applied sciences

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Article

Supplementary Materials: Hybridization of DRASTIC Method to Assess Future GroundWater Vulnerability Scenarios: Case of the Tebessa-Morsott Alluvial Aquifer (Northeastern Algeria)

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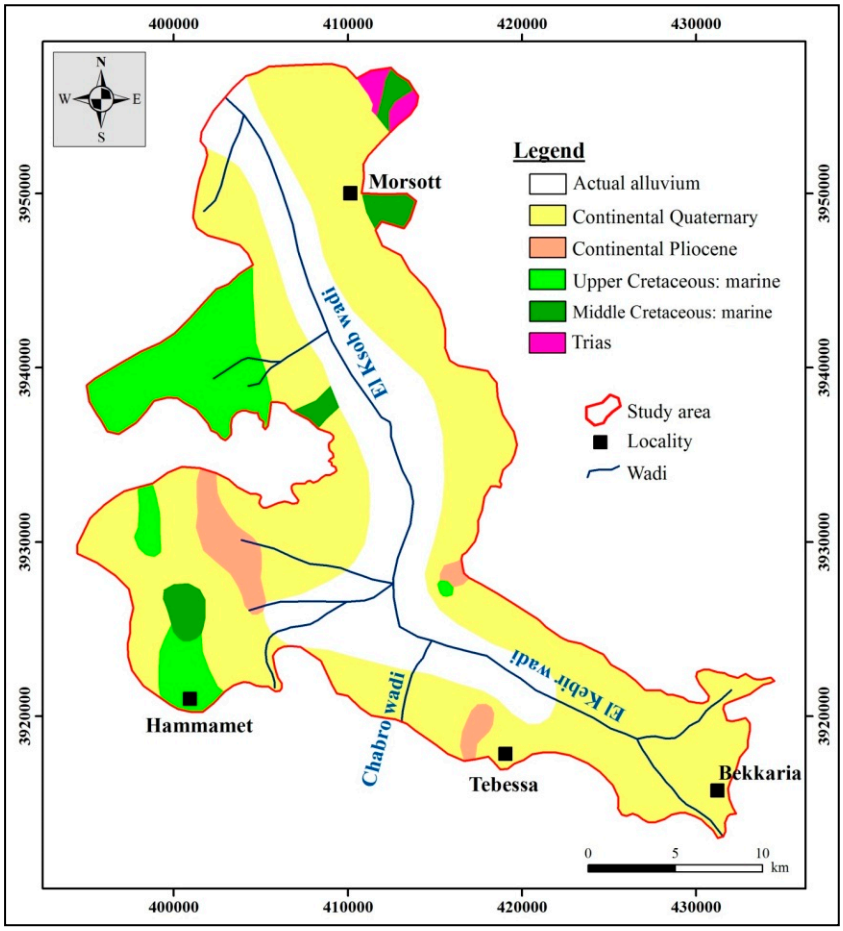

Figure S1. Geological map of the study area.

Geologic legend : Actual Alluvium: alluvial deposits; Continental Quaternary: old alluvial deposits composed of clay and pebble; Continental Pliocene: Red clay and conglomerate; Upper Cretaceous marine: Alternation of limestone and marl; Middle Cretaceous marine: limestone; Trias: clay and gypsum.

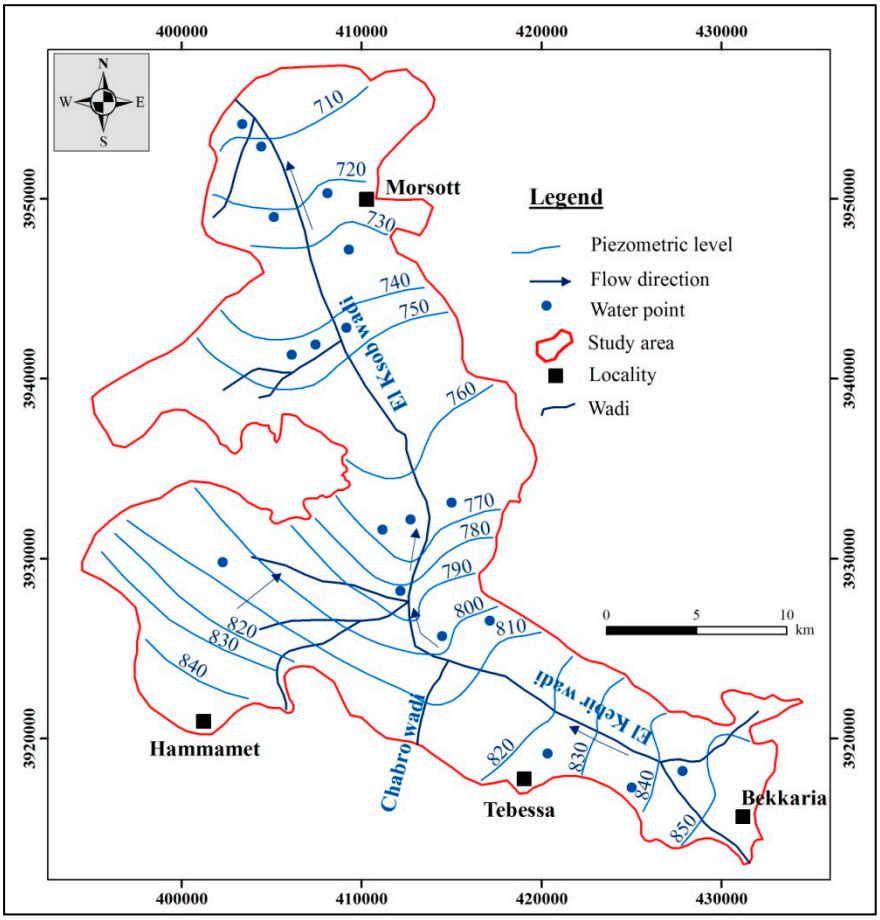

Figure S2. Piezometric map in the Tebessa-Morsott plain (May 2010).

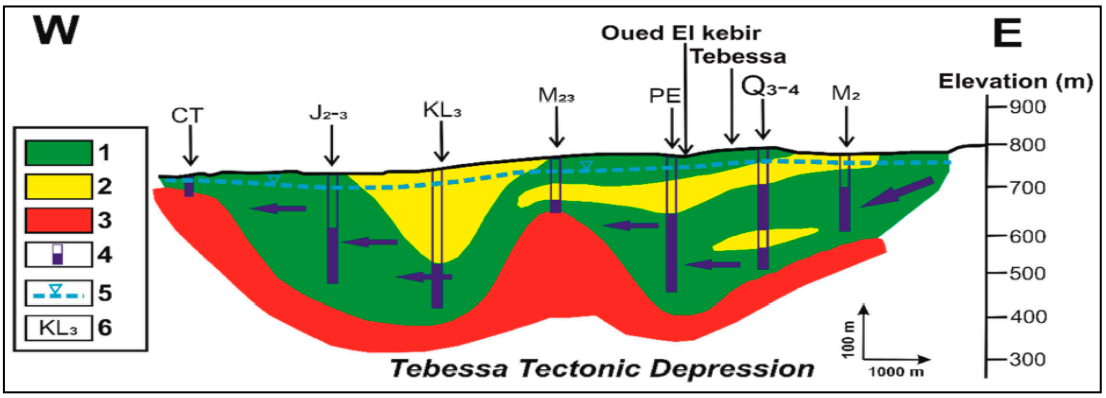

Figure S3. Hydrogeological cross-section in the Tebessa-Morsott plain.

1- Permeable zone (alluvial fans, silts, calcareous crust, conglomerates and gravels); **2-** Impermeable zone (clay and marl); **3-** Marly bedrock; **4-** Screened interval; **5-** Piezometric head, **6-** Well name.

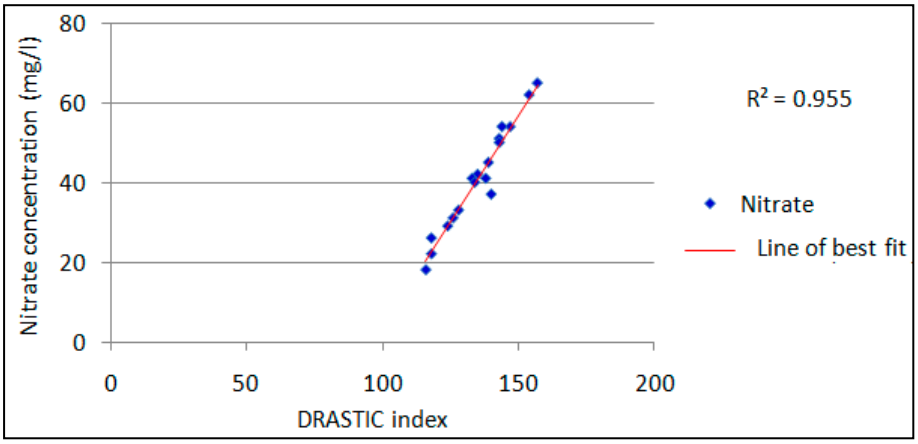

Figure S4. Comparison of the DRASTIC model with the nitrate values.

Table S1. Original DRASTIC weights and rating systems.

Depth to water (m)		Recharge (mm/year)		Aquifer media		Soil media		Topography (%)		Impact for vadose zone		Conductivity (m/day)	
Range	Rating	Range	Rating	Range	Rating	Range	Rating	Range	Rating	Range	Rating	Range	Rating
(0–1.5)	10	(0–50)	1	Massive Shale	2	Thin/Absent	10	(0–2)	10	Confining Layer	1	(0.04–4.1)	1
(1.5–4.6)	9	(50–100)	3	Metamor/Igneous	3	Gravel	10	(2–6)	9	Silt/Clay	3	(4.1–12.3)	2
(4.6–9.1)	7	(100–180)	6	WeatheredMetamor/Igneous	4	Sand	9	(6–12)	5	Shale	3	(12.3–28.7)	4
(9.1–15.2)	5	(180–250)	8	Glacial Till	5	Peat	8	(12–18)	3	Limestone	3	(28.7–41)	6
(15.2–22.8)	3	(>250)	9	Bedded Sand/Limes	6	Shrinkig Clay	7	(>18)	1	Sandstone	6	(41–82)	8
(22.8–30.4)	2			Massive sandstone	6	Sandy Loam	6			Bedded Limes/Sand	6	(>82)	10
(>30.4)	1			Massive limestone	8	Loam	5			Sand/Gravel/Silt	6		
				Sand and Gravel	8	Silty Loam	4			Sand and Gravel	8		
				Basalt	9	Clay Loam	3			Basalt	9		
				Karsts Limestone	10	Muck	2			Karsts Limestone	10		
						No shrinking Clay	1						
DRASTIC Weight: 5		DRASTIC Weight: 4		DRASTIC Weight: 3		DRASTIC Weight: 2		DRASTIC Weight: 1		DRASTIC Weight: 5		DRASTIC Weight: 3	