**Interferometric X-band SAR for monitoring of forest biomass: correction of topographic effects**

*Lange, Holger - Norwegian Forest and Landscape Institute, Forest Ecology*
*Solberg, Svein - Norwegian Forest and Landscape Institute, Forest Inventory*

We derive forest height from interferometric SAR acquisitions (Tandem-X mission) and use it for biomass estimation. From the SAR processing we retrieve Digital Surface Models (DSM), from which we subtract a Digital terrain Model (DTM), resulting in InSAR heights which correspond to a Canopy Height Model (CHM). However, this forest height is influenced by acquisition geometry, i.e. incidence angle, and local topography (slope and aspect). For a given forest height, the InSAR height is lower in hillsides facing towards the sensor, and higher in hillsides facing away from the sensor. The effects are most pronounced in steep terrain, as the tree stem axis is less and less perpendicular to the ground surface. Since forest height is used as predictor for biomass, or carbon density, these important quantities are affected in the same way as forest height. Here, we present an explicit geometry-based correction procedure to account for this topographic effect, and validate this algorithm using pairs of acquisitions, one ascending and one descending, using the local incidence angle as sole explanatory variable.