

# 5

## Evaluation



## Major Programme 5: Evaluation

### EVALUATION

During 2003, progress was made in enhancing the functionality of the threshold monitoring software (Tmtool), which is intended for interactive assessment of the performance of the IMS seismic network under various circumstances. Testing of the new functionality was conducted during the year and version 1.1 was delivered in September. The new features of the tool include ‘average’ and ‘worst’ case detection capability calculations, various scenarios that may be encountered and an improved approach to default noise estimation based on detailed studies of background noise behaviour of a number of seismic stations. All proposed changes to version 1.0 were implemented.

So far Tmtool has been used to prepare detection capability status maps for the network of certified primary seismic stations and for routine evaluation activities. Other uses will include assessment and evaluation activities during the proposed progressive system-wide performance test (SPT1).

Another software, Bulcmp, intended for comparison of seismological bulletins, was subjected by the PTS to more detailed evaluation and testing to identify its strengths and weaknesses. The outcome of this effort is to be used to plan for enhancements to the tool during 2004. (See also “Data Fusion, Review and Services” in Major Programme 2.)

Beta testing of version 3.0 of the radionuclide technology software, Aatami, was conducted with six interested institutions, including NDCs, station operators and one of the laboratories designated in Annex 1 to the Protocol to the Treaty. Most of the testers presented their preliminary results at a meeting held in Vienna on 10–11 November 2003 and their final reports were subsequently received.

Incorporating feedback from the testers received in the course of testing, a new version of Aatami, version 3.05, was developed. Aatami 3.05 has been generally

enhanced in functionality, performance and reliability. A database collecting all the information on processed radionuclide spectra for use by Aatami is planned to be developed in 2004.

### QUALITY ASSURANCE

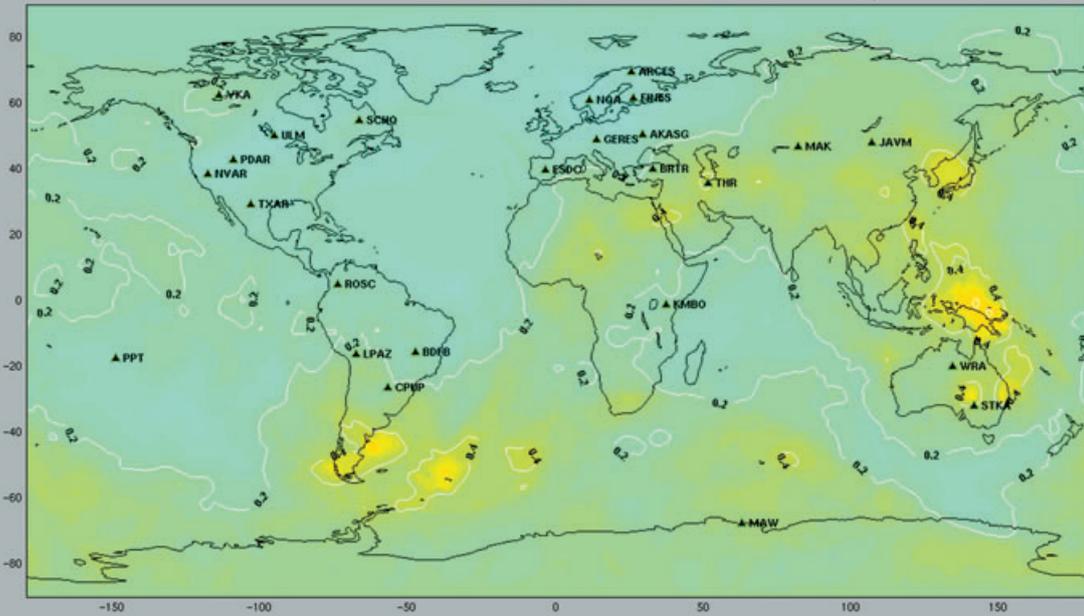
During 2003, consistent with WGB priorities and guidance, particular emphasis was put on quality assurance (QA) in the context of provisional O&M issues. The main activity was the development and coordination of O&M procedures for IMS stations by the O&M coordination group, assisted by an external contractor. Important outcomes of this collaborative work from a QA perspective included a graphical guide to most of the O&M processes and a document analysing and classifying these processes (see also “Provisional Operation and Maintenance of IMS Stations” in Major Programme 1). The amount and complexity of the QA work related to these O&M issues were significantly higher than initially expected. For this reason, work is to continue in 2004.

### SYNERGY OF QA AND EVALUATION

QA and evaluation considerations were an important element in the plan for SPT1 prepared by the PTS and presented to WGB in 2003. Particular objectives were development of an indicative list of metrics and identification of evaluation responsibilities within the PTS at the various stages of the activity. The plan for SPT1 was introduced to participants, including station operators and NDC representatives, at the evaluation workshop in Amman, Jordan (see “Workshops” below). Participants provided technical comments on the plan.

Further work related to SPT1 will be done in 2004 on metrics and development of simulation cases.

End of 2003

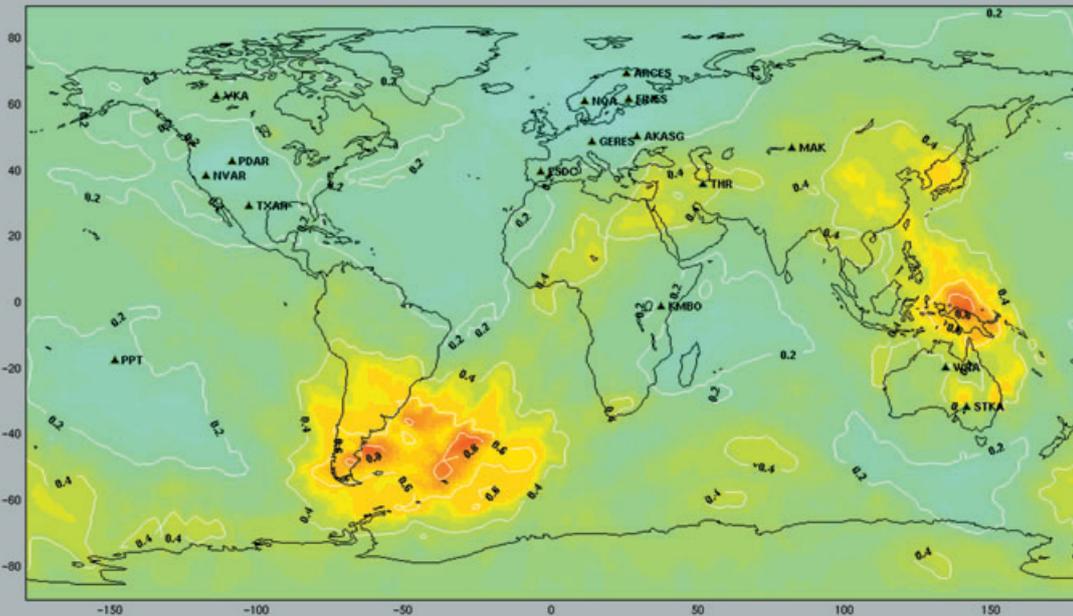


Magnitude difference



0 0.5 1 1.5

End of 2002



*Estimated automatic detection capability of certified IMS primary seismic stations at the end of 2002 and 2003 relative to that of the 49 currently known stations of the primary seismic network under ideal conditions (full station availability and low background noise).*

*Relative detection capability is shown as a difference in body wave magnitudes. An event is considered detected when its signal exceeds the noise level by a factor of 3 at three or more stations. Areas with large magnitude differences (red) in the map for the end of 2003, with 25 certified stations, show a marked decrease in size relative to the end of 2002, when there were 16 certified stations. Since only primary seismic data were considered in this evaluation, fusion with inputs from other IMS technologies would improve the overall picture even further.*

## WORKSHOPS

An evaluation workshop took place successfully in Amman from 30 November to 4 December 2003. The workshop was hosted by the Natural Resources Authority of Jordan. Thirty-nine participants from 17 States Signatories and the PTS attended. The workshop addressed topics related to the establishment of the verification system and to advanced interaction between the PTS and National Authorities and NDCs. Technical input and feedback were provided by NDCs.

The second GCI–Evaluation Workshop took place from 20 to 23 October 2003 in Vienna. Discussions focused on O&M and technology refreshment of the GCI. The

QA issues discussed were related to O&M and quality management processes. Among the issues to be considered further by WGB are the placing of more effort in the coordination of O&M issues among NDCs, station operators and the PTS, and the planning of data traffic capacity to meet the needs arising from the simultaneous transfer of data by auxiliary seismic stations and radionuclide stations. (See also “Workshop” in Major Programme 3.)

Preparations commenced for an O&M workshop which is planned for October 2004. The focus of the workshop will be on O&M issues related to the IMS, IDC and GCI. Evaluation issues, especially those related to the overall performance of the IMS network and preparations for SPT1, are expected to form part of the agenda.