



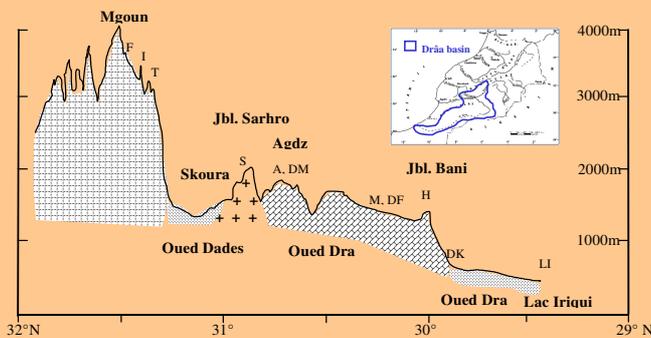
Soilsapes of the Drâa basin / Southern Morocco

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The Drâa is situated in the dry zone of the southern part of the High Atlas Mountain in southern Morocco. A large N-S-transect (> 400 km) along an extreme gradient of altitude (3,200 - 445 m) and aridity (600 - 50 mm rainfall per year) at 6°30' W longitude is taken (Figure 1). The most divergent ecosystems from periglacial high mountain and perennial Mediterranean, sub-humid steppe forest ecosystems to the fully desert ecosystems of the outer Sahara are all encompassed.

Climate Station	M'Semir	Ifre	Ouarzazate	Agdz	Zagora	Tagounite
Altitude [m a.s.l.]	1992	1500	1050	1110	707	600
P [mm]	218	172	111	108	59	54,5
P/E-Index (UNEP, 1992)	0.3	0.2	0.1	0.1	0.06	0.01
Aridity Classification	semi-arid	semi-arid	arid	arid	arid	hyper-arid
Climate Classification (KÖPPEN 1923)	H-BWk	H-BWk	BWh	BWh	BWh	BWh

ATLAS ANTI-ATLAS



F Fougani, I Imeskar, T Taouajalt, S Bou Skour, A Arguioûn, DM Drâa Oase Mezguita, M El Miyit, DF Drâa Oase Fezouata, H Jbel Hassain ou Brâhim, DK Drâa Oase Ktaoua, LI Lac Iriqui

13 study sites are chosen along the transect (Figure 1) in the framework of the projekt IMPETUS, - an integrated approach to the efficient management of scarce water resources in West Africa. The soils are examined and described after *The World Reference Base for Soil Resources* (ISSS-ISRIC-FAO, 2002). The soilsapes are determined using the classification system after SCHMIDT & JAHN (2004). An overview of the developed soilsapes along the transect (Table 1) show a high diversity. The soilsapes with different properties and limits for land use are compared on the regional scale. The selected studied soilsapes of the test sites *Fougani* and the *Drâa oasis* are presented exemplarily further down.

geography	site	soilsapes (on slopes /alluvial deposits)
High Atlas	F	Kastanozem-Luvisol
	I	(Leptosol-) Calcisol
	T	Anthrosol-Calcisol-Leptosol-Luvisol
	L	Regosol-Calcisol-Luvisol
Anti Atlas	S	Leptosol-Regosol Anthrosol
	A	Leptosol-Luvisol-Calcisol
	DM	Anthrosol-Arenosol-Fluvisol
	M	Calcisol-Luvisol
	DF	Anthrosol
	H	Leptosol-Luvisol Anthrosol-Fluvisol
Sahara	LI	Solonchak Arenosol-Calcisol

Left Figure 1: Geographical Sketch from High Atlas to Sahara (along 6°30' W)

Right Table 1: Detected soilsapes along the transect (s. Figure 1)

In the High Atlas at 3,200 meter altitude is the test site Fougani (Figure 2) located. The ESE facing, steep slope (35 %) of debris of limestone with a thorn shrub vegetation is still extensively pastoral used. The High Mountain Climate with frequent frost lead to periglacial stripped soils. The diagnostic mollic, calcic horizons of these Kastanozems are the dark brownish topsoils with strongly humic properties. They accumulate the organic matter due to the cold limit. In the middle slope there are Luvisols with their diagnostic argic, chromic horizon. The finally classified type of soilscape is as follows: Silti-Calcic Kastanozem/ Chromi-Calcaric Luvisol - Soilscape of Skeletic Silty Loam and Silty Clay of debris of limestone with periglacial structure phenomena.

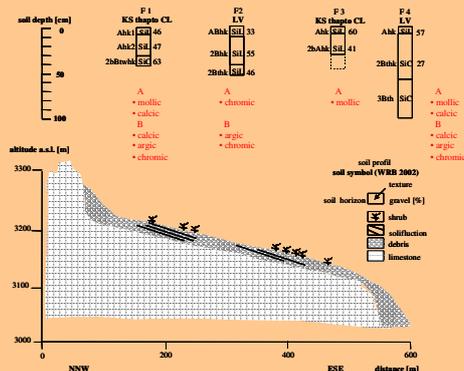


Figure 2: Kastanozem-Luvisol-soilscape of the catena Fougani/ High Atlas

The six old river oasis of the Drâa in the dry zone of the Anti-Atlas are irrigated since 1970 with artificial flushes of the dam in Ouarzazate (Figure 3). The less irrigation water quality continue to worsen to the south from high salinity in Mezguita (1) to very high salinity in Ktaoua (4). The Anthrosols of the oasis show increasing salinization to the south, too. The Anthrosols are in Mezguita (1) non-saline and in Fezouata slightly-saline. In Ktaoua (3) the Anthrosol is strongly-saline and out of use. The Drâa is ending in the drying former lake Iriqui (4) with a strongly-saline Solonchak.

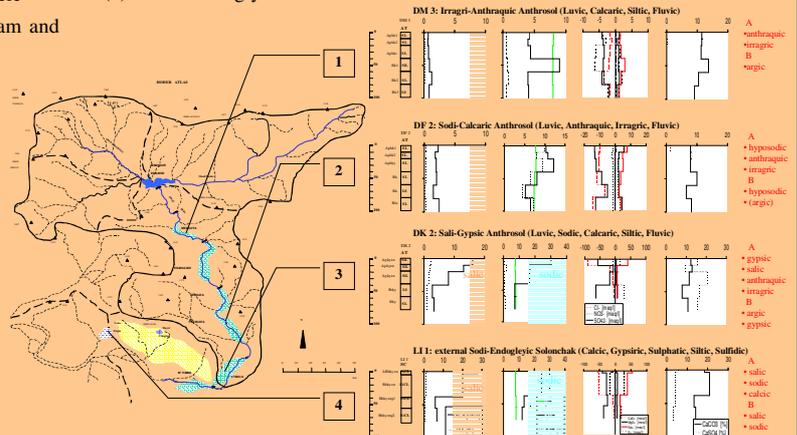


Figure 3: Anthrosols of the Drâa oasis and salinization

