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Temporal Patterns of Beryllium-7 Depositions and Activity Concentrations in the Phillipines

The study seeks to evaluate appropriate machine learning algorithms in getting the correlation between Beryllium-7 concentrations in surface air with selected meteorological parameters: precipitation, wind speed, wind direction and relative humidity. It will use the CTBTO IMS radionuclide data from its PHP52 monitoring station (14.58N 121.37E) located at the PAGASA (Philippines Weather Agency) Synoptic and Upper Station in Tanay, Rizal for the period 2007-2012. Beryllium-7, a cosmogenic radionuclide produced in the atmosphere through the spallation of nitrogen and oxygen by cosmic-ray-produced neutrons and protons, scavenges itself to aerosols and is carried to the earth's atmosphere. Investigations on the behavior of this radionuclide are important for radioecological assessment, e.g., tracer for vertical air mass transport and impact of accidental releases from nuclear installations to the environment. Overall, this study aims to provide relevant and advanced information on the the distribution and behavior of Beryllium-7 in surface air in the Philippines which can be used as reference for the development of nuclear techniques to aid in the evaluation of environmental problems.

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