



Australian Government
Bureau of Meteorology

Advancing Water Information.



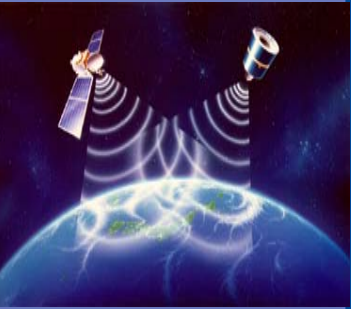
Rob Vertessy
Bureau of Meteorology

*Water Information Industry Seminar
Sydney
November 22, 2007*



Australian Government
Bureau of Meteorology

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



Australian Government
Bureau of Meteorology

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

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

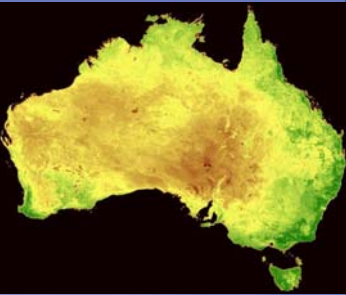
Sewage, Stormwater, Town Water Supply



Australian Government
Bureau of Meteorology

The Bureau's new functions.

(as set out under the NPWS 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

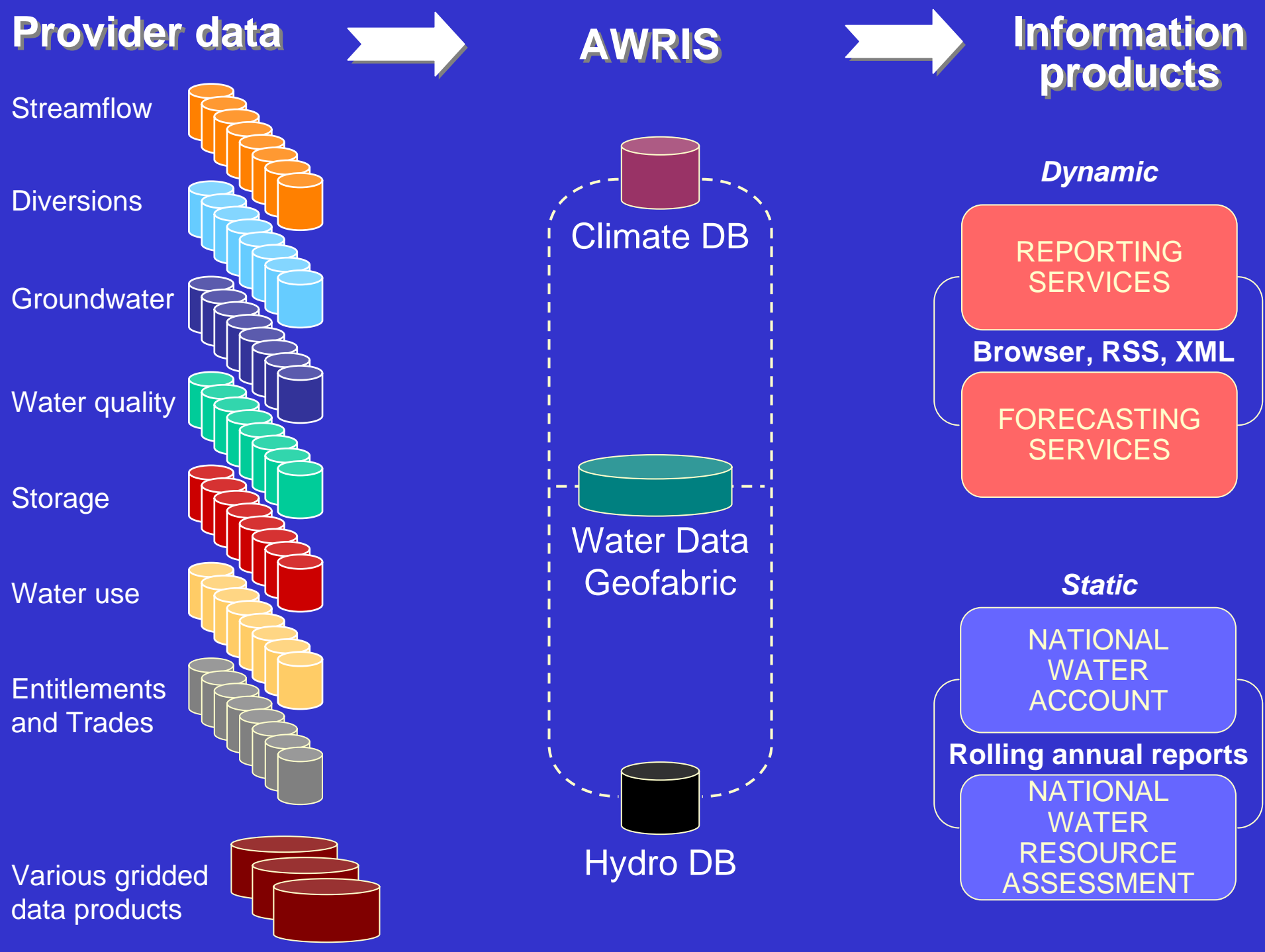
Reporting

Forecasting

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

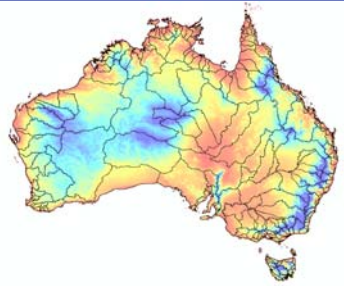
Generally done poorly

Rarely done





A national water data 'geofabric'.

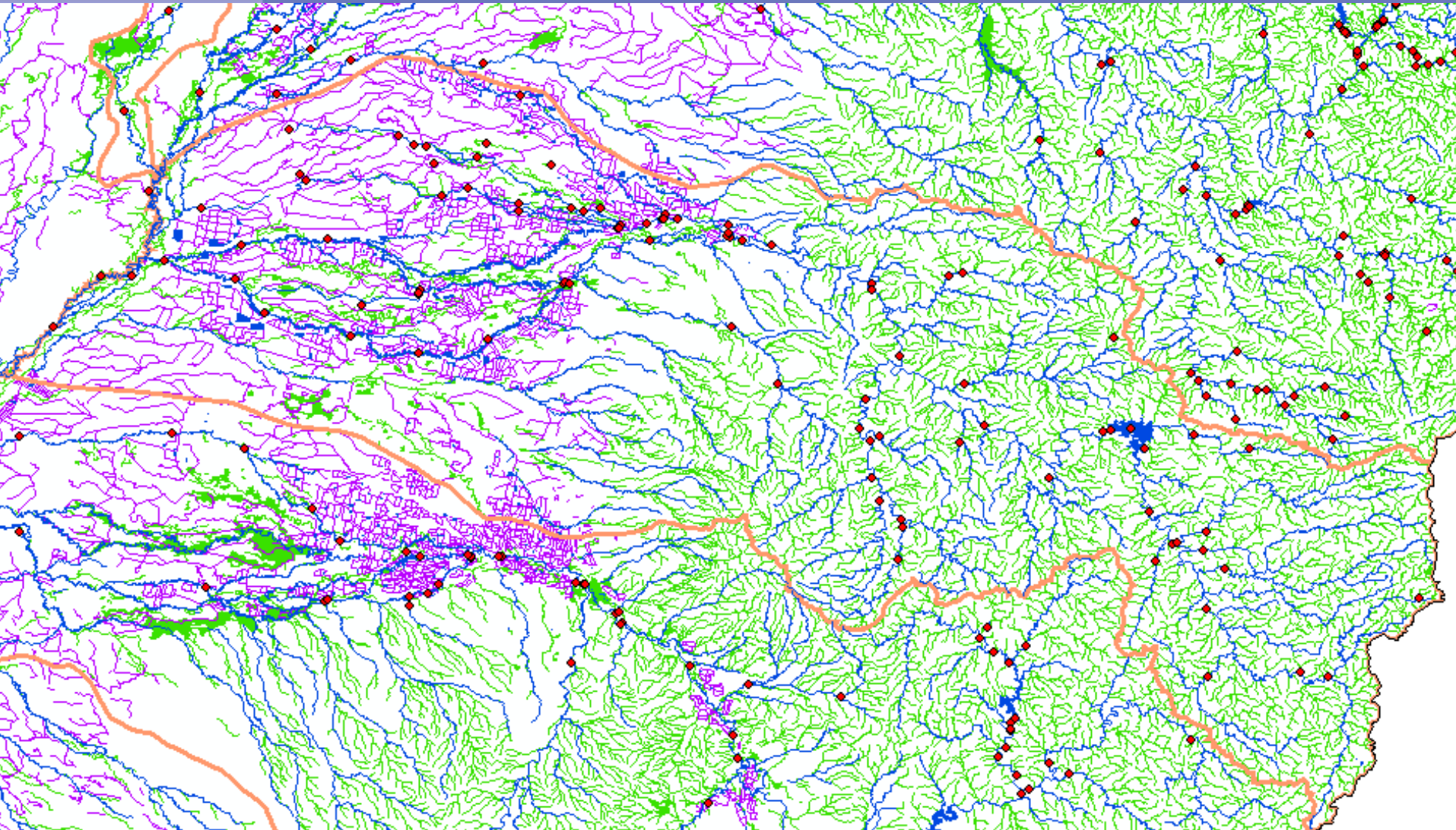


- Digitisation, new delineations, numbering and connectivity schemes for:
 - Surface water catchments and groundwater systems
 - River reaches and other water bodies
 - Irrigation system delivery and drainage channels
 - Hydrometric monitoring stations
 - Water extraction points (metered and non-metered)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



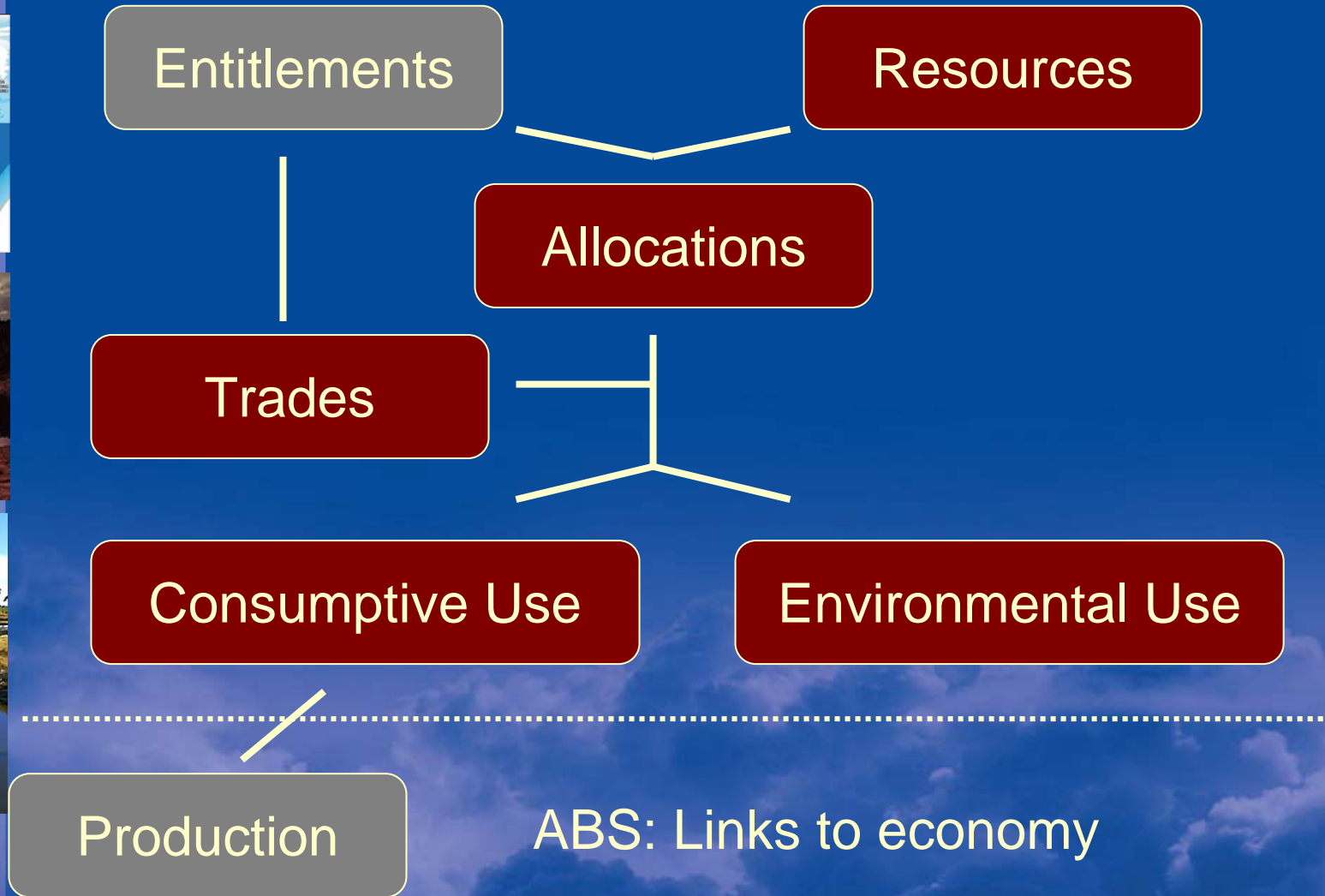
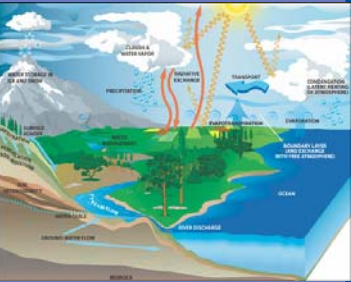
Australian Government
Bureau of Meteorology

Subset of the Gwydir catchment, NSW.





A national water account.



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).





Australian Government
Bureau of Meteorology

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

- Systems development
 - Geofabric, AWRIS, modelling systems
- Filling fundamental gaps in hydrologic knowledge
 - SW/GW interactions, interception
- Water resource investigations
 - One-off investigations, commissioned as needed
- Commercial data procurements
 - National Digital Elevation Model (DEM)
 - Annual mapping of landuse and farm dam extent
 - Remote sensing imagery for various other purposes





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)
- Some likely funding preferences:
 - Improving data quality and currency of water data
 - Technology to simplify data ingestion
 - Filling critical gaps in networks





Australian Government
Bureau of Meteorology

Getting the job done.



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



Australian Government
Bureau of Meteorology

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
- To be published by the GG when the Water Act is proclaimed 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 and manner of transmission



External coordination and consultation.

1. **Australian Water Information Advisory Council** - advising how best to contribute to national water reform.
2. **Jurisdictional Reference Group on Water Information** - working through implementation issues with the States and Territories.
3. **Expert Panels** - getting talent to help us develop and promulgate a variety of standards and methods.





Australian Government
Bureau of Meteorology

New South Wales membership of JRGWI.

DWE nominated as the lead NSW water agency.

Paul Pendlebury

Director, Water Systems, DWE

Dugald Black

Manager, Resource Processes, DWE





Australian Government
Bureau of Meteorology

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



Australian Government
Bureau of Meteorology

Keeping you informed.



- Public seminars
- Newsletters
- Our web site
- Direct contact with your agencies



Deeper engagement.

At the technical level:

- Expert panels
- Conferences and workshops
- Secondments

At the end user level:

- End user needs analyses
- End user satisfaction surveys
- Secondments



Australian Government
Bureau of Meteorology

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



Australian Government
Bureau of Meteorology

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.



Australian Government
Bureau of Meteorology

Contacts.

Rob Vertessy
r.vertessy@bom.gov.au
02 6216 7017

Louise Minty
l.minty@bom.gov.au
03 9669 4542

Bruce Stewart
b.stewart@bom.gov.au
03 9669 4889