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## **Towards an operational CTBTO-WMO Atmospheric Backtracking Response system for Nuclear Test-Ban Treaty Monitoring**

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After the detection of treaty-relevant radionuclides in filters or air samples, atmospheric backtracking techniques are employed by the Provisional Technical Secretariat (PTS) of the Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) to trace back the measured substances to their potential areas of origin. In the case of an underground nuclear test, potential sources are co-located with the epicenters of seismic events that may have been triggered by the explosions. Previous studies have shown that predictions or analyses of atmospheric transport can be significantly improved by ensemble techniques. Such techniques can also account for modeling uncertainties. Based on these findings, an international backtracking response system was designed and tested. In December 2007, the first international atmospheric backtracking exercise was held between the PTS and the WMO Secretariat, involving nine Meteorological Centres that responded in near-real-time. In the backtracking exercise, the underlying measurement scenario was triggered by a pre-selected seismic event. Internal analysis and reporting procedures were worked out and tested, and a subsequent scientific analysis was provided. The set-up of the exercise and the main results shall be described here.