



Union pour la Méditerranée
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الإتحاد من أجل المتوسط



INSTITUT MÉDITERRANÉEN
DE L'EAU IME



SEMIDE
EMWIS

Mediterranean Water Knowledge Platform

National Water Information System

Presented by

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Head of Central administration,

for Information , Documentation and Decision Support

Ministry of Water Resources & Irrigation

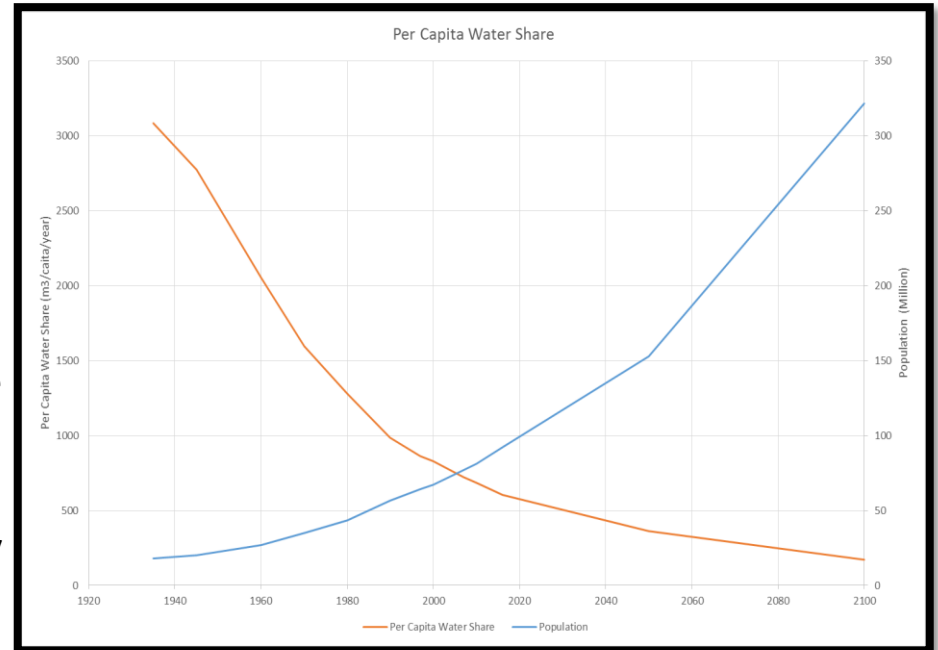
Egypt

19-20 October 2017, Barcelona, Spain

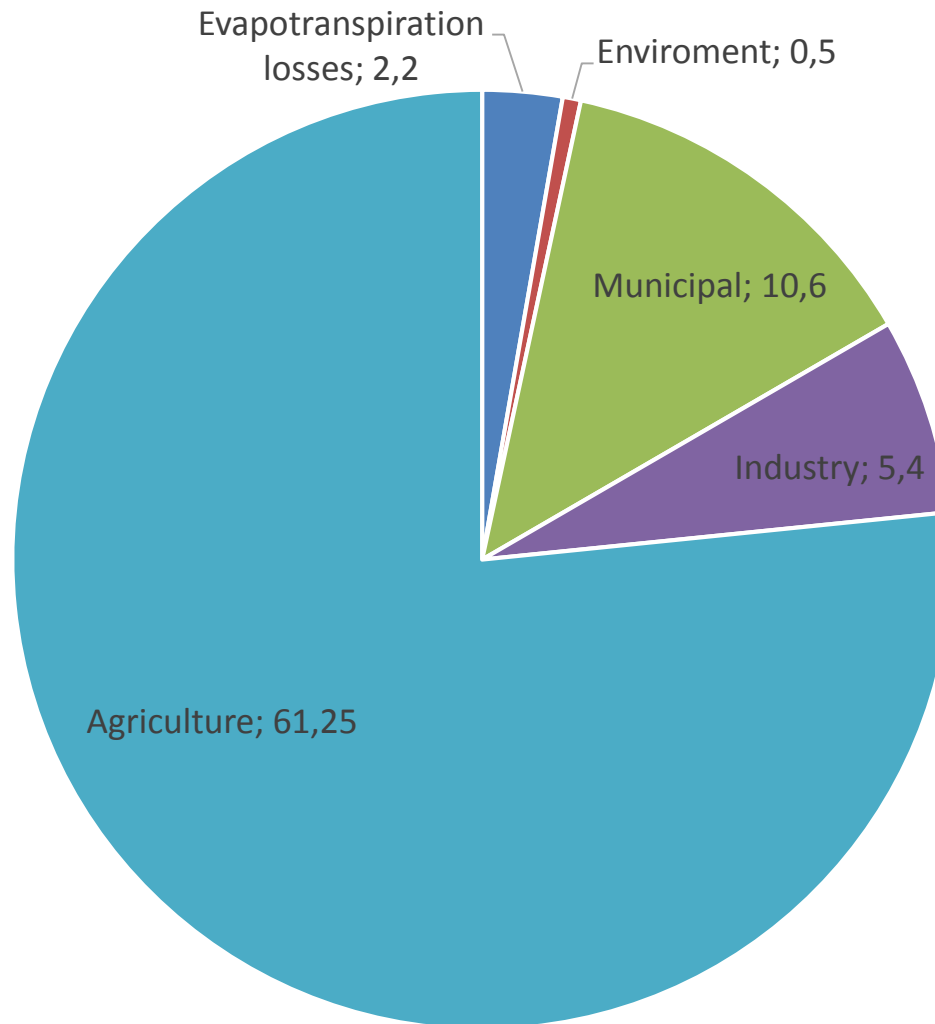


Water Challenges

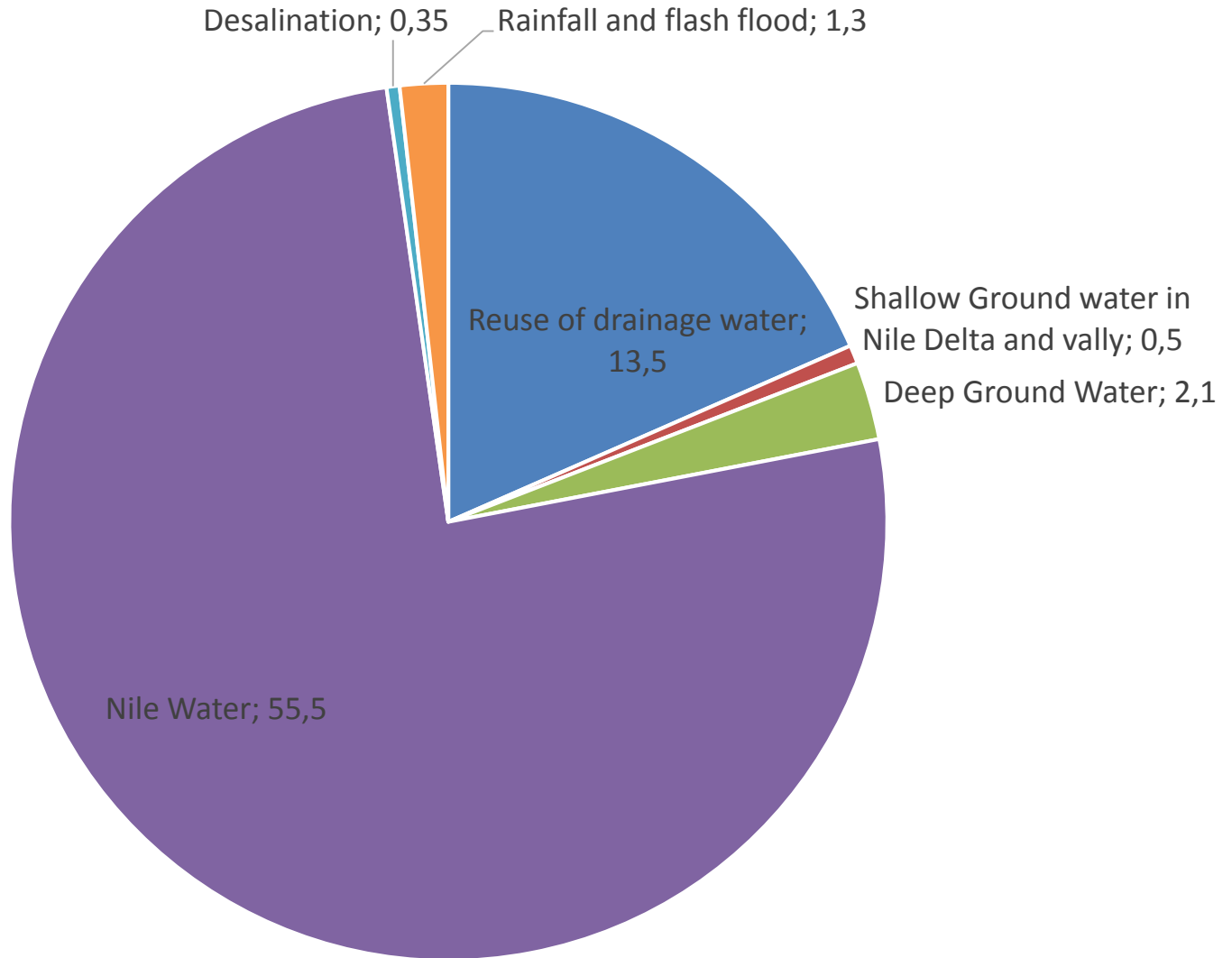
- High population growth
- Limited water resources
- Increasing water demand for all sectors
- Increasing food gap
- Deterioration of the irrigation and drainage networks
- Pollution of water ways and water quality deterioration
- Climate change negative impacts on water sector



Current Water Demand



Current Water Resources



Total Water Resources = 80.25 BCM/year

Central Administration for Information & Documentation and Decision Support

TOR and main tasks

- Coordinate technical activities among all existing information centers in each department.
- Provide technical support and backstopping services for all departments through the existing sub-information centers.
- Develop a central data bases and applications for data integration.
- Develop and perform technical and managerial performance indicators.
- Review and integrate procurement plans of software, hardware and networking devices
- Provide satellite images and facilitate remote sensing data exchange.
- Holding monthly meetings to follow up, coordinate and develop plans.

Divisions

- General directorate for information and data bases
- General directorate for computers and networking

Overview of the technical architecture

1-General directorate for information and data base

GIS Division

Design and establishment of geographical databases including all the geographical data of the Ministry

Develop standard technical specifications for geographic databases, maps and programs

Consolidating the base map of the Ministry's activities with the continuous updating of geographical data base

Produce updated maps for water resources

Supporting all the Ministry's parties with accurate geographic information in their field of work

Database Division

Design and Execute coding system for different types of data available in the ministry

Create central databases that can accommodate all available data and link them to other databases

Setting the standard technical specifications for the databases used by the ministry and its operating mechanisms

Continuous updating of data and information within the databases in coordination with the various parties

Microfilm Division

Archive copies of maps and geometric drawings of the water constructions

Convert all maps and geometric drawings to Microfilms

Save and index all tapes that are periodically converted and take action to protect them

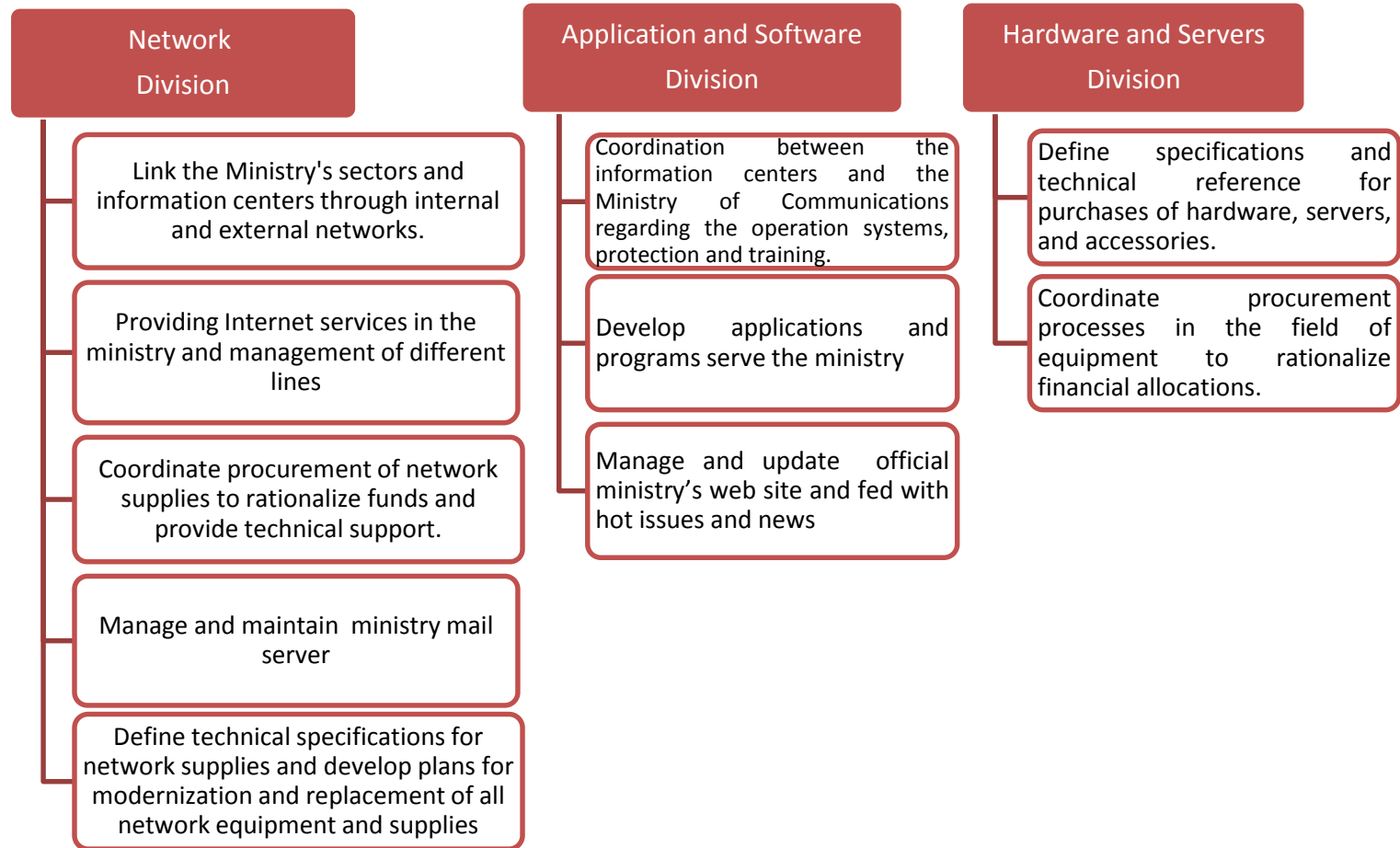
Convert tapes and movies to digital image (PDF files) can be saved and retrieved through computers

Decision support Division

Design custom applications and develop indicators for decision makers

Develop applications integrate multi source data bases and generate simplified outputs

2- General directorate of Computers and networking



MWRI information systems

▪Irrigation Department

- Telemetry system measuring water levels, discharge, water quality, rainfall
- Traditional data collection system of water levels (river and canals)
- Ground water system (technical and administrative)

▪Drainage Department

- Traditional data collection system of water levels and discharge (drains)
- Sub-surface drainage system

▪Planning Sector

- Remote sensing data (rainfall , evapotranspiration, vegetation ...)
- Hydrological stations along river Nile (discharge, levels)
- Forecast database (Nile river flows, levels)
- GIS Portal and Dashboard (Canals, Structures, Canals Problems)

▪Shore Protection Authority

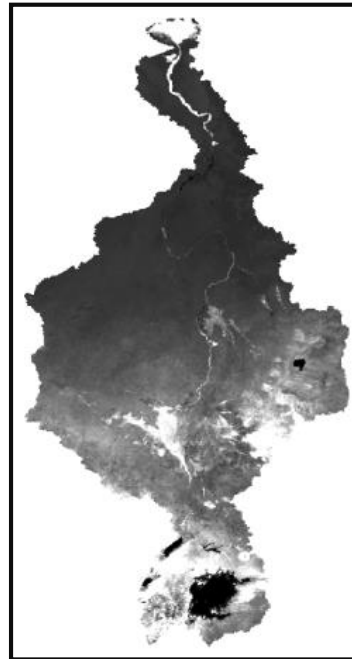
- Shoreline monitoring database
- Evaluation of erosion and accretion in coastal areas

▪National Water Research Center

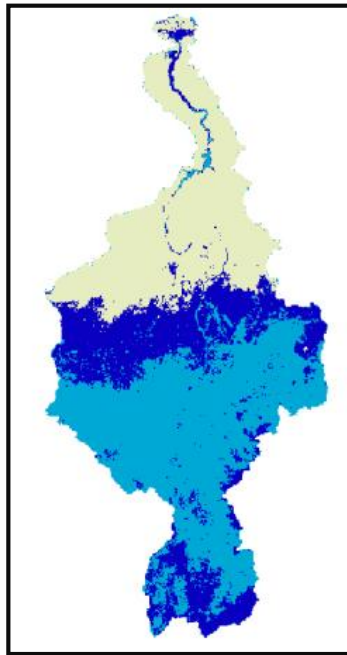
- Hydrological stations
- Metrological stations

Monitoring systems

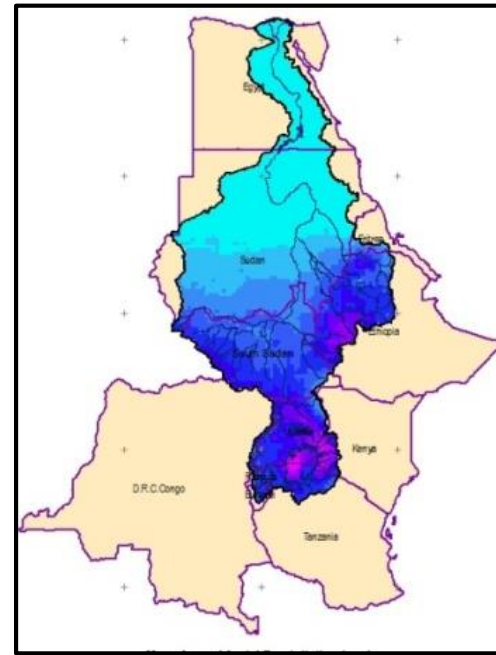
- Hydrological monitoring systems (Rainfall – ET – NDVI)



NDVI



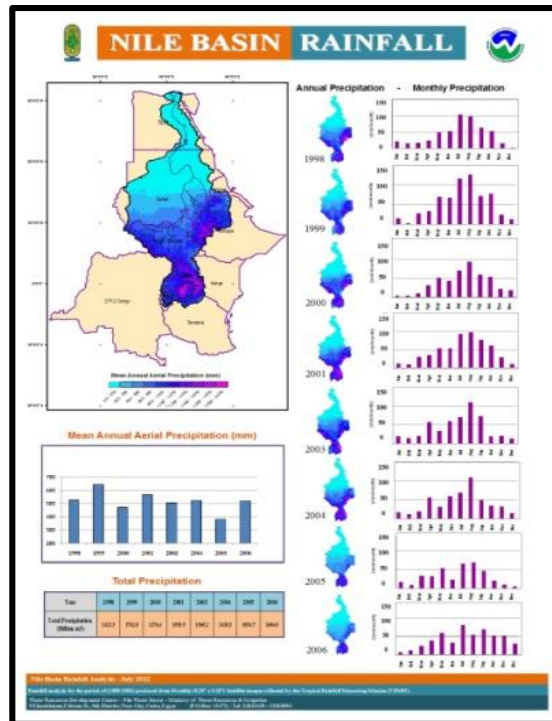
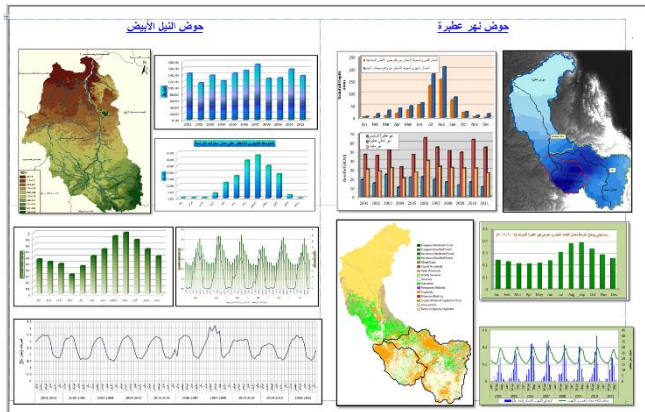
ET



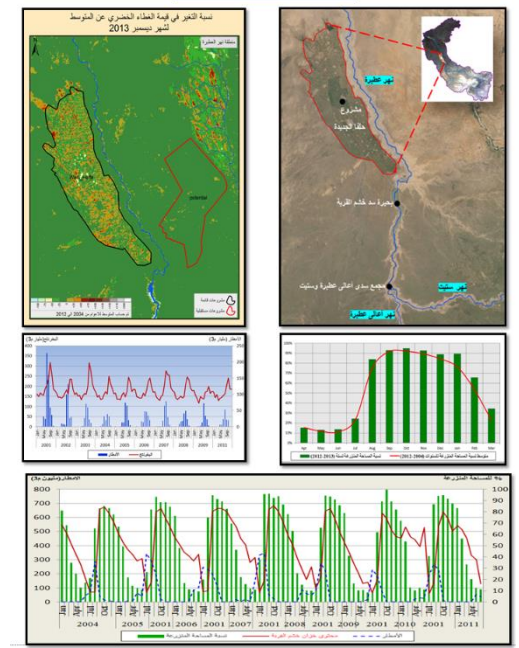
Rainfall

Monitoring systems

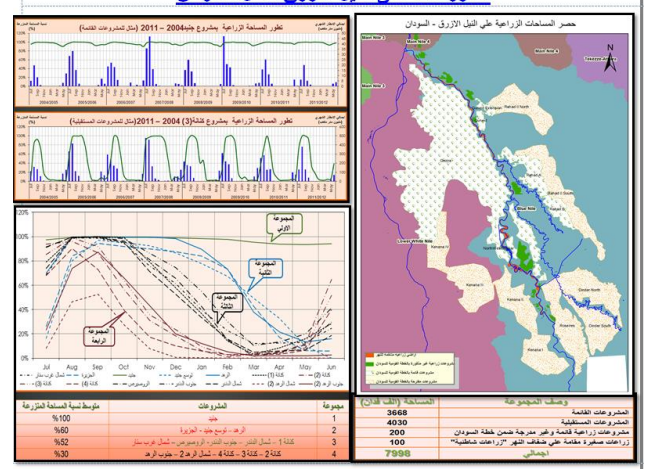
- Data analysis



مشروعات على نهر العطبرة

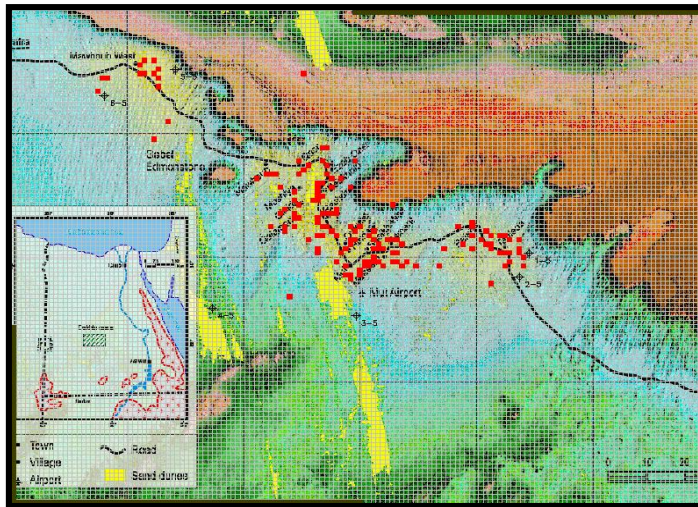


مشروعات على النيل الأزرق داخل السودان



Monitoring systems

- Ground water monitoring systems (wells – well discharge ,water levels)



Well ID	Coordinates		Layer No.	Coordinates ModFlow Cells		Period 1	Period
	Easting	Northing		row	col	1961 to 1970	1971 to 1
41	709597.53	2824804.66	5	54	84	-3195.62	-3195.6
257	645512.55	2862854.3	5	16	20	-4657.08	-4657.0
263	656867.55	2849284.5	5	30	31	-4260.82	-4260.8
267	656806.82	2863768.72	5	15	31	-3967.89	-3967.8
269	653888.82	2866205.35	5	13	28	-2663.01	-2663.0
270	655018.96	2866898.72	5	12	29	-2451.04	-2451.0
253	656657.04	2866995.08	5	12	31	0.00	-4372.9
275	657818.04	2865100	5	14	32	0.00	-4288.6
2	734349.43	2825822.25	5	53	109	0.00	0.00
14	722279.28	2825055.73	5	54	97	0.00	0.00

All Access Objects

Tables

- Bacteriological_water_analysis_re...
- Borehole
- Casing_and_screen
- Chemical_Examination(mg/l)
- Drilling_depth_diameter
- Generating_set_Specs
- Hydrologic_Data
- Lithological_Data
- Physical_Examination
- Pump_Specs
- Pumping_test_data
- Recovery_constant_discharge_test
- Water_Analysis
- Well_Development_Report

Queries

- Borehole Query
- Search1

Forms

- Baringo
- Borehole
- Borehole_Details
- Isiolo
- Kenya
- Kericho
- Kitui
- Koibatek
- Machakos
- Main Form
- Marsabit
- Mwingi
- North_Meru
- Pumping_test_data
- Search
- Tana_river

Reports

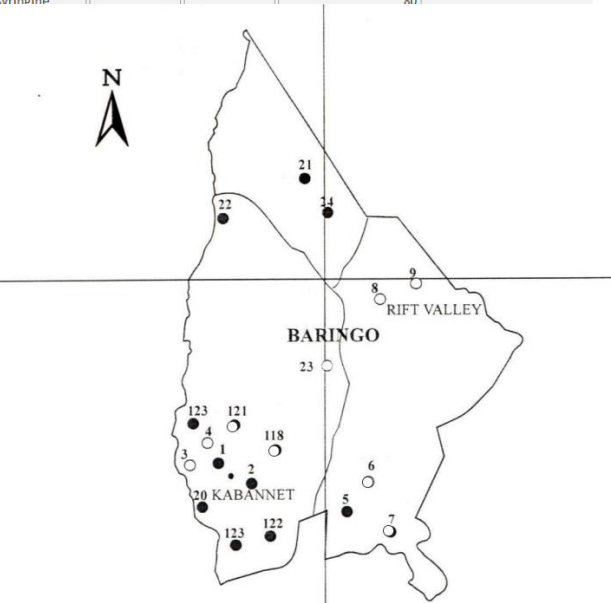
- Borehole Query
- Search_Results

Kenya Borehole Query

Tuesday, October 17, 2017
2:53:34 PM

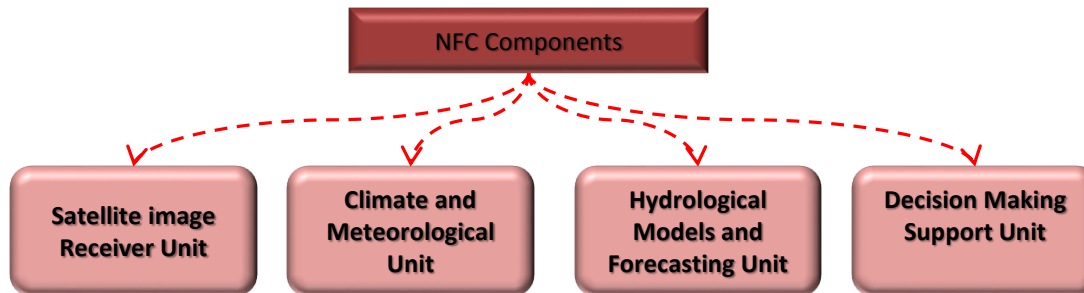
Borehole Query

well_name	x_Coordinate	y_Coordinate	water_level_depth(m)
Borehole No 1 Majengo			2.6
Borehole No 2 Kavamba			5.8
Borehole No 3 Mabiliani			
Borehole No 4 Hedaru			32.3
Borehole No 5 Mwembe			9.35
Borehole No 6 Majevu			69.8
Borehole No 7 Dengo			
Borehole No 8 Dengo2			
Borehole No 9 Osteti			76.6
Borehole No 10 Engsvrvinjine			RD
Borehole No 11 Mbi			
Borehole No 12 Para			
Borehole No 13 Mak			
Borehole No 15 Shir			
Borehole No 16 Sanj			
Borehole No 17 Sanj			
Borehole No 18 Mar			
Borehole No 19 Mbi			
Borehole No 20 Mw			
Borehole No 21 Fun			
Borehole No 22 Ilun			
Borehole No 23 Nya			
Borehole No 24 Mar			
Borehole No 25 May			
Borehole No 26 Lam			
Borehole No 27 Kiri			
Borehole No 28 Kun			
Borehole No 29 Nan			
Borehole No 30 Igur			

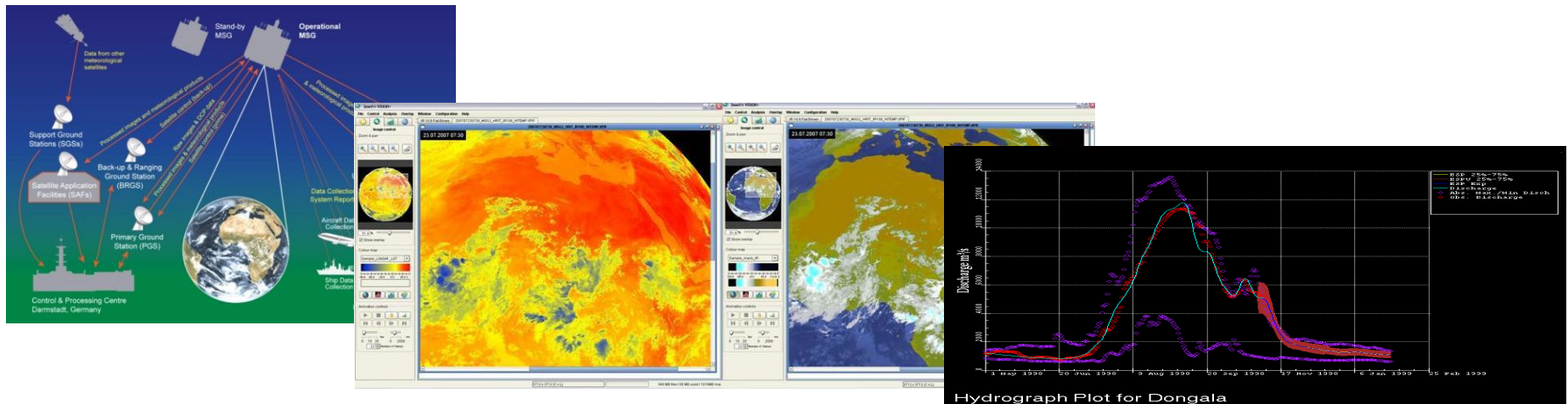


Forecasting systems

Nile Forecast Center



- Daily rainfall estimate from Satellite images merged with Rainfall from rain gauge data.
- Short Term Weather Elements Forecasts over Egypt and Nile Basin
- Monitoring, Simulation and Forecast the flow over the Nile Basin



Operational Systems

GIS Portal

Web-based application for assets management

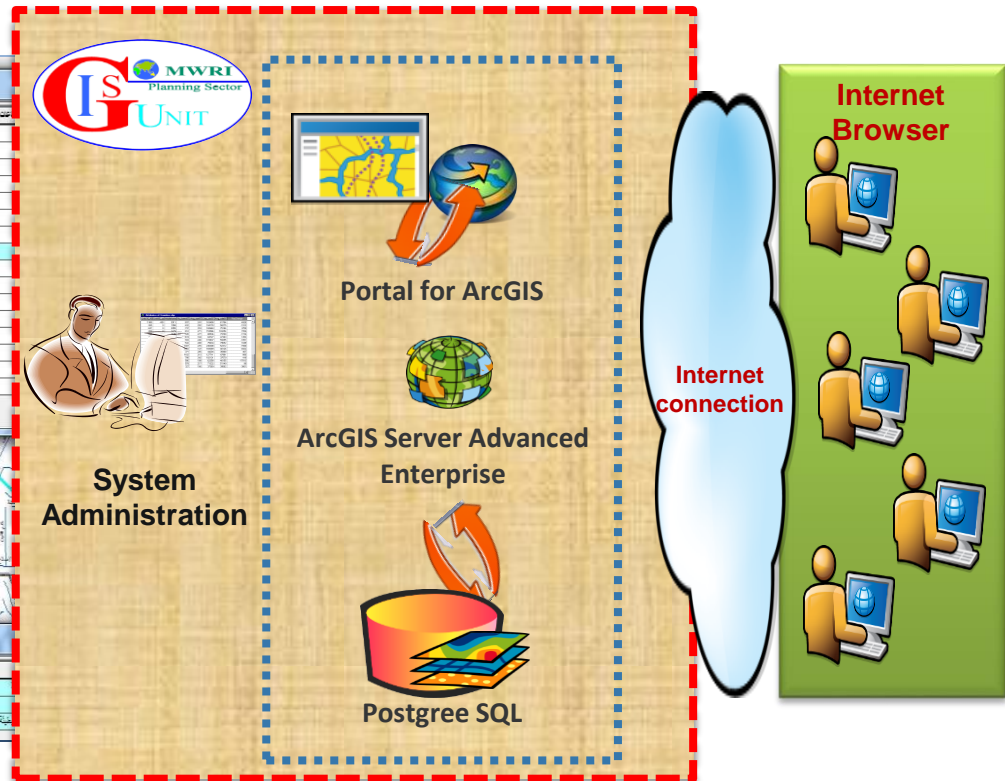
Attributes of غرب المياه

رقم الترخيص	اسم الترخيص	ملاحظات	الرمز	نوع الترخيص	الترخيص	حصة الترخيص	عدد الترخيص	الملاحظات
7	مخاضة الترخيص		600	مخاضة	مخاضة	44	لا يوجد	
5	مخاضة الترخيص		1400	مخاضة	مخاضة	45	لا يوجد	
6	مخاضة الترخيص		125	مخاضة	مخاضة	46	لا يوجد	
6	مخاضة الترخيص		1900	مخاضة	مخاضة	47	لا يوجد	
6	مخاضة الترخيص		1000	مخاضة	مخاضة	48	لا يوجد	
6	مخاضة الترخيص		1500	مخاضة	مخاضة	49	لا يوجد	
7	مخاضة الترخيص		300	مخاضة	مخاضة	50	لا يوجد	
6	مخاضة الترخيص		33512	مخاضة	مخاضة	51	لا يوجد	
7	مخاضة الترخيص		30490	مخاضة	مخاضة	52	لا يوجد	
8	مخاضة الترخيص		3500	مخاضة	مخاضة	53	لا يوجد	
8	مخاضة الترخيص		2400	مخاضة	مخاضة	54	لا يوجد	
8	مخاضة الترخيص		40.28	مخاضة	مخاضة	55	لا يوجد	
8	مخاضة الترخيص		4215	مخاضة	مخاضة	56	لا يوجد	
7	مخاضة الترخيص		2500	مخاضة	مخاضة	57	لا يوجد	
7	مخاضة الترخيص		0	مخاضة	مخاضة	58	لا يوجد	
2	مخاضة الترخيص		1700	مخاضة	مخاضة	59	لا يوجد	

Record: 14 | Show: All Selected | Records (1 out of 189 Selected) | Options

Selected Attributes of final

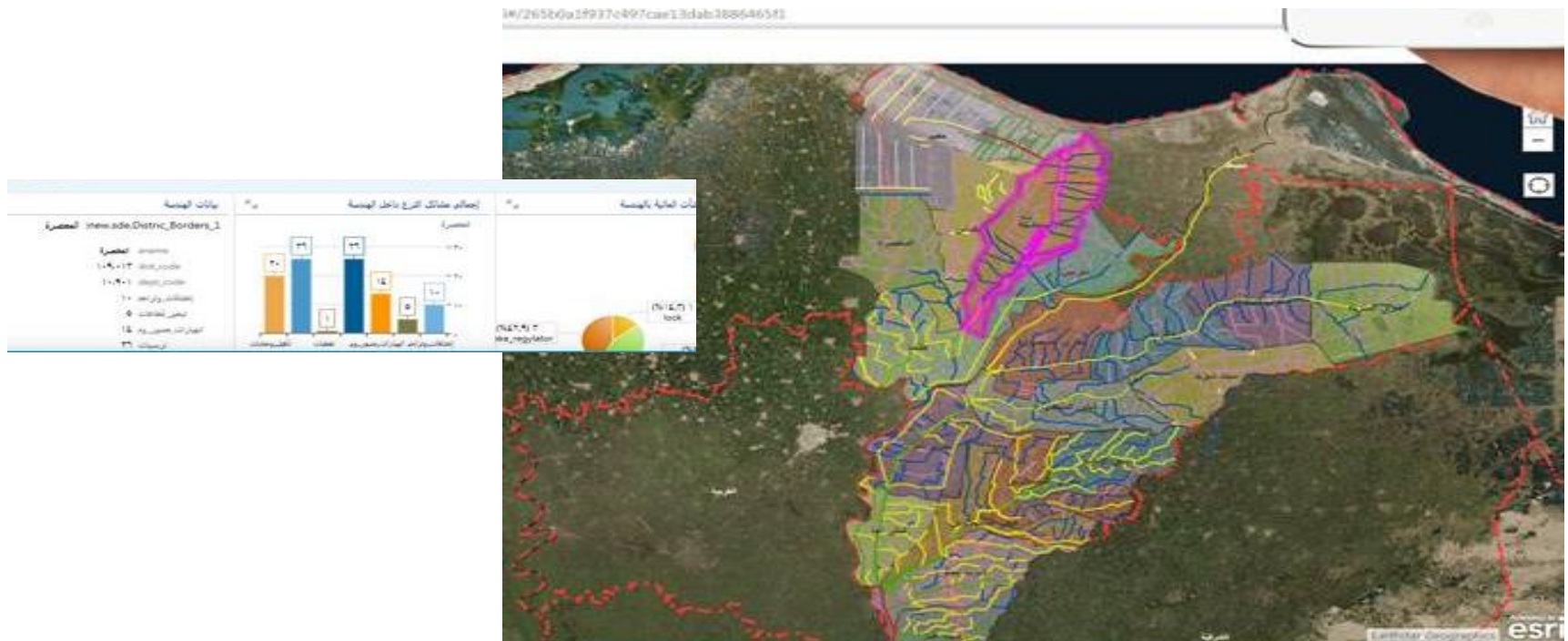
رقم الترخيص	مخاضة الترخيص	مخاضة الترخيص	مخاضة الترخيص	مخاضة الترخيص	مخاضة الترخيص	مخاضة الترخيص
51	0	33.8	مخاضة	مخاضة	مخاضة	مخاضة
51	مخاضة	مخاضة	مخاضة	مخاضة	مخاضة	مخاضة
51	4.6	25	مخاضة	مخاضة	مخاضة	مخاضة



Decision support systems

Dashboard

- Water Structures
- Canals Problems



MWRI official website

The screenshot shows the official website of the Ministry of Water Resources and Irrigation, Arab Republic of Egypt. The header includes the ministry's logo and name in Arabic and English, along with social media icons and a search bar. The main navigation menu lists various sections: Home, Ministry, Projects, Irrigation & Drainage, Water Info, Media, Multi-Funded projects, Water & Kids, Advertisements, and Training plans. The central banner features a scenic view of the Nile river with sailboats and a dam, overlaid with four diamond-shaped icons for Projects, Public Services, Staff Services, and Contacts. Below this is a NEWS section with five thumbnail images and a 'MORE NEWS' button. The VIDEO LIBRARY section displays a search bar and a list of video categories: Irrigation development, Land Grabber, High Seas, Water assets development, and Measurement of canals & banks. The SERVICES & ACTIVITIES section includes four thumbnails: Climate Change Of the Nile, Irrigation Sector Services, National Plan, and Organizational Chart. At the bottom, five hexagonal icons represent: Central Library, Nile river, Million And A Half-Feddan, Egypt's vision 2030, and International conferences.

Difficulties faces and main challenges for the future

Challenges

- Isolated islands
- Fragmentation
- Absence of unified coding system, structure, or data sharing protocol
- Project based capacity buildings plans
- Staff turn over

Future development plans or operational activities for existing systems

Future Plans

- Information managers forum
- Formulating standards and common knowledge for information exchange among main departments
- Design unified coding system
- Develop disclosure policy
- Expand GIS Portal to include operational, development and management of water resources databases
- Develop web base applications for public use
- Develop indicators for decision makers
- Develop sustainable capacity building program



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With the support of the French Ministry for Environment, Foundation of Prince Albert 2 of Monaco, UfM Secretariat



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