Water monitoring and assessment

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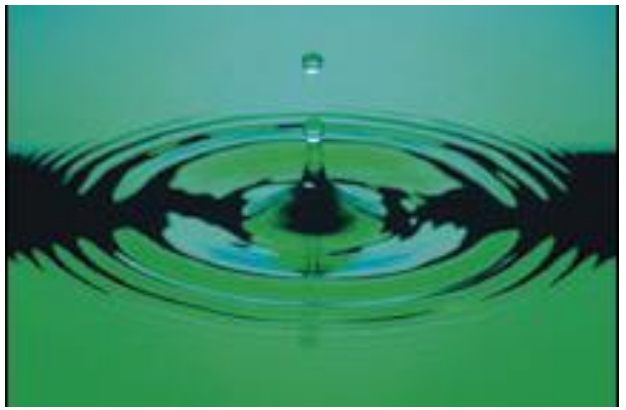
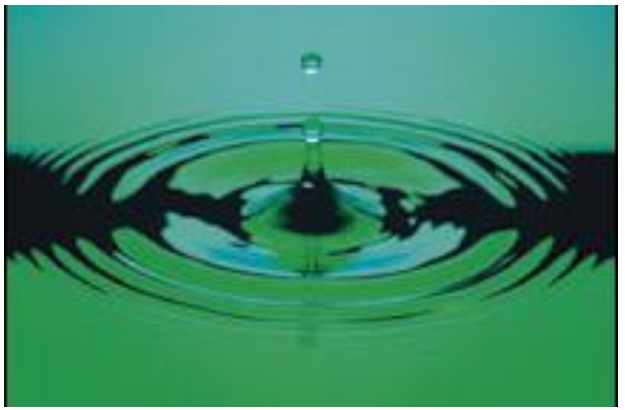
Background

- If you can not measure it you can not manage it.
- NWA 1998 – monitoring implicit in different components of Act
- FETWater Pases I and II - addressed effective cooperation and transfer of knowledge related to integrated water resource management, a requirement for the implementation of the NWA (Act 36 of 1998)
- Phase I – 2002-2005
  - RDM & Ground water
- Phase II – 2007-2010
  - Rivers and wetlands
- e I – 2002-2005
  - RDM & Ground water



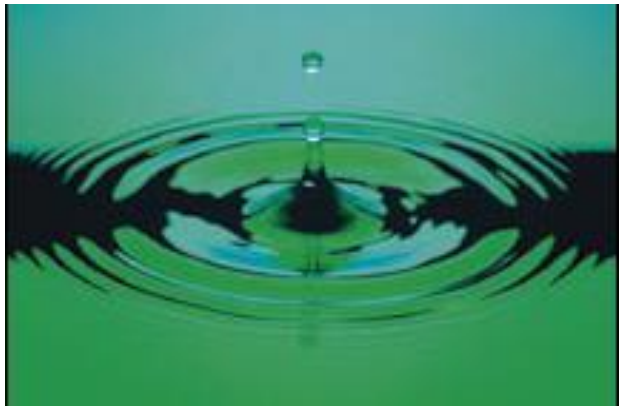
Background

- Phase I – RDM
  - Development of modules for Short Learning Programmes (SLP) and tutored MSc.
  - Non-credit bearing SLPs = Introduction to RDM; Introductory course to estuarine management in South Africa; SPATSIM, EWR-RDM
- Introduction to RDM (<300 between 2003-2010)
- Introduction to estuarine management (143 between 2007-2011)
- Tutored MSc modules – not part of a
- programme, not finalised



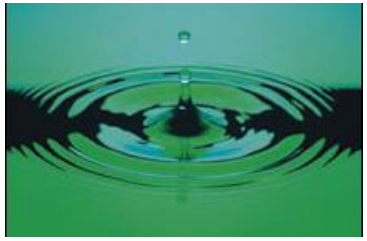
Background

- FETWater Phase II – Rivers and wetlands
- Initiated in 2009 –Partners: University of Johannesburg, University of Limpopo, University of Venda, University of the Free State
- Provide fundamental theoretical grounding - application
- Multi-modal delivery model
  - Credit bearing
  - Tutored MSc



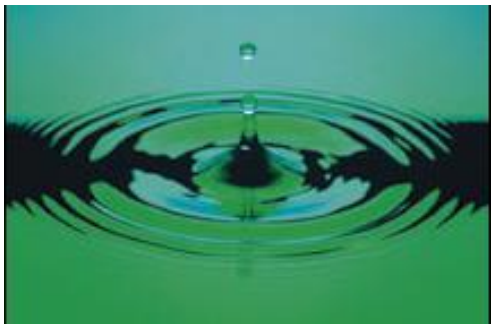
Background

- Curriculum finalised following wide consultation
  - DWA, SANBI, Wetland NGOs (WWf, Working for Wetlands)
- Modules developed as SLPs and later incorporated into Tutored MSc at UJ
  - Module 1: Wetland and river functional ecology
  - Module 2: Water quality and pollution.
  - Module 3: Monitoring of wetlands and rivers.
  - Module 4: Estuaries and the marine environment .
  - Module 5: Wetlands, rivers and the law.
  - Module 6: Wetland and river management.
  - Module 7: Wetland and river rehabilitation methods.
  - Module 8: Project (Minor dissertation)



Current

- FETWater Funding model
  - 2009-2010 student support for both SLP & MSc
- 67 total registered for short courses and MSc
- In 5 years - 21 completed the MSc (DWA, Consultants, other government departments)
  - 9 females and 11 males
- Currently 12 completing dissertations
  - 5 females and 7 males
- Registered in 2014 – 8 students (4 male and female)
- Financially sustainable

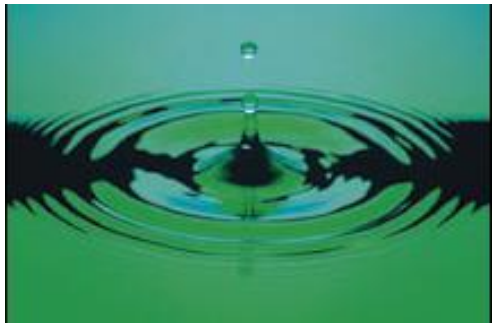


RDM Finalization

- Finalisation of RDM curricula (DWA) – Network of Networks
- Modules (adaptation of exisiting RDM modules, development of new modules)
  - 9 modules finalised + minor dissertation
- Presentation of tutored Masters at NWU and UJ
  - M Environmental Management (Environmental Water Requirements) from 2015 onwards
  - MSc Environmental Sciences (Environmental Water Requirements) – 2016/2017
  - National to regional (SADC)
- Diploma to train Aquatic Technicians (UniVen)
- WRC/DWA – SLP in fish biomonitoring

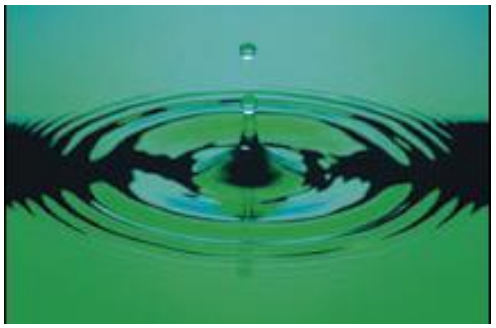
RDM Finalization

Module	RDM / Environmental water requirements Module name	RDM Credit value	UJ MSc Aquatic Health module code	NWU M Env. Manag. module code
Module 1	Background and context: Environmental water requirements and legal framework	10	AQH0019 (10 of 30)	OMB0878 (10 of 40)
Module 2	Resource Economics	10	AQH0039 (10 of 30)	OMB0879 (10 of 50)
Module 3	Hydrology	10	AQH0029 (10 of 30)	OMB0879 (10 of 50)
Module 4	Geohydrology	10	AQH0019 (10 of 30)	OMB0879 (10 of 50)
Module 5	Geomorphology	10	AQH0019 (10 of 30)	OMB0879 (10 of 50)
Module 6	Aquatic ecology	10	AQH0019 (10 of 30)	OMB0879 (10 of 50)
Module 7	Water Quality	10	AQH0019 (10 of 30)	OMB0878 (10 of 40)
Module 8	Technical Integration (EWR) and implementation	10	AQH0039 (10 of 30)	OMB0878 (10 of 40)
Module 9	Implementation and management options for water supply	10	AQH0039 (10 of 30)	OMB0878 (10 of 40)
Module 10	Minor dissertation	90	AQH0049 (90 of 90)	OMB0873 (100 of 100)
Total credits for an MSc at NQF level 9		180	180	190



Points to consider when developing training material

- Level of delivery of material (NQF)
  - Universities – diplomas, degrees, SLPs NQF 6 >
  - SETAs – NQF <6
  - Quality control - assessment
- New degree programmes – period 18-24 months
  - “fast tracking” via inter-governmental channels, e.g. DST and DHET for Nanotechnology tutored MSc
- SLP – business model of universities
- Technical vs academic training
  - short courses = SASS accreditation, fish identification, gauging weir calibration

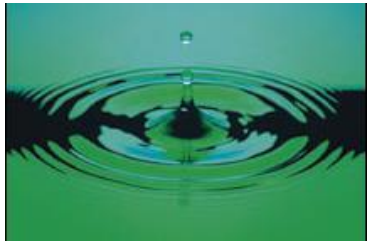


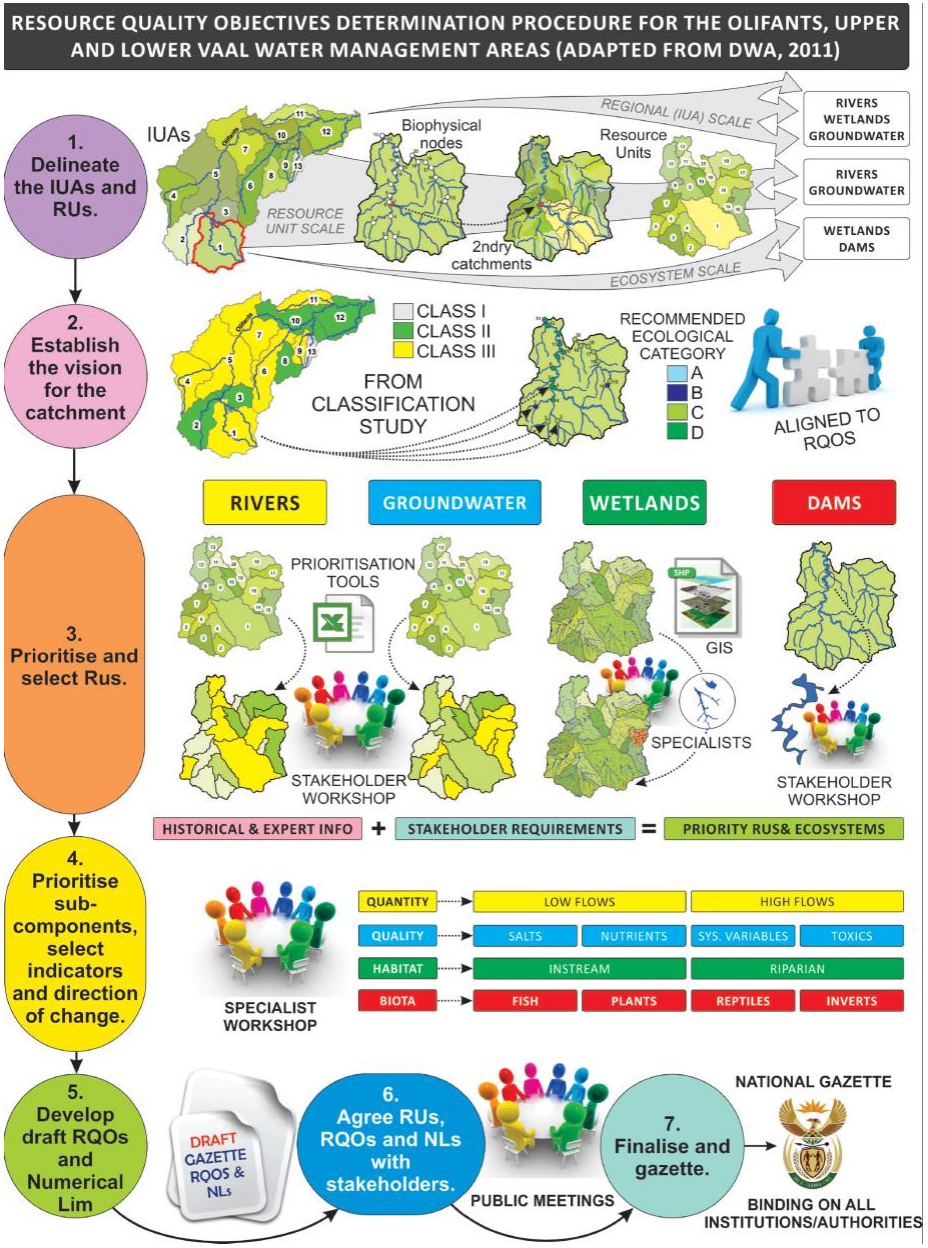
The NWA provides for:

A -· the setting of the Reserve (training developed in Phases I and II),

B -· the classification of significant water resources (activities for Phase III?),

C - · the determination of Resource Quality Objectives (activities for Phase III?).





Lessons learnt (short comings?)

- Method implementation difficulties due to foundational knowledge gaps with regulators (Phases I and II).
- Continuous method development requirements and training (NB wetlands, dams and groundwater).
- Understanding the importance of and establishing classification visions – incomplete for RQO determination.
- Integration of Water Resource protection measures: Reserve – Classification and RQOs.
- Availability of evidence to make sound decisions.
- Implementation resource limitations, NB by regulators. This includes lack of trained DWS staff at regional level in SA.
- Uncertainty associated with gazetted numerical limits, achieving RQOs and RQO revisions.

Lessons learnt (short comings?)

- Training on implementation lacking!
  - Need for implementation study. Once the Water Resource protection measures are established they need to THEN be implemented – how do you do this? Who can do this (Neels coined the new “mystic manager” concept who will be solving the “world's” problems).
- Stakeholder engagement process issues, who, how?