

4.1-O6. Optimization of the network coverage of the IMS noble gas component

The IMS noble gas network has been designed with 40 monitoring stations to equally monitor the Earth's atmosphere for releases of radionuclides from nuclear explosions. The first step in this work is to assess the coverage of the current network design with regard to underground, atmospheric and underwater nuclear tests and to the radionuclide background produced by nuclear power plants and medical isotope production facilities. Atmospheric transport modelling is applied to simulate whether the emissions from nuclear tests reach one or more monitoring stations and can be detected before the radionuclides decay. A lowered network coverage is found downwind from medical isotope production facilities and in equatorial regions due to the meteorological patterns. In the second step recommendations are given on how to overcome these negative impacts on the IMS and improve the network coverage. It is discussed how different network configurations with additional stations would affect the network coverage. The goal is to bring the IMS noble gas component closer to a worldwide equally distributed coverage.

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