



Hydrology Research: WRC perspective

Wandile Nomquphu



WRC Dialogue on The State of Hydrology (Research) in SA
31 March 2014
WRC (Pretoria)

Mandate of the WRC

💧 **The mandate of the WRC (the Water Research Act, Act no 34 of 1971) highlights the following functions to be carried out by the organisation:**

- 💧 Promoting co-ordination, co-operation and communication in the area of water research and development
- 💧 Establishing water research needs and priorities
- 💧 Stimulating and funding water research according to priority
- 💧 Promoting effective transfer of information and technology
- 💧 Enhancing knowledge and capacity building within the water sector



- 💧 **KSA 1: Water Resource Management** - water resource institutional arrangements, water resource assessment and planning, water quality management, resource protection, water and climate change
- 💧 **KSA 2: Water-linked Ecosystems** – ecosystem services, monitoring and assessment of eco-health
- 💧 **KSA 3: Water Use and Waste Management** – water footprints, brine, AMD, water-energy nexus, emerging contaminants and trace organics, drinking water quality monitoring
- 💧 **KSA 4: Water Utilisation in Agriculture** - increasing productivity of rainwater and irrigation water use; uplifting rural economies with market directed food production; water footprint in food value chains; alternative sources of renewable energy; preventing water and soil degradation and pollution.



KSA1: Water Resource Management

💧 Thrust 1: Water Resource Institutional Arrangements

Roles and responsibilities; tools and methodologies for IWRM institutional support



💧 Thrust 2: Water Resource Assessment and Planning

Understanding hydrological cycle; promoting systematic assessment & planning



💧 Thrust 3: Water Quality Management

More emphasis on 'solution formulation' than 'problem formulation'; decision support for well-known water quality problems; surveillance of emerging issues



💧 Thrust 4: Water Resource Protection

Understanding catchment processes and land use affecting quantity and quality



💧 Thrust 5: Water Resources and Climate

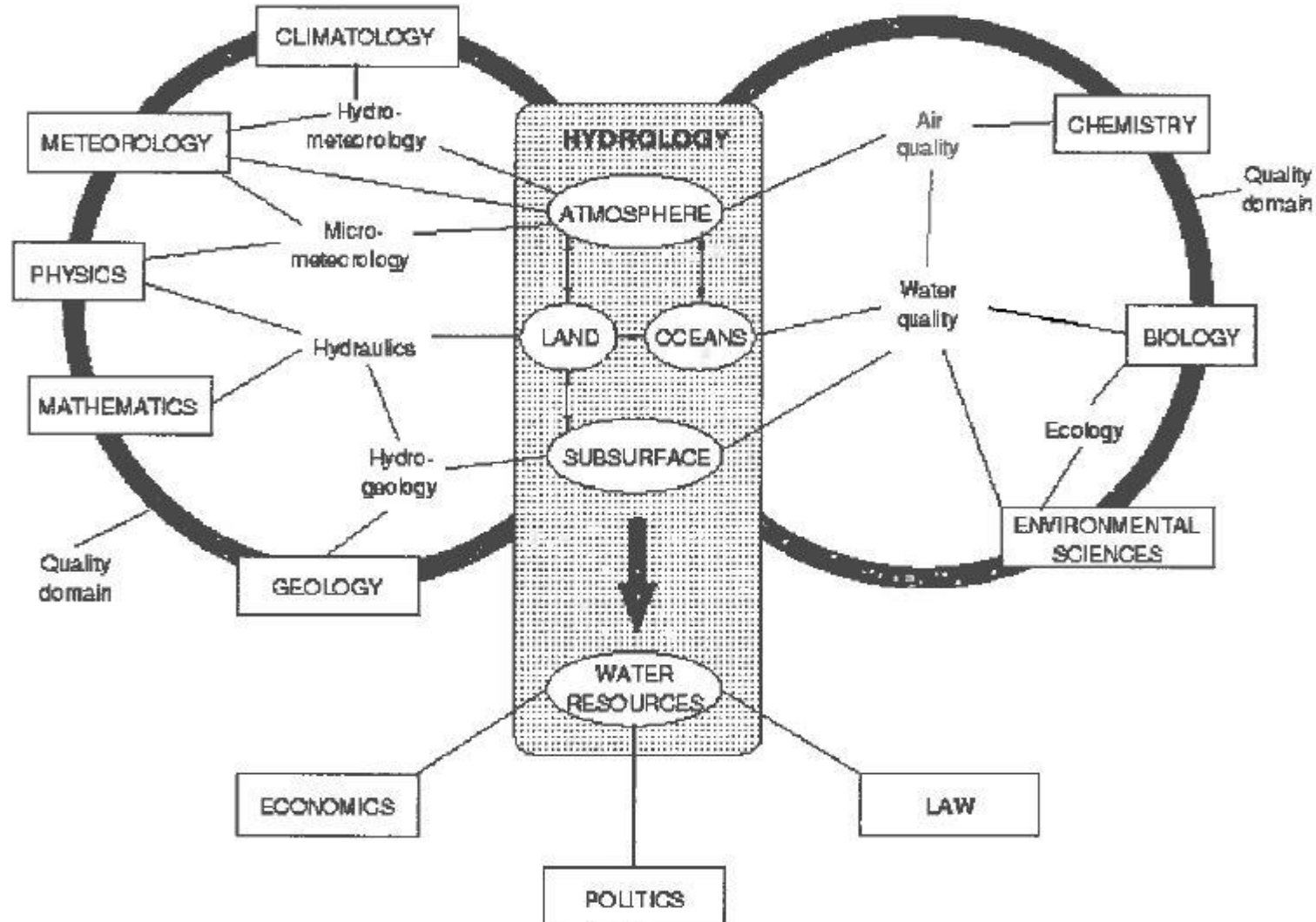
Quantitative predictions; understanding vulnerability; development of adaptation strategies; understanding extreme events



Hydrology components *(after BHS, 1990)*

Quantity Domain

Quality Domain



Hydrology research

WRC recognized hydrology as central to the:

- 💧 development, management and use of water
- 💧 management of flood and drought risks, and
- 💧 protection of aquatic environment



Established

- 💧 Coordinating Committee for Research in the Hydrological Cycle (CCRHC) operated under DWA – 1977
 - 💧 initiate and coordinate all hydrological research in SA
 - 💧 Support HCD through research centres at Universities (e.g. HRUs at Wits, Rhodes, Zululand, Natal, UOFS, etc)
- 💧 master research plans for
 - 💧 surface water research – late 1970s
 - 💧 groundwater research – 1981
 - 💧 effects of rural land use and catchment management on water resources - 1981
 - 💧 etc



Today:

- 💧 CCRHC framework still loosely operated by WRC without much financial backing to establish research infrastructure at Universities



Key issues for hydrology in SA

Hydrological research programme

-  *No clear and agreed hydrology research programme for the country*
-  *No authority/centre to articulate hydrological issues,*
-  *funding for hydrological research is limited (or not guaranteed)*



Long-term hydrological databases

-  *Lack of coordination in the development and maintenance of long-term national observations*
-  *Research projects short-lived and data held in research institutes (or individuals)*
-  *Lack of public access to hydrological data*
-  *Need to maintain processed datasets (and hence maintain adequate data-gathering network)*



Future skills base in hydrology

-  *The current national capability in hydrology is unknown as there is no audit mechanism to measure the throughput of 'real' hydrologists with a solid foundation in science and engineering.*
-  *The country has no long-term strategy for ensuring a constant supply of hydrology scientists, though the WRC, maintain some throughput of new students through its capacity building within projects.*



Thank you

