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Reduction of uncertainties in greenhouse gas accounting using Global Forest Watch forest loss database, LiDAR and stand wise inventory data

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Global Forest Watch (GFW) provides a global map of forest loss derived from LANDSAT satellite imagery, providing a tool for monitoring global forest change. In managed forests, GFW mainly provides information on commercial logging. This study is part of the INVENT project which aims to improve the National Forest Inventory based estimates of Carbon stock changes in forests reported to the UNFCCC. The purpose of this study is to evaluate the feasibility of using the GFW database to detect carbon stock changes in forest stands, using LiDAR (Light Detecting and Range) data and the stand wise forest database maintained by the State Forest Service (SFS) as additional data sources.

Only those forest loss areas from GFW database, which were detected according to the national LiDAR survey, were selected for data processing, thus obtaining 3D forest information prior to felling. Information on species composition and number of trees per hectare in the forest was obtained from the SFS stand wise forest database. Living biomass estimates were then calculated for each GFW pixel. For pixels outside the SFS stand wise forest database, living biomass values were determined by extrapolation. The average estimated live biomass per forest loss pixel in GFW database is 6792 kg.

Keywords: ERA-GAS INVENT, living biomass, carbon stock.