Australian Hydrological Geospatial Fabric (Geofabric)

Data Product Specification

Hydrology Reporting Regions

Version 2.0 – November 2011

Australian Government
Bureau of Meteorology

Water Information
DATA · INFORMATION · INSIGHT

Contact details

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Preface

This document is based upon the AS/NZS ISO 19131:2008 Geographic information - Data product specifications standard[1]. The document provides a framework for the completion of a Data Product Specification (DPS) for geographic data product produced as part of the Geofabric project.

[1] AS/NZS, "AS/NZS ISO 19131:2008 Geographic information - Data product specifications" (AS/NZS, July 21, 2008), www.saiglobal.com/online/.

1 Overview

1.1 Data product specification title

Geofabric Hydrology Reporting Regions

1.2 Reference date

2011-08-30

1.3 Responsible party

Contact organisation: Bureau of Meteorology

Contact position: Geospatial Data Unit

Mail address: GPO Box 2334

Locality: Canberra

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1.4 Data product specification language

English

1.5 Terms and definitions

Please refer to the Glossary in the Geofabric Product Guide.

1.6 Abbreviations and acronyms

AHGF	Australian Hydrological Geospatial Fabric
ANU	Australian National University
ANZLIC	Australian and New Zealand Land Information Council
AWRA	Australian Water Resources Assessment
Bureau	Australian Government: Bureau of Meteorology
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEM	Digital Elevation Model
DEM-9S	GEODATA 9 Digital Elevation Model
DEM-H	Hydrologically enforced Digital Elevation Model

DPS	Data Product Specification
ESRI	Environmental Systems Research Institute Inc.
FGDC	Federal Geographic Data Committee
GDA94	Geodetic Datum of Australia 1994
ISO	International Organization for Standardization
MDB	Murray–Darling Basin
NCB	National Catchment Boundaries
NSW	New South Wales
STRM	Shuttle Radar Topography Mission
VIC	Victoria

1.7 Informal description of data product

The Geofabric Hydrology Reporting Regions product is based on aggregations of contracted catchments from the Geofabric Hydrology Reporting Catchments feature class. These units have been defined to provide a set of reporting regions for the Bureau's Australian Water Resources Assessment.

The data product extent is Geographic Australia (as defined by *Acts Interpretation Act 1901*). The product will be updated periodically to reflect changed attribution and new data sources.

2 Specification scope

2.1 Scope identification

Global

2.2 Level

Dataset

2.3 Level name

Global scope

2.4 Level description

This is the default root level global scope used by this data product and relates to all data within the product.

2.5 Extent

2.5.1 Description

Data for this scope relates to Australia, excluding external territories - Geographic Australia (as defined by *Acts Interpretation Act 1901*).

2.5.2 Geographic extent

West bound longitude

112.8 °

East bound longitude

154.1 °

South bound latitude

-44.0 °

North bound latitude

-8.9 °

2.5.3 Temporal extent

Start date

1992-01-01

End date

Now

3 Data product identification

3.1 Title

Geofabric Hydrology Reporting Regions

3.2 Alternate title

Geofabric Hydrology Reporting Regions 1:250,000 scale 2011

3.3 Product ID

ANZCW0503900108

3.4 Abstract

The Geofabric Hydrology Reporting Regions are derived from aggregations of contracted catchments from the Geofabric Hydrology Reporting Catchments product. These aggregations have been specifically built for the purpose of providing a stable set of reporting boundaries specifically for the Bureau's Australian Water Resources Assessment.

This product contains four (AWRA) feature types including: AWRA Drainage Division, AWRA Drainage Division Contracted Catchment Lookup, AWRA River Region, and AWRA Reporting Regions Contracted Catchment Lookup.

3.5 Purpose

The purpose of the Geofabric Hydrology Reporting Regions is to provide a stable set of reporting boundaries specifically for the Bureau's Australian Water Resources Assessment. It contains two levels of hydrological reporting regions. The first delineates national level Drainage Divisions and the second delineates regional level River Regions across Australia.

Though the Geofabric Hydrology Reporting Regions have been developed for the purposes of the Australian Water Resources Assessment, it is envisaged that these units can be used more generally as a standard for hydrological reporting at the national and regional scale, and thus replace the Australia River Basins 1997 (www.ga.gov.au/meta/ANZCW0703005427.html).

3.5.1 Use case

The product provides access to national and regional scale reporting regions for use in hydrological reporting based on the topography derived from a 9 second DEM.

3.6 Topic category

003 - boundaries

007 - environment

012 - inland water

3.7 Spatial representation

vector

3.8 Spatial resolution

3.8.1 Spatial denominator

250,000

3.8.2 Resolution distance

250 metres

3.9 Geographic bounding box

3.9.1 West bound longitude

112.8 °

3.9.2 East bound longitude

154.1 °

3.9.3 South bound latitude

-44 °

3.9.4 North bound latitude

-8.9 °

3.10 Geographic identifier

3.10.1 Identifier authority

ANZLIC – the Spatial Information Council

3.10.2 Identifier code

AUS

3.10.3 Code space (register URL)

ANZLIC

http://asdd.ga.gov.au/asdd/profileinfo/anzlic-allgens.xml

3.11 Reference to specification scope

Global

4 Data content and structure

4.1 Description

The product consists of the following components which combine to give a complete data product:

Vector data

The data is available as an ESRI File Geodatabase: Geofabric Hydrology Reporting Regions. The ESRI File Geodatabase reflects the stored environment of the data in a spatial database engines (SDE) export format. In its native ESRI File Geodatabase format, Geofabric Hydrology Reporting Regions consists of a single feature dataset/theme – HR_Regions – containing four feature classes. The geodatabase structure provides greater efficiencies in the management and revision of source topographic data, which are now reflected in a more sophisticated data product suitable for a range of hydrological applications.

Geofabric Product Guide

This guide describes the Geofabric Hydrology Reporting Regions, particularly the geodatabase format, with the aim of describing:

- important and common geospatial data characteristics
- geodatabase components and data concepts
- hierarchy of feature structure and attributes
- accuracy of the data.

Licence agreement Creative Commons

The licence agreement details the conditions of use for the data including any referencing requirements.

4.2 Feature information

4.2.1 Application schema

Refer to Geofabric Hydrology Reporting Regions – Geodatabase Product Schema V2.0 2011 available from www.bom.gov.au/water/geofabric/documentation.shtml

4.2.2 Feature catalogue

The following table lists the feature classes, their geometry and Australian Hydrological Geospatial Fabric (AHGF) feature type number for Geofabric Hydrology Reporting Regions.

Table 1 - Product Feature Type Registry for Geofabric Hydrology Reporting Regions

HR_Regions - Feature Class / TableName.Subtype(Type)	Feature Class Geometry	AHGF Feature Type Number
NCBLevel1DrainageDivision	polygon	na
NCBLevel2DrainageBasin	polygon	na
AWRADrainageDivisionCatchmentLookup	na	table
AWRARiverRegionCatchmentLookup	na	table

Highlighted text indicates a Bureau created feature.

4.3 Reference to specification scope

Global

5 Reference systems

5.1 Spatial reference system

5.1.1 Name

GDA94

5.1.2 Code

4283

5.1.3 Code space

EPSG_v65

5.2 Temporal reference system

Gregorian calendar

5.3 Vertical reference system

Not applicable

5.4 Reference system scope

Global

6 Data quality

6.1 Data quality scope

6.1.1 Scope code

Dataset

6.1.2 Extent

Australia (excluding external Territories)

6.1.3 Scope description

The data quality metadata relates to the entire dataset comprising this data product.

6.2 Data quality lineage

6.2.1 Lineage statement

Data sources

Geofabric Hydrology Reporting Regions is part of a suite of Geofabric products produced by the Bureau. The geometry of this product is derived from aggregations of Contracted Catchments within the Hydrology Reporting Catchments product.

This product contains two candidate reporting regions, namely AWRA Drainage Divisions for national scale reporting purposes and AWRA River Regions for regional scale reporting purposes. More reporting regions will be added in future releases based on user requirements.

The AWRA Drainage Divisions were defined for the purpose of providing a stable set of reporting regions specifically for the Bureau's Australian Water Resources Assessment 2010, and are referred to as the 2010 Assessment Reporting Regions.

The AWRA Drainage Divisions were based on the National Catchment Boundaries (NCB) Level 1 Drainage Division feature within the Geofabric Surface Catchments product with the addition of an extra division dividing New South Wales and Victoria. This division was based on a boundary derived from the NCB Level 2 Drainage Basin feature and was chosen to best approximate the border between New South Wales and Victoria, creating the South East Coast (VIC) and South East Coast (NSW) regions.

The AWRA River Regions were based on a specification developed by Bureau staff involved in water resources assessment in consultation with the Geofabric team and scientists from CSIRO and ANU. These boundaries were developed for use in regional scale reporting and hydrological modelling. These boundaries are not used in the Australian Water Resources Assessment 2010.

The AWRA River Regions were based on the NCB Level 2 Drainage Basins, within the Geofabric Surface Catchments product, for every location in Australia except for the Murray–Darling Basin (MDB) where a finer level of division was required.

The boundaries within the MDB were originally developed on the selections of Pfafstetter levels 3 to 7 that best approximated the Australian Water Resource Council (AWRC) river basins. A set of decision rules was developed using evidence from the GEODATA 9 Digital Elevation Model (DEM-9S) Version 3.1 flow direction grid, the 1 second DEM-H Shuttle Radar Topography Mission (STRM) data, Bing Maps Satellite Images, Geofabric stream flow directions and Geofabric Surface Cartography data. Particular attention was given to areas with internal draining basins, minimal or no streams, and floodplain areas with anabranch and braided streams.

These informed the creation of MDB contracted nodes which correspond to features in the landscape with hydrological significance, with subsequent creation of contracted catchments. Contracted catchments were then aggregated to create AWRA River Regions within the MDB.

Processing steps:

1. Re-composited feature classes in the Geofabric Maintenance Geodatabase Feature Dataset are assigned unique Hydro-IDs using ESRI ArcHydro for Surface Water (ArcHydro: 1.4.0.180 and ApFramework: 3.1.0.84).
2. Feature classes from the Geofabric Maintenance Geodatabase Feature Dataset are extracted and reassigned to the Geofabric Hydrology Reporting Regions Feature Dataset within the Geofabric Hydrology Reporting Regions Geodatabase.

A complete set of data mappings, from input source data to Geofabric Products, is included in the Geofabric Product Guide, Appendices, which is available from www.bom.gov.au/water/geofabric/documentation.shtml

6.3 Quality scope

Global

7 Data capture

7.1 Data capture statement

This is a derived data product from Geofabric Surface Catchments.

7.2 Data capture scope

Global

8 Data maintenance

8.1 Maintenance and update frequency

Irregular

8.2 Other maintenance information

The product will be updated periodically, as deemed necessary, to reflect changed attribution and new data sources.

8.3 Maintenance scope

Global

9 Portrayal information

9.1 Portrayal information

Not applicable

9.2 Portrayal scope

Global

10 Data Product Delivery

10.1 Delivery format

10.1.1 Format name

ESRI ArcGIS File Geodatabase

10.1.2 Format version

ArcGIS v9.3

10.1.3 Language used within the dataset

English

10.1.4 Character set coding

Utf8

10.2 Delivery medium

10.2.1 Units of delivery

National dataset

10.2.2 Estimated size of a unit in the specified format

HR_Regions.gdb = 20 MB

10.2.3 Medium name

onLine

10.2.4 Online delivery URL

http://www.bom.gov.au/water/geofabric/download.shtml

10.3 Other delivery information

Also supplied as ESRI Shapefiles (requires written request to ahgf@bom.gov.au).

ESRI File Geodatabase and ESRI shapefiles are also available on DVD from the Bureau.

10.4 Delivery scope

Global

11 Additional information

11.1 Additional information

Licensing and access constraints:

Licensed for use under Creative Commons Australia Attribution.

We request attribution as © Commonwealth of Australia (Bureau of Meteorology) 2011.

Special features of the supplied data product or its component parts:

Spatial data in the ESRI File Geodatabase, Geofabric Product Guide and Geofabric Data Product Specifications.

Limitation or constraints on product use:

As per Creative Commons Australia Attribution licence.

Layer files or queries that operate on the data product:

Geofabric_Hydrology_Reporting_Regions.lyr

Related data products:

- Geofabric Surface Cartography
- Geofabric Surface Network
- Geofabric Surface Catchments
- Geofabric Groundwater Cartography
- Geofabric Hydrology Reporting Catchments.

11.2 Additional information scope

Global

12 Metadata

Metadata format requirements

Metadata compliant with ANZLIC Metadata Profile Version 1.1 of AS/NZS ISO 19115 was produced for this data product. The metadata profile is available at dataset level. Feature level metadata is provided within the ArcGIS ArcCatalog FGDC style sheet for all feature types included within this product and describes the lineage of feature.

Metadata encoding requirements

ArcGIS FGDC and ANZLIC compliant feature metadata.

References to metadata for data product and component parts

An ISO 19115 compliant XML file of the Geofabric Hydrology Reporting Regions metadata statement accompanies the Product (HR_Regions.xml) and is viewable using either the ArcGIS ISO 19139 ArcCatalog metadata style sheet or the ANZMet Lite version 1.0 metadata creation tool available from:

www.osdm.gov.au/Metadata/ANZLIC+metadata+resources/ANZMet+Toolkit+%28final+draft+-+07.2009%29/default.aspx

Through the *Water Act 2007*, the Australian Government has given the Bureau of Meteorology responsibility for compiling and delivering comprehensive water information across Australia.

For more information
Visit our website at www.bom.gov.au/water
Send an email request to waterinfo@bom.gov.au

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