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The Importance of CTBTO Data in Climate Change Research

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The Comprehensive Nuclear-Test-Ban Treaty Organization (CTBTO) operates an advanced network system of the International Monitoring System (IMS) designed to detect nuclear explosions. Beyond its primary mission, the IMS's network of seismic, infrasound, hydroacoustic, and radionuclide stations provides invaluable data that can be used by researchers for climate change studies. This presentation explores how CTBTO data has been invaluable and enhanced climate models and support the study of climate change impacts.

IMS data offers real-time insights into atmospheric and environmental processes. Radionuclide data tracks greenhouse gases, pollutants and aerosols, revealing their global distribution. Infrasound and seismic data contribute to understanding atmosphere-ocean interactions, such as tsunamis and volcanic eruptions, which affect climate patterns. Hydroacoustic data informs ocean temperature dynamics, a key indicator of global warming.

These datasets validate climate models, predict weather events and study long-term human activity impacts. They also foster interdisciplinary collaboration across geophysics, environmental science and meteorology. The accessibility and reliability of IMS data provide researchers with a robust framework to address climate challenges.

Leveraging data initially intended for nuclear monitoring highlights the importance of international cooperation and data sharing. As climate challenges escalate, CTBTO data remains a critical resource for developing sustainable, global solutions.

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