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Forest canopy attributes derived from airborne lidar above the Barbeau/Fontainebleau forest

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Lidar systems onboard airplanes have demonstrated the possibility to characterize the three-dimensional distribution of biomass elements of forest canopies and further to estimate the biomass and carbon densities. Forests could be a regulator to the increase of atmospheric CO2, and thus to climate change, if the development methods of the ecosystems were modified in a suitable way. Indeed, since preindustrial times, the terrestrial biosphere has absorbed approximately a quarter of CO2 anthropogenic emissions. Forests contributed more than 80% of this biospheric carbon sink. Hence, the establishment of relationships between forest stand structure attributes and lidar measurements is a pertinent approach to assess the aboveground biomass over a wide range of spatial scales. A new UV (355 nm) lidar has been developed by CEA (France) with the contribution of LEOSPHERE company for measuring the forest canopy attributes and deployed above the Barbeau forest (NE of Fontainebleau forest) in the south-eastern suburb of Paris region. This experiment funded by CNES has been built to evaluate the spatial data sampling capability of lidar and provide inputs helping to prepare future lidar spaceborne missions dedicated to the global forest survey. Lidar-derived canopy height has been compared to dendrometric measurements of Barbeau forest. The experiment and the first results will be presented.