



INNOVATIVE APPROACHES TO MONITORING FOR TRANSBOUNDARY WATER GOVERNANCE



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Management of Transboundary Waters

- One of the greatest challenges facing the world today
- Over 260 transboundary basins shared by 2 or more countries worldwide
 - Comprise over 50% of Earth's surface
 - Contain 40% of global population
 - Include 145 different nations
- Approach: Integrated Water Resources Management (IWRM)



Elements of Transboundary Water Governance

- International water law
 - Cooperation, equitable use, obligation not to cause harm, exchange of data and information, emergency notification
- Transboundary organizations
 - International Joint Commission, Nile Basin Initiative, Mekong River Commission
- Transboundary water treaties and agreements
 - Bilateral, multilateral
 - Basin-wide, sub-basin
 - Duty to inform, Implementation of joint programs

Weaknesses of Existing Transboundary Water Governance



- Gaps between policy, plans and practice
- Difficult to achieve consensus in decision making
- Agencies involved are overextended, under-resourced
- Lack of funding
- Countries have different scientific and political approaches, and ambition levels
- Transboundary agreements too narrow in scope
- Water quality overlooked
- Agricultural effects overlooked in developing countries
- Lack of authority and enforcement powers
- Too much talk, not enough action
- Lack of public awareness of activities and achievements
- Information production lags information needs



Status of Transboundary Organizations

- Many transboundary organizations have reached stagnation
- Must evolve and make use of emerging technology to improve management of watersheds
- “Can’t manage what you can’t measure”
- Wide spectrum of data required to support informed decision making
- Science based assessments can:
 - Identify top priorities and focus political will
 - Reduce tensions between conflicting resource interests
 - Effect transitioning from water conflict to cooperation

Emerging Technologies in Transboundary Water Governance

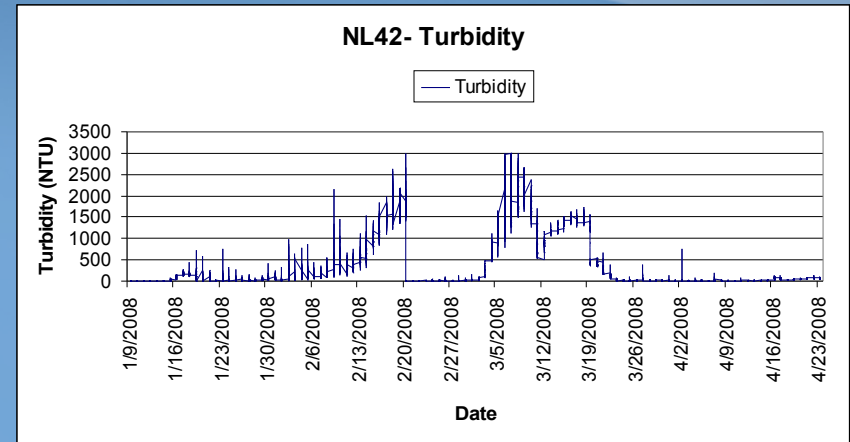


- In-situ, real-time water monitoring technologies
- Water related indices
- Earth Observation (EO) remote sensing technologies
- Communication and network technologies
- Example of integrated use of emerging water monitoring technologies
 - Nile Basin, Egypt



Emerging Technology use in Egypt

- Real-time water monitoring
 - 4 real time stations (quantity and quality)
 - Integrated water monitoring, warning and reporting
 - Pro-active approach
 - Protect water resources from threats
 - Take immediate corrective action
- Egyptian Water Quality Index
 - Meet information needs of decision makers
 - Suitability of water for various water uses



Data Criteria Report Manual The WQI

EWQI 0.1

Water Resources Management Division
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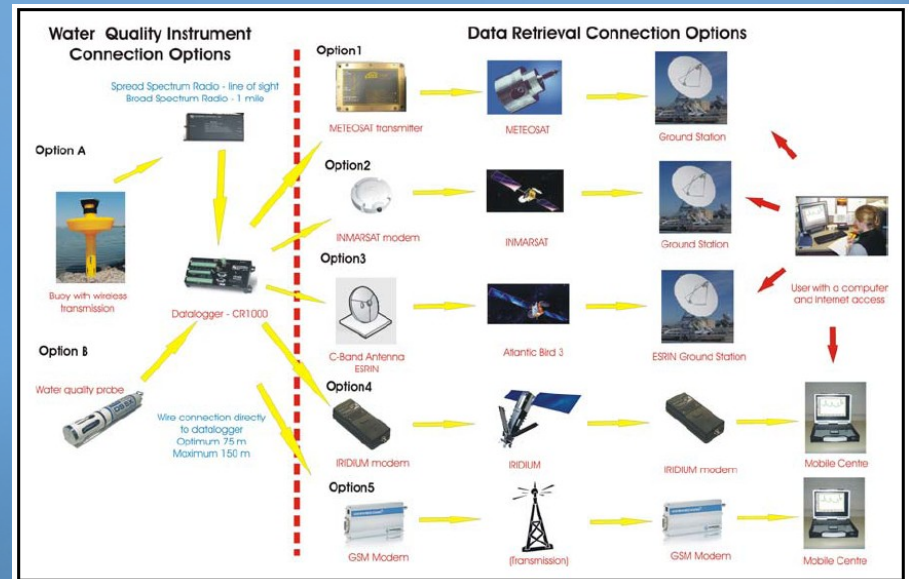
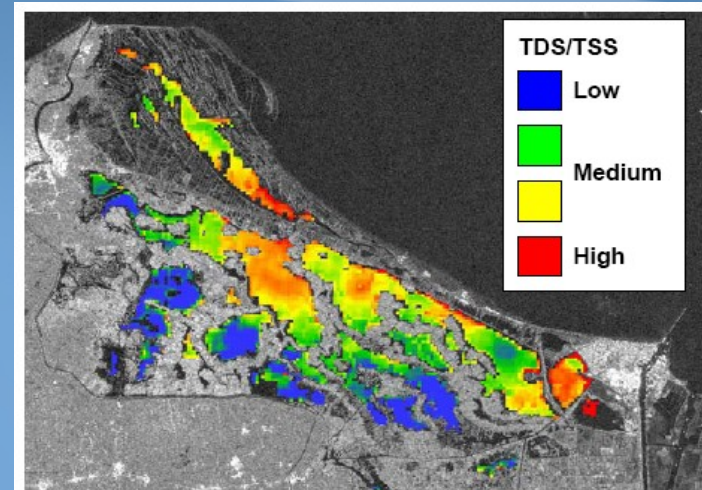
Disclaimer -The Water Quality Index has been developed by the CCME and has been adapted as this Site Specific Water Quality Index calculator by the Water Resources Management Division for application in Egypt under the NATO Science for Peace (SFP-982630). This has been programmed to run on Excel 2000 SP-3 or later using Visual Basic for Applications.
While every effort has been made to test the electronic spreadsheet, the Government of Newfoundland and Labrador makes no warranties expressed or implied, as to the performance of this spreadsheet. Users are expected to use professional judgment in the application of the spreadsheet.

Last Revision: December 2007

Emerging Technology use in Egypt



- Earth Observation
 - Status, changes in environment
 - Extend point measurements over larger areas
 - Water quality of Lake Manzalah
 - Integrated with real time data
- Communication and network technologies
 - Allows for in-situ, remote monitoring





Lessons of Emerging Technology use in Egypt

- Holistic approach that is inherently proactive
- Data generated in real time and over the entire basin
- Encompasses different aspects of IWRM
 - Data collection, early warning, analysis, reporting, response, mitigation
- Integrated use of technology to meet water resources security and management needs of Egypt
- Innovative monitoring approach that should be expanded
- Applicable to any transboundary basin under pressure



Summary and Thank You

- Conventional approach stand alone monitoring programs in parallel
- Innovative approach uses emerging technologies to create a network interlinking all aspects of monitoring
- New uses for technology and linkages in how technologies can be used together continually being found
- Innovative approach makes watershed come alive characteristics, behaviour and responses
- Information needs of IW RM should be met in a manner as integrated, comprehensive and adaptive as the concept itself
- IW RM should also stand for Integrated Water Resources Monitoring