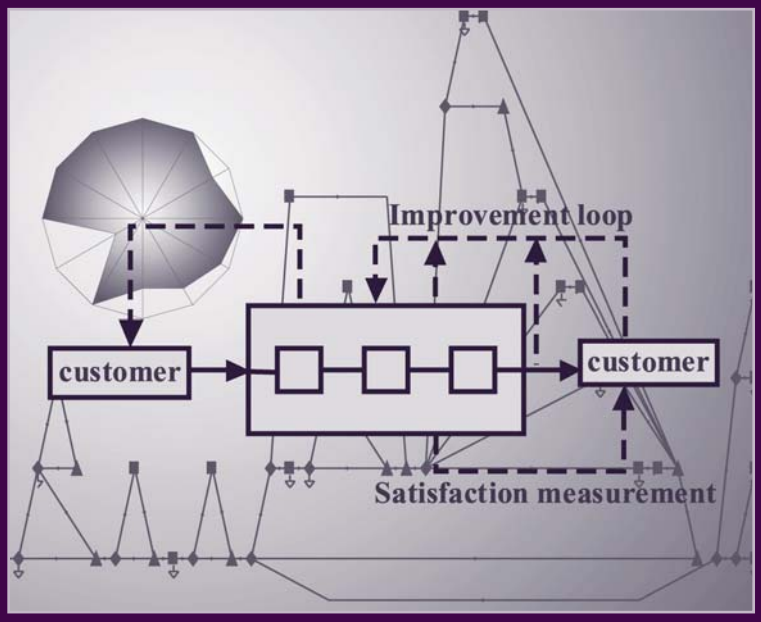


MAJOR PROGRAMME 5

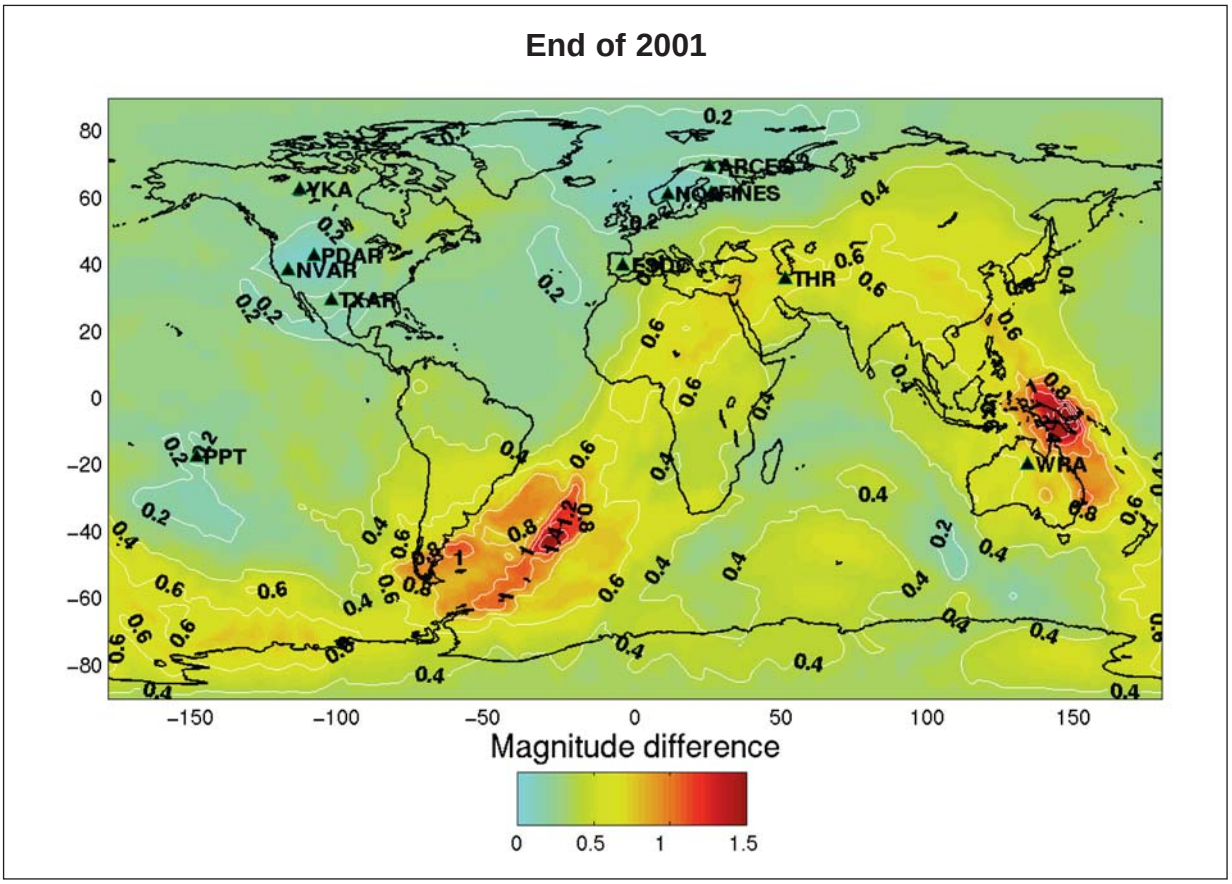
Evaluation

Major Programme 5:
Evaluation

Further progress was made in developing and implementing within the PTS an evaluation framework and quality assurance (QA) elements for the verification regime. The PTS continued to conduct its work on these two basic components in a balanced manner. New approaches were undertaken, especially through the development and consolidation of conceptual and technical synergies between evaluation and QA elements. Specific capabilities were further developed for contributing to an overall evaluation of the verification system and for focusing on issues related to key segments and components of this system as it develops.

Figure 1. *Estimated automatic detection capability of certified IMS primary seismic stations at the end of 2001 (below) and 2002 (opposite) relative to that of the 49 currently known stations of the primary seismic network under ideal conditions (full station availability and low background noise).*

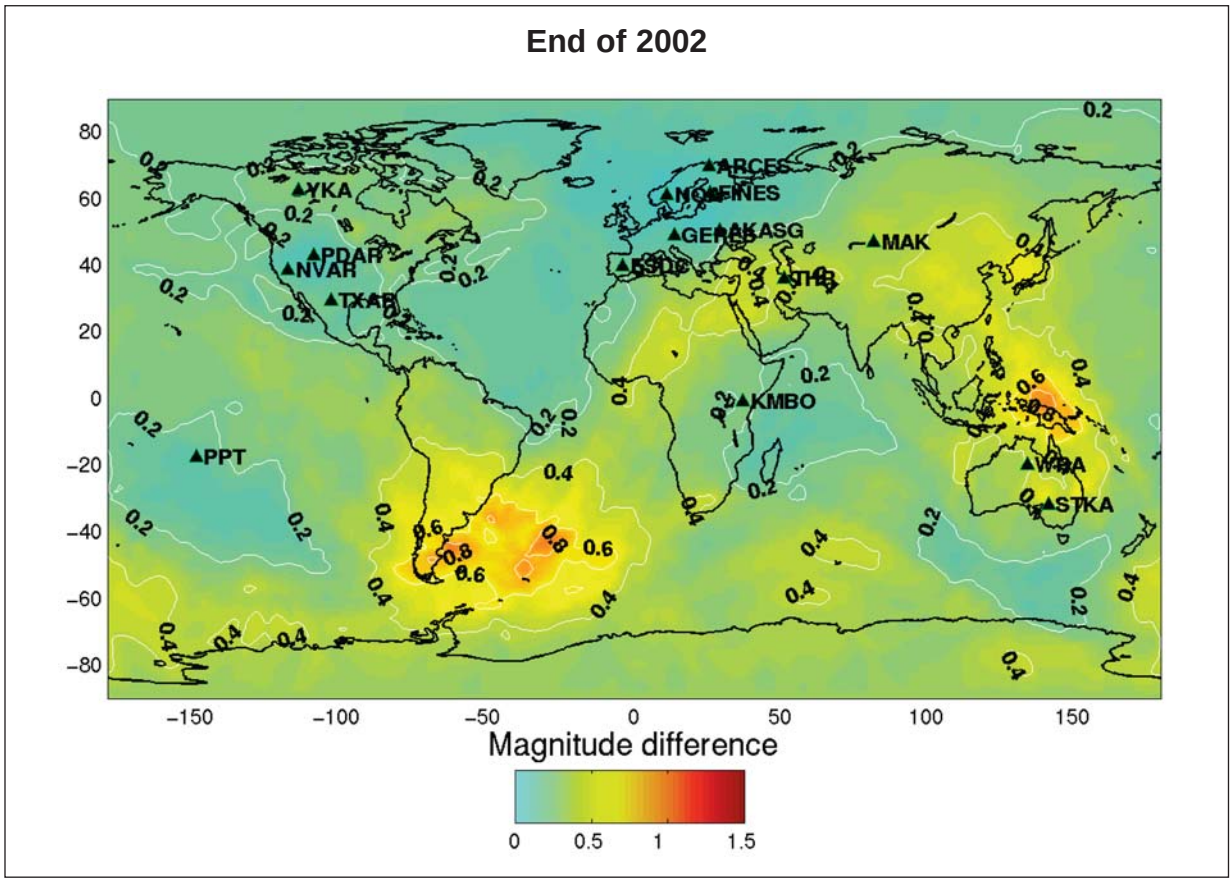
Relative detection capability is shown as a difference in body wave magnitudes. An event is considered detected when its signal exceeds the noise level by a factor of 3 at three or more stations. Areas with large magnitude differences (dark red) in the map for the end of 2002, with 16 certified stations, show a marked decrease in size relative to the end of 2001, when there were 11 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.



EVALUATION

Further work was conducted to develop and promote evaluation tools and metrics for verification activities conducted by the PTS. Activities on the waveform technologies tools focused on the routine usage of the threshold monitoring software (Tmtool), which is intended for interactive assessment of the performance of the IMS seismic network under various circumstances, such as the detection capability at a given time of the certified stations of the primary seismic network relative to that of the planned final network. Comparing the performance at the end of 2002 and at the end of 2001 (Figure 1), Tmtool shows a marked improvement in the detection capability of the primary seismic network. Feedback obtained on the functional capabilities of Tmtool led to a definition of possible additional features. Their implementation is expected to be completed by the third quarter of 2003. In the seismic field also, assessment of the usefulness of the Bulcmp software, a tool for bulletin comparison, began. The goal is to be able to benchmark IDC seismic products against those of other institutions.

On radionuclide technology, development of the Aatami software advanced significantly. Aatami is designed especially for the verification regime needs: it is capable of specific and complex operations which cannot be performed in a comprehensive and synchronized way by any other software currently available. Aatami was also developed with a special concern to ensure full coverage of software documentation, resulting in transparency and user friendliness. In 2002, the software was routinely used in the process of certifying IMS radionuclide stations. Also, 2002 marked the start of an assessment phase, known as beta testing, with interested NDCs. The aim of this assessment phase is to test Aatami's multidimensional qualities and capabilities.



QUALITY ASSURANCE

Consistent with priorities and guidance from WGB, particular emphasis was put on QA in the context of provisional O&M issues. QA and technical evaluation support was provided to the provisional O&M coordination group; for example, in the development of the terms of reference for a contract aiming at developing and documenting the O&M procedures for IMS stations used by the various stakeholders, in order to ensure that they are aligned and work efficiently. With regard to the draft IMS Operational Manuals, inputs were given on the revised structure.

Support was also provided for the certification process of IMS stations by investigating the use of a browsable CD-ROM containing all electronically available documentation for a station and providing capabilities for searching by means of keywords and/or an automatically generated index. This new procedure was tested for some IMS stations that were due for certification. This method will be further assessed in 2003.

SYNERGY OF QA AND EVALUATION

Interaction between QA and evaluation, as two complementary means, enhances the capacity to achieve the best possible verification capabilities in terms of efficiency and value for money.

An ad hoc expert group was convened to evaluate hydroacoustic data processing tools used at the PTS. Supported by the PTS, the expert group is reviewing the operational tools available and the application of underlying physical principles (including modelling), as well as envisaged improvements, and will provide advice to the PTS. The group met in June and October 2002. Owing to budgetary reasons the last meeting to finalize the report was postponed.

Evaluation support was provided for the OSI field experiment in Kazakhstan. In this respect, the following points were considered. First, attention was paid to PTS know-how in organizing the exercise and gathering observations that would be used later as lessons in the drafting of the OSI Operational Manual. Then, a number of key elements for an inspection were addressed: the manual, the IT composition and the training of inspectors. Special attention was paid to competencies of the team leadership, including technical knowledge, diplomatic and legal skills and the ability to run operations. Consideration was also given to exploring means for more process integration in order to improve the capability of an IT to fulfil its obligations within the tight time constraints imposed by the Treaty and by the phenomenology of a triggering event.

WORKSHOPS

Forty-nine participants from 18 countries, together with staff from the PTS, took part in the 2002 evaluation workshop, which focused on PTS and NDC interaction for the evaluation of the verification system. The workshop was held in Oslo, Norway, from 6 to 10 May 2002. The opportunity to share experiences between the PTS and NDCs of widely different sizes and levels of development benefited all participants. The workshop's conclusions were examined by WGB, leading to a recommendation on database access which was adopted by the Commission. The proceedings of this workshop are available both in hard copy and on CD-ROM.

In line with WGB's request for the PTS to organize, through joint effort, workshops with more streamlined and integrated agendas, the evaluation workshop on QA issues and the GCI workshop, which were envisaged separately for the end of 2002, were combined. The joint workshop, which took place from 21 to 24 October 2002 in Vienna, focused on technical discussions between the PTS and managers or operators of IMS stations and NDCs. A number of recommendations were formulated for consideration by WGB. (See also "Workshop" in Major Programme 3.)