

FSC.DEL/42/10

3 May 2010

ENGLISH only



609th Meeting of the Forum for Security Co-operation
28 April 2010

the comprehensive nuclear-test-ban treaty
putting an end to nuclear test explosions

Overview of the CTBT Verification Regime

Ambassador Tíbor Tóth
Executive Secretary of the Preparatory Commission for the
Comprehensive Nuclear-Test-Ban Treaty Organization

www.ctbto.org

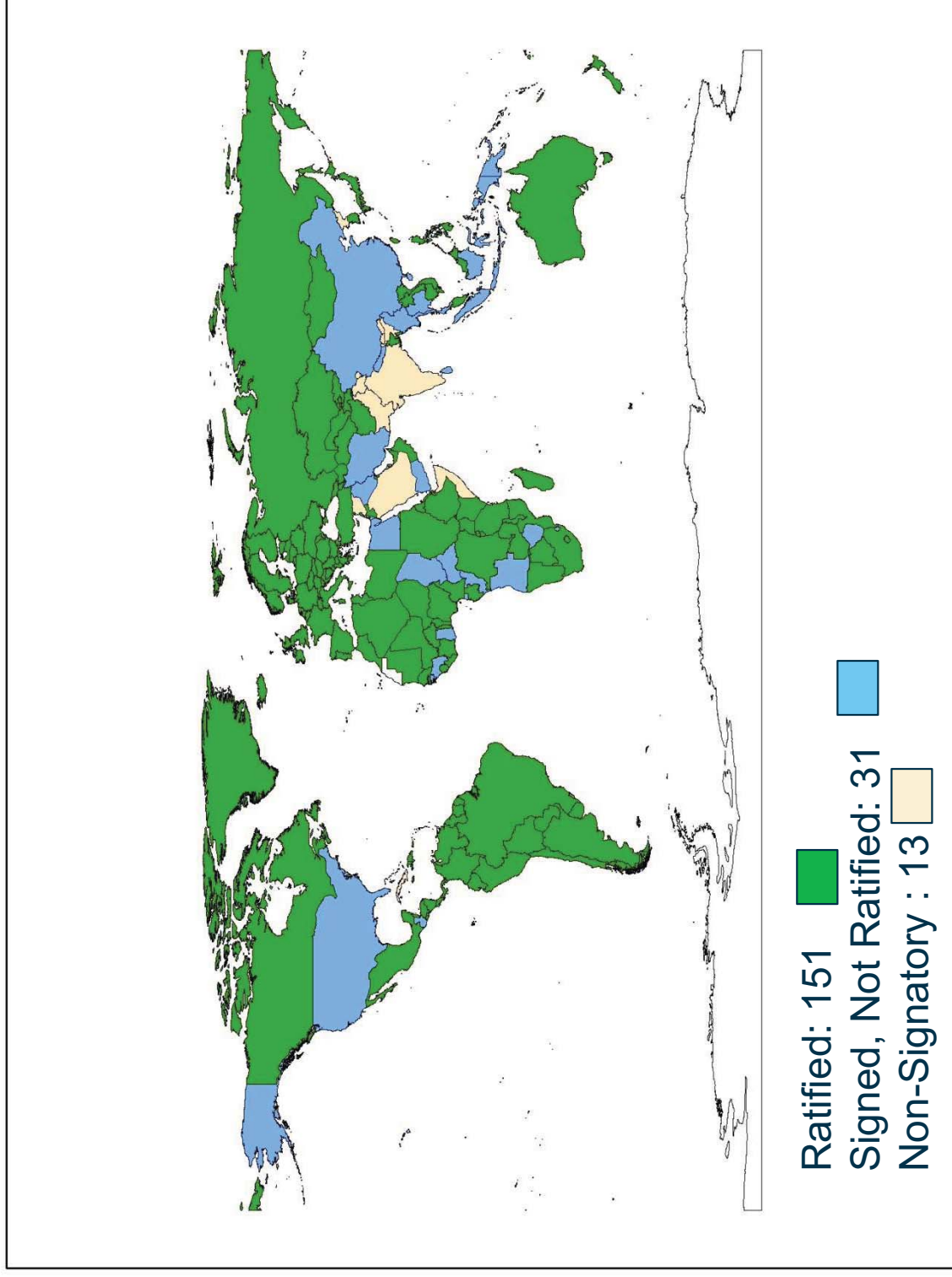
The Treaty



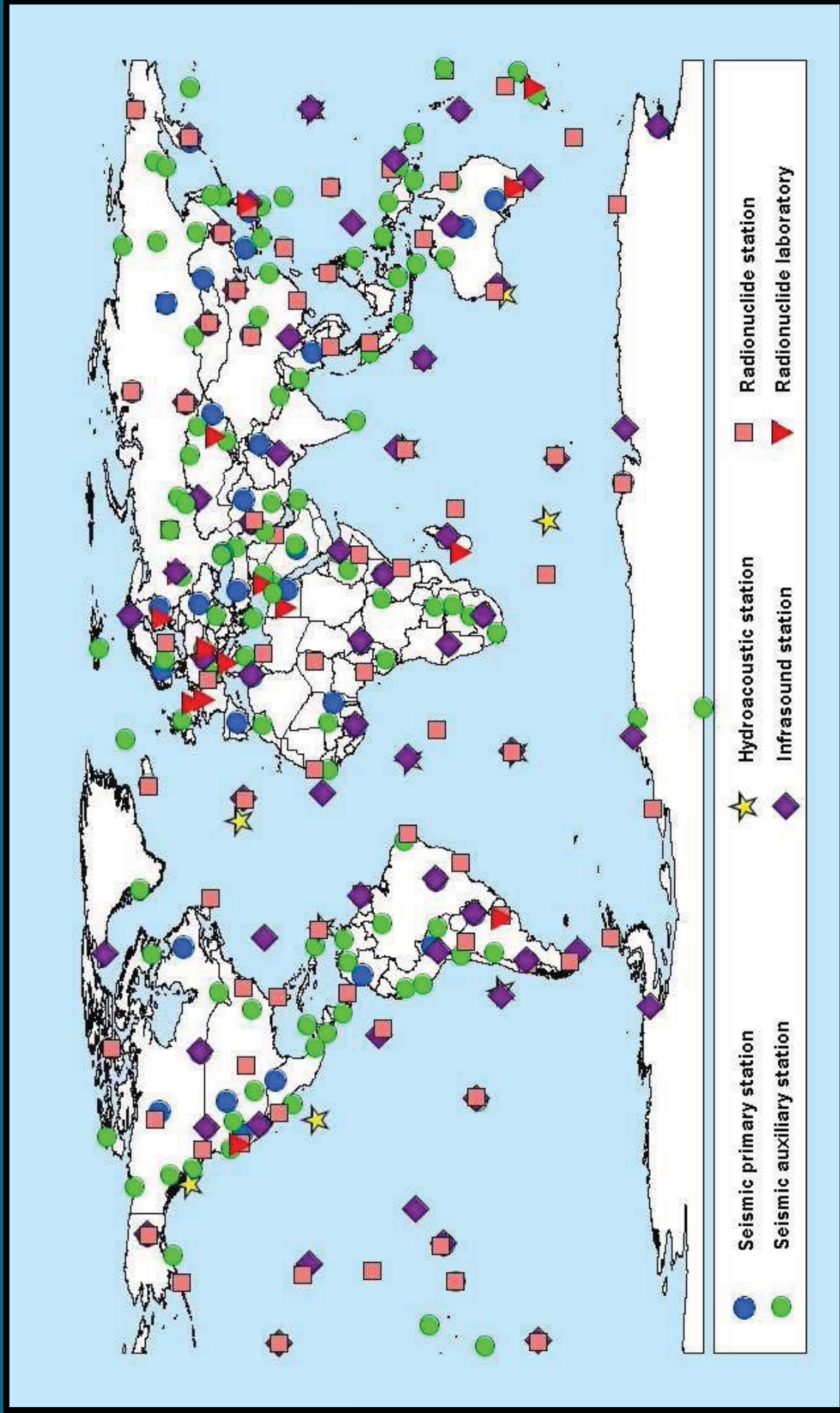
24 September 1996: The CTBT was opened for signature



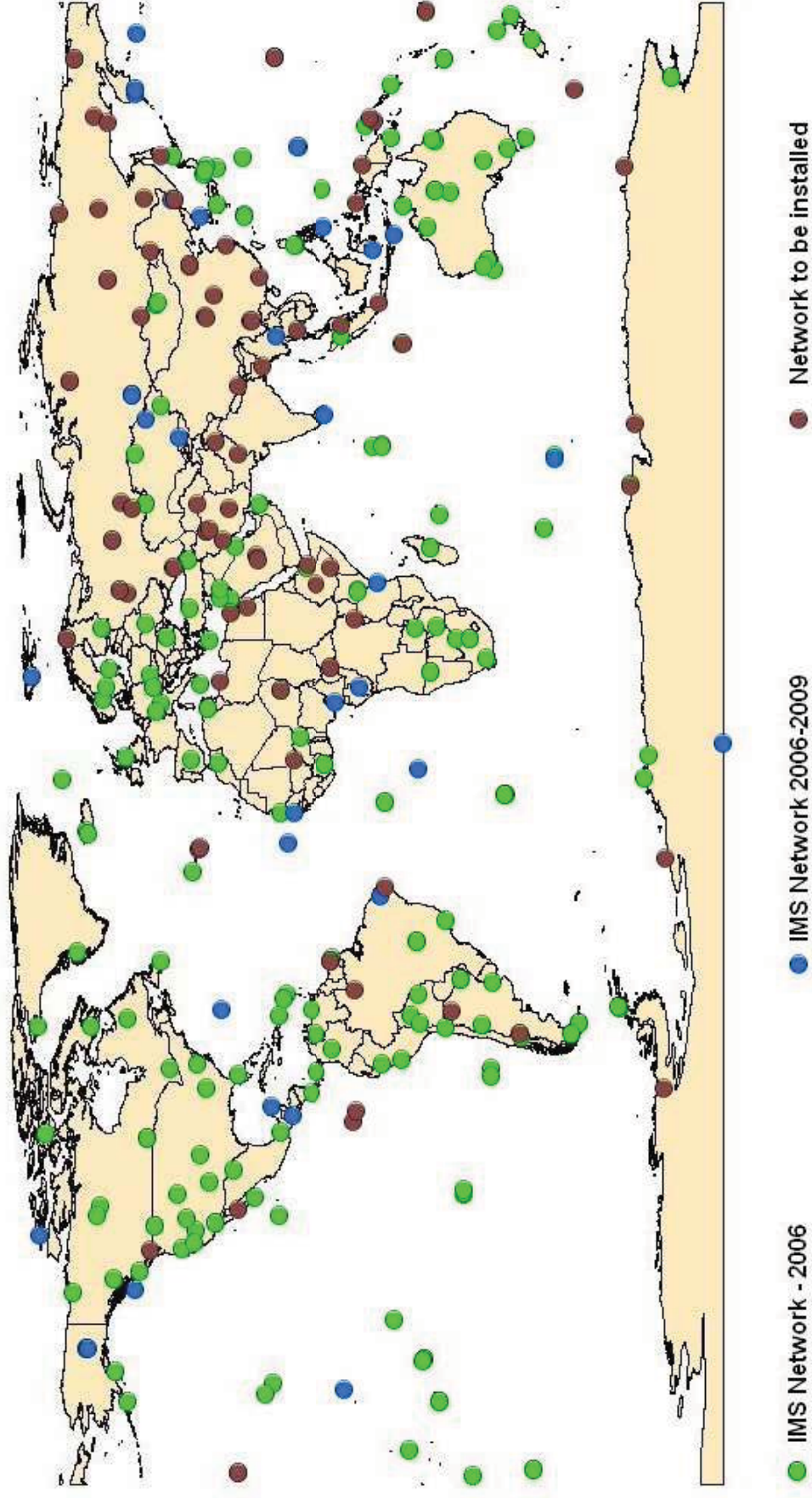
Countries that have Signed and the Ratified the CTBT (April 2010)



Complete IMS Network



Complete IMS Network



System Put to the Test



On 9 October 2006 and 25 May 2009 the DPRK announced successful tests of a nuclear device.

International Monitoring System



International Data Centre

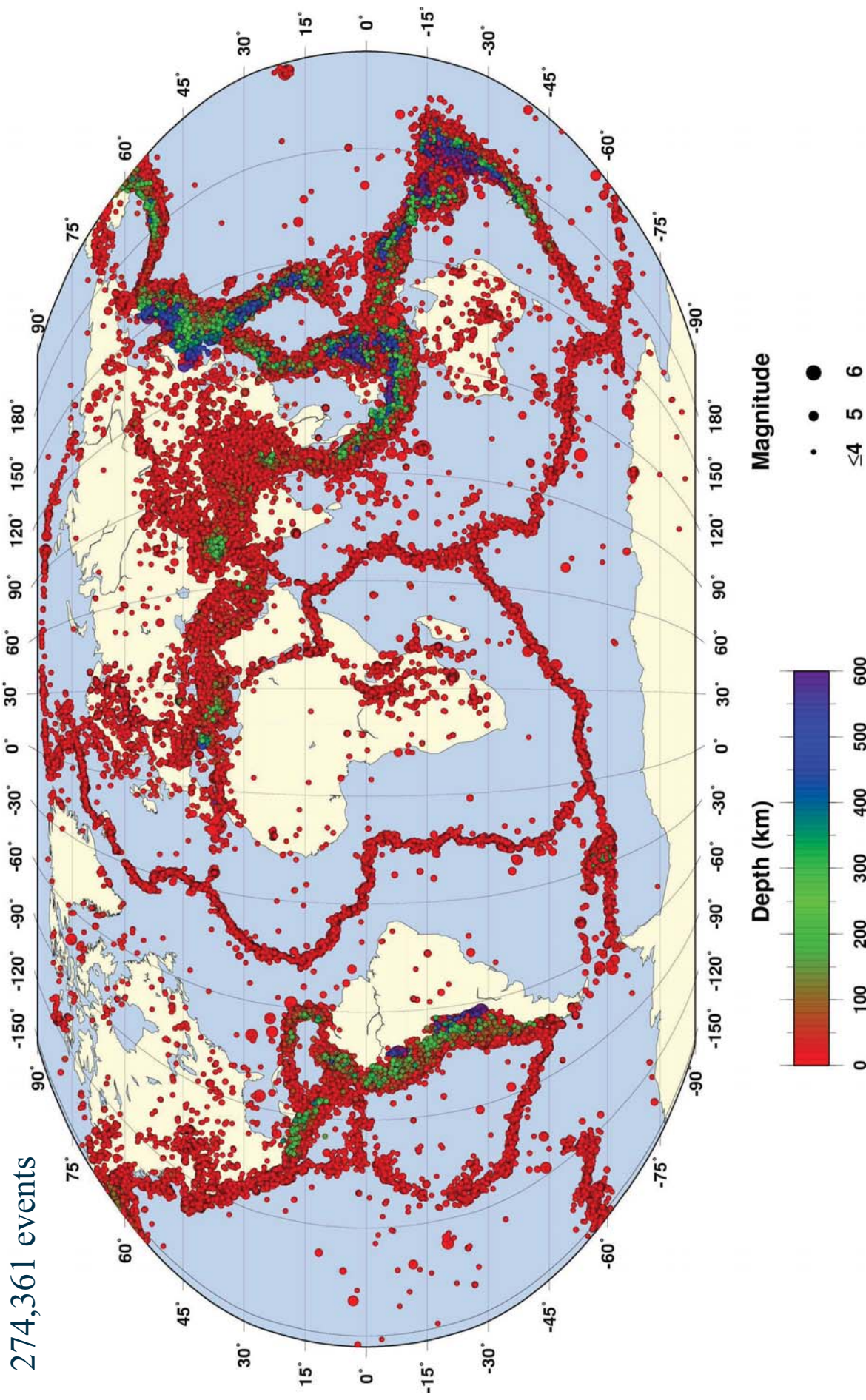


On-Site Inspection

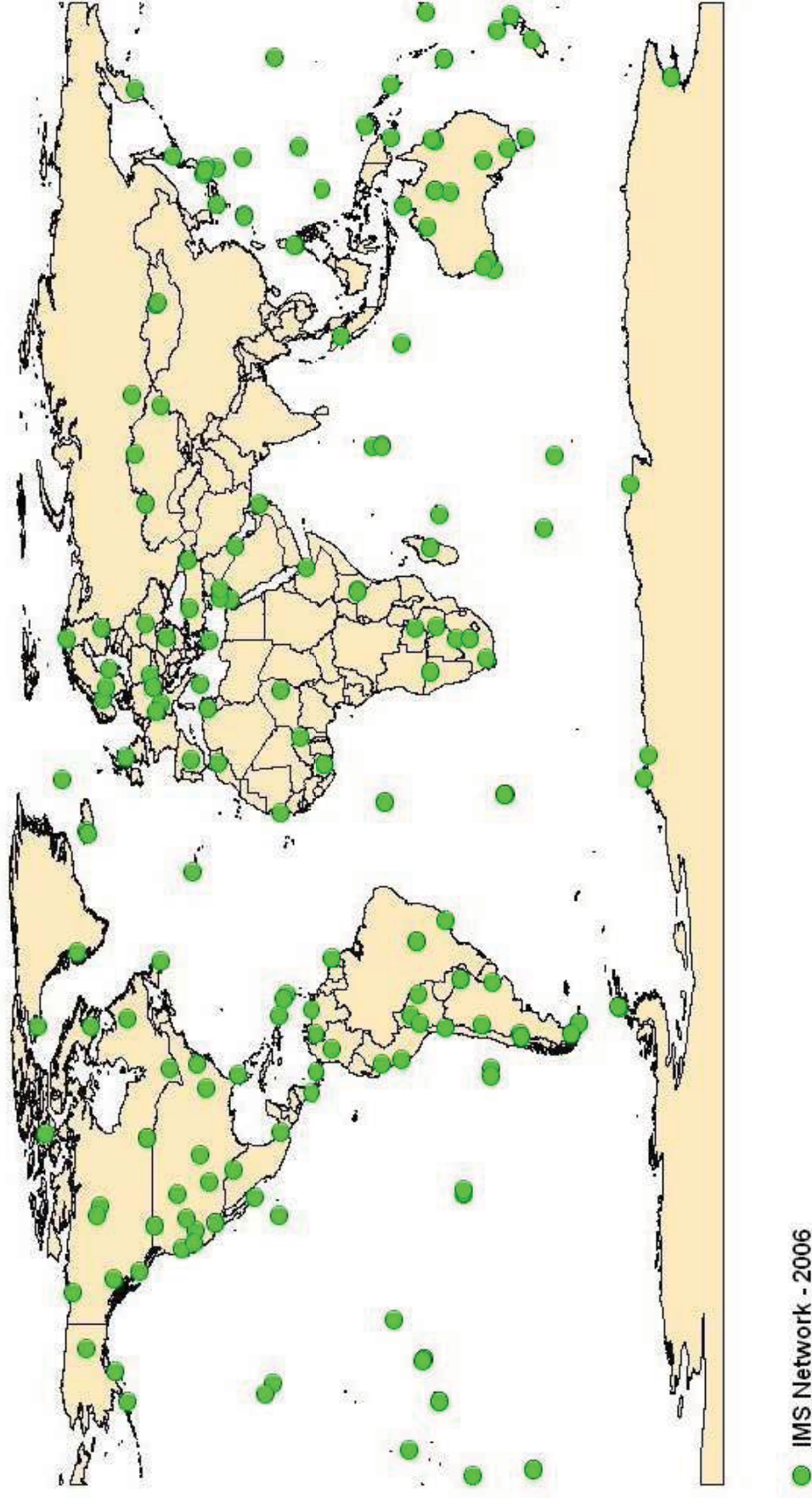


Events Located by the IDC from February 2000- April 2010

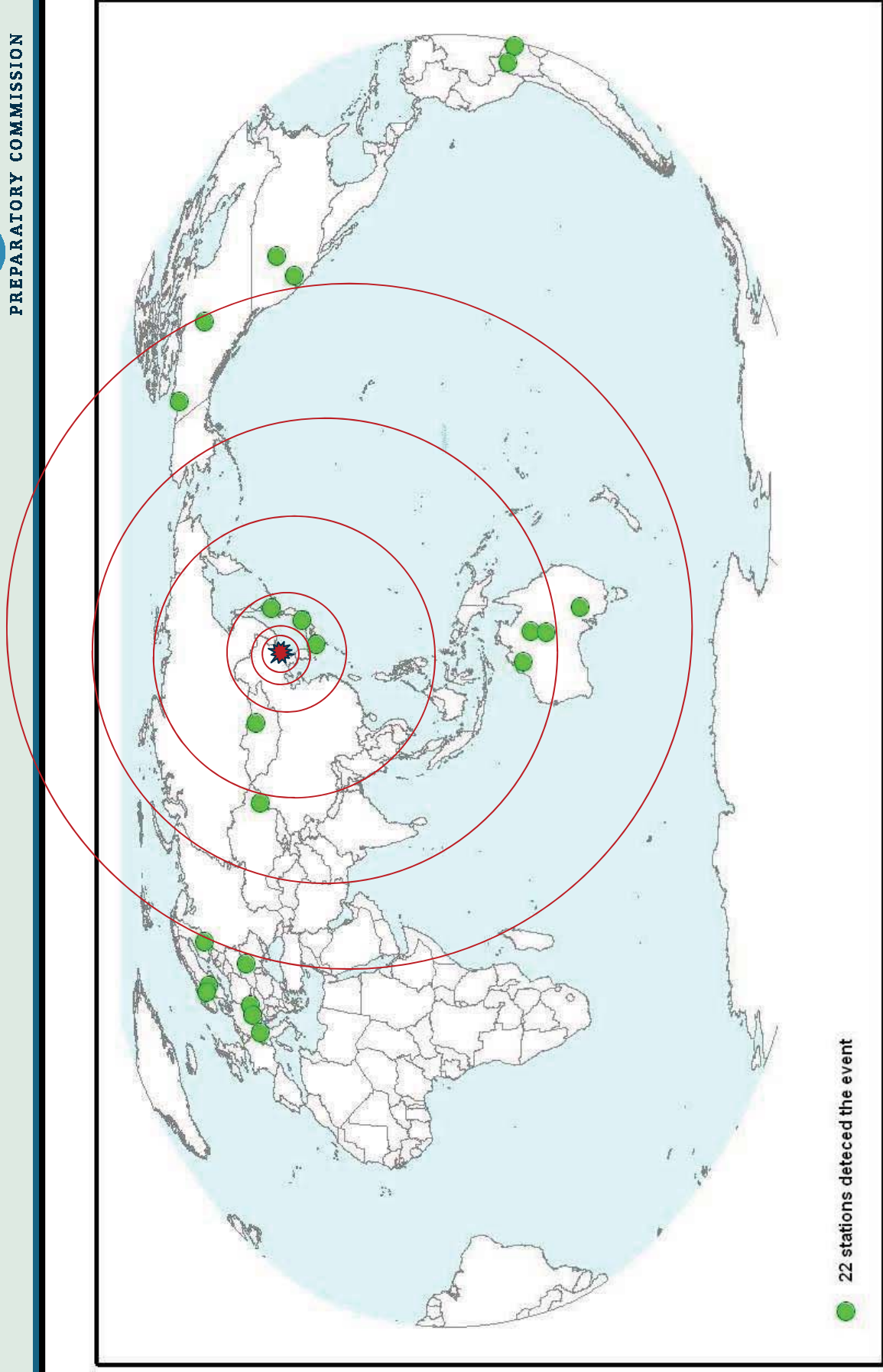
274,361 events



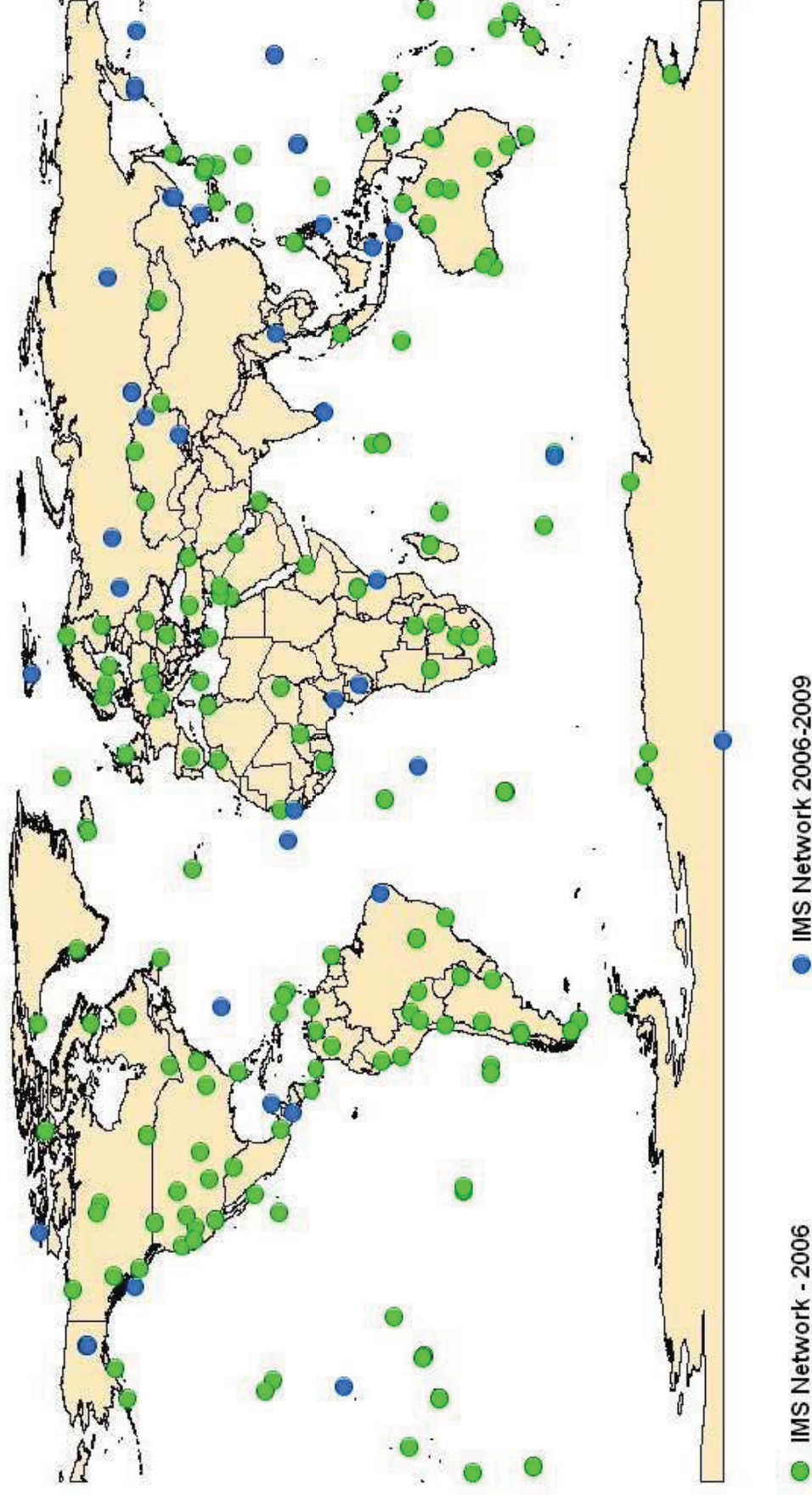
Status of IMS Network – October 2006



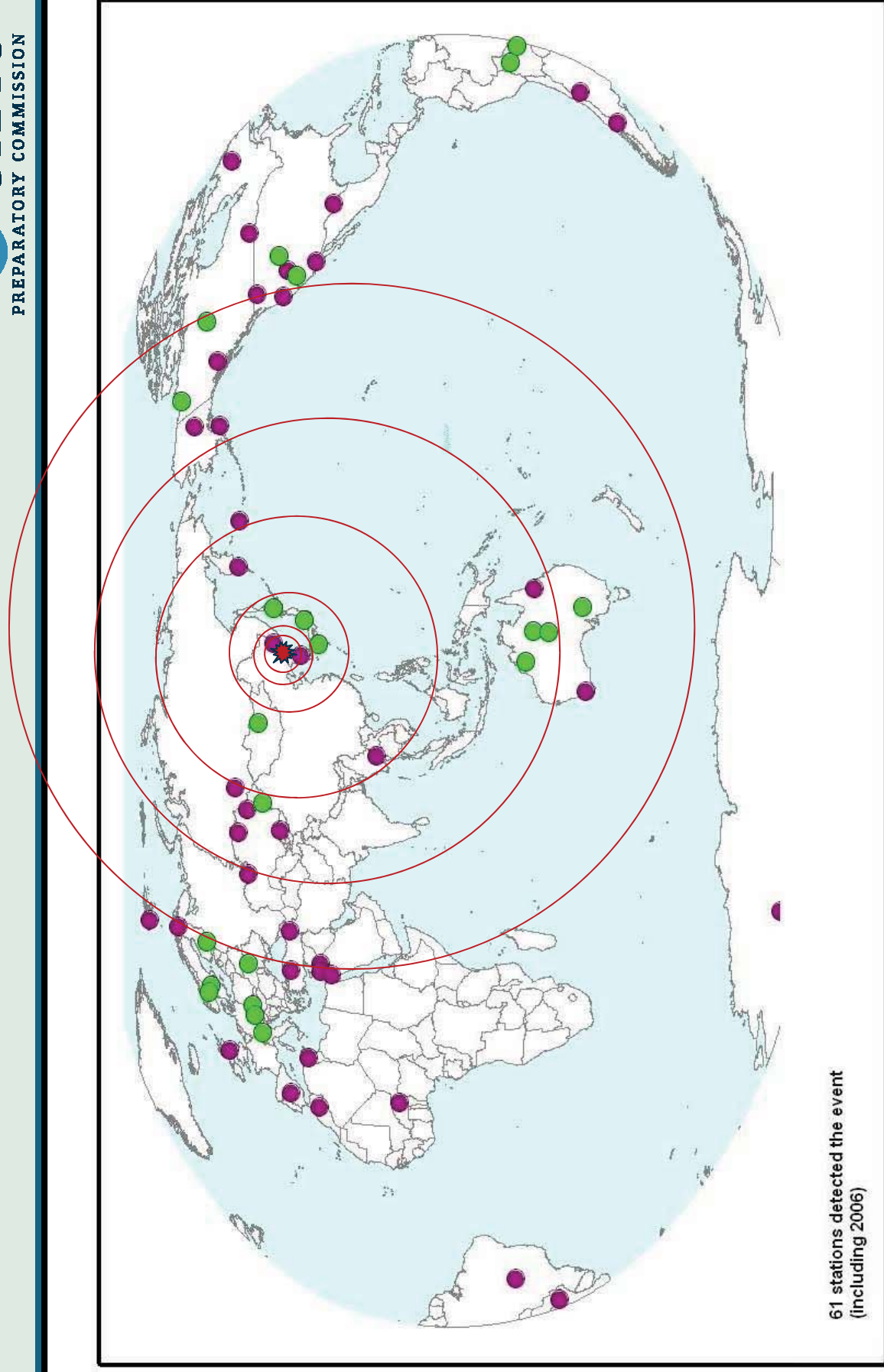
Detecting IMS Stations: 2006 event



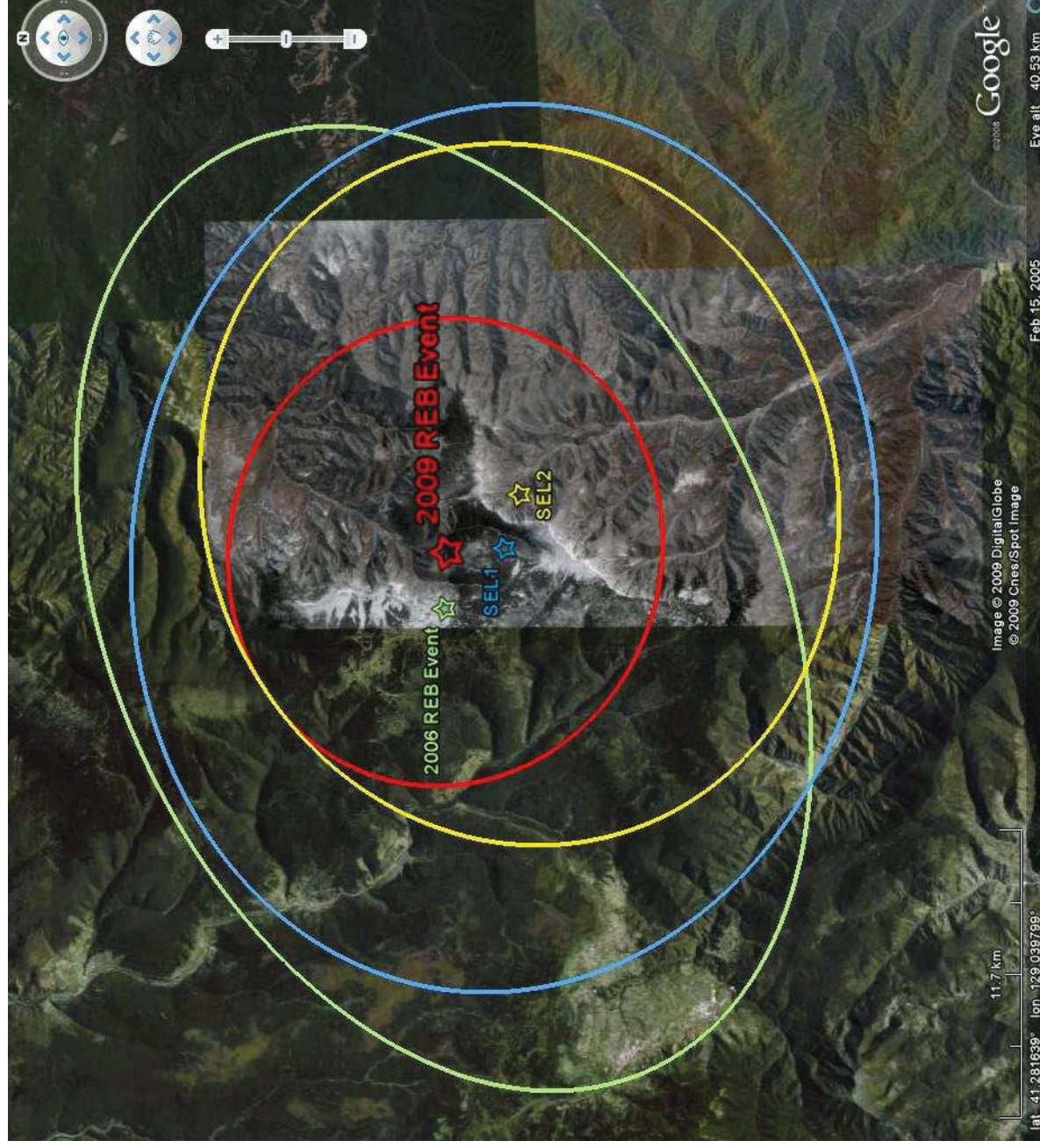
Status of IMS Network – December 2009



Detecting IMS Stations: 2009 event



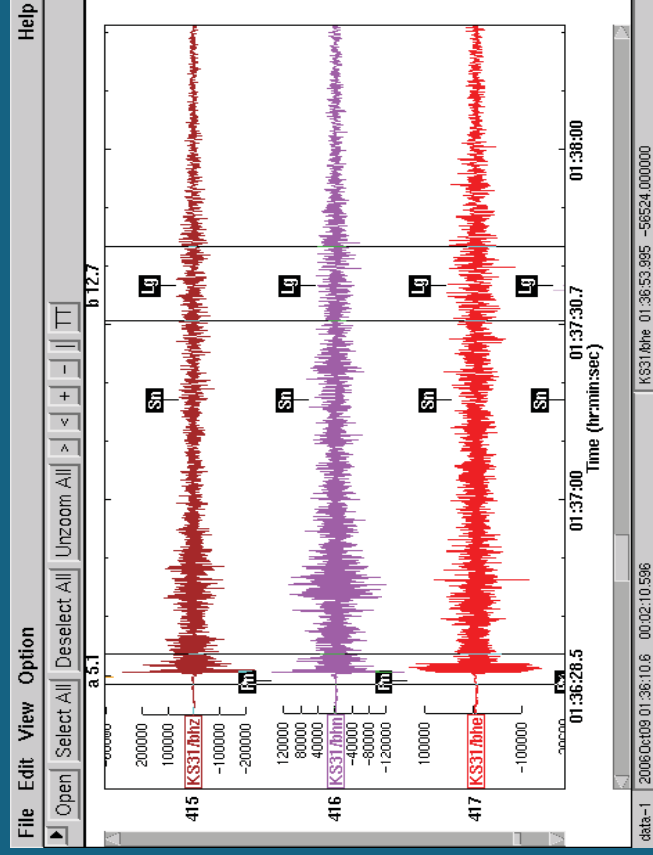
SEL & REB Locations



Historical Seismicity in the Region



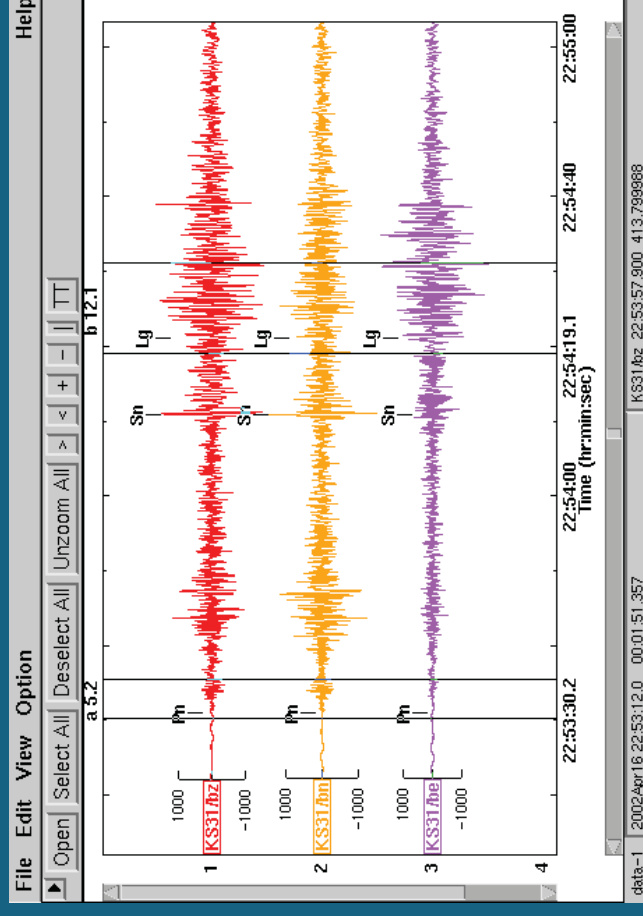
Data characteristics, explosion or earthquake?



More explosion-like

Sudden, impulsive onset

Lacks later surface waves

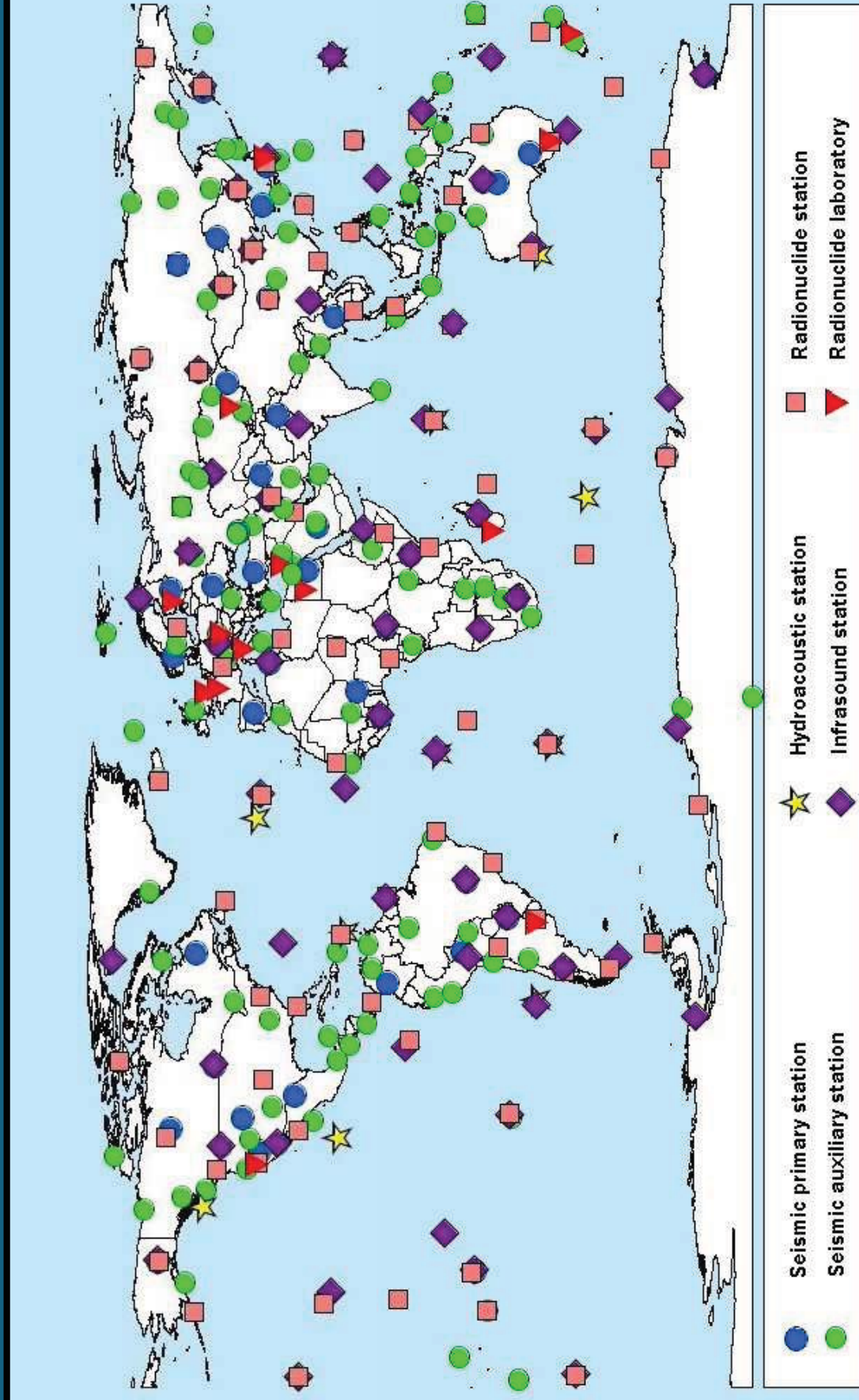


More earthquake-like

Emergent arrivals

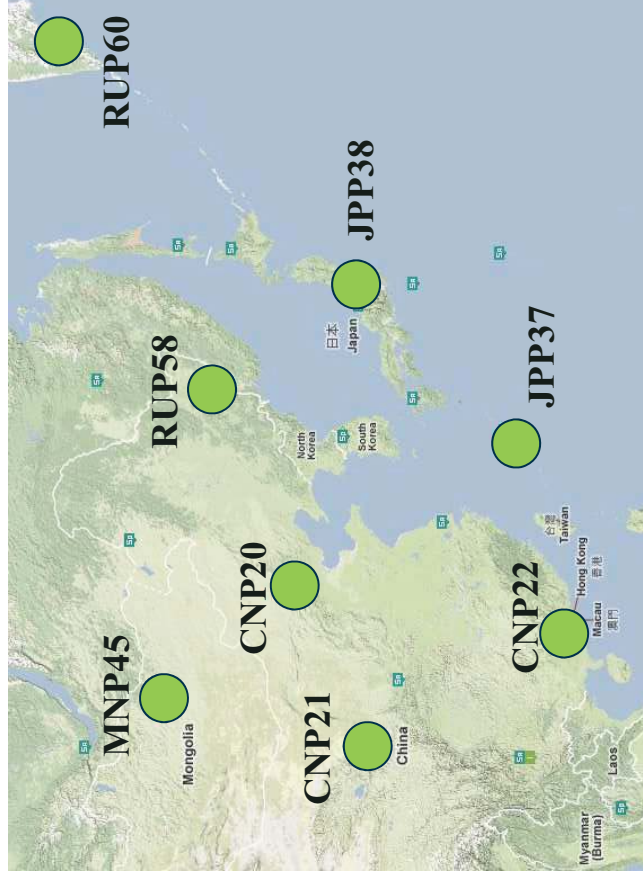
Large surface waves

Complete IMS Network

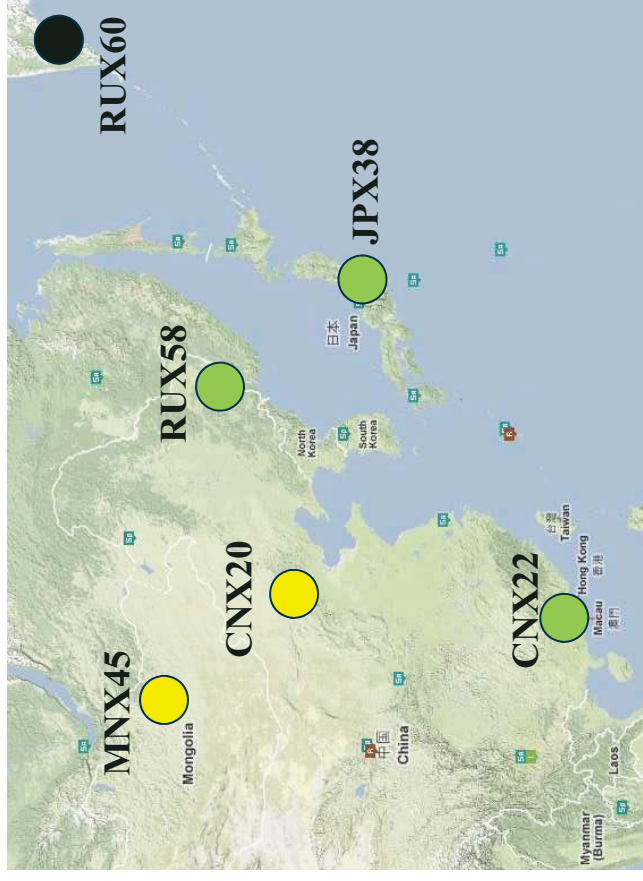


Status of Regional IMS Radionuclide Stations

29 May 2009



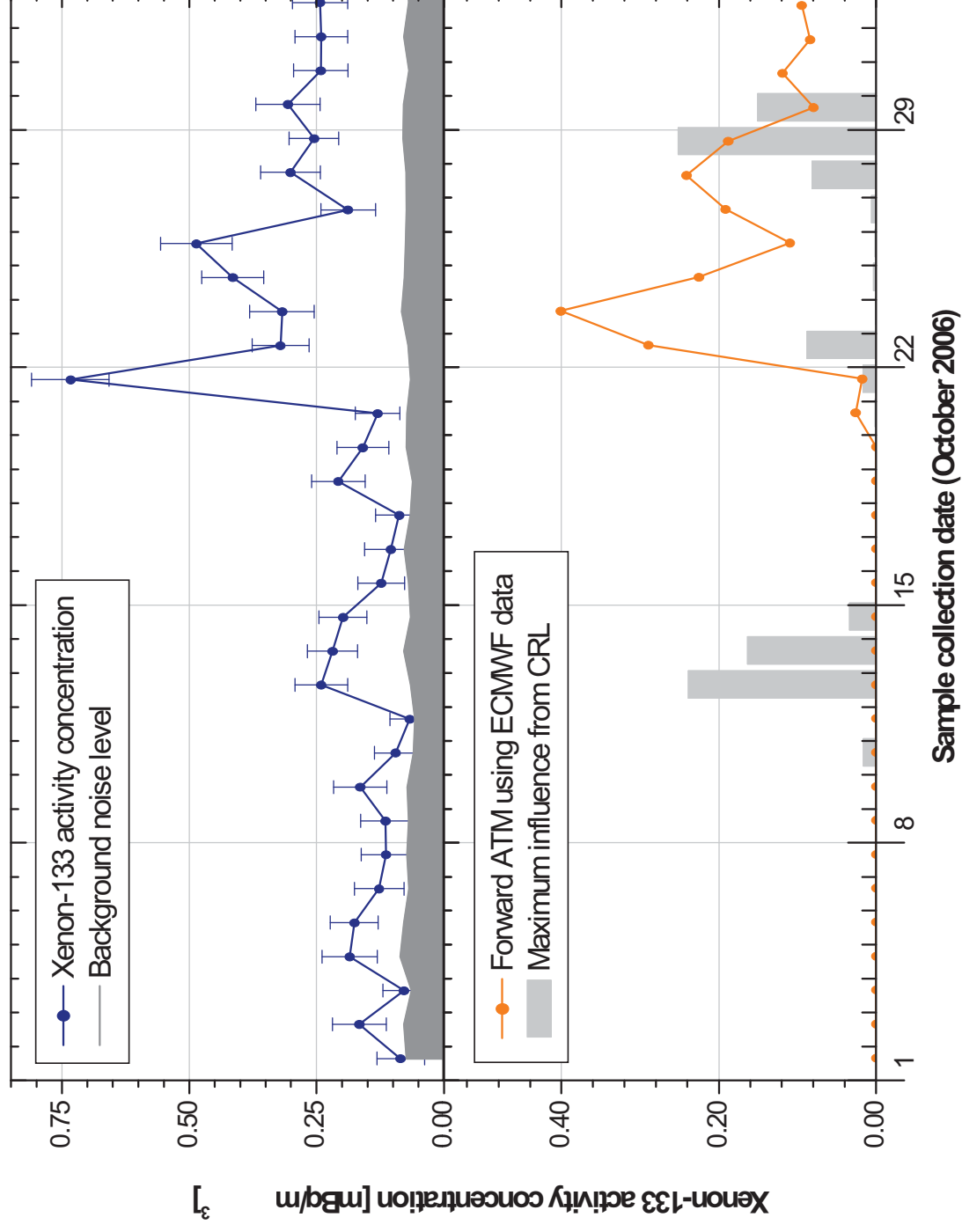
Particulate stations



Noble gas stations

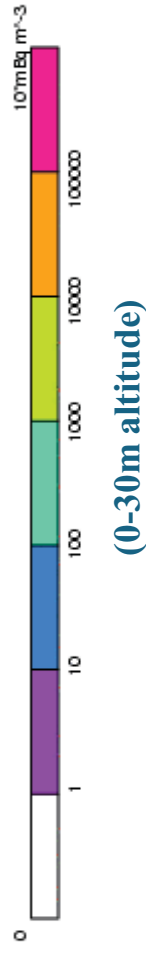
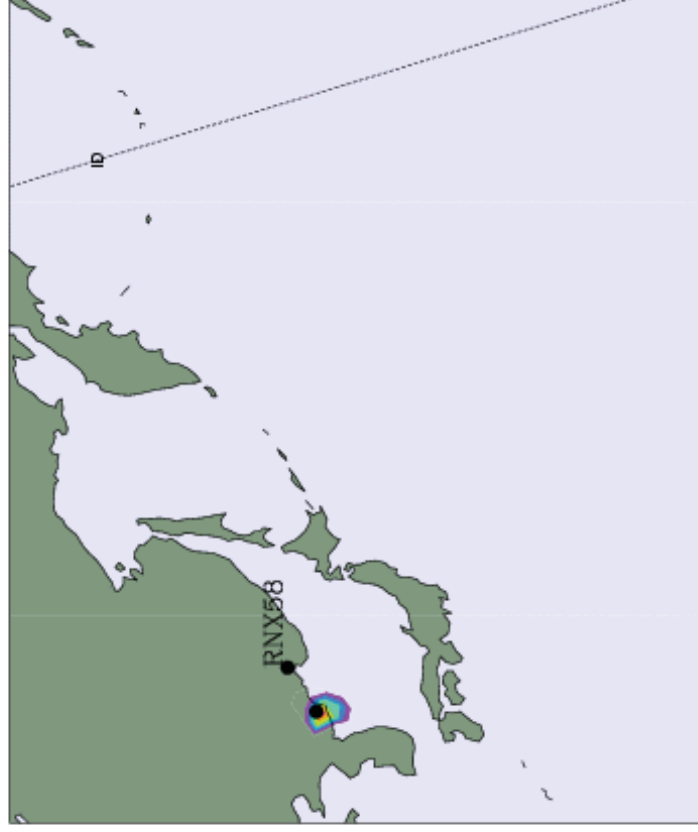
- Station is running/operational
- Station is sampling but not analyzing sample onsite
- Noble gas equipment not installed

Predicted Xenon-133 signal at CAX16



Animated model of dispersion of emitted gas from 9 to 30 October 2006

Activity concentration DPRK_Event_Oct09_20061009_03_2
Actual Date: 20061009 060000 Release Date 20061009 03



European Centre for Medium-Range Weather Forecasts (ECMWF)

- Analysis wind fields only

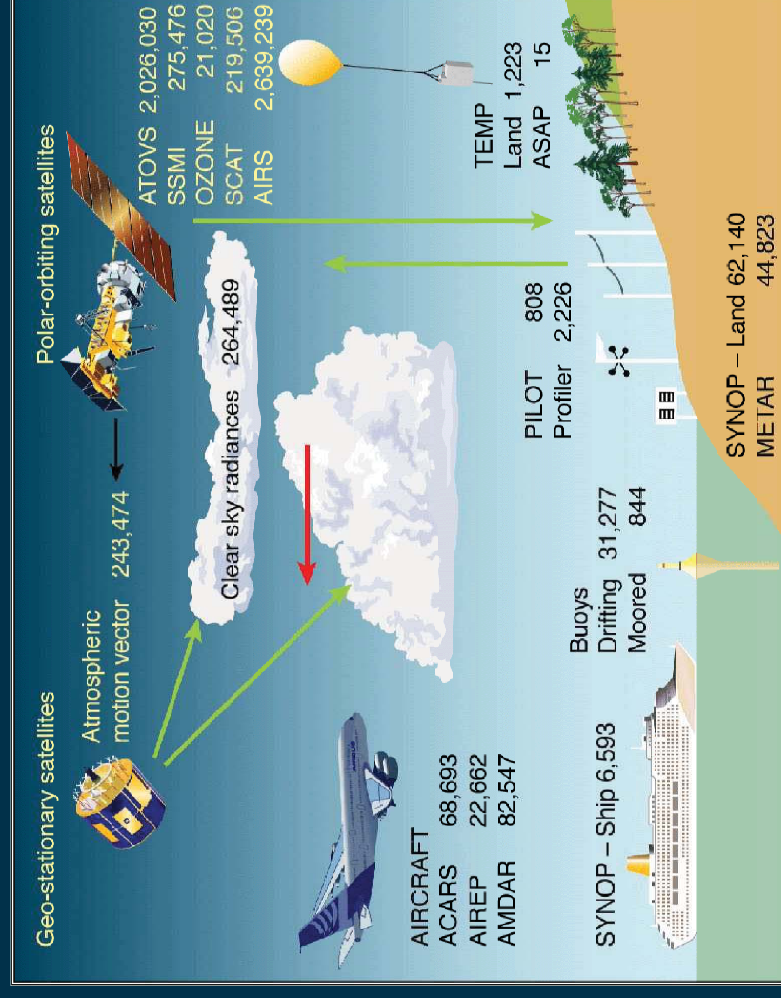
ECMWF is accepted as the best provider of global meteorological data sets

Number of observations used daily exceeds 6 million

These include 29 different types of satellite observation

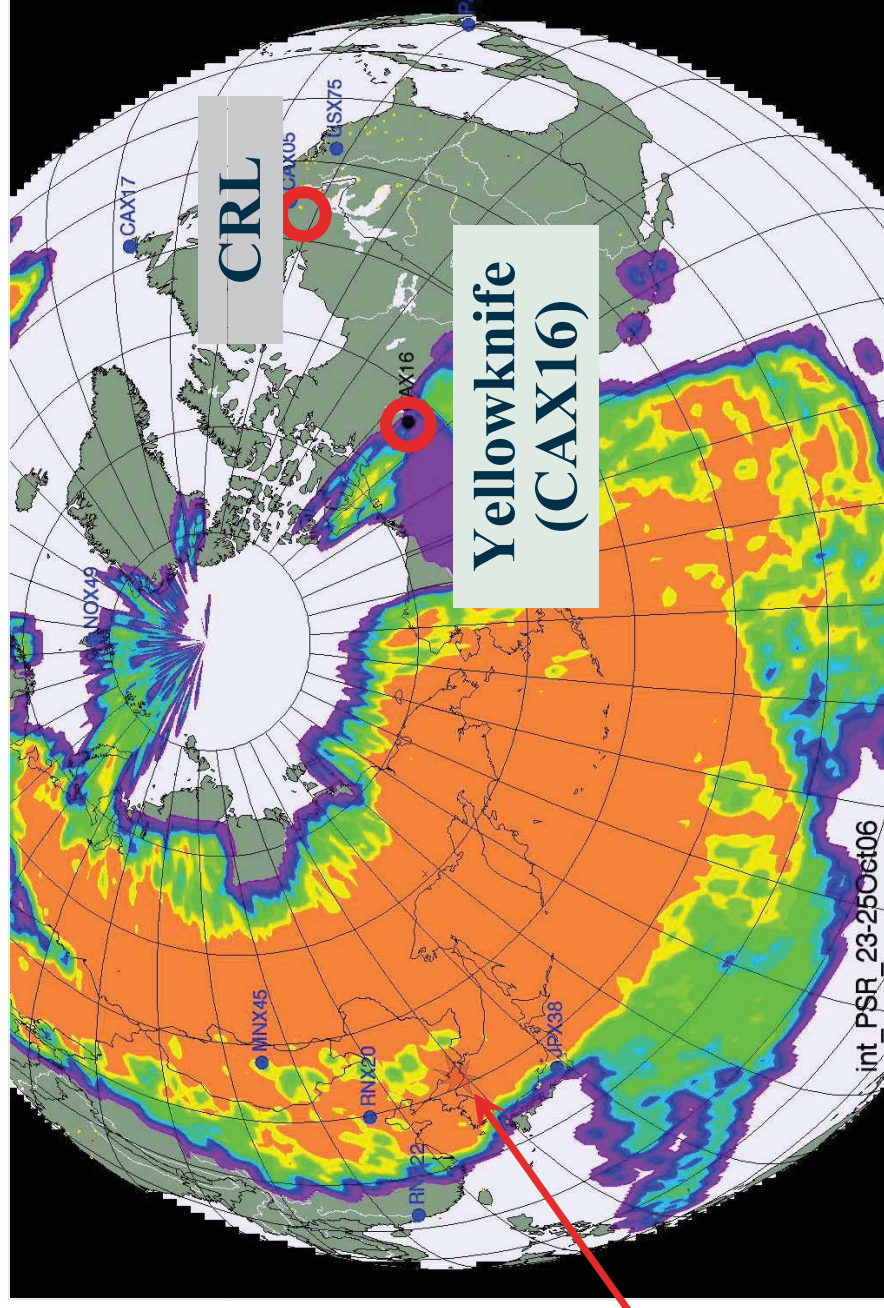
US National Centers for Environmental Prediction (NCEP) weather prediction model

- Analysis & Forecast wind fields



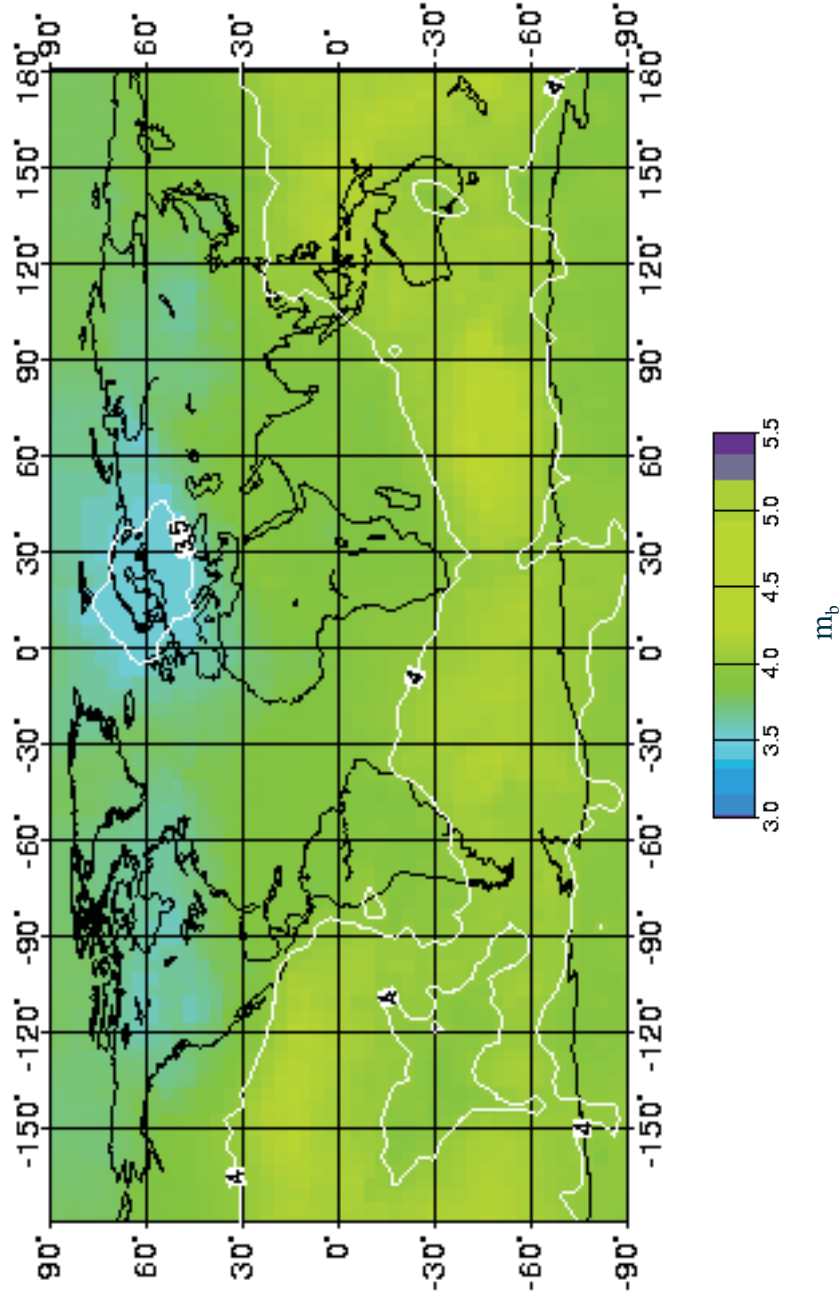
Exclusion of possible source locations

Coloured regions show from where the Xe-133 detected at CAX16 could have been emitted.



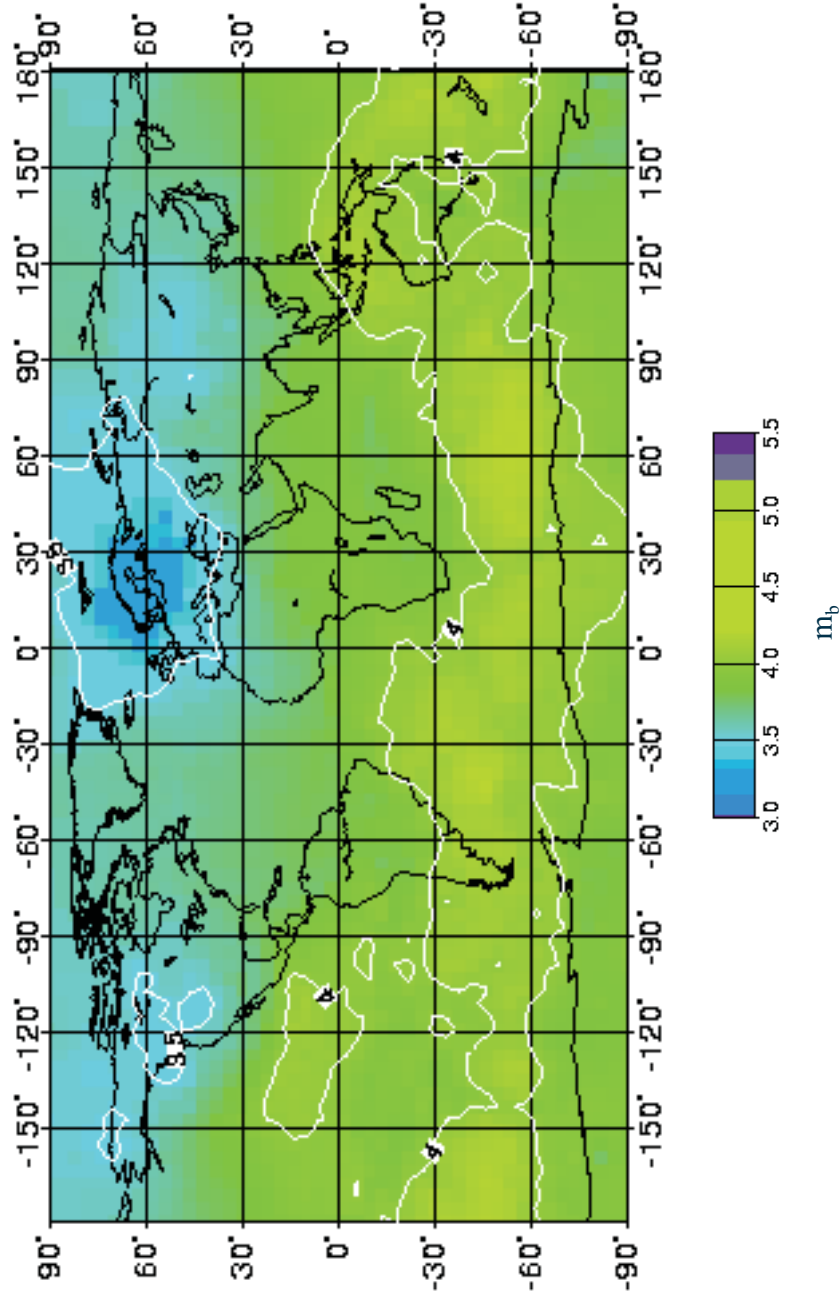
Average Detection Capability

09 October 2006



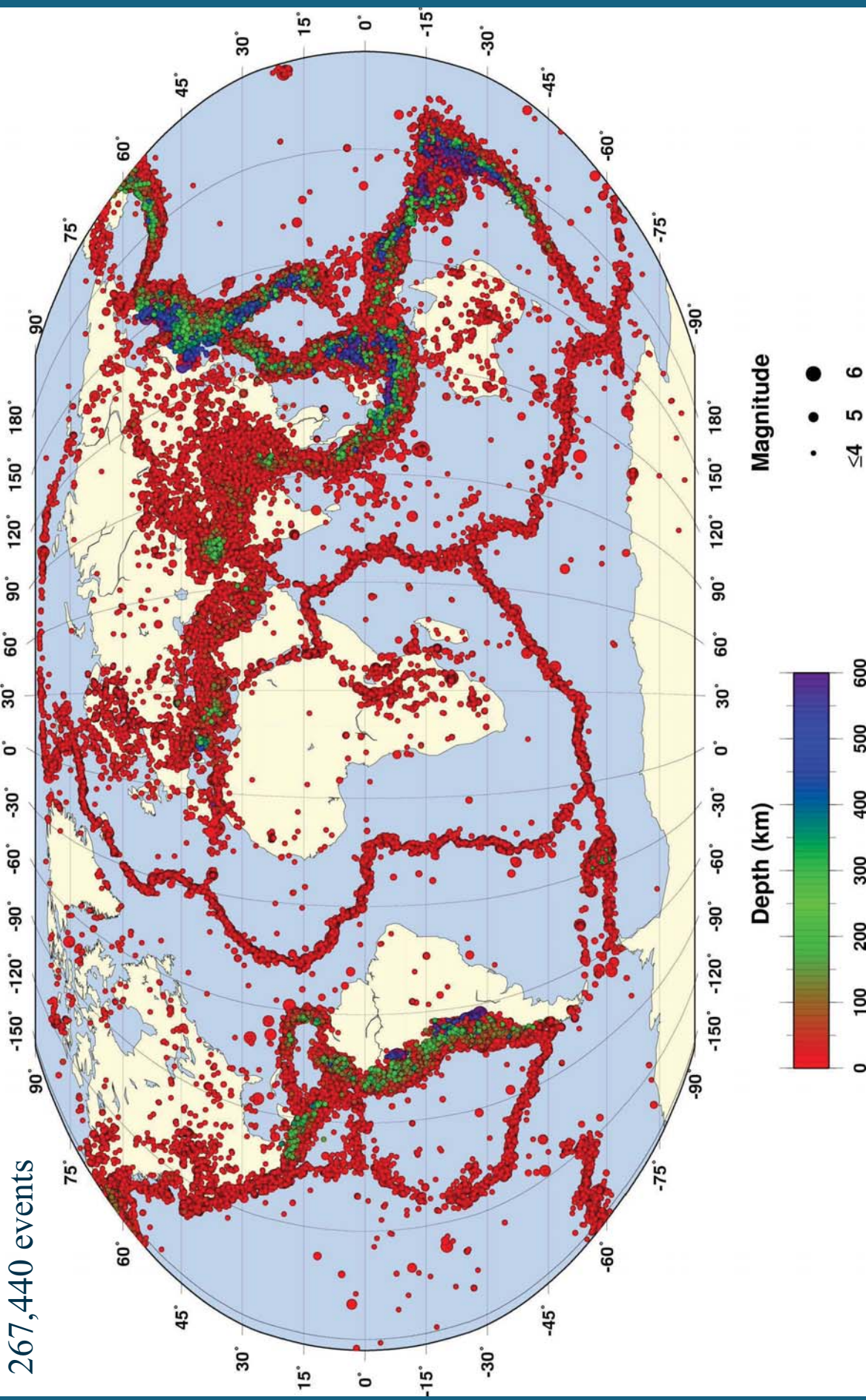
Average Detection Capability

May 25 2009



Events Located by the IDC from February 2000- February 2010

267,440 events

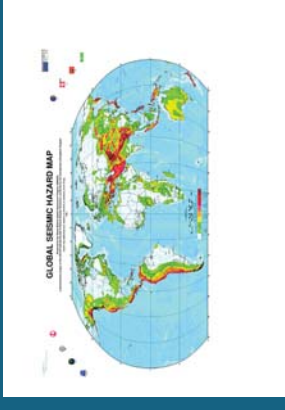


Civil and Scientific Applications of CTBT Verification Technologies

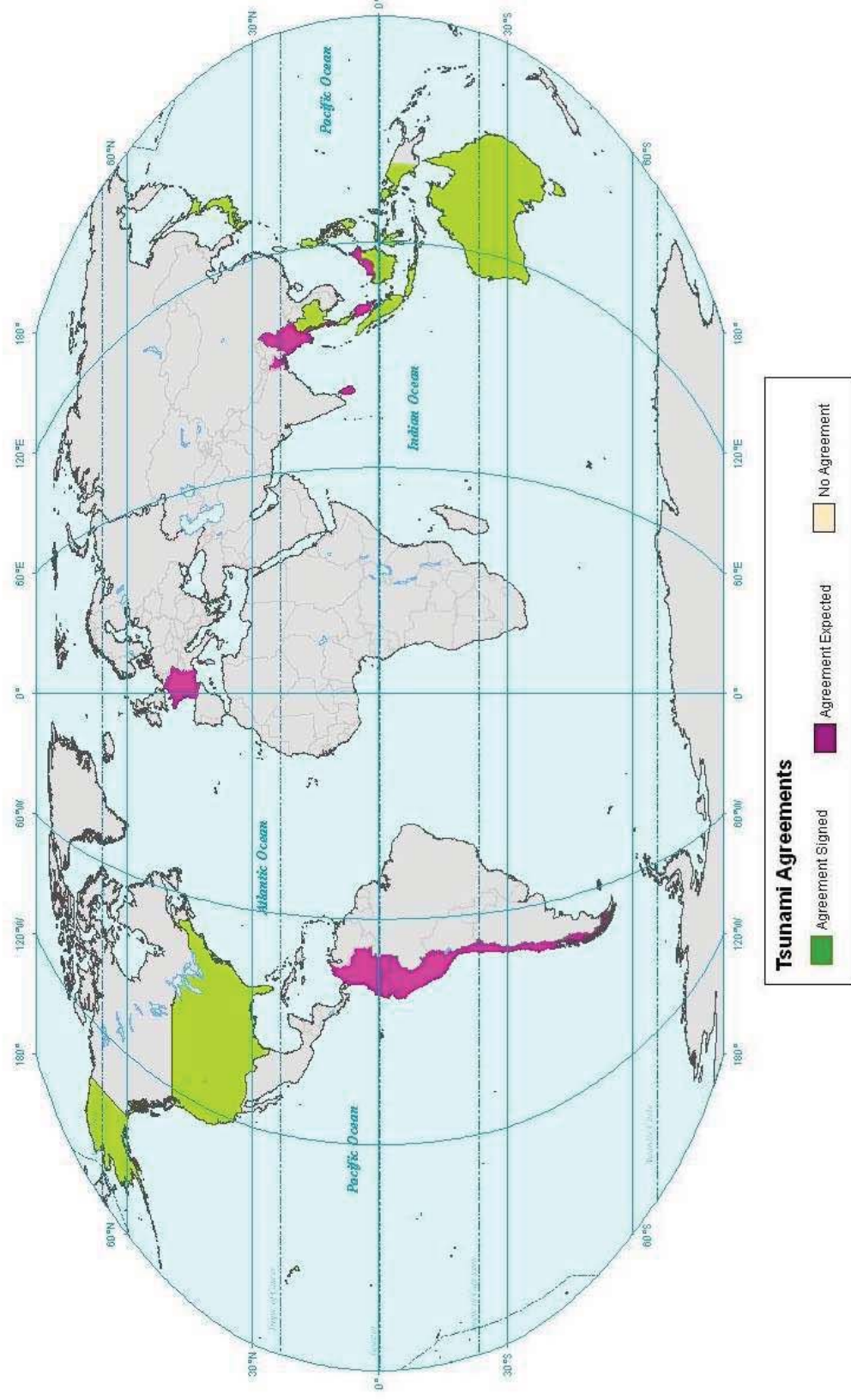


IMS data for national
purposes:

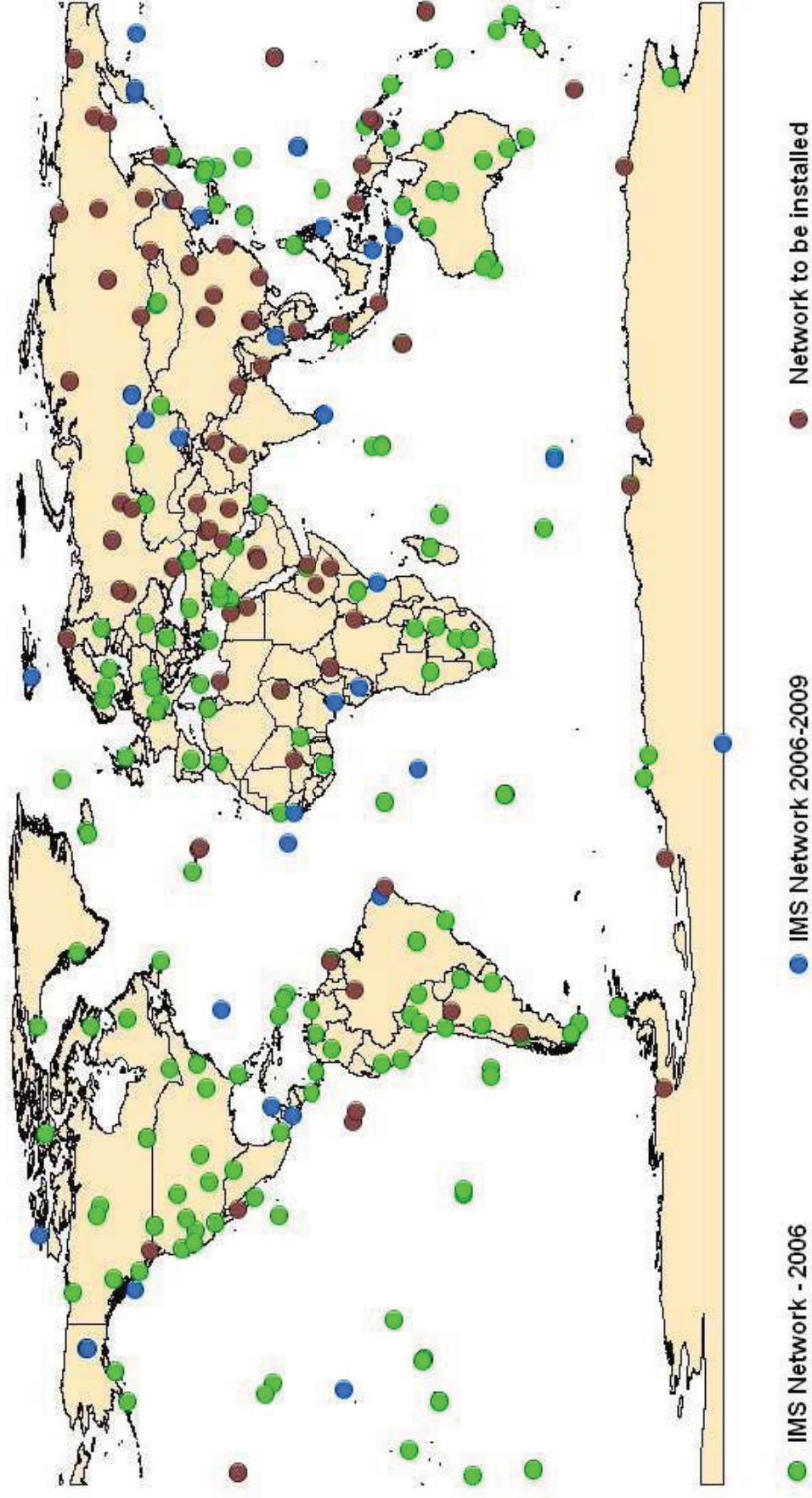
- Earthquakes/Seismicity
- Volcano Monitoring
- Radiation studies
 - Natural and man-made sources
- Atmospheric studies



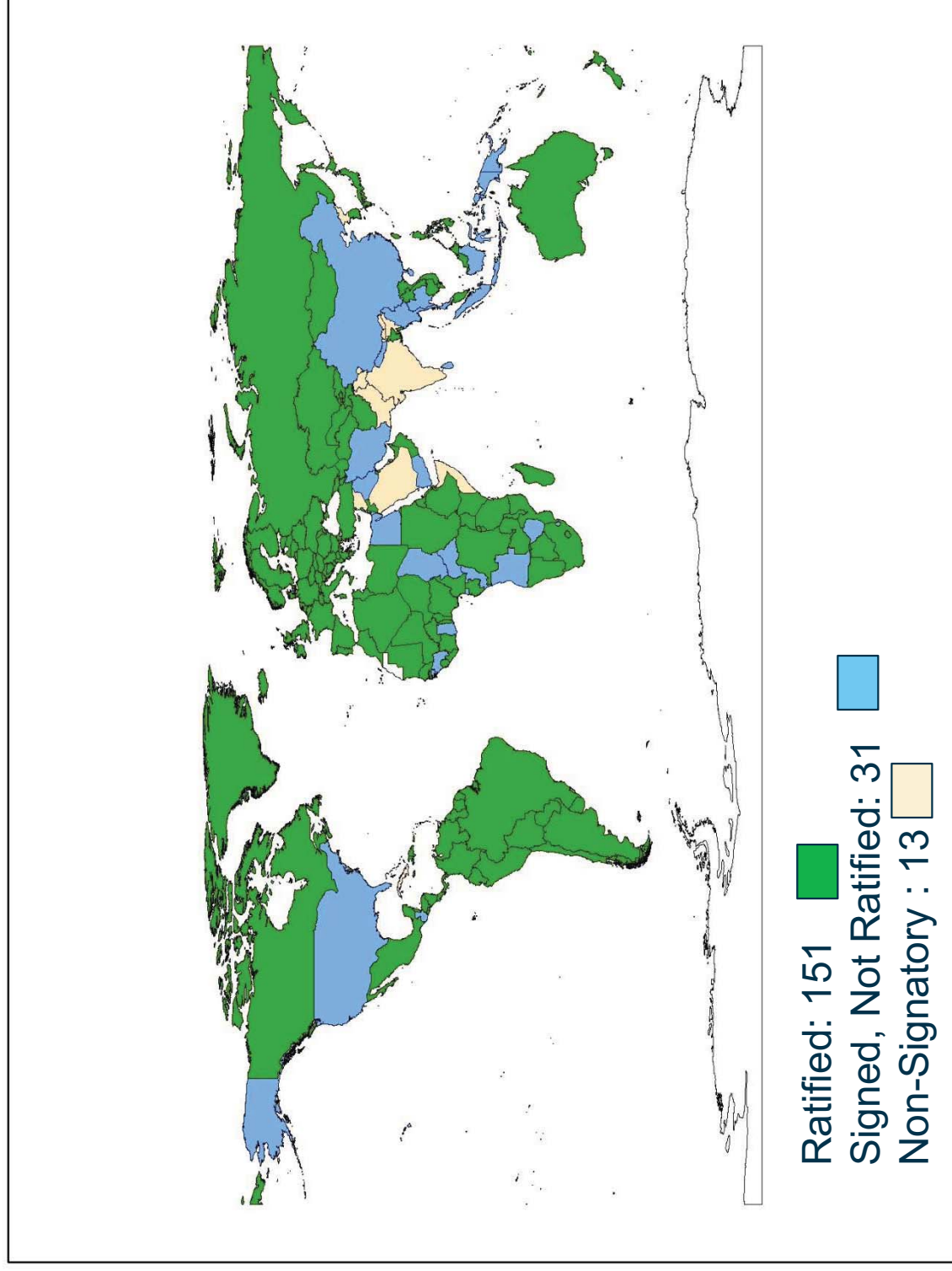
Tsunami Agreements



Complete IMS Network



Countries that have Signed and the Ratified the CTBT (Dec 2009)



the comprehensive nuclear-test-ban treaty
putting an end to nuclear test explosions

Thank you!