



Australian Hydrological Geospatial Fabric (Geofabric)

The Bureau of Meteorology (the Bureau) is building the Australian Water Resources Information System (AWRIS) to deliver high quality water information essential to managing our nation's valuable water resources.

AWRIS will be spatially enabled using the Australian Hydrological Geospatial Fabric (or *Geofabric*), a spatial framework for discovering, querying, reporting and modelling water information.

The Geofabric is a specialised Geographic Information System (GIS) that registers the spatial relationships between important hydrologic features such as rivers, dams, lakes, aquifers, diversions, drains and monitoring points.

It will store the boundaries of drainage divisions, catchments, aquifers and priority aquatic ecosystems, as well as water administrative units such as water management areas, water supply schemes and water trading zones.

By detailing the spatial dimensions of these *hydrofeatures* and how they are connected, we are able to see how water is stored, transported and used through the landscape.

The Australian Hydrological Geospatial Fabric (Geofabric) will show how hydrological features such as rivers, dams, lakes, aquifers, diversions, supply channels, drains and monitoring points are connected. Phase One of this key component of the Australian Water Resources Information System (AWRIS) is due for completion in early 2010.

Delivery phases

The Geofabric will evolve in phases over the next 10 years. The first version will be available in early 2010. Subsequent versions, with enhanced data and functionality, will follow annually.

The first phase of the Geofabric will comprise foundation data including:

- surface water hydrology at the 1:250,000 scale
- a drainage-enforced 9 second Digital Elevation Model (DEM)
- a set of National Catchment and Reporting Units (NCRU) derived from the 1:250,000 surface water hydrology and the 9 second DEM
- data from hydrometric monitoring points (such as stream gauges) obtained by the Bureau via the Water Regulations 2008.

Subsequent versions of the Geofabric will include upgrades to the foundation data such as:

- finer scales of surface water hydrology
- a drainage-enforced 1 second DEM based on the Shuttle Radar Topography Mission (SRTM) data
- a set of NCRU based on the best available surface water hydrology and the 1 second DEM
- improved hydrometric monitoring point data
- groundwater data.

Foundation data coming into the Geofabric and data products being served out of the Geofabric will be accompanied by a Data Product Specification (DPS) to ensure products are documented in ways that allow users to interpret the data and identify its fitness for purpose.

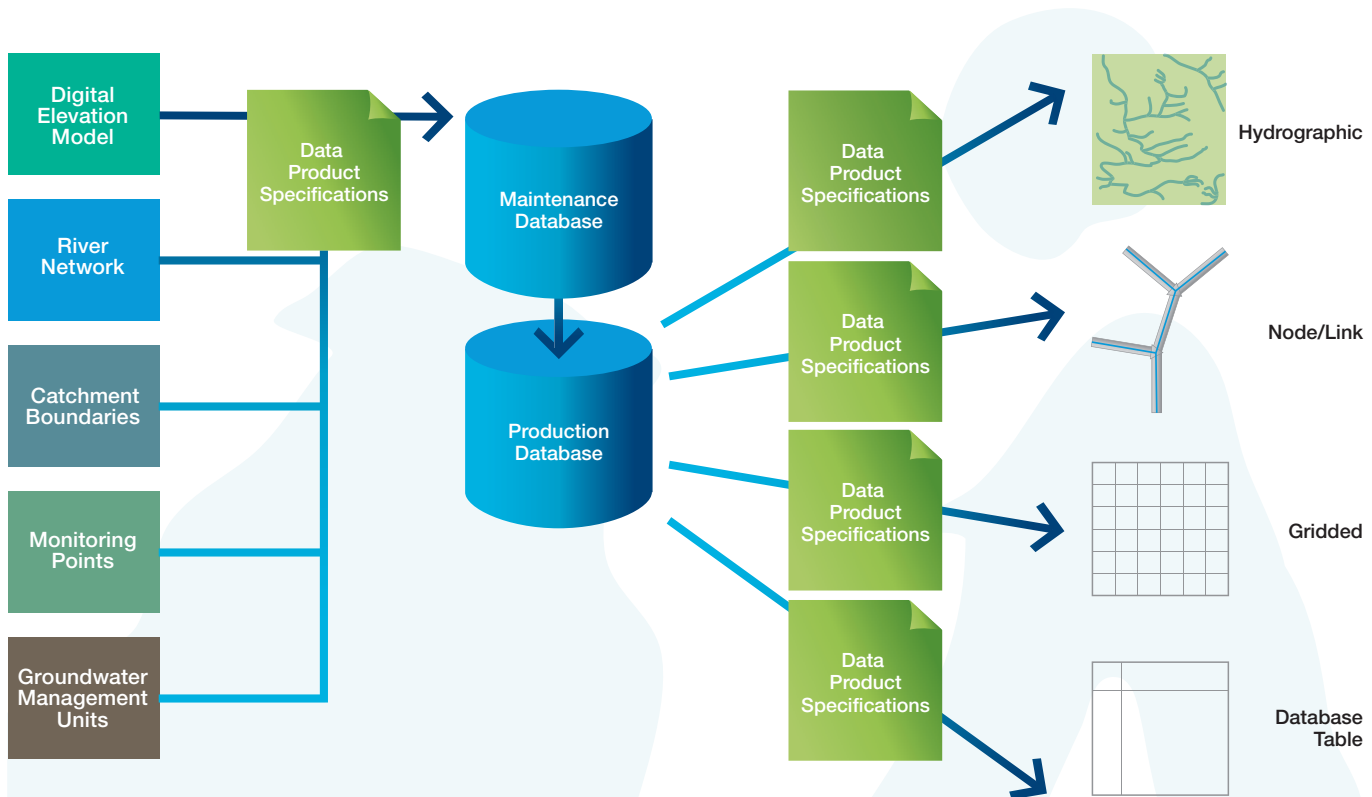
The Australian Hydrological Geospatial Fabric (Geofabric)

www.bom.gov.au/water

BUILD FOUNDATION DATA

STORE, MAINTAIN AND RETRIEVE DATA

SUPPLY VIEWS ON THE DATA



The Geofabric is designed such that a suite of data products at different spatial and temporal resolutions, and using different representations of features where appropriate, can be produced from a single maintenance environment. This is required to support the many disparate needs of the Bureau. Key to this design are formal data product specifications that describe each required product as well as input data sets. Underpinning the Geofabric is a formal, modular conceptual model which allows for direct mapping between the input data sets and the many products.

Figure 1. Geofabric conceptual architecture showing data work flows (Original source: CSIRO). Note: Data Product Specifications based on ISO19131:2007.

Figure 1 shows the conceptual architecture for the Geofabric. Foundation data will be delivered to the Bureau and stored and managed in a maintenance geodatabase environment. Water information products will then be moved into a production environment and served as multiple views depending on user requirements for water accounting, assessment, forecasting and prediction.

Research partnerships

The Australian Hydrological Geospatial Fabric project is being led by the Bureau of Meteorology in partnership with Geoscience Australia, the Australian National University and CSIRO. The partnership provides a collaborative mechanism for obtaining foundation hydrological data, maintaining and upgrading these data and improving the product suite over time. These activities will be guided by industry best practice, then tested and made operational through research and development.

For more information on the Geofabric please contact ahgf@bom.gov.au