

## Distribution of glaciers elevation changes in Khumbu Himal, Nepal Himalaya since 1984 using multitemporal DEM.

# Takayuki Nuimura[1]; Koji Fujita[1]; Satoru Yamaguchi[2]; Rishi Sharma[3]

[1] Nagoya Univ.; [2] Snow and Ice Research Center, NIED; [3] DHM

Glacier volume change has an important role to sea level rising. IPCC 4th report refereeing about the glacier volume change (Except Arctic and Antarctic ice) is a second large factor contributes to sea level rising. Consequently, global scale glacier volume change is desired to estimate sea level rising accurately. The volume change is decided based on net balance of accumulation, snowfall, and ablation, ice melting. Therefore, volume change trend varies locally. Especially, Himalayan glaciers are sensitive to climate change, because of seasonal accumulation called "summer accumulation type glacier". However, the volume change estimation of glacier in Himalaya has not carried out accurately, based on remote sensing data which is calibrated with field survey data.

We carried out differential code-phase GPS (DGPS) survey in Khumbu Himal region, eastern Nepal in October and November 2007. The DPGS data had been recorded each second, which has geographical coordinate value (x, y) and height above ellipsoid value (z) with several decadal centimeter accuracy. These accurate elevation data has been used for calibration and comparison of multi series DEMs (historical map, aerial photogrammetry, SRTM, and ASTER). Finally, the calibrated DEMs was used to find changes in glacier elevation distribution of Khumbu Himal region.