Project Database of ICP Forests

PROJECT DESCRIPTION

PROJECT INFORMATION

Project title:	Predicting canopy nitrogen content based on optimality theory
Project ID:	210
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Canopy nitrogen (N) content plays important role in plant growth and other ecosystem processes. More specifically, Leaf nitrogen concentration links to several leaf traits associated with photosynthesis, including photosynthetic capacity, light use efficiency, specific leaf area and thus the primary productivity. Current Global Vegetation Models (GVMs) based prediction of carbon assimilation could be improved by accurate canopy N map. Research group in Faculty of Geosciences, Utrecht University (UU) has published an approach to mapping canopy N content with a remote sensing (RS) way recently. A random forest (RF) approach was used with RS observation and environmental variables input to retrieve canopy N in Europe. Result shows good consistency against field observation and reasonable spatial distribution. Since we also have long been working with optimality theory. The universal gross primary productivity model (the P model) could predict carbon uptake based on plant adjustment to local environment . Our recent research about LMA (Leaf Mass per Area), with our reasonable prediction of VCmax, makes it possible to further predict canopy N.