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Bureau of Meteorology

Advancing Water Information.

Rob Vertessy
Bureau of Meteorology

Water Information Industry Seminar
Darwin
February 14, 2008

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My hopes for today.

- Raise awareness about the Bureau's new role in water information
- Enthuse you about the value of our new role
- Describe key implementation arrangements
- Highlight who we are depending on and how

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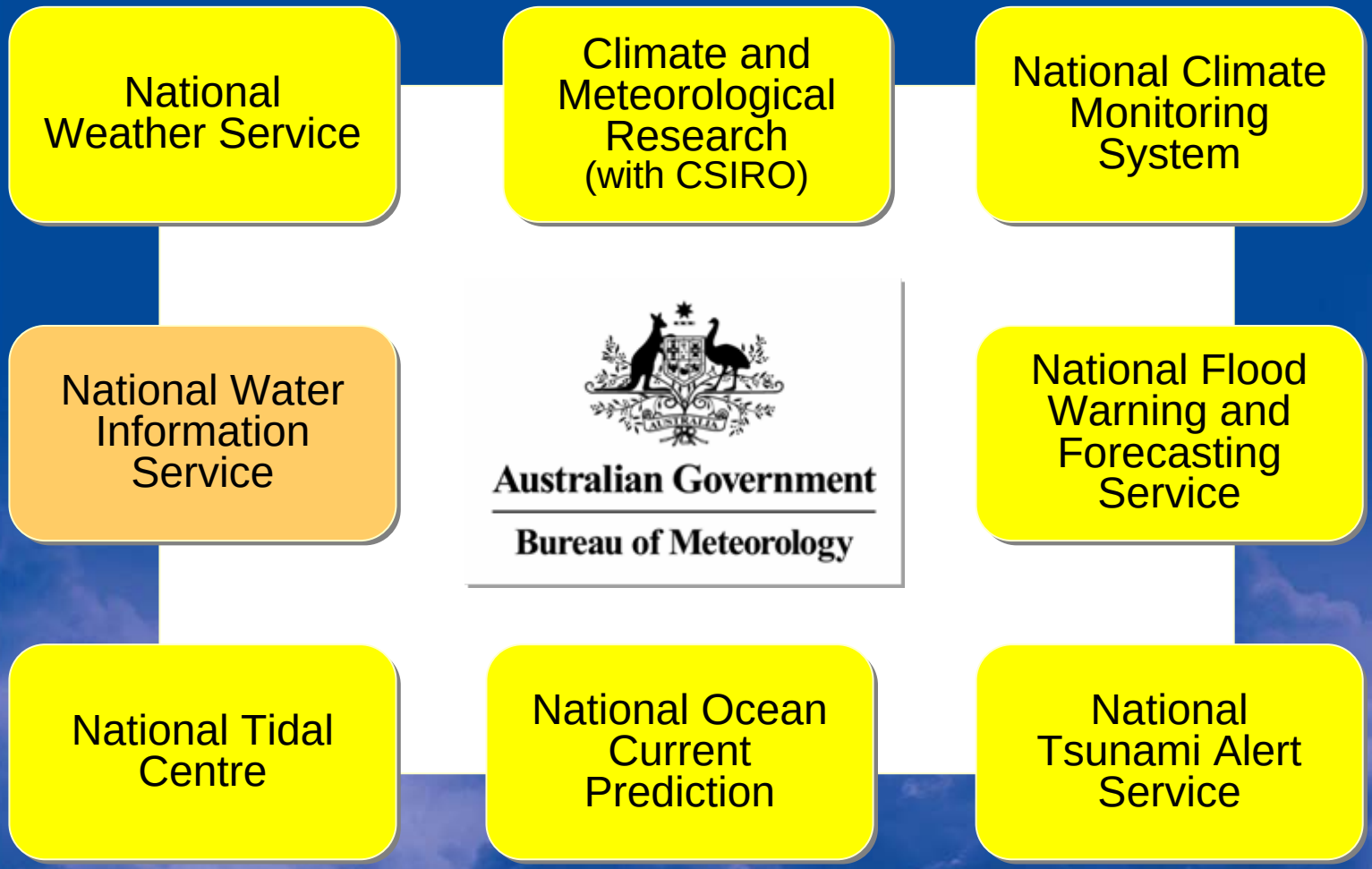
Functions of the Bureau of Meteorology.



Water management in Australia.

Federal Government

Policy, Audit, Funding

Weather, Climate, Flood Warning & Forecasting

6 State + 2 Territory Governments

Natural Resources Management

Environmental Protection

Urban Water Supply

Rural Water Supply

Authority devolved from States and Territories

Regional (sub-State) Authorities

Catchment Management Authorities

Cross-Border Catchments & Aquifers

Irrigation Companies and Trusts

Urban Water Retailers

Local Government

Sewage, Stormwater, Town Water Supply

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The Bureau's new functions.

(as set out under the national water plan and Water Act 2007)

1. Set standards for water data measurement and transmission.
2. Gather water information and make it freely available via the web, with value-added analyses.
3. Conduct annual national water resource assessments.
4. Produce an annual national water account.
5. Provide continuously updated water availability forecasts.

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The water information value ladder.

Data >>> Information >>> Insight

>>> Increasing value >>>

Forecasting

Reporting

Analysis

Rarely done

Distribution

Integration

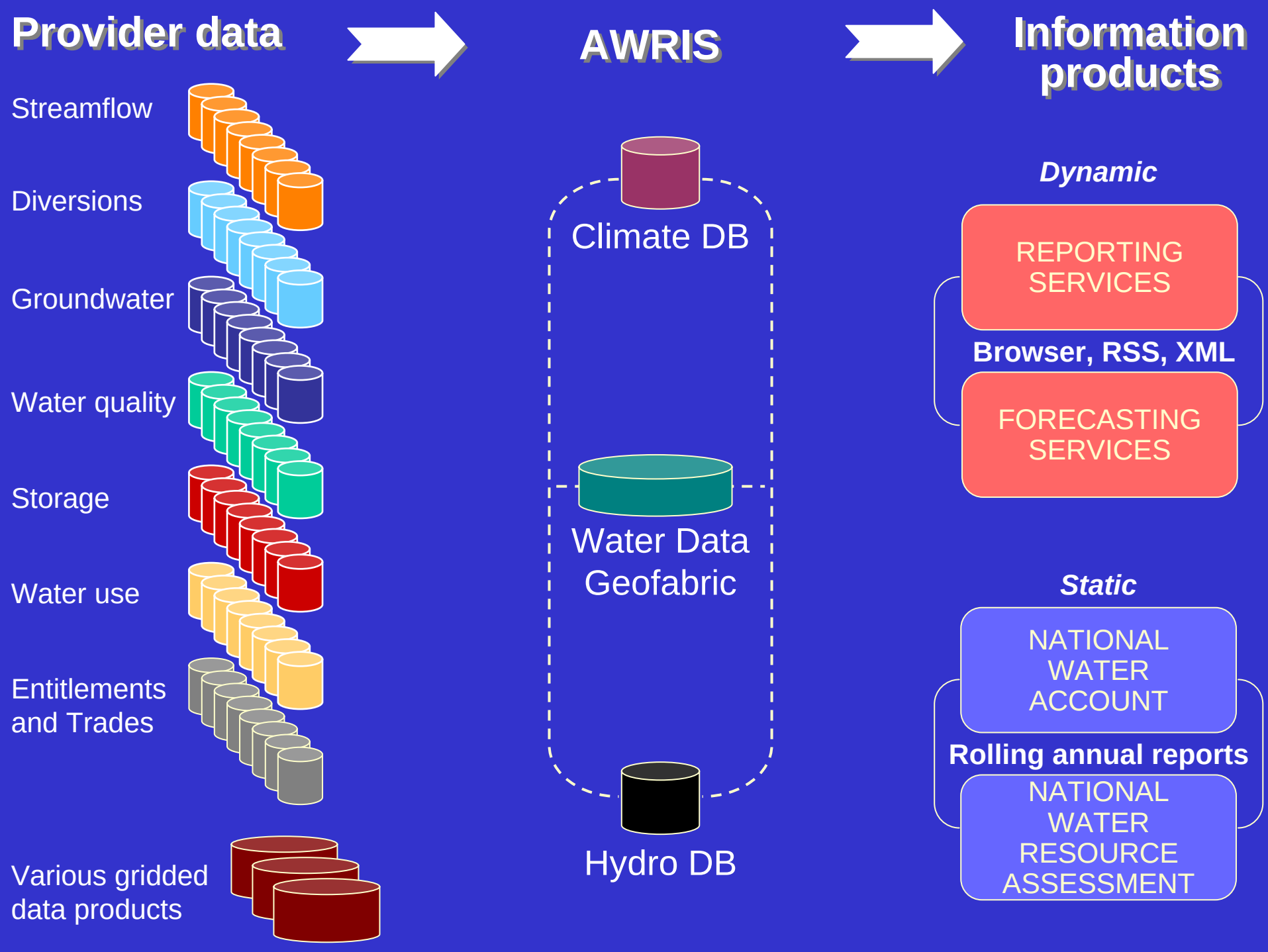
Generally done poorly

Archiving in house

Quality assurance

Measurement

Generally done well, by over 100 groups, but could be vastly improved with new technology


Provider data
AWRIS
Information products
Streamflow
Diversions
Groundwater
Water quality
Storage
Water use
Entitlements and Trades
Various gridded data products
Climate DB
Water Data Geofabric
Hydro DB
Dynamic
REPORTING SERVICES
Browser, RSS, XML
FORECASTING SERVICES
Static
NATIONAL WATER ACCOUNT
Rolling annual reports
NATIONAL WATER RESOURCE ASSESSMENT

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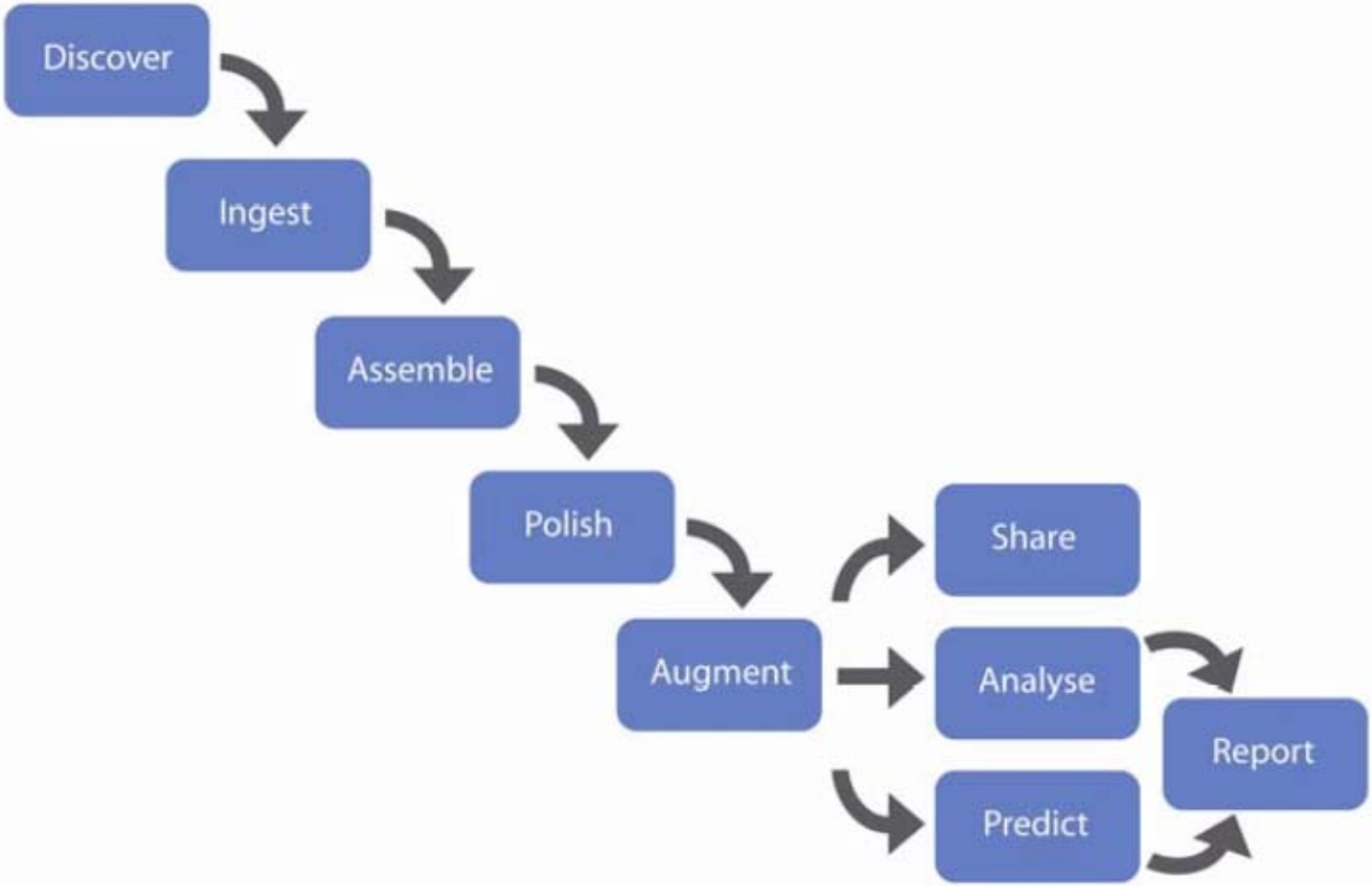
AWRIS work flow.



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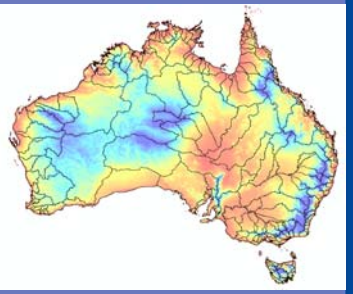
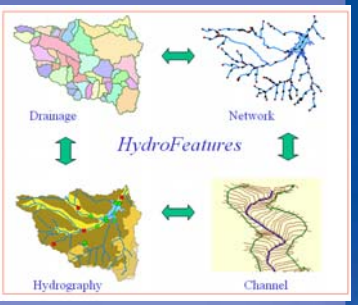
A national water data ‘geofabric’.





- Digitisation, new delineations, numbering and connectivity schemes for:
  - Surface water catchments and groundwater systems
  - River reaches and other water bodies
  - Irrigation system delivery and drainage channels
  - Hydrometric monitoring stations
  - Water extraction points (metered and non-metered)
  - Etc
- *Pretty much like the US has accomplished with NHDPlus and ArcHydro.*

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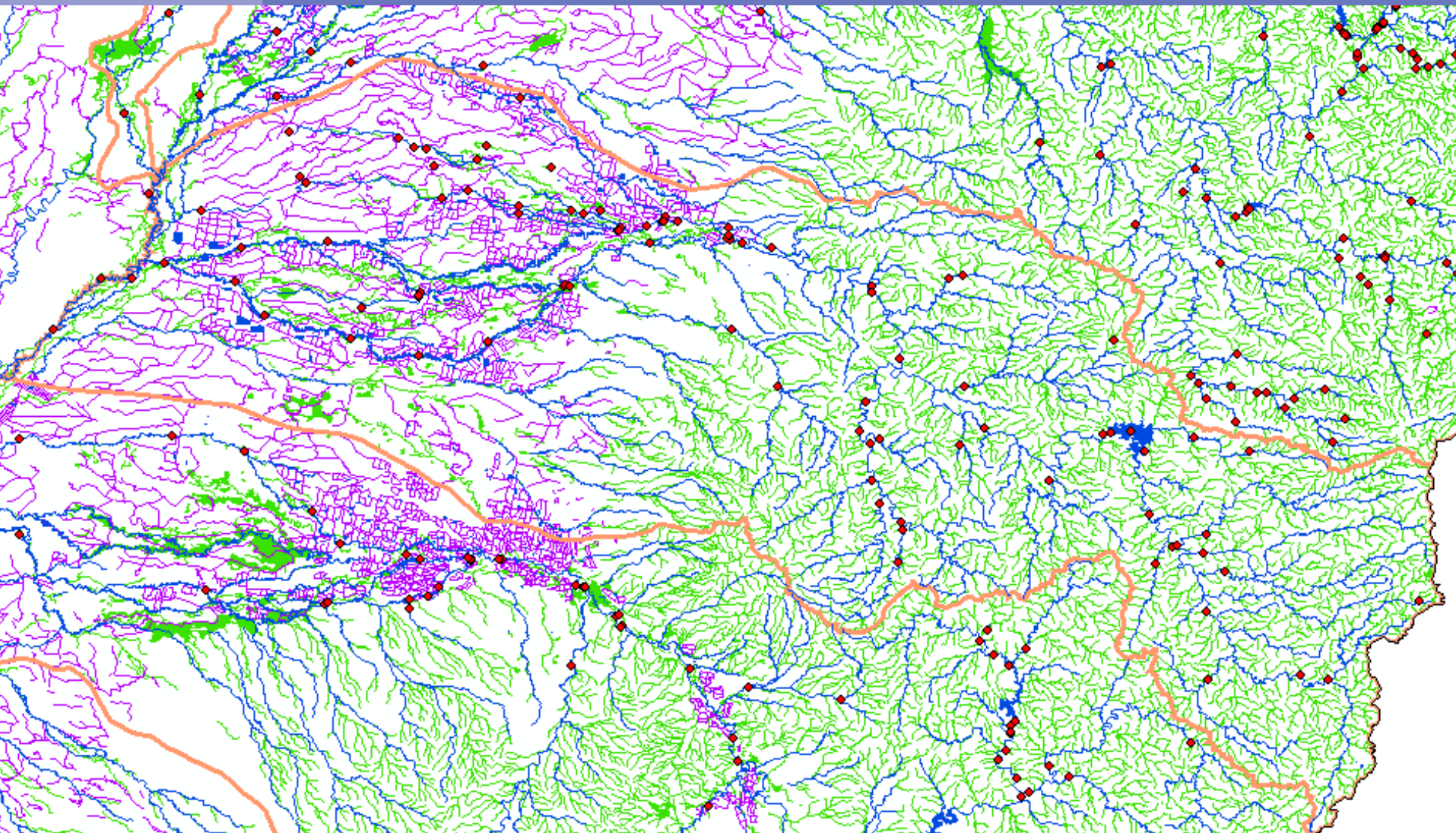
Subset of the Gwydir catchment, NSW.



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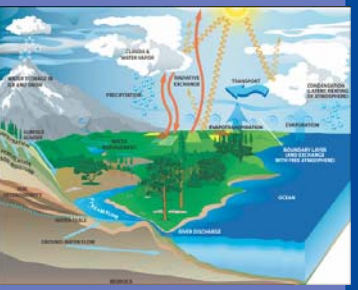
A national water account.



Entitlements

Resources

Allocations

Trades

Consumptive Use

Environmental Use

Production

ABS: Links to economy

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Hydrologic forecasting services.

(Possible areas of effort - to be resolved)

- Flood Warning and Forecasting
  - Hours to days, as per current activity
- River/Irrigation Operations Support
  - 1-5 days, linked to numerical weather prediction
- River/Irrigation Management Support
  - 3-12 months, linked to seasonal outlooks
- Long-range Hydrologic Modelling
  - Years-decades, linked to global circulation models

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Resourcing.

$460m over 10 years for 3 things:

- Core staffing and operating infrastructure.
- Special data sets, tools and knowledge.
- Improving hydrologic observing systems.

Complemented by $620m over 10 years for a major water use metering and telemetry rollout

(The Bureau wont manage this but will receive the data streams from several thousand water meters.)

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1. Core staffing and infrastructure. ($210m over 10 years)

- The Bureau **<u>will employ another ~120 staff</u>** to deliver a range of **functions**, including:
  - Data Capture and Handling
  - Analysis and Reporting
  - Forecasting

- Investments in data storage, web serving and computational power (and possibly satellite receiving stations).

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2. Special data, tools and knowledge. ($170m over 10 years)

- Systems development
  - Geofabric, AWRIS, modelling systems
- Research & Development
  - Water Information R&D Alliance (WIRADA)
  - eWater CRC
- Commercial data procurements
  - National Digital Elevation Model (DEM)
  - Mapping of landuse change and farm dam extent
  - Remote sensing imagery for various other purposes

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3. Improving hydrologic observing systems. ($80m over 5 years)

- The Bureau **won't make observations** beyond current meteorological and flood monitoring, but has …
- $80m to invest with the States to update hydrologic monitoring networks (not including water use metering)
- Now negotiating with lead water agencies, who will coordinate with other agencies

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Getting the job done.

- In-house (existing capability)
- In-house (new capability; now being recruited)
- R&D partners
- Consulting industry
- State agencies
- Commonwealth agencies

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External coordination and consultation.

1. **Australian Water Information Advisory Council -** advising how best to contribute to national water reform.

2. **Lead Water Agencies nominated.**

3. **Jurisdictional Reference Group on Water Information** - working through implementation issues with the States and Territories.

4. **Expert Panels -** getting talent to help us develop and promulgate a variety of standards and methods.

5. **User input –** Understanding user needs in the development and delivery of products

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Interacting with the Northern Territory.

NRETA nominated as the lead NT water agency.

Northern Territory membership of JRGWI:

John Gilmour

Executive Director, Land and Water

Natural Resources, Environment and the Arts

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National workshops on technical issues.

>100

Four national workshops held so far:

- Water Data Standards
- Water Information Systems Architectures
- Water Data Interoperability (international)
- Telemetry Systems for Water Data

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Water Act 2007
(Part 7 - Water Information).

- Clauses 118-135, pages 131-139
- General
  - Functions
  - Definitions
- Sets out Bureau's powers
  - Requesting information
  - Setting information standards
- Sets out Bureau's obligations
  - Publishing water accounts
  - Publishing information generally

http://www.environment.gov.au/water/action/npws-act07.html

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Regulations under S126.

- Under negotiation with the States and Territories
- Planning to finalise in March 2008
- **www.bom.gov.au/water/regulations**

4 Schedules:

A. Persons or classes of persons who must give water information
B. Kinds of water information to be given
C. Time within which information must be given
D. Form of the water information

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Water scarcity: A deepening problem.

Drying & Warming Climate

Growing Urban Demand

Over-allocation to Irrigation

Uncapped Groundwater Extraction

The big

8

water scarcity factors

Expanding Plantations

Expanding Farm Dams

The Environmental Flows Imperative

Bushfire Recovery Impacts

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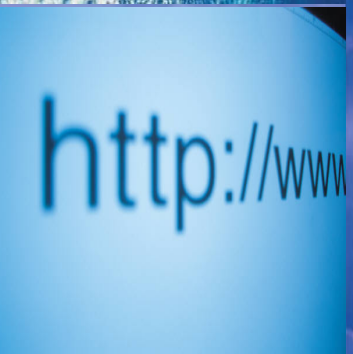
Outcomes.



- National water information standards established.
- Currency and quality of water data improved.
- Value-added water information products.
- Greatly improved water availability forecasting.
- Seamless national information coverage.
- Enhanced public access to information.
- An independent, authoritative voice.

All leading to greater rigour, foresight and confidence in water resources management.

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