

the Use of Mobile Modular Gas Samplers in Near-Field Detection Using HYSPLIT

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The Wireless Independent Noble Gas Sampler (WINGS) is a mobile, modular gas sampling system designed for use in low infrastructure environments. WINGS units operate on battery power and communicate by radio connection. In the case of a suspected underground nuclear explosion (UNE), WINGS units could be deployed to detect and identify noble gases emanating from the explosion site or identify gases entering the local area from offsite. This work uses the atmospheric transport modeling tool inline WRF-HYSPLIT to determine the ideal deployment configuration for WINGS units around a local area using a test case with a hypothetical upwind medical isotope production facility providing a nuisance background. HYSPLIT is a computer model for atmospheric transport and dispersion. Inline WRF-HYSPLIT integrates data from the WRF-ARW meteorological model, generating dispersion and deposition models with finer spatial resolution than achievable with an offline approach. These more accurate models enable determination of sampler network effectiveness as a function of sampler density, sample collection duration and interval, and distance from the emission point from a UNE.

Promotional text

The use of mobile modular gas samplers for potential use during on-site inspections has been modeled and evaluated using a specialized atmospheric transport modeling tool.

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Oral preference format

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