Food and Agriculture Organization of the United Nations

SEMIDE EMWIS

LEBANESE REPUBLIC MINISTRY OF ENERGY AND WATER

Feasibility Study for the information component of the Information and Training Centre for Water in Lebanon

Kick-off meeting and workshop

National Information System

Presented by:

Ms. Mona Fakih

Director of Water

13 February 2018, Beirut, | Radisson Blu Hotel Beirut

UNION POUR LA MÉDITERRANÉE

الاتحاد من أجل المتوسط

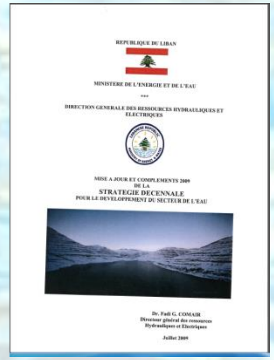
UNION FOR THE MEDITERRANEAN

Water resources challenges in Lebanon

- Water scarcity is one of the main problems currently facing the country.
- The current situation :
  - **Limited Water Resources**, with additional stress exacerbated further from the consequences of **climate change** and of **mass population** movements
  - Increase in water demand across sectors, Irrigation is a highly water consuming
  - Inadequate water supply systems and water use
- **Environmental dilemma**
  - Pollution of water resources
- **lack of Data**
  - Quantity and quality of surface and ground water resources (Lack of temporal series
  - Inadequate development of management and planning practices. Limited level of water quantity and quality monitoring networks

MEW & IWRM Planning in Lebanon Progress & achievements

- IWRM concepts: Creation of a framework for broad stakeholder participation
- **Revision of water Legislation** (2000) and its amendment (2001)
- **National 10-year Strategy Plan for** the Water Sector
- **National Water Sector Strategy (NWSS)** (approved March 2012)
- **Water Code**: cooperation programme between Lebanon and France. **The Water Code has been submitted to the Council of Ministers for approval.**
- **Projet de Centre d'Information et de Formation aux Métiers de l'Eau C.I.F.M.E au Liban**
  - This center has been labeled by UfM on 7th of April 2014 by a unanimous decision of 43 Member Countries of the Union, under project of title : "Towards a Mediterranean Knowledge Platform on Water".
  - Feasibility study has been recently implemented by OIEau and Funded by AfD".
  - Feasibility study for National Information system will be carried by EMWIS, funded by FAO



REPUBLIQUE DU LIBAN

MINISTERE DE L'ENERGIE ET DE L'EAU

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DIRECTION GENERALE DES RESSOURCES HYDRAULIQUES ET ELECTRIQUES

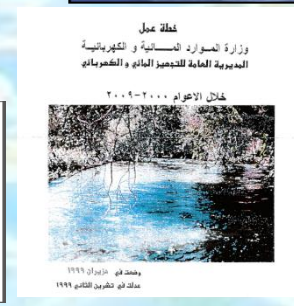
MISE A JOUR ET COMPLEMENTS 2009
DE LA
STRATEGIE DECENNALE
POUR LE DEVELOPPEMENT DU SECTEUR DE L'EAU

Dr. Fadi G. COMAIR
Directeur général des ressources Hydrauliques et Electriques

Juillet 2009

IWRM

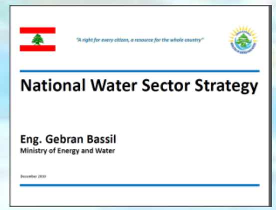
Integrated Water Resources Management



خطة عمل
وزارة الموارد المائية و الكهربائية
المديرية العامة للتجهيز المائي و الكهربائي

خلال الاعوام ٢٠٠٠-٢٠٠٩

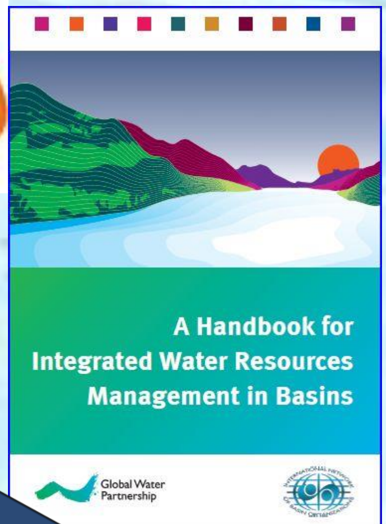
وضعت في حزيران ١٩٩٩
عدلت في تشرين الثاني ١٩٩٩



"A right for every citizen, a resource for the whole country"

National Water Sector Strategy

Eng. Gebran Bassil
Ministry of Energy and Water



A Handbook for Integrated Water Resources Management in Basins

Global Water Partnership

Paris Pact on water and adaptation to climate change in the basins of rivers, lakes and aquifers

1

At the twenty-first Conference of the Parties to the United Nations Framework Convention on Climate Change (COP21 / CMP11) organized from 30 November to 11 December 2015 in Paris, **We,** representatives of governments, international organizations, donors, national and transboundary basin organizations of rivers, lakes or aquifers, local authorities, of the civil society and companies, support the integration of Water into the Climate change Action Agenda, especially for initiating or strengthening necessary adaptation actions in the basins of rivers, lakes, aquifers and large wetlands.

General statement

Climate change is already affecting and will increasingly affect the quantity and quality of freshwater and aquatic ecosystems, especially through the intensity and greater frequency of extreme hydrological events, such as floods and droughts, as well as the increase in ocean level, which threaten security, economic and social development and the environment.

We recognize that adaptation actions should be undertaken without delay to minimize the impacts of climate change on the populations' health and safety, on economic development and the environment, considering the importance of the protection of water-related ecosystems.

The basins are natural areas where water flows on the surface and in the subsoil: they are the relevant territories for organizing water resources management.

In order to ensure more effectiveness, these actions to adapt to climate change should thus be implemented at the level of river, lake and aquifer basins, through a joint, participative, integrated and sustainable water resources management.

We should act quickly before it is too late!

To that end, mobilizing new and increasing funding dedicated to climate change adaptation in basins is essential. Therefore, new basin organizations and existing ones should be financed and strengthened to facilitate the cooperation, coordination and exchange of information, dialogue, consultation and prevention of conflicts between stakeholders and to enhance the implementation of adaptation measures and the sharing of benefits on the basin scale.

We encourage donors to support prior assessments and actions for adaptation to climate change in basins.

Local authorities and communities, economic sectors and the civil society should be better associated and involved in basin management, including in the definition and implementation of adaptation measures.

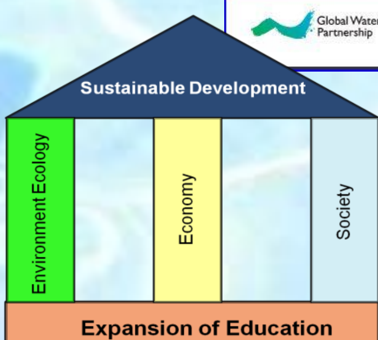
Cooperation and exchange should increase between the institutions involved, especially among the basin organizations at the global and regional levels in order to facilitate the transfer of experience and know-how on best practices in basin management and adaptation to climate change.

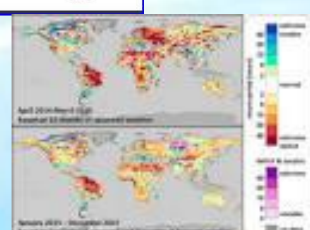
PARIS2015
COP21-CMP11

v14

Paris Pact

www.inbo-news.org
www.cop21.gouv.fr/en





For **strengthening the National Policies** and Strategies on Integrated Management of Water Resources

To **improve knowledge of Resources, their uses** and the status **Governance** and to Strengthen Administrative, Legal, Financial and Technical Capacity of the various organizations of the water sector.

In this context

MEW Initiated the creation of

Projet de Centre d'Information et de Formation aux Métiers de l'Eau C.I.F.M.E au Liban

General Objectives

- Ameliorating the knowledge about the water resources and their uses

  => **Information Component**

- Capacity building of the relevant stakeholders working on how to use and adopt the best innovative technologies

  => **Training Component**

Value of Water Information

- For **water policy planning and assessment**
  - Knowledge of the resource, its status and evolution
  - Aggregated **indicators** with socio-economic data

- **Integrated water resources management and risk prevention** with all stakeholders
  - Operational **monitoring**

- Essential for **public information, awareness raising** and participatory approaches
  - (local) status, simulation

- **Simultaneous combination of various levels of action**:
  - **local, basin, regional, national, international**, etc.

Information Component – Principles

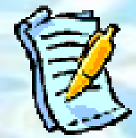
Develop and implement an organization

Define the needs

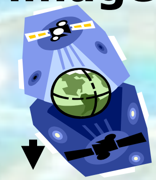
measure

analysis

Investigations



Satellite images



Collect, process, manage, validate

Database Groundwater.

Dtabase Coastal Water

Database Wastewater.

Database Surfacewater.

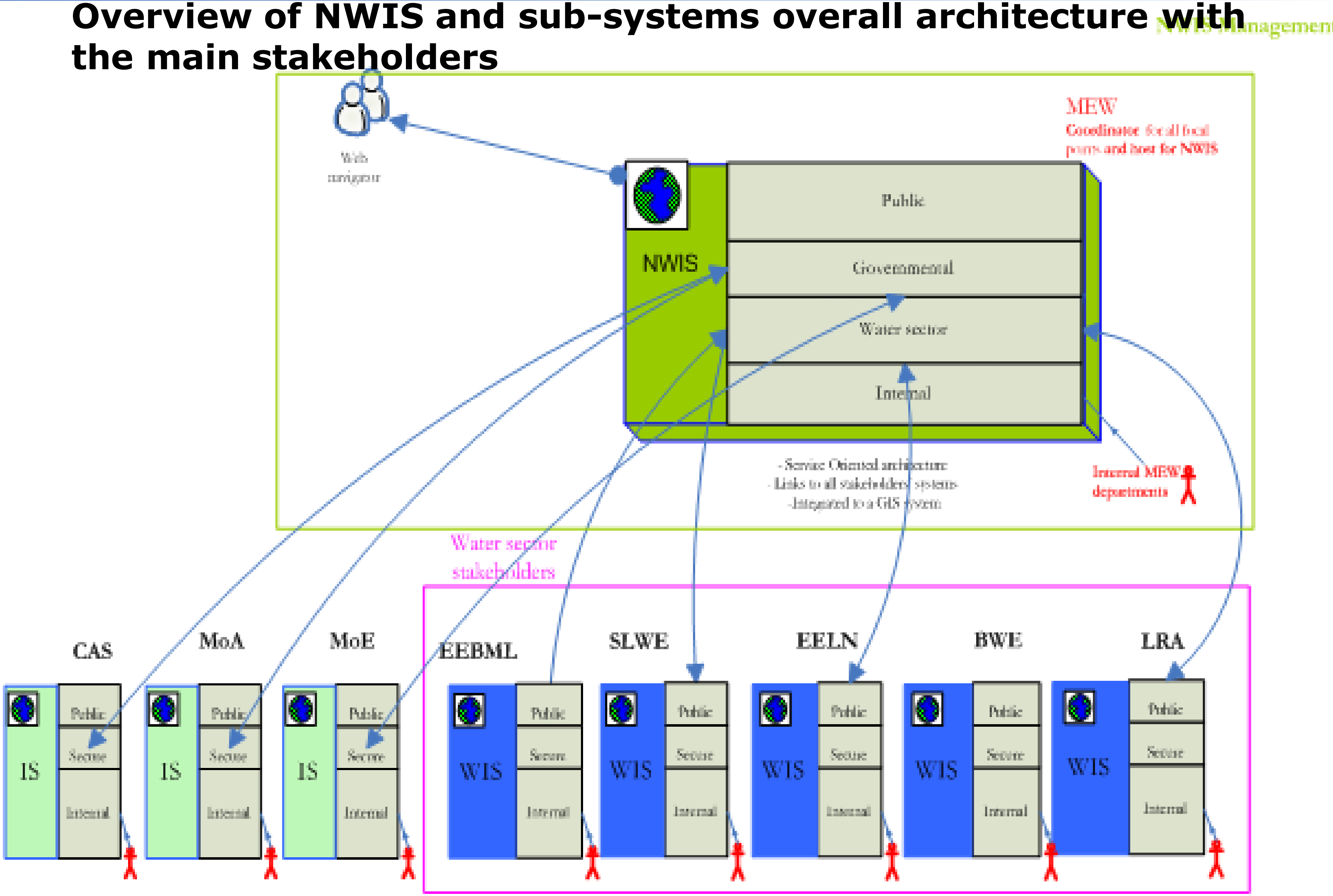
Reference Database

Enhance, disseminate, evaluate, report

Catalog metadata	Internet Portal	Simulation: WEAP, MODFLOW, GWBase…	Cartography
Doc, Maps, infos Statistics	Bulletins, synthèses	Report	Dashboard

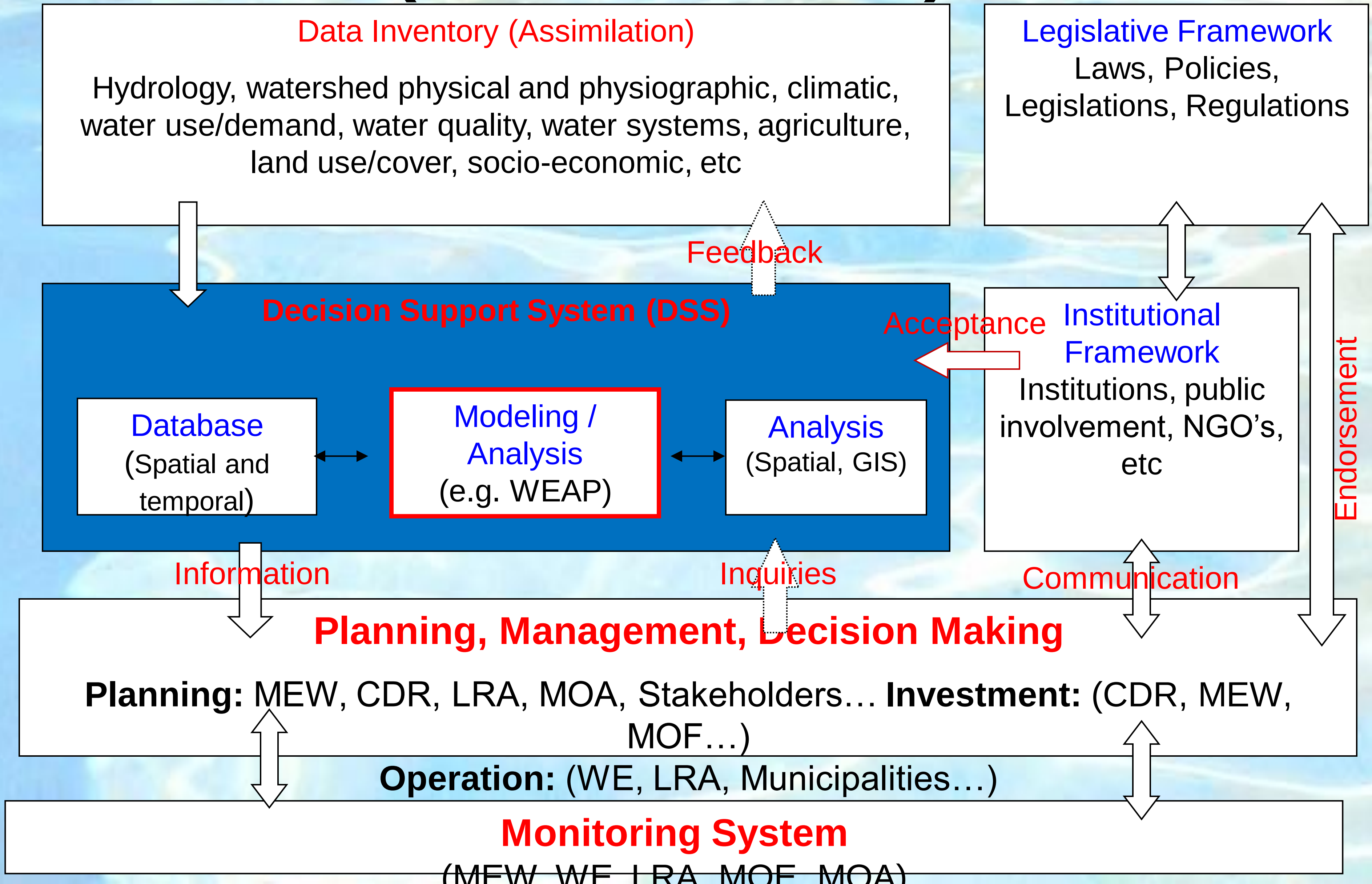
Application of the International Standards

Overview of NWIS and sub-systems overall architecture with the main stakeholders

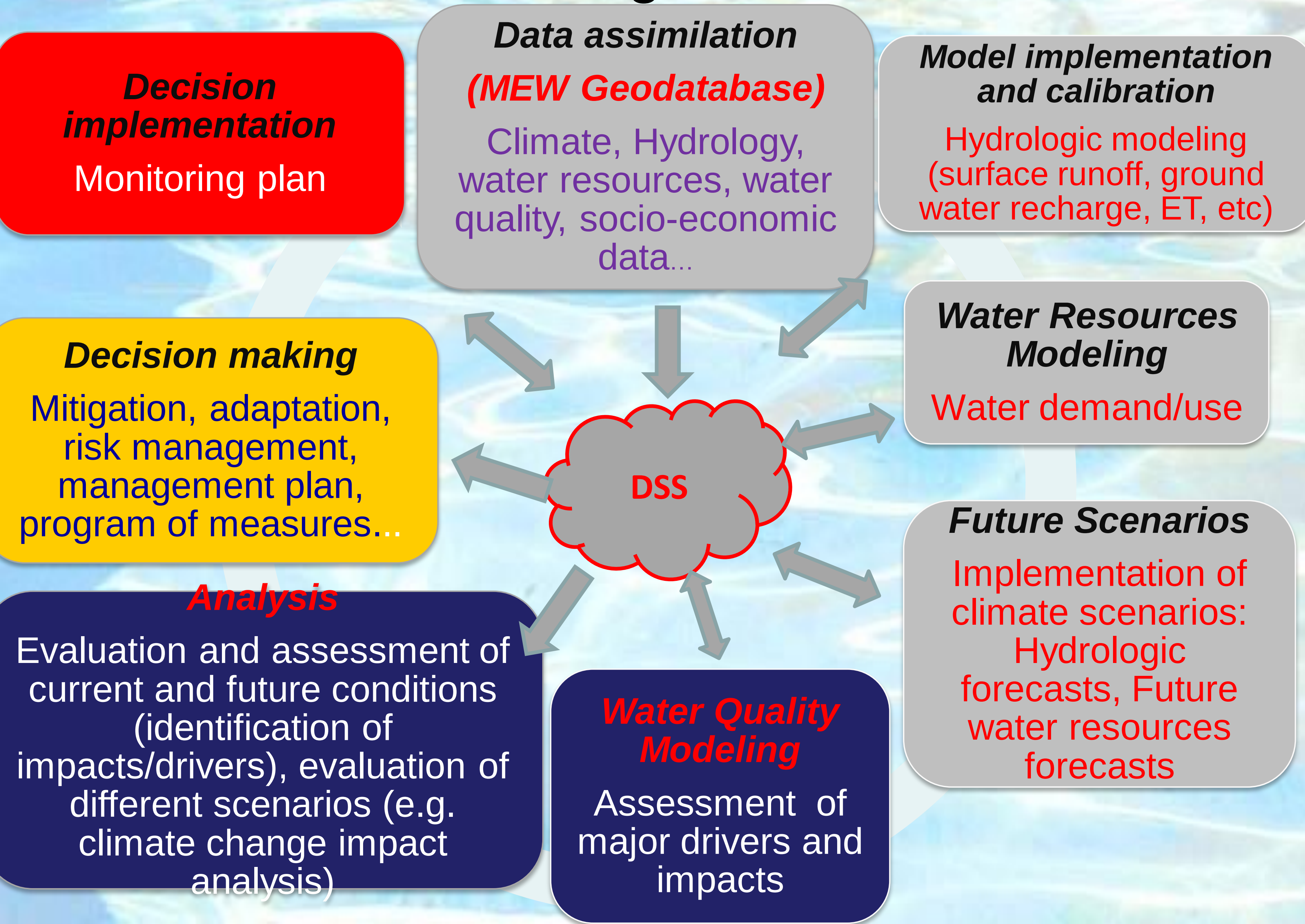


--Each stakeholder will be responsible managing its own system
-Data is distributed in databases maintained by each stakeholder
-Sharing of data will through the NWIS interface

IWRM Conceptual Framework (MEW Lebanon)

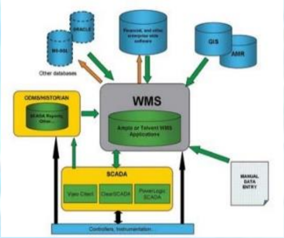


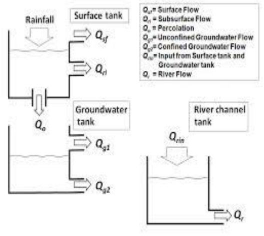
MEW Integrated DSS

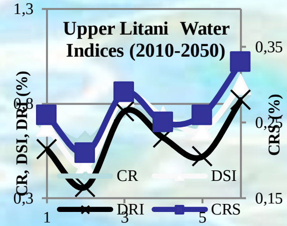


Decision Support Systems

Data → Decision







Data
- Historical data
- Monitoring stations
- Field observations
- RS datasets
- Statistics and census

Data management system (DMS)
- Hydro database
- Data exporter
- Data sharing

Modeling software
- Surface water
- Groundwater
- Water budget

Modeling indicators
- Water
- Shared information

Decision making
- Informed decision

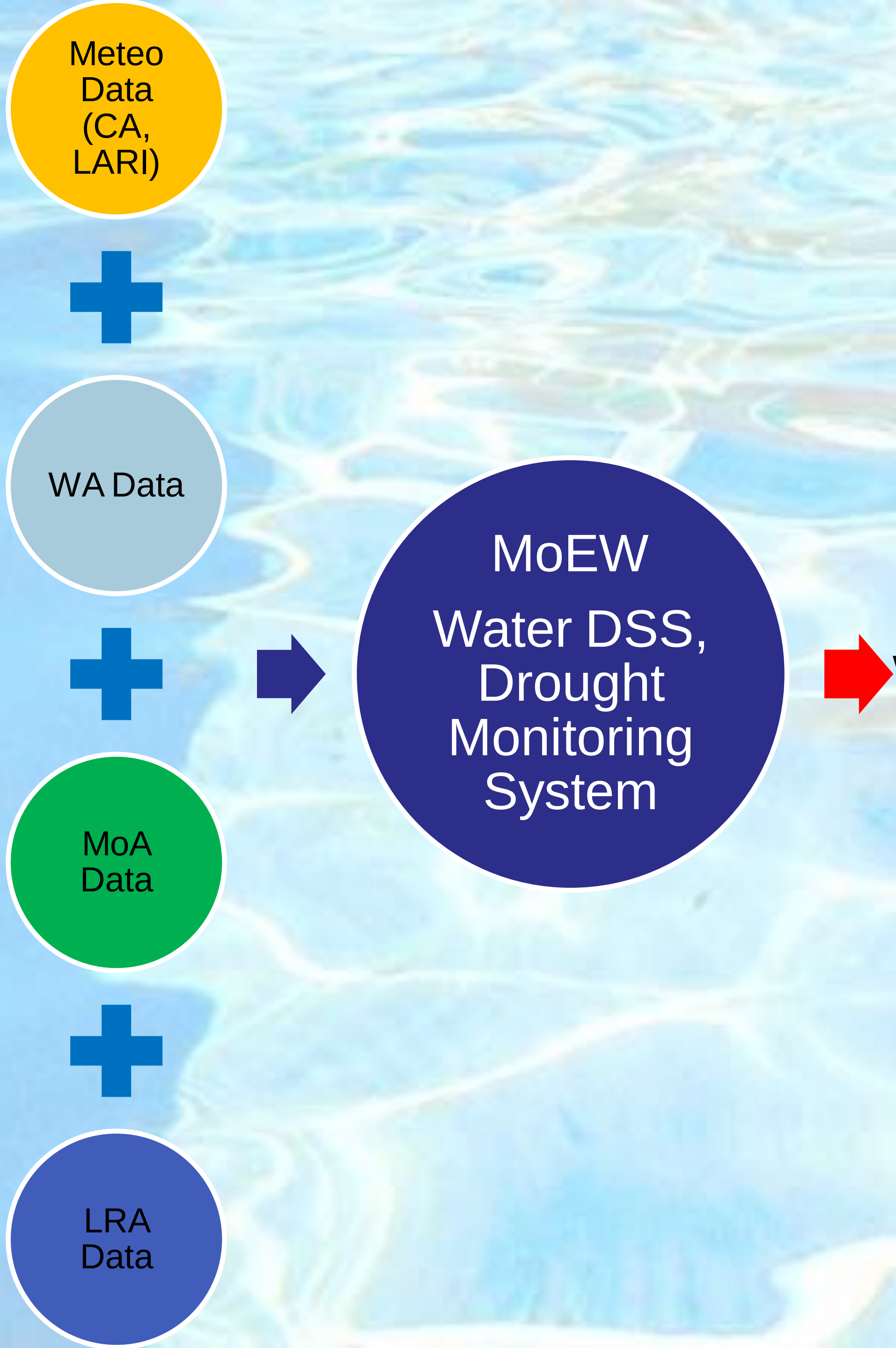
Station data (climate, streamflow, springs, snow, groundwater)
Management data
Water rights

Looking at trends

Modeling datasets
Future scenarios

Surface and groundwater planning and management

Monitoring system



CA, LRA

Spatial estimates of precipitation and temperature. Drought forecasts. Drought vulnerability. Projected streamflow.

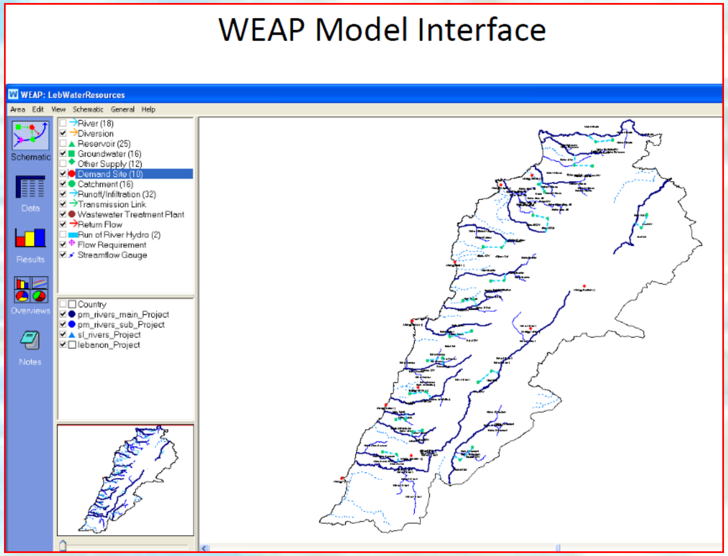
WA

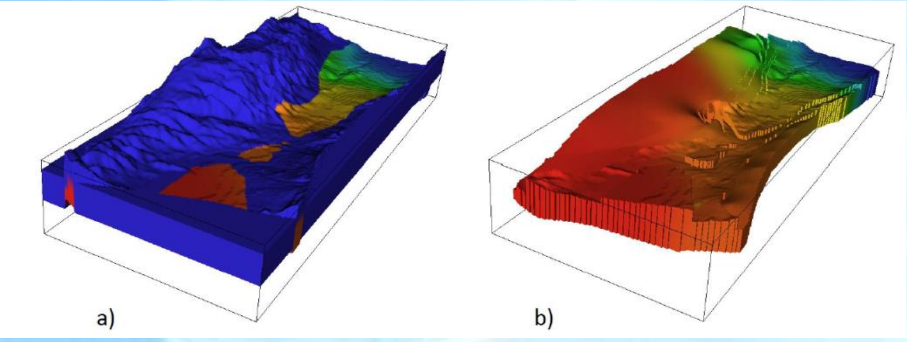
Water availability from springs, wells, reservoirs, and dams. Projected water demands by sector. Drought forecasts. Projected water shortages.

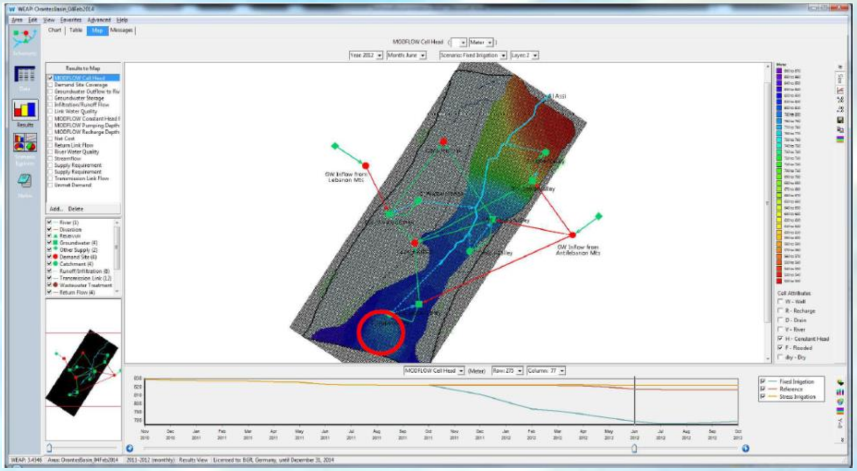
MoA, LARI

Water availability for agriculture. Projected drought impacts. Drought vulnerability.

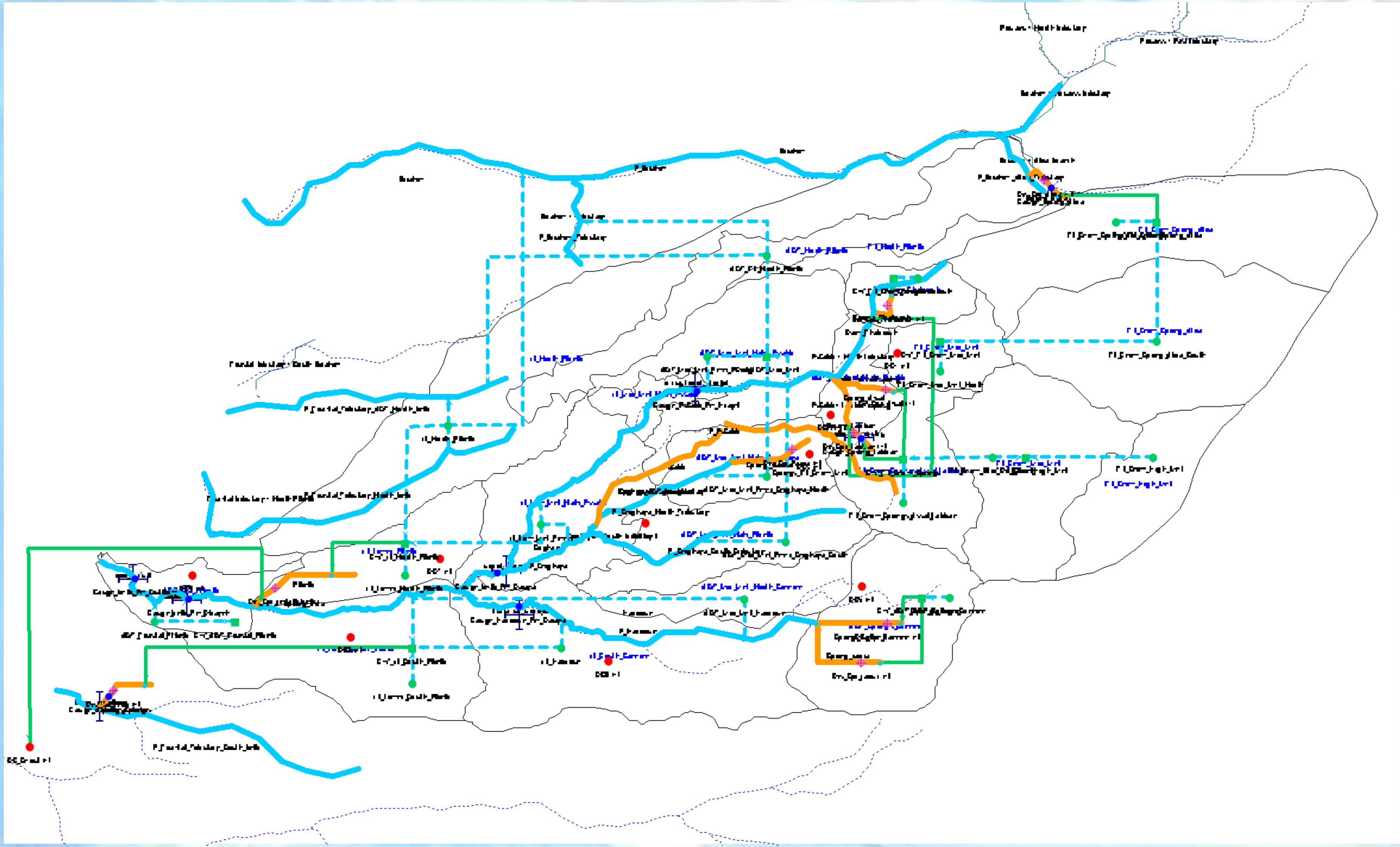
Simulation: WEAP, MODFLOW, GWBase…



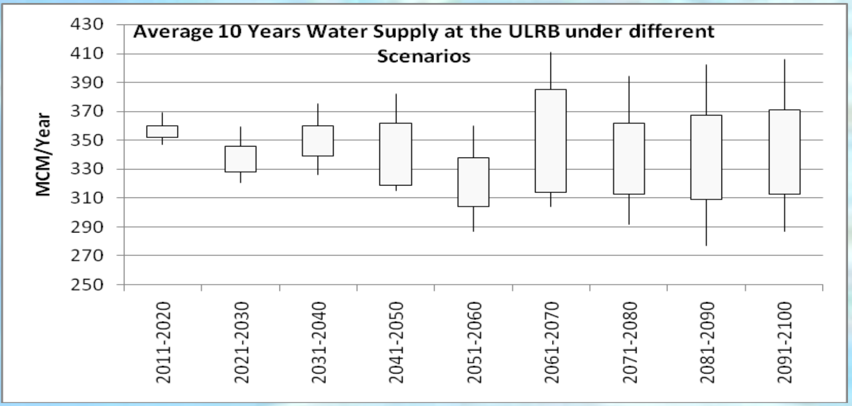


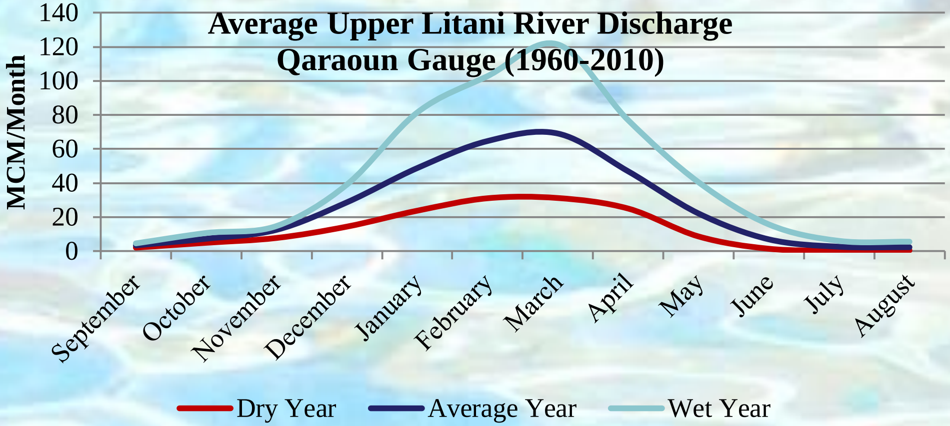


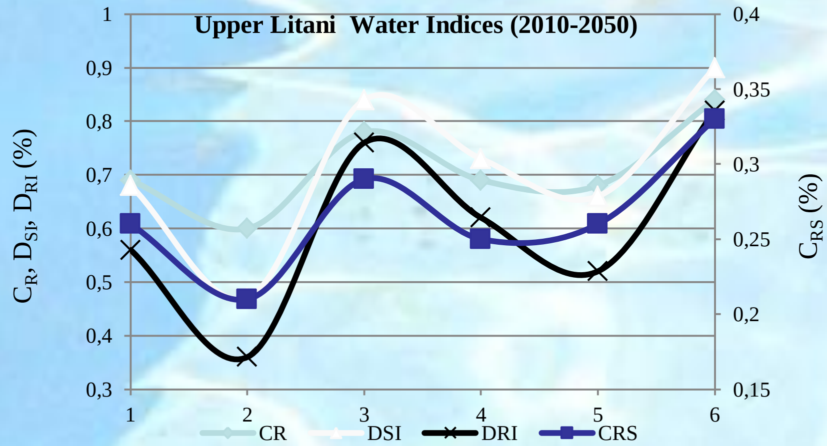
Modeling software: Developing an integrated DSS for Narh El Kelb (ongoing activity)

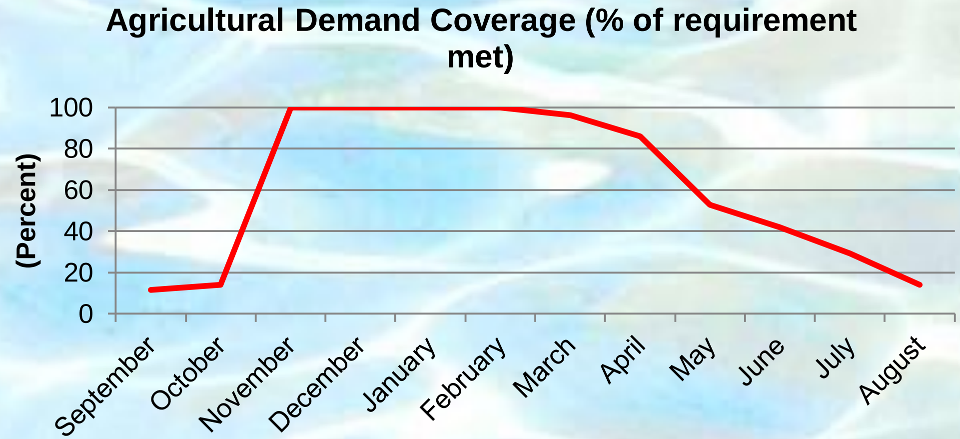


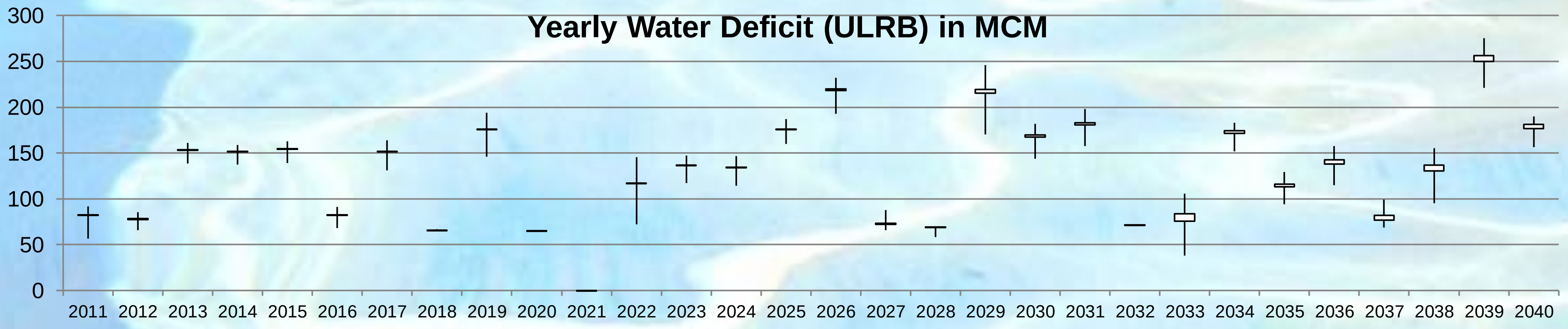
Modeling indicators











Decision making?

- for surface water:
  - mapping of the location and boundaries of water resources (e.g. watersheds, rivers, streams, wells, etc);
  - Assessing climate and hydrologic variables;
  - Detection of baseline conditions for surface water resource (i.e. hydrologic cycle)
- For groundwater:
  - Mapping of the location and boundaries of groundwater resources (i.e. geologic, and hydrogeological analysis);
  - Detection of baseline conditions for ground water resource
- Scenario analysis
  - Water resource management, operations, and planning
  - Climate variability and change analysis
  - **Stakeholder consultations / water users contribution**

NWIS Benefits

- Data management:
  - Supporting decision making (water and other sectors)
  - Better data accessibility
  - Better control on costs
  - Upgrade of existing (sub) systems
- National referential data sets
  - Comparability
  - Quality control & stability over time
  - Optimising monitoring networks
  - Aggregating and combining data
  - Openness to add applications/services
  - Integration of water data with data from other sectors
- Regional harmonisation
  - Sharing experiences, existing guidelines
  - Use of international standards supporting data exchange
  - Sustainability of technical solutions
  - Easier reporting to international initiatives
  - Potential international support

Data access & visualization at different levels

Water bodies Characterization

Drivers
Pressures
Impacts

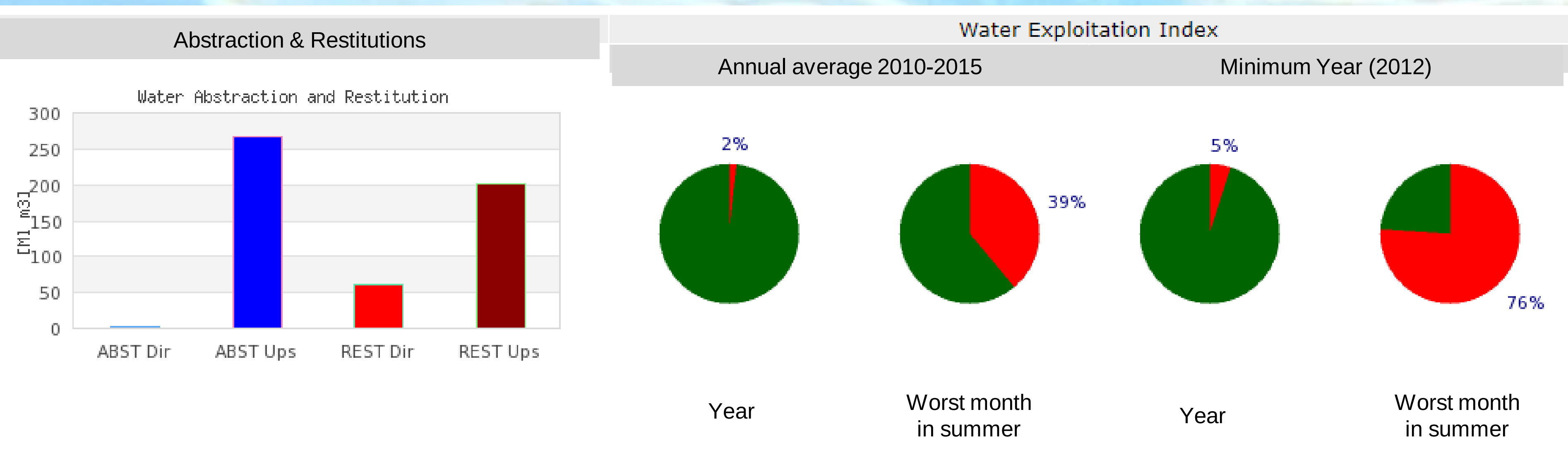
Environmental Status

Water Accounts

Action Plan (e.g. investments)

Flood Risk Management

Data integration and visualization: Water balance



- Example from Arno river basin (Italy)

Monthly hydrographic situation

- A propos d'eaufrance
- Données
- Les publications

- Les synthèses de données
- **Bulletin de situation hydrologique**
  - Précipitations
  - Précipitations efficaces
  - L'eau dans le sol
  - Rivières - Débits
  - Nappes
  - Les bulletins régionaux et de bassins
  - Les producteurs de ce bulletin
  - Les bulletins des mois précédents
- S'informer

Situation Générale du 15 janvier 2018

En moyenne sur la France et sur le mois décembre 2017, **la pluviométrie a été excédentaire de 30 %**, après un déficit persistant depuis décembre 2016. Seul le mois de mars 2017 avait connu un excédent de l'ordre de 25 %.

Les passages perturbés ont été fréquents durant ce mois de décembre et la pluviométrie a été excédentaire du Sud-Ouest au sud de la Bourgogne – Franche-Comté, de la Bretagne à l'Île-de-France et aux Hauts-de-France, sur la majeure partie de la Corse et surtout sur les Alpes. À l'inverse, l'important déficit présent le mois dernier autour du golfe du Lion s'étend à la quasi-totalité du Languedoc-Roussillon, au sud de l'Ardèche et au delta du Rhône.

Les sols superficiels se sont humidifiés sur la quasi-totalité du pays. Sur le Sud-Est, la sécheresse des sols, qui a débuté au printemps, s'est nettement atténuée. Les sols restent toutefois assez secs sur le pourtour du golfe du Lion, la basse vallée du Rhône et le littoral provençal.

Depuis le début de la période de recharge, les pluies efficaces ont retrouvé des valeurs conformes aux normales sur la majorité du pays. Seul le pourtour méditerranéen et la vallée du Rhône sont marqués par un déficit de plus de 50 %.

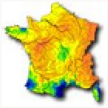
Le niveau des nappes au 1er janvier 2018 est hétérogène d'une région à l'autre. Près des deux tiers des nappes (64%) affichent un niveau modérément bas à très bas. Une situation de basses eaux qui se prolonge jusqu'en fin d'année n'est pas habituelle. Elle traduit l'absence d'incidence notable des premières pluies automnales qui sont très attendues pour assurer la recharge des aquifères. A l'exception de quelques secteurs assez peu nombreux, on note, sur la plus grande partie du territoire, que les niveaux de nappes traduisent un déficit de recharge, en l'absence de précipitations notables.

Tendance d'évolution du niveau des nappes

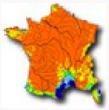
La tendance d'évolution du niveau des nappes traduit une nette tendance à une recharge qui devient active avec près des deux-tiers des points (63%) désormais orientés à la hausse. La tendance d'évolution à la baisse du niveau des nappes est faible (12%) et le nombre de points dont le niveau est stable augmente (25%). Cette situation montre que la bascule entre basses eaux et reprise d'une recharge des nappes est amorcée et que l'on s'oriente progressivement vers une recharge hivernale qui devient efficace.

La situation des nappes au 1er janvier 2018 traduit un début assez timide de recharge hivernale mais une tendance qui semble se confirmer malgré tout.

Au 15 janvier 2018, **5 départements ont mis en œuvre des arrêtés de restriction des usages de l'eau**. Il n'y en avait aucun en 2017 à la même date.



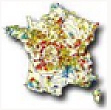
Précipitations



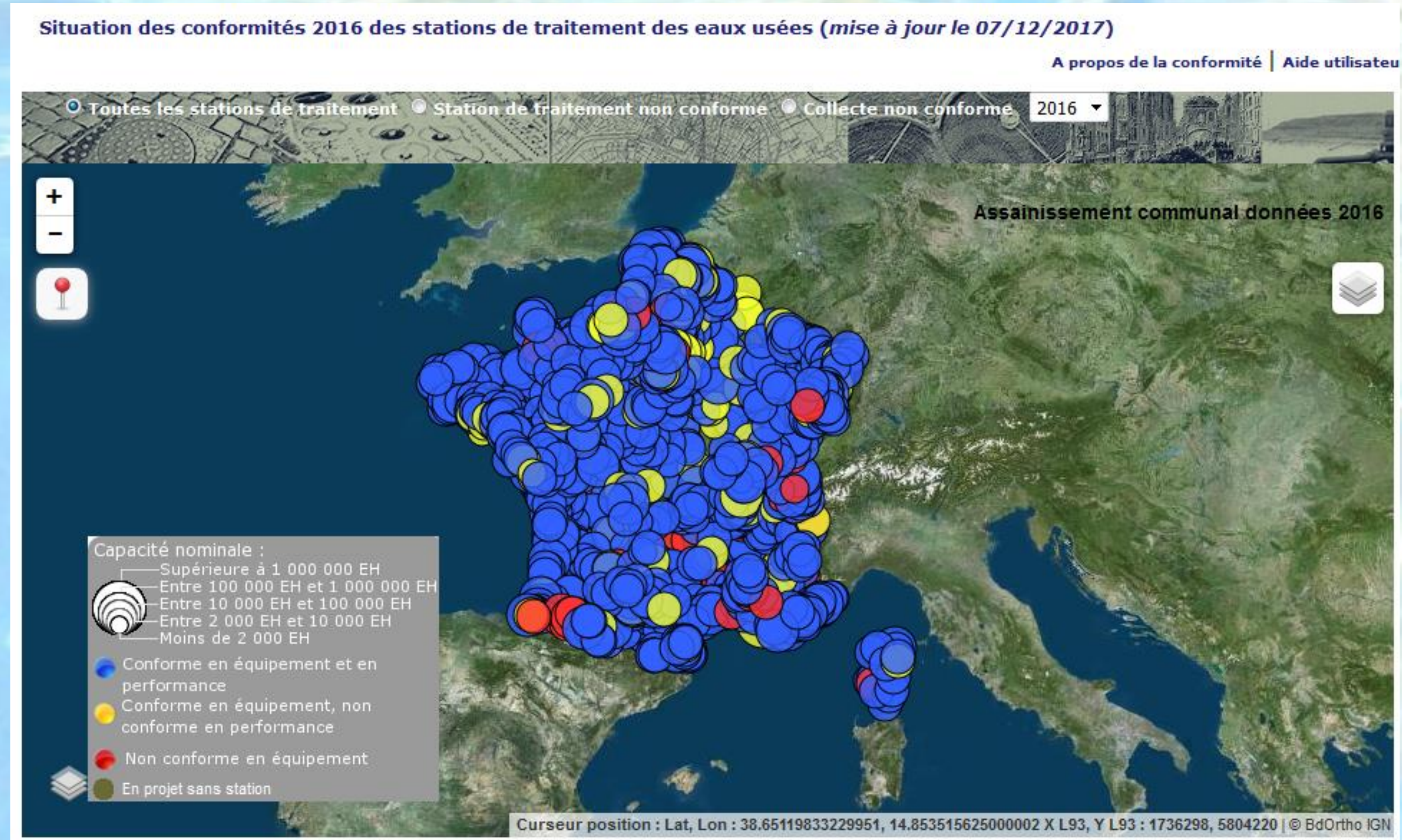
Précipitations efficaces

Eau dans le sol

Nappes



Status of Waste Water Treatment Plants



http://www.assainissement.developpement-durable.gouv.fr/

Feasibility Study for the information component of the Information and Training Centre for Water in Lebanon

SWIM and Horizon 2020 Support Mechanism

Working for a Sustainable Me

Kick-off workshop

Name
email
website

www.semide.net/initiatives/MWKP