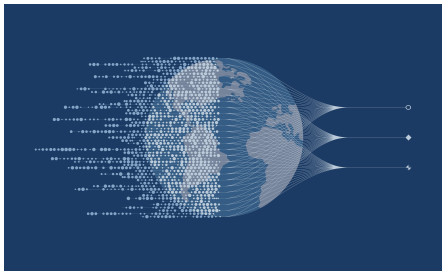

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jetstream winds through gravity waves arriving on surface based pressure sensors

Jet stream winds play an important role in our daily weather. Accurate wind and temperature estimations in the upper troposphere can lead to better medium to long term weather forecasts. However, continuous measurement in the upper troposphere poses challenges, resulting in relatively sparse data. This study revisits previous research done in the 1960s and 1970s, on the use of ground based pressure measurements as a measure for jet stream winds. It has been established that the jet stream can generate atmospheric gravity waves that radiate to the ground. Since the previous research done, the International Monitoring System infrasound network was established. The continuous pressure data from the International Monitoring System microbarometers holds valuable information about the jet stream. We present results from a microbarometer array in Southern Germany (IS26). The pressure data has been processed for frequencies within a range of 0.1-2 mHz, where gravity waves are detected. Signal characteristics from the array analysis, such as direction of arrival and incidence angle, enable a detailed monitoring of the jet stream strength and direction. The characteristics of these gravity waves are compiled and compared to hourly European Centre for Medium-Range Weather Forecasts ERA5 model data and other observations, such as radiosonde balloon measurements.

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