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# Advancing Water Information.



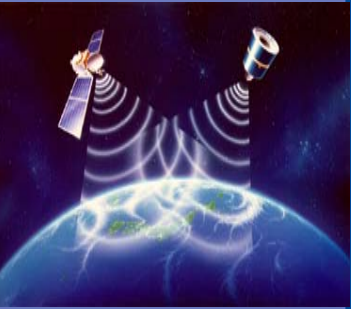
**Rob Vertessy**  
Bureau of Meteorology

*Water Information Industry Seminar  
Tasmania  
February 7, 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



# Functions of the Bureau of Meteorology.

National  
Weather Service

Climate and  
Meteorological  
Research  
(with CSIRO)

National Climate  
Monitoring  
System

National Water  
Information  
Service



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National Flood  
Warning and  
Forecasting  
Service

National Tidal  
Centre

National Ocean  
Current  
Prediction

National  
Tsunami Alert  
Service



# 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*

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## Regional (sub-State) Authorities

*Catchment Management Authorities*

*Cross-Border Catchments & Aquifers*

*Irrigation Companies and Trusts*

*Urban Water Retailers*

Authority  
devolved  
from States and  
Territories

## Local Government

*Sewage, Stormwater, Town Water Supply*



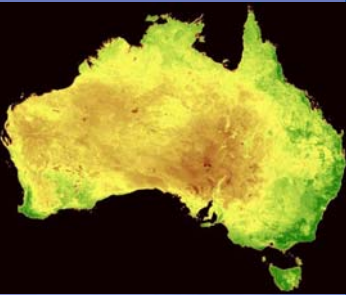
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# The Bureau's new functions.

*(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.



# The water information value ladder.



**Data >>> Information >>> Insight**

**>>> Increasing value >>>**

Measurement

Quality assurance

Archiving in house

Integration

Distribution

Analysis

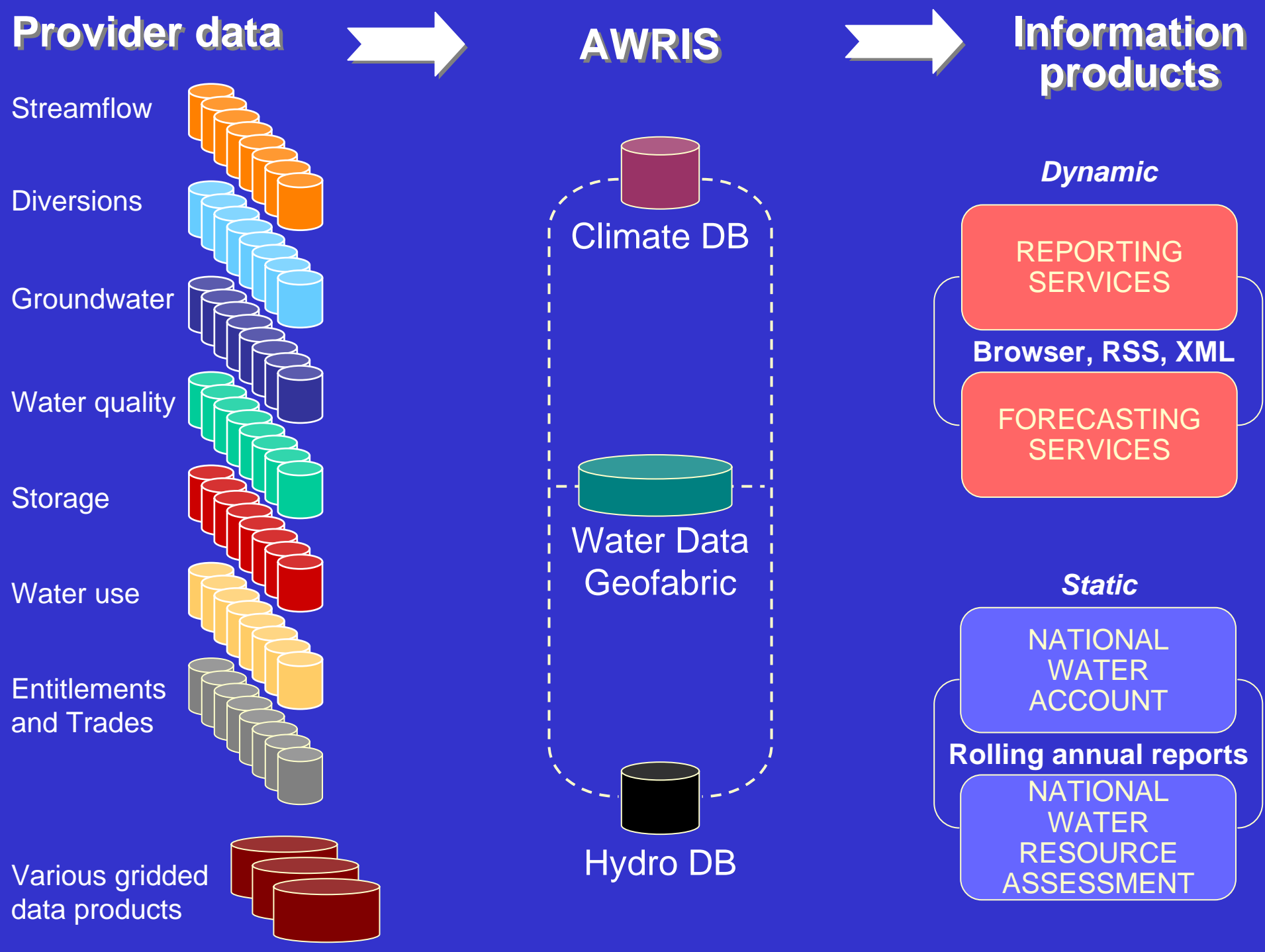
Reporting

Forecasting

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

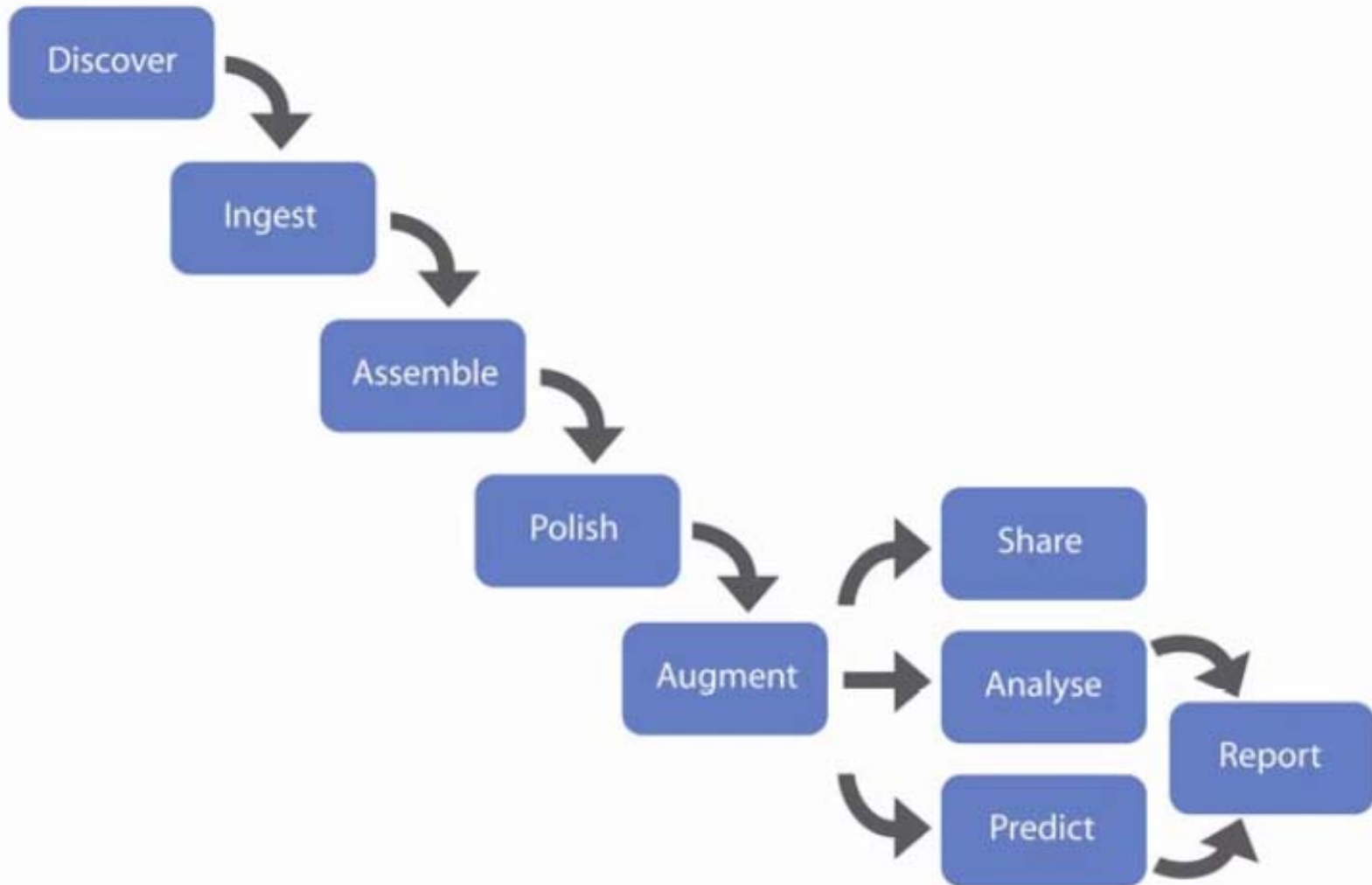
**Generally done poorly**

**Rarely done**





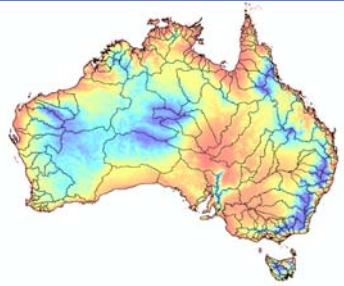
# AWRIS work flow.







# A national water data 'geofabric'.

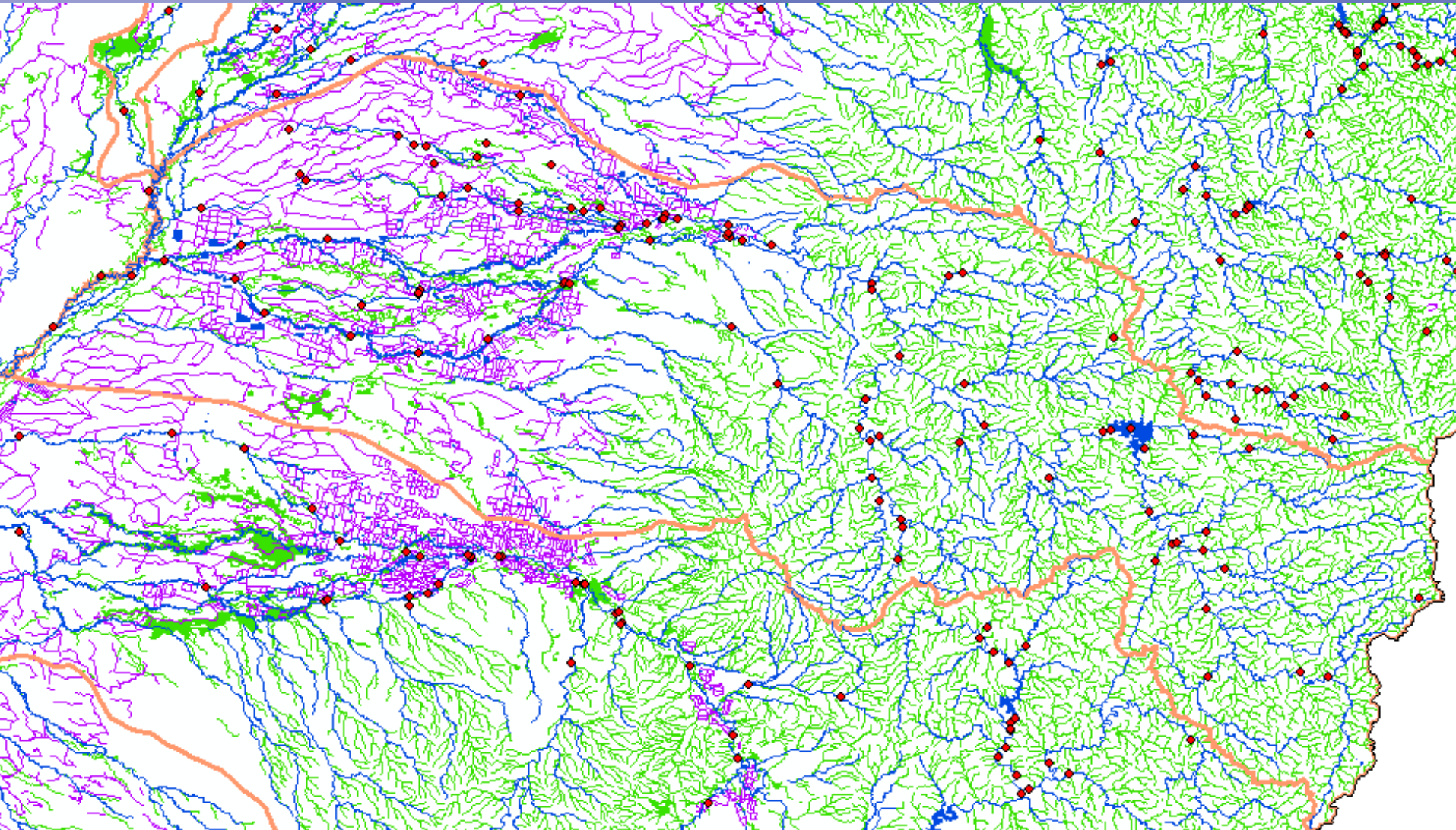


- Digitisation, new delineations, numbering and connectivity schemes for:
  - Surface water catchments and groundwater systems
  - River reaches and other water bodies
  - Irrigation system delivery and drainage channels
  - Hydrometric monitoring stations
  - Water extraction points (metered and non-metered)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



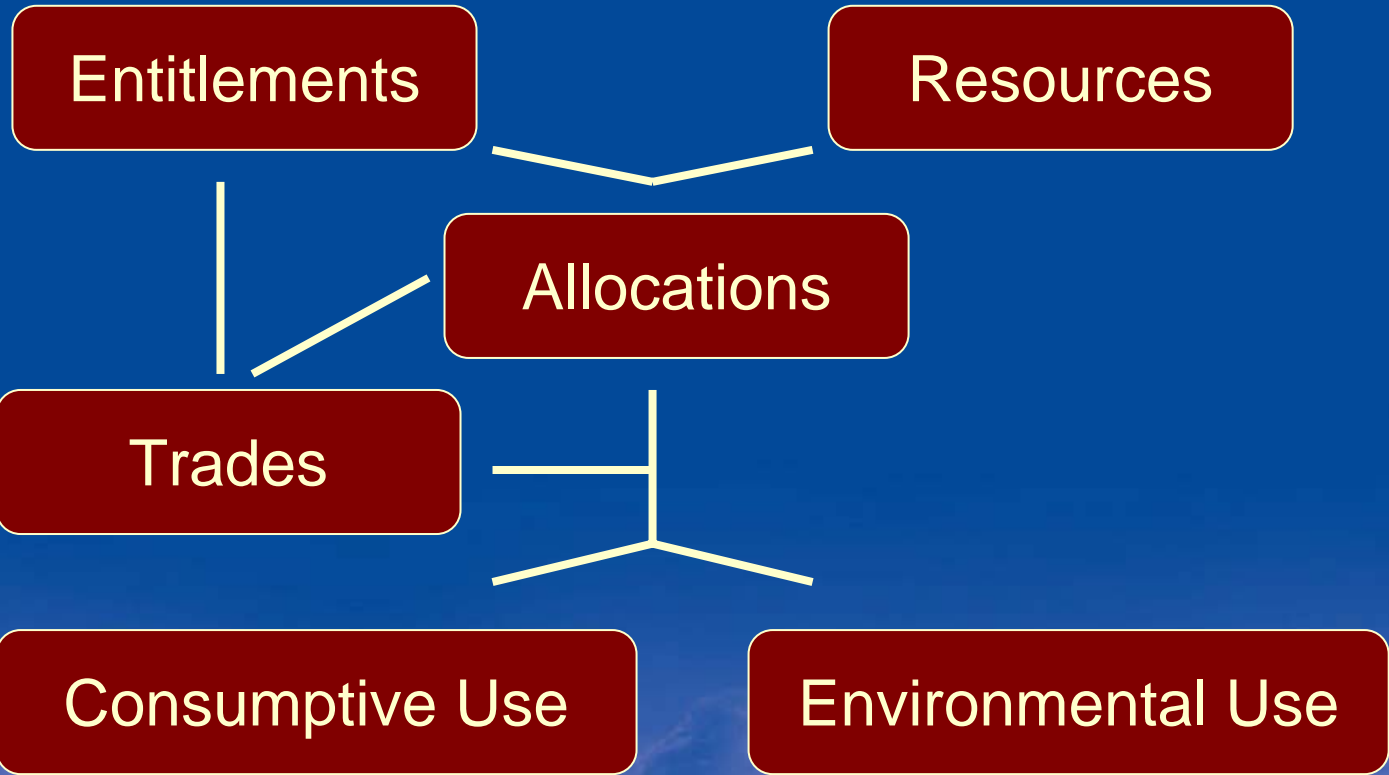
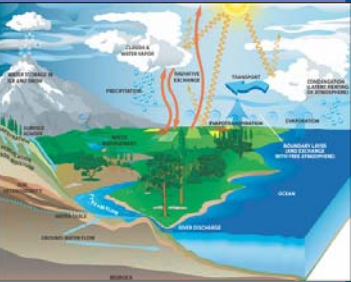
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# Subset of the Gwydir catchment, NSW.





# A national water account.



Production

ABS: Links to economy



# Hydrologic forecasting services.

(Possible areas of effort - to be resolved)

Time span increases  
Time resolution decreases



- 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



## 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.)



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

- The Bureau will employ another ~120 staff 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



## 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 Tasmania.

DPIW nominated as the lead TAS water agency.

Tasmania membership of JRGWI:

**Martin Read**

*Manager, Water Assessment Branch, DPIW*

**Greg Carson**

*Water Operations Team Leader,  
Hydro Tasmania*



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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>



## Regulations under S126.



- Under negotiation with the States and Territories
- Planning to finalise in March 2008
- [www.bom.gov.au/water/regulations](http://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.



<http://www>

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





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