Progress in the Implementation of UNESCO IHP-HELP

Some Practical Aspects

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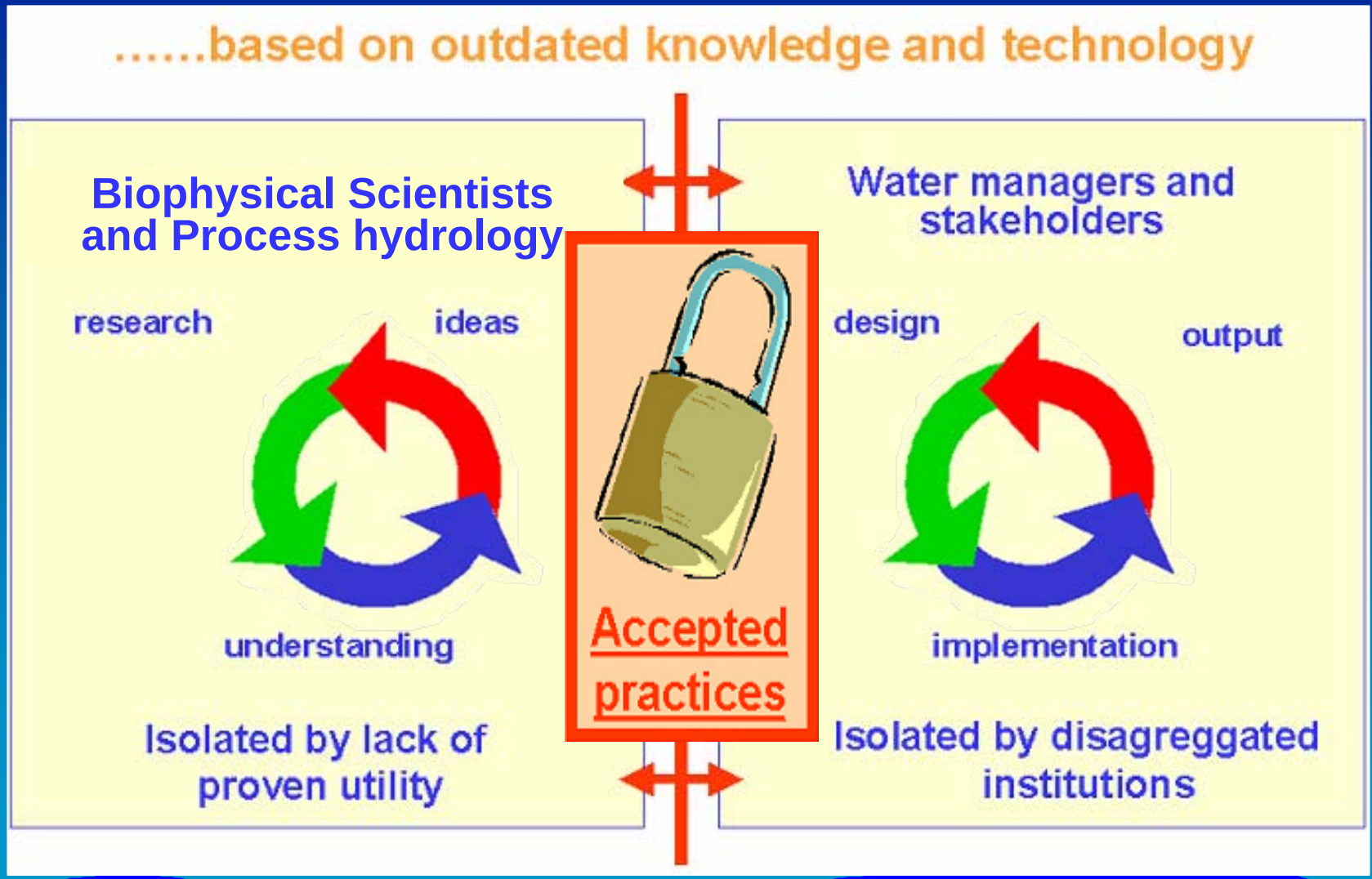
Purpose of Presentation

- HELP and RCUs
- Inspirational HELP Science
- Linking Basins for Joint Learning
- Is HELP A Success?

“Paradigm Lock”



How to use Science for the benefit of Society ?

HELP Ladder of Achievement
Basin categories

Demonstration

Operational

Evolving

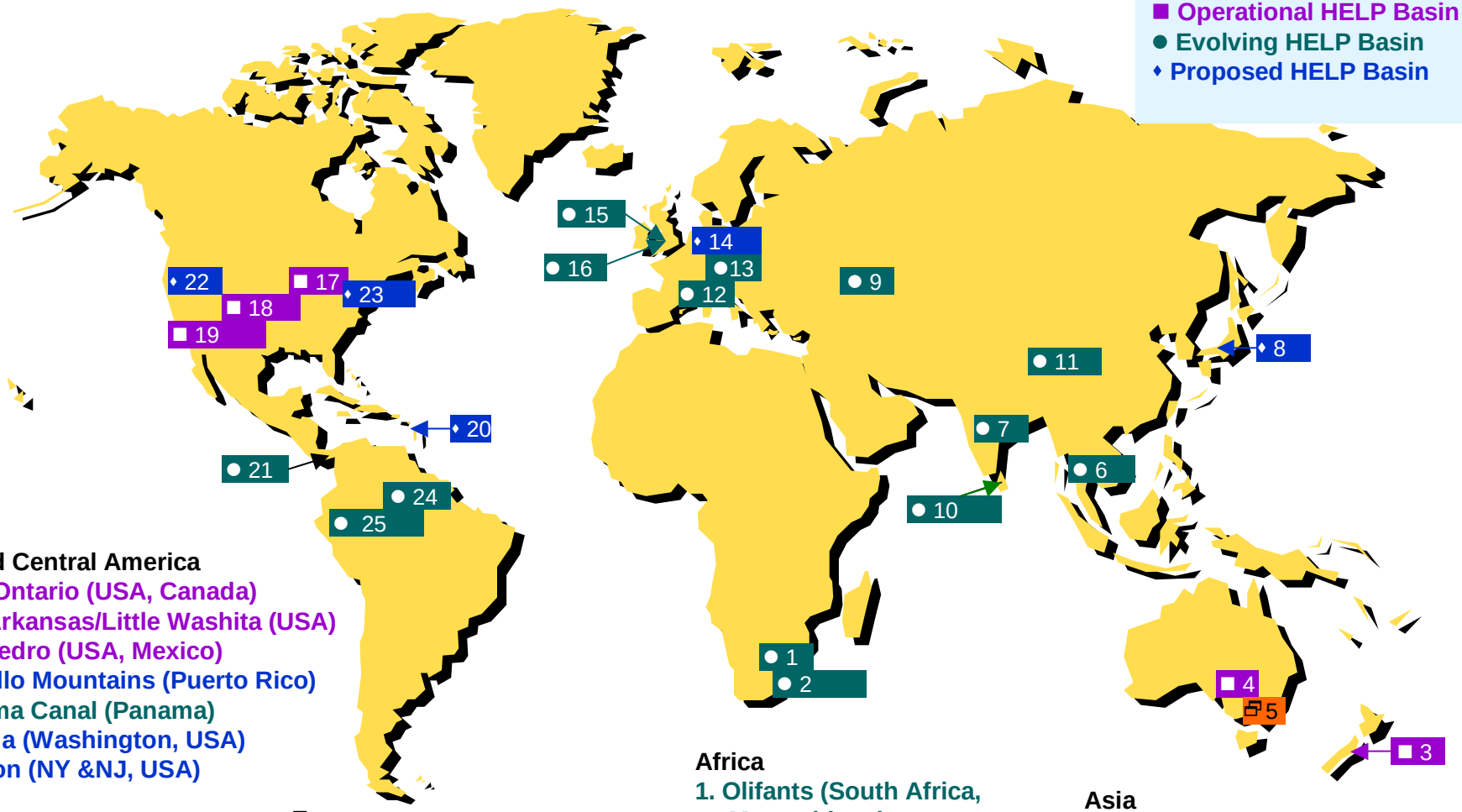
Proposed

Murrumbidgee HELP Basin, Australia

Western Ghats, India

Thukela HELP Basin, South Africa

HELP PILOT PHASE DRAINAGE BASINS



North and Central America
17. Lake Ontario (USA, Canada)
18. Red-Arkansas/Little Washita (USA)
19. San Pedro (USA, Mexico)
20. Luquillo Mountains (Puerto Rico)
21. Panama Canal (Panama)
22. Yakima (Washington, USA)
23. Hudson (NY &NJ, USA)

South America
24. Rio Jau and/or Rio Branco or Ji-parana (Brazil)
25. Rio Jequetepeque (Peru)

Europe
12. Herault (France)
13. Danube (5 countries in Europe)
14. Spree-Havel (Germany)
15. Upper Severn (UK)
16. Thames (UK)

Middle East (None)

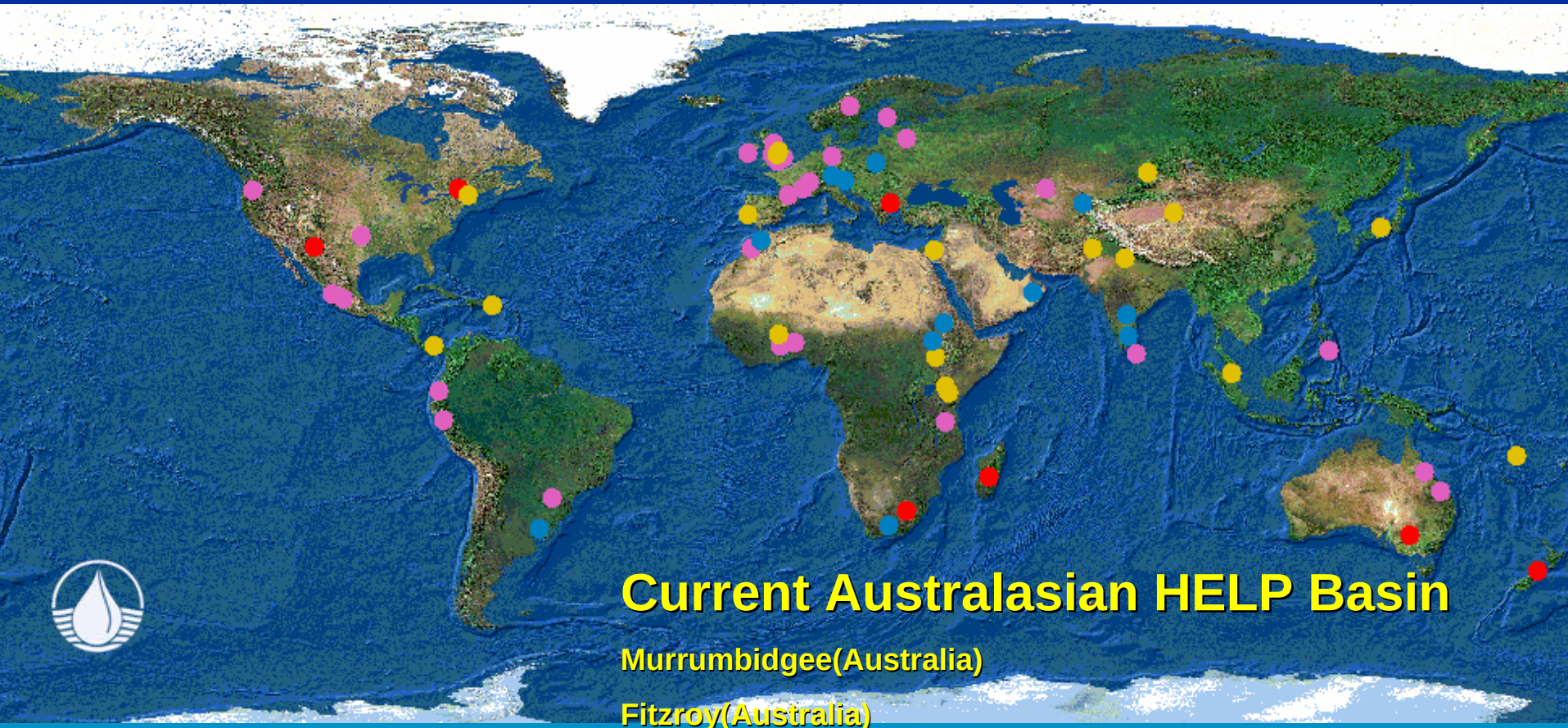
Africa
1. Olifants (South Africa, Mozambique)
2. Thukela (South Africa)

Australasia
3. Motueka (New Zealand)
4. Mount Lofty (Australia)
5. Murrumbidgee, sub-basin of Murray Darling (Australia)

Asia
6. NE of Thailand and Vietnamese Delta, sub-basins of Mekong (6 countries in Asia)
7. Subernarekha (India)
8. Yasu or Tama (Japan)
9. Aral Sea (Central Asia)
10. Walawe (Sri Lanka)
11. Tarim (China)

CURRENT HELP GLOBAL NETWORK

67 Basins



Current Australasian HELP Basin

Murrumbidgee(Australia)

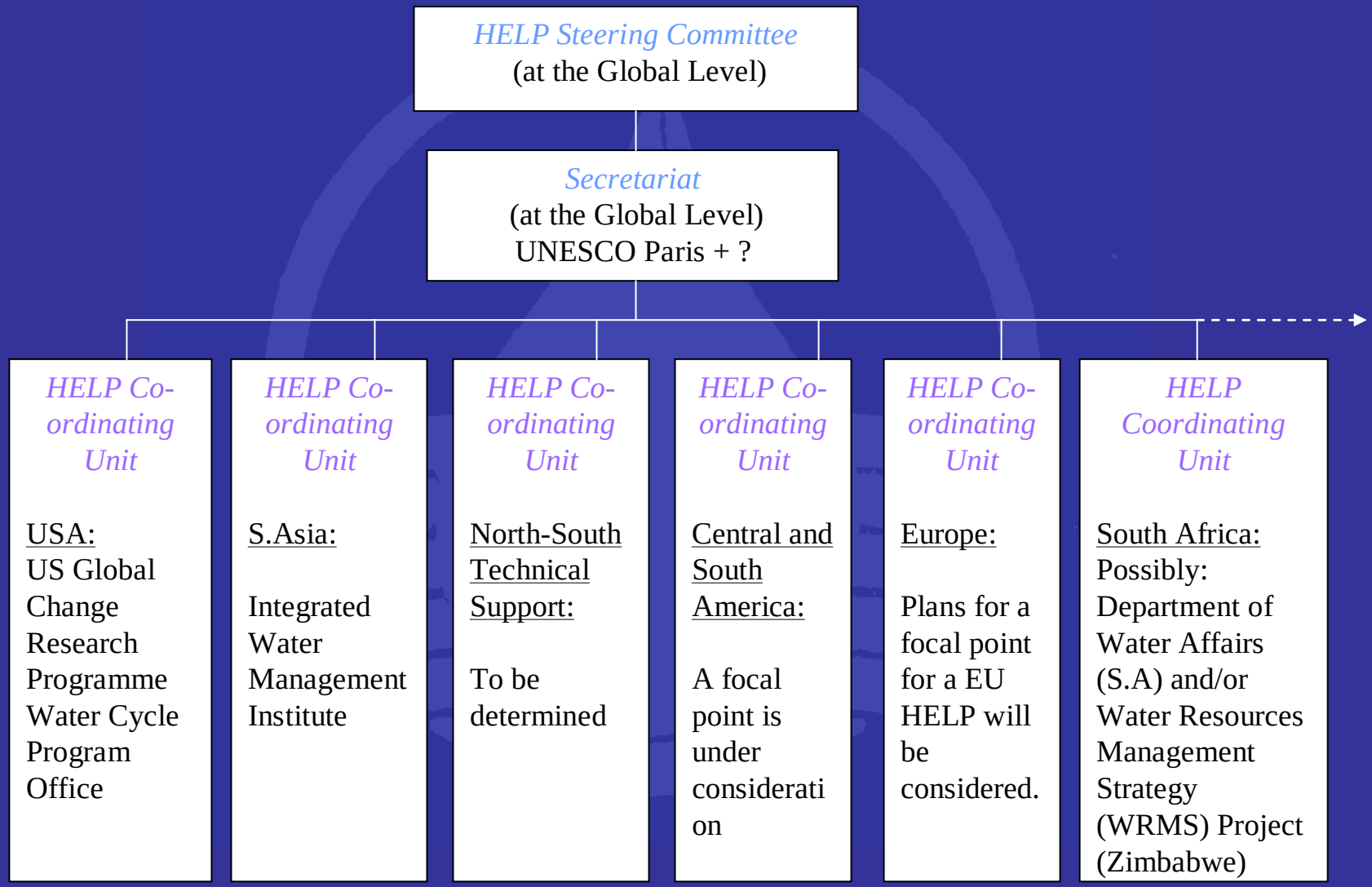
Fitzroy(Australia)

Burdekin(Australia)

Motueka(New Zealand)

Talise(Vanuatu)

HELP STRUCTURE



HELP Regional Coordinating Units-RCUs

- *North America (USA, Mexico and Canada):*
  US Global Change Research Program. Washington, USA
  Contact: Ms Susanna Eden. seden@usgcrp.gov

- *Australia, New-Zealand, South Pacific:*
  CSIRO Land and Water, Griffith, Australia, Charles Sturt University, Wagga Wagga Contact: Professor Shahbaz Khan. shahbaz.khan@csiro.au; skhan@csu.edu.au

- *Latin America and the Caribbean:*
  FIMCM-ESPOL, Escuela Superior Politecnica del Litoral, Ecuador
  Contact: Ms Pilar Cornejo R. de Grunauer. mpcr@hotmail.com

- *Europe (from November 2005):*
  International Water Law Research Institute, Univ Dundee, UK
  Contact: Ms Patricia K. Wouters. p.k.wouters@dundee.ac.uk

Role of RCUs – Global Level

- Represent the Region in the Global HELP Committee
- Report regional activities, support, needs of HELP Basin in the Region to the Global HELP Committee.
- Act as a Clearing House for the HELP Secretariat in the Region (funding, training, workshop, other opportunities)
- Participate, upon request by the IMC/Secretariat in the Review Process for Potential HELP Basins in other Regions:

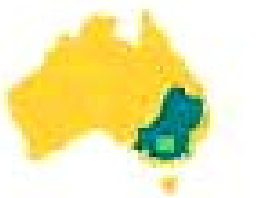
Role of RCU – Region Level

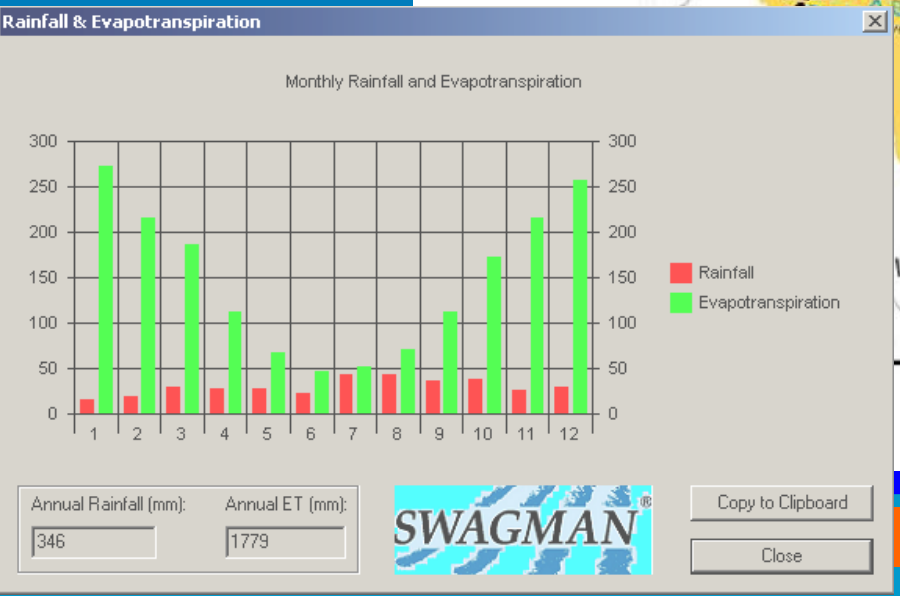
- Represent HELP in the Region
- Provide regional HELP “vision” consistent/supportive of HELP principles.
- Disseminate HELP activities/program
- Clearing Houses to HELP Basins groups in the region (funding, meetings, other opportunities/ country, regional, global)
- Provide a permanent forum for HELP Basin networking in the region
- Provide advice to present HELP Basin on actions to improve their HELP standards: mentoring/ guidance/ supportive function.
- Provide guidance for potential HELP Basins enrollment
- Coordinate the Review Process for Potential HELP Basins in the Region – disseminate applications to other regions for review
- Liaise with FRIEND office in the Region, where appropriate
- Coordinate activities/initiatives at the regional level
- Facilitate Training – capacity building
- Initiate Publications (books, journal)

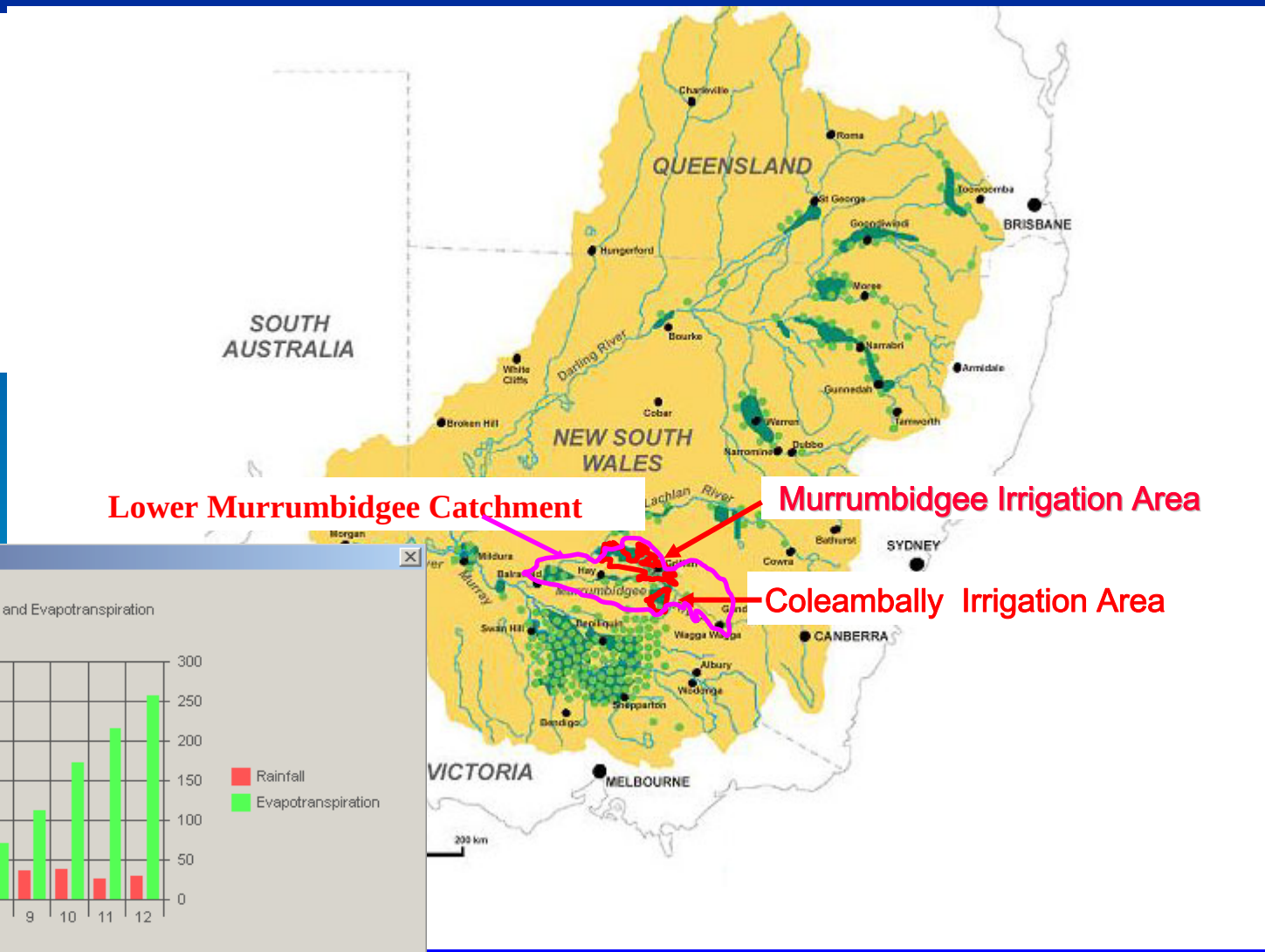
Some examples of scientific issues to be addressed

- Status of modeling has surpassed field testing.
- Experimental hydrology focused on microscale.
- Limited number of field experiments to address process hydrology at mesoscale.
- Water quality – process hydrology linkage.
- Need to filter human impacts from climate variability on the hydrology of landscapes.
- Interannual – long-term experimental hydrology data sets to address extremes.
- Impacts of declining support for long-term monitoring.

Lower Murrumbidgee Catchment







Overview of Issues in Lower Murrumbidgee

- Over allocation of surface and groundwater
- Shallow watertables and soil salinity
- Declining pressure levels and contamination of aquifers
- Drought - reduced water flows in the river
- Competition with downstream users (environmental flows and water quality)
- Increasing salinity in the river

Building Blocks for Influencing Change

Management Options Development with Stakeholder Involvement

Education
SWAGMAN Whatif
Formal & Community
Media

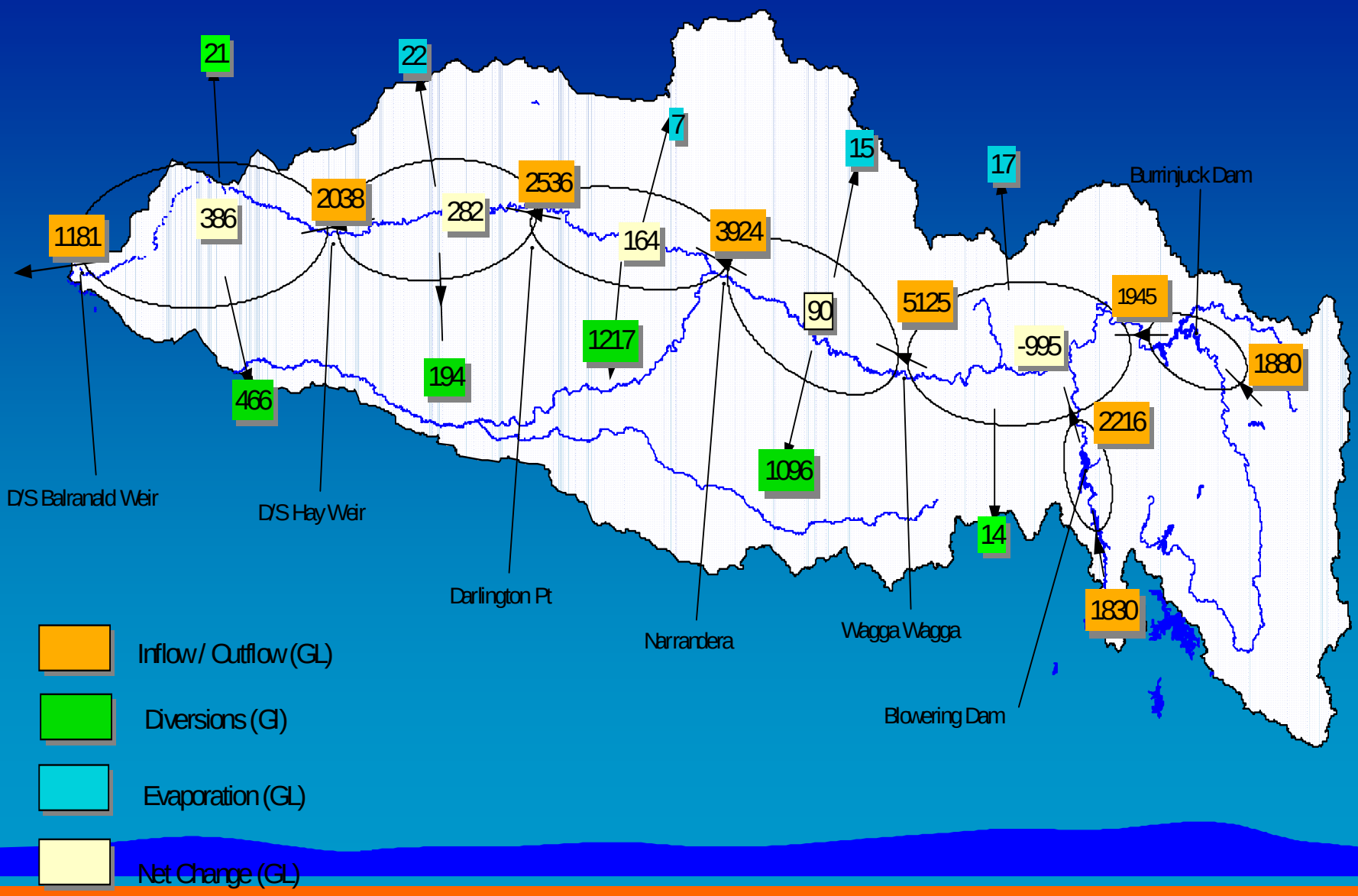
Policy
SWAGMAN Options
SWAGMAN Farm
SWAGMAN Policy

Tools
GIS
Remote Sensing
DSS

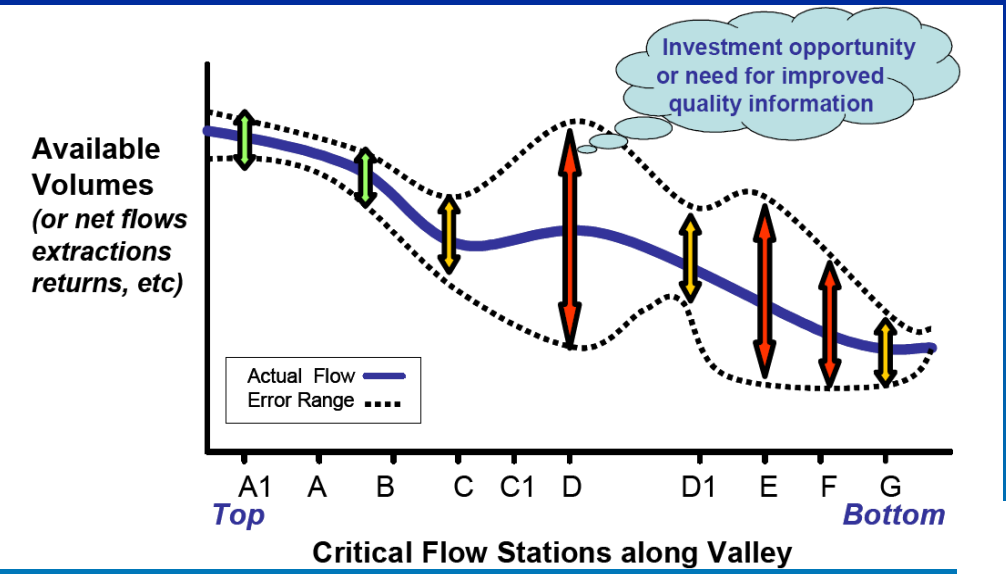
Management
SWAGSIM
SIRAGFIELD
SWAGMAN Destiny
Net recharge mgt
Crop models

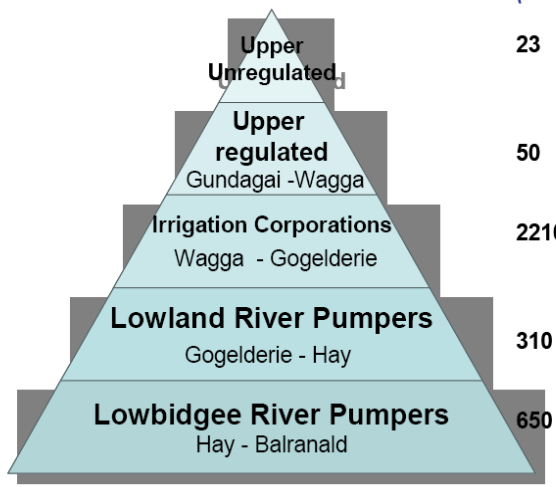
Scientific Measurement
Met data
Crop water use
Water tables
Soils

Murrumbidgee System Water Account



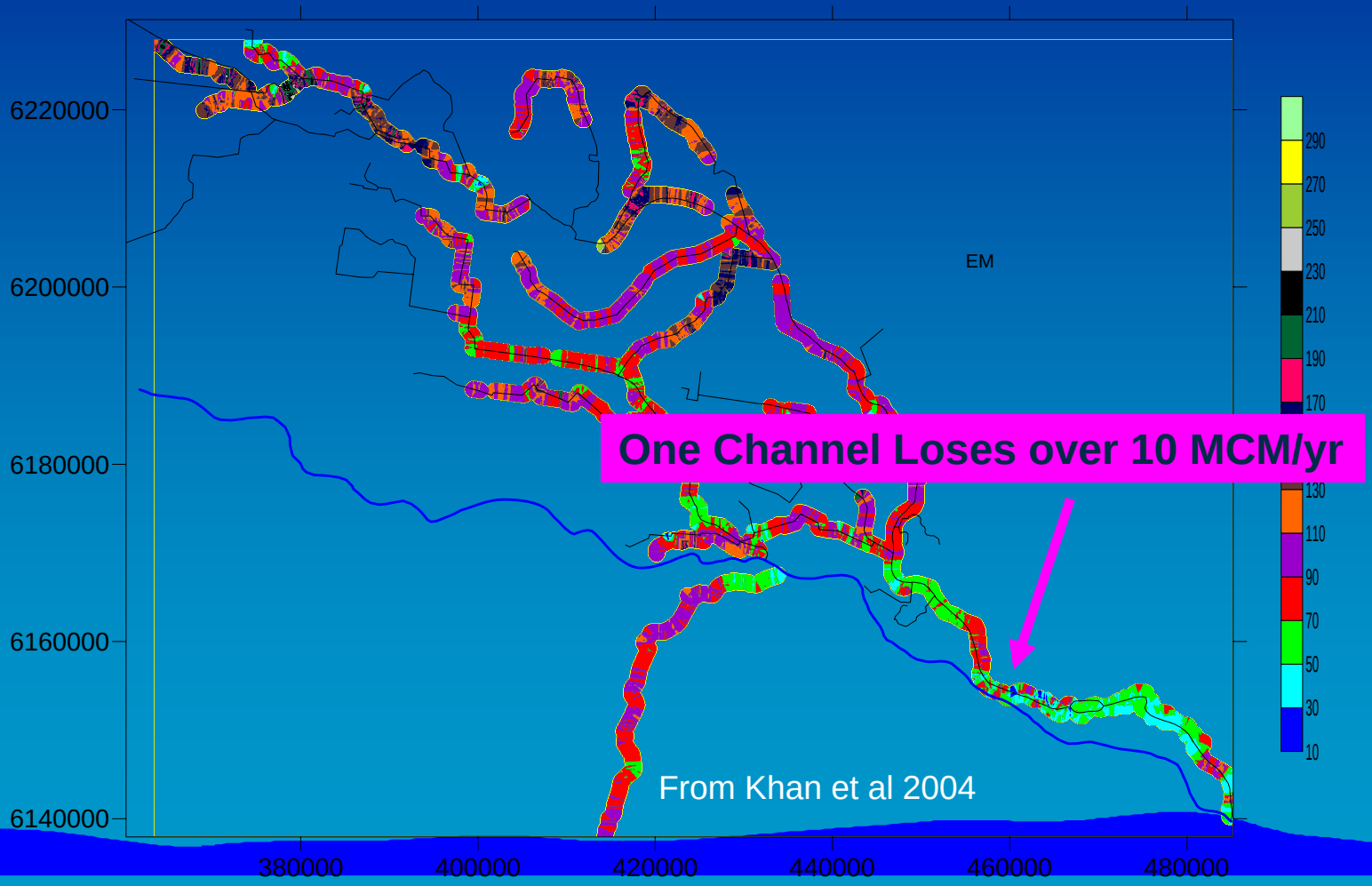
From Hydrological Data Gathering to Investment Opportunities

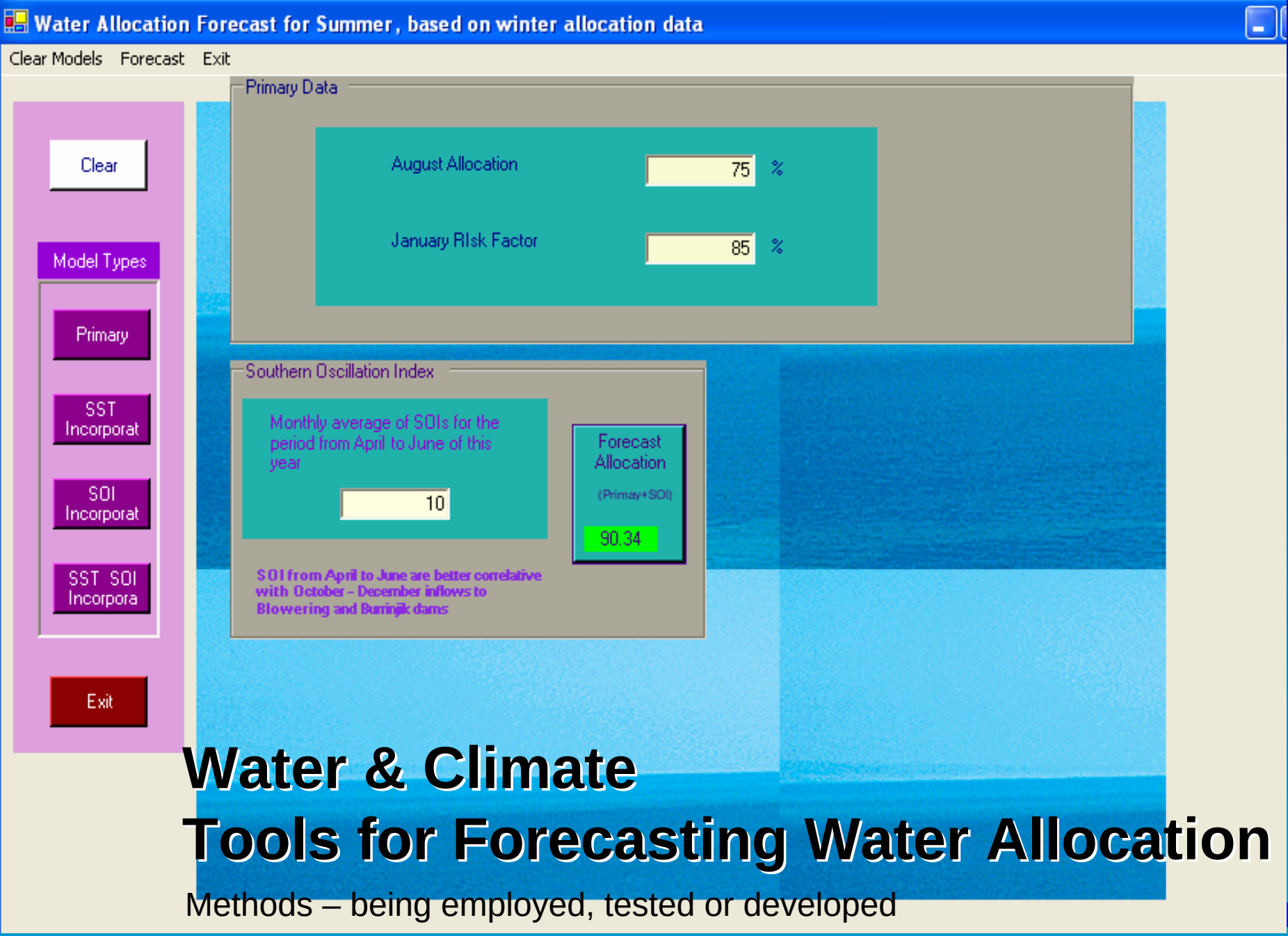




	FLOWS Annual Extractions (GL/yr)	+/- Error Volume (%)	Measurement Costs Current	BMP
Upper Unregulated	23	4GL/yr (+/-16%)	$0.3M	$0.5M
Upper regulated Gundagai -Wagga	50	2GL/yr (+/-5%)	$0.4M	$0.8M
Irrigation Corporations Wagga - Gogelderie	2210	473GL/yr (+/-22%)	$2.4M	$4.0M
Lowland River Pumpers Gogelderie - Hay	310	42GL/yr (+/-14%)	$1.1M	$1.6M
Lowbidgee River Pumpers Hay - Balranald	650	54GL/yr (+/-8%)	$0.9M	$1.4M
Totals		574 GL/yr	($5.1M)	($8.3M)

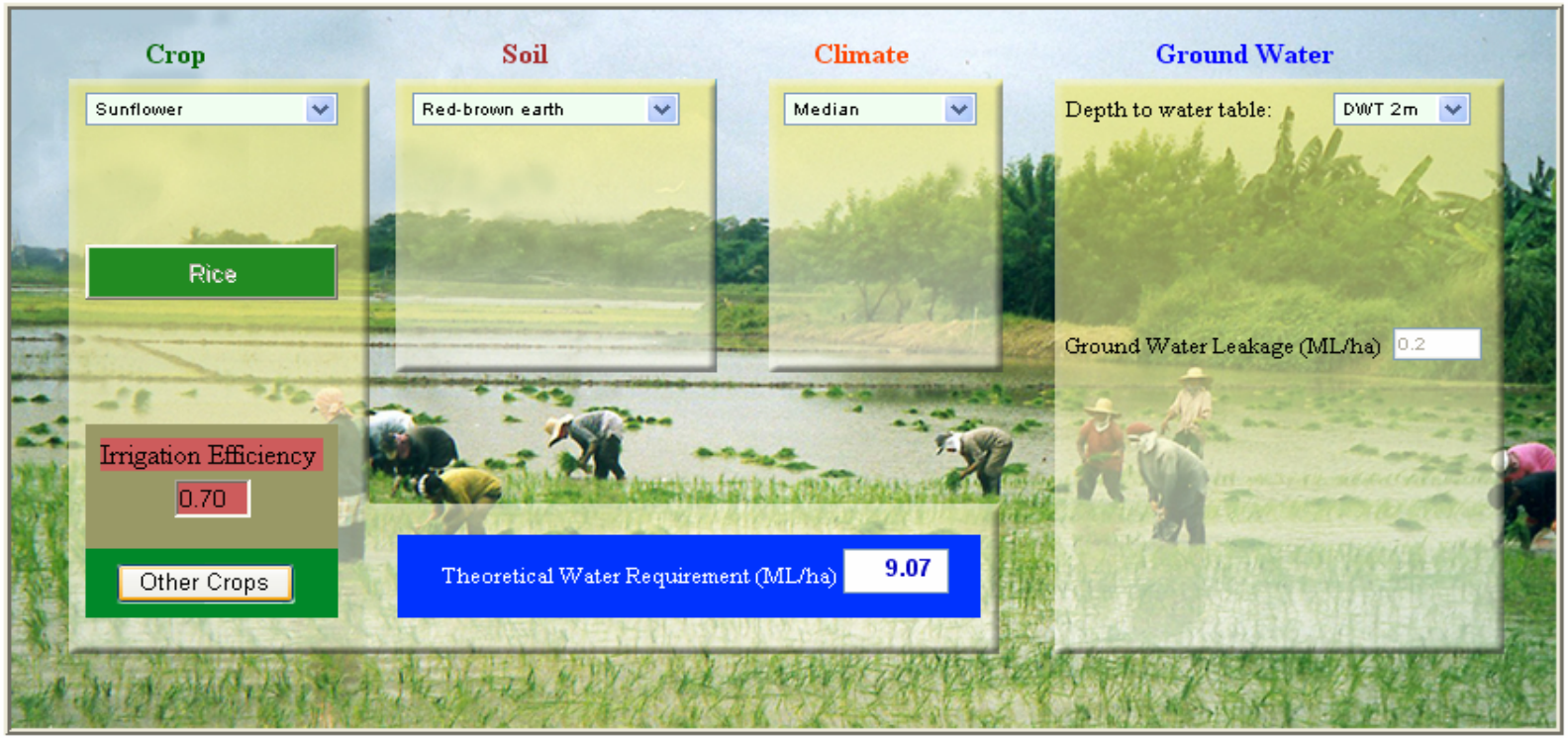
Linking EM-With Artificial Intelligence
Gaining a systems view – water savings





Water & Climate
Tools for Forecasting Water Allocation

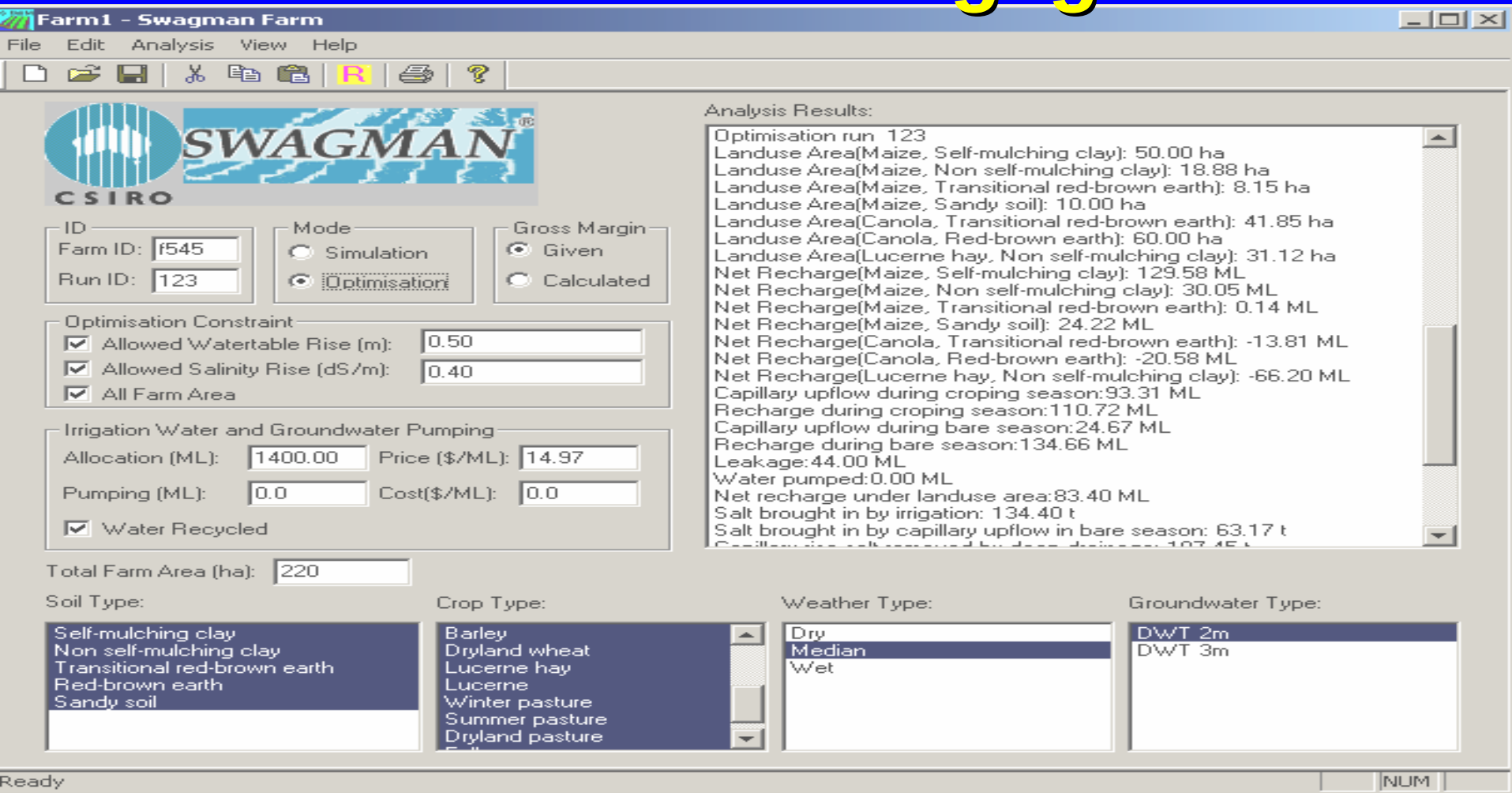
Methods – being employed, tested or developed



Water Food & Environment

Methods – being employed, tested or develope

Standalone and Web Based Tools for Stakeholder Engagement

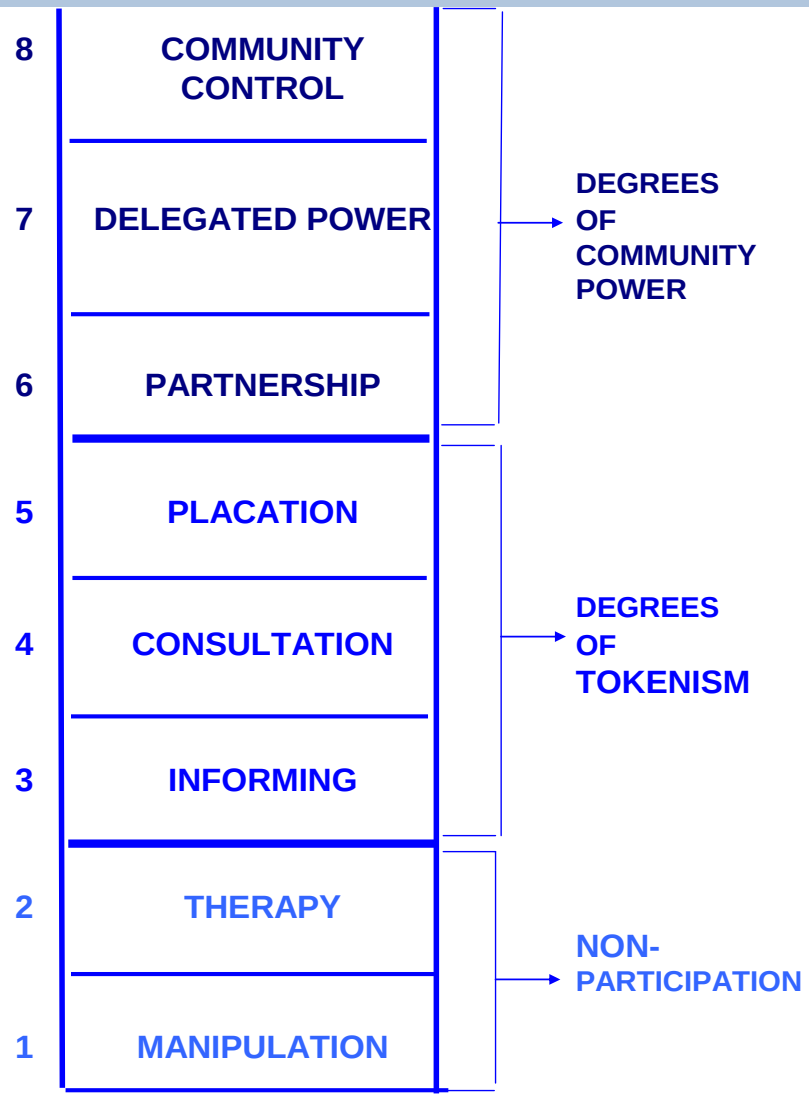


Simple **Accessible** **Relevant** **Adaptable**

Stakeholder Dialogue Leading to Change
The Murrumbidgee Model

Cross-Agency and Cross-Sectoral Cooperation Through Community Engagement

www.csiro.au



Adapted from Arnstein (1969)

The Five-Step Feasibility Approach to Water Savings

www.csiro.au

New Science for Synchronising Irrigation Systems and their Operating Environments

Business Cases and Delivery Templates

1 Biophysical Stocks and Flows

In what key areas do irrigation businesses directly and indirectly rely on and impact water throughout the value chain ?

Key Drivers for Water & Residual Cycle

Key Water Uses

Key Water Impacts

2 Water Productivity & Ecosystem Services

What are the ecological risks and WUE opportunities for irrigation businesses?

WUE Opportunities Prioritised Ecological Risks and

3 Social Cultural & Institutional Aspects

How the communities and organisations can be best engaged in pursing the water sustainability strategy ?

Institutional and Social Opportunities

4 Establish A Business Plan

What is the best business case for pursuing water sustainability strategy ?

Business Case for Action

Setting the Strategic Water Business Directions

5 Implement the Business Plan

A structured delivery mechanism that produces tools for application elsewhere

Templates for Resilient Irrigation Businesses & Environments

Input to Other Water Planning and Management Strategies

X Feasibility Step

CSIRO

HELP - International Research Collaborators

IWMI, Sri Lanka and Pakistan

IRRI, Philippines

Chinese Academy of Sciences

Massachusetts Institute of Technology

Swiss Federal Institute of Technology

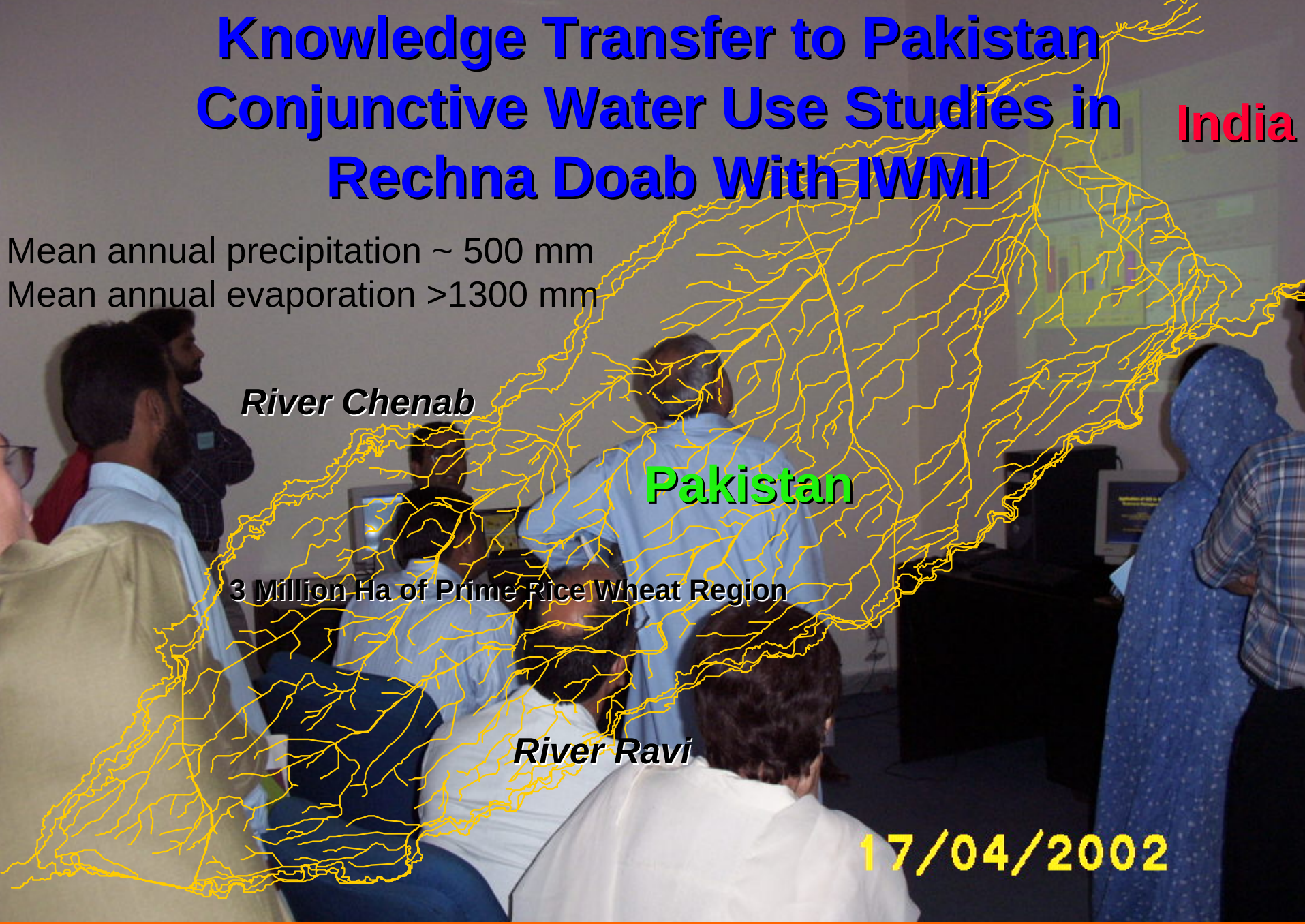
University of the Free State, SA

Wuhan University, China

Knowledge Transfer to Pakistan Conjunctive Water Use Studies in Rechna Doab With IWMI

India

Mean annual precipitation ~ 500 mm
Mean annual evaporation >1300 mm



HELP Joint Learning Initiative

Davao River Basin - Philippines and

Murrumbidgee River Basin - Australia

the sharing of knowledge through the International HELP River Basin Network linking the needs of hydrology and the needs of society

Focus of the Murrumbidgee-Davao HELP Learning Initiative

- Web based water management tool for improvement in water conservation
- Linking biodiversity with agriculture, livelihoods, health and tourism
- Capacity-building of local Institutions and resource users (thru community engagement models)

Is HELP A Success?

Communities Desperate for HELP to Empower

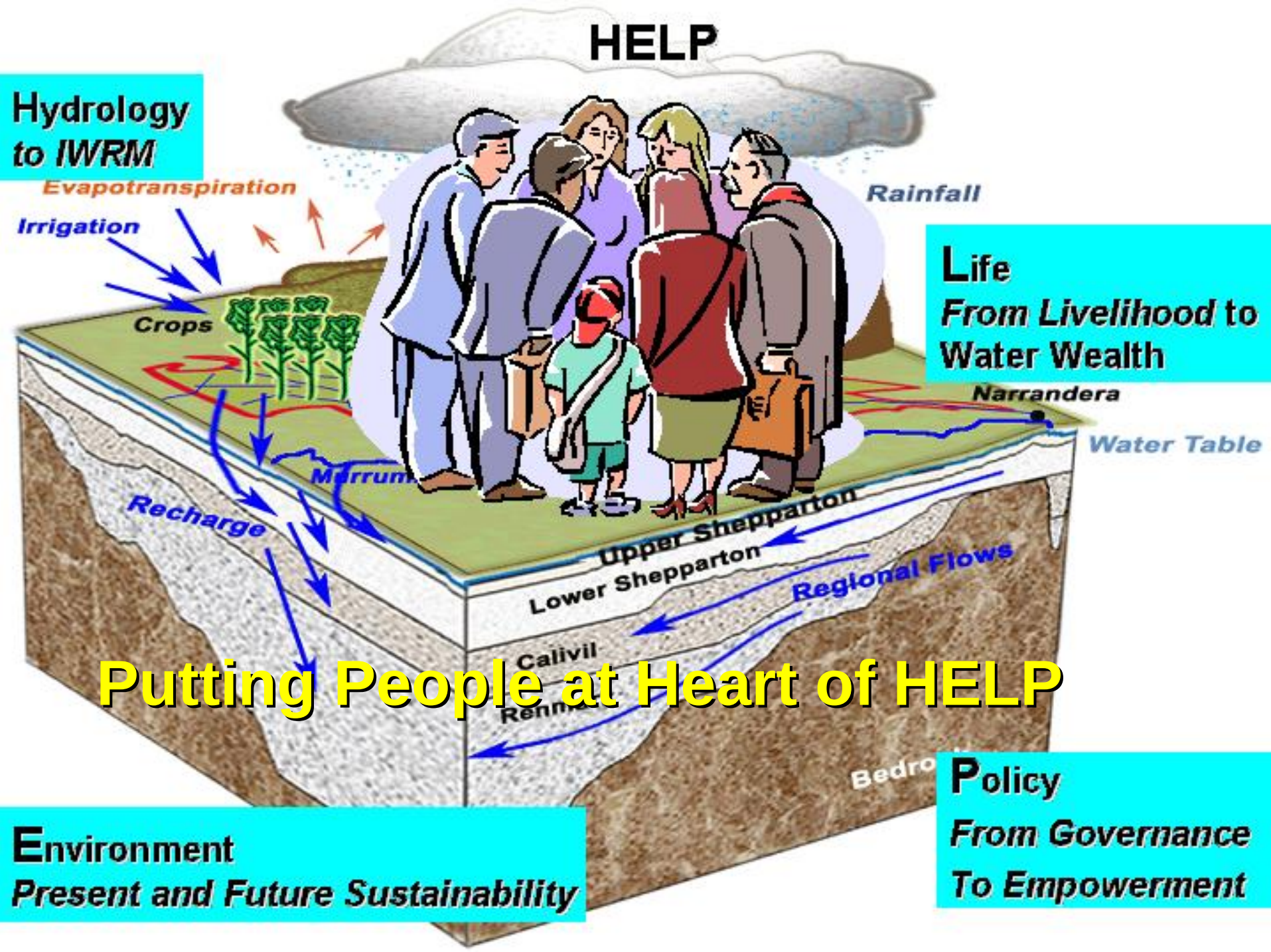
Unease Period for Traditional Scientists and Water Managers

"Organisational Inertia" Making HELP Intangible

Demand for Research to be Translated into Actions

Implementation is Slow But Recognition is Fast

HELP has Shown the Way to Break Paradigm Locks


HELP
Hydrology
to IWRM
Evapotranspiration
Irrigation
Rainfall
Crops
Life
From Livelihood to
Water Wealth
Narrandera
Water Table
Murrum
Recharge
Upper Shepparton
Lower Shepparton
Regional Flows
Calivil
Putting People at Heart of HELP
Environment
Present and Future Sustainability
Policy
From Governance
To Empowerment