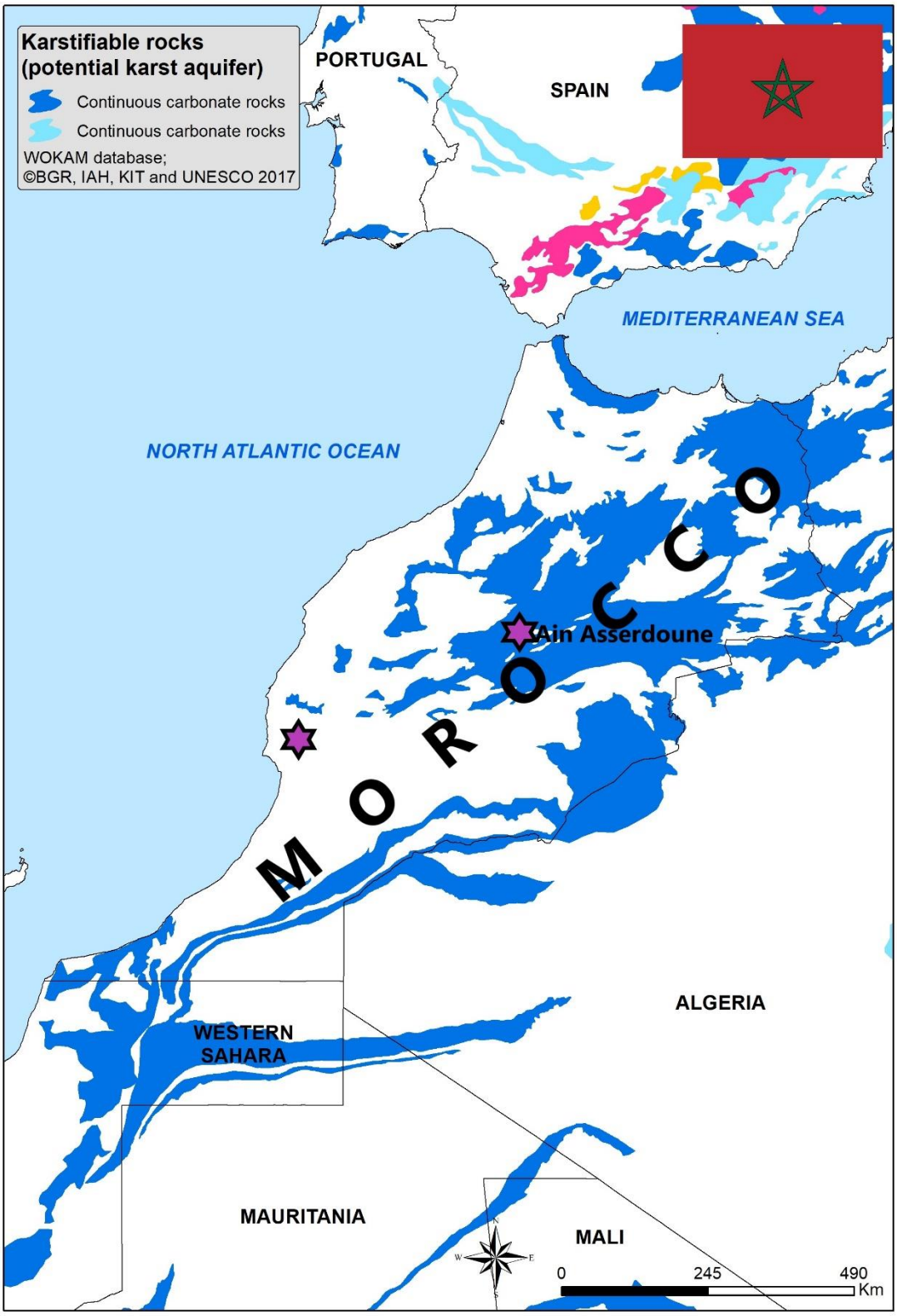
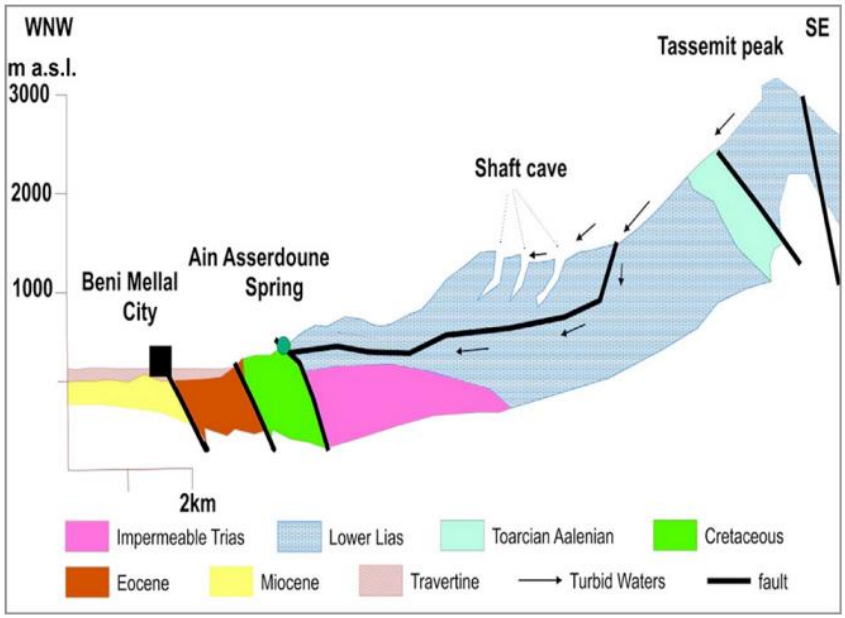
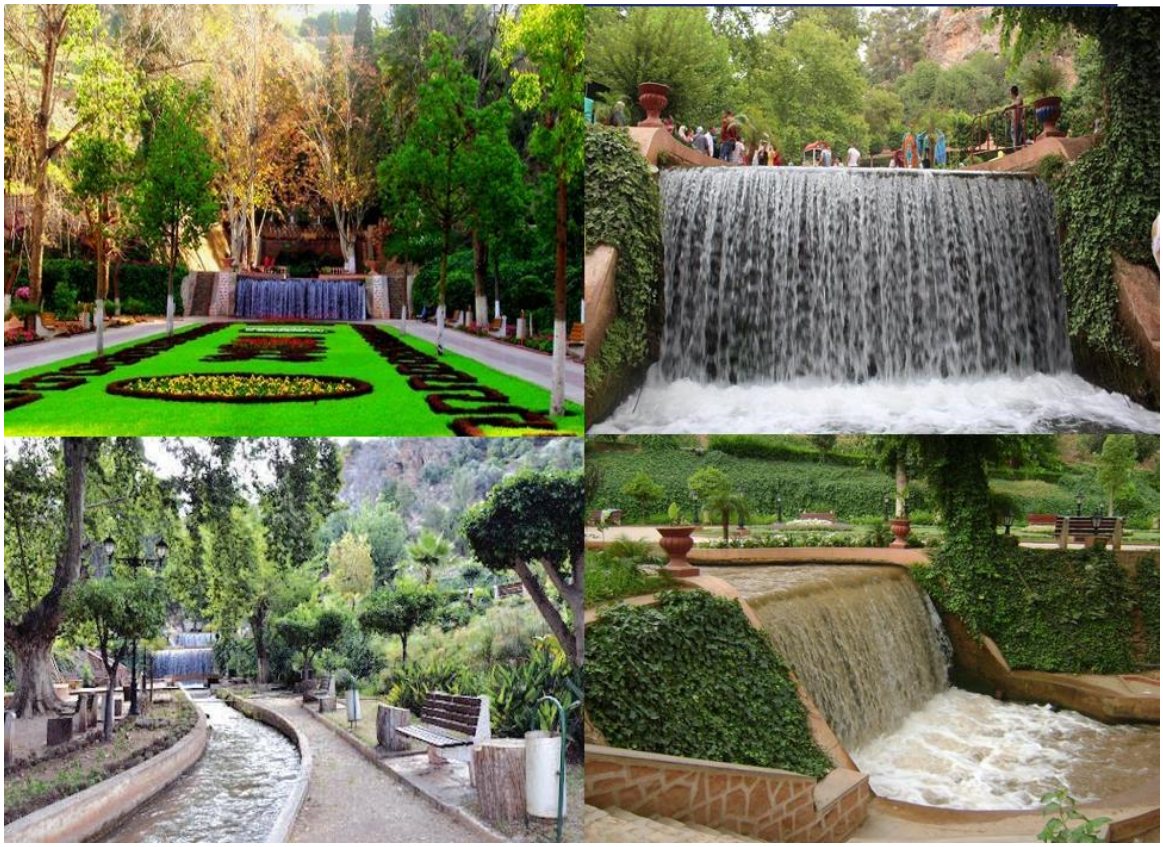

Karstifiable rocks
(potential karst aquifer)
Continuous carbonate rocks
Continuous carbonate rocks
WOKAM database;
©BGR, IAH, KIT and UNESCO 2017
PORTUGAL
SPAIN
MEDITERRANEAN SEA
NORTH ATLANTIC OCEAN
MOROCCO
Ain Asserdoune
ALGERIA
WESTERN SAHARA
MAURITANIA
MALI
0
245
490
Km

Country	MIKAS springs	Coordinates / Nearby City	Spring discharge (Q in l/s,min/av/max) / tapped or not	Criteria* in order / Main justification */ H-historic, A-aesthetic, S-scientific, E-Economic, Ec-ecologic	Data collected by
Morocco	1. **Ain Asserdoune**	6°20'8.45"W 32°19'30.37"N Z = 642 m asl Beni Bellal	- / 1460 /- Ensure water supply of Beni Bellal and used for irrigation	***E, S, A*** *The Ain Asserdoune spring Fractured issuing from Liassic dolomite limestone is one of the most important springs in Morocco. The Ain Asserdoune serves as natural outlet that provide valuable insights into the behavior of regional aquifers, including recharge mechanisms and groundwater flow within the karstic and fractured rock formations typical of the Middle Atlas region in Morocco. Additionally, the spring often attracts visitors due to its scenic beauty and recreational opportunities.*	Yassine Ez-Zaouy
	2. **Win Timdouine**	30°40'49.39"N 9°20'42.02"W Z = 1409 m asl Souss-Massa region	2 / 10 /~1000 Not tapped, but used locally for drinking water supply and irrigation	***S, E, A*** *Win Timdouine cave is carved into Jurassic chalky dolomitic rocksIt is considered among the longest karstic network of caves in Africa. It contains underground rivers and lakes and is part of an important karst aquifer system in Morocco. The water in the cave emerges at the Timdouine spring, which supplies drinking water to nearby villages. Recharge is mainly from rainfall and snowmelt in the High Atlas The site is used as training centre in geology and speleology for students of local universities.*	Yassine Ez-Zaouy

MIKAS – Ain Asserdoune



Hydrogeological section showing the emergence conditions of Ain Asserdoune spring. (Ait Barka et al., 2022)



Photos of Ain Asserdoune spring.

MIKAS – Win Timdouine

Win Timduine site. (Photo by Ayoub Ayaou, 2024)

Schematic network of the cave's river. (Bouchaou et al., 2002)

Win Timdouine cave view. (Photo by Yassine Ez-Zaouy, 2024)

Win Timdouine cave's river. (Left. Photo by Khalil Azenoud, 2024). Stalactites and stalagmite of Win Timdouine Cave. (Right. Photo by Yassine Ez-Zaouy, 2024)