

Operational radar land cover mapping system for REDD

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Radar imagery is critical input for robust Measuring, Reporting and Verification (MRV) systems in cloudy tropical forest areas. However, visual interpretation of radar images does not yield acceptable results and, not all advanced computer processing steps required are available in commercial software.

Wageningen University – SarVision has developed a new radar image processing system for the mapping of forest and land cover (change) over large areas, as a contribution to the GEO Forest Carbon Tracking task. Maps can be updated using a consistent approach on a yearly basis. Some key features include:

- 1) The use of multiple observations per year to incorporate seasonality (improved identification of wetlands and cropland classes);
- 2) The application of new slope correction algorithms, critical for deriving reliable classification results in hilly and montane areas;
- 3) Application of a probabilistic method based on finite mixture modeling and Markov Random Fields for optimal classification results.

The example below shows a demonstration map developed for Borneo at 50 m resolution, using 554 ALOS PALSAR radar images (i.e. 44 strips of 1500x70km each). Radar satellite data used includes ALOS PALSAR FBD (Fine Beam Dual mode HH-HV polarization) from June-September 2007 and ALOS PALSAR FBS (Fine Beam Single mode HH polarization) from January-March 2007.

ALOS PALSAR data courtesy ALOS Kyoto and Carbon (K&C) Initiative © JAXA/METI

