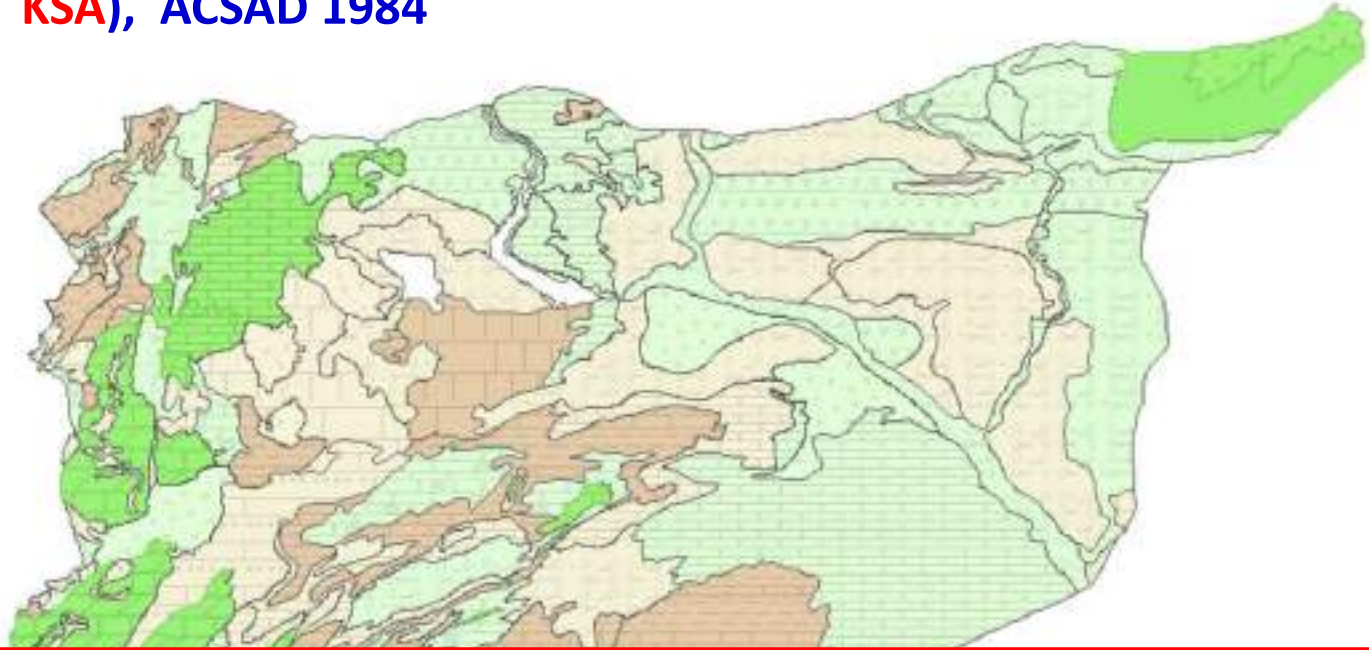




Produced hydrogeological map of (Syria- Lebanon- Jordan, Palestine, partially KSA), ACSAD 1984

Data Source: ACSAD



Highly productive aquifers with important annual recharge or extensive aquifers with considerable wa



طبقات مائية ذات انتاجية عالية وتغذية سنوية مهمة

Aquifers with medium productivity and limited area extent or incoherent aquifers



طبقات مائية ذات انتاجية متوسطة أو محدودة أو غير متجانس

local aquifers with low productivity



طبقات مائية محلية ذات انتاجية ضعيفة

Essentially unproductive aquifer



طبقات بصورة عامة غير منتجة



Data Source:

Kuwait wafra report, ACSAD project, 2014

Kuwait Maps,

- **Geology**
- **Land use**



Kuwait geological map,

Data Source: ACSAD, 2014



- Layers
- GeologyMap_Kuwait
 - <all other values>
 - Formation1
 - AeolianSand
 - Alluvium
 - Desert Floor Deposits
 - Lower Dibdibah Formation
 - Lower Member Of Fars Fo
 - Sabakah Deposits
 - Undifferentiated Fars and
 - Upper Dibdibah Formation
 - Upper Member Of Fars Fo
 - Landuse_Kuwait
 - Kuwait_poly

GeologyMap_Kuwait							
	OBJECTID_1*	Shape *	OBJECTID	SHAPE_Leng	area	Formation_	Formation1
	1	Polygon	1	189279.820376	645.522146	9	Undifferentiated Fars and Ghar Formation
	2	Polygon	2	150312.127329	696.089602	4	Sabakah Deposits
	3	Polygon	4	34427.689531	62.769102	5	Upper Dibdibah Formation
	4	Polygon	5	190034.042882	732.890476	9	Undifferentiated Fars and Ghar Formation
	5	Polygon	6	213265.032335	592.610333	3	Desert Floor Deposits
	6	Polygon	7	606167.251792	2589.165153	1	AeolianSand
	7	Polygon	8	364125.524477	1383.498119	9	Undifferentiated Fars and Ghar Formation
	8	Polygon	11	353771.284969	1026.854129	6	Lower Dibdibah Formation
	9	Polygon	13	320413.268909	1186.48188	6	Lower Dibdibah Formation
	10	Polygon	15	214208.470577	373.572911	5	Upper Dibdibah Formation
	11	Polygon	16	13955.817885	13.139167	3	Desert Floor Deposits
	12	Polygon	17	21342.543508	27.542187	3	Desert Floor Deposits
	13	Polygon	18	65657.984951	211.040462	1	AeolianSand
	14	Polygon	19	17841.022144	16.194235	3	Desert Floor Deposits
	15	Polygon	21	65374.569483	197.045905	1	AeolianSand
	16	Polygon	22	126237.385109	171.668308	8	Lower Member Of Fars Formation
	17	Polygon	23	252022.148911	512.636384	7	Upper Member Of Fars Formation
	18	Polygon	24	61575.312731	82.922537	6	Lower Dibdibah Formation
	19	Polygon	26	242760.898366	827.379367	6	Lower Dibdibah Formation
	20	Polygon	27	85104.150184	63.613499	3	Desert Floor Deposits
	21	Polygon	28	73381.429279	311.340904	6	Lower Dibdibah Formation
	22	Polygon	29	142484.955677	501.816471	1	AeolianSand
	23	Polygon	30	844495.024772	843.514864	5	Upper Dibdibah Formation
	24	Polygon	31	150689.734281	329.774115	3	Desert Floor Deposits
	25	Polygon	32	82954.189341	110.889831	2	Alluvium
	26	Polygon	33	95583.585347	317.684518	1	AeolianSand
	27	Polygon	34	135500.4909	309.216409	6	Lower Dibdibah Formation



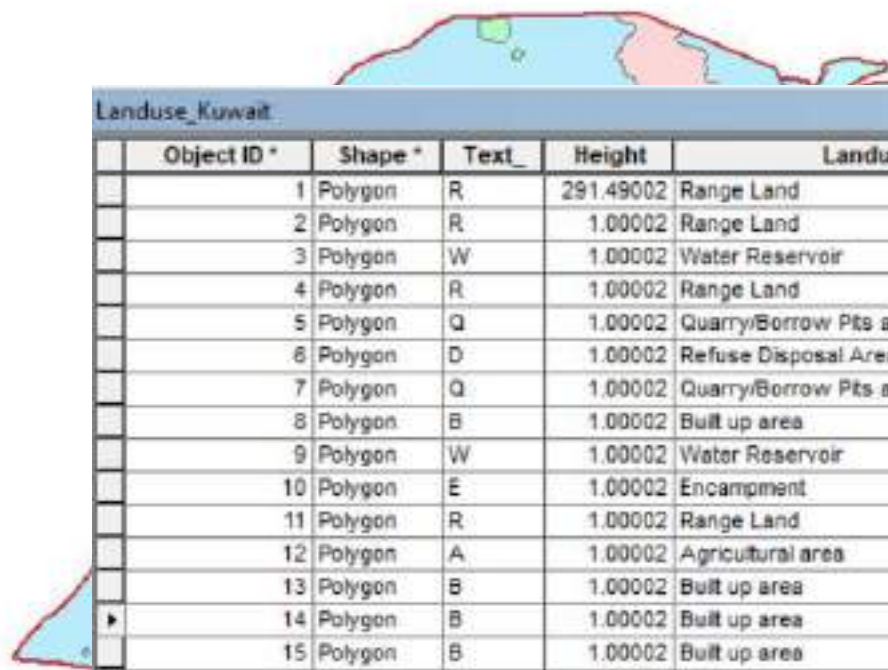
Kuwait Landuse Map,

Data Source: ACSAD, 2014



Layers

- GeologyMap_Kuwait
- Landuse_Kuwait
 - <all other values>
 - LanduseType
 - <Null>
 - Agricultural area
 - Built up area
 - Cemetery
 - Communications facility
 - Encampment
 - Intensive Animal Farm
 - Military Area
 - National Park/Protected Area
 - Oil Field
 - Power Substation
 - Quarry/Borrow Pits and Tailings
 - Racetrack
 - Range Land
 - Refuse Disposal Area
 - Scrapyard
 - Unused land
 - Water Reservoir
 - Wooded Parkland
- Kuwait_poly



Landuse_Kuwait								
Object ID *	Shape *	Text_	Height	LanduseType	Label	Angle	MsLink_ON	
1	Polygon	R	291.49002	Range Land	R	0		
2	Polygon	R	1.00002	Range Land	R	0		
3	Polygon	W	1.00002	Water Reservoir	W	0		
4	Polygon	R	1.00002	Range Land	R	0		
5	Polygon	Q	1.00002	Quarry/Borrow Pits and Tailings	Q	0		
6	Polygon	D	1.00002	Refuse Disposal Area	D	0		
7	Polygon	Q	1.00002	Quarry/Borrow Pits and Tailings	Q	0		
8	Polygon	B	1.00002	Built up area	B	0		
9	Polygon	W	1.00002	Water Reservoir	W	0		
10	Polygon	E	1.00002	Encampment	E	0		
11	Polygon	R	1.00002	Range Land	R	0		
12	Polygon	A	1.00002	Agricultural area	A	0		
13	Polygon	B	1.00002	Built up area	B	0		
14	Polygon	B	1.00002	Built up area	B	0		
15	Polygon	B	1.00002	Built up area	B	0		
16	Polygon	B	1.00002	Built up area	B	0		
17	Polygon	O	1.00002	Oil Field	O	0		
18	Polygon	B	1.00002	Built up area	B	0		
19	Polygon	F	1.00002	Intensive Animal Farm	F	0		
20	Polygon	PS	1.00002	Power Substation	PS	0		
21	Polygon	D	1.00002	Refuse Disposal Area	D	0		
22	Polygon	W	1.00002	Water Reservoir	W	0		
23	Polygon	Q	1.00002	Quarry/Borrow Pits and Tailings	Q	0		
24	Polygon	B	1.00002	Built up area	B	0		
25	Polygon	M	265.00002	Military Area	M	0		
26	Polygon	W	1.00002	Water Reservoir	W	0		



Data Source:

ACSAD project, 2012

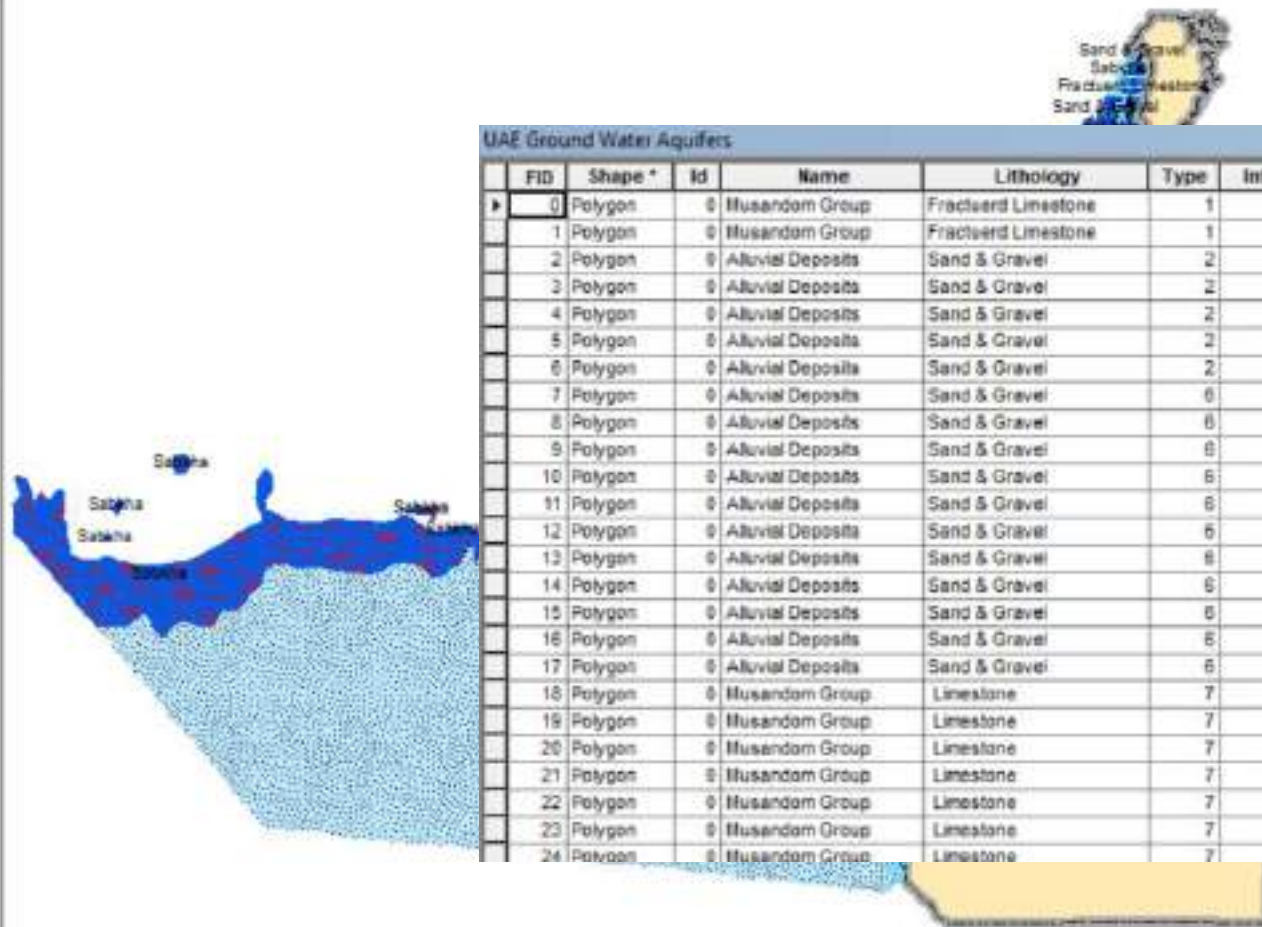
UAE Maps,

- **UAE Ground Water Aquifers**
- **Productivity_Aguifer**
- LandUse
- Geology

UAE Ground Water Aquifers

Layers

- Roads_Clip
- UAE Ground Water Aquifers
 - Type
 - Frac. LS (H. GW. Pot.)
 - Alluvial Deposits (H. GW. Pot.)
 - Juweiza Form (L. GW. Pot.)
 - Simsima Form (L. GW. Pot.)
 - Alluvial Deposits (M. GW. Pot.)
 - Limestone (M. GW. Pot.)
 - Alluvial Deposits (L. GW. Pot.)
 - Wind BlownDeposits (L. GW. Pot.)
 - Wind BlownDeposits (M. GW. Pot.)
 - Sabkha (M. GW. Pot.)
 - EvaporitesClay (M. GW. Pot.)
 - Sabkha (H. GW. Pot.)
 - Wind BlownDeposits (H. GW. Pot.)
 - Ophiolites (L. GW. Pot.)
 - OMAN Lands
 - Shale (L. GW. Pot.)
 - Clay.Evaporites (M. GW. Pot.)
- LandUse
 - <all other values>
 - Description
 - Agricultural Area
 - Built-up or Industrial Area
 - Cemetery
 - Communication Facility
 - Forestry or Wooded Parkland
 - Mangrove
 - Not Determined





UAE Geology

Data Source: ACSAD, 2014



Layers

- Roads_Clip
- UAE Ground Water Aquifer
- Geology**
 - < all other values >
 - Lithology
 - Limestone
 - Sabkha
 - Sand
 - Fractured Limestone
 - Ophiolite
 - Ophiolites
 - Sabkha
 - Sand
 - Sand_Gravel
 - Shale
 - LandUse
 - < all other values >
 - Descriptio
 - Agricultural Area
 - Built-up or Industrial An
 - Cemetery
 - Communication Facility
 - Forestry or Wooded Parl
 - Mangrove
 - Not Determined



Geology								
OBJECTID *	Shape *	Id	Name	Lithology	Type	Informatio	G_W_Pot	Shape
33	Polygon	0	Musandam Group	Limestone	7		Medium	41
34	Polygon	0	Musandam Group	Limestone	7		Medium	41
35	Polygon	0	Musandam Group	Limestone	7		Medium	90
36	Polygon	0	Musandam Group	Limestone	7		Medium	71
37	Polygon	0	Musandam Group	Limestone	7		Medium	90
38	Polygon	0	Musandam Group	Limestone	7		Medium	11
39	Polygon	0	Musandam Group	Limestone	7		Medium	631
40	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	34
41	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	1
42	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	101
43	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	172
44	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	11
45	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	101
46	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	131
47	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	1
48	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	11
49	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	831
50	Polygon	0	Sabkha Deposits	Sand & Gravel	8		Low	2161
51	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	161
52	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	301
53	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	321
54	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	901
55	Polygon	0	Wind blown Sand	Sand	9		Low	371
56	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	11
57	Polygon	0	Alluvial Deposits	Sand & Gravel	8		Low	371
58	Polygon	0	Wind blown Sand	Sand	10		Medium	501
59	Polygon	0	Sabkha Deposits	Sabkha	11		Medium	1231



Digitizing Maps of Lebanon

- leban_hydro (groundwater basins)
- Sub_watersheds
- major_geological_structure
- main_faults, Fault
- springs

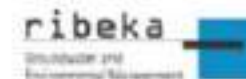
Data Source:

Assessment-of-Groundwater-Resources-of-Lebanon.pdf, 2014

PROJECT PARTNERS:



TECHNICAL CONSULTANTS:





Digitizing -Ground water Basins

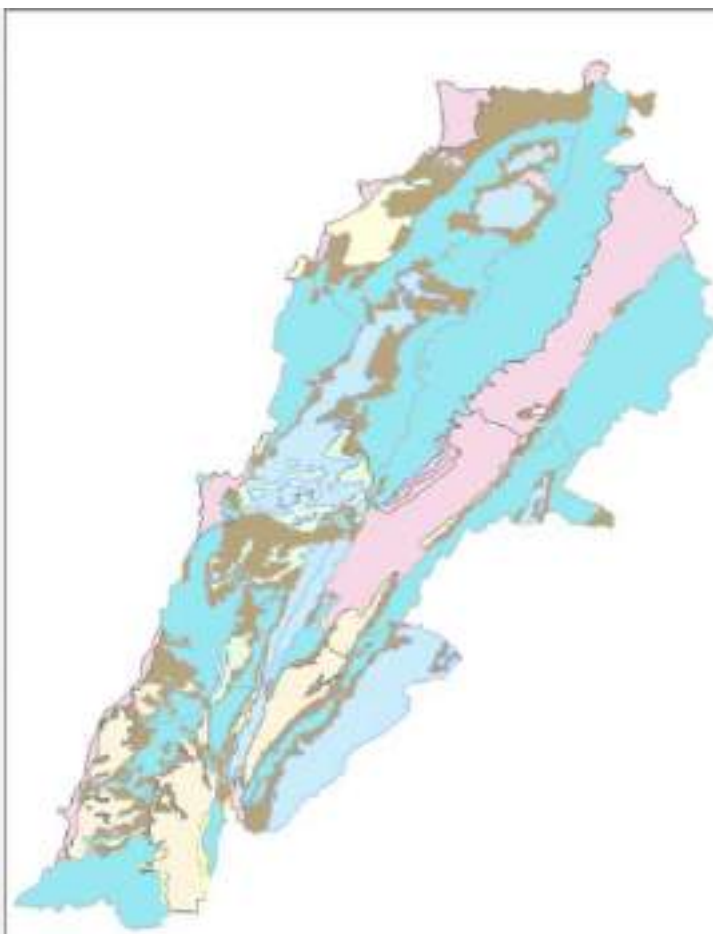
Data Source:

Assessment-of-Groundwater-Resources-of-Lebanon.pdf, 2014

Table Of Contents

Layers

- springs
- main_faults
- lebanon_lines
- lebanon_lines
- faults
- lebanon
- leban_hydro
 - <all other values>
 - STRAR
 - Cretaceous Sandstone Basins
 - Eocene Basins
 - Jurassic Basins
 - Miocene Basins
 - Neogen /Quaternary Basins
 - cretaceous basins
 - unproductive basins
- leban_hydro
- leban_hydro
- Assessment_Groundwater_Resources_Leba
- geological_structure
- major_geological_structure1.tif
- Sub_watersheds
- Sub_watersheds1.tif

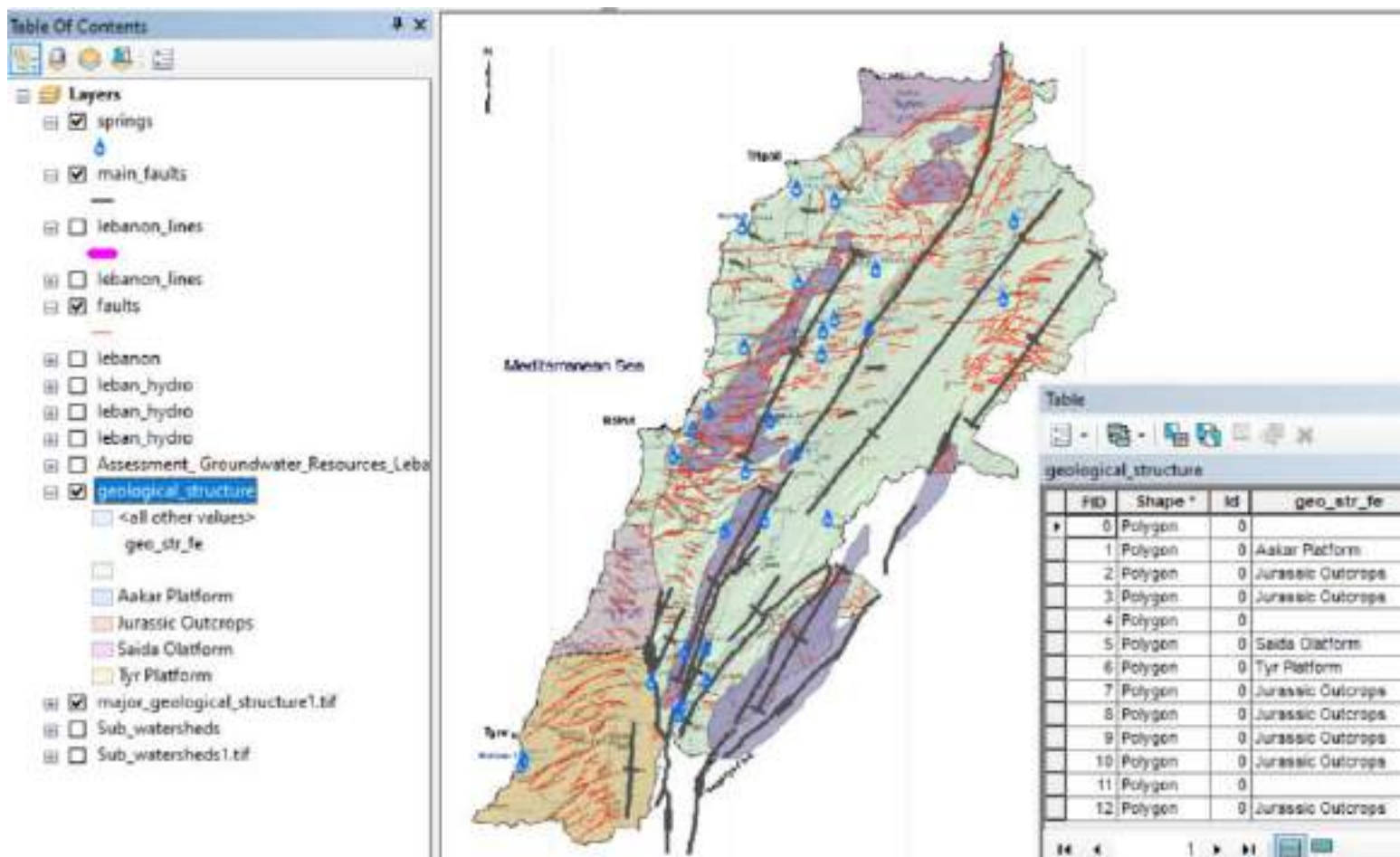


Table

leban_hydro

FID	Shape *	Id	STRAR	NAMES
37	Polygon	0	cretaceous basins	Figen cretaceous basins
46	Polygon	0	cretaceous basins	central Anti_lebanon cretaceous basins
54	Polygon	0	cretaceous basins	Mount lebanon Bekaa cretaceous basins
55	Polygon	0	cretaceous basins	Western Knaysseh cretaceous basins
67	Polygon	0	cretaceous basins	southern Anti_lebanon cretaceous basins
75	Polygon	0	cretaceous basins	Qaroun cretaceous basins
84	Polygon	0	cretaceous basins	yamaq cretaceous basins
86	Polygon	0	cretaceous basins	Jezzine cretaceous basins
91	Polygon	0	cretaceous basins	Sarafand_Khalti cretaceous basins
100	Polygon	0	cretaceous basins	Batroun jounie cretaceous basins
102	Polygon	0	cretaceous basins	Naqoura_sarafand cretaceous basins
105	Polygon	0	cretaceous basins	Naqoura_sarafand cretaceous basins
125	Polygon	0	cretaceous basins	Naqoura_sarafand cretaceous basins
132	Polygon	0	cretaceous basins	
133	Polygon	0	cretaceous basins	Naqoura_sarafand cretaceous basins
140	Polygon	0	cretaceous basins	Naqoura_sarafand cretaceous basins
18	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
48	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
50	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
51	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
52	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
57	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
56	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
59	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
60	Polygon	0	Cretaceous Sandstone Basins	Jezzine Sandstone Basins
63	Polygon	0	Cretaceous Sandstone Basins	Jezzine Sandstone Basins
65	Polygon	0	Cretaceous Sandstone Basins	Jezzine Sandstone Basins
96	Polygon	0	Cretaceous Sandstone Basins	Jezzine Sandstone Basins
97	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins
98	Polygon	0	Cretaceous Sandstone Basins	Meln_Cheuf Sandstone Basins

Digitizing - Major geological structure, Main faults, Fault, Springs





Digitizing - Sub watersheds

Data Source:

Assessment-of-Groundwater-Resources-of-Lebanon.pdf, 2014

Sub_watersheds

- < all other values>
- Name
- Abo Ali
- Abou Alassouad
- Alassi
- Antelias
- Arka
- Asfour
- Awik
- Bacchta
- Beirut
- Bissanye
- Bshemoun
- El Awali
- El Bared
- El Jouz
- El Kalb
- El damour
- El kabir
- Fidar
- Ghadir
- Ham_Maaraboun
- Hasbani
- Ibrahim
- Kharoub
- Litani
- Litani Assi



Table

Sub_watersheds

FID	Shape *	Id	Name
52	Polygon	0	Zahrani
7	Polygon	0	Yammoune
17	Polygon	0	West Barsa
13	Polygon	0	Wadi Minieh
19	Polygon	0	Wadi Barsa
81	Polygon	0	Tfal
25	Polygon	0	South Madfoun
57	Polygon	0	south Litani
49	Polygon	0	South Awali
51	Polygon	0	Sarik
53	Polygon	0	Saida
8	Polygon	0	Ostouane
22	Polygon	0	North Ajouz
28	Polygon	0	Mouhane
5	Polygon	0	Marjin
58	Polygon	0	Mansiyye
24	Polygon	0	Madfoun
33	Polygon	0	Maalmeitine
6	Polygon	0	Litani Assi
0	Polygon	0	Litani
47	Polygon	0	Kharoub
37	Polygon	0	Ibrahim
80	Polygon	0	Hasbani
62	Polygon	0	Ham_Maaraboun
44	Polygon	0	Ghadir
30	Polygon	0	Fidar



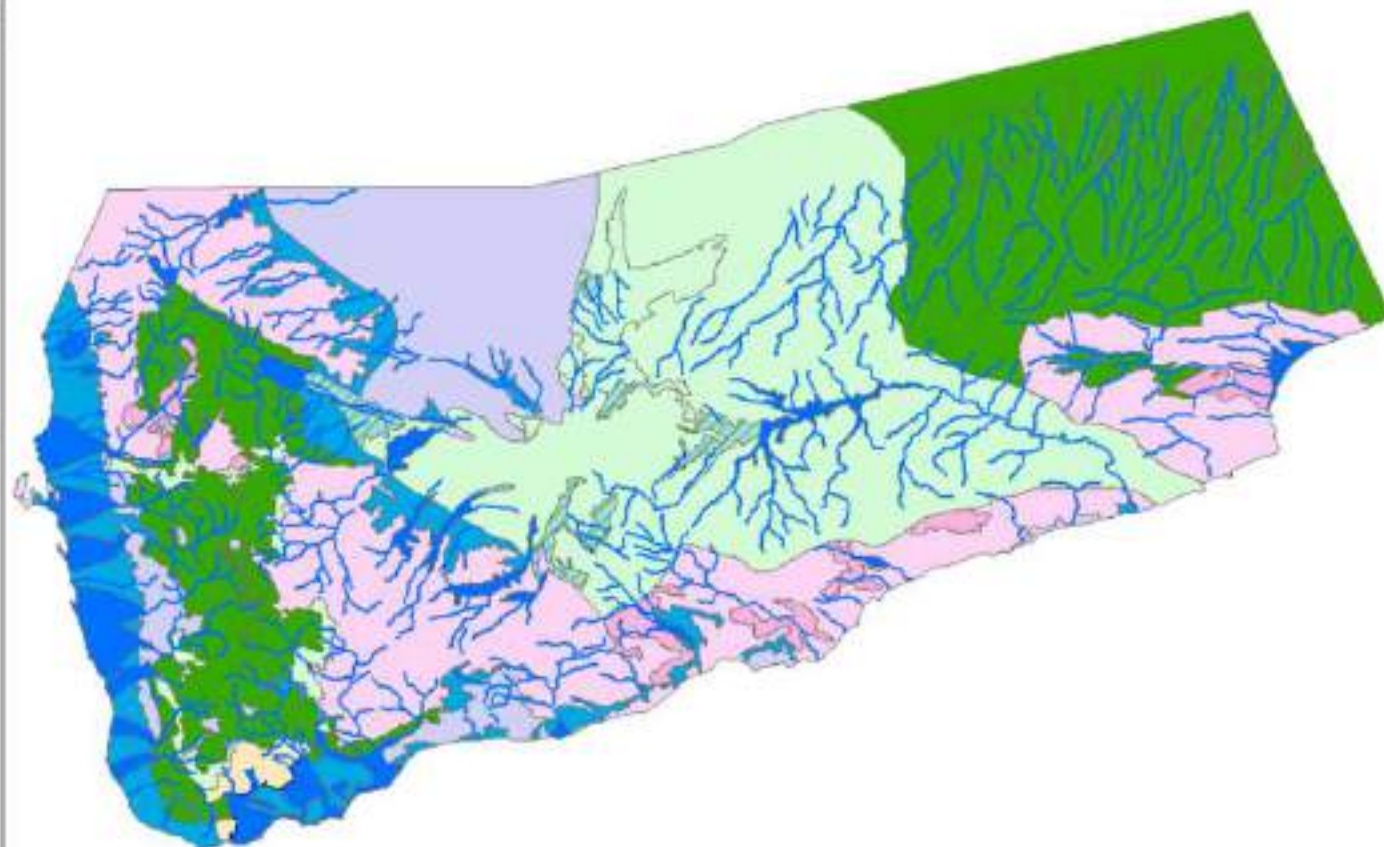
Data Source:

The water resources of Yemen,

Technical report,1995

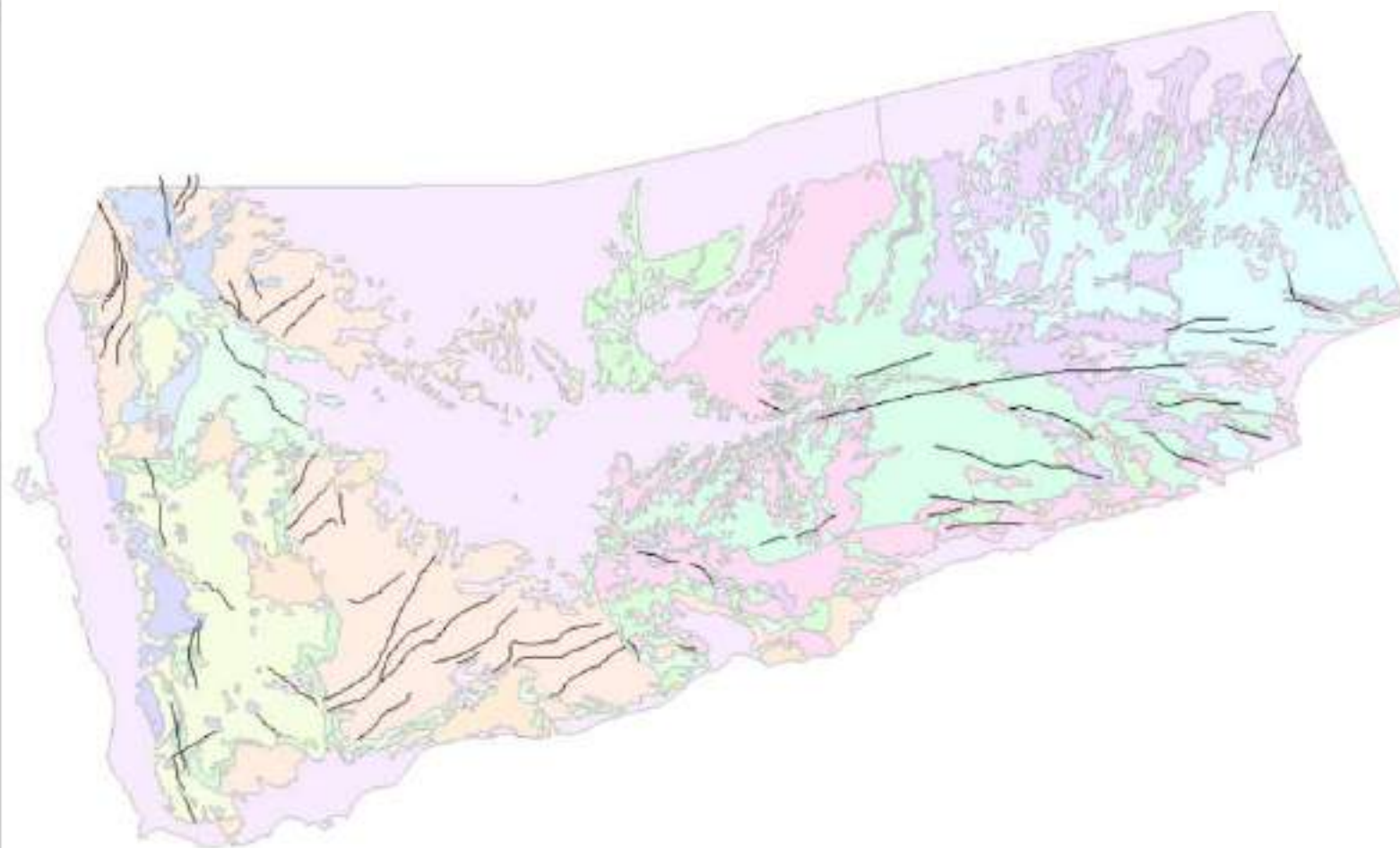
Maps of Yemen,

- hydrogeology
- geology



Digitizing– Yamen Geolo

Data Source: The water resources of Yemen,
Technical report,1995





Libya Hydrogeological Map



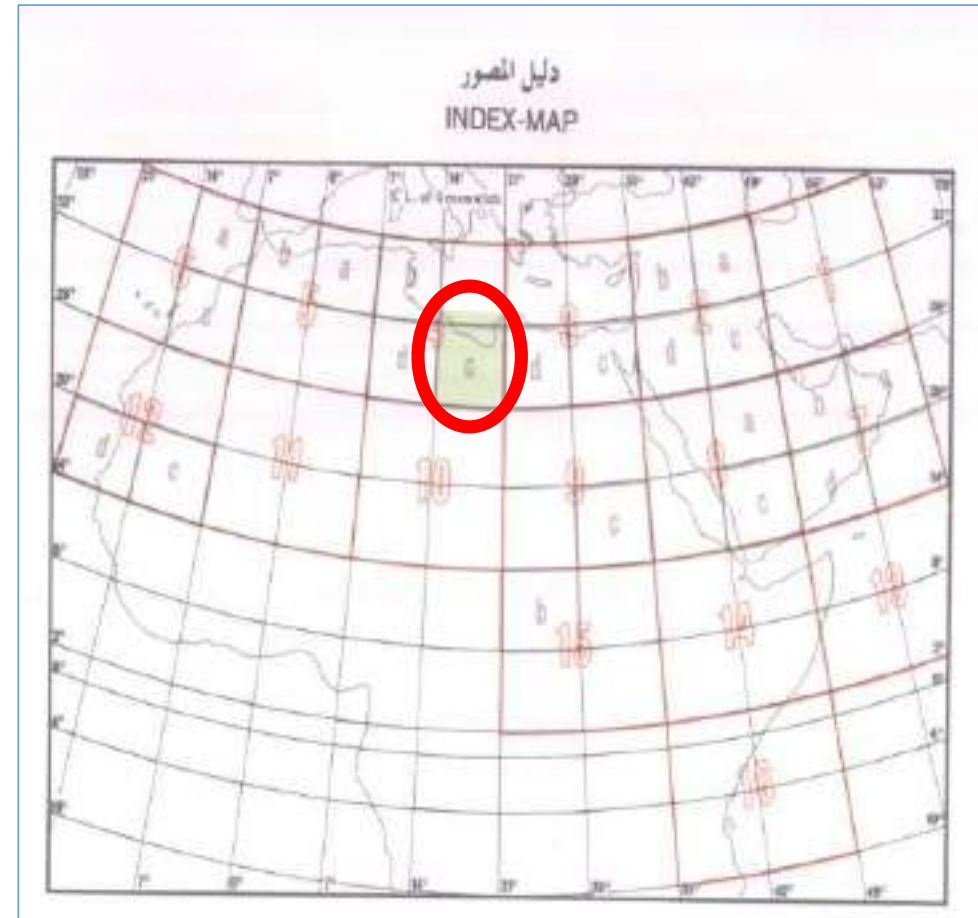
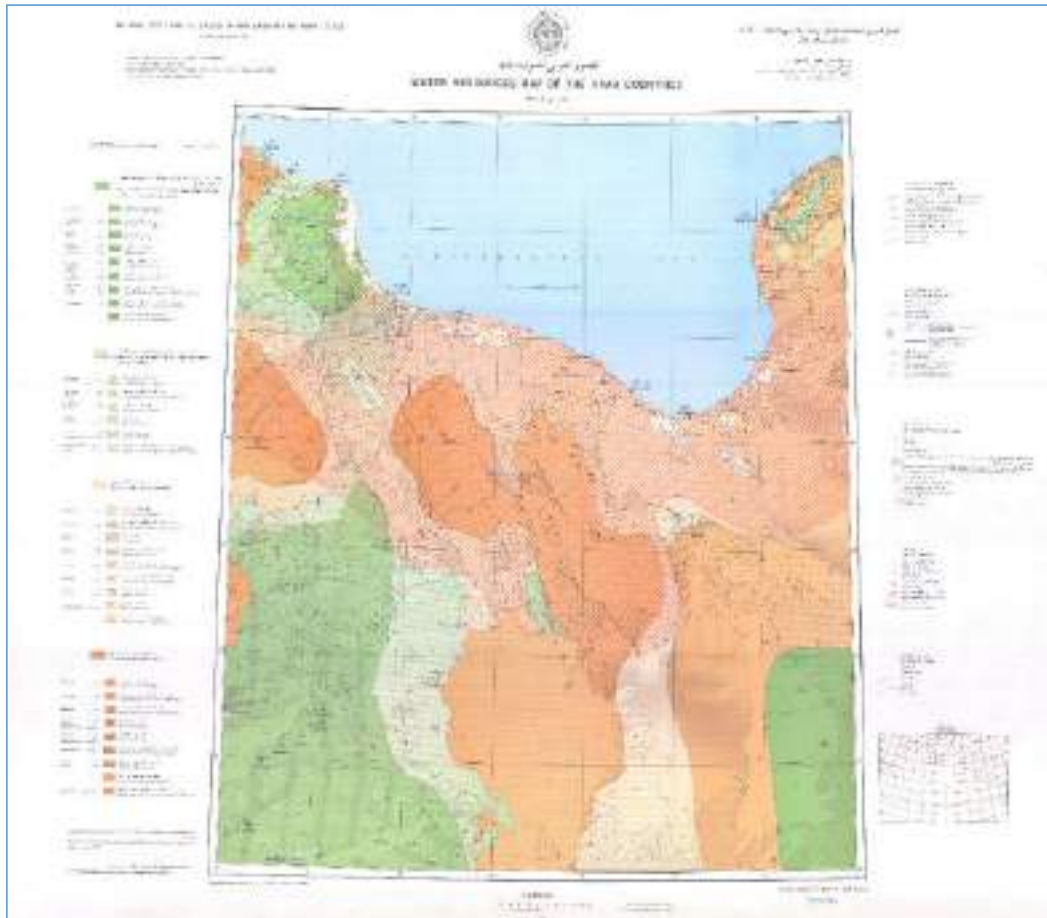
Arab Water Resources Map.

Scale 1:1000,000 (**partially Libya**), ACSAD 1990

Data Source: ACSAD



1990





Arab Water Resources Map.

Scale 1:1000,000 (**partially Libya**), ACSAD 1990

Data Source: ACSAD



These maps contain the following Layers:

1- Groundwater occurrence

- Aquifers with **high productivity** and significant annual feeding or extensive aquifers
- Aquifers **with limited average productivity** or heterogeneous
- Local aquifers with **poor productivity**
- Generally **unproductive layers**

2- **depths** of groundwater table

3- Groundwater **quality** (salinity...)

4- **Lithology**, types of rocks and soils,

5- **Stratigraphy** and geological ages are classified into: quaternary-Eocene-Cretaceous

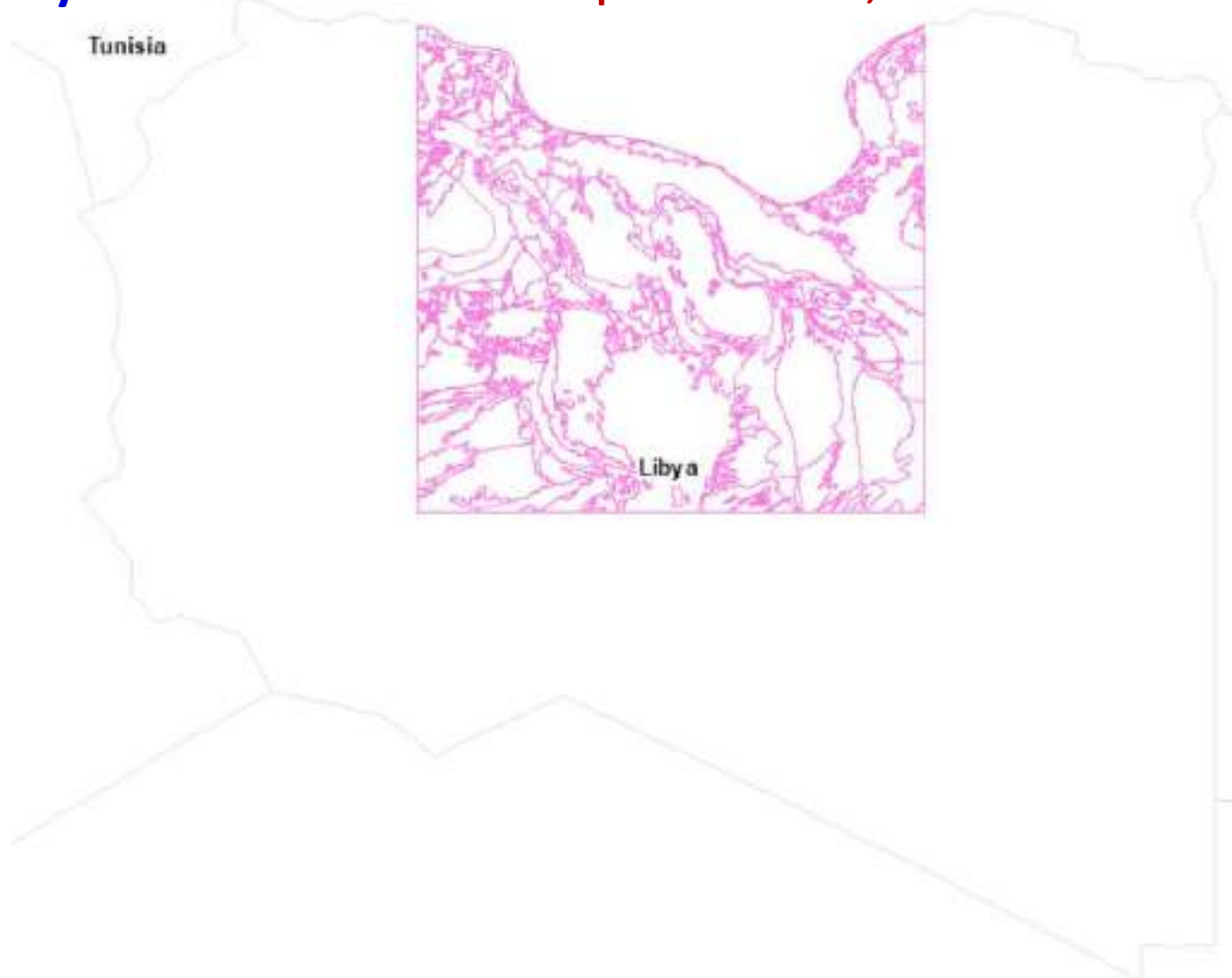
6- **Surface water and springs**

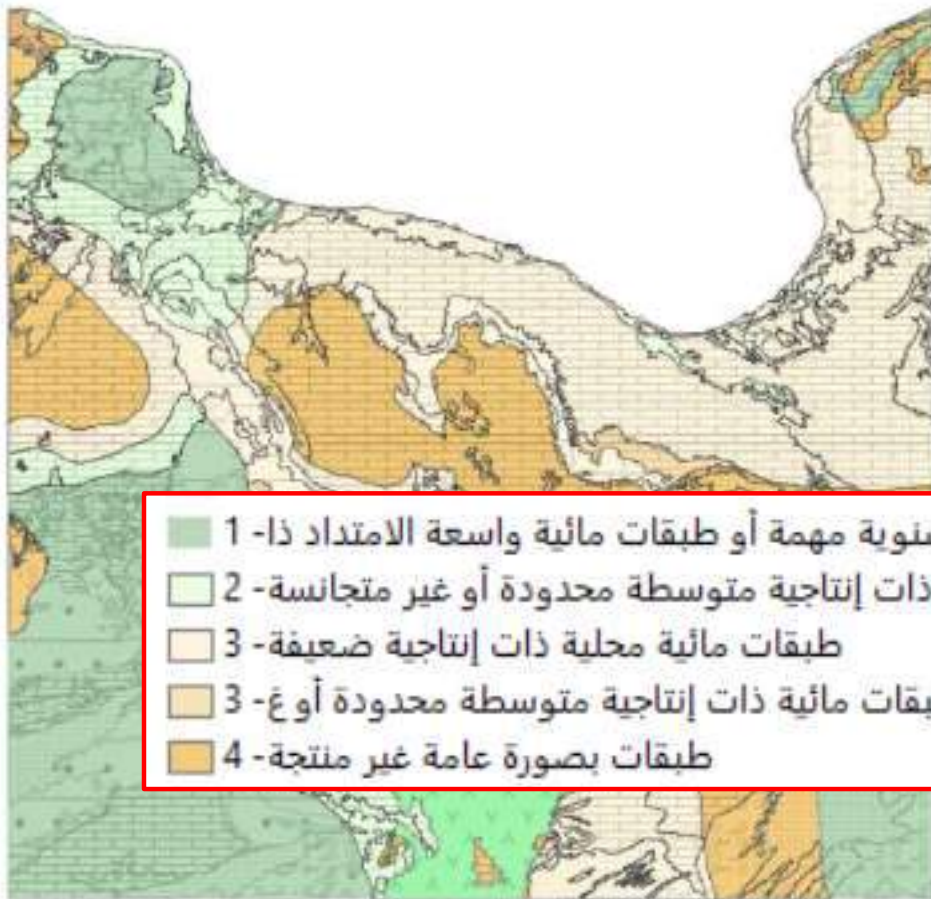
7- **Wells & dams**



Digitizing – **Libya** -Arab Water Resources Map. Scale 1:1000,000

Data Source: ACSAD







Entered Attribute -Libya

Data Source: ACSAD

FID	Shape	id	Water Prod	Water Pr_A	Lith no	Lithology	Litology_A	Ages	Age_a	Age_e	Wpr No
17	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	0						
94	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	9	Undifferentiated basic - mainly b	صخور قاعدية غير مفسمة حال	Tv	Tv	Tv	
95	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	8	Claystone - siltstone - sandston	صخر طيني - صخر عرسي - ح	Ku		Ku	
96	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	9	Undifferentiated basic - mainly b	صخور قاعدية غير مفسمة حال	Tv	Tv	Tv	
97	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	9	Undifferentiated basic - mainly b	صخور قاعدية غير مفسمة حال	Tv	Tv	Tv	
98	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	8	Claystone - siltstone - sandston	صخر طيني - صخر عرسي - ح	Ku		Ku	
100	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	1	Gravel - sand- shale- conglomer	حصى - رمل - طين - وخرطوط	E		E	
101	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	Tp		Tp	
102	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	Tp		Tp	
103	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	8	Claystone - siltstone - sandston	صخر طيني - صخر عرسي - ح	Ku		Ku	
104	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	9	Undifferentiated basic - mainly b	صخور قاعدية غير مفسمة حال	Tv		Tv	
105	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	1	Gravel	حصى - رمل - طين	O		O	
127	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	15	Intrusive igneous	صخور انصهارية				
128	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	15	Intrusive igneous	صخور انصهارية				
129	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	15	Intrusive igneous	صخور انصهارية				
130	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	5	Dolomite	صخر كلسي دولوميتي	Tp		Tp	
131	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	5	Dolomitic - Limestone	صخر كلسي دولوميتي ودولوميت	Tp		Tp	
132	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	9	Undifferentiated basic - mainly b	صخور قاعدية غير مفسمة حال	Tv		Tv	
133	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	9	Undifferentiated basic - mainly b	صخور قاعدية غير مفسمة حال	Tv		Tv	
153	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	6	Sandstone - siltstone - claysto	صخر رملي - صخر عرسي - ح	Tm		Tm	
154	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	6	Sandstone - siltstone - claysto	صخر رملي - صخر عرسي - ح	Tm		Tm	
155	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	6	Sandstone - siltstone - claysto	صخر رملي - صخر عرسي - ح	Tm		Tm	
156	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	5	Dolomitic - Limestone to dolomite	صخر كلسي دولوميتي ودولوميت	Tm		Tm	
157	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	6	Sandstone - siltstone - claysto	صخر رملي - صخر عرسي - ح	Tm		Tm	
158	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
159	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
162	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
163	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
165	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
167	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
169	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	To-Te-Ku		To-Te-Ku	
173	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	Tm		Tm	
178	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	Tm		Tm	
181	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	Tm		Tm	
182	Polygon	0	4 - Essentially unproductive aquifers	طبقات بصوريا عامة غير منتجة	4	Limestone - calcarenite	صخر كلسي - كالكارنيت	Tm		Tm	

الإنتاجية المائية
Productivity

الليثولوجيا
Lithology

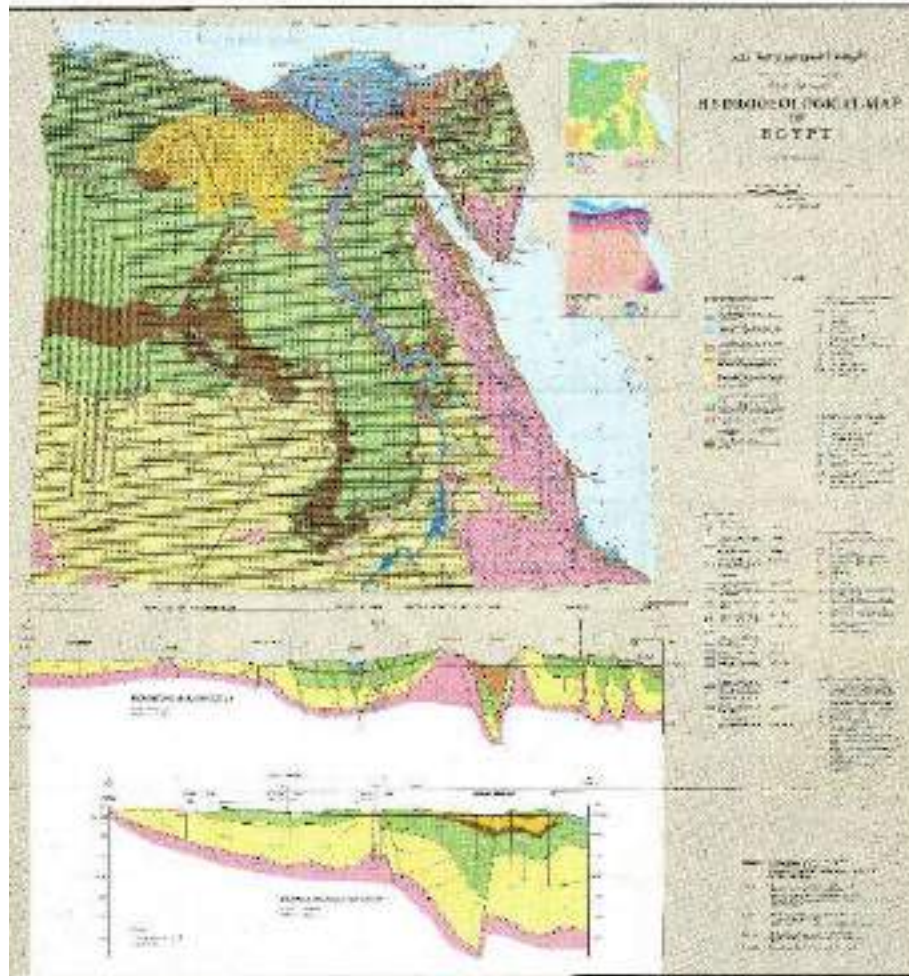
الستراتيغرافيا
Stratigraphy



EGYPT Maps



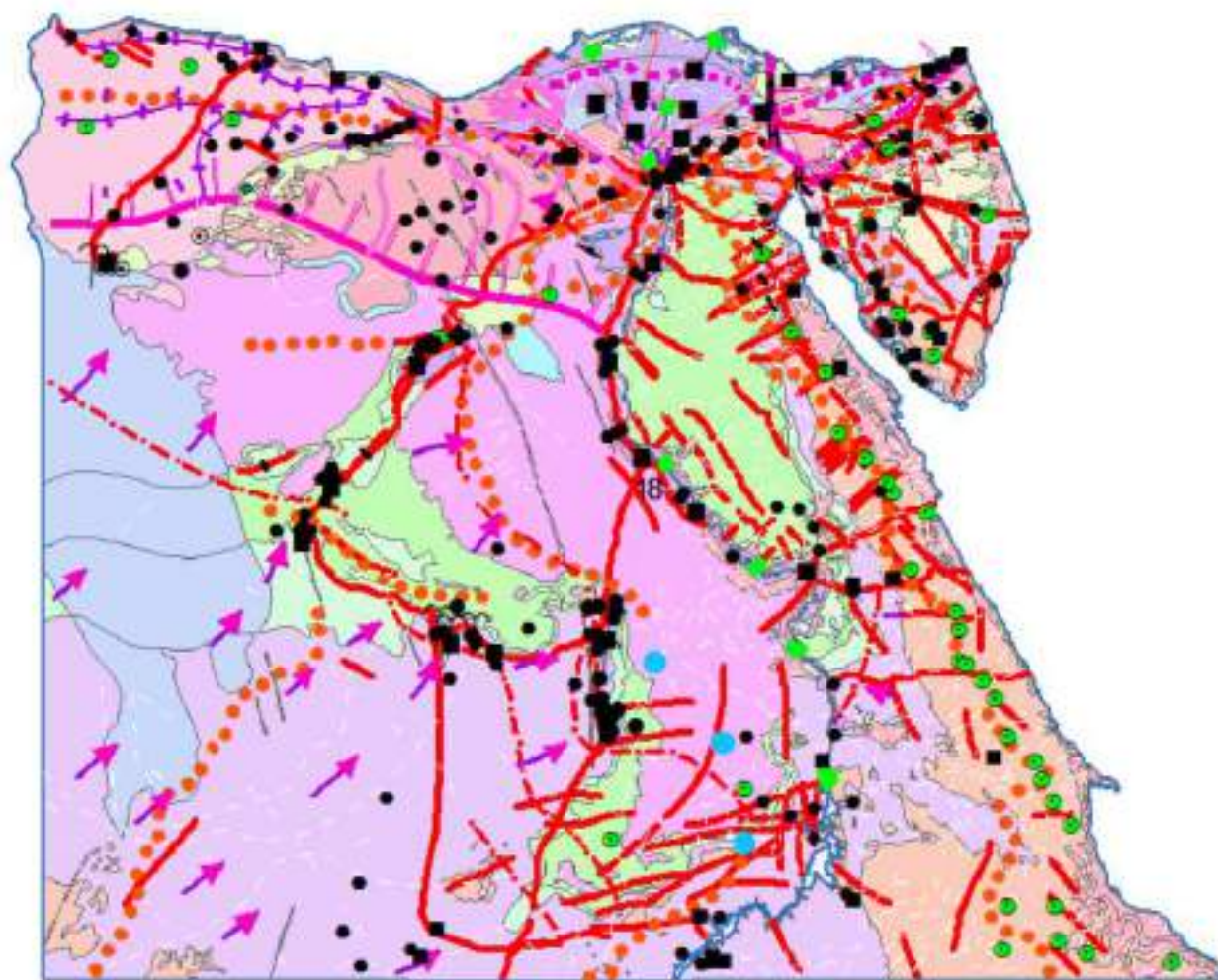
EGYPT– Hydrogeology



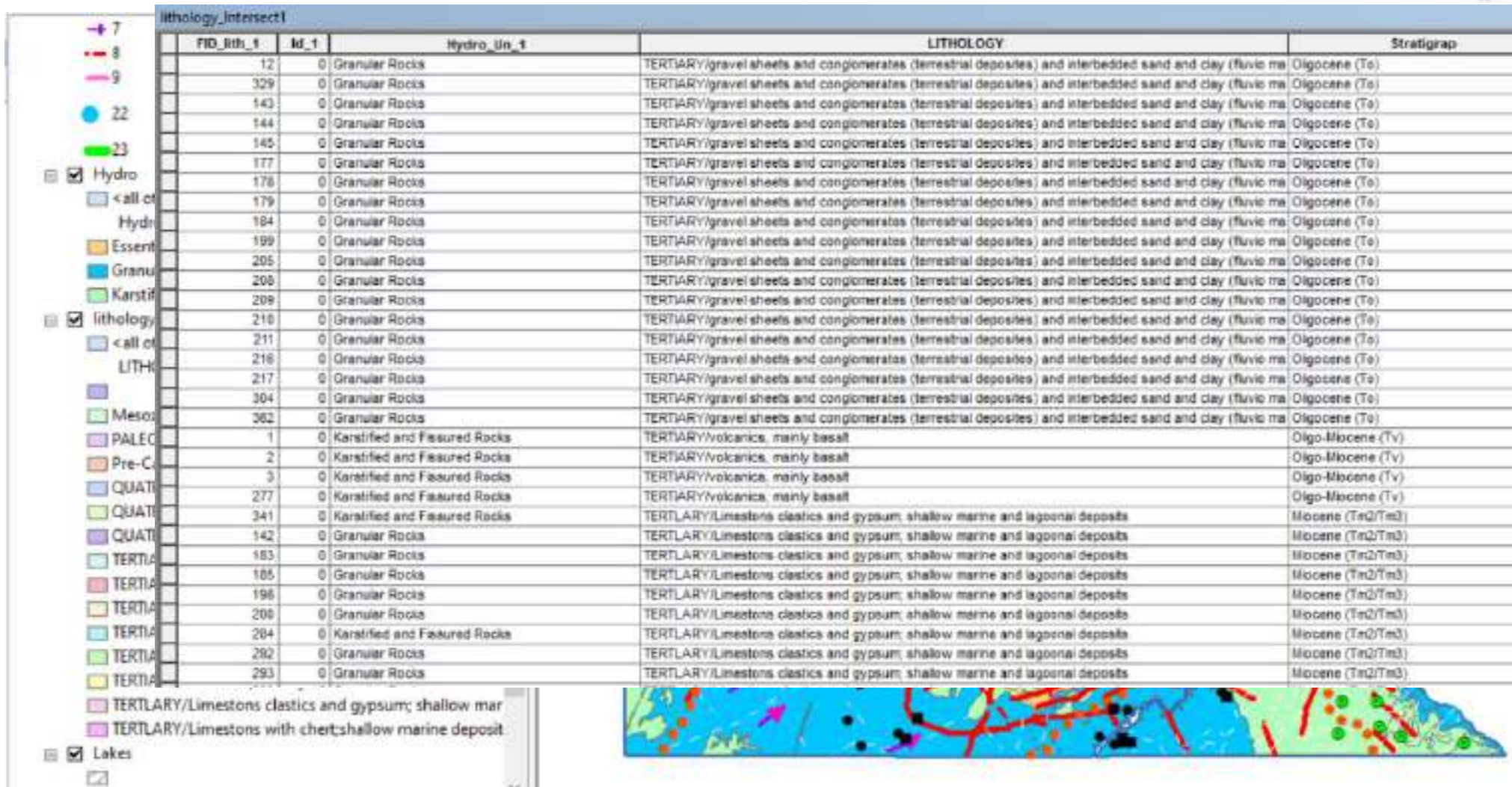
Data Source:
Water research Center(WRC)
Ministry of Public Works and
Water Resources
Scale 1/2,000,000

Digitizing –EGYPT Lithology

- Tunnel
- Arrows
- <all other values>
- Id
- elev_point
- Lines1
- Hydro
- lithology_Intersect
- <all other values>
- LITHOLOGY
- Mesozoic/limestone, chalk, dolomites and phosphates;
- PALEOZOIC/MESOZOIC/ Sandstone; epicontinental dep
- Pre-Cambrian/igneous, metamorphic and volcanic rock
- QUATERNARY/fine sand; sand dunes
- QUATERNARY/mixed salt, gypsum and clay; sabkha dep
- QUATERNARY/silt and clay; cultivated Nile deposits
- TERTIARY/Clays and sands (marine deposits), gravelly s
- TERTIARY/Coarse sands and gravel with limestone inter
- TERTIARY/Limestones with chert; shallow marine deposit
- TERTIARY/gravel sheets and conglomerates (terrestrial d
- TERTIARY/shale with few bands of limestone; shallow m
- TERTIARY/volcanics, mainly basalt
- TERTIARY/Limestones clastics and gypsum; shallow mar
- TERTIARY/Limestones with chert; shallow marine deposit
- Lakes



Digitizing – EGYPT – Hydrogeology





Digitizing – EGYPT – Points features



Layers

- points_egypt
 - < all other values >
 - MMF
 - GWF_Spring : discharge >25m³/day
 - GWF_Thermomineral spring - temperature mor than 30 degrees celsius
 - MMF_Area of groundwater pollution
 - MMF_Ground water abstraction from wells; discha
 - MMF_Ground water abstraction from wells; discha
 - MMF_Selected deep well with information about li
 - Oasis; cultivated
- Tunel
- Arrows
 - < all other values >
 - Id
 - 1
 - 2
 - 3
- elev_point
- Lines1
 - < all other values >
 - Type
 - 0
 - 1
 - 2
 - 4
 - c

points_egypt

FID	Shape	Id	Type	MMF	POINT_X	POINT_Y
232	Point	0			27.04593	29.931405
41	Point	0 4		GWF_Spring : discharge >25m ³ /day	28.916444	30.237835
78	Point	0 4		GWF_Spring : discharge >25m ³ /day	34.438199	30.628861
79	Point	0 4		GWF_Spring : discharge >25m ³ /day	34.580751	29.027879
80	Point	0 4		GWF_Spring : discharge >25m ³ /day	33.370795	29.038586
83	Point	0 4		GWF_Spring : discharge >25m ³ /day	32.915723	29.247384
98	Point	0 4		GWF_Spring : discharge >25m ³ /day	26.389813	29.100137
123	Point	0 4		GWF_Spring : discharge >25m ³ /day	33.668096	28.536163
124	Point	0 4		GWF_Spring : discharge >25m ³ /day	33.950789	28.53997
156	Point	0 4		GWF_Spring : discharge >25m ³ /day	29.178542	25.73411
157	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.782311	25.789313
158	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.782311	25.715074
159	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.750889	25.62751
160	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.585279	25.737917
161	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.501522	25.732206
170	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.581472	25.452382
172	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.583375	25.332457
174	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.5967	25.025982
177	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.825254	24.81659
178	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.625254	24.748061
179	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.830965	24.677629
180	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.777539	24.717604
183	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.655711	24.612908
184	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.691879	24.548167
186	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.731854	24.492983
187	Point	0 4		GWF_Spring : discharge >25m ³ /day	30.862186	24.553897
191	Point	0 4		GWF_Spring : discharge >25m ³ /day	29.361204	25.383853
192	Point	0 4		GWF_Spring : discharge >25m ³ /day	29.317502	25.452382
193	Point	0 4		GWF_Spring : discharge >25m ³ /day	29.020545	25.488846
224	Point	0 4		GWF_Spring : discharge >25m ³ /day	33.327251	29.577445
78	Point	0 5		GWF_Thermomineral spring - temperature mor than 30 degrees celsius	34.438845	28.879757
84	Point	0 5		GWF_Thermomineral spring - temperature mor than 30 degrees celsius	32.976399	29.209908
86	Point	0 5		GWF_Thermomineral spring - temperature mor than 30 degrees celsius	32.316099	29.584673
98	Point	0 5		GWF_Thermomineral spring - temperature mor than 30 degrees celsius	26.572556	29.45178
99	Point	0 5		GWF_Thermomineral spring - temperature mor than 30 degrees celsius	25.790189	29.137691
100	Point	0 5		GWF_Thermomineral spring - temperature mor than 30 degrees celsius	25.687396	29.143402

Standardization of terminology , symbology

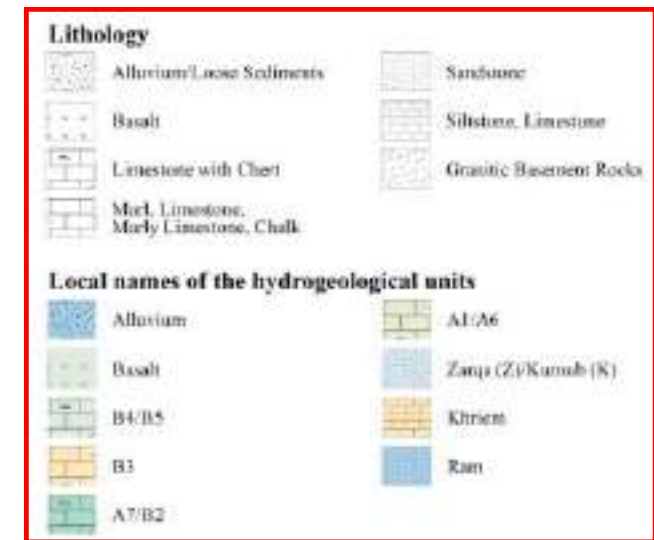
Reviews: The differences of the Hydrogeological units classification between Arab countries
 - Examples.



Iraq Classification



Syria Classification



Jordan Classification



Some important data sources



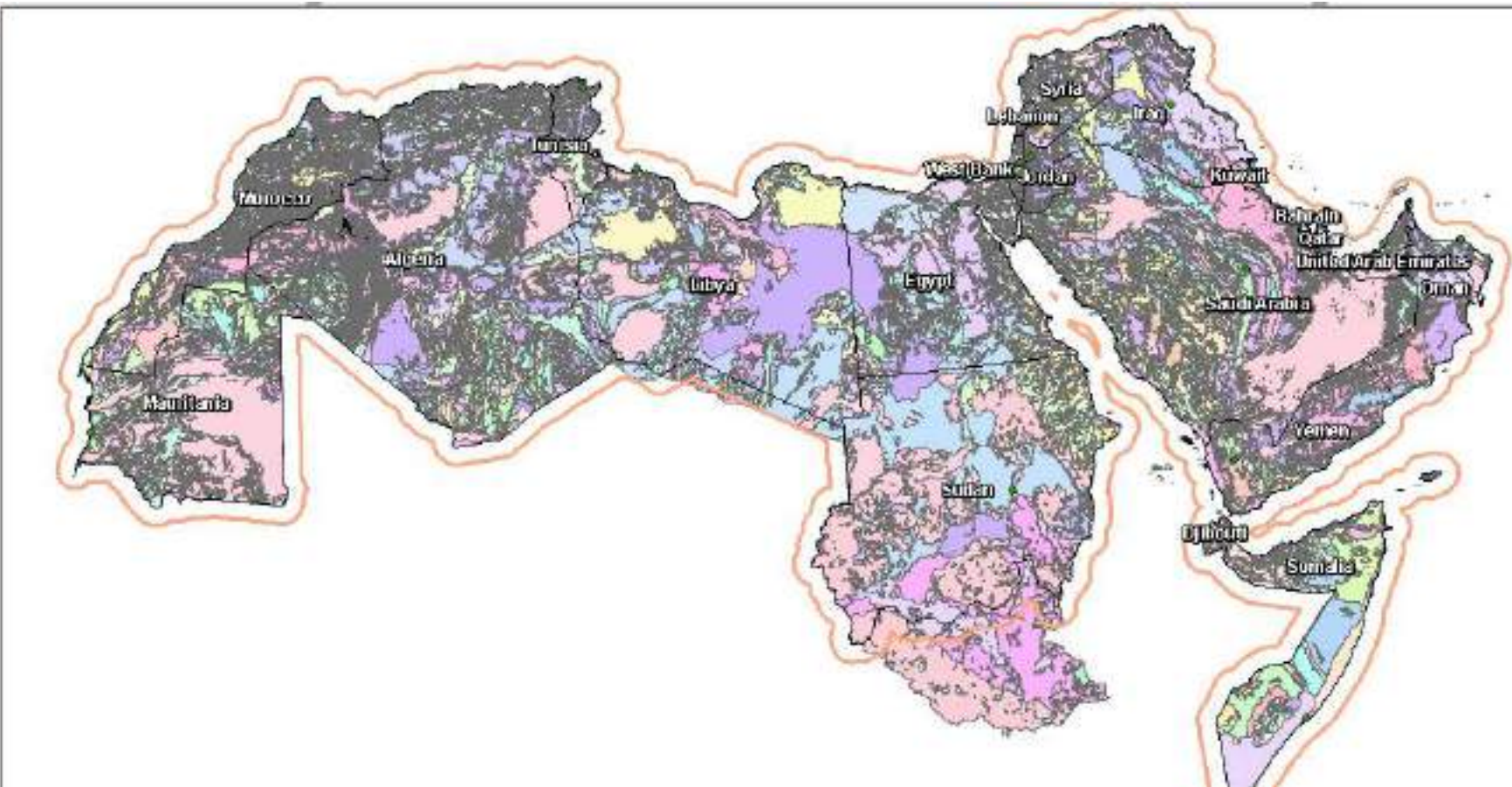
Arab Geological Map

نوع الملف: shape files
المصدر: USGS, 2020، Scale: 1/5,000,000



Table Of Contents

- Legend
- call other val.
- IGDS_TEXT
- Q2e
- Q2l
- Qc
- A
- A+
- A7
- AA
- APr-Cz
- APr-N
- AR
- ARbis
- Abis
- Ace-Cz?
- Ace-N1
- Ace-N2-Q1
- Ace-Q
- Asygma
- Bcc-Cz
- Bcc-Cz?
- Bcc-N
- Bcc-N1
- Bcc-N2
- Bcc-N2-Q1
- B...D





Africa Groundwater Atlas

Data Source:

Shp files, Map scale: 1/5,000,000

BGS,2019



British Geological Survey



British Geological Survey
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Unlocking the Potential of Groundwater for the Poor

UPGro is funded by:



User Guide: Africa Groundwater Atlas Country Hydrogeology Maps, Version 1.1

Groundwater Programme
Open Report OR/19/033



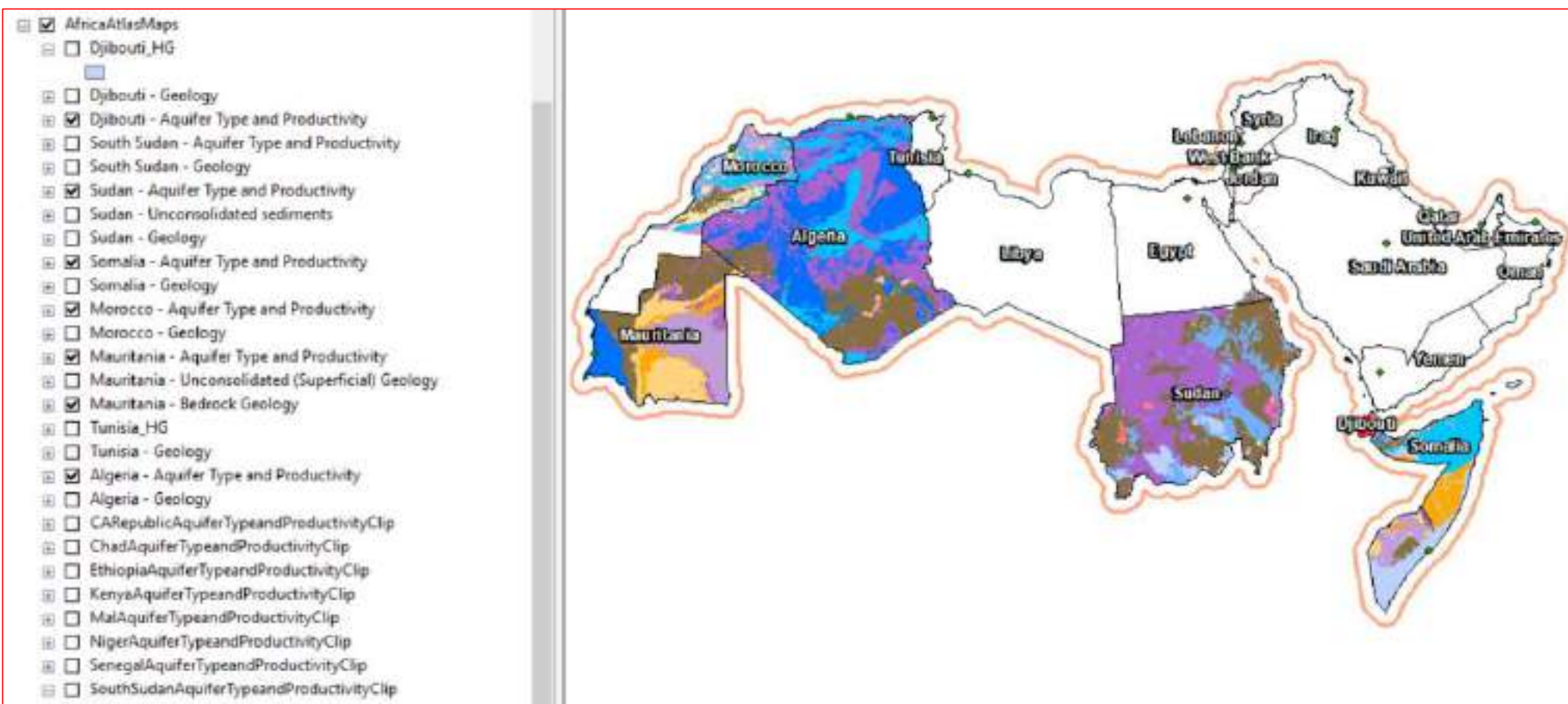


Africa Groundwater Atlas

- **Aquifer type and productivity**
- **geology**



British Geological Survey





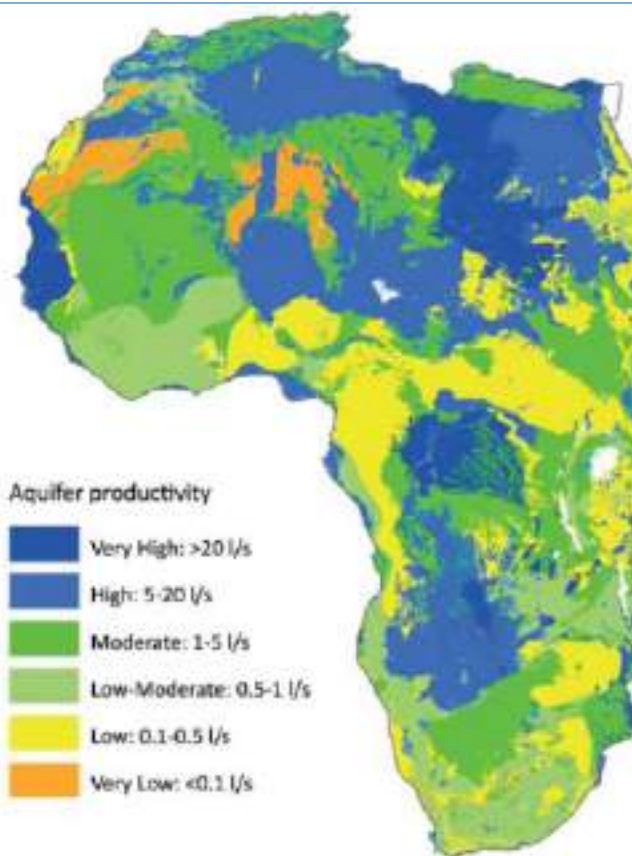
Africa Groundwater



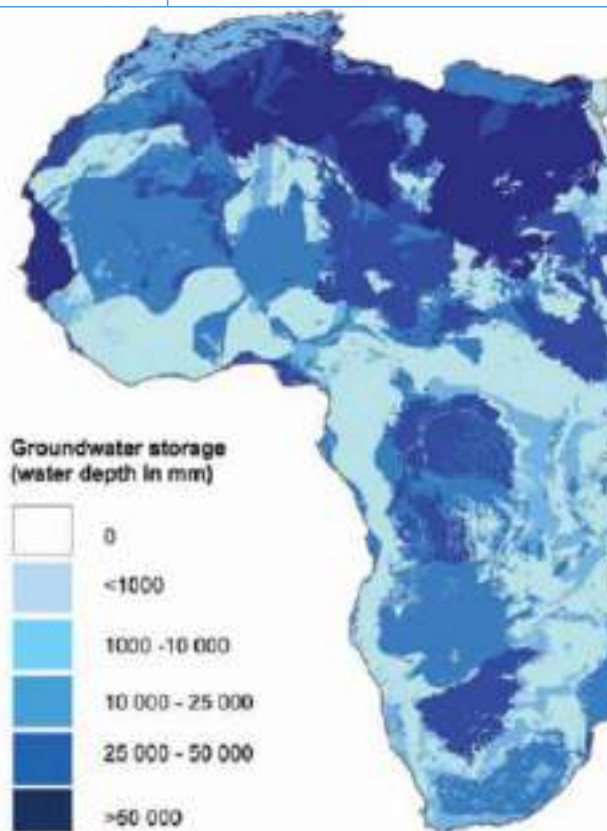
British
Geology
Survey

Data Source: ASCII coordinates files

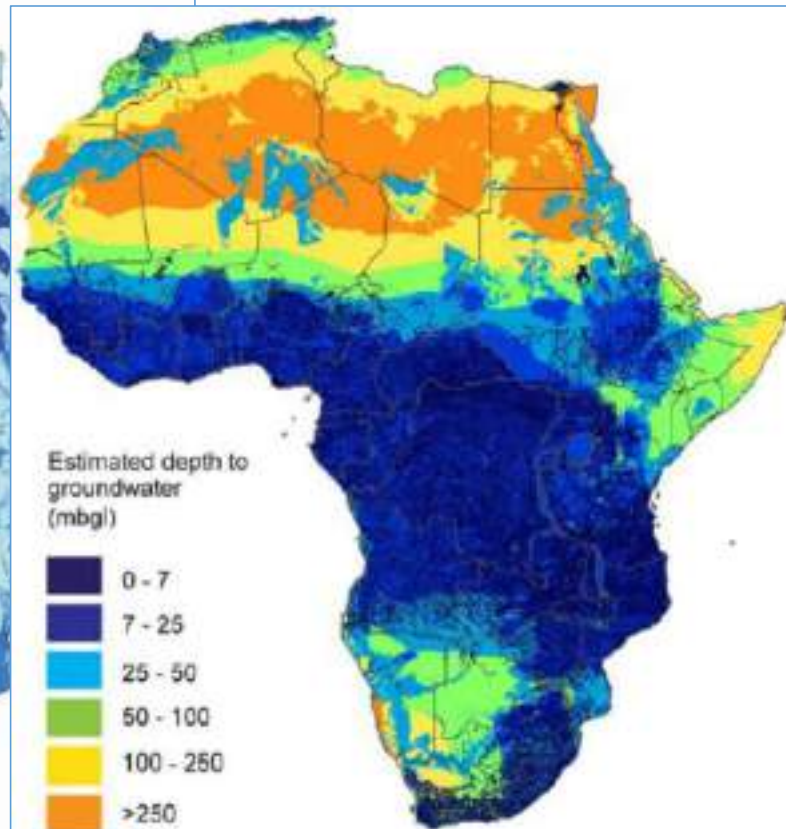
BGS 2011, scale: 1/5,000,000



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Boundaries of surficial geology of Africa, courtesy of the U.S. Geological Survey.
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Boundaries of surficial geology of Africa, courtesy of the U.S. Geological Survey.
Country boundaries sourced from ArcWorld © 1995-2011 ESRI. All rights Reserved.



Africa Groundwater Depth Map

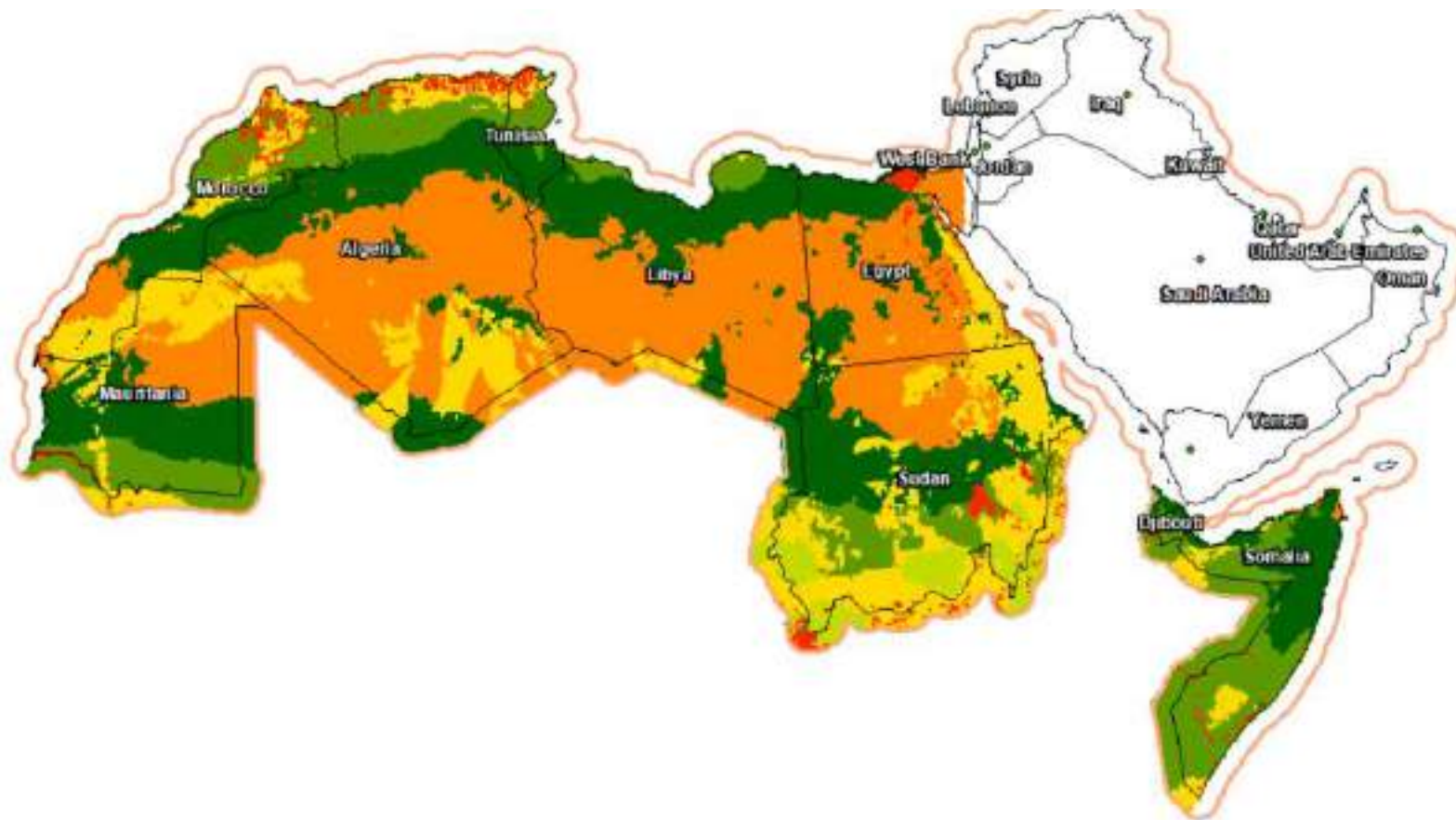
Data Source: [ASCII coordinates files](#)



[BGS 2011, scale: 1/5,000,000](#)

Layers

- Boundaries_Countries
- capital
- Arabic_Countries
- ArabCountriesBuffer100
- AfricaHydro_Map
 - DepthGw.tif
 - storage.tif
 - Productivity.tif
 - xyzASCII_gwstor_v1.txt Events
 - xyzASCII_gwprod_v1.txt Events
 - xyzASCII_dtwmap_v1.txt Events
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 - Product
 - DepthGW
 - storageClip100
 - productClip100
 - DepthGwClip100





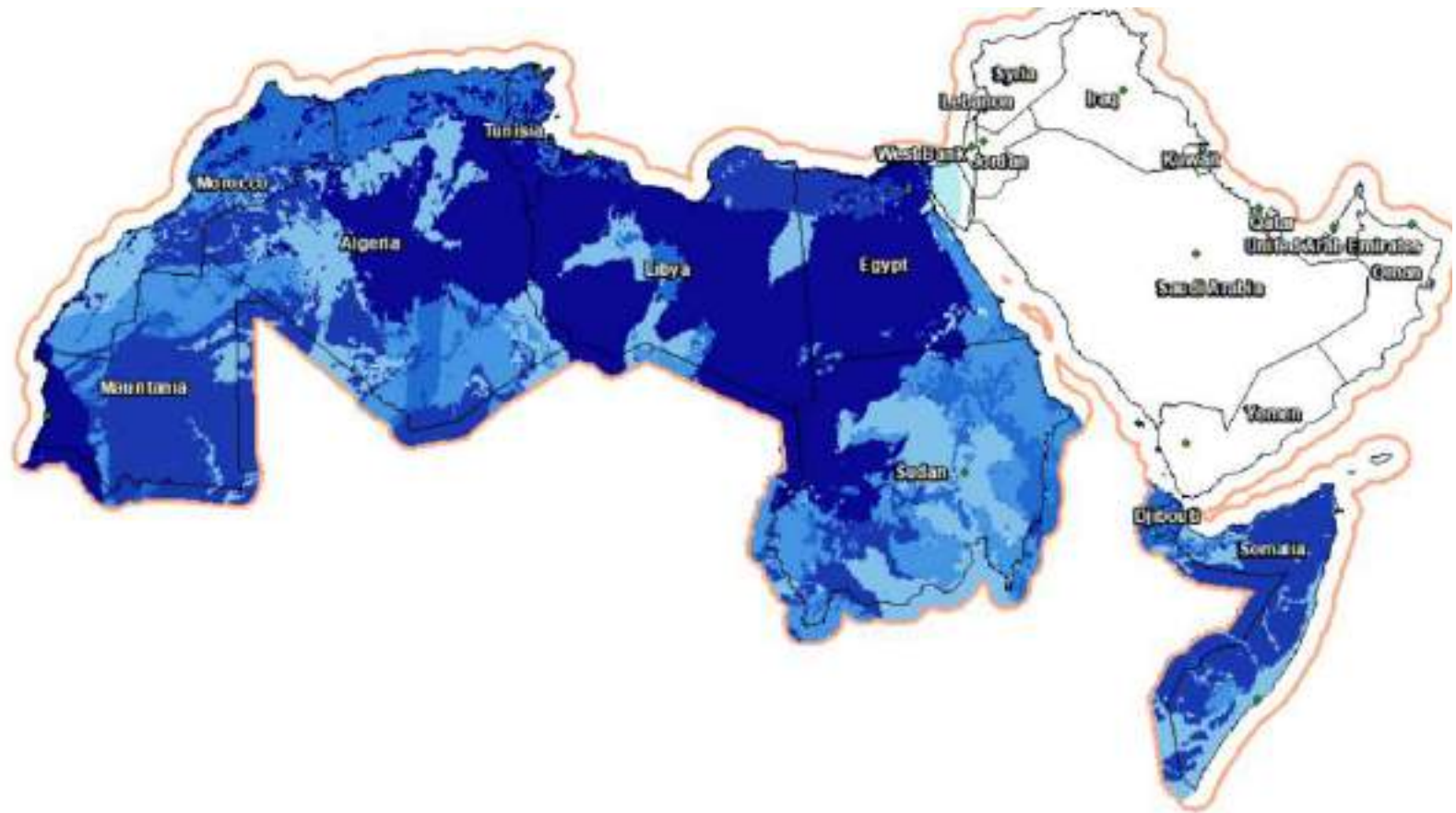
Africa Groundwater Storage Map

Data Source: ASCII coordinates files



BGS 2011, scale: 1/5,000,000

- Layers
- Boundries_Countries
- capital
- Arabic_Countries
- ArabCountriesBuffer100
- AfricaHydro_Map
- DepthGw.tif**
- storage.tif
- Productivity.tif
- xyzASCII_gwstor_v1.txt Events
- xyzASCII_gwprod_v1.txt Events
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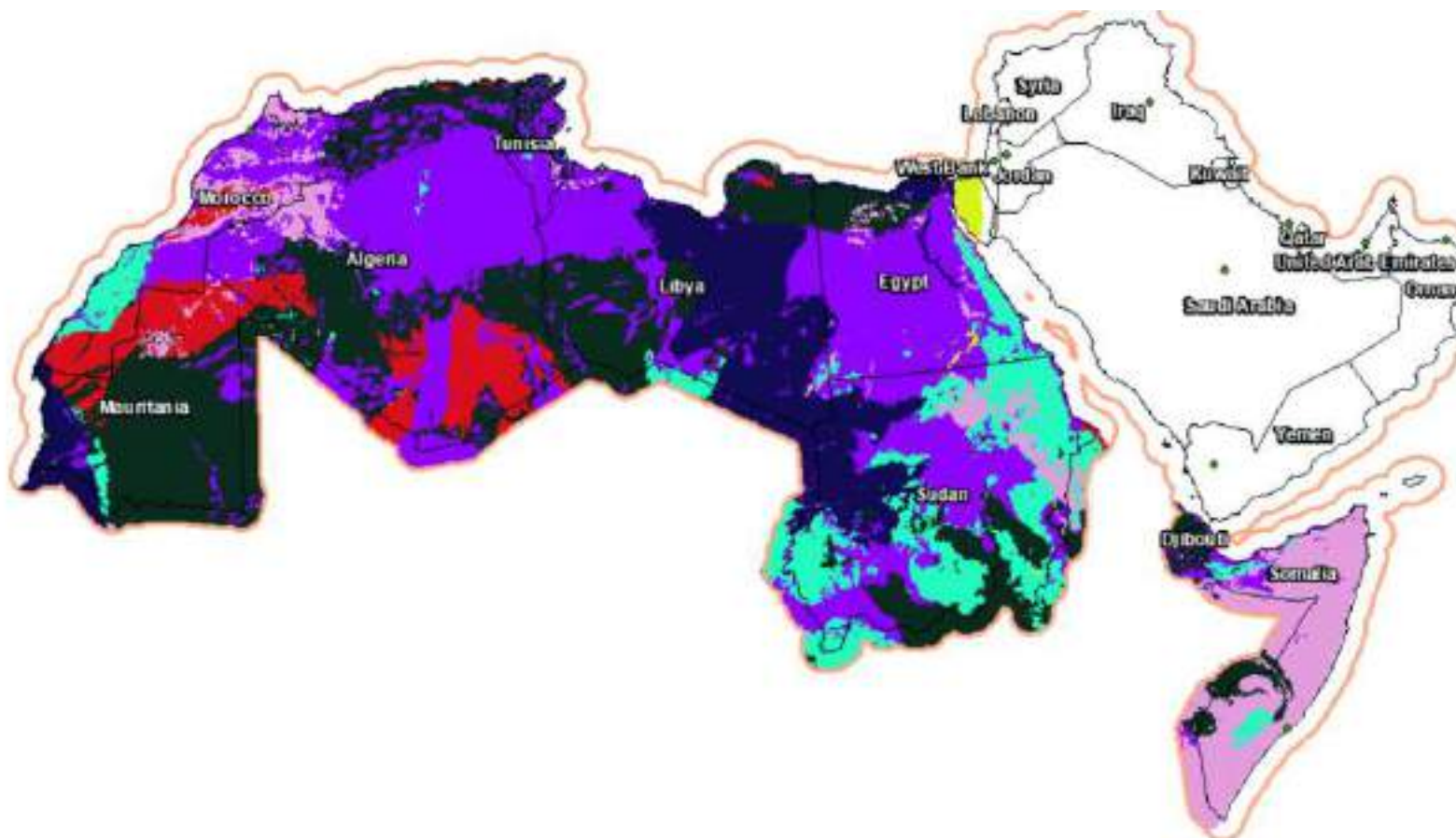
Africa Groundwater Productivity Map

Data Source: ASCII coordinates files

BGS 2011, scale: 1/5,000,000

Layers

- Boundries_Countries
- capital
- Arabic_Countries
- ArabCountriesBuffer100
- AfricaHydro_Map
 - DepthGw.tif
 - storage.tif
 - Productivity.tif
 - xyzASCII_gwstor_v1.txt Events
 - xyzASCII_gwprod_v1.txt Events
 - xyzASCII_dhwmap_v1.txt Events
 - storage
 - Product
 - DepthGW
 - storageClip100
 - productClip100
 - DepthGwClip100



الخرائط المتوفرة على شكل Shapefiles لاستخدامها في تحديث الخارطة الهيدروجيولوجية للوطن العربي

Map Name	Layer Name	Scale	Geographic Coverage	Source	Date	Brief description of layer
Arab Hydrogeology Map		1/5,000,000	Arab Region	ACSAD, Arab Hydrogeological map - Sheet 1+ Sheet2	1988	Scanned map
	Arab_Hydro					hydrogeological units+ lithology + stratigraphy (with buffer 100km)
Jordan (ESCWA)		1/650,000	Jordan	BGR	2018	PDF files
	map01_hydrogeologica_units					Map01, Simplified Hydrogeological Map of Jordan
	map03_gw_level					map03, Groundwater Level Contour Map of the Deep Sandstone Aquifer System and Kurnub Aquifer
	map4					map04, Depth to Groundwater in the Deep Sandstone Aquifer System
	Map5Level_A1_A6					map05, Groundwater Level Contour Map of the A1/A6 Aquifer Complex
	map08_gw_level_1_a7_b2					map08, Groundwater Level Contour Map of the A7/B2 Aquifer
	Map9_depth_a7_b2					map9, Depth to Groundwater in the A7/B2 Aquifer
	Map9_1_depth_a7_b2					map9_1, Salinity
	map_10					map10, Saturated Thickness of the A7/B2 Aquifer 2017
	map11					map11, Difference in Groundwater Levels of the A7/B2 Aquifer Between 1995 and 2017
	Map12_wells					map12, Spring Classification and Five-Year Average Discharge
	Map13					Map13, Groundwater Vulnerability Map of the Ajloun and Balqa Group Aquifers

الخرائط المتوفرة على شكل Shapefiles لاستخدامها في تحديث الخارطة الهيدروجيولوجية للوطن العربي

Iraq		1/1,000,000	Iraq	Iraqi Ministry of industry and minerals	2013	Scanned map
	Geo_age			HYDROGEOLOGICAL MAP OF IRAQ, SCALE 1- , 2 nd EDITION, 2013		Regional water bearing sediments, Salinity of the ground water, Groundwater type
Lebanon			Lebanon	Assessment of Groundwater Resources of Lebanon	2014	Scanned files
	Leban_hydro (groundwater basins)					
	Sub_watersheds					
	Major_geological_structure					
	Main_faults, Fault					
	Springs					
Yemen			Yemen	Technical Report	1995	Scanned files
	hydrogeology, Productivity map					Hydrogeological map of Yemen (figure 6.1 of "The Water Resources of Yemen")
	geology					Geological map of Yemen (Fig 2.3 in "The Water Resources of Yemen")
Kuwait			Kuwait	ACSAD Project	2014	
	Geology					
	Land Use					
UAE			UAE	ACSAD Project	2012	
	UAE Ground Water Aquifers					Groundwater Potentiality Map of UAE
	groundwater depth					
	wells					
	Geology					
	Land Use					
	Sabkha					
	Productivity_Aguifer					

الخرائط المتوفرة على شكل Shapefiles لاستخدامها في تحديث الخارطة الهيدروجيولوجية للوطن العربي

Egypt		1/2,000,000	Egypt	Water research Center (WRC), Ministry of Public Works and Water Resources	1988	Scanned map
	Hydro Map					Hydrogeological units, Type, Lithology, stratigraphy
	Springs, Wells, Tunnel, Lake					
Lybia		1/1,000,000	Lybia (partially)	ACSAD, Arab Water Resources Map -Plan A	1990	Scanned map
	Lybia_Hydro					Productivity, Lithology, stratigraphy
Oman	Oman Geology	-	Oman			
Sudan	Geology_sudan_2mIn_Germany_2004	1/2,000,000	SUDAN (NORTH&SOUTH)			
	GWLVL_FROM_HYDROGEOLOGY_MAP_S CALE2M_1989	1/2,000,000	SUDAN (NORTH&SOUTH)			
	SUDAN_HYDROGEOLOGY_UNITS	1/2,000,001	SUDAN (NORTH)			



شكرا لحسن استماعكم