



# Improving Performance and Efficiency

Throughout the process of establishing the verification system, the Provisional Technical Secretariat of the Preparatory Commission aims for effectiveness, efficiency and continual improvement through the implementation of its Quality Management System (QMS). The QMS is focused on customers, such as States Signatories and National Data Centres, and aims at fulfilling the responsibilities of the Commission in establishing the CTBT verification regime in compliance with the requirements set forth in the Treaty, its Protocol and relevant documents of the Commission.

Throughout the process of establishing the verification system, the Provisional Technical Secretariat of the

## HIGHLIGHTS IN 2007

- Quality Management Workshop in Vienna
- Second revision of the Quality Manual, which describes the QMS, issued in February
- Ongoing discussions on a preliminary draft Process Metrics Manual, which would include potential key performance indicators (KPIs) for radionuclide data and data products
- Development of a prototype Web based tool to compute and display KPI status and trends
- Evaluation of the OSI directed exercise conducted in Chernobyl in June, in preparation for the evaluation of the 2008 Integrated Field Exercise.



Participants of the Quality Management Workshop, Vienna, May 2007.



Discussion during the Quality Management Workshop.

## DEVELOPING THE QUALITY MANAGEMENT SYSTEM

The function of the Quality Management System (QMS) is to identify and put into effect key performance indicators (KPIs) for evaluating PTS processes and products, thus facilitating management review and continual improvement. KPIs are metrics used to quantify progress in reaching objectives and to indicate the strategic performance of an organization. They are primarily employed to assess the status of an organization and to prescribe a course of action. The aim of the QMS is to support the objective of consistently meeting verification system requirements. It encompasses all contributing PTS processes and work products.

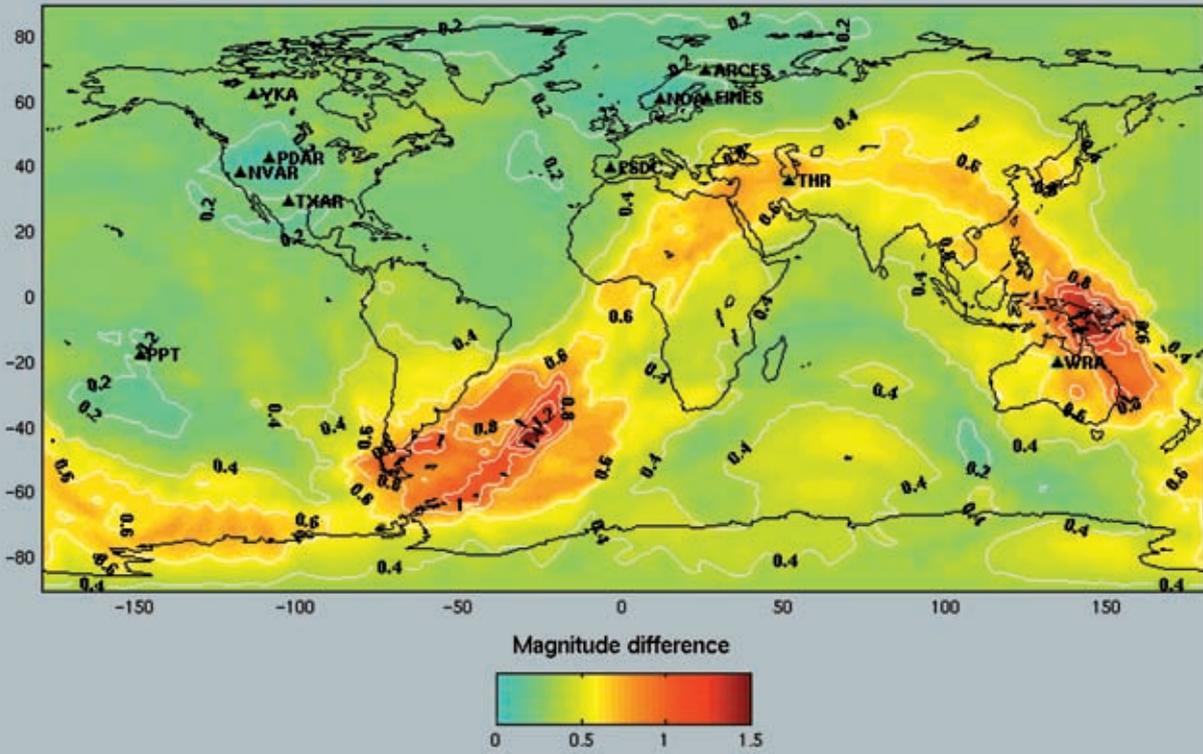
In 2007, potential KPIs were being identified for the PTS processes related to verification system development activities and provisional operation and maintenance products and services. In 2007, a preliminary draft

Process Metrics Manual, compiling the KPIs corresponding to radionuclide data, data products and associated processes, as well as the methods to compute these KPIs, was issued and discussed during the Quality Management Workshop held in Vienna in May.

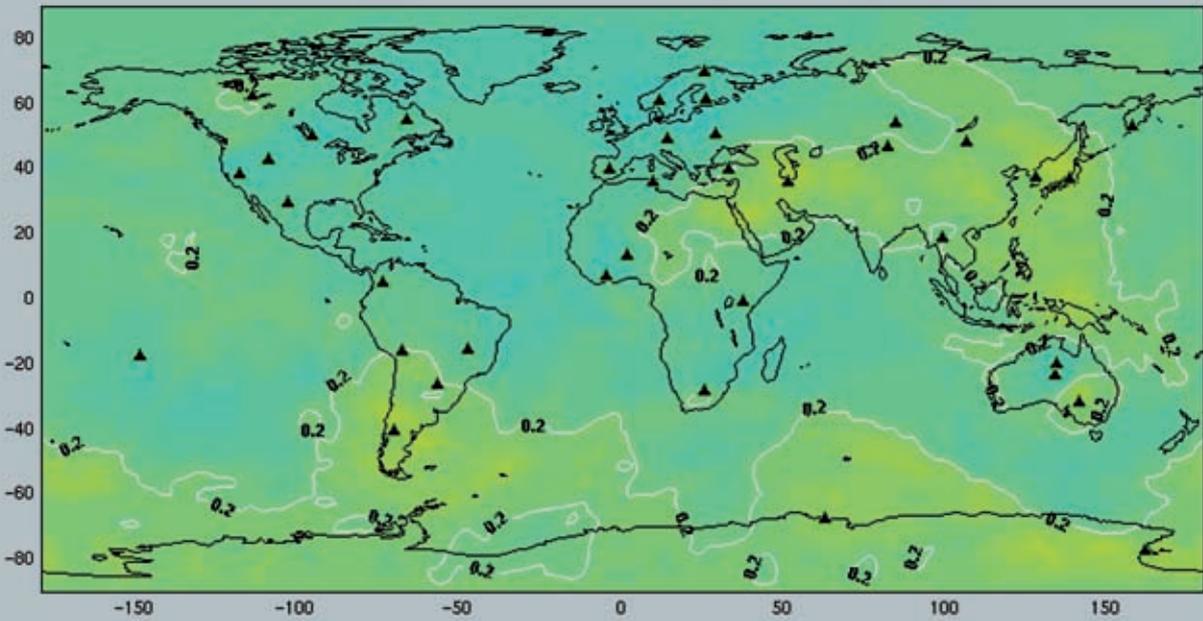
To enhance the role that KPIs can play in assessing the performance of the PTS, a prototype visualization tool has been developed to display the status and trends of KPIs. This will enable users to understand more readily how well the PTS is performing in a particular area of its work. The tool has so far been populated with a number of KPIs identified for the radionuclide technology.

In fulfilment of the testing and evaluation requirements of the QMS, and as a follow-up of recommendations that arose from the first system-wide performance test (SPT1), conducted during 2004–2006, a number of small scale exercises were conducted in those areas for which improvements were identified during SPT1. These exercises were evaluated by the PTS in 2007.

2001



2007



### Improvement in Seismic Detection Capability

The two maps show simulations of the estimated detection capability of certified primary seismic monitoring stations at the end of 2001 and 2007 relative to that of the complete IMS primary seismic network under ideal conditions (full station availability and low background noise).

Relative detection capability is shown as a difference in body wave magnitude. An event is considered detected when its signal exceeds the noise level by a factor of 3 at three or more stations,

At the end of 2001, when only 11 primary seismic stations had been certified, there were large areas with magnitude differences above 0.4 (represented by yellow to brown shading), and some local differences were as high as 1.4 (represented by red to dark brown shading).

At the end of 2007, the same areas showed differences in magnitude of only 0.2 on average, with 37 stations certified. Overall, at the end of 2007, magnitude differences in several parts of the world fell to below 0.2.



## EVALUATING PREPARATIONS FOR ON-SITE INSPECTIONS

During OSI field exercises, standard operating procedures, equipment or software packages related to the inspection activities and techniques outlined in the Protocol to the Treaty are tested and evaluated under realistic field conditions. The evaluation of such exercises permits identification of those aspects that need improvement in order to further develop inspection techniques.

In June 2007, a directed exercise was conducted in Chernobyl with the purpose of validating the OSI methodologies for gamma radiation monitoring as well as environmental sampling and analysis (see *Preparing for On-Site Inspections: "Directed Exercise Inside the Chernobyl Exclusion Zone"*). The evaluation of the directed exercise concluded that its objectives had been essentially achieved. Several areas of improvement were identified, including: the robustness and equipment of the radionuclide laboratory, standard operating procedures for the design and set-up of the base of operations, and fire safety and other measures. It was recommended that the upgraded operating procedures be incorporated into the inspectors' training syllabuses in order to enhance the awareness of participants in the IFE.

The first draft framework for evaluating the IFE was discussed in a meeting of the evaluation core team and an expert advisory group in December 2007, which provided useful feedback. The draft framework document details, among other things, the evaluation criteria and the basis for the selection of external evaluation team members.

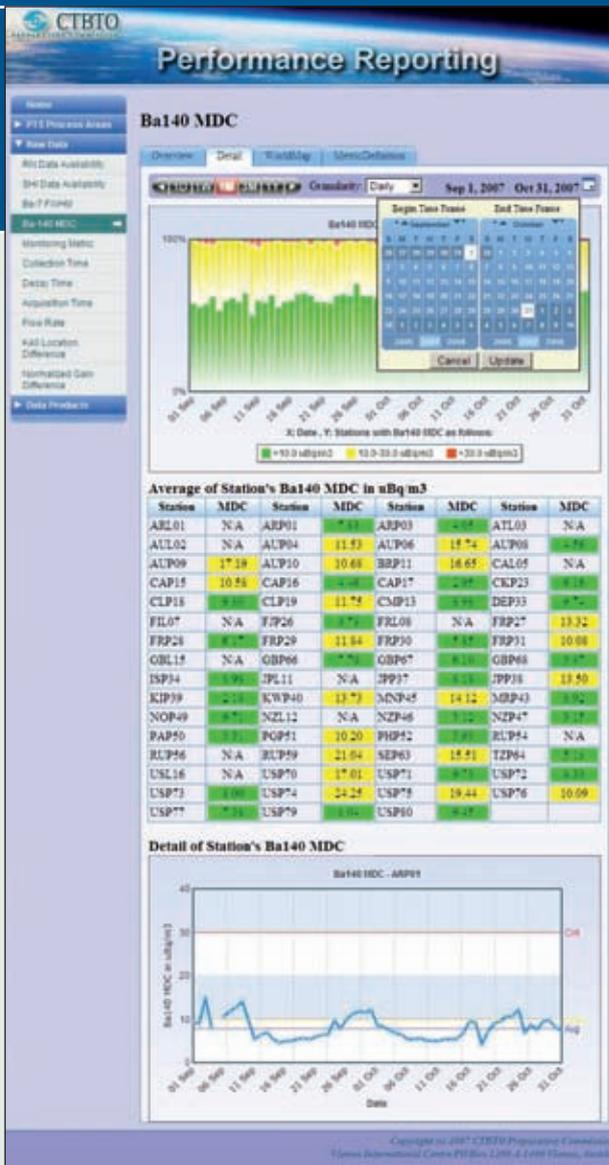


2007 directed exercise, Chernobyl. Top left: preparation of environmental sampling equipment. Top right: monitoring of radiation contamination of personnel and equipment after data gathering in the field. Above: debriefing session on gamma radiation monitoring.

## FEEDBACK FROM NATIONAL DATA CENTRES

In its Quality Policy, the PTS underlines its focus on customers. NDCs, as the main users of PTS products and services, meet in annual NDC evaluation workshops in order to provide their feedback to the PTS. However, for the first time in 10 years the NDC evaluation workshop could not take place in 2007 owing to budgetary constraints.

In 2007, a Web based system to facilitate tracking of the implementation of recommendations from NDC evaluation workshops was developed following the 2006 workshop. This system also provides a repository for evaluation recommendations and all recommendations since 1998 have been entered into the system.



The upper chart in the screenshot shows the average minimum detectable concentration (MDC) of barium-140 for the IMS radionuclide particulate network. The lower part of the screenshot shows, at the station level, the average MDC and the variation in MDC over the period specified.

MDC, which is one of the key specifications for a particulate station, is the smallest concentration of a radionuclide that can reliably be detected and quantified in a spectrum. An upper limit for barium-140 of 30  $\mu\text{Bq}/\text{m}^3$  has been set for particulate stations under operational conditions.

Annual reports are now produced, compiling the status of implementation of recommendations.

## EVALUATION PRACTICES AND THE UNITED NATIONS

The United Nations Evaluation Group (UNEG) is a professional network that brings together the units responsible for evaluation in the United Nations system, including the specialized agencies, programmes and affiliated organizations. UNEG aims to strengthen the objectivity, effectiveness and visibility of the evaluation function across the United Nations system and to advocate the importance of evaluation for learning, decision making and accountability. UNEG provides a forum for members to share experience and information, discuss the latest evaluation issues and promote simplification and harmonization of reporting practices.

The Commission supports the activities of UNEG and has contributed its experience in integrating quality management and evaluation. Best-practice guidelines, norms and standards are issued by UNEG for adoption by the member organizations.

