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Updated global reference models of broadband infrasound signals for atmospheric studies and civilian applications

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The International Monitoring System (IMS) was established to monitor for nuclear explosions, and is capable of detecting many different signals of interest (e.g. volcanoes, earthquakes, atmospheric convection etc.) embedded in the station specific ambient noise. The ambient noise can be separated into coherent noise (e.g. microbaroms) and incoherent noise (e.g. wind turbulence). The analysis of the coherent ambient noise was expanded through the use of updated IMS data-sets up to the end of 2020 for all 53 currently certified IMS stations. Monthly reference curves will be presented, which provide a means to determine the deviation from nominal monthly behavior. An example of this use is through the Ambient Noise Stationarity (ANS) factor created for this paper, which provides quick references to the data quality compared to the nominal situations allowing for the identification of either poor data quality, or instances of strong abnormal signals of interest. Further investigation, through use of information about the number of detections can be used to distinguish between poor data quality and strong abnormal signals of interest.