

Wetland hydrological characterisation

The Queensland Wetlands Program's hydrological characterisation project identifies and evaluates hydro-climatic conditions for wetland environments in the state. Using tools and data on the Program's *WetlandInfo* website, the project characterises some key processes for wetland inundation and the variability of hydro-climatic conditions.

Wetland inundation

Huge amounts of rainfall, run-off, stream discharge and height data exist that can be used to interpret observed inundation in Queensland's wetlands over periods of decades. This information is vital for wetland assessment at a subregional scale.

By describing the changes in wetland filling processes—and the circumstances that lead to wetland filling for different wetland types—the project facilitates the study of the association between ecological values and services and aspects of the water cycle within areas of similar ecosystem characteristics.

Method

The project assesses reported hydro-climatic conditions within physiographic zones with similar climatic or hydrological conditions and physical geographic context.

These zones are defined by ecoregions (sub-bioregions) and sub-basins:

- 120 sub-bioregions with similar vegetation, landform pattern, elevation, geology and rainfall for application of rainfall and run-off climate data
- 253 potentially assessable sub-basins within sub-bioregions for application of stream discharge and height gauge data.

Time series of indices related to wetland inundation across the landscape are available for a maximum period from 1889 to 2006.

Maps, images, charts, data, reference and benchmark information are provided with documentation to support the exploration and assessment of hydro-climatic conditions.

Ecohydrology

Research and development in ecology and hydro-climatology has increased so rapidly in the decade prior to 2010 that a new field, *eco-hydrology*, emerged.

Ecohydrology integrates concepts of land and water patterns, processes and interactions within and between ecosystems and species, so that the manner in

which aquatic systems are organised in space and time and across scales can be better understood.

The project's hydrological attribution methods build as much capacity as possible to explain the patterns and timing of inundation for different wetland types and ecosystems across the State of Queensland benefiting their current and future management.

Products

This information is provided through charts, statistics and reference systems to ensure relevant and meaningful interpretation of hydro-climatic conditions relative to historical records and natural variability.

The outcomes of the project will include a suite of publications including a method for the development of the tools, a user guide, and a set of Frequently Asked Questions. Many research and management initiatives, such as aquatic connectivity mapping and assessment, are expected to use the tools provided.

Background

The fitness for purpose of the Queensland Wetlands Program's wetland mapping and classification methodology was reviewed in 2005 by 4 eminent wetland scientists. The review recommended that hydro-climatic conditions as identified through annual flow and rainfall regimes be linked to the imagery used to enable the evaluation of the representativeness of mapped inundation. The tools deliver this capability and the ability to identify dates for new image selection to characterise the representativeness of other inundation conditions.

The Queensland Wetlands Program supports projects and activities that result in long-term benefits to the sustainable management, wise use and protection of wetlands in Queensland. The tools developed by the Program help wetland landholders, managers and decision makers in government and industry. The Program is a joint initiative of the Australian and Queensland governments.

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