The year 2017 was a very productive year for the ISC thanks to the support of 65 Members and 11 Project Sponsors. The Visual Bulletin Analysis System (VBAS) was finally put into operation, completely phasing out the routine use of paper and bar codes and making the ISC fit to cope with the ever increasing number of station reports. Bulletin data for earthquakes and other seismic events during recent (2014-2017) and historical (1904-1919) periods were added to the ISC database. The ISC Bulletin has been rebuilt for the period 1964-1979. The ISC-EHB has been extended to the overall period 2000-2014. We ran the 1st British Seismology Meeting that turned out to be rather international and maintained the ISC conference booth at the AGU. The ISC web download statistics and the large number of scientific articles published by researchers in 2017 confirm an extensive worldwide use of the ISC data.
EXECUTIVE SUMMARY ...........................................................................................................3

STAFF and CONSULTANTS ....................................................................................................5

OPERATIONS ...........................................................................................................................8

INTERNATIONAL SEISMOGRAPH STATION REGISTRY (IR) as part of the ADSL DATABASE ................................................................................................................................. 8
COLLECTING PRELIMINARY NETWORK BULLETINS ................................................................ 9
BUILDING the PRELIMINARY ISC BULLETIN ........................................................................ 11
COLLECTING REVISED NETWORK BULLETINS ..................................................................... 11
VBAS-based BULLETIN REVIEW ............................................................................................. 13
GENERAL STATISTICS of the ISC BULLETIN ........................................................................... 16
PRINTED SUMMARY of the BULLETIN of the ISC ................................................................. 19
IASPEI REFERENCE EVENT LIST (GT) .................................................................................. 20
ISC EVENT BIBLIOGRAPHY .................................................................................................... 22
SEISMOLOGICAL CONTACTS .................................................................................................. 23
ISC WEB and FTP SITES ......................................................................................................... 23
ISC DATABASE and WEBSITE BACKUP and MIRRORS ....................................................... 25

DEVELOPMENT PROJECTS ....................................................................................................26

ISC-EHB: RECONSTRUCTING the EHB .................................................................................. 26
EXTENSION of the ISC-GEM CATALOGUE ........................................................................... 27
CTBTO LINK to the ISC DATABASE ...................................................................................... 29
ISC BULLETIN REBUILD ........................................................................................................ 31
SOURCE TIME FUNCTIONS and DEPTHS .............................................................................. 35
FOCAL MECHANISMS .............................................................................................................. 35

FINANCE ..................................................................................................................................36

INCOME ................................................................................................................................... 36
EXPENDITURE ............................................................................................................................ 36
RESERVES ................................................................................................................................ 37
CASH FLOW ............................................................................................................................... 37

SCIENTIFIC LIAISONS and COMMUNITY AWARENESS .........................................................38

BSM2017 .................................................................................................................................. 38
ISC BOOTH at AGU .................................................................................................................. 39
VISITORS to the ISC .................................................................................................................. 39
CONFERENCES, MEETINGS, WORKSHOPS, TRAINING COURSES ........................................ 40
ISC STAFF VISITING OTHER INSTITUTIONS ...................................................................... 41
ISC PRIZES: OXFORD UNIVERSITY and TIDES ................................................................... 41
SCIENTIFIC PUBLICATIONS BY ISC STAFF ........................................................................... 42

APPENDIX 1: STANDARD BULLETIN REPORTERS ................................................................44

APPENDIX 2: SCIENTIFIC PAPERS in 2017 that used the ISC DATA ...........................................47
EXECUTIVE SUMMARY

The ISC gratefully acknowledges generous support received from 65 Member-Institutions in 48 countries and additional project grants (26% of the total income) from CTBTO, USGS, BGR, FM Global, Lighthill Risk Network, US NSF, OYO as well as sponsorships from Reftek, GeoSIG, Guralp and SRC.

Two new Member-Institutions joined the ISC in 2017.

The 2017 annual income has exceeded the ISC expenditure by approximately £43,500, on the understanding that ~83,000 is still owed to the ISC for 2017 alone, most notably by the three national Member-Institutions in India, Italy and France.

A record total of ~£125,000 is owed to the ISC at the end of 2017; we strongly encourage the ISC membership fees to be promptly paid when invoiced to avoid the ISC having cash flow problems.

18-19 staff members, three contractors and one member of the Earth Science Department of Oxford University worked at the ISC during the year.

1,407 seismic stations were registered or modified in the International Seismograph Station Registry.

Within hours and days after an event occurring, the ISC collected and grouped preliminary data from 30 networks and made the Preliminary ISC Bulletin available to all users.

The routine process of collection of revised bulletins from ~150 institutions stood at 12 months behind real time; a number of agencies were not able to comply with this deadline and inadvertently hindered the ISC Bulletin analysis.

The Visual Bulletin Analysis System is now fully in operation and the use of paper has been finally discontinued.

12 full data months were added to the Reviewed ISC Bulletin with ~53,000 events and ~6.1 million arrivals; one further data month was in an advanced stage of review; the entire Bulletin was enlarged by ~434,000 seismic events and ~13.7 million associated seismic arrivals.

The ISC Bulletin remains more complete than the bulletins of either NEIC or IDC.

We completed the ISC Bulletin Rebuild for 1964-1979.

We released one further issue of the printed Summary of the ISC Bulletin, which included several invited network related articles.

The ISC-GEM Global Instrumental Earthquake Catalogue has been extended to include many earthquakes during 1904-1919 and 2014.
References to 577 scientific articles related to ~1,003 seismic events have been added to the ISC Event Bibliography.

We continued operating and improving the CTBTO Link to the ISC database which experienced a steady stream of data requests from NDC and IDC personnel; the IDC REB is now contributed to the ISC on a daily basis with an appropriate delay.

The ISC database and the website mirrors at IRIS DMC in Seattle, ERI in Tokyo and LLNL in Livermore guaranteed improved speed of access to ISC data; another set of mirrors in Beijing and Xian have been built by China Earthquake Administration.

We continued updating and distributing the IASPEI Reference (GT) Event List and the List of International Contacts in Seismology.

We released the ISC-EHB dataset for 2000-2014 complete with a collection of regional seismicity cross-sections.

We initiated and conducted the 1st British Seismology Meeting (BSM2017) and maintained the ISC conference booth at the AGU Fall Meeting.

The ISC staff published several scientific articles and participated in a number of international and regional scientific and industry conferences.

The ISC has contributed to the work of IASPEI by maintaining the IASPEI website, leading several working groups and working at the IASPEI ExecCom.

Impressive ISC data download statistics and a large number of published scientific articles using ISC data indicate a very wide and extensive use of the ISC products by many researchers worldwide.

Signed, June 19, 2017

Dr. Dmitry A. Storchak
Director
STAFF and CONSULTANTS

As many as 18-19 members of staff and 3 consultants worked at the ISC during 2017, thanks to the regular Member’s support and a number of additional grants given to the ISC by international and public institutions and commercial companies to work on the ISC-GEM Catalogue, CTBTO Link, Station Registry and ISC Event Bibliography.

Among the ISC staff members, there are 8 Ph.D., 4 M.Sc. or equivalent, and 3 B.Sc. or equivalent degrees. The ISC staff represents 11 different countries from 4 continents. Several members of staff took part in professional meetings, travelled to international conferences and participated in professional training programmes.

ISC staff often organise sessions at scientific conferences. Several ISC staff are members of professional organizations such as IASPEI, EGU, AGU and SSA. ISC staff members are engaged in the IASPEI’s Executive Committee, commissions and working groups.

MANAGEMENT and ADMINISTRATION

Dmitry Storchak, Ph.D.  
Director/Seismologist  
Russia/UK

Lynn Elms  
Administration Officer  
UK

DATA and COMPUTER SYSTEMS

James Harris  
Senior System & Database Administrator, UK

Alfie Barber  
Systems Administrator, UK,  
joined in March

Gergely Csontos  
Web Developer, Hungary,  
joined in March
BULLETIN DATA COLLECTION

The data collection team has an Officer communicating with agencies and doing routine data processing. In addition, there is a seismologist who initiates collection of bulletins from newly established permanent networks, identifies, collects and parses bulletins from past and present temporary seismic deployments and experiments around the globe.

John Eve, B.Sc.
Data Collection Officer
UK

Edith Korger, Ph.D.
Data Collection Seismologist,
Austria

BULLETIN ANALYSIS and BULLETIN REBUILD

Six analysts are engaged in reviewing the current ISC Bulletin. Each member of this team has an additional task either in development projects or in data collection. Two further analysts specialise in the Rebuild of the ISC Bulletin for 1964-2010 period.

Rosemary Hulin, M.Phys.Geog., Analyst/Administrator, UK

Blessing Shumba, M.Sc.
Seismologist / Analyst
Zimbabwe

Rebecca Verney, B.Sc., Analyst, UK

Elizabeth Entwistle, Ph.D.
Seismologist / Analyst
UK

Jennifer Weston, Ph.D.
Seismologist / Analyst
UK

Elizabeth Ayres, B.Sc.
Geog., Analyst / Historical Data Officer,
UK
DEVELOPMENT PROJECTS

Domenico Di Giacomo  
Ph.D.  
Senior Seismologist  
Italy

Kostas Lentas  
Ph.D.  
Seismologist/Developer  
Greece

Daniela Olaru  
M.Sc.Admin.  
Historical Data Entry Officer  
Romania

VISUAL BULLETIN ANALYSIS SYSTEM (VBAS) PROJECT

Saiful Khan,  
Ph.D. in Computer Science,  
left in February  
India

CONTRACTORS

During the year, the following persons also contributed to the ISC as contractors either working remotely, at the ISC or both:

- **E.R. Engdahl**, Ph.D., *Boulder, USA*; taking part in the projects of extending the ISC-GEM Global Instrumental Earthquake Catalogue and ISC-EHB bulletin;
- **Emily Delahaye**, M.Sc., *Reading, UK*; summarising the VBAS testing results and training the ISC analysts;
- **Maureen Aspinwall**, *Newbury, UK*; typesetting of the ISC Newsletter.
OPERATIONS

INTERNATIONAL SEISMOGRAPH STATION REGISTRY (IR) as part of the ADSL DATABASE

The International Seismograph Station Registry (IR) allocates globally unique codes to seismic stations worldwide.

![Map of International Seismograph Stations](image)

**Figure 1.** 25,202 stations, open or closed, were fully registered in the International Seismographic Station Registry at the end of 2017; parameters of 1,407 of those (in red) were either registered or modified during 2017.

At the end of 2017, the IR contained information on 25,202 stations. During the year, the IR has been particularly improved and extended in Europe, the Mediterranean, Sub-Saharan Africa, South-East Asia, Oceania, Alaska and Central America (Fig. 1) as part of:

- regular ISC Bulletin work,
- inclusion of additional or missing datasets into the ISC Rebuilt Bulletin,
- update of the IASPEI Reference Event (GT) List and
- participation in the CTBTO initiative on the Regional Seismic Travel Times (RSTT).

Notably, the stations of the US Array in Alaska have been registered.

The ISC runs a popular web page giving an account of already registered stations as well as inviting the submission of parameters required to register a new station. Figure 2 gives account of the IR related web searches, per country.

In fact, the IR has become part of the ADSL database (Agency.Deployment.Station.Location) that we designed and continue maintaining jointly with the NEIC. The ISC maintains the agency.deployment “ISC.IR” as a subset of ADSL. In order to use all waveform data available on-line, NEIC routinely updates the ADSL database with stations under the
deployment codes equal to corresponding FDSN two-character network codes, based on dataless mini-SEED files available at IRIS DMC. The ADSL database is housed at the ISC and the changes are copied to NEIC once a week.

Now and in the future, the globally unique ISC.IR station codes will remain an exclusive source of station position information for the historical period of time. Also, the ISC.IR will continue to cover a large number of stations whose waveform data are not available to the international waveform data centres.

At present, for the majority of its standard operational activities, the ISC uses just the IR (almost equivalent to ISC.IR element of the ADSL database). In order to be able to deal with a multitude of additional stations becoming available for data years 2015-2016, largely from NEIC, the ISC will need to switch to working with the entire ADSL. To make this happen, a very large effort is required to update, test and validate almost the entire operational and web distribution computer code at the ISC.

COLLECTING PRELIMINARY NETWORK BULLETINS

The ISC continues to collect preliminary bulletin data from a large number of networks and data centres. These data are expected to undergo at least a minimal review by local analysts. Typically the incoming data include a preliminary hypocentre location, magnitude estimates, moment tensor solution and station arrival data, though variations are large from agency to agency. 30 agencies reported preliminary data to the ISC during year 2017 (Table 1).

Table 1. 30 agencies reported preliminary hypocentre determinations and corresponding arrival time data to the ISC in 2017.

<table>
<thead>
<tr>
<th>Country</th>
<th>Reporting Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Armenia</td>
<td>National Survey of Seismic Protection</td>
</tr>
<tr>
<td>Australia</td>
<td>Geoscience Australia</td>
</tr>
<tr>
<td>Austria</td>
<td>Zentralanstalt fur Meteorologie und Geodynamik (ZAMG)</td>
</tr>
<tr>
<td>Canada</td>
<td>Canadian Hazards Information Service, Natural Resources Canada</td>
</tr>
</tbody>
</table>
In addition, there are 18 agencies that produce bulletins soon after an event occurrence and never return to event re-analysis unless there is a special need (Table 2). These agencies can be considered as reporting both preliminary and final bulletins at the same time.

Table 2. Agencies reporting final analysis results within a month of event occurrence.

<table>
<thead>
<tr>
<th>Country</th>
<th>Reporting Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>International Data Centre, CTBTO</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>Institute of Earth Sciences, Academia Sinica</td>
</tr>
<tr>
<td>France</td>
<td>Laboratoire de Detection et de Geophysique/CEA</td>
</tr>
<tr>
<td>French Polynesia</td>
<td>Laboratoire de Geophysique/CEA</td>
</tr>
<tr>
<td>Germany</td>
<td>Alfred Wegener Institute for Polar and Marine Research</td>
</tr>
<tr>
<td>Germany</td>
<td>Seismological Observatory Berggieshübel, TU Bergakademie Freiberg</td>
</tr>
<tr>
<td>Greece</td>
<td>National Observatory of Athens</td>
</tr>
<tr>
<td>Greece</td>
<td>University of Patras, Department of Geology</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>Station Geophysique de Lamto</td>
</tr>
<tr>
<td>Mexico</td>
<td>Centro de Investigacion Cientifica y de Educacion Superior de Ensenada</td>
</tr>
<tr>
<td>Moldova</td>
<td>Institute of Geophysics and Geology</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>IRD Centre de Noumea</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Institute of Geological and Nuclear Sciences</td>
</tr>
</tbody>
</table>
BUILDING the PRELIMINARY ISC BULLETIN

Preliminary hypocentre solutions and station arrivals are grouped in the ISC database with corresponding solutions from other agencies and made available through the standard ISC Bulletin search procedure within a few hours of receipt. For each event an output includes several hypocentre solutions reported by various agencies, all reported source mechanisms and magnitude estimates as well as corresponding station arrival data. Earthquake headers include logo images of each reporting agency and, by clicking on the logo, Preliminary ISC Bulletin users can get further information from each agency directly.

Almost all events with magnitude 5 and above and many of smaller magnitudes are reported within the first week. Further reports beyond one week add information to already reported large and moderate events and also inform about smaller events.

This process is there to fill the gap between the event occurrence and the time when the final Reviewed ISC Bulletin becomes available. It presents an attempt to consolidate the effort of many data centres and networks to make their data available internationally in good time. At this stage the ISC does not compute or publish its own event solutions. This service is not intended for use by the media or civil protection agencies. It is designed to be used by seismologists to receive as much information as possible in one single format from one single place and then to get access to details using provided links to the original data reporters.

No later than one year after each seismic event occurrence, the preliminary data from agencies are substituted with their final, revised versions; this is well before the ISC analysts make their final review of the ISC Bulletin. The ISC hypocentre solutions are still based only on the revised set of bulletin parametric data given by each reporting institution.

COLLECTING REVISED NETWORK BULLETINS

The standard ISC data collection is the collection of revised bulletin data from many agencies (network data centres and single observatories) around the world up to 12 months behind real time. This delay gives the majority of data contributors enough time for reviewing and finalising their bulletin data before submission to the ISC.

Appendix I lists 146 agencies that contributed revised seismic bulletins to the ISC during the calendar year 2017. It is important to note here that among them there are two regional data concentrators that in fact represent a number of networks. The East and South Africa Regional Seismological Working Group (ESARSWG) contributes a coordinated collection of local bulletins from 9 countries: Ethiopia, Eritrea, Kenya, Malawi, Mozambique,
Tanzania, Uganda, Zambia and Zimbabwe. US National Earthquake Information Center (NEIC) also covers a multitude of regional seismic networks in the US.

The ISC no longer receives seismic bulletins from the European-Mediterranean Seismological Centre (EMSC). All available bulletin contributions from this region arrive to the ISC directly from individual institutions.

Figure 3 shows countries and agencies that contributed revised bulletins for various months and years, directly or indirectly (via other agencies), during 2017. There is currently ~24 months gap between the data collection deadline and the Bulletin production start date. Figure 4 shows those agencies that reported data for the data months that the ISC have reviewed during 2017. This collection is generally more complete (see Algeria, Cuba, Iceland, Morocco, Namibia) due to extra effort made by the Data Collection Officer and the Director to bring all missing agency data before the Analysis begins.

Figure 3. Agencies (black dots) and corresponding countries (in colour) that reported revised bulletins during 2017; red/grey colours indicate direct/indirect contributions.

Figure 4. Agencies and corresponding countries that reported revised bulletins for the data months reviewed by the ISC in 2017: February 2014 – February 2015.

The ISC Bulletin is progressively updated with each network report coming in. Preliminary network contributions are substituted with final reviews. New events are built, merged or split with every new report coming to the ISC by e-mail and processed either automatically or manually by the ISC Data Entry Officer, who is working remotely from his home office in Scotland. The Analyst Administrator and the Data Entry Officer regularly review the status of data collection and contact various agencies to avoid reporting gaps.
VBAS-based BULLETIN REVIEW

When the time comes, one month’s worth of data is pulled into a separate database and a set of automatic procedures are run to produce the first automatic ISC event locations and magnitude determinations for those events that are large enough to be reviewed by the ISC seismologists. It would be impossible for the ISC to sustain a review of every reported event, so from data year 1999 the data collection thresholds were removed and review thresholds introduced. Following various recent improvements, this system continues to serve its purpose by limiting the number of seismic events to be reviewed by ISC analysts. The threshold criteria are complex yet almost all events of magnitude ~3.5 and larger are reviewed.

The ISC seismologists/analysts review approximately 10-20% of all events formed in the ISC database by the automatic procedures. Although this review misses smaller events, it makes the most used part of the ISC Bulletin accurate and trustworthy. The accuracy of \textit{ak135}-based ISC solutions and magnitude estimates, and proper grouping of reported information between the events in the Bulletin is under constant scrutiny. The ISC analysts also review the correctness of automatic association of reported station arrivals to events, reported arrival’s phase identification and travel-time residuals.

In the first part of 2017, the Analyst still used the conventional paper and bar code based analysis system whilst Version 1 of the on-screen Visual Bulletin Analysis System (VBAS) was undergoing the last stages of testing and debugging and partially used in operations. By August 2017, all analysis work was moved to VBAS and paper-based analysis was discontinued for good.

All analyst computers have been upgraded with two or three large high-resolution monitors and more powerful graphic cards. Figure 5 shows a typical view of an analyst computer screen. Individual windows can be moved around and adjusted by analysts.

\textbf{Figure 5.} Graphical windows of the Visual Bulletin Analysis System (VBAS) can be arranged in line with the individual analyst’s taste.

Throughout 2017, the Analysis Team included six members, each involved in the review process for a certain proportion of their time:
• Mrs Rosemary Hulin, Analyst/Administrator;
• Mr Blessing Shumba, Seismologist/Analyst;
• Ms Rebecca Verney, Analyst;
• Ms Elizabeth Ayres, Analyst;
• Dr Jennifer Weston, Seismologist/Analyst;
• Dr Elizabeth Entwistle, Seismologist/Analyst.

Mrs Emily Delahaye, former Lead Analyst, contractor, helped the Team with the final stages of VBAS implementation and associated staff training.

In addition to the standard Bulletin analysis, members of the team were involved in other projects such as the Rebuild of the ISC Bulletin, ISC-EHB, Event Bibliography, ISC-GEM catalogue and automatic amplitude measurements from waveforms. On average, this amounted to 25-30% of the team’s time.

During 2017, the Analysis Team fully reviewed 12 new data months of the ISC Bulletin (February 2014 - January 2015). A fair amount of work was also done for the data month of February 2015. The analysts were working with a lower number of seismic events compared to the average number during the previous 6 years (Fig. 6). Nevertheless the number of associated phases reviewed by analysts was on the increase (see numbers below) as new stations and networks are set up and corresponding data reported to the ISC. By design, VBAS helped to alleviate this problem.

![Events reviewed by the ISC Analysts during 2017](image)

**Figure 6.** Monthly number of seismic events in the Reviewed ISC Bulletin analysed during 2017; the solid colour represents those data months that have been fully completed; the dashed line shows the average monthly number during the preceding 6 years.

The result of the ISC work can be seen when comparing Figures 7 and 8. A fuzzy picture of the originally reported seismicity sharpened up by the Reviewed ISC Bulletin.

During the calendar year 2017 (2016), ~53,000 (~48,000) reviewed events with ~6.1 (~5.0) million associated phases were added to the reviewed part of the Bulletin by the ISC analysts. Overall, the Bulletin (both reviewed and un-reviewed) was enlarged with ~434,000 (~357,000) events and ~13.7 (~12) million associated phases.
Figure 7. All hypocentres reported by individual networks (February 2014 – February 2015).

Figure 8. Primary hypocentres in the ISC Bulletin (black) in the period (Feb 2014 – Feb 2015); in red are the reviewed events.

Figure 9 demonstrates the diversity of seismic phases included in the ISC Bulletin.

Figure 9. The travel-time graph and associated table show the statistics of various seismic phases generated by large shallow events reviewed by the ISC analysts during 2017; 233 events with depth <=35 km and magnitude above 5.5 are shown.
GENERAL STATISTICS of the ISC BULLETIN

The ISC Bulletin and the ISC database grow by the day in both seismic event (earthquake or explosion) numbers (Fig. 10) and reported seismic wave arrival times and amplitudes of seismic waves recorded at stations registered in IR (Fig. 11).

**Figure 10.** Timeline of the annual number of reviewed and un-reviewed (small) events in the ISC Bulletin; the total height of each column represents the annual number of all seismic events in the ISC Bulletin; note different scale used for events before and after 1964; “Reviewed” events beyond February 2015 are those intended for review. Numbers as of June 18, 2018.
**Figure 11.** Timeline of the annual number of seismic arrivals associated with both reviewed (red) and un-reviewed (black) events in the ISC Bulletin, as well as those arrivals in the ISC database that are not associated to any known event (grey); the total height of each column represents the annual number of all seismic arrivals in the ISC database; note different scales used for events before and after 1964; “Reviewed” events beyond February 2015 are those intended for review. Numbers as of June 18, 2018.

Figure 12 demonstrates the comparative magnitude completeness of the ISC Bulletin and bulletins of the NEIC/USGS and IDC/CTBTO. The ISC Bulletin appears to be more complete globally than NEIC or IDC by at least half a unit of magnitude. The NEIC’s current global operational magnitude cut-off threshold is 4.5. Smaller events are routinely included only for US territories. Thus, the ISC Bulletin is more complete by definition. The IDC is unlikely to use many more seismic sites/arrays than they use at present because the exact IMS network station positions are written into the Comprehensive Test Ban Treaty. Hence, the Bulletin of the ISC is likely to stay more complete than either of NEIC or IDC.
The ISC Bulletin is used by a large number of researchers worldwide. The number of bulletin web searches in 2017 has increased by 17% compared to 2016; it is in the order of 3 searches per minute (Fig. 13). The above number doesn’t even include searches through the ISC mirror databases at ERI, CTBTO, LLNL or CEA. Neither does it include individual user searches based on flat bulletin files downloaded by some users from the ftp-site.

Figure 14 shows the multinational character of the ISC Bulletin search users.
The above statistics include the use of the ISC mirror website at IRIS DMC, yet it does not include bulletin searches made from mirror-sites at ERI in Tokyo and LLNL in Livermore. Where reliably known, we have removed the numbers related to web crawlers.

Currently, the website searches give output in three major formats: ISF1.0 (International Seismic Format), QML (QuakeML) and CSV (comma separated variables). Figure 15 shows that the total number of searches in QML exceeds those of ISF or CSV. The QuakeML searches, though, are performed by fewer users who tend to run automated queries that request larger volumes of data. Thus, all three formats are popular and need to be maintained in the future.

**PRINTED SUMMARY of the BULLETIN of the ISC**

Each volume of the printed *Summary of the Bulletin of the ISC* covers six months of data. The Summary is prepared at the ISC, published by Cambrian Printers in Wales and posted within approximately two months after the relevant period of data becomes available to ISC web users. Since the previous volume of the Summary was arranged just at the end of 2016, this year we published only one issue covering the period from January to June 2014 (Fig. 16). The following topics were covered:

- The ISC (Mandate, History, Evolution of the Bulletin, Member Institutions, Sponsors, Data Contributors, Staff)
- Operational Procedures (data collection, grouping, association, thresholds, location, magnitude determination, review, history of operational changes)
• Availability of the ISC Bulletin
• Citing the ISC
• IASPEI Standards
• Summary of Seismicity (6 months)
• Two invited articles on the history, status and procedures used at the long-term observatories in Germany: Collm and Berggießhübel
• Statistics of Collected Data
• Overview of the ISC Bulletin
• Leading Data Contributors
• Glossary
• Advertisements of the instrument producers – Sponsors of the ISC

The invited articles from the Summary are also used on the ISC website. Articles on notable events contribute to the ISC Event Bibliography. Network description articles become associated with general information available for each agency contributing to the ISC Bulletin.

As a book publisher, the ISC charges no Value Added Tax (VAT) on its printed products yet VAT on all goods and services that it buys from other suppliers can be reclaimed.

**IASPEI REFERENCE EVENT LIST (GT)**

The International Seismological Centre maintains the IASPEI database of Reference Events (earthquakes and explosions, including nuclear) for which epicentre information is known with high confidence (to 5km or better, GT5) with seismic signals recorded at regional and/or teleseismic distances (Fig.17a,b). It should be noted that the depth of these events is not known to the same level of accuracy as the epicentre.

The global effort of collecting and validating GT events is coordinated by the CoSOI/IASPEI working group on Reference Events for Improved Location that includes Bob Engdahl, Eric Bergman, István Bondár and Kostas Lentas.

The GT database of 9,415 reference events (1959-2017) and approximately 1,055,000 station arrival times facilitates better visualization of the Earth structure, better modelling of velocities of seismic waves, more accurate travel time determinations and increased accuracy of event locations.

The ISC users are able to search this database at the ISC website and receive GT locations and corresponding ISC locations along with station arrival data available for each event. A cross-link to the ISC Bulletin is provided for users to go between ISC and GT databases.
Figure 17a. The IASPEI List contains seismic events during 1959-2017 for which epicentre information is known with high confidence (to 5km or better (GT5)).

Figure 17b. The IASPEI List contains natural earthquakes as well as chemical and nuclear explosions.

At the end of analysis of each ISC Bulletin data year, we add new events to the Reference Event List. During 2017, 188 events were added or updated (Fig. 18).

Figure 18. During 2017, 188 events (red) were either updated or added to the IASPEI list of Reference earthquakes and explosions.
ISC EVENT BIBLIOGRAPHY

The ISC Event Bibliography (first released in April 2013) facilitates an interactive web search for references to scientific publications linked to both natural and anthropogenic events that have occurred in the geographical region of their choice based on earthquake (location, time, magnitude, etc.) and/or publication parameters (author name, journal, year of publication, etc.). The output is presented in a format accepted by major scientific journals. For most recent publications the results include the DOI that allows direct access to scientific articles from corresponding journal websites.

References are collected and linked to events in the ISC database based on the titles and abstracts of scientific publications that could be found in the ISC Bibliography of Seismology, electronic indexes provided by scientific journals as well as references collected during work on the ISC-GEM Catalogue.

References to publications are not limited to Seismology. They cover a broad range of disciplines including, but not limited to earthquake engineering, tectonics, structural geology, geodesy, remote sensing, nuclear test monitoring, tsunami, landslides, environmental studies, coastal science, natural disasters, hydrology, geochemistry, atmospheric sciences and geomagnetism. This feature makes the Event Bibliography an attractive tool for multidisciplinary studies and useful for researchers and students from different fields.

At the end of 2017, the Event Bibliography included 19,742 articles from ~500 journal titles related to 15,407 seismic events. Seismic events cover the period from 1904 till present; publications covered the period from 1904 till present. Figure 19 illustrates 1,003 articles related to 577 events that were added to Event Bibliography during 2017.

*Figure 19. Annual numbers and the map of 577 seismic events related to 1,003 scientific articles added to the ISC Event Bibliography during 2017.*
SEISMOLOGICAL CONTACTS

The objective of this project is to update and maintain up-to-date information on the network of scientific institutions, seismologists and geophysicists in each country willing to serve as scientific points of contact to:

- Seismologists and Geophysicists in other countries;
- Governments;
- Charitable, Response and Relief organizations;
- Media.

Particular care is given to establishing and maintaining contacts in developing countries.

The service benefitted from support in terms of staff time from the Institute of Geophysics and the China Earthquake Networks Center of the China Earthquake Administration.

The registry in its current form is readily available for scientific & research institutions, governmental bodies, charitable and relief organizations and media at www.isc.ac.uk/projects/seismocontacts (Fig.20).

Figure 20. Seismological Contacts webpage; in red are countries in which institutes and individual staff members are willing to share information and serve as a local point of contact; in blue are countries for which we have information about operating geophysical organisation(s); in black are countries for which we do not hold any information.

ISC WEB and FTP SITES

In 2017, the ISC website experienced ~9 million hits which is 70% higher than in year 2016. The majority of the ISC web data are distributed through the main ISC website and the mirror at IRIS DMC in Seattle. In the past users could choose the IRIS website to get the most quick and efficient service. In early 2015 we installed the load balancer that automatically directs users queries to the least busy server. It substantially improved ISC user web experience, efficiency and speed of queries. At the same time, due to the new enhanced software now
used to track robots, web crawlers and other non-human interaction, we are not able to compare meaningfully the numbers of the ISC website hits in the past and during 2015-2017.

The use of the ISC ftp site almost doubled in 2017 compared to 2016. The ftp-site is used for downloading the pdf copies of the printed ISC Bulletins and Summaries, the ISC Bulletin in FFB and ISF formats, the EHB bulletins and the text version of the IR station list.

Per country usage of the ISC web (Fig. 21) and ftp services (Fig. 22) demonstrate worldwide interest to the ISC data.
ISC DATABASE and WEBSITE BACKUP and MIRRORS

The ISC continued maintaining one of its servers at the IRIS DMC in Seattle in order to hold a mirror of the ISC database and the ISC website. This was done with assistance from the DMC and US NSF in order to achieve a general ISC data back-up and fall-over facility in case of a breakdown of services at the ISC itself as well as to spread the load on the ISC Internet line and give ISC users faster access to data.

The mirror has been operational since 2011. The database in Seattle is updated with approximately an hour time lag. The Load Balancer evenly distributes the load on the ISC website, including the user searches, between the server at the ISC in Thatcham and the server at DMC in Seattle. Users no longer need to know the exact web address in Seattle and are generally no longer aware which server is addressing their request.

In addition, the IRIS DMC is able to use the database on a daily basis to serve the DMC archive users with event-based selection of waveform data.

Other mirrors of the ISC database are maintained by the Earthquake Research Institution (ERI) of University of Tokyo to serve the research community in Japanese universities and by the Lawrence Livermore National Laboratory (LLNL) to serve users from nuclear test monitoring laboratories in the US.

A new database mirror has been installed in Beijing and Xian by the China Earthquake Administration. This ISC website will help numerous Mandarin speaking seismologists to obtain more intuitive access to the ISC data. We are currently discussing ways of keeping the main ISC and Chinese mirror website as concurrent as possible.
DEVELOPMENT PROJECTS

ISC-EHB: RECONSTRUCTING the EHB

The EHB dataset is a groomed version of the ISC Bulletin. It is a valuable tool for global and regional seismicity studies and tomographic inversions. Teleseismically well-constrained events are selected from the ISC Bulletin and are relocated using the EHB location algorithms (Engdahl et al., 1998) to minimise errors in location (particularly depth) due to assumed 3D Earth structure. The EHB algorithm incorporates a specific phase identification algorithm for teleseismic depth phases (pP, pwP, sP, PcP) as well as using PKiKP, PKPdf, PKPbc and PKPab.

The original EHB stopped in 2008, and since then the volume and quality of bulletin data at the ISC has significantly improved. We have used these enlarged and improved data, updated the event selection, data preparation and processing, and relocation procedures to produce a cleaner and more robust ISC-EHB dataset, using the advantages of both the ISC (Bondar & Storchak, 2011) and EHB location techniques.

During 2016-2017, together with E.R. Engdahl of Colorado University in Boulder, we applied the ISC-EHB approach to events in the 2000-2014 period. This dataset has replaced the equivalent years in EHB (Fig. 23). The 1960-1999 period follows the old EHB approach.

The entire EHB/ISC-EHB dataset contains 164,267 seismic events from 1960 to 2014. Over the next few years we shall replace the EHB with ISC-EHB for years 1964-1999. This will considerably increase the total number of events and improve visualization of seismicity in each geographical area, and give enough data for studies of inner structure of the Earth. The regional cross-section plots, available from the ISC website, will be updated accordingly.

We shall then incrementally extend this dataset forward in time as part of routine operations, based on the progress in production of its original source of data - the Reviewed ISC Bulletin.

**Figure 23.** The annual numbers of events in the original EHB and reconstructed ISC-EHB; there is a total of 88,964 events during 1960-1999 and 75,303 during 2000-2014 period.
The ISC-EHB dataset has great potential to reveal complicated structures (Fig. 24). It is available from the ISC website along with cross-section plots for a large number of seismic regions.

![Figure 24. 333 km wide North-South cross-section of the Northern Sulawesi region shows the intersection of two slabs; the upright triangle is a volcano; the inverted triangles are trench points.](image)

**EXTENSION of the ISC-GEM CATALOGUE**

The ISC-GEM Global Instrumental Catalogue was originally requested and funded by the GEM Foundation. It is now widely used for modelling seismic hazard on a regional and global scale. The catalogue is also used as an authoritative reference and a starting point in regional studies in South America, Africa and Asia. The Catalogue has a multidisciplinary use in a wide range of other areas such as studies of global seismicity, tectonics, earthquake hazard forecasting, rapid determination of hazard etc. In addition, the basic station observation data digitised by the ISC for use in the catalogue production are now used by individual researchers for historical earthquake studies.

The ISC-GEM catalogue forms the basis of the USGS ComCat catalogue before 1970.

![Figure 25. During the last 29 months, the ISC-GEM catalogue has, on average, been downloaded 12 times per day.](image)

The catalogue is very popular with an average of 12 downloads per day recorded in the last 29 months (Fig. 25). Six scientific publications explaining details of the project were
published by the team in a special volume of the Physics of the Earth and Planetary Interior and Seismological Research Letters. References to the ISC-GEM catalogue are becoming progressively more common, both in publications and conference presentations.

In Version 1 of the original ISC-GEM catalogue (Storchak et al., 2013), (Storchak et al., 2015), the magnitude cut-off thresholds were as follows:

- 1900-1917: $M_S \geq 7.5$ worldwide + smaller shallow events in stable continental areas
- 1918-1959: $M_S \geq 6.25$
- 1960-2009: $M_S \geq 5.5$

Since November 2013, we have been working on extending the ISC-GEM catalogue by decreasing the magnitude cut-off thresholds in the early instrumental period before 1960 as well as adding recent years beyond 2009. This work was supported by the GEM Foundation (the first two years), United States Geological Survey (USGS), Germany’s BGR, United States National Science Foundation (NSF), FM Global, Lighthill Risk Network (Aon Benfield, Catlin, Guy Carpenter and Lloyd’s) in UK, Aspen Re in Switzerland and OYO Corporation in Japan.

The team that worked on this project during 2017 included several members of the ISC staff and E.R. Engdahl from University of Colorado, Boulder. Several institutions internationally have also helped by providing copies of vital historical data.

![Figure 26](image)

**Figure 26.** Annual number of earthquakes above a certain magnitude level in the main ISC-GEM catalogue in the original version (left) and at the end of the 4th year of the Extension project (December 2017).

Year 4 of the project (2017) has seen the earthquake data years 1904-1919 and 2014 extended and added to the catalogue. As a result, the catalogue now has ~28,000 moderate to large earthquakes with locations and magnitudes computed using the same technique described by Bondar et al. (2015), Di Giacomo et al. (2015b) and Lee and Engdahl (2015). In order to
apply these techniques, a large amount of basic observational data has been collected from ISS, BAAS, ISA and many individual network and station bulletins, in line with the principles laid out by Di Giacomo et al., 2015a. During 2017, we relocated 1,110 earthquakes that occurred between 1904 and 1919 and 521 large global earthquakes in 2014. For 246 of them we assigned poor location quality (i.e., those events are listed in the Supplementary catalogue). We were not able to re-compute reliable magnitudes of 184 earthquakes. Figure 26 compares the state of the ISC-GEM catalogue at the start and finish of the Extension project. Approximately 9,000 earthquakes have been added. Magnitude determinations of many earthquakes have been improved. Many of the magnitudes have never been reliably determined in the past.

The next 4-year programme of advancement work on the ISC-GEM catalogue is scheduled to begin in 2018.

**CTBTO LINK to the ISC DATABASE**

Back in 2008, the UK Foreign and Commonwealth Office (FCO) awarded the ISC with a three-year grant to set up a dedicated and secure link to the ISC database for the CTBTO PTS and National Data Centres. The UK FCO provided 90% of the total funding with GEUS (Denmark), NORSAR (Norway), FOI (Sweden) and University of Helsinki (Finland) complementing it with 2.5% each. From April 2011, the funding of the project was taken over by CTBTO. From April 2015, a new annual contract was signed with four possible annual extensions. The contract has now been extended to run until the end of March 2018.

During 2017, we maintained a dedicated server at the ISC that held a mirror version of the ISC database. The dedicated web-based software package designed, maintained and upgraded by the ISC for this service allowed users from the Provisional Technical Secretariat and National Data Centres for CTBTO to query the ISC database in ways specific to the nuclear test monitoring community. The software package includes four types of bulletin searches: area based, REB event based, GT event based and IMS station based search through the wealth of the parametric information in the ISC database.

The objective of the project is to provide the capacity for NDCs to perform various types of analysis such as:

- assessing the historical seismicity in a specific region;
- putting an event of interest into context with the seismicity of the surrounding region;
- examination of observations reported by non-IMS stations;
- comparison of hypocentre solutions provided by various agencies;
- relocating an REB event based on user selected arrival times available in the ISC database using the ak135 1-D model with optional RSTT regional velocity model;
- investigation of station histories and residual patterns of IMS or IMS surrogate stations.

We also developed an interface for selecting waveforms of non-IMS stations for REB events from the IRIS DMC, EIDA and GeoNet archives. For each recent REB and GT event, this interface:
• allows selection of stations by distance / azimuth to the REB epicentre;
• shows the number of stations, for which waveforms are available at all three archives;
• exhibits pre-prepared images of selected waveforms, filtered and un-filtered with theoretical first arrivals indicated on top of the waveform images;
• offers a form to request part of waveform, based on absolute or relative theoretical arrival times of required seismic phases or on group velocity of surface waves;
• triggers a request to waveform archives; as a result, users receive required waveforms by e-mail in the SEED format.

Figure 27 shows user activity on the Link by both PTS/CTBTO and NDCs.

![Figure 27. The Link to the ISC database mirror is provided to the NDCs through the IDC secure website. The figure shows the healthy stream of user activity.](image)

This project also benefits the ISC and the ISC users.

• The ISC development staff acquired important skills and experience during this project. The advances made under this project are gradually implemented to improve the traditional open ISC web services.
• In particular, experience of downloading, checking quality and processing waveforms on an industrial scale helps the ISC’s efforts towards making its own automatic waveform measurements to further improve the quality of the ISC Bulletin.
• During 2017, the ISC and its Bulletin users gained much speedier access to the REB Bulletin which is now available in daily batches within 10-20 days after an event occurrence as opposed to half a year in the past (Fig. 28).
• Many National Data Centres for CTBTO are run by institutions that are either Members of the ISC or reporters of data to the ISC.
• Several NDC’s either became ISC Members or increased their financial contributions, based on the added value of the ISC service.
Figure 28. The availability of the IDC REB data to general ISC Bulletin users (days behind real time) has considerably improved with the routine operation of the CTBTO Link.

It also has to be noted that although the software created under this project is open only to the monitoring community, the actual data used by them are exactly the same as used by all ISC users: the ISC Bulletin, GT List, ISC-EHB and International Seismograph Station Registry.

ISC BULLETIN REBUILD

The value of the ISC Bulletin is subject to adhering to uniform procedures over a long period of time. Nevertheless, essential changes in the ISC procedures have occurred (Fig. 29):

Figure 29. The overall plan of the ISC Bulletin Rebuild project. (Courtesy Geoscience Lett, 2017)
• The \textit{ak135} velocity model (Kennett et al., 1995) has been used since 2006 superseding the \textit{JB} travel times (Jeffreys and Bullen, 1940).
• A new event Locator based on a different approach was introduced from data year 2009 (Bondar and Storchak, 2011).
• Throughout the ISC history different sets of seismic phases were used for location: P & (from 2001) S with other \textit{ak135} phases from 2009.
• Latitude & longitude error estimates were computed before Oct 2002, followed by full error ellipses later on.
• Procedures that determine which reported events require relocation by the ISC were also changed in 1999, 2005 and 2006.

We are currently rebuilding the ISC Bulletin using current ISC procedures to guarantee homogeneity throughout its entire period by:

• Renaming the ISC phase identifications in line with the IASPEI standard (Storchak et al. 2013, 2011);
• re-computing all ISC hypocentres and event magnitudes with uncertainties;
• soliciting, obtaining and integrating essential additional datasets that were not available at the time of the original ISC Bulletin production;
• performing essential integrity and consistency checks, quality control and correction.

The ISC Rebuild Analyst Team (an equivalent of 2.4 full time analysts) review events with considerable departures of main hypocentre parameters from the original ISC solutions as well as events with unacceptable travel time residuals at individual stations. They also review those events where the only hypocentre is that of the ISC and events where there was no ISC hypocentre in the past.

During 2016-2017, we completed the review of seismic events within the period 1964-1979. The main ISC database available to users will be updated for this period in early 2018.

The outcomes of the Bulletin Rebuild of 1964-1979 are discussed in Storchak et al. (2017). Here we show the major achievements.

\textbf{Figure 30.} Poorly located or phantom events discarded from the ISC Bulletin (1964-1979).
\textbf{Figure 31.} New events added to the ISC Bulletin (1964-1979). \textit{Geoscience Lett}, 2017

We performed the overall review of events in the Bulletin by removing poorly constrained and phantom events (Fig. 30) as well as adding new events from previously unavailable
datasets (Fig. 31). New stations are shown on Figure 32. A large number of seismic arrival times have been added to the Bulletin (Fig. 33).

*Figure 32. The existing and new (red) stations in the Rebuilt Bulletin during 1964-1979 period. Geoscience Lett., 2017*  

*Figure 33. Comparative numbers of original and new seismic arrivals and the growth of the station numbers through 1964-1979 period.*

The most dramatic changes have taken place in the magnitude area (Fig. 34).

*Figure 34. The existing and new (red) stations in the Rebuilt Bulletin during 1964-1979.*

Many one or two station based ISC mb magnitudes have been deleted whilst the rest of the magnitudes were recomputed using a much more robust technique that is used by the ISC today. ISC MS almost were not existent during that period in the original Bulletin, whilst the surface wave amplitudes have been available in the ISC database. A very large number of station surface wave measurements have been added to the Bulletin from the ISC-GEM dataset. Collectively, these data allowed us to produce many more ISC MS magnitudes that weren’t available in the past.
Figure 35 gives a chance to judge the changes in event location of seismic events that have taken place with the introduction of the Rebuilt ISC Bulletin.


The speed of the analyst’s review was highly variable for different data months, which makes estimates of the likely end of the project highly uncertain. We are trying to speed up the review aiming to complete the project whilst we have the analyst resources available.

Our plan for 2018 is to reinvent the ISC Bulletin during the 1904-1963 period, based on the data available in the ISC-GEM database account. At the same time, we shall continue rebuilding the 1980-2010 period, releasing to users 5-year batches per year or faster, if the ISC funding allows more analyst’s time.

As a result, within a few years time, the entire extended ISC Bulletin (1904-present) will be relocated based on the same location procedure, ak135 velocity model and magnitude computation techniques that are used in the ISC Bulletin production today.
SOURCE TIME FUNCTIONS and DEPTHS

In September, Dr Tom Garth joined the ISC and Department of Earth Sciences in Oxford University of which he is a formal employee (PDRA). Tom’s appointment at Oxford is jointly funded by the ISC (⅔) and Prof. Karin Sigloch’s ERC grant (⅓). Tom has a desk at both the ISC and Oxford University where he works under the guidance of Karin.

With this project, we are exploring additional resolution to earthquake depths that can be gained by using openly available seismic waveforms. Based on established techniques, we intend to develop automatic procedures to build source time functions for moderate to large earthquakes in the ISC Bulletin.

It is expected that at the end of the 3-year PDRA post, Tom will be able to join the ISC as a full member of staff responsible for earthquake location and other developments.

FOCAL MECHANISMS

We are also working towards computing fully automatic earthquake focal mechanisms, combining directions of first motions reported to the ISC with auto-picked first motions from waveforms available at IRIS, EIDA, etc. We focus on moderate to large earthquakes in the reviewed ISC bulletin and especially on earthquakes with no previously reported source mechanisms.

It is our plan to produce a scientific publication describing the method. We also aim to produce mechanisms for the historical ISC Bulletin, based solely on reported first motion polarities in order to include those in the Rebuilt ISC Bulletin.
FINANCE

The detailed financial statements of the ISC for 2017 were audited by Wilkins Kennedy (previously known as Griffins) Chartered Accountants (Newbury UK) and approved by Prof. John Woodhouse of the ISC Executive Committee. These statements present the state of the ISC’s financial affairs as at 31st December 2017.

INCOME

In 2017, the ISC had a total income of £910,256 from 65 Membership contributions, grants for special projects and general sponsorship. We were pleased to welcome two new Member-Institutions: the Royal Scientific Society of Jordan (RSS) and Mexico’s Center for Scientific Research and Higher Education in Ensenada (CICESE). The grants and sponsorships amounted to ~26% of the total income, which helped to ease the burden on Members. The ISC also received £1,935 of interest on its bank accounts.

The exchange rate between the weakened post-Brexit UK £ and US $ was volatile throughout the year with £1=$1.237 at the beginning of January and £1=$1.328 at the end of December. The exchange rate between the UK £ and € varied throughout the year starting at £1=€1.186 at the beginning of January and finishing at £1=€1.127 at the end of December. Taking into account the timings of individual incoming and outgoing transactions, the ISC lost £20,612 on foreign exchange in 2017, having gained £4,509 in 2016.

The total of £3,925 have been treated as bad debt. This amount is a sum of 2016 membership fee from the Department of Geophysics of the University of Chile (membership was taken over by the CSN of the same University with a gap of one year) and 2015 fee from KOERI in Turkey (lost in the international banking system with no trace).

At the end of the year 2017, £133,541 had yet to be paid by Members. At the time of writing this report £8,180 had been received, leaving £125,361 outstanding, with £121,251 of that being due from just three members: INSU/CNRS in France, INGV in Italy and NCS in India.

EXPENDITURE

81.5% of ISC expenditure was committed to personnel costs, an increase from 77% in 2016, predominantly due to the rise in pension costs. During the year we saw the departure of one and arrival of two new members of staff. The staff costs include salaries, pension contributions, and recruitment of new staff. The ISC salaries continue to follow the scales adopted in 2015 and approved by the Executive Committee.

Building maintenance costs dropped by approximately two thirds as compared to 2016 as no building work took place this year. Staff travel increased but computer costs decreased. As in previous years, staff travelled to several countries to attend meetings and increase the profile of the ISC, take part in project meetings and also to seek new data and future funding.
Community Awareness represented the cost of running the British Seismology Meeting, ISC exhibition booth at AGU, printing and producing the ISC brochure, mugs, coasters as well as giving ISC prizes to students at Oxford University and at TIDES training school.

RESERVES

In understanding that all missing contributions will be repaid, the ISC’s income during 2017 has exceeded its expenditure by £43,553. As a result the total reserves, comprising cash in the bank, value of building and land, money owed to the ISC (debtors) minus money the ISC owes (creditors) have increased to £850,841; this includes money ear-marked for on-going projects. The Contingency Fund stands at £30,000 in accordance with the wish of the ISC Governing Council. The ISC General Reserve of £820,841 is within British guidelines for charitable organizations.

CASH FLOW

The cash flow in Fig. 36 shows receipts and expenditure using dates when transactions were recorded at the bank and the bank balances where US Dollars and Euros are converted to Sterling using the exchange rate at the end of each month.

![Cash Flow Graph](image)

**Figure 36. Income/Expenditure and running cash balance during 2017**

In 2017, due to the size of its General Reserve serving as a safety cushion, the ISC was fortunate not to experience problems with its cash flow but this may change in the future if Members and Sponsors do not provide funds in time. In particular, the General Reserve is subject to £125,361 still owed to the ISC at the end of 2017.

Here we would like to thank once again those member-Institutions that make their annual fee payment promptly and accurately when invoices are sent at the beginning of each year.
SCIENTIFIC LIAISONS and COMMUNITY AWARENESS

BSM2017

During April 5-7, seismologists from the UK and abroad met in Reading for the first stand alone conference organised by the International Seismological Centre (ISC) in its 50+ year history (Fig. 37). There was great support from the seismology community, with 112 attendees, 44 talks, 43 posters and exhibits from Guralp, Optics11, AWE, the British Geological Survey and the ISC. Topics covered at the meeting include: induced seismicity, earthquake physics, seismic hazard, networks and catalogues, tomography and forensic, passive, laboratory and computational seismology.

Thanks to BGA sponsorship, BSM2017 hosted seven invited speakers; Professor Torsten Dahm (GFZ, Potsdam), Dr Steven Gibbons (NORSAR, Norway), Dr Tom Mitchell (University College London), Dr Tarje Nissen-Meyer (University of Oxford), Dr Andy Nowacki (University of Leeds), Dr Eleonore Stutzmann (IPGP, France), and Dr Roger Musson (BGS and University of Edinburgh).

Fig. 37. The ISC team near Reading Museum and Town Hall where BSM2017 took place.
On behalf of AWE, eight student conference grants were awarded to current Masters and Ph.D. students, who presented research helping to update current understanding in their fields of seismology. AWE also awarded two best poster prizes for early career researchers.

Overall, the meeting celebrated the fantastic and diverse research going on in the UK and internationally. The positive feedback and enthusiasm from BSM2017 attendees has highlighted the benefit of a UK-based seismology meeting every two to three years.

A scientific paper describing the programme and presentations made at the meeting has been submitted to Astronomy & Geophysics.

**ISC BOOTH at AGU**

In December, three members of the ISC staff flew to New Orleans, where they set up an ISC exhibition booth at the AGU Fall meeting (Fig. 38). Compared to Reftek and Nanometrics, the booth was not as spectacular, though it attracted hundreds of visitors over five days, bravely competing with the next-door jewellery shop. The booth had posters on the ISC Members and Sponsors as well as major products. The specially published ISC brochure as well as the traditional red ISC coffee mugs and coasters were a great success with the visiting researchers and students.

**VISITORS to the ISC**

The following geophysicists visited ISC premises in Thatcham during the year:

- Tamara Jesenko, ARSO, *Slovenia*
- Irina Gabsatarova, Geophysical Survey RAS, *Russia*
- Abdelaziz Kherroubi, CRAAG, *Algeria*
- Laura Ermert, ETH, *Switzerland*
- Sarah Brazier, OnLap Consulting Ltd, Reading, *UK*
- Nato Jorjiashvili, Ilia State University, *Georgia*
- Kasra Hosseini, University of Oxford, *UK*
- Yuzo Ishikawa, AIST, *Japan*
- Gina-Maria Geffers, University of Edinburgh / BGS, *UK*
- Ehdie Kendall, University College London, *UK*
- Maria Tsekhmistrenko, University of Oxford, *UK*
- Natalia Poiata, National Institute for Earth Physics, *Romania*
- Paula Koelmeijer, University of Oxford, *UK*
- Benjamin Schwarz, University of Oxford, *UK*
- Tanja Fromm, AWI, **Germany**
- Ghizlane Bouskri, Scientific Institute Morocco, **Morocco**
- Marline Brax, National Centre for Geophysical Research, CNRS, **Lebanon**
- Tom Garth, University of Liverpool, **UK**
- Yao Yan, China Earthquake Administration, **China**
- Huang Fuqiong, China Earthquake Networks Centre, CEA, **China**
- Gao Kai, China Earthquake Network Centre, CEA, **China**
- Kim Hyok, Korea Earthquake Administration, **DPRK**
- Jianping Wu, Institute of Geophysics, China Earthquake Administration, **China**
- Jiadong Xu, Institute of Geophysics, China Earthquake Administration, **China**
- Kim Yon Ho, Faculty of Geology, Kim Li Sung university, **DPRK**
- Ryn Kum Ran, Environmental Coordinator, **DPRK**
- Jo Son Hyung, Faculty of Geology - Kim Il Sung university, **DPRK**
- Kim Kang Sop, Professor Kim Chaek University of Technology, **DPRK**
- Ri Sung Su, State Academy of Sciences, **DPRK**
- Kim Ju Song, Korea Earthquake Administration, **DPRK**
- James Hammond, Birkbeck, University of London, **UK**
- Galina Kulikova, University of Potsdam, **Germany**
- Gisela Domej, IFSTTAR / Seismes et vibrations, **France**

**CONFERENCES, MEETINGS, WORKSHOPS, TRAINING COURSES**

Members of the ISC staff presented at the following conferences, meetings and workshops:

- CTBTO Science & Technology Conference, Vienna, **Austria**
- CTBTO WGB-48 meeting, Vienna, **Austria**
- 16th World Conference on Earthquake Engineering, Santiago, **Chile**
- Nordic Seismology Seminar, Helsinki, **Finland**
- EDF Sigma-2 Symposium, Paris-Saclay, **France**
- 5th International Colloquium on Historical Earthquakes, Paleoseismology, Neotectonics and Seismic Hazard, Hannover, **Germany**
- German Geophysical Union, Potsdam, **Germany**
- Indian Geophysical Union, 54th Annual Convention, Hyderabad, **India**
- IASPEI General Assembly, Kobe, **Japan**
- JpGU-AGU, Makuhari, **Japan**
- International Seismology School, GS RAS, Almaty, **Kazakhstan**
- CTBTO RSTT and NDC workshop, Windhoek, **Namibia**
- New Advances in Geophysics (NAG), Liverpool, **UK**
- Impact Forecasting Revealed, Aon Benfield, London, **UK**
- Willis Research Network Seismic Risk Seminar, London, **UK**
- TIDES Training School: Seismic tomography and uncertainties, Oxford, **UK**
- British Seismology Meeting, Reading, **UK**
- SSA, Denver, **USA**
- AGU, New Orleans, **USA**
ISC STAFF VISITING OTHER INSTITUTIONS

Often with the help of the hosting institution, members of the ISC staff visited and, where appropriate, gave a presentation to the staff of:

- IDC/CTBTO, Vienna, *Austria*
- China Earthquake Administration, Beijing, *China*
- China Earthquake Networks Centre, Beijing, *China*
- Yunnan Provincial Earthquake Administration, Kunming, *China*
- Federal Institute for Geosciences and Natural Resources (BGR), Hannover, *Germany*
- GFZ Helmholtz Centre Potsdam, *Germany*
- Seismological Experimental and Methodological Expedition, Almaty, *Kazakhstan*
- Geophysical Survey of Russian Academy of Sciences, Obninsk, *Russia*
- Oxford University, Earth Science Department, Oxford, *UK*
- UNAVCO Inc. global geodetic facility, Boulder, *USA*
- NOAA, Boulder, *USA*
- NEIC/USGS, Golden, *USA*

ISC PRIZES: OXFORD UNIVERSITY and TIDES

Several years ago the ISC established a small annual Prize in Mathematics and Geophysics (£200 and traditional ISC coffee mug) for the best first year student at the Earth Science Department of its home institution – the University of Oxford.

In 2017, the prize was given to Mr Noam Vogt-Vincent, the student with the best exam results in Mathematics and Geophysics. By awarding this prize the ISC hopes to attract Oxford University students to take note of the ISC services right from their first year, support the ISC in the future and perhaps even help the ISC in fulfilling its mission.

Fig. 39. TIDES training school in Oxford; two presentations and three prizes for best posters are given by the ISC during this school
The TIDES (TIme DEpendent Seismology) is a Europe-wide initiative that aims at structuring the EU seismological community to enable development of data-intensive, time-dependent techniques for monitoring Earth active processes (e.g., earthquakes, volcanic eruptions, landslides, glacial earthquakes) and oil/gas reservoirs. During July 10-14, Wolfson College of Oxford University hosted the 3rd TIDES training school “Seismic tomography and uncertainties” (Fig. 39). Apart from giving two presentations on the “ISC Datasets and Services” and “ISC-EHB: Reconstructing the EHB dataset”, the ISC has also sponsored three £75 Prizes for best student posters.

SCIENTIFIC PUBLICATIONS BY ISC STAFF


REFERENCES USED IN THIS REPORT

BAAS, 1900-1912. British Association for the Advancement of Science, Circulares 1-27 issued by the Seismological Committee of the British Association for the Advancement of Science (Shide Circulars).

BAAS, 1913-1917. British Association for the Advancement of Science, Seismological Committee, monthly bulletins.


Jeffreys, H., and Bullen K.E., 1940. Seismological Tables. British Association for the Advancement of Science, London


APPENDIX 1: STANDARD BULLETIN REPORTERS

146 agencies reported revised bulletin data to the ISC in 2017.

<table>
<thead>
<tr>
<th>Country</th>
<th>Reporting Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albania</td>
<td>The Institute of Seismology, Academy of Sciences</td>
</tr>
<tr>
<td>Argentina</td>
<td>Universidad Nacional de La Plata</td>
</tr>
<tr>
<td>Argentina</td>
<td>Instituto Nacional de Prevencion Sismica</td>
</tr>
<tr>
<td>Armenia</td>
<td>National Survey of Seismic Protection</td>
</tr>
<tr>
<td>Australia</td>
<td>Primary Industries and Resources SA</td>
</tr>
<tr>
<td>Australia</td>
<td>Geoscience Australia</td>
</tr>
<tr>
<td>Australia</td>
<td>Curtin University</td>
</tr>
<tr>
<td>Austria</td>
<td>International Data Centre, CTBTO</td>
</tr>
<tr>
<td>Austria</td>
<td>Zentralanstalt fur Meteorologie und Geodynamik (ZAMG)</td>
</tr>
<tr>
<td>Belgium</td>
<td>Royal Observatory of Belgium</td>
</tr>
<tr>
<td>Bolivia</td>
<td>Observatorio San Calixto</td>
</tr>
<tr>
<td>Bosnia-Herzegovina</td>
<td>Republic Hydrometeorological Service, Seismological Observatory Banja Luka</td>
</tr>
<tr>
<td>Brazil</td>
<td>Instituto Astronomico e Geofisico</td>
</tr>
<tr>
<td>Bulgaria</td>
<td>Geophysical Institute, Bulgarian Academy of Sciences</td>
</tr>
<tr>
<td>Cameroon</td>
<td>Seismological Observatory of Mount Cameroon</td>
</tr>
<tr>
<td>Canada</td>
<td>Canadian Hazards Information Service, Natural Resources Canada</td>
</tr>
<tr>
<td>Chile</td>
<td>Centro Sismologico Nacional, Universidad de Chile</td>
</tr>
<tr>
<td>China</td>
<td>China Earthquake Networks Center</td>
</tr>
<tr>
<td>China</td>
<td>Key Laboratory of Ocean and Marginal Sea Geology, South China Sea</td>
</tr>
<tr>
<td>Chinese Taipei</td>
<td>Institute of Earth Sciences, Academia Sinica</td>
</tr>
<tr>
<td>Colombia</td>
<td>Red Sismologica Nacional de Colombia</td>
</tr>
<tr>
<td>Costa Rica</td>
<td>Seccion de Sismologia, Vulcanologia y Exploracion Geofisica</td>
</tr>
<tr>
<td>Croatia</td>
<td>Seismological Survey of the Republic of Croatia</td>
</tr>
<tr>
<td>Cyprus</td>
<td>Cyprus Geological Survey Department</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>The Institute of Physics of the Earth (IPEC)</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>Geophysical Institute, Academy of Sciences of the Czech Republic</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>West Bohemia Seismic Network</td>
</tr>
<tr>
<td>DPRK</td>
<td>Korea Earthquake Administration</td>
</tr>
<tr>
<td>Denmark</td>
<td>Geological Survey of Denmark and Greenland</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>Observatorio Sismologico Politecnico Loyola</td>
</tr>
<tr>
<td>Ecuador</td>
<td>Servicio Nacional de Sismologia y Vulcanologia</td>
</tr>
<tr>
<td>Egypt</td>
<td>National Research Institute of Astronomy and Geophysics</td>
</tr>
<tr>
<td>Ethiopia</td>
<td>University of Addis Ababa</td>
</tr>
<tr>
<td>Finland</td>
<td>Institute of Seismology, University of Helsinki</td>
</tr>
<tr>
<td>France</td>
<td>Institut de Physique du Globe de Paris</td>
</tr>
<tr>
<td>France</td>
<td>Laboratoire de Detection et de Geophysique/CEA</td>
</tr>
<tr>
<td>French Polynesia</td>
<td>Laboratoire de Geophysique/CEA</td>
</tr>
<tr>
<td>FYR Macedonia</td>
<td>Seismological Observatory Skopje</td>
</tr>
<tr>
<td>Georgia</td>
<td>Institute of Earth Sciences/ National Seismic Monitoring Center</td>
</tr>
<tr>
<td>Germany</td>
<td>Alfred Wegener Institute for Polar and Marine Research</td>
</tr>
<tr>
<td>Country</td>
<td>Organization</td>
</tr>
<tr>
<td>-------------</td>
<td>-------------------------------------------------------------------</td>
</tr>
<tr>
<td>Germany</td>
<td>Bundesanstalt fur Geowissenschaften und Rohstoffe</td>
</tr>
<tr>
<td>Germany</td>
<td>Seismological Observatory Berggiesshübel, TU Bergakademie Freiberg</td>
</tr>
<tr>
<td>Germany</td>
<td>Geophysikalisches Observatorium Collm</td>
</tr>
<tr>
<td>Germany</td>
<td>Helmholtz Centre Potsdam GFZ German Research Centre For Geosciences</td>
</tr>
<tr>
<td>Greece</td>
<td>Landeserdbebendienst Baden-Wurttemberg</td>
</tr>
<tr>
<td>Greece</td>
<td>National Observatory of Athens</td>
</tr>
<tr>
<td>Greece</td>
<td>Department of Geophysics, Aristotle University of Thessaloniki</td>
</tr>
<tr>
<td>Greece</td>
<td>University of Patras, Department of Geology</td>
</tr>
<tr>
<td>Greece</td>
<td>University of Athens</td>
</tr>
<tr>
<td>Guatemala</td>
<td>INSIVUMEH</td>
</tr>
<tr>
<td>Hong Kong, China</td>
<td>Hong Kong Observatory</td>
</tr>
<tr>
<td>Hungary</td>
<td>Geodetic and Geophysical Research Institute, Academy of Sciences</td>
</tr>
<tr>
<td>India</td>
<td>National Geophysical Research Institute</td>
</tr>
<tr>
<td>Indonesia</td>
<td>National Centre for Seismology, Ministry of Earth Sciences</td>
</tr>
<tr>
<td>Iran</td>
<td>Tehran University</td>
</tr>
<tr>
<td>Iraq</td>
<td>Iraqi Meteorological and Seismology Organisation</td>
</tr>
<tr>
<td>Israel</td>
<td>Geophysical Institute of Israel</td>
</tr>
<tr>
<td>Italy</td>
<td>Istituto Nazionale di Geofisica e Vulcanologia</td>
</tr>
<tr>
<td>Italy</td>
<td>Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS)</td>
</tr>
<tr>
<td>Ivory Coast</td>
<td>Station Geophysique de Lamto</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Jamaica Seismic Network</td>
</tr>
<tr>
<td>Japan</td>
<td>Japan Meteorological Agency</td>
</tr>
<tr>
<td>Japan</td>
<td>The Matsushiro Seismological Observatory</td>
</tr>
<tr>
<td>Japan</td>
<td>National Research Institute for Earth Science and Disaster Prevention</td>
</tr>
<tr>
<td>Japan</td>
<td>National Institute of Polar Research</td>
</tr>
<tr>
<td>Jordan</td>
<td>Jordan Seismological Observatory</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>National Nuclear Center</td>
</tr>
<tr>
<td>Kazakhstan</td>
<td>Seismological Experimental Methodological Expedition</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>Kyrgyz Seismic Network</td>
</tr>
<tr>
<td>Kyrgyzstan</td>
<td>Institute of Seismology, Academy of Sciences of Kyrgyz Republic</td>
</tr>
<tr>
<td>Lebanon</td>
<td>National Council for Scientific Research</td>
</tr>
<tr>
<td>Lithuania</td>
<td>Geological Survey of Lithuania</td>
</tr>
<tr>
<td>Luxembourg</td>
<td>European Center for Geodynamics and Seismology</td>
</tr>
<tr>
<td>Macao, China</td>
<td>Macao Meteorological and Geophysical Bureau</td>
</tr>
<tr>
<td>Malawi</td>
<td>Geological Survey Department Malawi</td>
</tr>
<tr>
<td>Malaysia</td>
<td>Malaysian Meteorological Service</td>
</tr>
<tr>
<td>Mexico</td>
<td>Centro de Investigacion Cientifica y de Educacion Superior de Ensenada</td>
</tr>
<tr>
<td>Mexico</td>
<td>Instituto de Geofisica de la UNAM</td>
</tr>
<tr>
<td>Moldova</td>
<td>Institute of Geophysics and Geology</td>
</tr>
<tr>
<td>Montenegro</td>
<td>Seismological Institute of Montenegro</td>
</tr>
<tr>
<td>New Caledonia</td>
<td>IRD Centre de Noumea</td>
</tr>
<tr>
<td>New Zealand</td>
<td>Institute of Geological and Nuclear Sciences</td>
</tr>
<tr>
<td>Country</td>
<td>Institution/Programme</td>
</tr>
<tr>
<td>---------------------</td>
<td>---------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Norway</td>
<td>University of Bergen</td>
</tr>
<tr>
<td>Norway</td>
<td>Stiftelsen NORSAR</td>
</tr>
<tr>
<td>Oman</td>
<td>Sultan Qaboos University</td>
</tr>
<tr>
<td>Pakistan</td>
<td>Micro Seismic Studies Programme, PINSTECH</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Institute of Volcanology and Seismology</td>
</tr>
<tr>
<td>Philippines</td>
<td>Manila Observatory</td>
</tr>
<tr>
<td>Poland</td>
<td>Institute of Geophysics, Polish Academy of Sciences</td>
</tr>
<tr>
<td>Portugal</td>
<td>Instituto Geofisico do Infante Dom Luiz</td>
</tr>
<tr>
<td>Portugal</td>
<td>Instituto Portugues do Mar e da Atmosfera</td>
</tr>
<tr>
<td>Portugal</td>
<td>Sistema de Vigilancia Sismologica dos Azores</td>
</tr>
<tr>
<td>Republic of Belarus</td>
<td>Centre of Geophysical Monitoring of the National Academy of Sciences</td>
</tr>
<tr>
<td>Republic of Crimea</td>
<td>Inst. of Seismology and Geodynamics, V.I. Vernadsky Crimean Federal University</td>
</tr>
<tr>
<td>Republic of Korea</td>
<td>Korea Meteorological Administration</td>
</tr>
<tr>
<td>Romania</td>
<td>National Institute for Earth Physics</td>
</tr>
<tr>
<td>Russia</td>
<td>Baykal Regional Seismological Centre, GS RAS</td>
</tr>
<tr>
<td>Russia</td>
<td>Institute of Environmental Problems of the North, Russian Academy of Sciences</td>
</tr>
<tr>
<td>Russia</td>
<td>Kola Regional Seismic Centre, GS RAS</td>
</tr>
<tr>
<td>Russia</td>
<td>Kamchatka Branch, GS RAS</td>
</tr>
<tr>
<td>Russia</td>
<td>Geophysical Survey of Russian Academy of Sciences (GS RAS)</td>
</tr>
<tr>
<td>Russia</td>
<td>Sakhalin Experimental and Methodological Seismological Expedition, GS RAS</td>
</tr>
<tr>
<td>Russia</td>
<td>Yakutiya Regional Seismological Center, GS RAS</td>
</tr>
<tr>
<td>Serbia</td>
<td>Seismological Survey of Serbia</td>
</tr>
<tr>
<td>Slovenia</td>
<td>Slovenian Environment Agency</td>
</tr>
<tr>
<td>Solomon Islands</td>
<td>Ministry of Mines, Energy and Rural Electrification</td>
</tr>
<tr>
<td>South Africa</td>
<td>Council for Geoscience</td>
</tr>
<tr>
<td>Spain</td>
<td>Instituto Geografico Nacional</td>
</tr>
<tr>
<td>Spain</td>
<td>Institut Cartografic i Geologic de Catalunya</td>
</tr>
<tr>
<td>Spain</td>
<td>Real Instituto y Observatorio de la Armada</td>
</tr>
<tr>
<td>Sweden</td>
<td>University of Uppsala</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Swiss Seismological Service (SED)</td>
</tr>
<tr>
<td>Trinidad and Tobago</td>
<td>The Seismic Research Centre</td>
</tr>
<tr>
<td>Turkey</td>
<td>Kandilli Observatory and Research Institute</td>
</tr>
<tr>
<td>Turkey</td>
<td>Faculty of Mines, Department of Geophysical Engineering</td>
</tr>
<tr>
<td>USA</td>
<td>University of Alabama</td>
</tr>
<tr>
<td>USA</td>
<td>Earth &amp; Environment</td>
</tr>
<tr>
<td>USA</td>
<td>The Global CMT Project</td>
</tr>
<tr>
<td>USA</td>
<td>Himalayan Nepal Tibet Experiment</td>
</tr>
<tr>
<td>USA</td>
<td>IRIS Data Management Center</td>
</tr>
<tr>
<td>USA</td>
<td>National Earthquake Information Center</td>
</tr>
<tr>
<td>USA</td>
<td>Pacific Northwest Seismic Network</td>
</tr>
<tr>
<td>Puerto Rico, USA</td>
<td>Red Sismica de Puerto Rico</td>
</tr>
<tr>
<td>USA</td>
<td>Earth &amp; Planetary Sciences</td>
</tr>
<tr>
<td>USA</td>
<td>Department of Earth and Environmental Science</td>
</tr>
<tr>
<td>USA</td>
<td>United States Geological Survey</td>
</tr>
</tbody>
</table>
APPENDIX 2: SCIENTIFIC PAPERS in 2017 that used the ISC DATA

This list is a result of a special effort to put together a collection of scientific papers that used ISC data and published in 2017. The list is by no means exhaustive. The ISC has become such a familiar name that many researchers unfortunately fail to reference the ISC when using the ISC data.

We have searched Google Scholar for scientific papers that refer to the ISC data. We used the exact phrases “International Seismological Centre”, “International Seismological Center”, “ISC-GEM”, “ISC-EHB” and “EHB”+”seismic” for papers appearing in 2017. No doubt many more references can be found by using different search phrases.

```
Development of NGA-Subduction database
T Kishida, Y Bozorgnia, NA Abrahamson, SK Ahdi… - 2017 - cloudfront.escholarship.org
... The data distribution services provided by Cento Sismologico Nacional in University of Chile (CSN), Incorporated Research Institutions for Seismology (IRIS), Institute of Earth Sciences, Academia Sinica in Taiwan (IES), International Seismological Centre (ISC), Japan ...

Variation of singularity of earthquake-size distribution with respect to tectonic regime
Q Cheng, H Sun - Geoscience Frontiers, 2017 - Elsevier
... regimes. 3. Data analysis and results. In this paper we use the global database of earthquake records from 1964 to 2015 that are freely available on the website of the International Seismological Centre (ISC) (http://www.isc.ac.uk) ...

Coseismic Slip in the 2016 Mw 7.8 Ecuador Earthquake Imaged from Sentinel-1A
P He, EA Hetland, Q Wang, K Ding… - Seismological..., 2017 - pubs.geoscienceworld.org
... During the first two months, the mainshock was followed by a total of 138 aftershocks with M w ≥3 (the largest M w 6.7) within a nearly north–south-trending zone of 150 km by 200 km (International Seismological Centre; see Data and Resources; Fig ...

Probabilistic seismic hazard assessment in the Black Sea area
IA Moldovan, M Diaconescu, R Partheniu… - Romanian Journal of ..., 2017 - nipne.ro
... scale covering historical and modern instrumental seismicity until present days (ANSS – Advanced National Seismic System-USA, NEIC – National Earthquake Information Centre, World Data ...
```
Rupture evolution of the 2006 Java tsunami

... The July 17, 2006 Java earthquake was a classic tsunami earthquake with body-wave magnitude mb = 6.1, surface-wave magnitude Ms = 7.1, and moment magnitude Mw = 7.7 (Ekström et al., 2012; International Seismological Centre, 2013) ...

Single Station Sigma in Chile

G Montalva, N Bastias... - 16th World Conference ..., 2017 - researchgate.net

... a public flatfile. This flatfile contains the magnitudes and locations reported by the International Seismological Centre ([3]), Harvard Centroid Moment Tensor (CMT,[4]), and Centro Sismológico Nacional (CSN). The moment ...

Minoan Earthquakes: Breaking the Myth

Through Interdisciplinarity

S Jusseret, M Sintubin - 2017 - books.google.com

... Epicenters Bulletin (https://earthquake.usgs.gov/data/pde.php) or by the International Seismological Centre (http://www.isc.ac.uk/), based on 'the first 5sec of short-period P waves' (Utsu 2002: 733). See also surface-wave ...

Double-difference relocation of the 29
January 2011 ML 4.5 Oroszlány

earthquake and its aftershocks and its relevance to the rheology of the lithosphere and ...

E Békési, B Süle, L Lenkey, Á Lenkey... - Acta Geodaetica et ..., 2017 - Springer

... We used the extended International Seismological Centre location algorithm, iLoc to determine the initial single event locations for the aftershock sequence and applied multiple event location algorithm on the new hypocenters ...

A comprehensive earthquake catalog for

Iraq in terms of moment magnitude

T Onur, R Gök, W Abdulnaby... - Seismological ..., 2017 - pubs.geoscienceworld.org

... Hence, events were collected from various sources, including the ISN when available, International Seismological Centre (ISC), European-Mediterranean Seismological Centre, US Geological Survey Centennial Catalog, Global Centroid Moment Tensor solutions, and ...

Source parameters of the Taimyr

earthquake of June 9, 1990

Al Sereidkina, BM Kozmin - Doklady Earth Sciences, 2017 - Springer

... ACKNOWLEDGMENTS This work was supported by the Russian Science Foundation, project no. 15–17–20000. REFERENCES 1. International Seismological Centre. On-Line Bulletin. Thatcham, 2013. http://www.isc.ac.uk ...

Satellite observation of CH4 and CO anomalies associated with the Wenchuan

MS 8.0 and Lushan MS 7.0 earthquakes in

China

Y Cui, D Ouzounov, N Hatzopoulos, K Sun, Z Zou... - Chemical Geology, 2017 - Elsevier

... 2008/08/01, 32.1, 104.7, 12.7, 6.1, 2008/08/05, 32.8, 105.5, 10, 6.1, Note: the depth of the main shock and aftershocks of Wenchuan earthquake are from the International Seismological Centre and others are from the China Seismic Information. 2. Data and method. 2.1. Data ...
On the accuracy of initial seismological data in the problem of seismic hazard assessment

RE Tatevosian, NG Mokrushina - Seismic Instruments, 2017 - Springer

http://www.isc.ac.uk ...

Relocation of hypocenter using Jacobian's matrix and Jeffreys-Bullen's velocity model

F Muhts, R Listyaninigrum, IR Palupi - UNEJ e-Proceeding, 2017 - jurnal.unej.ac.id

… International Seismological Centre (ISC) is an institution that record arrival time of earthquake then report the position of the hypocenter … [1] 1982. Analysis procedures at the international seismological centre, Phys. Earth Planet. Inier., 30, 85-93
Grandis, Hendra, 2009 ...

Subduction initiation with vertical lithospheric heterogeneities and new fault formation

X Mao, M Gumis, DA May - Geophysical Research Letters, 2017 - Wiley Online Library

… Fault, (c) Filled circles are earthquakes with magnitude between 2 and 5 from the ISC Bulletin (International Seismological Centre, 2014), and the focal mechanism solutions are from CMT catalog (Dziewonski et al., 1981).

The February 1, 2011 Mw 4.7 earthquake:
Evidence of local extension in western Transbaikalia (Eastern Siberia)

VI Melnikova, Al Seredkina, YB Radziminovich... - Journal of Asian Earth ..., 2017 - Elsevier

… During the instrumental observation period (1951–2016), it became the second-most important seismic event after the October 2, 1980 mb 5.0 earthquake located near the Orongoi basins(Golenetskii et al., 1982, 1983. International Seismological Centre, 2016) ...

Engineering Strong-Motion database: a gateway to access European strong motion data

L Luzi, R Puglia, E Russo, M D'Amico... - ... World Conference on ..., 2017 - earth-prints.org

… seismic events. For moderate to small events the sources of information are regional catalogues (eg the INGV Bulletin) or the Bulletin of the International Seismological Centre, ISC, in case regional catalogues are unavailable. The ...

Volcanism and hydrothermalism on a hotspot-influenced ridge: Comparing Reykjanes Peninsula and Reykjanes Ridge, Iceland

D Palgan, CW Devey, IA Yeo - Journal of Volcanology and Geothermal ..., 2017 - Elsevier

… Events with magnitudes higher than 4 are detectable telesismically with high precision due to the relocation procedure introduced by Engdahl et al. (1998) and are listed, along with epicenter locations, by the International Seismological Centre …
THE INTENSITY ASSESSMENT OF THE
APRIL 25, 2009, VRANCEA SUBCRUSTAL
EARTHQUAKE FROM MACROSEISMIC
DATA
AP CONSTANTIN, R PARTHENIU, J. A. MOLDOVAN... - rp.infim.ro
EMSC 45.70 26.63 96 5 3 4.2 5 2 USGS 45.67 26.52 100.7 5 3
5 2 IS ISC 45.70 26.53 102 4 5 3 NIEP National Institute for Earth
Physics; EMSC European-Mediterranean Seismological
Centre, USGS United States Geological Survey; ISC International Seismological Centre ...
Subduction zone in Java Island using
primary wave tomography from Jacobian
relocation method based on ak135 velocity
model
R Listyaningrum, F Muhlis, J Soesilo... - AIP Conference ..., 2017
- aip.scitation.org
... 1974. S. Katili, JA Volcanism and Plate Tectonics in the
Indonesian Island Arcs, Tectonophysics, 26, 1975, p. 165-186. B. Adams, RD, AA Hughes, and DM
McGregor, Analysis procedures at the
international seismological centre, Phys. Earth Planet.
Inier., 30, 1982, p. 85-93 ...
Seismic hazard analysis for central-western
Argentina
SD Gregori, R Christiansen - Geodesy and Geodynamics, 2017 -
Elsevier
... 1982–2016, USGS. GR: Gutenberg and Richter; ISS:
International Seismological Summary/USCGS: United States
Coast and Geodetic Survey; BCI: Bureau Central International
deSeismologie; ISC: International Seismological Centre; USGS: US Geological Survey - NEIC ...
Earthquake ground motion simulation at
Zoser pyramid using the stochastic method:
A step toward the preservation of an
ancient Egyptian heritage
AE Khalil, HEA Hafez, M Girgis, MA Taha - NRIAG Journal of
Astronomy, 2017 - Elsevier
... Figure 1. Location map of Zoser pyramid and the earthquake
activities in its vicinity (data obtained from
International Seismological Centre (2013))... GEOFIZIKA,
The earthquake of July 22, 2011 (Mw = 4.5)
in a low-seismicity area of the Argun region
YB Radzimovich, Al Seredkina, VI Melnikova... - Seismic ..., 2017 - Springer
... 0 150 300 km Table 1. Main parameters of the earthquake of
July 22, 2011, from data of different seismological agencies
(International Seismological Centre..., 2011) ... International S
eismological Centre, Berkshire, Bulletin of the
International Seismological Centre for 2011
An event database for rotational
seismology
J Salvermoser, C Hadzioannou... - Seismological ..., 2017 -
pubs.geoscienceworld.org
... 4.5. In addition to that, we provide smaller (M w <4.5) local and
close events (<10°epicentral distance; compare with Table 1)
using solutions of the International Seismological Centre (ISC,
2016; Di Giacomo et al., 2014). After ...
Source and causes of 2015 great pluvial flood of Chennai, Tamil Nadu and its surroundings
A Aklcan, S Balaj, KKA Azeez ... - Journal of the Geological ..., 2017 - Springer
... An attempt has been made in the present study to integrate the numerical weather modeling (NWM) parameters such as temperature and zenith total delay (ZTD) with International Seismological Centre (ISC) derived earthquake catalogue and relate them with rainfall to ...

Applicability of ground-motion prediction equations to a Greek within-slab earthquake dataset
AA Skarlatoudis - Bulletin of Earthquake Engineering, 2017 - Springer
... (2013) work. For earthquakes 6–8 and 1d and 2d, I use the magnitudes reported by the International Seismological Centre (ISC 2013). Table 1 Earthquakes considered in the present study. ID. Origin time (yyyy/mm/dd hh:mm:ss.ss), Latitude (°). Longitude (°). Depth (km) ...

Increase in earthquake swarm activity in the southern Red Sea, Afar and Gulf of Aden
J Ruch, D Keir, G Ogubazghi ... - EGU General ..., 2017 - adsabs.harvard.edu
... Affiliation: AA (King Abdullah University of Science and Technology (KAUST)), AB (Southampton University), AC (Department of Earth Sciences, Entrera Institute of Technology, Asmara, Entrera), AD (International Seismological Centre), AE (King Abdullah University

Travel time source-specific station corrections related to lithospheric structures in the Mediterranean region
A Giuntini, V Materni, R Console, S Chiappini ... - Journal of ..., 2017 - Springer
We compare the locations obtained from arrival times collected by the International Seismological Centre from a network of regional and teleseismic stations for a cluster of Italian earthquakes with ...

Neotectonic activity and parameters of seismotectonic deformations of seismic belts in Northeast Asia
L Imaeva, G Gusev, V Imaev, V Mel'nikova - Journal of Asian Earth ..., 2017 - Elsevier
... Calculations and analyses of the STD parameters were based on the focal mechanism solutions for 248 earthquakes (M ≥ 3.5) that occurred in the study area from 1927 to 2014 (Fujita et al., 2009; International Seismological Centre; Department of Earth and Planetary ... Reply to 'Comment on 'Unbiased Estimation of Moment Magnitude from Body-and Surface-Wave Magnitudes' by R. Das, HR Wason, and ML Sharma and ' ...
Velocity structure of the subducted Yakutat Terrane, Alaska: insights from guided waves
S Coulson, T Garth, A Rietbrock - Geophysical Research Letters, 2017 - Wiley Online Library

Uppermost Inner Core Heterogeneity from Differential Travel Times of PKIKP vs. PKP...
B Deliverable - 2017 - iterate-eu.org
… The Algerian catalogue contains events from Spanish National Geographic Institute (ING) network, the Algerian CRAAG, International Seismological Centre (ISC), National Earthquake Information Center (NEIC) Preliminary Determination of Epicentres catalog (USGS) and the …

Estimation of b-Value and Maximum Magnitude for Indian earthquakes and explosions of similar magnitudes. We propose a new ...
K Pallav, SK Duggal - 2017 - academia.edu
… study. The earthquake data has been taken from the catalogues prepared from various sources like International Seismological Centre, Indian Metrological Department, and United State Geological Survey Department etc. In …

This study analyzes and compares the P- and S-wave displacement spectra from local earthquakes and explosions of similar magnitudes. We propose a new ...
G Suárez, G Ataeva, Y Gitterman, A Shapira - Journal of Seismology, 2017 - infona.pl
… We compare the locations obtained from arrival times collected by the International Seismological Centre from a network of regional and teleseismic stations for a cluster of Italian earthquakes with the locations of the same events obtained by the dense national seismic network …

Seismicity and major geologic structures of Tiran and Sanafir islands and their surroundings in the Red Sea
HA Aboulela, E Aboud, RA Bantan - Environmental Earth Sciences, 2017 - Springer
… Seismic data were obtained from the International Seismological Centre (www.isc.ac.uk), National Earthquake Information Centre (https://earthquake.usgs.gov/contactus/golden/neic.php), the Egyptian National Seismic Network (www.nriag.sci.eg), and the Egyptian Geological …

Empirical criteria for the accuracy of earthquake locations on the Croatian territory
T Belinić, S Markušić - Geofizika, 2017 - pdfs.semanticscholar.org
A Boyce, ID Bastow, S Rondenay - Bulletin of the ..., 2017 - pubs.geoscienceworld.org
… When compared with the available equivalent earthquake-station pairs on the International Seismological Centre (ISC) database, ~ 83 % of AARM picks agree to within ± 0.5 s . Tests using synthetic P-wave data indicate that AARM produces absolute arrival-time picks to …

New Evidences Of Compressional Tectonic Regime At The Southern Part Of The Western Black Sea Basin Along Turkish Margin (Between Akcakoca And Cide)
KM Onal, E Demirbag - 9th Congress of the Balkan Geophysical …, 2017 - earthdoc.org

Investigation of a Holocene marine sedimentary record from Pond Inlet, northern Baffin Island, Nunavut
LM Broom, DC Campbell, JC Gosse - 2017 - cngo.ca

Seismic Character of Moho Beneath the NW Himalaya and Ladakh Inferred from Regional Earthquakes Travel Time Data
N Kanna, KS Prakasam, S Gupta - Pure and Applied Geophysics, 2017 - Springer

Long-Term Interactions Between Intermediate Depth and Shallow Seismicity in North Chile Subduction Zone
J Jara, A Socquet, D Marsan - Geophysical Research ..., 2017 - Wiley Online Library
… earthquake in 2014 (Duputel et al., 2015). The 1990–2016 seismicity (M ≤4.0) from the International Seismological Centre (ISC) (2017) is color
Warning Time Analysis for Emergency Response in Sumbawanga City for the Repeat of Magnitude 7.2 Earthquakes of 1919 Using Proposed Community Earthquake ...


Precursory seismic quiescence along the Sumatra-Andaman subduction zone: past and present S Sukrungsri, S Pailoplee - Journal of Seismology, 2017 - Springer ... study. 2 Dataset and completeness. The primary dataset used in this study was taken from the instrumental earthquake catalogues provided by the (i) Global Centroid Moment Tensor and (ii) International Seismological Centre ...

Longer aftershocks duration in extensional tectonic settings E Valerio, P Tizzani, E Carminati, C Doglioni - Scientific reports, 2017 - nature.com ... the 1995 Kozani-Grevena and the 1999 Athens sequences). We compared these data with those from the ISC 25 (International Seismological Centre) catalogue. Specifically, in case of the 2003 Zemmouri sequence (Algeria ...
... In this work, we integrate a genuine copy of PFG, with additional locations from the bulletins of the Instituto Nazionale di Geofisica (ING, now known as INGV) and of the International Seismological Centre (ISC) and with local magnitudes from two couples of Wood–Anderson …

Is the Okavango Delta the terminus of the East African Rift System? Towards a new geophysical model: geodetic study and
governmental review
AM Pastier, O Dauteuil, M Murray-Hudson, F Moreau… - Tectonophysics, 2017 - Elsevier ...
... The black star shows location of the recent M6.5 earthquake. B: Number of events per year in Botswana and the OG (International Seismological Centre, 2016) ... Fig. 6. Recorded earthquakes from 2004 to 2016, with magnitude over 3 (International Seismological Centre, 2016) ...

The intraplate Maranhão earthquake of 2017 Jan 03, northern Brazil: evidence for uniform regional stresses along the
Brazilian equatorial margin.
FL Dias, M Assumpção, MB Bianchi… - Geophysical Journal Int., 2017 - academic.oup.com ...

Electronic Supplement to The 1904 M s 7.3 Earthquake in Central Alaska
C Tape, A Lomax, V Silwal, JD Agnew… - giseis.alaska.edu ...
... Real-time earthquake processing and seismic monitoring at the GPOE. Domenico, R, 2017 - Elsevier ...

Active tectonics in the Gulf of California and seismicity (M> 3.0) for the period 2002–2014
RR Castro, JM Stock, E Hauksson, RW Clayton - Tectonophysics, 2017 - Elsevier ...
... The mean horizontal location errors, estimated from a bootstrap error analysis, are on the order of ~ 2 km. 4. The International Seismological Centre (ISC) catalogue. We searched in the ISC Bulletin for earthquakes located in the GoC region between 2002-04-01 and 2014-12-31 ...

SEISMIC HAZARD ASSESSMENT AT
ESFAREÅN–BOJNURD RAILWAY,
NORTH–EAST OF IRAN
SH Fard, H Jahari, M Pourkermani, M Almasian - researchgate.net ...

Simulation of Strong Ground Motion of the
2009 Bhutan Earthquake Using Modified
Semi-Empirical Technique
A Joshi, S Lal, P Kumar, SK Sah - Pure and Applied Geophysics, 2017 - Springer ...
... According to the International Seismological Centre (ISC; http://www.isc.ac.uk) catalogue, during the last century the seismicity of the Bhutan Himalaya was low compared to its adjoining Himalayan segments. Gahalaut et al …
Related articles All 2 versions

An improved evaluation of the seismic/geodetic deformation-rate ratio for the Zagros Fold-and-Thrust collisional belt
M Palano, P Imprescia, A Agnon… - Geophysical Journal Int., 2017 - academic.oup.com ...
... Determinations). From the International Seismological Centre (www.isc.ac.uk) on-line catalogue we … 4a; see also Table S5 in the Supporting material section). The International Seismological Centre (ISC) routinely produce catalogues of earthquake hypocenter ...

Lomonosov ridge and the Eastern Arctic
Shelf as elements of an integrated
lithospheric plate: Comparative analysis of wrench faults
EV Artyuushkov, PA Chekhovich - Doklady Earth Sciences, 2017 - Springer ...

Depth to the bottom of magnetic layer in South America and its relationship to Curie isotherm, Moho depth and seismicity
behavior
J Idárreg-García, CA Vargas - Geodesy and Geodynamics, 2017 - Elsevier ...
... flow values reported for the study zone. Seismicity data were taken from the International Seismological Centre-ics database [60], between 1964 and 2015 for events of depths <80 km. Bouger gravity anomalies are from the ...

Shallow and intermediate depth earthquakes in the Hindu Kush region
across the Afghan–Pakistan border
... The homogeneous earthquake catalogue is the primary input in the study of seismicity variation (Habermann, 1987; Burton, 1990; Katsumata, 2011). Rehman et al. (2014) purified various existing earthquake catalogues (eg, International Seismological Centre (ISC), EHB …
Probabilistic Models For Earthquakes With
Large Return Periods In Himalaya Region
C Chaudhary, ML Sharma - Pure and Applied Geophysics, 2017 - Springer
... The instrumental data for 1964–2015 have been collected from the website of International Seismological Centre (ISC) http://www.isc.ac.uk/of UK, National Earthquake Information Centre (NEIC) of USGS http://earthquake.usgs.gov/earthquake/search/and additional data have ...

Geodesy and Geodynamics
J Idráraga-García, CA Vargas - 2017 - researchgate.net
... the analysis additional datasets such as seismicity, gravity anoma- lies and heat flow values reported for the study zone. Seismicity data were taken from the International Seismological Centre-ISC database [60], between 1964 and 2015 for events of depths <80 km ...

Instrumental magnitude constraints for the
11 July 1889, Chilik earthquake
F Krüger, G Kulikova... - Geological Society, London ..., 2017 - sp.lyellcollection.org

Probabilistic Seismic-Hazard Assessment for Eritrea
Probabilistic Seismic-Hazard Assessment for Eritrea
B Goitom, MJ Werner, K Goda... - Bulletin of the ..., 2017 - pubs.geoscienceworld.org

Slab temperature controls on the Tonga double seismic zone and slab mantle dehydration
SS Wei, DA Wiens, PE van Keken... - Science ..., 2017 - advances.sciencemag.org

Misattributed tsunami 5: the Namie, Japan

Passive seismic monitoring of an active CO2-EOR operation in Farnsworth, Texas
A Kumar, E Zorn, R Hammack, W Harbert... - SEG Technical ..., 2017 - library.seg.org
... events reported in four different earthquake catalogs (Advanced National Seismic System [ANSS] composite catalog, USGS's National Earthquake Information Center [USGS-NEIC] catalog, New Madrid earthquake catalog, and International Seismological Centre [ISC] catalog) ...

S Pallopea - Journal of Earthquake and Tsunami, 2017 - World Scientific... 2. Data and Completeness The main database employed in this study was the earthquake catalogue recorded instrumentally and compiled by the International Seismological Centre. Within the 300 km extent of the SSFS (latitude 9.33–25.96 ...) The discovery of a conjugate system of faults in the Wharton Basin intraplate deformation zone
SC Singh, N Hananto, Y Qin, F Leclerc... - Science ..., 2017 - advances.sciencemag.org
... F6a and F7b, reactivated fracture zones. Different symbols are defined in the right-hand upper corner. NEIC, National Earthquake Information Center; ISC, International Seismological Centre. (C) Simplified interpreted bathymetry showing main features ...

3D seismic analysis of the AK Fault, Orange Basin, South Africa: Implications for neotectonics
Al Isiaka, RJ Durheim, MSD Manzi, MAG Andreoli - Tectonophysics, 2017 - Elsevier... (2005) and De Beer (2012) respectively. The overalied seismicity data downloaded from the International Seismological Centre (2017) covers the region around southern Namibia and Northern Cape, and shows the evidence of seismic activity within the vicinity of the AK Fault ...

Depths of Earthquakes in South Africa
A Mangongolo, FO Strasser... - Seismological ..., 2017 - pubs.geoscienceworld.org
... There are a few instances of such events listed in the early part of the International Seismological Centre (ISC) bulletin for which the depth had not been fixed, resulting in large listed values of depth (eg, an event that occurred on 11 August 1971 at 14:17 located at – 26.4070 ° S S ...

PSHA Study Using EZ-Frisk Software Case Study Baychebaq Dam Site
H Jarahi - 2017 - researchgate.net
... the other authors have read and approved the manuscript and there are no ethical issues involved. Data and Resources Data retrieved from the International Seismological Centre (ISC), On-line Bulletin, http://www.isc.ac.uk, Internatl. Seismol ...

Reconstructing subducted oceanic lithosphere by “reverse-engineering” slab geometries: The northern Philippine Sea Plate
JM Pownall, GS Lister, W Spakman - Tectonics, 2017 - Wiley Online Library... Colored dots show the locations of earthquake hypocenters (projected to surface level) catalogued by the International Seismological Centre [2016] for earthquakes of magnitude 4 and greater that occurred between 1 January 2000 and 1 January 2016 ...

Probabilistic seismic hazard assessment in the Constantine region, Northeast of Algeria
H Mouloud, S Badreddine - Arabian Journal of Geosciences, 2017 - Springer... The International Seismological Centre (ISC) catalogue (2014): includes seismicity data that span the northeast region of Algeria over the period from 1850 to 2014 and were used as a basis for this study. Open image in new window. Fig. 6 ... Systematic fluctuations in the global seismic moment release
geothermal area, Aegean region of Turkey.

Seismological
Giacomo,. ORCID:orcid.org/0000
Italy. Search for more papers by this author. Domenico Di

Online Library
M Picozzi

2012)
Instrumental Earthquake Catalogue (ISC
and ISC
records were compiled from
Hazard Model
Arup NSHM
of M >4 recorded between 1915 and 2013
showing the location and the magnitude of natural seismic events
Elsevier
G Osti, P Franek, G A Prieto - Journal of Geophysical Research: Solid Earth, 2017 - Wiley Online Library
... depth are the largest ones. Bondár and Storchak [2011]
describe ongoing efforts at the International Seismological Centre to include depth phases into routine earthquake location workflows. Indeed, by improving the precision ...

Controlling factors for slope instability in a seismically active region: The NW-Svalbard continental margin
G Osti, P Franek, M Forwick, JS Laberg - Marine Geology, 2017 - Elsevier
... 2. 3D bathymetric map of the northwestern Svalbard margin and mid-ocean ridge, modified from Jakobsson et al., 2012, showing the location and the magnitude of natural seismic events of M >4 recorded between 1915 and 2013

International Seismological Centre, http://www ...

Arup NSHM-Australian National Seismic Hazard Model
TI Mote, ML So, JW Pippin - 2017 - aees.org.au
... 3 SEISMICITY/EAUFAKE CATALOGUE The instrumental records were compiled from
International Seismological Centre (ISC), EHB Bulletin in ISC
and ISC-GEM Global Instrumental Earthquake Catalogue (ISC-GEM; Storchak et al., 2012) ...

Rapid determination of P wave-based energy magnitude: Insights on source parameter scaling of the 2016 Central Italy earthquake sequence
M Piccozzi, D Bindi, P Brondi - - Geophysical Research Letters, 2017 - Wiley Online Library
... Department of Physics, Università di Napoli Federico II, Naples, Italy. Search for more papers by this author. Domenico Di Giacomo,. ORCID:orcid.org/0000-0001-8472-8979. International Seismological Centre, Thatcham, UK. Search for more papers by this author. Stefano Parolai ...

Local earthquake tomography of Izmir geothermal area, Aegean region of Turkey.

C Ozer, P Polat - Bollettino di Geofisica Teorica ed Applicata, 2017 - search.ebscohost.com
... We have also added the data from International Seismological Centre (ISC, 2003), around the study area. Abbreviations; AFAD: Earthquake Department of the Disaster and Emergency Management Presidency in Ankara-Turkey, ISC: International Seismological Centre. Page 7 ...

The use of waveform cross correlation to recover the aftershock sequence of the August 14, 2016 earthquake within Sakhalin Island
... The earthquake coordinates were estimated using near-regional stations: 50.351° N, 142.395° E. This location is close to that estimated by the International Data Centre (IDC), which is also available at the International Seismological Centre: 50.424° N, 142.381° E. The IDC ...

Depth-varying seismogenesis on an oceanic detachment fault at 13° 20′ N on the Mid-Atlantic Ridge
... 3. Constraints on earthquake location. Earthquake locations based on globally-observed travel times for these earthquakes indicate that they all occurred within 10 km of the active 13°20′N detachment (Fig. 1, Table S2; International Seismological Centre 2014) ...

Discrimination of the DPRK underground explosions and their aftershocks using the P/S spectral amplitude ratio
... Page 3. International seismological centre (ISC) with a two-month delay. These three aftershocks were saved in the IDC database as seismic events with only 2 (the minimum number for the REB is 3) primary IMS stations associated. Table 2. Parameters of five aftershocks ...

Seismicityof the Novaya Zemlya archipelago: relocated event catalog from 1974 to 2014
AN Morozov, VE Asming, NV Vaganova... - Journal of..., 2017 - Springer
... A catalog of seismic events was created for the Novaya Zemlya Archipelago using the data of International Seismological Centre (ISC; International Seismological Centre 2013), NORSAR (NOA network), Institute of Seismology (University of Helsinki) (ISUH, HEL network), Kola ...

Crustal Structure beneath the Kashmir Basin Adjoining the Western Himalayan
Syntaxis
RR Mir, IA Parvez, VK Gaur... - Bulletin of the..., 2017 - pubs.geoscienceworld.org
... Relocated seismicity from the International Seismological Centre (ISC, 2013) catalog (1964–2013), together with a small number of local earthquakes recorded by our network, is apparently confined south of the NE edge of the valley, suggesting that the transition of the Indian ...
Seismicity associated with magmatism, faulting and hydrothermal circulation at Aluto Volcano, Main Ethiopian Rift
M Wilks, JM Kendall, A Nowacki, J Biggs... - Journal of Volcanology, 2017 - Elsevier
... ISC reviewed earthquakes since 1960
(International Seismological Centre, 2016) and seismicity recorded by the EAGLE project from October 2001 to January 2003 (Keir et al., 2006a) are white and blue circles with the MW5.3. Upper Left Inset: The study area's context within ...

Homogeneous earthquake catalogue for Northeast region of India using robust statistical approaches
AK Pandey, P Chingtham, PNS Roy - Geomatics, Natural Hazards ..., 2017 - Taylor & Francis
... Here, we have compiled the earthquake data for Northeast region of India in a chronological order from International Seismological Centre and Global Centroid Moment Tensor databases during the period 1 January 1900 to 31 April 2016 ...

Assessment of maximum earthquake potential of the Kopili fault zone in northeast India and strong ground motion simulation
AK Sutar, M Verma, AP Pandey, BK Bansal... - Journal of Asian Earth ..., 2017 - Elsevier
... In this study, we have used EHB (Engdahl et al., 1998) relocated events from International Seismological Centre (ISC) Bulletin (http://www.isc.ac.uk, International Seismological Centre, United Kingdom, 2009) within an area of 400 × 300 sq km covering the Kopili fault zone ...

Updated Tsunami Catalog for the Jalisco-Coast, Mexico, Using Data from Historical Archives
R Castillo-Aja... - Seismological ..., 2017 - pubs.geoscienceworld.org

Pn wave tomography in Greece
A Mμνννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννννν
... retrieved from the International Seismological Centre (http://www.isc.ac.uk/isc-bulletin/) ... Η βάση δεδομένων μας αποτελείται από 452220 αφίξεις που καλύπτουν μία περίοδο από το 1974 έως το 2013 και τις λάβαμε από το International Seismological Centre (ISC) ...

Intraplate seismicity recorded by a local network in the Neuguén Basin, Argentina
S Correa-Otto, S Nacif, A Pesce, A Nacif... - Journal of South ..., 2017 - Elsevier
... Fig. 1. Digital elevation model with the location of intraplate seismicity (green circles) between 0 and 50 km depth corresponding to a period of time of 48 years (International Seismological Centre, EHB Bulletin) ...

Earthquake activities along the Indonesian Sunda Margin: a seismicity approach
S Pailoplee - Geosciences Journal, 2017 - Springer
... The earthquake catalogue utilized for this seismic activity investigation was the composite catalogue derived from merging the three reliable sources of i) the International Seismological Centre, ii) the US National Earthquake Information Center, and iii) the Global Centroid ...

An algorithm for computing synthetic body waves due to underside conversion on an undulating interface and application to the 410 km discontinuity
H Zhang, S Ni, R Chu... - Geophysical Journal ..., 2017 - academic.oup.com

Categorical colormap optimization with visualization case studies
H Fang, S Walton, E Delahaye, J Harris... - IEEE transactions on ..., 2017 - ieeeexplore.ieee.org
... There is a general consensus that Hui Fang was with University of Oxford and International Seismological Centre, and is now with Edge Hill University, UK ... Emily Delahaye, James Harris and Dmitry A. Storchak are with International Seismological Centre, UK ...

P-wave tomography of subduction zones around the central Philippines and its geodynamic implications
J Fan, D Zhao, D Dong, G Zhang - Journal of Asian Earth Sciences, 2017 - Elsevier
... 2. Data and method. We conducted tomographic inversions using two sets of P-wave arrival-time data, which are selected from the updated International Seismological Centre (ISC) Bulletins from 1964 to 2011 (see Engdahl, 2006 for details) ...

A unified earthquake catalogue for South Asia covering the period 1900–2014
SK Nath, S Mandal, MD Adhikari, SK Mali - Natural Hazards, 2017 - Springer

Atmospheric Storm Triggered and Intensified by Geodynamics: Case Studies from Andaman Sea and Bay of Bengal Region in the Indian Ocean
A Aklan, KKA Azeez, H Schuh - Pure and Applied Geophysics, 2017 - Springer
... (2014). Table 1 Earthquakes (since four days before the storm is declared) prepared from the International Seismological Centre (ISC) database (http://www.isc.ac.uk/) and volcanic activities

Observation of core sensitive phases: constraints on the velocity and attenuation profile in the vicinity of the inner-core boundary
JMC Adam, A Ibourichène, B Romanowicz - Physics of the Earth and ..., 2017 - Elsevier
We measured more than three thousand differential travel-times and amplitude ratios of PKPBC, PKPBC-diff, PKPAB and PKPDF phases in the epicentral distance rang.
Marcellus Shale in Greene County, Pennsylvania
A Kumar, E Zorn, R Hambuck… - The Leading …, 2017 - pubs.geoscienceworld.org
... and international earthquake catalogs [US Geological Survey's [USGS] National Earthquake Information Center earthquake catalog, Advanced National Seismic System composite catalog, New Madrid earthquake catalog, and International Seismological Centre catalog) for the ...
Seismicity of the Andaman–Nicobar Islands and Andaman Sea
Precursory seismicity rate changes prior to the large and major earthquakes along the Sagaing fault zone, Central Myanmar
... 1). The initial dataset was derived from three available earthquake catalogs, namely (i) Global Centroid Moment Tensor, (ii) the International Seismological Centre, and (iii) US National Earthquake Information Center. Since ...
Assessing the activity of faults in continental interiors: Palaeoseismic insights from SE Kazakhstan
Causes and consequences of flat-slab subduction in southern Peru
Crustal structure of the high Andes in the North Pampean flat slab segment from magnetic and gravity data
The Geological Society of America Special Paper 525 Postcollisional tectonics and seismology of the Sagaing belt2. The epicentral parameters of these 611 events were obtained from the catalogue of the Indian Society of Earthquake Technology (ISET)41, International Seismological Centre composite catalog, and ISC International Seismological Centre, as described by ...
Recent developments in the detection of seismicity patterns for the Italian region
A Peresan - Pre-Earthquake Processes: A Multidisciplinary …, 2017 - books.google.com
... is a compilation of different local Italian catalogs from 1900 to 1986, and since 1986 has been updated using global data from NEIC-USGS (National Earthquake Information Centre, United States Geological Survey) and ISC International Seismological Centre, as described by ...
Evidence for distributed clockwise rotation of the crust in the northwestern United States from fault geometries and focal mechanisms
TM Brocher, RE Wells, AP Lamb, CS Weaver - Tectonics, 2017 - Wiley Online Library
A probabilistic seismic hazard assessment of the Trans-Mexican Volcanic Belt, Mexico based on historical and instrumentally recorded seismicity
JA Bayona Viveros, G Suárez Reynoso… - Geofísica …, 2017 - redalyc.org
... Thus, the data were culled from the catalogs of the International Seismological Centre (ISC), the US. Geological Survey (. USGS. ), the Global Centroid. Moment Tensor Catalog (. CMT. ), and of the Servicio. Sismológico Nacional (. SSN. ) were...
Postcollisional tectonics and seismicity of Georgia
S Adami, V Alania, N Tsereteli… - Geological Society of …, 2017 - researchgate.net
Page 1. spe 525‐17 2nd pgs page 1 1 The Geological Society of America Special Paper 525 Postcollisional tectonics and seismology of Georgia Shota Adamiia V. Alania N. Tsereteli O. Varazanashvili N. Sadradze M. Noia Institute ...
Analysis of the Illapel Mw= 8.3 Thrust Earthquake Rupture Zone Using GOCE-Derived Gradients
O Álvarez, A Pesce, M Gimenez, A Folguera… - Pure and Applied Geophysics, 2017 - Springer
... b Residual between R5 and R4 superimposed to the foreshock sequence (ISC: International Seismological Centre) in the region of the 2014 Mw = 8.2 Pisagua and Mw = 7.7 Iquique earthquakes. Black dashed line indicates the profile of Fig ...
Crustal intrinsic and scattering attenuation of high-frequency shear waves in the contiguous United States
T Eulenfeld, U Wegler - Journal of Geophysical Research: Solid Earth, 2017 - Wiley Online Library
Detailed analysis of the far-regional seismic coda in Kazakhstan using array processing
C Labonne, O Sèbe, A Smirnov… - Bulletin of the …. 2017 - pubs.geoscienceworld.org
Insights into the great Mw 7.9 Nepal earthquake of 25 April 2015
PK Khan, MA Ansari, D Singh - CURRENT SCIENCE, 2017 - researchgate.net
... beli2. The epicentral parameters of these 611 events were compiled from the catalogue of the Indian Society of Earthquake Technology (ISET)41, International Seismological Centre (ISC) and US Geological Survey (USGS) ...
Observations of remotely triggered seismicity in Salton Sea and Coso geothermal regions, Southern California
USA, after big (MW> 7.8) teleseismic “…
RR Castro, R Clayton, E Hauksson, J Stock - Geofísica Internacional, 2017 - redalyc.org
Nubia with Anatolia and the

Summary. Convergence in the eastern Mediterranean of oceanic

A Howell, J Jackson, A Copley... - Geophysical Journal ..., 2017 - academic.oup.com

Earthquake hazard assessment in the

Zagros Orogenic Belt of Iran using a fuzzy

rule-based model

SFG Aboonasr, A Zamani, F Razavi, R Boostani - Acta Geophysica, 2017 - Springer

Producing accurate seismic hazard map and predicting hazardous areas is necessary for risk mitigation strategies. In this paper, a fuzzy logic inference system is utilized to estimate the earthquake p.

The 2008 and 2012 Moosiyan Earthquake Sequences: Rare Insights into the Role of Strike Slip and Thrust Faulting within the Simply Folded Belt (Iran)

SEJ Nippress, R Heyburn... - Bulletin of the ..., 2017 - pubs.geoscienceworld.org

Historical seismogram reproductions for the source parameters determination of the 1902 Atushi (Kashgar) earthquake

G Kulikova, F Krüger - Journal of Seismology, 2017 - Springer

The majority of original seismograms recorded at the very beginning of instrumental seismology (the early 1900s) did not survive till present. However, a number of books, bulletins, and catalogs were.

Crustal structure of the Eurasia–Africa plate boundary across the Gloria Fault, North Atlantic Ocean

L Batista, C Hübischer, P Terinha... - Geophysical Journal ..., 2017 - academic.oup.com

Shallow and deep lithospheric slabs beneath the Dinarides from teleseismic tomography as the result of the Adriatic lithosphere downwelling

F Šumanovac, S Markulić, T Engelsfeld, K Jurković... - Tectonophysics, 2017 - Elsevier

... The data about teleseismic events were collected from the International Seismological Centre (ISC) Bulletin for a period of 24 months (2014–2015). The ISC Bulletin can be accessed using the online web searches, which provides access to all ISC Bulletin data...

Subduction and vertical coastal motions in the eastern Mediterranean

A Howell, J Jackson, A Copley... - Geophysical Journal ..., 2017 - academic.oup.com

Summary. Convergence in the eastern Mediterranean of oceanic Nubia with Anatolia and the Aegean is complex and poorly understood. Large volumes of sediment obs.

The rheological structure of the lithosphere in the Eastern Marmara region, Turkey

B Oruc, T Sommez - Journal of Asian Earth Sciences, 2017 - Elsevier

Seamounts and oceanic igneous features in the NE Atlantic: a link between plate motions and mantle dynamics

C Gaina, A Blischke, WH Geissler... - Geological Society ..., 2017 - sp.lyellcollection.org

Do weak global stresses synchronize earthquakes?

R Bendick, R Bilham - Geophysical Research Letters, 2017 - Wiley Online Library

... 1900–2017 (Table S1). The International Seismological Centre (ISC)/Global Earthquake Model (GEM) [DiGaetano et al., 2015] is not used since it is acknowledged by ISC to be currently incomplete prior to 1917. We test

Locating seismicity on the Arctic plate boundary using multiple-event techniques and empirical signal processing

SJ Gibbons, DB Harris, T Dahl-Jensen... - Geophysical Journal ..., 2017 - academic.oup.com

Summary. The oceanic boundary separating the Eurasian and North American plates between 70° and 84° north hosts large earthquakes which are well recorded. Teles.

Absolute reconstruction of the closing of the Mongol–Okhotsk Ocean in the Mesozoic and European plate at the Atlantic Ocean margin.

... 1902 Atushi (Kashgar) earthquake The majority of original seismograms recorded at the very beginning of instrumental seismology (the early 1900s) did not survive till present. However, a number of books, bulletins, and catalogs were.

Crustal structure of the Eurasia–Africa plate boundary across the Gloria Fault, North Atlantic Ocean

L Batista, C Hübischer, P Terinha... - Geophysical Journal ..., 2017 - academic.oup.com

Shallow and deep lithospheric slabs beneath the Dinarides from teleseismic tomography as the result of the Adriatic lithosphere downwelling

F Šumanovac, S Markulić, T Engelsfeld, K Jurković... - Tectonophysics, 2017 - Elsevier

... The data about teleseismic events were collected from the International Seismological Centre (ISC) Bulletin for a period of 24 months (2014–2015). The ISC Bulletin can be accessed using the online web searches, which provides access to all ISC Bulletin data...

Subduction and vertical coastal motions in the eastern Mediterranean

A Howell, J Jackson, A Copley... - Geophysical Journal ..., 2017 - academic.oup.com

Summary. Convergence in the eastern Mediterranean of oceanic Nubia with Anatolia and the Aegean is complex and poorly understood. Large volumes of sediment obs.

The rheological structure of the lithosphere in the Eastern Marmara region, Turkey

B Oruc, T Sommez - Journal of Asian Earth Sciences, 2017 - Elsevier

Seamounts and oceanic igneous features in the NE Atlantic: a link between plate motions and mantle dynamics

C Gaina, A Blischke, WH Geissler... - Geological Society ..., 2017 - sp.lyellcollection.org

Do weak global stresses synchronize earthquakes?

R Bendick, R Bilham - Geophysical Research Letters, 2017 - Wiley Online Library

... 1900–2017 (Table S1). The International Seismological Centre (ISC)/Global Earthquake Model (GEM) [DiGaetano et al., 2015] is not used since it is acknowledged by ISC to be currently incomplete prior to 1917. We test

Locating seismicity on the Arctic plate boundary using multiple-event techniques and empirical signal processing

SJ Gibbons, DB Harris, T Dahl-Jensen... - Geophysical Journal ..., 2017 - academic.oup.com

Summary. The oceanic boundary separating the Eurasian and North American plates between 70° and 84° north hosts large earthquakes which are well recorded. Teles.

Absolute reconstruction of the closing of the Mongol–Okhotsk Ocean in the Mesozoic and European plate at the Atlantic Ocean margin.
Global topographic slope, and the... using average shear... using average shear.

BSHAP seismic source characterization

models for the Western Balkan region

J Mihaljević, P Zupančič, N Kuka, N Kaluderović... - Bulletin of Earthquake... 2017 - Springer

... database of the United States Geological Survey National Earthquake Information Centre (USGS/NEIC, 12 events), National Observatory of Athens (NOA, 11 events), Zurich Moment Tensors Database (ZUR, RMT, 8 events), The International Seismological Centre (ISC, 4 events)

Earthquake prediction using the fields estimated by an adaptive algorithm

VG Gitis, AB Derendyaev, SA Pirogov... - Proceedings of the 7th... 2017 - di.acm.org

... Japan region is selected for testing. Modeling performed using the tools of GIS GeoTime 3 http://geo.itp.ru/GT3/ tools [2]. Initial data taken from the site of the International Seismological Centre (ISC) http://www.isc.ac.uk for 01.01.1990 - 01.04.2017 years...

Hybrid broadband simulation of strong-motion records from the September 16...

1978, Tabas, Iran, earthquake (Mw 7.4)

H Vahidifard, H Zafarani, SR Sabbagh-Yazdi... - Natural Hazards, 2017 - Springer

... on regional networks [eg, Atomic Energy Organization of Iran (AEOI) and Bulletin of the Seismographic Network of Mashhad University (BSNMU)] and teleseismic recordings [eg, National Earthquake Information Center (NEIC) and International Seismological Centre (ISC)], are...

Assessing seismic hazard of the East

African Rift: a pilot study from GEM and AfricaArray

V Poggi, R Durheim, GM Tuluka, G Weatherill... - Bulletin of Earthquake... 2017 - Springer

... procedures. 4.1 Source data. 4.1.1 ISC reviewed bulletin. The manually reviewed bulletin from the International Seismological Centre (ISC 2013) was used as one of the primary sources of information for the earthquake catalogue...

The Spanish national earthquake catalogue: evolution, precision and completeness

Á González... - Journal of Seismology, 2017 - Springer

... et al. 2007; Hamdache et al. 2010; Ayadi and Bezzeghoud 2015; Harbi et al. 2015), Euro-Mediterranean region (Grünlthal and Wahlstrom 2012), and the Bulletin of the International Seismological Centre (ISC 2016b). IGN is...

Ground-motion prediction equation for the Chilean subduction zone

GA Montalva, N Bastías... - Bulletin of the... 2017 - pubs.geoscienceworld.org

... using average shear-wave velocity in the upper 30 m ( V S 30 ), topographic slope, and the site's natural frequency ( f 0 ). The event metadata are gathered from public seismic catalogs (eg, Global Centroid Moment Tensor [CMT]; International Seismological Centre [ISC]; CSN)...

Active tectonics of Myanmar and the Andaman Sea

RA Sloan, JR Elliott, MP Searle... - Geological Society... 2017 - mem.lyellcollection.org

British University Observatories 1772–1939

R Hutchins - 2017 - taylorfrancis.com

... 337 6.4 HH Turner at the Oxford Observatory, with the seismology globe Photo: courtesy International Seismological Centre, Thatcham. 342 6.5 Ethel FB Bellamy (1861–1960) on receiving her Honorary MA in 1934 Photo: courtesy Mr Roger Bellamy of Plymouth. 347...

Probabilities of Earthquake Occurrences

along the Sumatra-Andaman Subduction Zone

S Pailoplee - Open Geosciences, 2017 - degruyter.com

... the magnitude range 4.6-9.0 during 1976-2014, (ii) the Engdahl, van der Hilst and Buland Bulletin reported the earthquake data with the magnitude range 3.0-9.0 during 1960-2009 (EHB; http://www.isc.ac.uk/ehbbulletin), (iii) the International Seismological Centre reported the...

Pn tomography of South China Sea, Taiwan Island, Philippine archipelago, and adjacent regions

X Li, X Song, J Li - Journal of Geophysical Research: Solid..., 2017 - Wiley Online Library

... Xu et al. [2007] performed a Pn tomography of the used Pn arrival time picks from the Chinese bulletins and the International Seismological Centre (ISC) bulletins. Their study area is similar but slightly smaller than that of our current study, Chen et al. ...

Worldwide earthquake forecasts

YY Kagan - Stochastic Environmental Research and Risk..., 2017 - Springer

... Open image in new window. Fig. 8 Global earthquake activity rate (GEAR) model, version 1.0 (colors), compared to the catalog from the independent International Seismological Centre-Global Earthquake Model (ISC-GEM) earthquakes (Di Giacomo et al. ...
ОА Кучай, ЗА Кальмутьева, МЕ Козина... - Геодинамика и ..., 2017 - cyberfenfin.ru  ... 4). Мы в данной работе остановились на механизме очага, построенном одним из авторов статьи по данным первых вступлений продольных волн на основе материалов сейсмических станций мировой [International Seismological Centre, 2017] и региональной …

Особенности скоростного строения верхней мантии Зарайчака на участке Монголо-Охотского орогенного пояса ВМ Соловьёв, ВВ Чечельницкий... - Геодинамика и ..., 2017 - cyberfenfin.ru ... фильтра ФИЦ ЕГС РАН за период с 2002 по 2014 г. [Masalsky et al., 2007; International Seismological Centre, 2017]. Эти данные отличаются высокойточностью, поскольку были получены на цифровой регистрирующей …

Sismicité de l’Algérie Nord Occidentale entre 1790 et 2016: catalogue sismique I Belayedi, M Bezzeghoud, A Nadji, J Fontiela - 2017 - Ineq.pt ... Le catalogue de l’International Seismological Centre (ISC) est basé sur une compilation de données, pour la période 1926-2013, de plusieurs institutions internationales tels que l’IGN (Espagne), USGS (USA) et le CRAAG (Algérie). 5) Le catalogue de Hamdache et al ...


ESKİŞEHİR ve ÇİVARININ DEPREMSELLİĞİ E BAYRAK, Ş YILMAZ, Y BAYRAK - tbdmd.org.tr ... Bu kataloğu hazırlayabilmek için Boğaziçi Üniversitesi Kandilli Rasathanesi Deprem Araştırma Enstitüsü (BÜKRADE), Ulusal Deprem İzleme Merkezi (UDİM), TUBİTAK (2006), TÜRKNET (2006). International Seismological Centre (ISC);(2006), Incorporated Research ...

Скорости P-волн в подкоровой мантии Украины ВВ Гордюненко, ЛЯ Гордюненко - Доповіді НАН України, 2017 - dspace.nbuv.gov.ua ...


MUŞLA İLİ VE ÇEVRESİ IÇİN DEPREMSELLIK VE SİSMİK TEHLİYE ANALİZİ NCA KILIÇ, ÜY KALYONCUOĞLU - Mühendislik Bilimleri ve ..., 2017 - dergipark.gov.tr ... belirlenmiştir. Çalışmanın ilk aşamasında uluslararasi veri merkezlerinden (International Seismological Centre ve National Earthquake International Centre) elde edilen veriler kullanılarak homojen bir katalog oluşturulmuştur ... О предварительных результатах анализ каталогов землетрясений для территории Бишкекского геодинамического полигона ВА Мухамедеева, НА Сычева - Вестник ..., 2017 - … Кыргызско-Российский Славянский ...

Model Update May 2016: Upper-Mantle Heterogeneity beneath North America from Travel-Time Tomography with Global and USAArray Data S Burdick, FL Vernon, V Martynov... - Seismological ..., 2017 - pubs.geoscienceworld.org ... (2008). The dataset comprises over 10 million P travel times from the International Seismological Centre and the National Earthquake Information Center (hereafter, Engdahl–van der Hilst–Buland [EHB] dataset) processed using the algorithms developed by Engdahl et al ...

Full-waveform detection of non-impulsive seismic events based on time-reversal methods EA Solano, V Hjörleifsdóttir, Q Liu - Geophysical Journal ..., 2017 - academic.oup.com Summary. We present a full-waveform detection method for non-impulsive seismic events, based on time-reversal principles. We use the strain Green’s tensor as a. More statistical tools for maximum possible earthquake magnitude estimation P Vermeulen, A Kikko - Acta Geophysica, 2017 - Springer
... Data from the ISC-GEM (International Seismological Centre's Global Earthquake Model) and GHEC (Global Historic Earthquake Catalogue) world catalogs were used to compile a catalog, ranging from circa AD 1000 to 2009. The magnitude of completeness was chosen at 7.1 ...

Landforms along transverse faults parallel to axial zone of folded mountain front, north-eastern Kumaun Sub-Himalaya, India


... The International Seismological Centre (ICS) earthquake catalogue was used to review the seismicity pattern around the Kumaun region. 4 Aggradational landforms. The depositional landforms have been grouped into (i) the alluvial fans and (ii) the fluvial deposits ...

Estimación de la amenaza sísmica causada por el proceso de subducción y su impacto sobre los asentamientos humanos para la región de América ...

M Triviño Abella - Universidad Nacional de Colombia ...

Comparison of seismic and geodetic strain rates at the margins of the Ordos Plateau, northern China

TA Middleton, B Parsons... - Geophysical Journal ..., 2017 - academic.oup.com

Summary. Differences between seismic and geodetic strain rates can highlight regions of potential seismic hazard. In China, many of the most devastating histor.

Automatic analysis of the Gorkha earthquake aftershock sequence: evidences of structurally segmented seismicity

C Bailleul, H Lyon-Caen, L Bollinger... - Geophysical Journal ..., 2017 - academic.oup.com

Earthquake tendency of the Himalayan seismic belt

X Lei, Q Si-Qing, Y Bai-Cun, W Xiao-Wa, Z Ke... - arXiv preprint arXiv ..., 2017 - arxiv.org

Page 1. 1 Earthquake tendency of the Himalayan seismic belt Xue Lei1, Qin Si-Qing1,2*, Yang Bai-Cun1,2, Wu Xiao-Wa1,2, Zhang Ke1,2, Chen Hong-Ran1,2 1 Key Laboratory of Shale Gas and Geoengineering, Institute of Geology and Geophysics, Chinese Academy of ... The deforming Nazca slab in the mantle transition zone and lower mantle: Constraints from teleseismic tomography on the deeply subducted slab between 6° S and ...

A Scire, G Zandt, S Beck, M Long... - Geosphere, 2017 - pubs.geoscienceworld.org

Ground motion prediction equations for the Chilean subduction zone

B Idini, F Rojas, S Ruiz, C Pastén - Bulletin of Earthquake Engineering, 2017 - Springer

... Few strong motion records of (m_b < 6) earthquakes were excluded since the (M_w) is not available. Hypocenter coordinates were taken from the CSN online catalog and from the International Seismological Centre (ICS) Bulletin ...

Effects of shallow-layer reverberation on measurement of teleseismic P-wave travel times for ocean bottom seismograph data

M Obayashi, Y Ishihara, D Suetsugu - Earth, Planets and Space, 2017 - Springer

... (2016) using data from the Tomographic Investigation by seafloor Array Experiment for the Society hot spot (TIARES) BBOBS network (Suetsugu et al. 2012) as the part of global data set including the arrival time data from the International Seismological Centre ...

Geology of the Yap Trench: new observations from a transect near 10° N from manned submersible Jiaolong

Y Yang, S Wu, J Gao, L Tian, J Yang... - International Geology ..., 2017 - Taylor & Francis

Seismotectonics of the Horsehoe Abyssal Plain and Gorringe Bank, eastern Atlantic

Ocean: Constraints from ocean bottom seismometer data

I Greveremeyer, D Lange, H Villinger... - Journal of ..., 2017 - Wiley Online Library

Seismic wave attenuation in the lithosphere of the North Tanzanian divergence zone (East African rift system)

AA Dobrynina, J Albicar, A Deschamps, J Perrot... - Russian Geology and ..., 2017 - Elsevier

Page 1. 1 Seismic wave attenuation in the lithosphere of the North Tanzanian divergence zone (East African rift system) AA Dobrynina a,*, J. Albicar b, A. Deschamps c, J. Perrot d, RW Ferdinand e, J. Déverchère d... Early signs of geodynamic activity before the 2011–2012 El Hierro eruption


Using a process-based model of pre-eruptive seismic patterns to forecast evolving eruptive styles at Sinabung Volcano, Indonesia
WA McCausland, H Gunawan, RA White... - Journal of Volcanology, 2017 - Elsevier
... saturated. Magnitudes in this paper are either local magnitudes from the International Seismological Centre (ISC) catalog, M Lv , from CVGHM analog paper records, M L , or duration magnitudes, M d , from this formula, as marked ...

Sequence of deep-focus earthquakes beneath the Bonin Islands identified by the NIED nationwide dense seismic networks

Hi-net and F-net
S Takemura, T Saito, K Shiomi - Earth, Planets and Space, 2017 - Springer
... focus earthquakes (eg, Obayashi et al. 2017; Zhan 2017). Because the combined catalogs of the International Seismological Centre-Global Earthquake Model (ISC-GEM) (Storchak et al. 2013) and the USGS-NEIC include only...

Upper plate deformation as marker for the Northern STEP fault of the Ionian slab (Tyrrhenian Sea, central Mediterranean)
A Milia, P Iannace, M Tesauro, MM Torrente - Tectonophysics, 2017 - Elsevier

Enhanced stress and changes to regional seismicity due to the 2015 Mw 7.8 Gorkha, Nepal, earthquake on the neighbouring segments of the Main ...
CH Chan, Y Wang, R Almeida, RBS Yadav - Journal of Asian Earth, 2017 - Elsevier
Evidence of recent plutonic magmatism beneath Northeast Peloponnnesus (Greece) and its relationship to regional tectonics
A Tzanis, A Elstathiu, S Chialas - Geophysical Journal ..., 2017 - academic.oup.com
Summary. This work reports evidence of recent tectonically controlled plutonic magmatism related to Neogene volcanism in a broad area of Northeast Peloponnnesus.

Multiojective Optimization of Regional and Teleseismic Data to Constrain the Source of the 12 September 2016 5.4 Earthquake in South Korea
J Letort, AG Trilla, SR Ford... - Bulletin of the ..., 2017 - pubs.geoscienceworld.org
Page 1. Multiojective Optimization of Regional and Teleseismic Data to Constrain the Source of the 12 September 2016 Mw 5.4 Earthquake in South Korea by Jean Letort, Aurélie Guilhem Trilla, Sean R. Ford, and Stephen C. Myers ...

Геодинамическая активность новейших структур и поля тектонических напряжений северо-востока Азии
ЛП Имаева, ГС Гусев, ВС Имаев... - Геодинамика и ..., 2017 - cyberleninka.ru
... основной для расчета и анализа параметров СТД служили решения механизмов очагов 249 землетрясений (М>3.5) за период 1927-2016 гг., заимствованные из международных сейсмологических центров [International Seismological Centre, 2017; Department ...

Probabilistic seismic hazard assessment of southern part of Ghana
ST Ahulu, SK Danuor, DK Asiedu - Journal of Seismology, 2017 - Springer

Comparison of Manual and Automated Ground Motion Processing for Small-to-
Moderate-Magnitude Earthquakes in Japan
T Kishida, D Di Giacinto, G Iaccarino - Earthquake Spectra, 2017 - earthquakespectra.org
A laboratory nanoseisimological study on deep-focus earthquake micromechanics
Y Wang, L Zhu, F Shi, A Schubnel... - Science ..., 2017 - advances.sciencemag.org
... Deep earthquakes, that is, those with hypocenter depths greater than ~70 km, constitute about a quarter of all recorded events, with moment magnitudes greater than 5 in the International Seismological Centre catalog (1). They occur in association with convergent margins ...

Seismic source zoning and maximum credible earthquake prognosis of the Greater Kashmir Territory, NW Himalaya
H Sana, SK Nath - Journal of Seismology, 2017 - Springer
... The instrumental earthquake database for the present study from 1914 to 2012 is compiled from the earthquake catalogue of International Seismological Centre (http://www.isc.ac.uk) with additions from the US Geological Survey (http://www.neic.usgs.gov/), Global Centroid ...

Seizmički reziduali određeni iz telesizmičkih podataka na području Dinarida i jugozapadnog dijela Panonskog bazena: diplomski rad
K Jurković - 2017 - zir.nsk.hr
... The data about teleseismic events were collected from the International Seismological Centre (ISC) Bulletin for a period from year 2014 to 2015 ...- centra (International Seismological Centre – ISC Bulletin) za razdoblje od 24 mjeseca, od 2014. do 2015. godine ...

Change in the pattern of crustal seismicity at the Southern Central Andes from a local seismic network
S Nacif, M Lupari, EG Triep, A Nacif, O Alvarez... - Tectonophysics, 2017 - Elsevier
... Fig. 1. Seismicity (depth: 0–50 km) corresponding to a period of time of ~48 years [International Seismological Centre, EHB Bulletin, http://www.isc.ac.uk, Internatl Seis. Cent., Thatcham, United Kingdom, 2009]. The EHB is ...

64
DESARROLLO DE UNA RED GEOFÍSICA Y GEODESICA NACIONAL EN URUGUAY
DEVELOPMENT OF GEOPHYSICAL AND GEODETIC NETWORK IN ...
L Sánchez Betucci, N Suárez, N Campal... - Revista SUG ..., 2017 - sugeologia.org
... La red de monitoreo sísmico nacional es denominada UY y está registrada en la Incorporated Research Institute for Seismology (IRIS), además todas las estaciones se encuentran registradas en el International Seismological Centre (ISC) ...

Active tectonics around Almaty and along the Zailisky Alatau rangefront
C Grützner, RT Walter, KE Abdrakhmatov... - ..., 2017 - Wiley Online Library
Relocation of two earthquakes in the Southwest Indian Ridge area combining land seismic stations' with OBSs' data
W Luo, M Zhao, J Zhang, C Tao, X Olu... - Marine Geophysical ..., 2017 - Springer
... transform fault (Ga TF) on the SWIR (Fig. 1) were reported by the International Seismological Centre (ISC) during past 20 years. These events were only recorded by the land seismic networks. It is difficult to observe the seismicity ...

Megathrust and accretionary wedge properties and behaviour in the Makran subduction zone
C Penney, F Tavakoli, A Saadat... - Geophysical Journal ..., 2017 - academic.oup.com
Geographic Variations in Lowermost Mantle Structure from the Ray Parameter and Decay Constant of Core-Diffracted Waves
GG Euler, ME Wysession - Journal of Geophysical Research ..., 2017 - Wiley Online Library
...

Pn tomography with Moho depth correction from eastern Europe to western China
Y Lü, S Ni, L Chen, QF Chen - Journal of Geophysical ..., 2017 - Wiley Online Library
High-Resolution 2D Lg and Pg Attenuation Models in the Basin and Range Region with Implications for Frequency-Dependent Q
High-Resolution 2D Lg and Pg ...
ML Pyle, WR Walter... - Bulletin of the ..., 2017 - pubs.geoscienceworld.org
Seismicity Pattern, Reference Velocity Model, and Earthquake Mechanics of South India
U Saitia, SS Rai - Bulletin of the Seismological Society of ..., 2017 - pubs.geoscienceworld.org
...

Nature of the Ambient Noise, Site Response, and Orientation of Ocean Bottom Seismometers (OBSs): Scientific Results of a Passive Seismic Experiment in the ...
P Dewangan, R Reddy, KAK Raju... - Bulletin of the ..., 2017 - pubs.geoscienceworld.org
Utilizing a 3D Global P-Wave Tomography Model to Improve Backprojection Imaging: A Case Study of the 2015 Nepal Earthquake
Z Liu, C Song, L Meng, Z Ge... - Bulletin of the ..., 2017 - pubs.geoscienceworld.org
A first-order seismotectonic regionalization of Mexico for seismic hazard and risk estimation
FR Zúñiga, G Suárez, Á Figueroa-Soto... - Journal of ..., 2017 - Springer
... Data from worldwide catalogs, routinely produced by various agencies, were also incorporated,
ie, the International Seismological Centre (ISC), the Preliminary Determination of Epicenters (PDE) reported by the US National Earthquake Information Center (NEIC, USGS), and ...

The source process of Greek earthquakes

D Křížová - 2017 - dispace.cuni.cz
... For more information about stations you can use registry at International Seismological Centre (ISC) web pages (http://www.isc.ac.uk/registries/search/). From records, we use only components without disturbances and with good signal to noise ratio ...

Temporal and spatial variations of Gutenberg-Richter parameter and fractal dimension in Western Anatolia, Turkey

E Bayrak, Ş Yılmaz, Y Bayrak - Journal of Asian Earth Sciences, 2017 - Elsevier

Mass-wasting effects induced by the 2015 Gorkha (Nepal) Mw 7.8 earthquake within a large paleo-landslide site adjacent to the Tatopani Border Station, Nepal ...

G Wu, D Cunningham, R Yuan, Q Zhou, X Zeng - Landslides, 2017 - Springer
... 1 Distribution of the Gorkha earthquake sequence and location of the Tatopani Border Station in Nepal (http://www.isc.ac.uk, International Seismological Centre, ISC), MFT main frontal thrust, MBT main boundary thrust, MCT main central thrust, STD south tibet detachment ...

Seismotectonic deformation from focal mechanisms of earthquakes in the Valle del Cauca, southwestern Colombia

EJ Salcedo, JL Pérez - Revista Geológica de América Central, 2017 - soeio.sa.cr
... Physical characteristics of subduction interface type seismogenic zones revisited, Geochemistry, Geophysics, Geosystems, 12(1), Q01004, doi:10.1029/2010GC003230 [ Links ]. International Seismological Centre (ISC), (sf). Recuperado de http://www.isc.ac.uk. [ Links ] ...

Seismic hazard assessment of the Kivu rift segment based on a new seismotectonic zonation model (Western Branch, East African Rift system)

D Delvaux, JL Mulumba, MNS Sebagenzi... - Journal of African Earth ..., 2017 - Elsevier

Izmir ve çevresinin 1-B (Bir-Boyutlu) sismik hz yapisinin belirlenmesi

Ç ÖZER, O POLAT - Journal of Science and Engineering, 2017 - deu.edu.tr
Page 1, 147 Dokuz Eylül Üniversitesi-Mühendislik Fakültesi Fen ve Mühendislik Dergisi Cilt 19, Sayı 55 No:1-Ocaı/ 2017 Dokuz Eylül University-Faculty of Engineering Journal of Science and Engineering Volume 19, Issue 55 No:1-January/2017 ... Aftershocks properties of the 2013 Shonbe Mw 6.3 earthquake, central Zagros, Iran


Morphotectonic study of the Greater Antilles

MOC Rodríguez, DC Barba, DN Escirbano - Geotectonics, 2017 - Springer

Geologia para el estudio de microzonación sísmica en Santiago de los Caballeros, República Dominicana

ML Isidro, M Belvaux, E Bernádez ... - ... : Ciencias Sociales e ..., 2017 - researchgate.net

CREATING AN EARTHQUAKE CATALOGUE FOR 1911; LOCAL, NATIONAL AND WORLD.

K McCabe - 2017 - aees.org.au
Page 1, Australian Earthquake Engineering Society 2017 Conference, Nov 24-26, Canberra, ACT CREATING AN EARTHQUAKE CATALOGUE FOR 1911; LOCAL, NATIONAL AND WORLD.
Kevin McCabe Central Queensland University, Rockhampton,

Факторы, влияющие на затухание сейсмических волн в литосфере в зонах континентального рифтогенеза

АА Добрынина, ВА Сыньков, Ж Девершер... - Геодинамика и ..., 2017 - cyberleninka.ru
... western Cordilleras, North America (left), showing the main geotectonic provinces and modern plate boundaries (from [Lee et al., 2009]), and the map of seismicity of the region studied (right) for the period from 1915 to 2016, according to the International Seismological Centre ...

The topographic state of fluvially conditioned mountain ranges

J Robl, S Hergarten, G Prasicek - Earth-Science Reviews, 2017 - Elsevier

Slab Geometry and Stress State of the Southwestern Colombia Subduction Zone

Y Chang - 2017 - search.proquest.com
... Earthquakes (circles colorcoded. by earthquake depth) are from ISC data from January 2010 to December 2014. [International Seismological Centre, 2013]. Rectangle marks the Cauca cluster. Dashed lines are country boundaries. A solid line labeled Caldas tear marks the ...

Технология мониторинга и анализа гидрометеорологической обстановки в Арктике

ВГ Гитис, АБ Дерендеев, КН Петров... - Информационные ..., 2017 - jip.ru
... 6. Прогнозные данные моделирования разлива углеводородов (ФГБУ “Государственный Оке- аноографический институт”).
Lower crustal hydrothermal circulation at slow‐spreading ridges: evidence from chlorine in Arctic and South Atlantic basalt glasses and melt inclusions

FM Van der Zwan, CW Devey, TH Hansteen… - … to Mineralogy and Geology, 2017 - Springer

Hydrothermal circulation at slow‐spreading ridges is important for cooling the newly formed lithosphere, but the depth to which it occurs is uncertain. Magmas which stagnate and partially crystallize.

... Our dataset consists of moderate‐size earthquakes (3.7 ≤ Mw ≤ 5.9), allowing us to neglect finite‐source effects. We principally obtained earthquake locations from the International Seismological Centre (ISC) database.

Earthquake …

 Doğu Marmara Bölgesinin Moho Derinliklerinin Gravimetrik ve İzostazik Yöntemleme Kestirimleri ve Kabuk Denge Analizleri Estimasyonu Moho Derinlikleri of the Earth …

T Sönmez, B Oruç - yerbilimleri.hacettepe.edu.tr


AMENAZA SÍSMICA.

MICROZONIFICACIÓN SÍSMICA Y ESPECTROS DE DISEÑO DE LA CIUDAD DE PEDERNALES, MANÁBÍ, ECUADOR

JA Martínez-González, JA León-Torres… - researchgate.net

… corresponde a la compilación de la información obtenida del Instituto de Geofísica de la Escuela Politécnica Nacional (IG‐EPN), La red Nacional de Acelerógrafos de Ecuador (RENSIG), National Earthquake Information Center, International Seismological Centre (ISC), Global …

Use of video on social media for seismic risk communication: an explorative study

G Massolino - 2017 - iris.sissa.it

Page 1. International School for Advanced Studies Master's course in Science Communication

MCS “Franco Prattico” Academic Year 2015/2016 Use of video on social media for seismic risk communication: an explorative study Candidate: Giulia Massolino …

Statistics of Earthquake Activity: models and methods for earthquake predictability studies


A Ground‐Motion Prediction Equation for Vertical Spectra of the Strong‐Motion Records from the Subduction Slab Events in Japan Using Site Class as the Site Term

F Jiang, JX Zhao - Bulletin of the Seismological Society of …, 2017 - pubs.geoscienceworld.org

… et al. (2015), in which the best event locations before the end of 2004 were those published in the Engdahl–van der Hilst–Buland group from the International Seismological Centre catalog (Engdahl et al., 1998). For earthquakes …

Fault systems of the eastern Indonesian triple junction: evaluation of Quaternary activity and implications for seismic hazards

IM Watkinson, R Hall - Geological Society, London, Special …, 2017 - sp.lyellcollection.org
Antarctica: The Frozen Continent's Environment, Changing Logistics and Relevance to India
J Khadikar - 2017 - books.google.com
... SCAR SPRI UNFCCC International Institute of Sustainable Development Indian Institute of Tropical Meteorology Indian Meteorological Department Intergovernmental Panel on Climate Change International Polar Year International Seismological Centre International Terrestrial...

An investigation into ocean wave sources of ambient seismic noise
JFW Neale - 2017 - eprints.soton.ac.uk
Page 1. UNIVERSITY OF SOUTHAMPTON An Investigation into Ocean Wave Sources of Ambient Seismic Noise. by Jennifer F. Ward Neale A thesis submitted in partial fulfillment for the degree of Doctor of Philosophy in the Faculty of Natural and Environmental Sciences ...

A GPS Modeling Study of Earthquakes and Deformation in Northern Central America and along the Middle America Trench: 1999 to 2017
AP Ellis - 2017 - search.proquest.com
A GPS Modeling Study of Earthquakes and Deformation in Northern Central America and along the Middle America Trench: 1999 to 2017. Abstract. Northern Central America is a tectonically complicated region prone to hazardous ...

A study of the Coulomb stress and seismicity rate changes induced by the 2008 Mw 7.9 Wenchuan earthquake, SW China
J Hu, LY Fu, W Sun, Y Zhang - Journal of Asian Earth Sciences, 2017 - Elsevier
Forecasting seismicity rate in the north-west Himalaya using rate and state dependent friction law
P Chintham, SK Prajapati, VK Gahalaut... - ... , Natural Hazards and ... , 2017 - Taylor & Francis
Gene Transfer in Crop Improvement
D Stevenson - excedeagriculture.rutgers.edu ...
... Research described here was made possible by the bulletin data compiled by the International Seismological Centre and digital recordings from two networks: Global Digital Seismographic Network operated by the US Geological Survey and the International Deploy ment of ...
Strike-slip tectonics within the northernmost Philippine Sea plate in an arc-continent collisional setting
W Gong, X Jiang, Y Guo, J Xing, C Li, Y Sun - Journal of Asian Earth ..., 2017 - Elsevier
Homogeniziranje i analiza kataloga potresa na području Hrvatske
L Ivanović - 2017 - zir.nsk.hr
Page 1. SVEUČILIŠTE U ZAGREBU PRIRODOSLOVNO-MATEMATIČKI FAKULTET GEOFIZIČKI ODSJEK Ljiljana Ivanović HOMOGENIZIRANJE I ANALIZA KATALOGA POTRESA NA PODRUČJU HRVATSKA Diplomski rad Zagreb, 2017. Page 2. SVEUČILIŠTE U ZAGREBU ...

Topography of the 410 km and 660 km discontinuities beneath the Japan Sea and adjacent regions by analysis of multiple ScS waves
X Wang, J Li, QF Chen - Journal of Geophysical Research ..., 2017 - Wiley Online Library
Anisotropic Horizontal Thermal Contraction of Young Oceanic Lithosphere Inferred From Stress Release Due To Oceanic Intraplate Earthquakes
R Sasajima, T Ito - Tectonics, 2017 - Wiley Online Library ...
... We used the hypocenter locations of OCEQs prior to 31 December 2008 from the EHB Bulletin earthquake catalog from the International Seismological Centre (ISC), which is a relocated earthquake catalog using the algorithm of Engdahl et al. (1998) ...

Plume-ridge interaction via melt channelization at Galápagos and other near-ridge hotspot provinces
T Mittal, MA Richards - Geochemistry, Geophysics, Geosystems, 2017 - Wiley Online Library
Complex inner core of the Earth constrained by differential travel times and differential ray parameters
2017 - s-space.snu.ac.kr ...
... waveforms. Event information was taken from the reviewed Bulletin of the International Seismological Centre (ISC), which is manually checked by ISC analysts and relocated. The targeted events have the body wave magnitudes (mb) between 5.0 and 6.7 ...

Tehran: An earthquake time bomb
M Berberian, RS Yeats - ..., 2017 - books.google.com
Page 93. The Geological Society of America Special Paper 525 Tehran: An earthquake time bomb Manuel Berberian* Fellow, School of Mathematics, Science, and Technology, Department of Science, Ocean County College ...
Caracterización de las fuentes sísmicas de subducción inter-placa del centro-sur de Chile a través de un sistema de información geográfica
PI Poblete Acuña - 2017 - repositorio.udec.cl
Page 1. CARACTERIZACIÓN DE LAS FUENTES SÍSMICAS DE SUBDUCCIÓN INTER-PLACA DEL CENTRO-SUR DE CHILE A TRAVÉS DE UN SISTEMA DE INFORMACIÓN GEOGRÁFICA Patricio Ignacio Poblete Acuña Proyecto de Título presentado al ...

Tectonic and Magmatic Controls on Extension and Crustalaccretion in Backarc
Basins, Insights from the Lau Basin and Southern Mariana Trough
JD Sleeper - 2017 - search.proquest.com
... surface-towed magnetometer, and an aeromagnetic survey, and seismicity data obtained from the Global Centroid Moment. Tensor database and the International Seismological Centre reviewed event catalogue. The. geologic and ... Development of a Chilean Ground Motion
Database for the NGA-Subduction Project
V Contreras - 2017 - search.proquest.com
... 2012), the National Earthquake. Information Center (NEIC) at the United States Geological Survey, the International. Seismological Centre (ISC, 2014), and the Chilean National Seismological Center (CSN). We. prefer magnitudes from the CMT catalog when available ...
Results of seismological data processing for the territory of Armenia

VY Burmin, IB Shemeleva, LD Flyyfel, AM Avetisyan... - Seismic ..., 2017 - Springer

OBN is Geophysical Service of Russian Academy of Sciences, Obninsk; ISC is International Seismological Center, Great Britain; NEIC is National Earthquake Information Center of US Geological Survey; ESE is Catalog of Epicentral Expedition of Institute of Physics of Earth...

Seismic risk assessment at the proposed site of Gemsa wind power station.

southwestern coast of Gulf of Suez, Egypt

K Abdelrahman, A Al-Amri, N Al-Arif... - Journal of the ..., 2017 - Springer

These data were then merged, reviewed and refined from duplicated events using the International Seismological Center (ISC); the National Earthquake Information Centre (NEIC) of United States Geological Survey and the European Mediterranean Seismological Centre...

Calculation of Confidence Intervals for the Maximum Magnitude of Earthquakes in Different Seismotectonic Zones of Iran

M Salamat, M Zare, M Holschneider... - Pure and Applied ..., 2017 - Springer

... The Institute of the Iranian Geophysics (IGUT 2015) and the International Institute of Earthquake Engineering and Seismology (IEEES 2015) are used as national data banks and the International Seismological Center UK (ISC 2015b), The National Earthquake Information Center...

Anomalously deep earthquakes related to the Ojo de Agua Lineament and its tectonic significance, Sierras Pampeanas of Córdoba, Central Argentina

AC Montero, RD Martino, AB Guereschi - Geodesy and Geodynamics, 2017 - Elsevier

... Database (originally projected on WGS 1984 geographic coordinates) was re-projected on Argentina POSGAR07 planar projection, zone 3. Focal mechanisms published by the International Seismological Center (ISC) were also included in order to characterize the structures...

Compiling an earthquake catalogue for the Arabian Plate, Western Asia

A Deif, Y Al-Shijbi, I El-Hussain, M Ezzelarab... - Journal of Asian Earth ..., 2017 - Elsevier

... Center (IRSC), which appeared online since 2006 (Karimiparidari et al., 2013), ISC-GEM global seismological catalogue, the EHB catalogue (Engdahl et al., 1998) updated to consider events up to 2006, data retrieved from the ISC (International Seismological Center) web site...

Source parameters of the 27th of June 2015 Gulf of Aqaba earthquake

S Almadani - Journal of Seismology, 2017 - Springer

... Mohamed et al. (2012): \( M_{\text{w}} = 1.16 M \). \( M_{\text{b}} = 0.9 S \). (1). The seismicity in the Gulf of Aqaba from the period of 1964 to 2015, as reported by the International Seismological Center (ISC), is shown in Fig. 2. It is...
**Internal deformation of lithosphere beneath central Tibet**

H Zhang, D Zhao, J Zhao, Z Hu - Journal of Geophysical ... 2017 - Wiley Online Library

... The initial hypocentral parameters of the local and regional earthquakes used in this study are those determined by Huang et al. (2014) using the data recorded by the China Seismic Network (CSN) and the International Seismological Center (ISC) without the Hi-CLIMB stations ...

**What Is Better Than Coulomb Failure**

**Stress? A Ranking of Scalar Static Stress**

**Triggering Mechanisms from 105 Mainshock-Aftershock Pairs**

BJ Meade, PMR DeVries, J Faller... - Geophysical ..., 2017 - Wiley Online Library

... Black dotted line is a 1:1 line for reference. (e–h) Analogous to Figures 1a–1d for a different static stress field, Δτ max (σ). Aftershocks within 1 year of the mainshocks (116,814 aftershocks in total were compiled from the International Seismological Center (ISC) event catalogue ...

**Local Magnitude Conversion to Unified Moment Magnitude in the Croatian Earthquake Catalogue (CEC)**

L Ivanković, S Markušić, I Ivančić - International Advanced Research ..., 2017 - iarjset.com


**Lateral structure variations and transient swarm revealed by seismicity along the Main Himalayan Thrust north of Kathmandu**

R Hoste-Colomer, L Bollinger, H Lyon-Caen, A Burtin... - Tectonophysics, 2017 - Elsevier

... 97. Gudelhongu, 30/12/1996, 11:18:19, 86.91°E, 27.22°N, 25 33(f), 5.8, 4.8, --, (a) National Seismological Center of Nepal (NSC), (b) International Seismological Center, UK (ISC), (c) Centroid Moment Tensor (in this article). (d) Geophysical ...

**Earthquake source characterization, moment tensor solutions, and stress field of small-moderate earthquakes occurred in the northern Red Sea Triple Junction**

AK Abdel-aal, Y Yagi - Geosciences Journal, 2017 - Springer ... www.niaq.sci.eg), Mamoun et al. (1984), International Seismological Center (ISC) bulletin (http://www.isc.ac.uk), European Mediterranean Seismological Center (EMSC) bulletin (http://www.emsc-csem.org), and online bulletin ...

**Probabilistic seismic hazard assessments of Sabah, east Malaysia: accounting for local earthquake activity near Ranau**

AE Khalil, IA Abir, H Ginos, HEH Hafiez... - Journal of Geophysics ..., 2017 - iopscience.iop.org

... The seismicity record of Ranau begins in 1991, according to the international seismicity bulletins (eg United States Geological Survey and the International Seismological Center), and this short record is not sufficient for seismic source characterization ...

**Forecasting of Global Earthquake Energy**

**Time Series**

STG Raghukanth, B Kavitha... - Advances in Data Science ..., 2017 - World Scientific

... quakes. Recently, International Seismological Center (http://www.isc.ac.uk/) has released the ISC-GEM Global Instrumental Reference Earthquake Catalogue spanning from 1900–2012 (http://www.isc.ac.uk/iscgem/index.php) ...

**Methodology of natural risk assessment in Russia**

VI Osipov, VI Larionov, VN Burova, NI Frolova... - Natural Hazards, 2017 - Springer

... February 2012. Joint study on seismic risk assessment for Dushanbe City, Tajikistan, was undertaken by NGO “PMP International,” Seismological Center of IGE RAS, Geological Institute of Tajik Acad.of Science and Extreme Situation Research Center, Moscow (Negmatullaev et al ...
ISC: Annual 2017 Director’s Report

A Sugijopranoto, A Triyono, H Priyosulistyo - Procedia engineering, 2017 - Elsevier

Seismicity assessment in and around Syria based on instrumental data: application of Gumbel distributions and Gutenberg-Richter relationship
... The earthquake data were collected from three main sources of information including compilations of both Plassard and Kogoj (1981) and Elnashai and El-Khoury (2004) and the online bulletin of International Seismological Center (ISC 2016) ...

Update and sensitivity analysis of the neo-deterministic seismic hazard assessment for Egypt
HM Hassan, F Romanelli, GF Panza, MN ElGabry - Engineering, 2017 - Elsevier
... Abou Elenean, 2009; Badawy et al., 2010; National Research Institute of Astronomy and Geophysics (NRIAG) and international sources (eg European Mediterranean Seismological Center (EMSC) http://www.emsc-csem.org); International Seismological Center (ISC) bulletins ...

Demonstration of pb-PSHA with Ras-Elhema earthquake, Egypt
... 1), 50 km toward south of the epicenter, and V–VI MM at Alexandria City. ISC (International Seismological Center) reported that the event was felt as far as 450 km in Nicosia, Cyprus with intensity II-MM. It is one of the good recorded events along north offshore area of Egypt ...

On the seismotectonic setting in the ocean side of deep trenches
MY Andreeva, MV Rodkin - Russian Journal of Pacific Geology, 2017 - search.proquest.com

Civil Engineering Journal
A Ghorbani, A Izadi - Civil Engineering, 2017 - researchgate.net
Page 1. Available online at www.CivileJournal.org Civil Engineering Journal Vol. 3, No. 4, April 2017 237 Comprehensive Earthquake Catalogues and Seismicity Parameters from Incomplete Earthquake Catalogues of Gullan Region, Iran Ali Ghorbani a, Ardavan Izadi b ...

Regional Pn Body-Wave Magnitude Scale mb (Pn) for Earthquakes Along the Northern Mid-Atlantic Ridge
WY Kim, L Ottemoller - Journal of Geophysical Research: Solid Earth, 2017 - Wiley Online Library
Page 1. This article has been accepted for publication and undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process which may lead to differences between this version and the Version of Record ...

P-wave anisotropic tomography of the Alps
Y Hua, D Zhao, Y Xu - Journal of Geophysical Research: Solid Earth, 2017 - Wiley Online Library
... These data are collected from the International Seismological Center (ISC, http://www.isc.ac.uk) bulletins ... All rights reserved. Acknowledgements We thank the International Seismological Center for providing the high-quality arrival-time data used in this study ...

Remote Sensing Applications: Society and Environment
RA Ahmad, RP Singh, A Adris - researchgate.net
... 4. Seismicity of Syria The Syrian earthquake data is based on data available by various agencies. The instrumentally recorded seismic data were collected from International Seismological Center (ISC), US Geological ...

Seismic hazard assessment of Syria using seismicity, DEM, slope, active faults and GIS
RA Ahmad, RP Singh, A Adris - Remote Sensing Applications: Society and ..., 2017 - Elsevier
... The instrumentally recorded seismic data were collected from International Seismological Center (ISC), US Geological Survey (USGS), World Data Center (WDC), European-MediterraneanSeismological Center (EMSC) and Syrian National Earthquake Center (NEC, 1995 ...

Site-specific probabilistic seismic hazard analysis for northern part of the Qeshm Island, Iran
A Kavand, H Aliehali - Natural Hazards, 2017 - Springer
... (1994). There are also other earthquake catalogs available for Iran such as those provided by International Institute of Earthquake Engineering and Seismology (IIEES), International Seismological Center (ISC) and the National Earthquake Information Center (NEIC) ...

Relation of Mean Time Interval with Magnitude for Earthquakes in Northeast India and Its Surrounding Region
SK Nath, AK Yadav - Annals of Geophysics, 2017 - annalsofgeophysics.eu
... USGS), Global Centroid Page 10. YADAV AND NATH 10 Moment Tensor (GCMT), International Seismological Center (ISC) and India Meteorological Department (IMD). Link: http://www.earthqHaz.net/ssaat/ 8. Appendix Weibull's ...

Seismic hazard estimation of northern Iran using smoothed seismicity
N Khoshevis, R Taborda, S Azizzadeh-Roodpish - Journal of Natural Hazards, 2017 - Springer
... Instrumental datasets included information from international, regional, and local agencies and networks, such as the US Geological Survey's National Earthquake Information Center (NEIC), the International Seismological Center (ISC) bulletins, the International Institute of ...

Tree-ring width reveals the preparation of the 1974 Mt. Etna eruption
R Seiler, N Houlié, P Cherubini - Scientific Reports, 2017 - nature.com
... Etna and its surroundings between the summer 1973 and the summer 1974. 

**International Seismological Center** (ISC) data is shown with green bars, daily rates of seismicity measured at different stations are grey and purple

**Seismicity characterization of the Maravatio-Acambay and Actopan regions, central Mexico**

Q Rodríguez-Pérez, FR Zúñiga - *Journal of South American Earth Sciences, 2017 - Elsevier*

... 3. Data and methods. 3.1. Data. We studied the seismicity from 1912 to 2016 in the Maravatio-Acambay and Actopan regions. We used the earthquake catalogues of the Mexican National Seismological Service (SSN) and the International Seismological Center (ISC) ...

**Lithospheric flexural strength and effective elastic thicknesses of the Eastern Anatolia (Turkey) and surrounding region**

B Oruç, D Gomez-Ortiz, C Petit - *Journal of Asian Earth Sciences, 2017 - Elsevier*

**Probabilistic seismic hazard assessment in the northeastern part of Algeria**

M Hamlaoui, K Vanneste, K Baddari, L Louail... - *Neic data files (1992). Data from the International Seismological Center (ISC) from the period 1950–2015 were also used to improve instrumental seismicity and complete the catalog of magnitude estimates. To compile a catalog ...

**TOMOGRAFI WAKTU TEMPUH GELOMBANG SEISMIK UNTUK MENGETAHUI STRUKTUR DI DAERAH SULAWESI UTARA DAN SEKITARNYA**

Menggunakan ...

S Egi - *2017 - eprints.upnyk.ac.id*

... Utara dan sekitarnya berdasarkan anomali gelombang P. Penelitian ini menggunakan data gempa yang terkam sejak tahun 1950 hingga tahun 2013 sejumlah 10793, yang terkam oleh 13 stasion penerima dari website international seismological center(ISC) Metode geiger ...

**Distribusi Coulomb Stress Akiat**

Gempabumi Tekttonik Selatan Pulau Jawa berdasarkan Data Gempa Tekttonik 1977-2000

F Puspasari, W Wahyudi - *Jurnal Fisika dan Apikasinya, 2017 - iptek.its.ac.id*

... Data penelitian diambil dari katalog ISC (International Seismological Center) dan Global CMT (Global Centroid Moment Tensor) ... The data is taken from the catalog of ISC (International Seismological Center) and Global CMT (Global Centroid Moment Tensor) ...

**Crustal seismic velocity models of Texas**

TM Borgfeldt - *2017 - repositories.lib.utexas.edu*

Page 1. Copyright by Taylor Marie Borgfeldt 2017 Page 2. The Thesis Committee for Taylor Marie Borgfeldt Certifies that this is the approved version of the following thesis: Crustal seismic velocity models of Texas APPROVED BY SUPERVISING COMMITTEE: Cliff Frohlich ...

**Lithospheric structure of Southeast Anatolia from joint inversion of local and teleseismic data**

MK Salah - *Studia Geophysica et Geodaetica, 2017 - Springer*

... system. In addition, 55 events during two previous years (2005 and 2006) were also selected from the on-line published ISC (International Seismological Center) bulletins (http://www.isc.ac.uk/iscbulletin/search/arrivals). Figure ...

**ESTIMASI NILAI PERCEPATAN TANAH MAKSIMUM WILAYAH SUMATERA BARAT BERDASARKAN SKENARIO GEMPABUMI M 8.8 SR**

**MENGGUNAKAN** ...

M Leviana, S Syafriani, A Sabarani - *PILLAR OF PHYSICS, 2017 - ejournal.unp.ac.id*

... Montawal tahun 1797 sampai 2016. Episenter berada pada koordinat 1,00oLS dan 99,00oBT (zona subduksi). Data ini dilihat dari bulletin International Seismological Center (ISC). Hiposenter berada di zona subduksi dengan ...

**Big mantle wedge, anisotropy, slabs and earthquakes beneath the Japan Sea**

D Zhao - *Physics of the Earth and Planetary Interiors, 2017 - Elsevier*

... Fig. 2. Distribution of large earthquakes (M ≥ 6.0) that occurred from January 1900 to September 2009 compiled by the International Seismological Center. The earthquake magnitude scale is shown at the bottom. The color ...

**Velocity structure of the mantle transition zone beneath the southeastern margin of the Tibetan Plateau**

G Li, L Bai, Y Zhou, X Wang, Q Cui - *Tectonophysics, 2017 - Elsevier*

... Three focal depths for each earthquake (column at the extreme right) are obtained from teleseismic waveform modeling in this study (the left), and listed in the International Seismological Center (ISC) catalog (the middle) and the global Centroid Moment Tensor (gCMT) catalog ...

**Seismotectonics of the Trans-Himalaya, Eastern Ladakh, India: Constraints from moment tensor solutions of local earthquake data**

D Hazarika, A Paul, M Wadhawan, N Kumar, K Sen... - *Tectonophysics, 2017 - Elsevier*

... one of the most powerful tools to study the source mechanisms of smaller earthquakes on a regional scale as such information is usually not reported by global seismological networks (eg United States Geological Survey (USGS) and International Seismological Center (ISC) etc ...

**3-D seismic tomography of the lithosphere and its geodynamic implications beneath the northeast India region**
J Raoof, S Mukhopadhyay, I Koulakov, JR Kayal - Tectonics, 2017 - Wiley Online Library

Numéro spécial

GB GANZA, GTM Damien DELVAUX - Geo-Eco-Trop, 2017 - geoeoctrop.be


Trends in Nuclear Explosion Monitoring
Research & Development-A Physics

Perspective
M Maceira, PS Blom, JK MacCarthy, OE Marcillo... - 2017 - osti.gov
Page 1. LA-UR-17-21274 Approved for public release; distribution is unlimited. Title:
Trends in Nuclear Explosion Monitoring Research & Development

A Physics
Perspective - Author(s): Maceira, Monica; Blom, Philip Stephen ...

Probabilistic seismic hazard assessment for Saudi Arabia using spatially smoothed seismicity and analysis of hazard uncertainty

V Sokolov, HM Zahran, SEH Youssef... - Bulletin of Earthquake ..., 2017 - Springer

... The catalog includes data from the International Seismological Center (ISC) online bulletin (http://www.isc.ac.uk/), the data collected from regional centers, namely the Seismic Studies Center at King Saud University (KSU), King Abdulaziz City for Science and Technology ...

P-wave anisotropy, mantle wedge flow and olivine fabrics beneath Japan

X Liu, D Zhao - Geophysical Journal International, 2017 - academic.oup.com

Geophysical evidence of the preparedness for a volcanic eruption: El Hierro 2011-2012

C López Moreno - 2017 - diposit.itb.edu
Page 1. Geophysical evidence of the preparedness for a volcanic eruption: El Hierro 2011-2012 Carmen López Moreno Aquesta tesi doctoral està subjecta a la licència Reconeixement 3.0. Espanya de Creative Commons ...

Improved Modeling and Prediction of Surface Wave Amplitudes

JL Stevens, JW Given, TW Thompson, M O'Brien - 2017 - dtic.mil
... we retrieved 59,000 waveforms from 1850 Eurasian and African events. We also retrieved the locations, depths and origin times for all of these events from the International Seismological Center (ISC), and replaced the CMT origins and depths with the better ISC origins ...

Seismotectonic destruction of the Earth's crust in the zone of interaction of the northeastern side of the Baikal rift and the Aldan-Stanovoy block

LP Imaeva, BM Koz'min, VS Imaev, NN Grib... - Journal of ..., 2017 - Springer
... Based on instrumental seismological data and information from the catalogs of the RAS and SB RAS Surveys and the International Seismological Center Bulletin (http://www.ceme.gras.ru; http://seismos-u-ifz.ru; http://www.isc.ac.uk), we present seismotectonic characteristics of …

Soil liquefaction hazard assessment along shoreline of Peninsular Malaysia/Huzaifa

Hashim
H Huzaifa - 2017 - studentsrepo.um.edu.my
... BMG : Indonesian Meteorology Agency ξ : Damping Ratio p : Density ISC : International Seismological Center mb : Body-wave magnitude (short period) mB : Body wave magnitude (long period) Me : Energy magnitude ML : Local magnitude Ms : Surface wave ...

Toward an empirical ground motion prediction equation for France: accounting for regional differences in the source stress parameter

G Ameri, S Drouet, P Traversa, D Bindi... - Bulletin of Earthquake ..., 2017 - Springer

... We used the epicentral locations of the French events provided by Si-Hex because the original locations reported in RESORCE-2013 are taken from the International Seismological Center (ISC) bulletin and thus are expected to be less precise than those obtained from Si-Hex ...

Quantifying the Termination Mechanism Along the North Tabriz-North Mishu Fault

Zone of Northwestern Iran via Small Baseline PS-InSAR and GPS Decomposition

Z Su, EC Wang, JC Hu, M Talebian... - IEEE Journal of ..., 2017 - ieeexplore.ieee.org
... White circles represent earthquake events listed in the International Seismological Center catalogue (ISC, 1.0 < Mw < 6.5, 2006–2013) and International Institute of Earthquake Engineering and Seismology database (IIEES, 1.0 < Mw < 6.5, 1901–2010) ...

Melt Extraction and Crustal Thickness Variations at Segmentated Mid-Ocean Ridges

H Bai - 2017 - search.proquest.com
Melt Extraction and Crustal Thickness Variations at Segmentated Mid-Ocean Ridges. Abstract. Mid-ocean ridges are underwater volcanic mountains extending more than 55,000 km in ocean basins worldwide, accounting for nearly 80% of the Earth's volcanism ...

Loss caused by earthquakes: rapid estimates

Nl Frolova, VI Larionov, J Bonnin, SP Sushchev... - Natural Hazards, 2017 - Springer
... To estimate the uncertainties in earthquake parameters by the Alert Survey of GS of RAS, two catalogs, for the period from 1991 up to 2009, were compared: the catalog of the GS RAS Alert Survey and the ISC-GEM Global Instrumental Earthquake Catalogue (1900–2009) ...

On the Seismicity, Geodynamics and Neotectonics of the Moresian Platform

IM Stanciu, D Ioane - researchgate.net
1. A) Seismicity from ISC-GEM Catalog from 1900 to 2013 (http://www.isc.ac.uk/iscgem/).

   This catalog is the result of a special effort to adapt and substantially extend and improve currently existing bulletin data of large global earthquakes (magnitude 5.5 and above) …

2. Investigating the March 28th 1875 and the September 20th 1920 earthquakes/tsunamis of the Southern Vanuatu arc, offshore Loyalty Islands, New Caledonia


   Both tsunamis were generated by local earthquakes. Neither of these earthquakes has been quantitatively well-constrained, but the 1920 event is classified as having a Mw magnitude of 8.1 in the ISC-GEM Global Instrumental Earthquake Catalog (1900–2012) …

4. Geodesy and Geodynamics


   This catalog is the result of a special effort to adapt and substantially extend and improve currently existing bulletin data of large global earthquakes (magnitude 5.5 and above) …

6. The Chiloé Mw 7.6 earthquake of 25 December 2016 in Southern Chile and its relation to the Mw 9.5 1960 Valdivia earthquake


   Although the background seismicity is very sparse there are two sequences of historical seismic activity listed in the ISC-GEM catalogue since 1900 (Figure 2). On 2nd March 1919 … star). This event is listed in the ISC-GEM (Storchak et al., 2013) catalogue with a depth of …


9. Testing alternative temporal aftershock decay functions in an ETAS framework


   Historical tsunami earthquakes in the Southwest Pacific: an extension to $\Delta > 80^\circ$

   of the energy-to-moment parameter $\Theta$


   The first since 1960: A large event in the Valdivia segment of the Chilean Subduction Zone, the 2016 M7.6 Melinka earthquake


   … There is no indication in the Chilean Seismological Center's historical catalog (http://www.sismologia.cl/) or in ISC-GEM catalog that spans 1900–2013 (Storchak et al., 2013) of significant events on this portion of the megathrust …

   To which level did the 2010 M 8.8 Maule earthquake fill the pre-existing seismic gap?


   Abstract. There is a long-standing debate whether or not the 2010 M 8.8 Maule earthquake filled a pre-existing seismic gap in which no large earthquake occurred.

   On the source of the 2015 1939 Azores earthquake–tsunami observations and numerical modelling

   C Reis, R Omira, L Matias… - …, Natural Hazards and Risk, 2017 - Taylor & Francis
Dependence of the brittle ductile transition on strain-rate-dependent critical homologous temperature

PM Davis - Geophysical Journal International, 2017 - academic.oup.com

Alternative representation of the Gutenberg–Richter relation in terms of the logarithmic mean annual seismicity rate and its standard deviation
WY Chang, KP Chen, YB Tsai - Natural Hazards, 2017 - Springer … (2010) used the G–R relation to determine the magnitude of completeness (Mc) of the Southern California earthquake catalog over different periods from 1932 to 2008. Michael (2014) recently used it to check the completeness of the ISC-GEM global earthquake

Testing stress shadowing effects at the South American subduction zone
F Roth, T Dahm, S Hainzl - Geophysical Journal International, 2017 - academic.oup.com

Summary. The seismic gap hypothesis assumes that a characteristic earthquake is followed by a long period with a reduced occurrence probability for the next la.

Geophysical risk: volcanic activity
S Loughlin, S Barsotti, C Bonadonna, E Calder - 2017 - archive-ouverte.unige.ch

Page 1. Book Chapter Reference Geophysical risk: volcanic activity LOUGHLIN, Susan, et al. 2013 Storchak, DA, D. Di Giacomo, I. Bondár, E. Richter relation in terms of the Richter relation in terms of the magnitude of the earthquake. The Gutenberg–Richter (G–R) relation describes the relationship between the magnitude of an earthquake and the frequency of occurrence of earthquakes with a similar magnitude. The G–R relation is given by the formula: $\log N = a - bM$, where $N$ is the number of earthquakes per magnitude range, $a$ and $b$ are constants, and $M$ is the magnitude.

Assessing long-term stability of the geological environment

The future stability of the Earth's crust is a critical factor in the site-selection process for geologcal repositories of hazardous radioactive waste. The cha.

Effectiveness of Rubber Isolators for the Seismic Retrofitting of a Peruvian Highway Concrete Bridge
A Tafur, T Swailes - researchgate.net

Page 1. Effectiveness of Rubber Isolators for the Seismic Retrofitting of a Peruvian Highway Concrete Bridge Anibal Tafur1*, Thomas Swailes2 1* Department of Civil Engineering, Pontifical Catholic University of Peru, Peru

Assessment of teleseismically-determined source parameters for the April 25, 2015 MW 7.9 Gorkha, Nepal earthquake and the May 12, 2015 MW 7.2 aftershock
T Lay, L Ye, KD Koper, H Kanamori - Tectonophysics, 2017 - Elsevier … Hough, 2015). The rupture did not reach to the surface (eg, Angster et al., 2015), unlike the adjacent 1255 and 1934 (M S 8.0 ISC-GEM, Storchak et al., 2013) Bihar-Nepal ruptures (Fig. 1; Bollinger et al., 2014).

Tsunami hazard in La Réunion Island (SW Indian Ocean): Scenario-based numerical modelling on vulnerable coastal sites
S Allgeyer, E Quentel, H Hébert, A Gailler… - Pure and Applied …, 2017 - Springer

unal.edu.co

Estimación de la amenaza sísmica causada por el proceso de subducción y su impacto sobre los asentamientos humanos para la región de América … M Triviño Abella - Universidad Nacional de Colombia … Preliminary observations from the 3 January 2017, MW 5.6 Manu, Tripura (India) earthquake
J Debbarma, SS Martin, G Suresh, A Ahsan… - Journal of Asian Earth …, 2017 - Elsevier

БЪЛГАРСКА АКАДЕМИЯ НА НАУКИТЕ НАЦИОНАЛЕН ИНСТИТУТ ПО ГЕОФИЗИКА, ГЕОДЕЗИЯ И ГЕОГРАФИЯ МЛ Попова - nigggbas.bg
Page 1. БЪЛГАРСКА АКАДЕМИЯ НА НАУКИТЕ НАЦИОНАЛЕН ИНСТИТУТ ПО ГЕОФИЗИКА, ГЕОДЕЗИЯ И ГЕОГРАФИЯ Мария Любомирова Попова Магнитудни оценки на съвременна и историческа сеизмичност за България и околните земи АВТОРЕФЕРАТ …
Evaluating spatial and temporal relations of the 6 February 2012 Mw 7.3 earthquake in the Pamir Interior: Response to the Underthrusting of India's Western Promontory

100 Years of earthquakes in the Pamir region as recorded in juniper wood: A case study of Tajikistan

P Owczarek, M Opala-Owczarek, O Rahmonov... - Journal of Asian Earth, 2017 - Elsevier

The 2015 Mw 7.2 Sarez Strike-Slip Earthquake in the Pamir Interior: Response to the Underthrusting of India's Western Promontory

S Metzger, B Schurr, L Ratschbacher, H Sudhaus... - Journal of Quaternary Geology, 2017 - Wiley Online Library

The effect of uncertainty in predictor variables on the estimation of ground-motion prediction equations

NM Kuehn, NA Abrahamson - Bulletin of the Seismological Society of America, 2017 - pubs.geoscienceworld.org

Extension rates across the northern Shanxi Grabens, China, from Quaternary geology, seismicity and geodesy

TA Middleton, JR Elliott, EJ Rhodes... - Geophysical Journal International, 2017 - academic.oup.com

Seismotectonics of the 6 February 2012 Mw 7.3 Negros Earthquake, central Philippines

MA Aurelio, JB Dianata, KJL Taguibao... - Journal of Asian Earth, 2017 - Elsevier

At 03:49 UTC on the 6th of February 2012, Negros Island in the Visayan region of central Philippines was struck by a magnitude Mw 6.7 earthquake causing deaths.

Evaluating spatial and temporal relations between an earthquake cluster near Entiat, central Washington, and the large December 1872 Entiat earthquake

TM Brocher, RJ Blakely... - Bulletin of the Seismological Society of America, 2017 - pubs.geoscienceworld.org

Economic and Human Loss Empirical Models for Earthquakes in the Mediterranean Region, with Particular Focus on Algeria


In this study, loss estimation models were developed for reasonably accurate assessment of economic and human losses from seismic events in the Mediterranean region, based on damage assessment at an u.

Prediction of the area affected by earthquake-induced landsliding based on seismological parameters

M Odin, P Meunier, N Hovius - Natural Hazards and Earth System Sciences, 2017 - search.proquest.com

Prediction of the area affected by earthquake-induced landsliding based on seismological parameters. Abstract. We present an analytical, seismologically consistent expression for the surface area of the region within which most...
Fault mechanics and post-
seismic deformation at Bam, SE Iran
S Wimpeney, A Copley - Geophysical Journal ..., 2017 - academic.oup.com

NEAR-FIELD SEISMIC LOCALIZATION
USING DELTA T MAPPING
Shi Peng-Cheng, W Yuan... - Chinese Journal of ..., 2017 - Wiley Online Library

... Conventional locating methods utilize seismic signals and seek results by finding the minimum of target functions ... abroad come up with numerous algorithms, for instance, joint inversion method (Crosson, 1976), principle events method (Spence, 1980), EHB method (Engdahl ...

Seismic imaging of slab metamorphism
and genesis of intermediate-depth intraslab earthquakes

... Using hypocenter data from the EHB catalog (Engdahl et al. 1998; Engdahl and Villaseñor, 2002), they verified the presence of the double seismic zone by investigating whether two peaks appear in the frequency distribution of intermediate-depth intraslab earthquakes with ...

Support for equatorial anisotropy of Earth's inner-inner core
from seismic interferometry at low latitudes
T Wang, X Song - Physics of the Earth and Planetary Interiors, 2017 - Elsevier

... Support for equatorial anisotropy of Earth's inner-inner core from seismic interferometry at low latitudes ... Therefore, it is meaningful to explore seismic structure of the inner core to understand the evolution process and the magnetic field of our planet ...

Synthetic Catalogue Simulation in Low-
Seismicity Regions and Few Instrumental Records in Central Iran Based on Monte Carlo Method
F Moradpour, N Fathianpour, R Ghaedrahmati... - Iranian Journal of ..., 2017 - Springer

... Table 1 Instrumental earthquake records available for the region of Naein seismic gap zone (http://www.ieses.ac.ir) Date Lat N Lon E Mag Kind Depth (km) Reference Region ...1969/11/11 33.39 54.95 S mb 25 EHB North-East of Ardakan, Yazd Province ...

Estimation of Source Parameters of Historical Major Earthquakes from 1900 to 1970 around Asia and Analysis of Their Uncertainties
J Han, S Zhou - AGU Fall Meeting Abstracts, 2017 - adsabs.harvard.edu

... Earthquake catalogue on the bases of modern seismic network recordings has been established since around 1970 in Asia and the ... historical major earthquakes (M>=7.0) in Asia based on the Shide Circulars, International Seismological Summary and EHB Bulletin instrumental ...

Pattern recognition of seismogenic nodes
using Kohonen self-organizing map:
example in west and south west of Alborz region in Iran
M Allamehzadeh, S Durudi, L Mahshadnia - Earthquake Science, 2017 - Springer

... By considering historical and instrumental earthquake catalogs with clear magnitudes, high-riskseismic nodes identified. Our used inputs in SOFM were longitude and latitude of recorded earthquakes greater than 4.5 magnitude (Table 1). Table 1 ... 15. M L :5.4. EHB. 1983-03-25 ...

The lateral variation of Pn velocity gradient under Eurasia
X Yang - Journal of Geophysical Research: Solid Earth, 2017 - Wiley Online Library

... As is expected, path densities are high in seismically active regions, such as the Tethys collisionbelt [Myers et al., 2010], western Pacific Rim, and central China, where more seismic stationsare also deployed. The path density is extremely high (> 10000) in southern Europe ...

Analysis of the seismicity in central Tibet
based on the SANDWICH network and its tectonic implications
G Zhu, X Liang, X Tian, H Yang, C Wu, Y Duan, W Li... - Tectonophysics, 2017 - Elsevier

... 2. Map of historical earthquake locations (from EHB Bulletin, 1961–2008) and historical focalmechanisms (GCMT solutions, 1976–2015) in central ... To investigate the tectonic features and seismogenic properties of the region, we have deployed a temporary seismic network, the ...

Geodesy and Geodynamics

... During the seismic experiment, the Principal Cordillera, south of 33 150S, only registered twoearthquakes. In all three datasets (NEIC, EHB and CHARSME), north of this latitude, the occurrence of little to no seismicity at all is counter balanced by a concentration at the ...
The nature of sub-slab slow velocity anomalies beneath South America
DE Porter, S Beck, G Zandt... - Geophysical Research ..., 2017 - Wiley Online Library


Proto-South China Sea plate tectonics using subducted slab constraints from tomography

... (e) Colored dots showing the seismic stations used in MITP08 tomography-EHB catalog (Engdahl et al., 1998) in gold; other stations in red. The MITP08 tomography was augmented by the Chinese seismographic network within East Asia (red dots within China in Fig. 1e) ...

Accurate relocation of seismicity along the North Aegean Trough and its relation to active tectonics
KI Konstantinou - Tectonophysics, 2017 - Elsevier

... This is particularly true when the aim is to investigate hypocentral depth variations and their relationship with heat flow, which in turn influences the seismogenic layer thickness and the resulting seismic hazard ... EHB refers to the global relocation catalog of Engdahl et al. (1998) ...

Focal depths and mechanisms of shallow earthquakes in the Himalayan–Tibetan region
L Bai, G Li, NG Khan, J Zhao, L Ding - Gondwana Research, 2017 - Elsevier

... 3). The catalog from China Earthquake Network Center (CENC) relies on arrival times of regional seismic network which provides a good constraint ... The EHB catalog provides the best depth estimates based on various teleseismic arrival times for earthquakes up to the end of ...

RECEIVER FUNCTION METHOD
DETAILS
BT Bishop, SL Beck, G Zandt, L Wagner, M Long... - researchgate.net

... depth to slab seismicity could be determined from the hypocenters reported by Kumar et al. (2016) and the EHB hypocenters plotted in Dougherty and Clayton (2015) (EHB hypocenters ... Chulick, GS Detweiler, S., and Mooney, WD, 2013, Seismic structure of the crust and ...

Lithospheric foundering and underthrusting imaged beneath Tibet
M Chen, F Niu, J Tromp, A Lenardic, CTA Lee... - Nature ..., 2017 - nature.com

... 4c,f). Except along profile B, one earthquake at a depth of 140 km located by the EHB catalogue 35 (event ID: 12477266) occurs in the vicinity of the interpreted IL upper interface (Fig. 4c) ... Figure 6 The interpretation is based on the seismic image along profile C (Fig ...

On the problem of destructive Iranian earthquakes and their causative faults
M Jalali, H Ramazi - Natural Hazards, 2017 - Springer

... As mentioned in this paper, these faults are likely to be in high seismic regions with potential for large-magnitude events as they are long, deep and bound sectors of the margins characterized by different deformation and coupling rates on the plate interface. Keywords ...

Trench motion-controlled slab morphology and stress variations: Implications for the isolated 2015 Bonin Islands deep earthquake
T Yang, M Gurnis, Z Zhan - Geophysical Research Letters, 2017 - Wiley Online Library

... known Benioff zones, although in tomographic images, they may lie within high seismic-velocity regions [Engdahl et al., 1995] ... subduction zone. The profile locations are plotted in (a). Gray circles represent deep earthquakes from the EHB catalogue [Engdahl et al., 1998] ...

Lithospheric structure of the Eastern Iranian plateau from integrated geophysical modeling: A transect from Makran to the Turan platform
V Entezar-Saadat, SH Molavalli-Anbaran... - Journal of Asian Earth ..., 2017 - Elsevier

... The red stars are the earthquakes from EHB catalogue (Engdahl et al., 1998) with depth > 40km and Magnitude ≥ 5. Figure (f) shows a blow ... the numbers in Table 2. Each colored dashed line and symbols in figures (e) and (f) indicate Moho depths from different seismic and non ...

Velocity variations and uncertainty from transdimensional P-wave tomography of North America

... search input. Advanced Search. Summary. High-resolution models of seismic velocity variations constructed using body-
wave tomography inform the study of the origin, fate and thermochemical state of mantle domains. In order ...

A Scire, G Zandt, S Beck, M Long... - Geosphere, 2017 - pubs.geoscienceworld.org

Компьютерная система для геодинамического анализа данных о природных катастрофах Земли
АВ Михеева - Марчуковские научные чтения-2017, 2017

InSAR and GPS measurements of crustal deformation due to seasonal loading of Tehri reservoir in Garhwal Himalaya, India
VK Gahalaut, RK Yadav, KM Sreejith... - Geophysical Journal International, 2017 - academic.oup.com

Seismological constraints on the down-dip shape of normal faults

... Events need to be large enough (Mw 5.5) that the seismic contributions from different parts of the rupture plane are distinct and separate in space ... Hypocentre locations and times were retrieved from the ISC; location data for events occurring prior to 2009 is from the EHB bulletin ...

利用到时差分布图法进行近场地表震源定位
史鹏程·王元·游庆瑜 - 地球物理学报, 2017 - html.rhhz.net

... 处理以及优化方法上(田玥和陈晓非, 2002), 面对复杂的波速环境, 国内外许多学者提出了不同的定位算法, 例如：联合反演法(Crosson, 1976), 主事件定位法(Spence, 1980), EHB法(Engdahl et al., 1998), 单纯形法 ... 2 (a) Seismic sensor of type QS-05A; (b) The scene in the experiment ...

Geodynamics and Seismology
A Alizadeh, FA Kadirov, S Mammadov, M Floyd... - Geosciences of ..., 2017 - Springer

... A second branch (or branches) may extend directly to the Caspian Sea south of Baku, likely connecting to the Central Caspian Seismic Zone (CCSZ) ... Tectonic overview of the Arabia–Eurasia Collision Zone. Yellow dots are earthquakes from the EHB catalog (Engdahl et al ...