

## 衛星搭載合成開口レーダー観測に対する中規模伝搬性電離圏擾乱の影響

# 齊藤 昭則 [1]; 池田 孝文 [1]; 津川 卓也 [2]  
[1] 京大・理・地球物理; [2] 情報通信研究機構

## Effect on the space-borne synthetic aperture radar observation by medium-scale traveling ionospheric disturbances

# Akinori Saito[1]; Takafumi Ikeda[1]; Takuya Tsugawa[2]  
[1] Dept. of Geophysics, Kyoto Univ.; [2] NICT

The effect on the space-borne synthetic aperture radar (SAR) by medium-scale traveling ionospheric disturbances (MSTIDs) has been investigated using the ALOS/PALSAR data and ground-based GNSS data. The radio wave of synthetic aperture radars on satellites propagates through the ionosphere, and its propagation speed is delayed according to the ionospheric plasma density and the radio wave frequency. The delay affects the observation of SAR when there is the intense gradient of the ionospheric plasma density with the scale-size of SAR's field-of-view. At mid-latitudes, MSTID causes this ionospheric gradient. The high occurrence rate of MSTID makes frequent interference of the space-borne SAR observation by the ionospheric structures. The ionospheric effect is intense in the L-band SAR, such as ALOS/PALSAR and ALOS-2/PALSAR-2 because of its lower frequency than the other space-borne SAR. A proxy of the ionospheric disturbances was newly developed to evaluate the ionospheric effect on the space-borne SAR. The ionospheric disturbances were evaluated by the total electron content observation by ground-based GNSS receiver network. The proxy is used to select the SAR measurement that has small ionospheric effect. This helps the selection of pair of scene for interferometric SAR. In the presentation, the effect of MSTIDs on the SAR observation, and the proxy to select the ionosphere-free scene are discussed.