

Possible source origin of cesium-137 detections at station MXP44 in 2024

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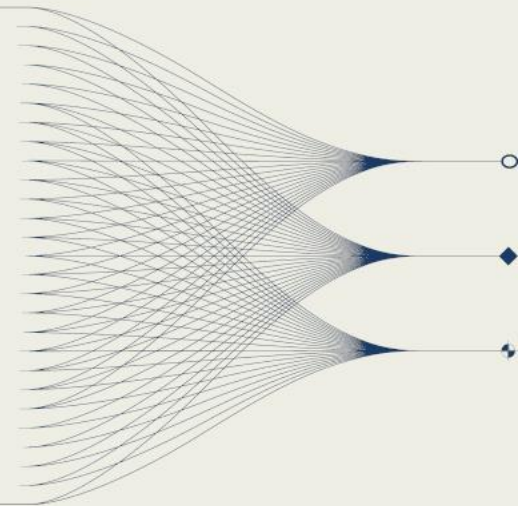
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INTRODUCTION AND MAIN RESULTS

The assessment of accidental emissions from a nuclear power plant is one of the applications of the International Data Center's products. The study of occasional detections of relevant radionuclides at stations of the International Monitoring System makes it possible to determine which stations could support the assessment of a nuclear accident. The environmental radiological early warning system in Cuba regularly analyzes the monitoring results from the IMS stations closest to determine whether they have detected accidental emissions from nuclear power plants located in Mexico and the United States of America. This would contribute to determinate whether the trajectory of the radioactive cloud would pass through cuban territory. This work studies the possible source origin of the cesium-137 detections at the MXP44 station during 2024. Back trajectory simulations using the HYSPLIT model showed that the possible source origin were episodic emissions produced at the Diablo Canyon nuclear power plant.





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Introduction/Objective

The International Monitoring System stations may occasionally detect radionuclides relevant to the CTBTO. Such is the case of station MXP44, which is located in Guerrero, in the Mexican state of Baja California. Cesium-137 was detected three times in the year 2024 with a level 4 categorization. The objective of this work is to estimate the possible source origin of the cesium-137 detections.

Methods/Data

The RNToolkit web application tool was used to determine the periods in which cesium-137 was detected at that station and the level of the categorization. Back trajectories were simulated using the HYSPLIT trajectory model at 500 m altitude.

Results/Conclusion

The simulations showed that the possible source origin of these detections were episodic emissions from the Diablo Canyon nuclear power plant located in the United States of America.

These results were because of the wind dominance from northwest. The air masses took approximately between 4 and 3 days to arrive at the station MXP44.

MXP44 station would contribute to evaluate the evolution of the emissions in the event of an accident at the Diablo Canyon nuclear power plant.

