

Table S1. Weight and CVs of thematic maps by MCE techniques.

Thematic layer	Map Rank	Map Weight	Class Ranges	Degree	Rank	Capability Value (CVs)
Geomorphology	5	5/20 = 0.25	Coastal plains	Low	1	0.1
			Basement ridge	Medium	2	0.2
			Structural plateau	High	3	0.3
			Structural plains	Very high	4	0.4
Geology	4	4/20 = 0.20	Chalky limestone	Low	2	Dissolve into five geological
			Gabbroic rocks/older granite	Very low	1	
			Nubian sandstone	Very high	5	
			Undifferentiated Quaternary	Very high	5	
			Hammamat clastics	High	4	
			Dokhan volcanics	Low	2	(1) 0.067
			Felsite	Low	2	(2) 0.133
			Metavolcanics	Medium	3	(3) 0.2
			Metavolcanics, undifferentiated	Medium	3	(4) 0.267
			Ophiolitic serpentinite	Low	2	(5) 0.333
			Metagabbro to metadiorite	Medium	3	
			Crystalline carbonate	Low	2	
			Sandstone	Very high	5	
			Sandstone and claystone	Medium	3	
			Wadi deposits	High	4	
			Nile silt	Low	2	
Lineaments	4	4/20 = 0.20	0-0.277	Very low	1	0.067
			0.278-0.462	Low	2	0.133
			0.463-0.627	Medium	3	0.2
			0.628-0.812	High	4	0.267
			0.813-1.31	Very high	5	0.333
Slope	3	3/20 = 0.15	38.61-48.25	Very low	1	0.067
			28.96-38.6	Low	2	0.133
			19.31-28.95	Medium	3	0.2
			9.66-19.3	High	4	0.267
			0-9.65	Very high	5	0.333
Drainage	2	2/20 = 0.10	361.01-651	Very low	1	0.067
			272.01-361	Low	2	0.133
			201.01-272	Medium	3	0.2
			134.01-201	High	4	0.267
			3-134	Very high	5	0.333
Rainfall	2	2/20 = 0.10	0.83-1.84	Very low	1	0.067
			1.85-2.42	Low	2	0.133
			2.43-2.87	Medium	3	0.2
			2.88-3.45	High	4	0.267
			3.46-4.73	Very high	5	0.333

Table S2. Weights determined for geological, hydrogeological and hydrological parameters for AHP.

Parameter	Classes	Weight	Influences (%)	Rank	Area (km ²)	Area (%)
Geomorphology	Coastal plains	0.41	41	1	181.9	4.3
	Basement ridge			2	3078	72.9
	Structural plateau			3	349.6	8.3
	Structural plains			4	612.3	14.5
Geology	Chalky limestone	0.2	20	2	Dissolve into five geological categories (1-5):	
	Gabbroic rocks/older granite			1		
	Nubian sandstone			5		
	Undifferentiated Quaternary			5		
	Hammamat clastics			4		
	Dokhan volcanics			2	(1) 528.8	13
	Felsite			2	(2) 1142.7	28
	metavolcanics			3	(3) 986.8	24.2
	Metavolcanics, undifferentiated			3	(4) 311.7	7.6
	Ophiolitic serpentinite			2	(5) 1108.5	27.2
	Metagabbro to metadiorite			3		
	Crystalline carbonate			2		
	Sandstone			5		
	Sandstone and claystone			3		
	Wadi deposits			4		
	Nile silt			2		
Lineaments	0-0.277	0.14	14	1	559	13.7
	0.278-0.462			2	1023.2	25.1
	0.463-0.627			3	1190.7	29.2
	0.628-0.812			4	914.5	22.4
	0.813-1.31			5	386.9	9.5
Slope	38.61-48.25	0.1	10	1	0.9	0
	28.96-38.6			2	23.7	0.6
	19.31-28.95			3	166	3.9
	9.66-19.3			4	745	17.5
	0-9.65			5	3322.9	78
Drainage	361.01-651	0.082	8.2	1	248.9	5.9
	272.01-361			2	697.3	16.4
	201.01-272			3	1084.6	25.6
	134.01-201			4	1208.1	28.5
	3-134			5	1003.7	23.7
Rainfall	0.83-1.84	0.068	6.8	1	403.5	9.5
	1.85-2.42			2	818.5	19.3
	2.43-2.87			3	1272.8	30
	2.88-3.45			4	1392.5	32.8
	3.46-4.73			5	354.1	8.3