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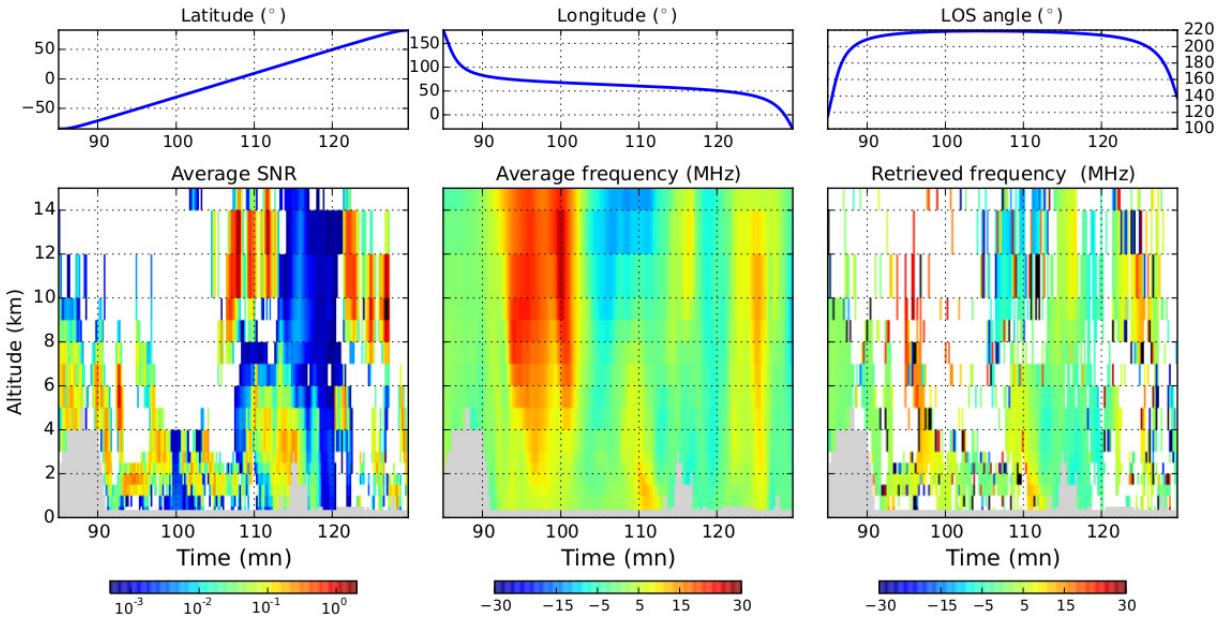

Figure 1. The two first main panels show the Signal-to-Noise Ratio (SNR) and wind induced Doppler shift frequencies averaged over the observed atmospheric ranges. The last main panel shows the measured Doppler shift frequencies. Data are shown over half a polar orbit (upper panels).

- A feasibility study of tropospheric wind measurements using a coherent Doppler lidar (wavelength of 2.05 µm) aboard a super low altitude satellite is being conducted in Japan.
- We describe a simulator of the measurements and use a summertime month of observations from a polar orbit to characterize the LOS wind retrieval errors and assess the instrument performance.
- 3-d and global cloud and wind fields are the pseudo-truth of an Observing System Simulation Experiment while aerosol data are from the aerosol model MASINGAR constrained with the speudo-truth wind.
- Below 8 km, the ratio of good retrievals is 30%--55% and the median LOS wind error is better than 0.6 m s^{-1}.
- In the upper troposphere, the ratio is less than 15% in the southern hemisphere and high-latitudes. However, the ratio is still about 35% in the northern Tropics and mid-latitudes where ice-clouds frequently occur. The upper-tropospheric median measurement error is between 1-2 m s^{-1}.