

NCCARF TB Travel Report: Brad Evans visit to Dr Else Swinnen at VITO in Mol, Belgium in May, 2011

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Overview

I visited Dr Else Swinnen, Scientist, Global Vegetation Research Group at VITO in Mol, Belgium between the 9th and 20th of May, 2011. The purpose of my visit was to collaborate on the creation of a new net primary productivity (NPP) map for the southwest of Western Australia using finer resolution meteorology from the Australian Government Bureau of Meteorology and evapotranspiration estimates from the Australian Water Availability Project.

Major findings and outcomes of the collaboration

The visit gave me the opportunity to meet with members of the VITO team and their collaborators. VITO scientists trained me on the design, functionality and operation of their proprietary software for processing large, time series datasets of this nature. Working closely with Dr. Swinnen, we reviewed the relevant literature to our application and designed a framework for how we intend to incorporate evapotranspiration into a number of NPP models. We were successful in generating a time series NPP product (1999 to 2010) using ECWMF meteorology and fAPAR generated from the SPOT VEGETATION sensor using the presently operational VITO NPP model.

Significance to adapting and protecting Australia's terrestrial biodiversity

As a surrogate for understanding net ecosystem health, the time series of 1km x 1km NPP is useful for investigating phenological trends in the forests of the southwest. It follows that an understanding of what is happening on the ground is necessary to draw conclusions on how productivity is related to health and biodiversity. With this knowledge, NPP can serve both as a baseline and a warning system for deviations from the normal and a management tool for adaptation and decision making.

Future research suggestions

The OzFlux and TERN groups are both involved in the observation and estimation of NPP and related indicators of ecosystem productivity. Similarly, the accuracy of gridded meteorology and land surface data continues to be refined and enhanced. Hence, it follows that NPP estimation models might also benefit from increased spatial, temporal inputs and design complexity as these data become available.