



eWater leads a workshop on Australian Water Tools at the Asian Development Bank Asia Water Forum

At the Asian Development Bank's Asia Water Forum in October 2018, eWater's chair [Dr Don Blackmore AM](#) and CEO Dr Robert Carr led a three-hour workshop on Australia's key tools for managing water scarcity; eWater Source, Geoscience Open Data Cube and the Bureau of Meteorology's forecasting tools. The workshop was sponsored by the Australian Water Partnership and was part of the forum's Water for Food theme.

30 people attended the workshop, which used Australia's involvement in the United Nations Economic and Social Commission for Asia and the Pacific (UN ESCAP) Regional Drought Mechanism pilot program in Cambodia as a case study for demonstrating how integration of the tools provides a sound scientific basis for the development of water policy and management regimes.

Geoscience open data cube

Erin Telfer from Geoscience Australia presented on the capabilities of [Digital Earth Australia](#) and the [Open Data Cube](#). The cube is an open source framework in which satellite imagery datasets are organized for a geographic area over a specified time period. Open source algorithms are then applied, allowing for analysis of the imagery, such as vegetation, land use, water coverage and quality and urban expansion. Erin showed how the cube provides innovative solutions to the problem of storing, analysing and using the ever-increasing amounts of data being produced, in a way that is cost effective and lowers the technical barriers of managing huge amounts of data.

Forecasting tools

Dr Daehyok Shin from the Australian Bureau of Meteorology discussed the Bureau's [Seasonal Streamflow Forecasting tool](#), which predicts likely streamflow volumes for the next three months. Daehyok explained how the tool applies a statistical approach, using the relationship between climate indicators, past catchment conditions, historical rainfall and streamflow to forecast total streamflow volume for the following three-month period. The service is available at 160 location across Australia, selected because of their economic, environmental and social significance.

eWater Source

Dr Robert Carr and David Hehir, eWater Senior Software Developer presented on [eWater Source](#), Australia's National Hydrological Modelling Platform. Robert and David focused on the key capabilities of Source and the benefits of a single, national hydrological modelling platform, including:

- integrates catchment management, urban analysis and river systems planning and operations with policy.
- Is an adaptive platform, that can be applied at different scales to match available data and needs with multiple options, for example it can start at the rapid simple water balance country scale assessment using satellite information and progressively build complexity as local data and knowledge improves.



- Can be customized via functions and plugin technology (similar and compatible with OPENMI) which can meet local needs or allow researchers and advanced users to add new or updated algorithms to the analysis.
- Is based on a modern open software architecture, free of embedded Geographical Information System (GIS) and other proprietary components but has the flexibility to link via API and web services to GIS, Water Information Systems and Open Data repositories like www.opendatacube.org
- Is supported by a community of users across Governments, research and teaching organisations and consulting companies.

UNESCAP's Regional Drought Mechanism

Kelly Hayden from the UN ESCAP Space Applications Section described their Regional [Drought Mechanism](#) programme and how Australia's Water Tools are supporting their Cambodian pilot program. The Regional Drought Mechanism is a toolbox of products, information and services, provided by various countries and institutions through regional cooperation to support drought-prone developing countries and expand their capacity to use these tools and manage drought. The project is also supported by institutions in China, Thailand and UNOSAT.

Dr Robert Carr described how Australia's WaterTools are being integrated with the ESCAP Drought Mechanism. A specialised Cambodian Open Data Cube has been developed to integrate satellite information and rainfall forecasts provided by the Bureau of Meteorology. From this, eWater Source converts the bias-corrected rainfall forecasts into a water balance and estimates flow at the watershed/basin level. This allows delineation of the water balance into seasonal and annual estimates. Customised reporting tools show the correlation between historical seasonal water balance estimates and drought indicators. This trend analysis communicates how droughts may have worsened in some years and not in other years, introducing communities to a risk management approach based on a range of possible water availability outcomes. Helping to show communities that planning for drought is an important contribution to improving resilience and food security.



EWater's Robert Carr presenting at the AWF workshop.