

## InSAR measurement of ground subsidence at permafrost areas: preliminary results

\*Masato Furuya<sup>1</sup>, Kento Iio<sup>2</sup>

1.Department of Earth and Planetary Sciences, Hokkaido University, 2.Department of Natural History Sciences, Hokkaido University

Permafrost thawing due to global warming can not only change any local hydrological and biological systems but also generate methane gasses that could further contribute to enhance global warming. Moreover, ground subsidence associated with permafrost thawing is another natural hazard to social infrastructures such as roads and pipelines in high-latitude regions. However, a comprehensive mapping of on-going permafrost thawing and refreezing is challenging, because of their remote and wide spatial coverage.

Liu et al. (2015, JGR-ES) suggested that satellite synthetic aperture radar interferometry (InSAR) could reveal on-going subsiding signals around thermokarst, which could tell us the dynamic processes and thus the mechanisms responsible for on-going permafrost thawing, using satellite remote sensing.

Meanwhile, at Yamal Peninsula, northern Siberia, four caldera-like collapsed topographies were discovered, whose maximum diameter and depth reach 37 meter and 70 meter, respectively. These sudden collapses are attributed to the rapid thawing of permafrost due to the anomalously high air-temperature in recent years.

Given these backgrounds, we have performed InSAR measurements over Yamal Peninsula to examine if any ground deformation has been on-going. We will report and discuss our preliminary results and issues.

Keywords: permafrost, InSAR, thermokarst, ground subsidence, ionosphere