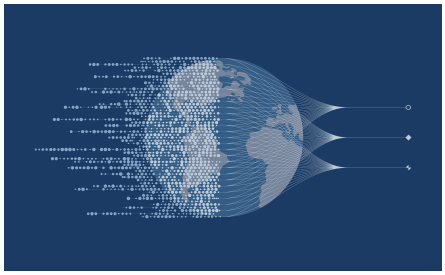

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simulation for 3-D infrasound propagation in shadow zone using a one-way approach

During infrasound propagation in the atmosphere, shadow zones can be induced by the temperature and/or wind speed gradients, the ground surface or the source geometry. Although commonly used to simulate the atmospheric infrasound propagation at large scales and three-dimensional domains, acoustic rays method is not able to simulate the propagation where the geometrical approximation is not valid. An advanced numerical method is then necessary to simulate the infrasound propagation resulting from diffraction effects in shadow zones. We present FLHOWARD3D, a numerical model based on a one-way approximation of sound propagation and able to deal with simplified diffraction configurations in the presence of atmospheric heterogeneities. We propose a strategy based on domain splitting to take into account the diffraction effect in the shadow zone. Analytical and numerical test cases on various configurations have been implemented to valid the accuracy and to assess the robustness of the method.

E-mail

antoine.verdier@cea.fr

In-person or online preference

Primary author: VERDIER, Antoine (Commissariat a l'energie atomique et aux energies alternatives (CEA))

Co-authors: SOCHALA, Pierre (Commissariat a l'energie atomique et aux energies alternatives (CEA)); GAINVILLE, Olaf (Commissariat a l'energie atomique et aux energies alternatives (CEA)); MARCHIANO, Régis (Sorbonne Universite)

Presenter: VERDIER, Antoine (Commissariat a l'energie atomique et aux energies alternatives (CEA))

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