EARTH OBSERVATION SYMPOSIUM (B1)
Big Data, Data Cubes and new platforms to exploit large-scale, multi-temporal EO Data (6)

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APPLICATIONS OF DIGITAL EARTH AUSTRALIA - FROM SATELLITE DATA TO BETTER DECISIONS

Abstract

The Australian Government spends well over half a billion dollars every year in programmes designed to protect, enhance or measure the environment. This diverse range of programmes cover a breadth of activities such as driving changes in land management practices to protect the Great Barrier Reef, undertaking surveys of agricultural productivity, and the management of millions of dollars of environmental water that is used to protect and improve critical wetlands in the Murray-Darling Basin.

Earth observation (EO) data have a vital role to play. Ubiquitous spatial coverage, decades of regular observations and paddock-scale resolution mean that EO data have a unique ability to provide insights into the effectiveness of land and water programmes and ensure that Australia is getting the maximum value from its investments.

Through the Digital Earth Australia (DEA) Program, Australia has pioneered the use of 'big space data' techniques to enable satellite data to be effectively and easily exploited to improve the effectiveness and efficiency of the Australian Government. The DEA is based on the Australian Geoscience Data

Cube which was developed by Geoscience Australia, CSIRO and Australia's National Computational Infrastructure.

In contrast to traditional approaches to the analysis of satellite data, which typically employ highly integrated processing chains from a specific sensor to a specific product, the DEA has been consciously developed to support multiple applications and to promote exploitation of 'analysis ready data' from multiple sensors. This means that the base data need only be stored once, making it economical to provide users access to comprehensive, deep archives of data, in an environment that is both highly interactive but also supports scaling to continental scale.

The flexibility of the DEA has supported a proliferation of applications that are changing a wide range of government programmes. One example is a new tool for mapping intertidal habitats and characterising how these important habitats are responding to the myriad of coastal change processes. Similarly, the DEA has underpinned new water detection and management systems to help inform how water storages are used and how to apply water into the environment to obtain the best agricultural and environmental outcomes in some of Australia's largest and most important agricultural regions.