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On the potentials of using multisensor ALOS data for the analyses of forest stand structure and biomass retrieval

S. Seeling, M. Stellmes, and H. Buddenbaum
University of Trier, Remote sensing department, Trier, Germany (seelings@uni-trier.de)

The Japanese satellite ALOS, launched in spring 2006, is equipped with a panchromatic and multiangle remote sensing instrument (PRISM), a visible and near infrared radiometer (AVNIR-2) and a fullpoliametric L-Band radar sensor (PalSAR). In case of acquisition dates within a short time periode, this instrumentation offers the opportunity for investigations focused on both, the fusion of data from different sensor types and even on the comparison of retrieval results from single instruments.
For June 2007 we acquired satisfactory imagery from all three sensors types, covering our study site “Idarwald”, situated in the western part of the federal state of Rhineland-Palatinate (Germany) in the Hunsrück mountains. Only multitemporal microwave data for interferometric investigations is still missing. Within our study we tried to derived LAI, vegetation density, canopy height and tree types from the different ALOS instruments and investigated the added value concerning the results provided by data fusion. To assess our findings we used data from field surveys and additionally compared them with former results of studies based on LIDAR, very high spatial resolution (Quickbird) and hyperspectral data (Hymap).
Although some of the results, especially the LAI and canopy surface estimations, are promising the derivation of other values is still vague or variables can be registered more precise by other sensors. Further achievements are expected from the acquisition of multitemporal SAR data for interferometric analyses.