Land and Water News
AN INDEPENDENT REGULAR NEWS ROUND-UP

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Soil mapping project funded

The Australian Research Council (ARC) has awarded a research team comprising scientists from the University of Melbourne, the University of Newcastle, Flinders University and NASA a three-year, $667,000 grant for a project to undertake high-resolution mapping of surface and root-zone soil moisture in key areas of Australia.

The aim of the project is to develop new techniques which will help farmers make use of water trapped in soil.

Dr Jeffrey Walker, from the University of Melbourne's Department of Civil and Environmental Engineering, said that a better understating of soil moisture distribution on farmland would enable farmers to develop better techniques for using water in soil and to make better use of their limited allocation for irrigation. Improved knowledge about soil moisture and its impact on water and energy fluxes would also assist with weather and climate predictions.

Dr Walker said that it has been shown that soil moisture is more important than surface sea temperatures (indicator of El Nino/La Nina) in making precipitation forecasts over land at mid latitudes. However, currently there are no high-resolution soil moisture products available nor even an operational low resolution product.

"So far, we are the only group to have developed an airborne system for making such high resolution soil moisture measurements together with such a wide range of supplementary data to be used for collecting the most detailed land surface information."

The research will involve the use of a thermal imager and polarimetric l-band microwave radiometer (plmr), funded by a $657,000 ARC-LIEF grant, which measures naturally emitted electromagnetic energy from the earth's surface at microwave wavelengths that can be related back to soil moisture.

Manufacture of this instrument has just been completed and is currently being installed on an aircraft from the Airborne Research Australia National Research Facility at Flinders University for test flying in April.

A further $338,000 (ARC-LIEF grant) was recently awarded to enable the purchase of an airborne laser scanner (LIDAR) for creating high precision, high resolution digital models of the terrain.

"This terrain information together with the thermal and other data will enable the development of techniques for increasing the current resolution of satellite observations. Additionally, these instruments are being used for satellite validation and algorithm development," Dr Walker said.

To enable Australian scientists to take maximum advantage of the airborne data to be collected over the next two years, a National Airborne Campaign involving a range of disciplines was initiated at a workshop at the University of Melbourne in February

During the campaigns there will be some 40 people on the ground making detailed soil moisture and related measurements, including visitors from NASA, the European Space Agency, CSIRO and national and international universities."

Data will also be collected for a range of other related activities including bushfires, forestry mapping, and carbon mapping .

The researchers are currently preparing for their first major airborne campaign which will take place over the Goulburn River in November this year. The second campaign will take place over the Murrumbidgee River a year later.

Dr Walker can be contacted at Airborne Research Australia on 08 8182 4000.

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