

U003-03

Room: Function Room A

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## Ionospheric observation of the PANSY radar

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The PANSY radar has a powerful capability to elucidate the following fundamental processes of the Earth's ionosphere over the Antarctica: 1) the coupling process between the magnetosphere and the ionosphere, 2) the coupling process between the ionized atmosphere and the neutral atmosphere, and 3) the coupling process between the upper atmosphere and the lower atmosphere. Most of the energy in the Earth's atmosphere originates the solar radiation, but the upper atmosphere at high latitudes receives the energy input from the magnetosphere in the form of the particle precipitation and electric current. The energy input is complicated because the coupling between the magnetosphere and the ionosphere has large spatial and temporal variations. Furthermore the energy flow is also complicated because the ionized atmosphere and the neutral atmosphere are controlled by different forces but moderately coupled each other. The influences of the energy flow to the middle and low latitude region have not been sufficiently clarified. The limited number of the observational method in this region has made the elucidation of processes difficult, especially in the upper atmospheric region. The PANSY radar can observe wide altitude range from 1km to 500km altitude. It enables to clarify the coupling processes between the lower atmosphere and the upper atmosphere. The coordinated observation with the other observational instruments in the Syowa station make it possible to clarify the coupling processes between the magnetosphere and the ionosphere, and the ionized atmosphere and the neutral atmosphere. The scientific objectives of the PANSY radar ionosphere observation will be reviewed in the presentation.

Keywords: ionosphere, PANSY radar, GPS, Antarctica, Ionospheric irregularity, Aurora