

LAS SCINTILLOMETER HELPS IMPROVE WATER MANAGEMENT IN AUSTRALIA

The use of water in agriculture depends on the requirements for the optimal health and productivity of crops. This has to be balanced with the water resources available, the demands of non-agricultural water consumers and the environmental impacts.

The Murray-Darling river Basin (MDB) in Australia accounts for most of the land surface in south-eastern Australia, and provides a major part of Australia's water resources. The ongoing drought in the region, combined with climate-change expectations, has heightened and emphasised the need for improved water management at farm-regional scales.

Satellite remote sensing methods assist in the evaluation of water use over large areas. In terms of the contributions made by different styles of land use, evapo-transpiration rate, and the water requirements of varying types of vegetation.

Australian scientists are using the Kipp & Zonen Large Aperture Scintillometer (LAS), and other instruments, to make local measurements of the surface energy balance components, including evapo-transpiration (ET). These measurements can then be used to 'ground-truth' energy flux estimates derived from satellite data, at farm-regional scales under the unique conditions experienced in the MDB.

The project is supported by the Australian Government's 'Raising National Water Standards' (RNWS) program of the National Water Commission and the Cooperative Research Centre for Irrigation Futures, with support from the Departments of Primary Industries (DPI) and Sustainability and Environment (DSE).

Managed by Dr. Des Whitfield, Senior Systems Agronomist – Horticulture of the DPI, this project aims to provide tools, information and methods for high agricultural productivity on irrigated farms in the MDB with minimal water wastage. Another objective is to provide an approach to the evaluation of the water requirements of environmental assets in irrigated catchments of the MDB.

Environmental Systems & Services (ES&S) in Melbourne supplies the tools for more effective environment monitoring and management, providing DPI three LAS systems for these water resource and agriculture management projects up to date (2009). These projects will be further strengthened by research conducted at a number of Australian Universities also using LAS, including Charles Sturt University, Wagga Wagga and James Cook University, Townsville.

