

## Biomass estimation by ALOS/PALSAR over boreal forest in Alaska

# Rikie Suzuki[1]; Yongwon Kim[2]; Reiichiro ISHII[3]

[1] FRCGC, JAMSTEC; [2] Int'l Arctic Research Center, Univ. of Alaska Fairbanks; [3] FRCGC, JAMSTEC

For the better understanding of the carbon cycle in the global ecosystem, investigations on the spatio-temporal variation of the carbon stock which is stored as vegetation biomass is important. The sensor PALSAR (Phased Array type L-band Synthetic Aperture Radar) of the satellite ALOS (Advanced Land Observing Satellite), launched in January 2006, provides the information which can be used for the above-ground biomass estimation. To derive the forest biomass from satellite measurement, it is inevitable to acquire in situ above-ground biomass by ground-based survey. In July 2007, a forest survey was carried out in the south-north transect (about 300km long) along the Trans-Alaska Pipeline which profiles the ecotone from boreal forest to tundra in Alaska. 29 forests along the transect were targeted for the survey, and their biomasses were measured by the combination method of Bitterlich Angle Count Sampling method and Sampled-tree Measuring method. Consequently, it was revealed that the forest biomass distributes from 5 to 100 ton/ha (dried matter). These ground-based biomass measurements at 29 forests were compared with the signal in 20 mages of ALOS/PALSAR (HV polarization mode) that cover the 29 forests in July or August 2007. In addition, 16 areas of grassland in the images were picked for the reference value of zero forest biomass. The result showed a positive strong ( $r = 0.84$ ) and linear relationship between them, demonstrating a feasibility of ALOS/PALSAR for the mapping of the biomass in boreal forests.