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COORDINATION GROUP ON
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OVERVIEW ON THE CURRENT STATUS OF THE CTBTO-WMO COOPERATION

(Submitted by CTBTO Preparatory Commission, Provisional Technical Secretariat)

Summary and purpose of document

This document contains an overview on ongoing fields of cooperation between the CTBTO and the WMO. Regarding Atmospheric Transport modelling, the CTBTO-WMO atmospheric backtracking response system is now in the stage of technical implementation. A second project is to explore the use of infrasound signals to detect volcano eruptions. The PTS has also initiated the “International Scientific Study” to evaluate the CTBT verification Regime. One topic area will be atmospheric transport modelling.

Proposed Action

The Group is invited to comment on the current status and to consider further progress.

The CTBTO-WMO atmospheric backtracking response system for CTBT verification purposes

Background

CTBTO/PTS and WMO co-operate in the framework of a formal agreement that entered into force on July 11th, 2003. In Article 1 (5) of the agreement, it is stated that "CTBTO and WMO agree to cooperate closely with regard to […] transport modelling and to establish specific procedures to that end in accordance with the provisions of this Agreement".

A nuclear explosion could cause detections of radionuclides at several stations during a long time period. In such a hypothetical case, and after entry into force of the CTBT, the then existing Technical Secretariat (TS) of the Commission will need support from the WMO concerning near-real-time provision of Atmospheric Transport Modelling. With a CTBTO - WMO response system, once operational, the State Parties to the Treaty will receive several high quality source region analyses consistent with the detected radionuclides. This procedure will address some uncertainty issues and increase the reliability and credibility of the results. The geographical distribution of the institutions involved will heighten the confidence in the products. For the time being and until entry into force of the CTBT, the PTS will set up and test the system in a provisional operational framework.

Status of the CTBTO-WMO Response system

At the last meeting of the group in May 2006 in Vienna, the PTS made a proposal for the technical implementation of the response system (CBS-DPFS/CG-NERA//Doc. 8(3), 2006). In November 2006, the PTS attended the Extraordinary Session of the Commission for Basic Systems (CBS) in Seoul, Republic of Korea. At this meeting, CBS recommended to the WMO Executive Council to add the backtracking response system to the Manual for the Global Data Processing and Forecasting System (GDPFS). The formal decision took place in 2007. In October 2007 a letter was sent to the Secretary General/WMO by the Executive Secretary, asking for confirmation of the agreement of WMO Centres to respond to CTBTO/PTS requests for support. A formal answer of the Secretary General to the Executive Secretary has been received in February 2008 affirming the commitment of 9 RSMCs/NMCs (Melbourne, Montreal, Beijing, Exeter, Obninsk, Toulouse, Offenbach, Vienna and Tokyo). In December 2007, the first CTBTO-WMO Exercise in Atmospheric Backtracking triggered by a selected seismic Event was performed; 9 WMO Centres participated. The exercise lasted for 10 consecutive days and comprised requests for support for more than 100 measurements. In total, the WMO response and the PTS analysis connected with the exercise was considered a success. A report is provided in a separate paper (CBS-DPFS/CG-NERA//Doc. 9(3), 2008). Inter-comparison of the participants results allow for reliability assessment of each centre's backtracking results. Moreover they bear the potential to improve the accuracy of the source location task as has been demonstrated for the data shared during the preceding experiment of January 2005 (Becker et al., 2007)

Other fields of cooperation

The PTS is currently investigating the possibility to use the data from its infrasound network to help identify volcanic eruptions. In an exploratory phase a collaborative project with the Toulouse Volcanic Ash Advisory Centre (VAAC) was initiated at the end of 2007 for selected volcanoes in the European and African regions. Some initial contacts have been established

with other VAACs in order to extend the investigations to additional volcanic regions in the world.

The PTS is open to extend cooperation with WMO to any field where data from the International Monitoring Network may be useful for scientific research, emergency response or disaster mitigation and where input from WMO members can improve the quality of the PTS verification network.

The PTS started in 2008 a project of International Scientific Studies (CTBT-ISS) under which the verifiability of the CTBT is assessed with scientific scrutiny. One element of the assessment is the way CTBT is dealing with Atmospheric Transport Modelling. The intention is also to get some assessment of possible future developments: what is expected based on technical progress in the immediate near future. The scientific and technical community is welcome to participate and contribute.

Possible Future Steps

A proposal regarding future steps in the field of Atmospheric Transport Modelling is provided in a separate paper (CBS-DPFS/CG-NERA//Doc. 9(2), 2008). An expansion to meet the needs of backtracking of radioxenon may require longer backtracking periods and smaller time intervals for the sampling reference periods. Also, radioxenon backtracking may require more sophisticated approaches compared to current backtracking for particulate radioactivity monitoring due to the very site specific characteristic of the civil xenon background and its seasonal variability. Other areas of cooperation, for example related to disaster reduction and data provision for scientific purposes, remain on the agenda as well.

Summary

The CTBTO-WMO response system has now been formally approved. An implementation in provisional operation is planned in the course of the year 2008. It will allow the PTS to request and obtain, semi-automated and in near-real-time, atmospheric transport modelling (ATM) results from WMO RSMCs in case of treaty-relevant detections at radionuclide (RN) sampling stations of the International Monitoring System (IMS) to supplement its own computations. Nine NMC have committed to participate. The response system will corroborate the confidence in the backtracking calculations of the PTS, and it will benefit both sides regarding constant feedback and the evaluation of the backtracking systems and methods. In December 2007, the first CTBTO-WMO Exercise in atmospheric backtracking was performed successfully. The results from each NMC were analysed and compared for consistency in order to give participants feedback.

Other fields of current cooperation are volcanic eruption detection and the International Scientific Studies project. Additional fields of cooperation are currently under consideration

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