



Infrasound propagation modelling using 4d atmospheric backgrounds

Florian Streicher (1), Sabine Wuest (2), and Michael Bittner (3)

(1) German Aerospace Center (DLR), German Remote Sensing Data Center (DFD), Weßling, Germany (florian.streicher@dlr.de), (2) German Aerospace Center (DLR), German Remote Sensing Data Center (DFD), Weßling, Germany (sabine.wuest@dlr.de), (3) German Aerospace Center (DLR), German Remote Sensing Data Center (DFD), Weßling, Germany (michael.bittner@dlr.de)

Infrasound is very low frequency sound. Because of its low attenuation in the atmosphere, it is able to travel up to thousands of kilometers around the globe. A sound wave may cover a distance of about 1.000km within an hour. Sensors monitoring infrasound however can be some thousands of kilometers away from a specific source. For determining an infrasonic event, e.g. by the use of propagation modelling, with growing distance it is increasingly important to consider changes of the atmosphere in space and time.

Most important and always accounted for in propagation modelling are changes of the atmosphere in vertical direction. Changes in horizontal direction generally are much smaller and sometimes are left away, e.g. for short distance calculations. Finally, changes in time hardly are considered.

Effect and potential benefit of the use of 4d atmospheric specifications in infrasound propagation modelling are compared to 1d and 3d backgrounds, also taking into account selected atmospheric conditions and weather events. Differences in propagation on short and long distances are discussed. The results are based on HARPA/DLR.