

Atmospheric Transport for CTBT

Ananthakrishna R. Sarma

Center for Atmospheric Physics, Science Applications International Corporation (SAIC),
1710 SAIC Drive, McLean, Virginia, 22102, USA

Atmospheric transport calculations play a significant role in the verification of CTBT. These calculations link a radionuclide detection with a suspected source by exploring possible trajectories by which air from the source region can reach the radionuclide sensor at an IMS station. To quantify the source region, the concept of field-of-regard is introduced by which one can assign probabilities of release to locations with which that location may have contributed to a given detection. This presentation gives an overview of the atmospheric transport methodologies used at the IDC. The calculations fall under two classes: a coarse resolution daily operational global run using HYSPLIT (developed by the Air Resources Laboratory of NOAA) providing fields-of-regard for all the IMS stations, and (2) a high-resolution run using OMEGA (developed by the Center for Atmospheric Physics of SAIC) to explore a specific detection. The HYSPLIT run is performed in 3 modes: 1) forward analysis, backward analysis and forward forecast. OMEGA uses trajectories computed from forward forecast calculations to arrive at fields-of-regard. A case study involving an actual detection at an IMS station is also presented.