A wave structure of haze in Jupiter's polar regions observed by the ground-based telescope

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In Jupiter's polar regions, there is stratospheric haze that formed by scattering aerosol particles. Those structures show up as bright caps in the image captured with deep methane band filter at 889 nm. In latitudinal range of 60^o-70^oS, their edges were seen as wave structure propagating in longitudinal direction by the Cassini ISS in 2000 and the Hubble Space Telescope (HST) from 1994 to 1999 [*Barrado-Izagirre at al*., 2008].

In previous work, it has shown that wavenumber of Jupiter polar wave at 67^oS was 12-14 and their westward phase velocity in System3 was 0-10 m/s. It is pointed out that this wave is a planetary Rossby wave, although the wave structure in the vertical direction is not clear. Final goal of this study is to determine whether or not the polar wave at 67^oS is Rossby wave. Here, we investigate the meridional and vertical wavenumber, the phase speed of the wave structure and zonal wind speed at 67^oS.

In this paper, we will introduce the observational results about the wave structure in Jupiter's polar regions from 2011 to 2014 by the ground-based telescope. From those observation we found three points. First, the phase speed of the wave structure is estimated to be about 3 m/s. Second, the wave structures at different latitudes show north-south asymmetry. Third, the wave structure at 67^oS in the vertical direction varied between altitude of 361 mbar and 750 mbar.