

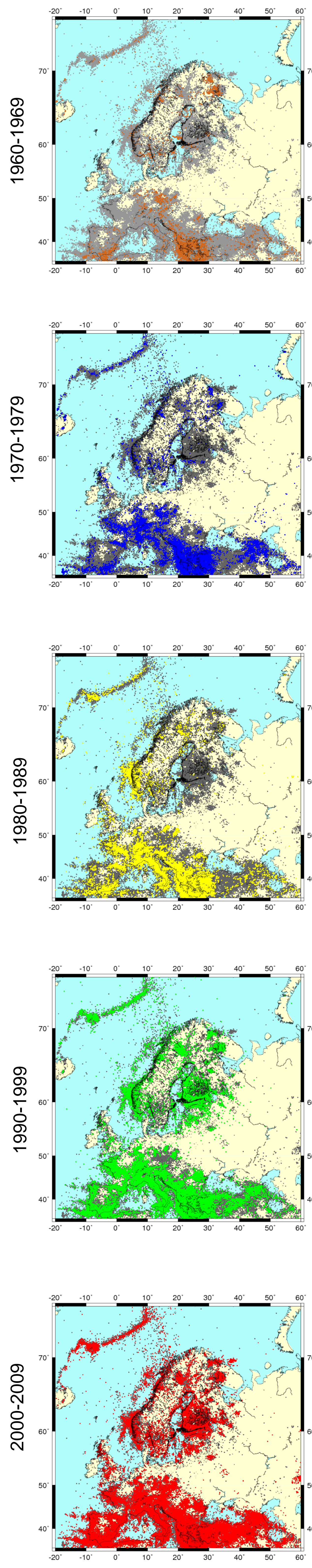
Re-Build of the **ISC** Bulletin (1960-2009)

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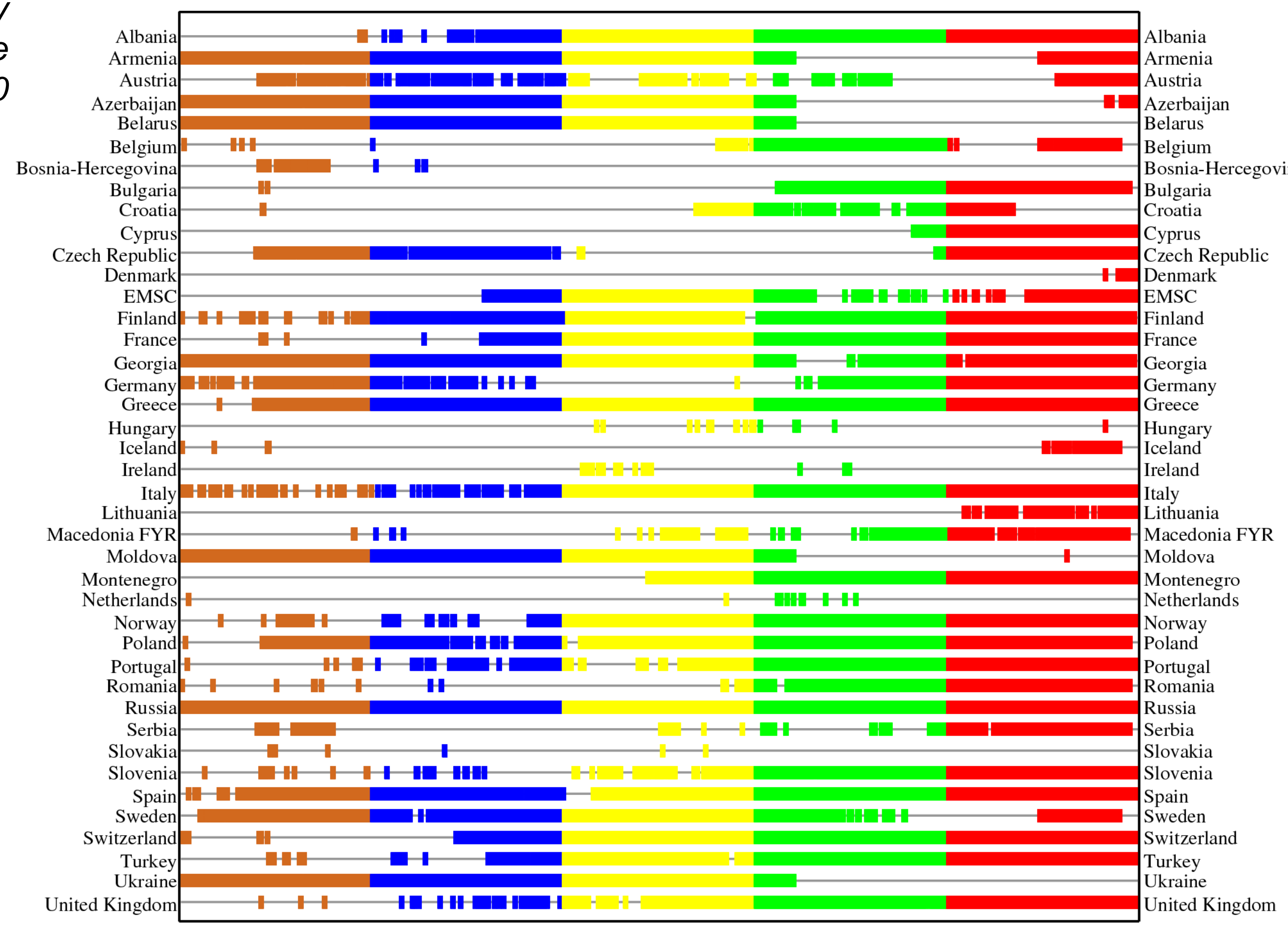


Changes in seismicity map of Europe

Events are colour-coded in line with the gap summary on the right; the grey background colour represents the overall seismicity during the entire 50 year period

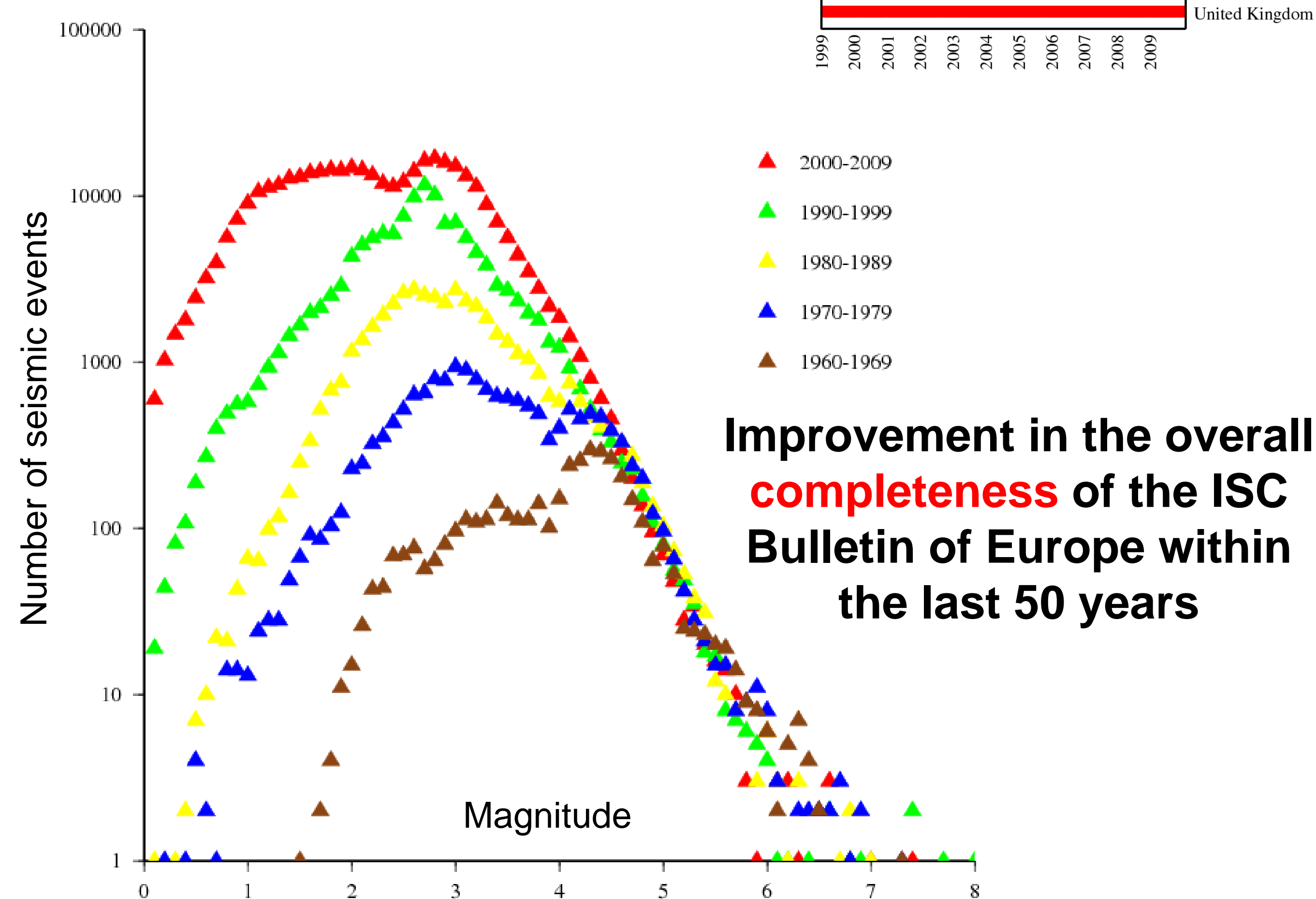
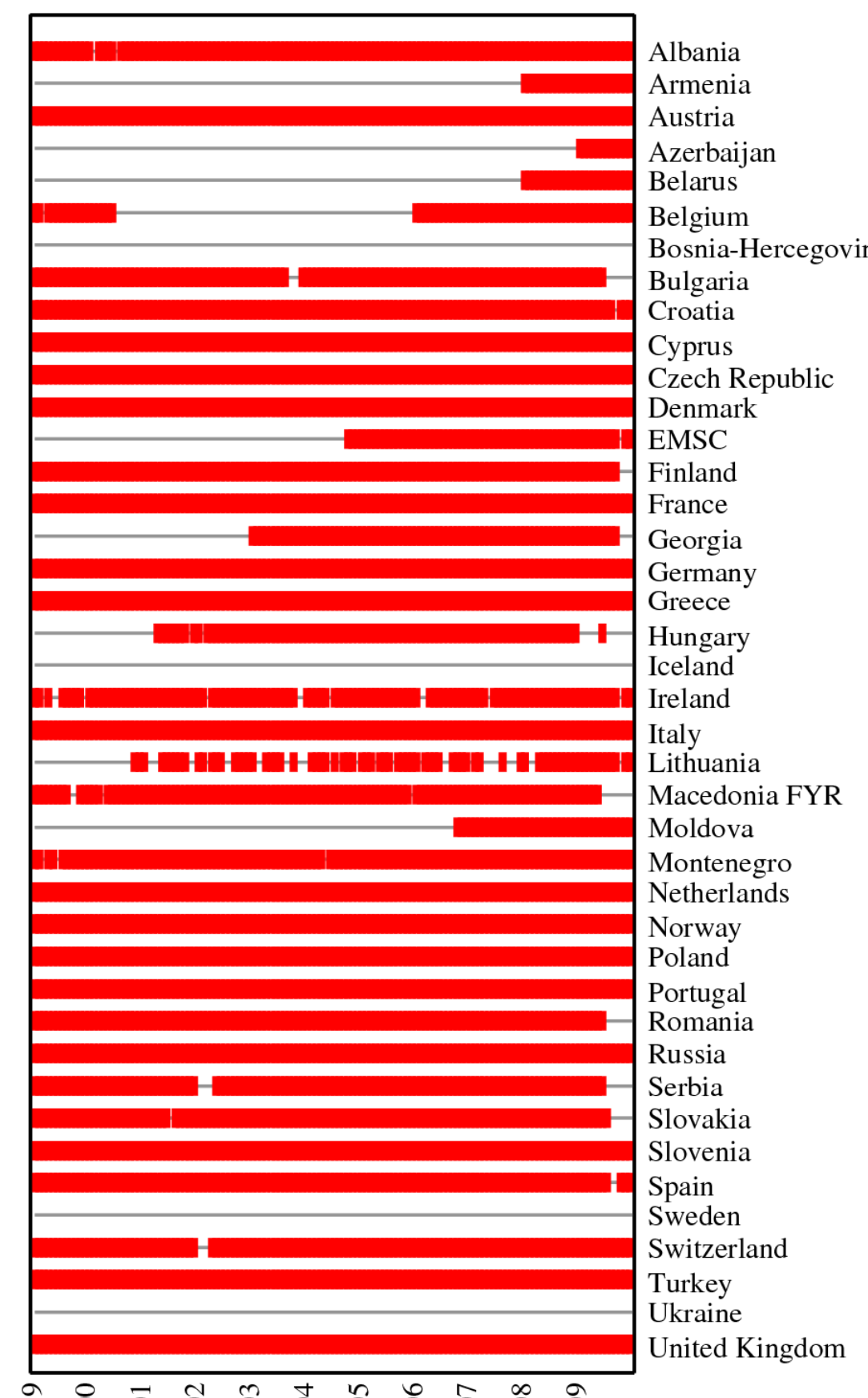


Gaps (white spaces) in original hypocentre reports to the ISC from different countries in Europe



Gaps in station arrival time reports for events in the region

It is unfortunate, yet the information on the reporter of each particular station arrival is only available since the introduction of the ISC database from data year 1999. Therefore, to avoid an error-prone "intelligent guesswork", we presented here a gap summary only from year 1999.



Introduction

The ISC has a substantial programme of development that will improve the ISC Bulletin and introduce new products and services.

This poster describes just one of the integral components of this Programme – the project of re-building the ISC Bulletin for the entire period from 1960 till present. We explain why this project is essential as well as what work is involved.

Motivation

The value of the ISC Bulletin is dependent on following uniform procedures over a long period of time. Nevertheless, essential changes in the ISC procedures did occur:

- The ak135 velocity model is used since 2006 where JB travel times were used in the past.
- A new event locator based on different approaches and techniques will soon be introduced.
- Throughout the ISC history different sets of seismic phases were used for location: P & (from 2001) S with other phases to be introduced soon.
- Latitude & longitude error estimates were computed before Oct 2002 followed by full error ellipses later.
- Procedures that determine what reported events require relocation by the ISC have also changed in 1999, 2005 and 2006.

Thus, the ISC Bulletin will benefit from being re-produced using uniform procedures to guarantee homogeneity through its entire period :1960-2009.

Outline of the Work under the Project

Re-computing all ISC hypocentres

- ✓ new standard earthquake locator;
- ✓ ak135 velocity model in place of Jeffreys-Bullen;
- ✓ uniform algorithm that decides if an event warrants ISC re-location;
- ✓ uniform set of seismic phases (IASPEI Standard Phase List);
- ✓ uniform set of error estimates.

Re-computing event magnitudes:

- ✓ Consistent treatment of amplitude measurement outliers;
- ✓ Removing magnitude estimates based on too few measurements;
- ✓ Providing previously unavailable magnitude error estimates;
- ✓ Providing previously unavailable account of which stations contributed towards the ISC network magnitude in each case.

Introduction and processing of essential additional datasets that have not been available at the time of original ISC Bulletin production:

- ✓ ISS data covering 1960-1963;
- ✓ Late data from permanent networks;
- ✓ Data from permanent networks recovered retrospectively following political and administrative disputes;
- ✓ Data from temporary deployments, including OBS;
- ✓ Data accidentally not used by the ISC.

Other essential corrections:

- ✓ Known inconsistencies and spurious events;
- ✓ Identifying & marking data with erroneous time stamp;
- ✓ Re-assigning event type flags to provide consistency and identify ing areas/periods of possible contamination of natural events with man-made activities.

Project Sponsors



This project was initiated thanks to the additional financial support given by a number of institutions in China, India, Japan and the United States. Several existing members of the ISC staff are already involved in the project. One of the former ISC senior Bulletin analysts was hired to coordinate this work with an aim to bring it to a successful conclusion in approximately 4 years time.

Summary

- Despite being the most comprehensive definitive summary of the world seismicity, the ISC Bulletin would benefit from a comprehensive review and re-computation of the ISC hypocentres using the standard procedure and velocity model for its entire period
- This work will re-create a flagship ISC product – the updated ISC Bulletin
- We invite network operators to review their bulletin data contributions over 50 year period and help the ISC to fill the gaps and correct known errors where possible.