

## Contribution submission to the conference SMuK 2021

**synthetic aperture radar satellite imaging of Earth's upper atmosphere and its potential application for upcoming Venus missions** — ●HIROATSU SATO<sup>1</sup> and JUN SU KIM<sup>2</sup> — <sup>1</sup>DLR Institute for Solar-Terrestrial Physics, Neustrelitz, Germany — <sup>2</sup>DLR Microwaves and Radar Institute, Wessling, Germany

Modern space-borne synthetic aperture radar satellite (SAR) can provide meter-scale resolution imaging of Earth's ground surface. When SAR radio waves undergo propagation effects from the ionized atmosphere between the satellite and ground, the resulting SAR image contains information of the atmospheric plasma structures. Recent studies show that plasma density structures in Earth's ionosphere can be captured in L-band SAR images. Different SAR processing techniques using interferometry and sub-band data have been developed to extract the two-dimensional variation of plasma density irregularities. We present case studies of SAR imaging of Earth ionospheric density and discuss its potential application for recently selected SAR missions for Venus whose ionosphere is not yet fully understood.

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