

LAND & DESERTIFICATION

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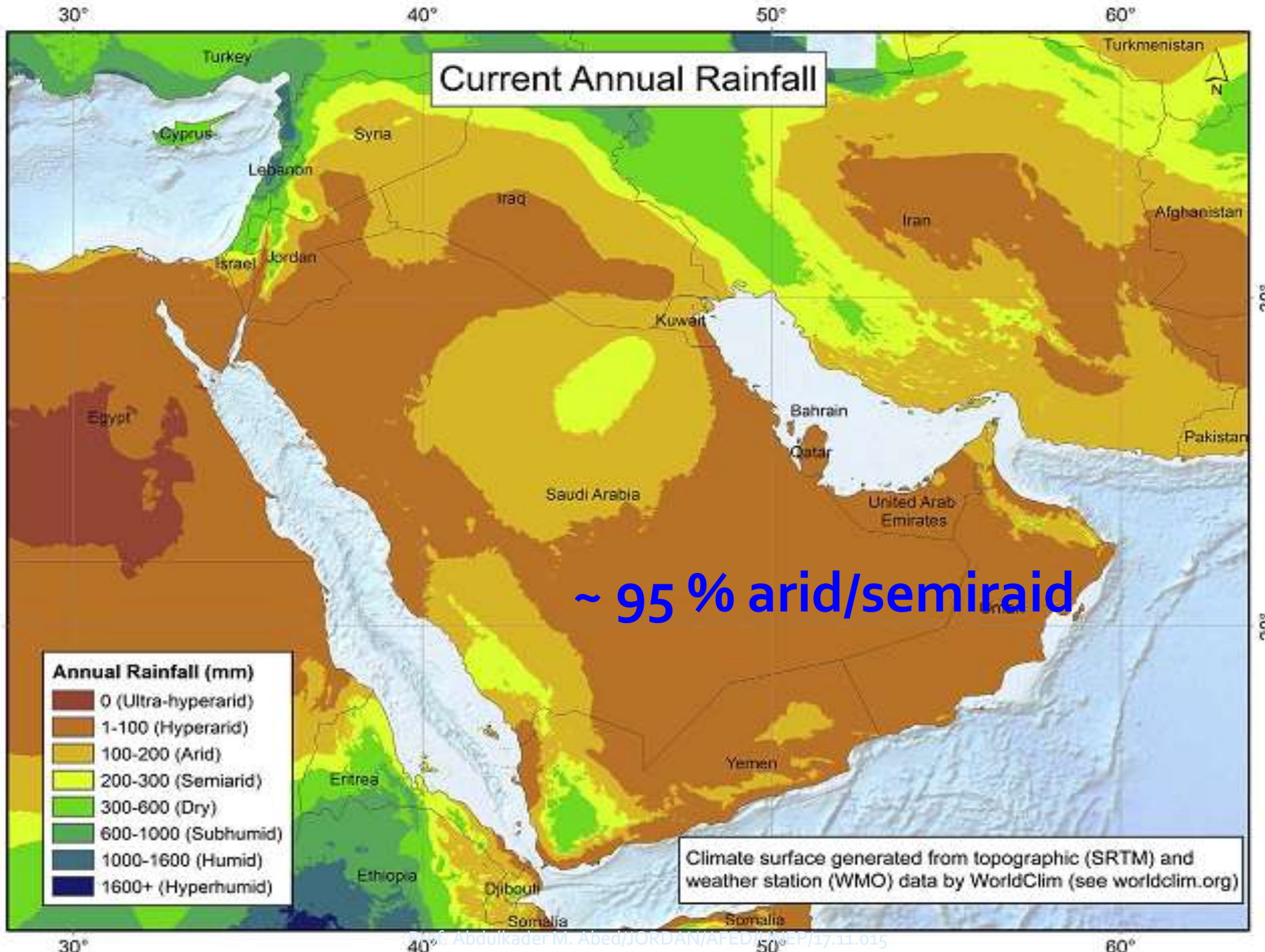
State of the land

Most of the Arab land in West Asia (WA) and North Africa (NA) is arid to semiarid.

Cultivated land: ~ 5%

Forests: ~ 1.5%

The rest: true desert and semi arid rangeland



Current Annual Rainfall

~ 95 % arid/semiarid

Annual Rainfall (mm)	
Dark Red	0 (Ultra-hyperarid)
Brown	1-100 (Hyperarid)
Orange	100-200 (Arid)
Yellow	200-300 (Semiarid)
Light Green	300-600 (Dry)
Green	600-1000 (Subhumid)
Dark Green	1000-1600 (Humid)
Dark Blue	1600+ (Hyperhumid)

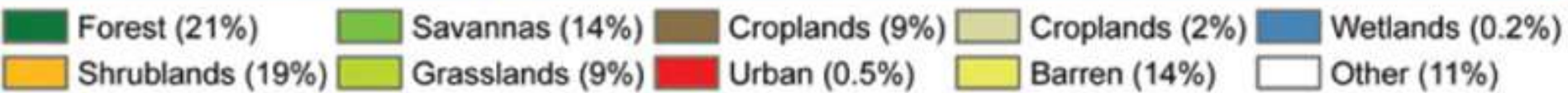
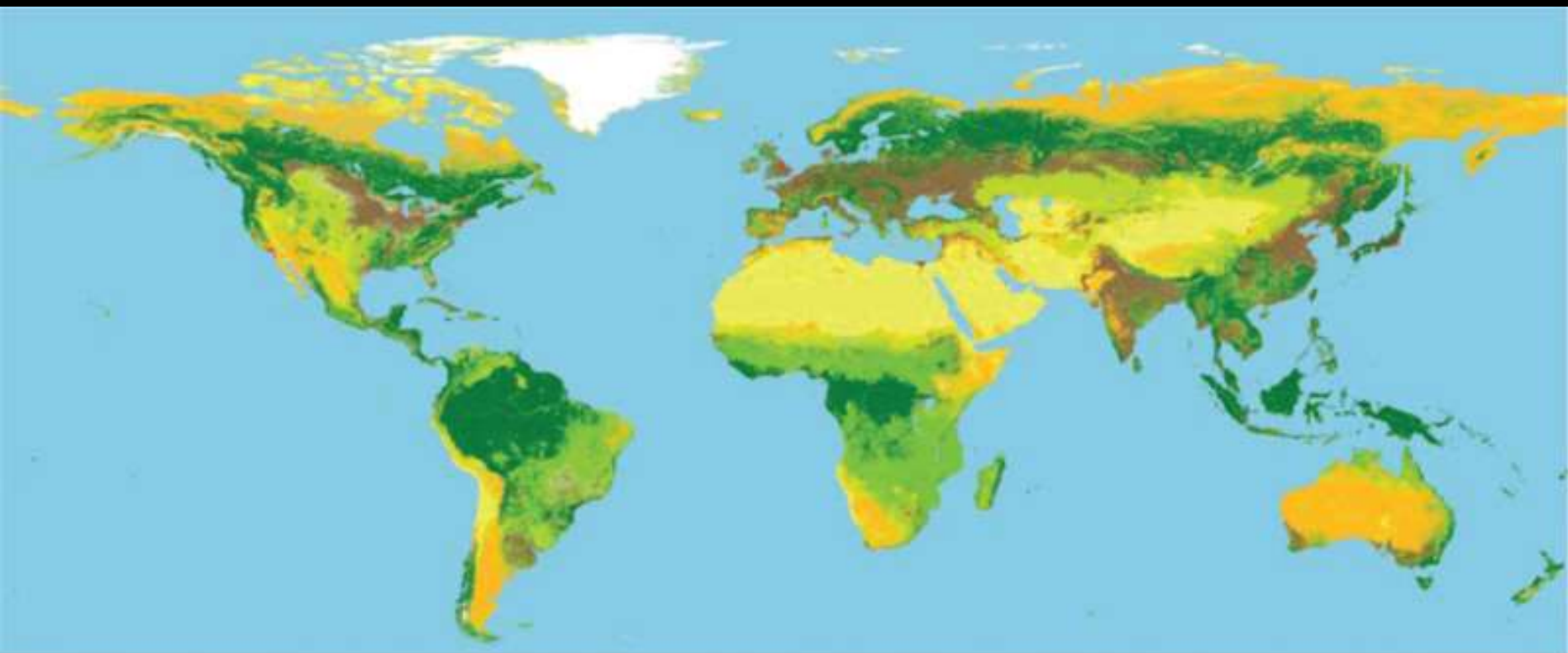
Climate surface generated from topographic (SRTM) and weather station (WMO) data by WorldClim (see worldclim.org)

Causes :

1. Geography and consequently climate are the main factors controlling aridity. Plate tectonics put the Arab land within the high atmospheric pressure, tropical arid belt of the earth.

This is the work of nature which is ongoing without the need of climate change.

Land situation will worsen with the addition of the anthropogenic climate change.



All types of sand dunes

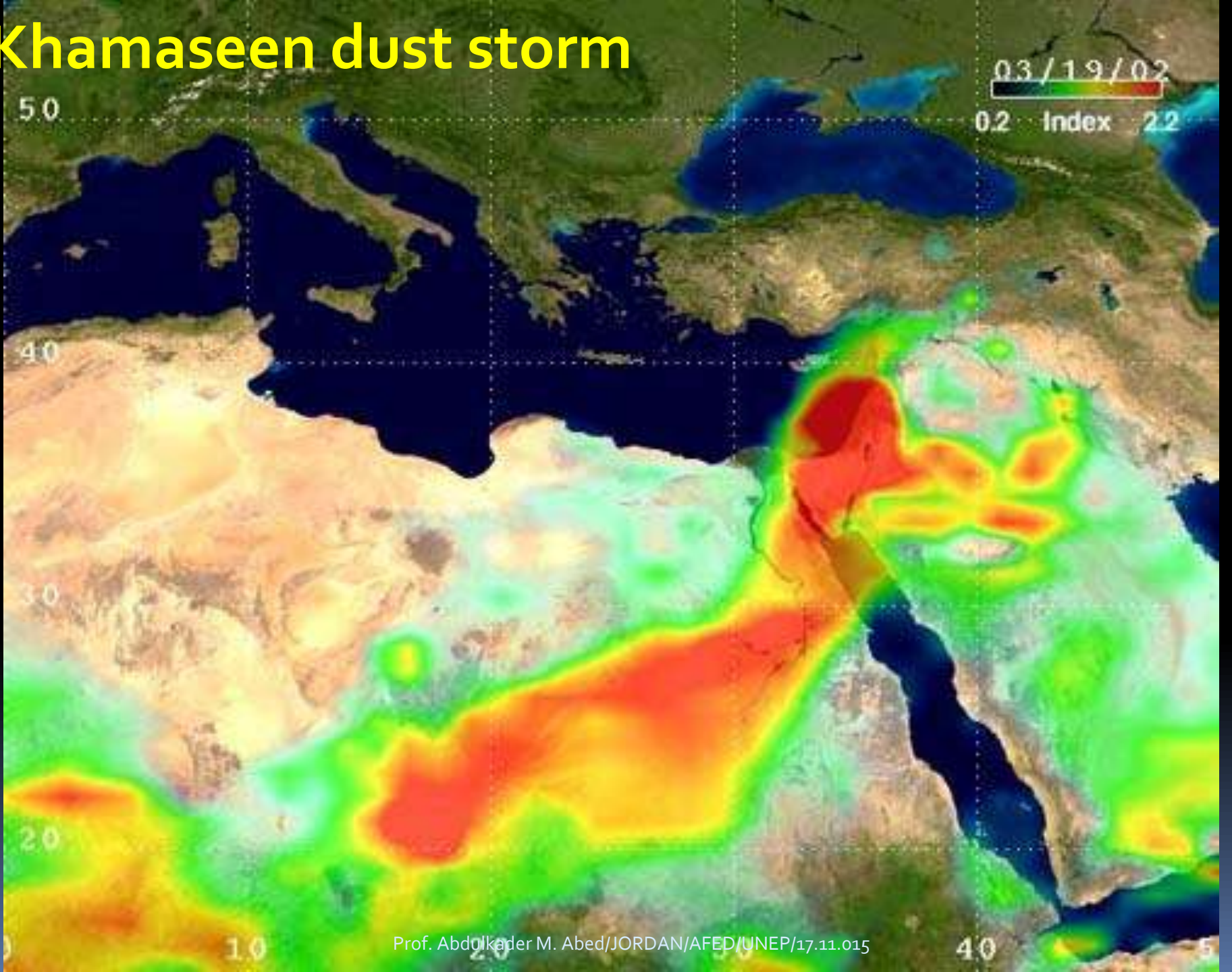


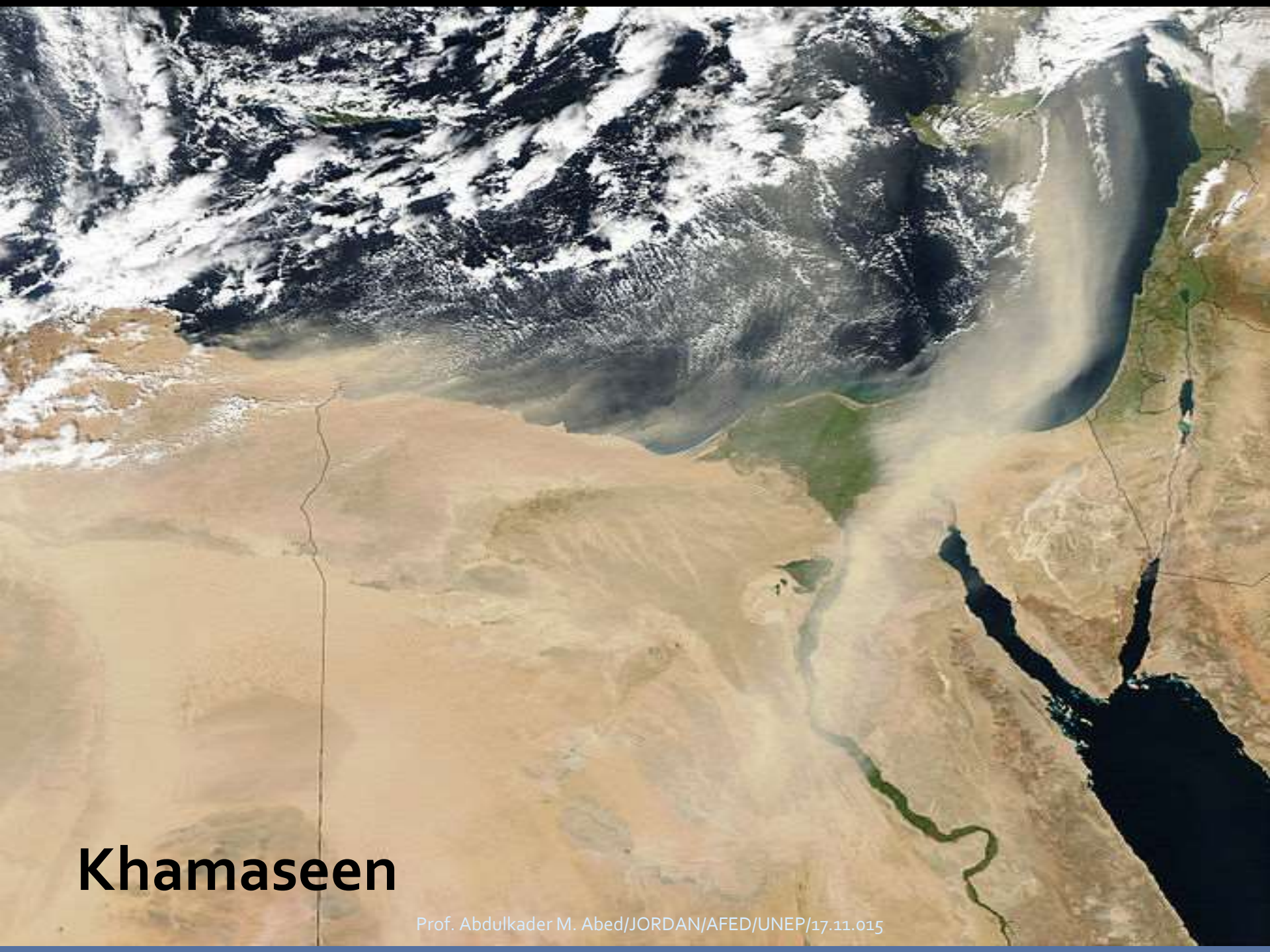
Supposed to be a **rangeland** in SE Jordan
It supports no one single goat at the moment



**Arid/semiarid climate
produces various types of
dust storms, typical for the
Arab region;
e.g. Amman, Jordan
4/11/2015**

Khamaseen dust storm





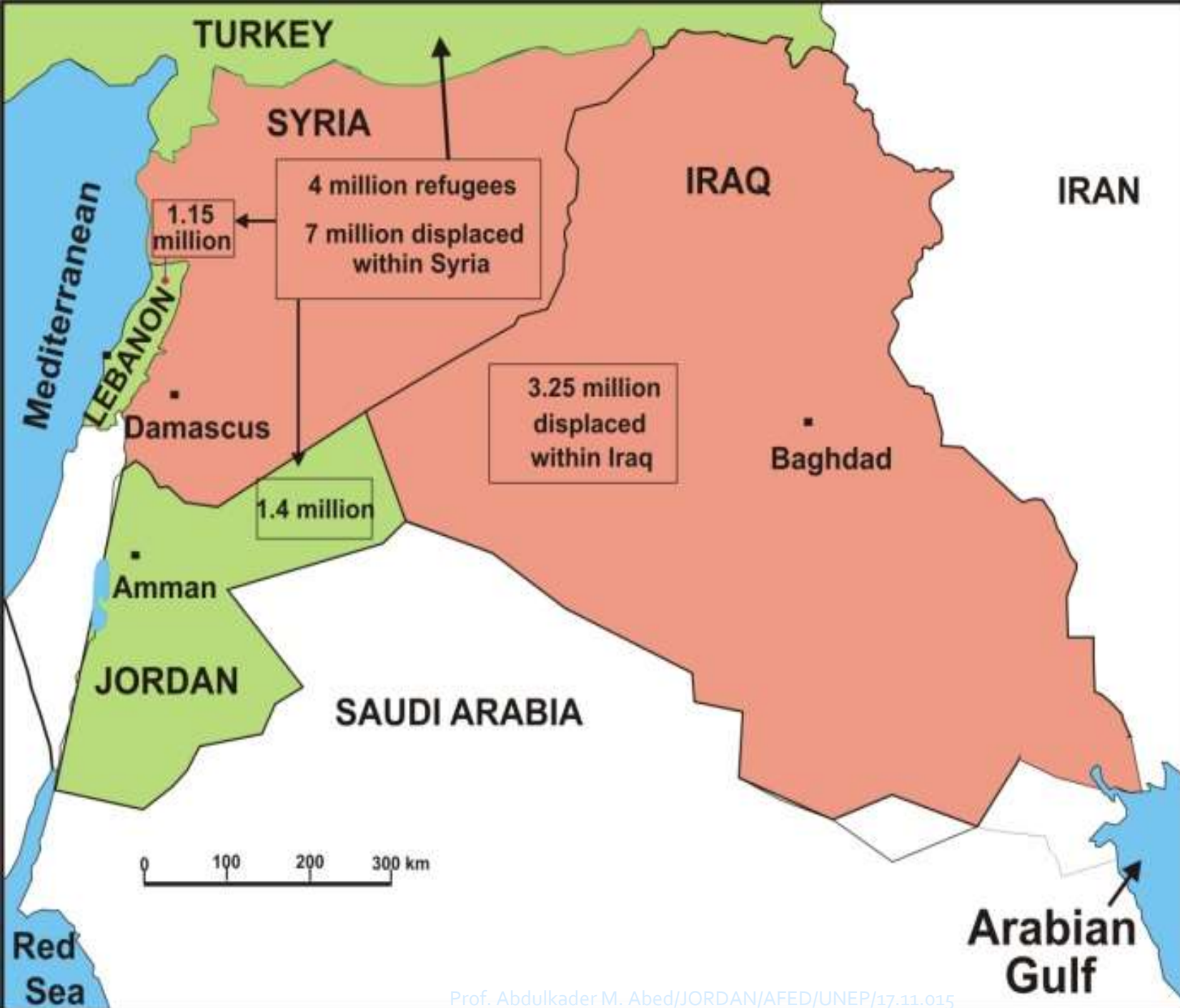
Khamaseen



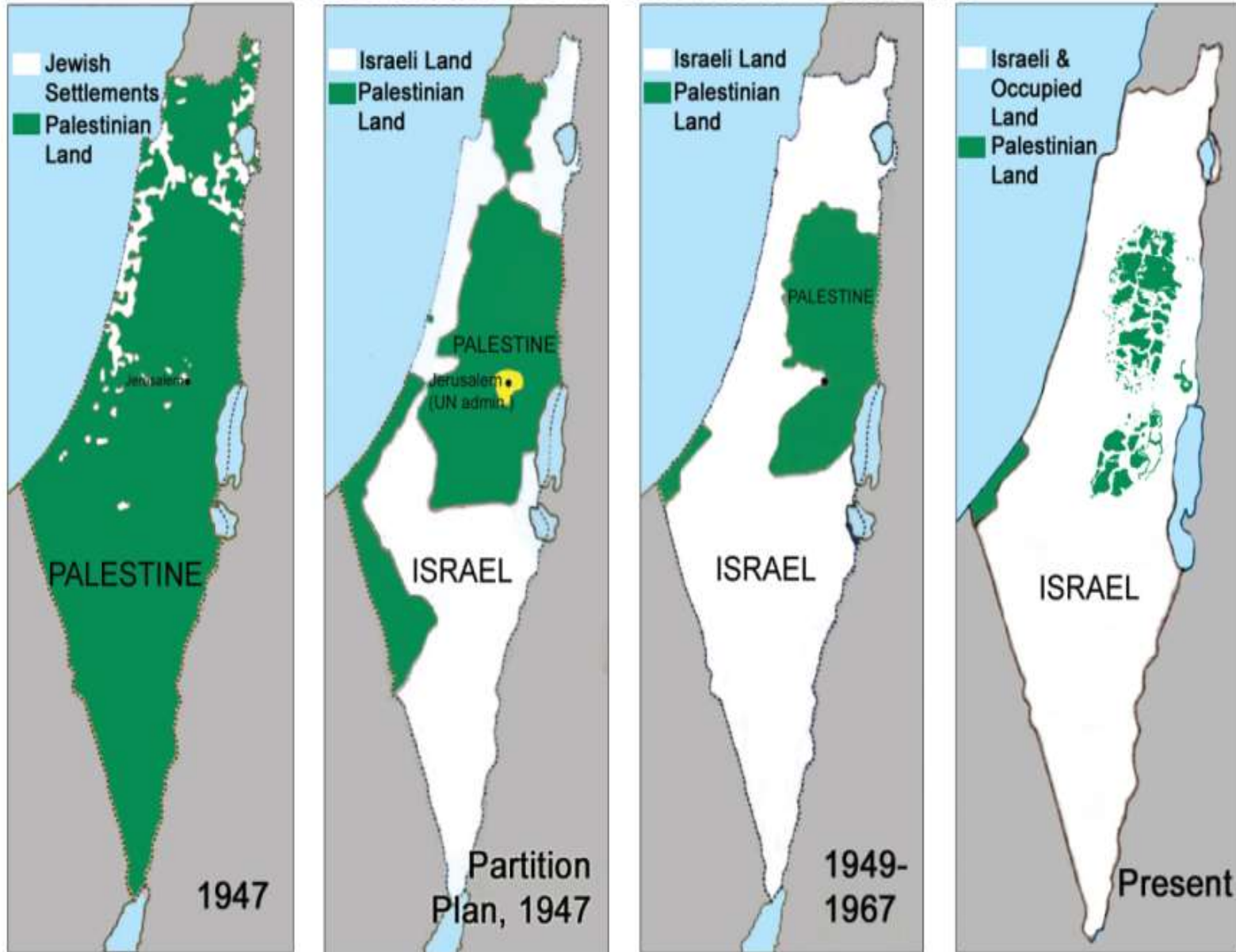
Khamseen

2. Conflicts and wars

This human-made factor, ongoing for the last 70 years, led to population displacement in masses. This, in turn, caused poverty, hunger, death and economy deterioration. A good part of the land is abandoned and finally salinized and desertified; e.g. best seen in Iraq.



Palestinian Loss of Land 1947 to Present



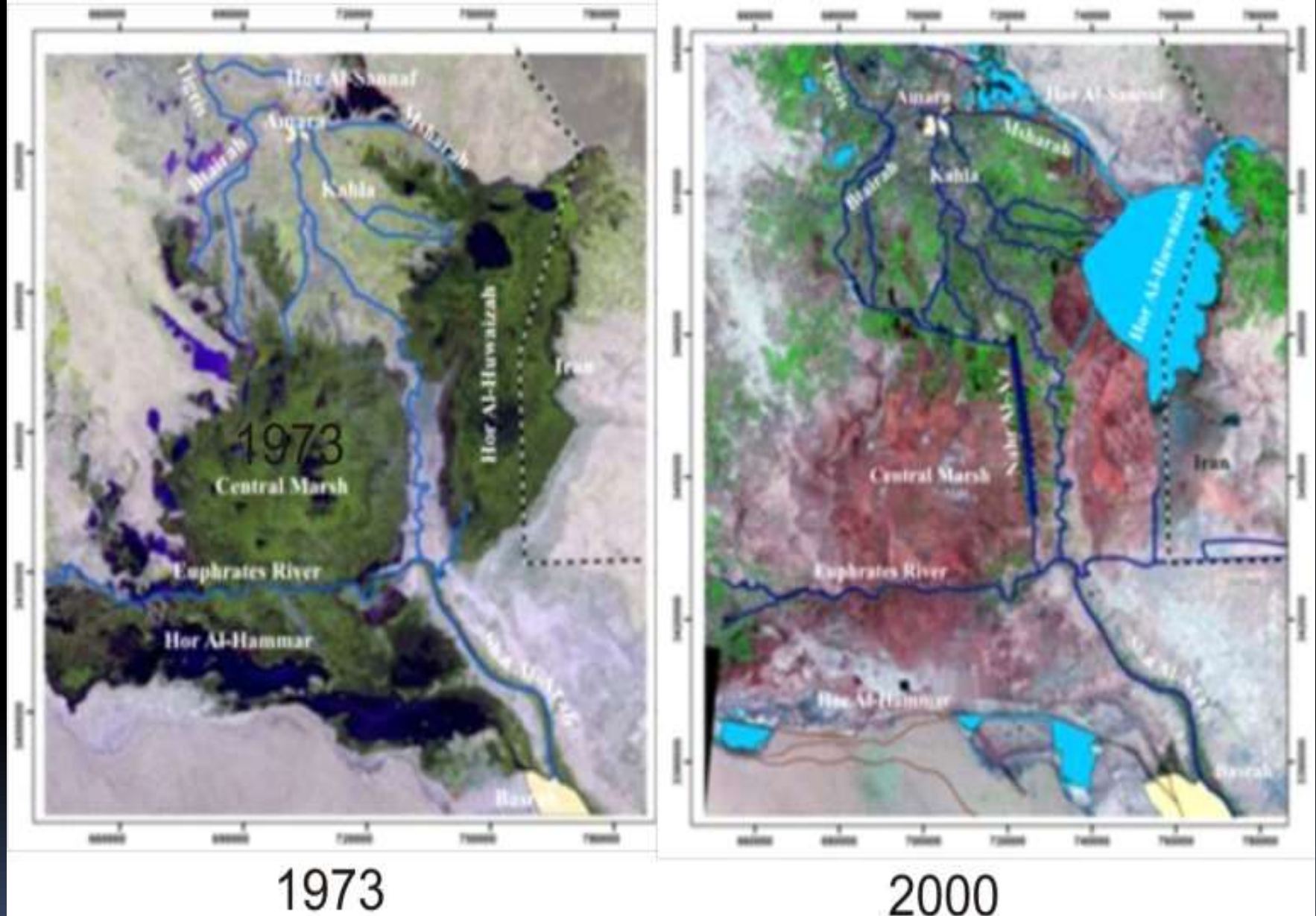


3. Fresh water scarcity

This factor should be read with geography and climate.

The resources are limited and fixed. They cannot be increased naturally.

Political regimes are too weak to have their shares in the transboundary fresh water.



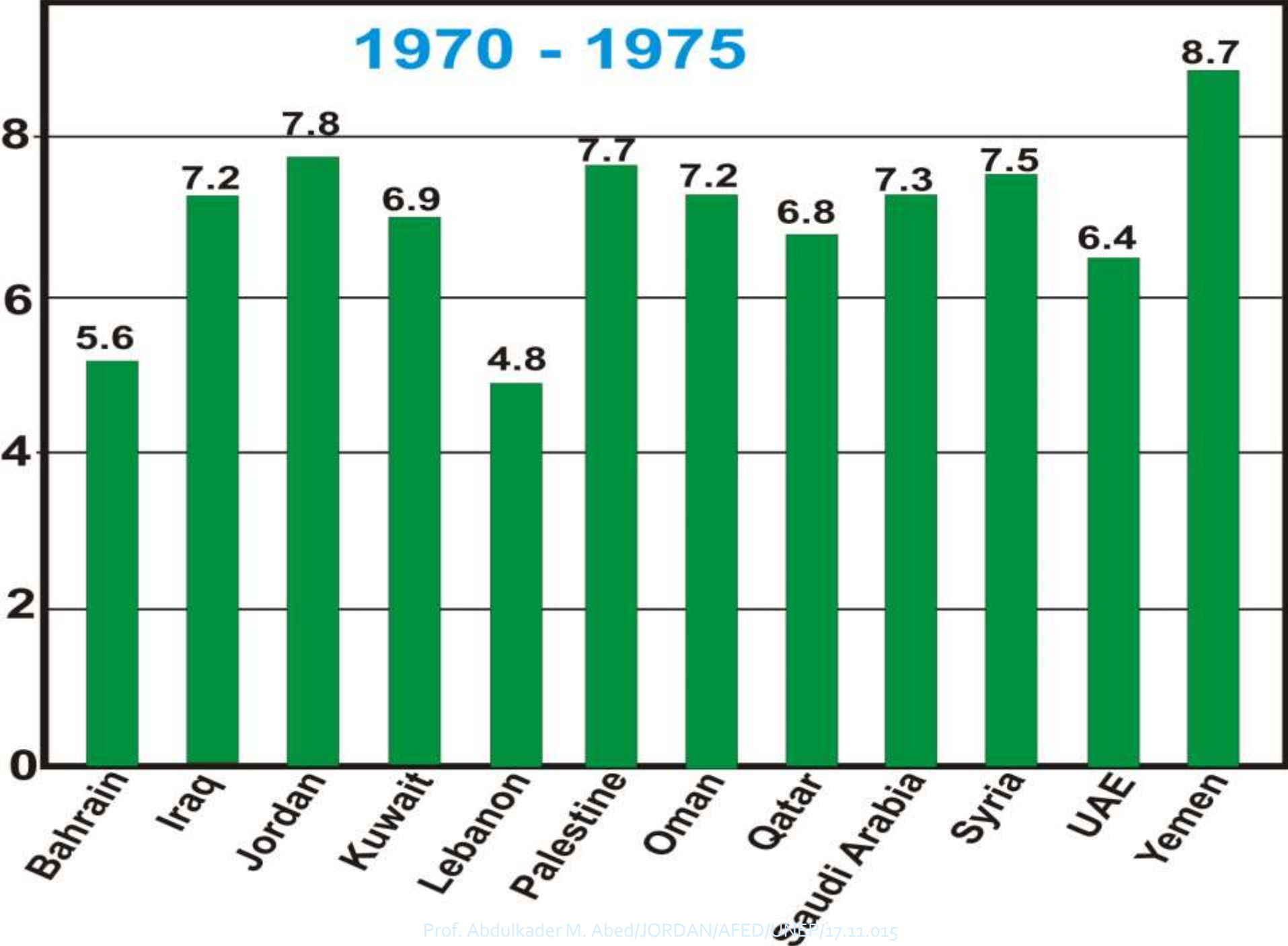
Satellite image monitoring of the Mesopotamia marshes

4. Population overgrowth

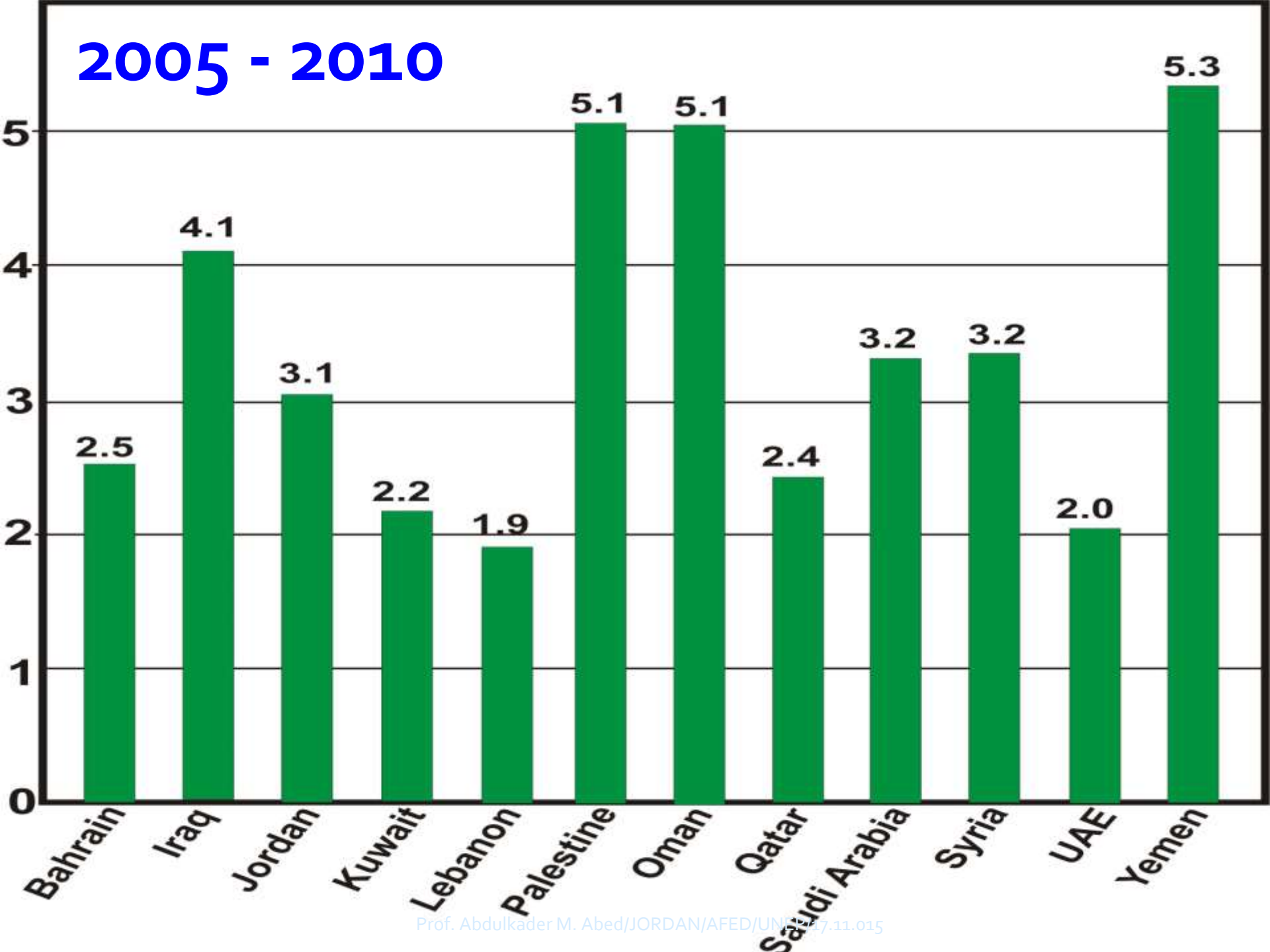
Despite the fact that it is declining, population growth is still high and is amongst the highest worldwide.

Population growth stresses the carrying capacity of the land which is already exhausted because of the climate. Land is no more able to support population

1970 - 1975



2005 - 2010



All said, the Arab region, both in WA and NA was not arid throughout the Pleistocene Period.

There are very well documented cases for more humid period during the warmer (inter pluvial) times; e.g. MIS9 (331 Ka), MIS5 (135-70 Ka), Holocene Optimum (9500-6500 years).

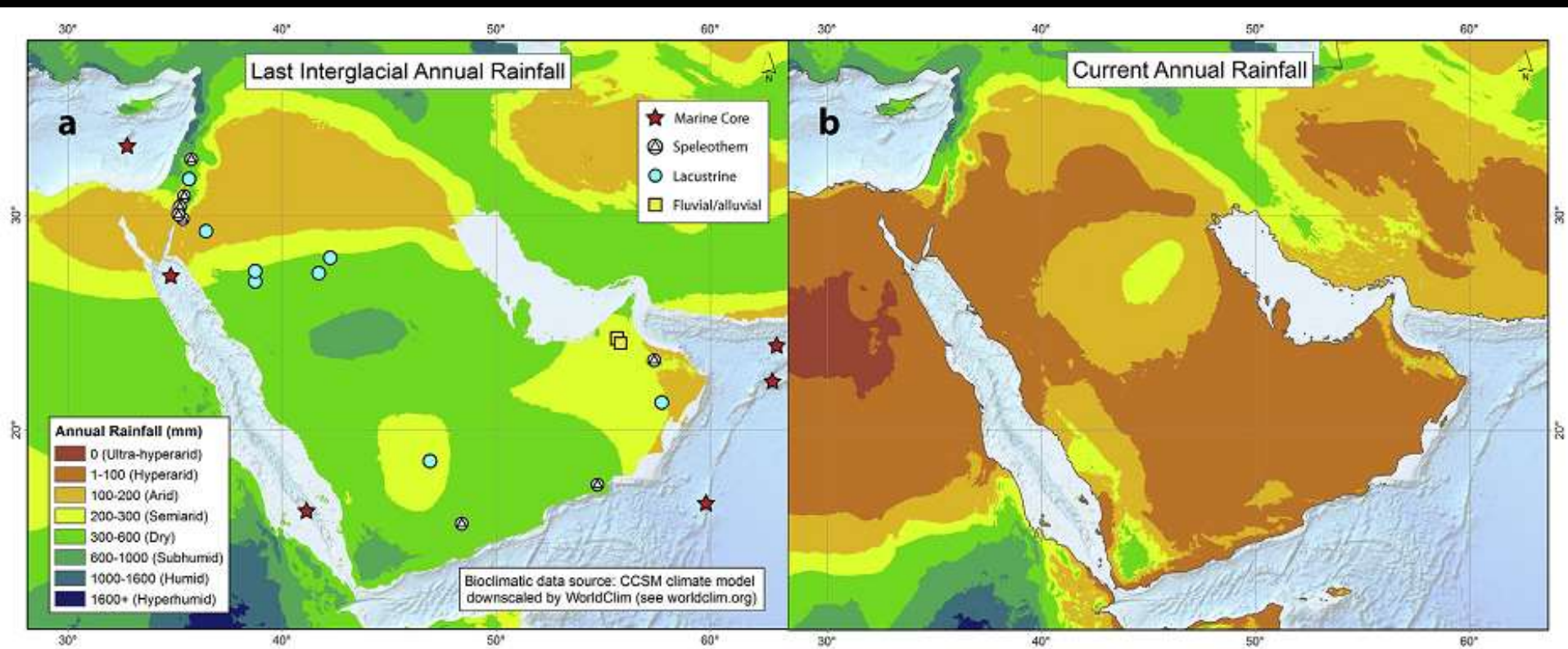
POSITIVE CLIMATE CHANGE

Positive climate change since 6000 years

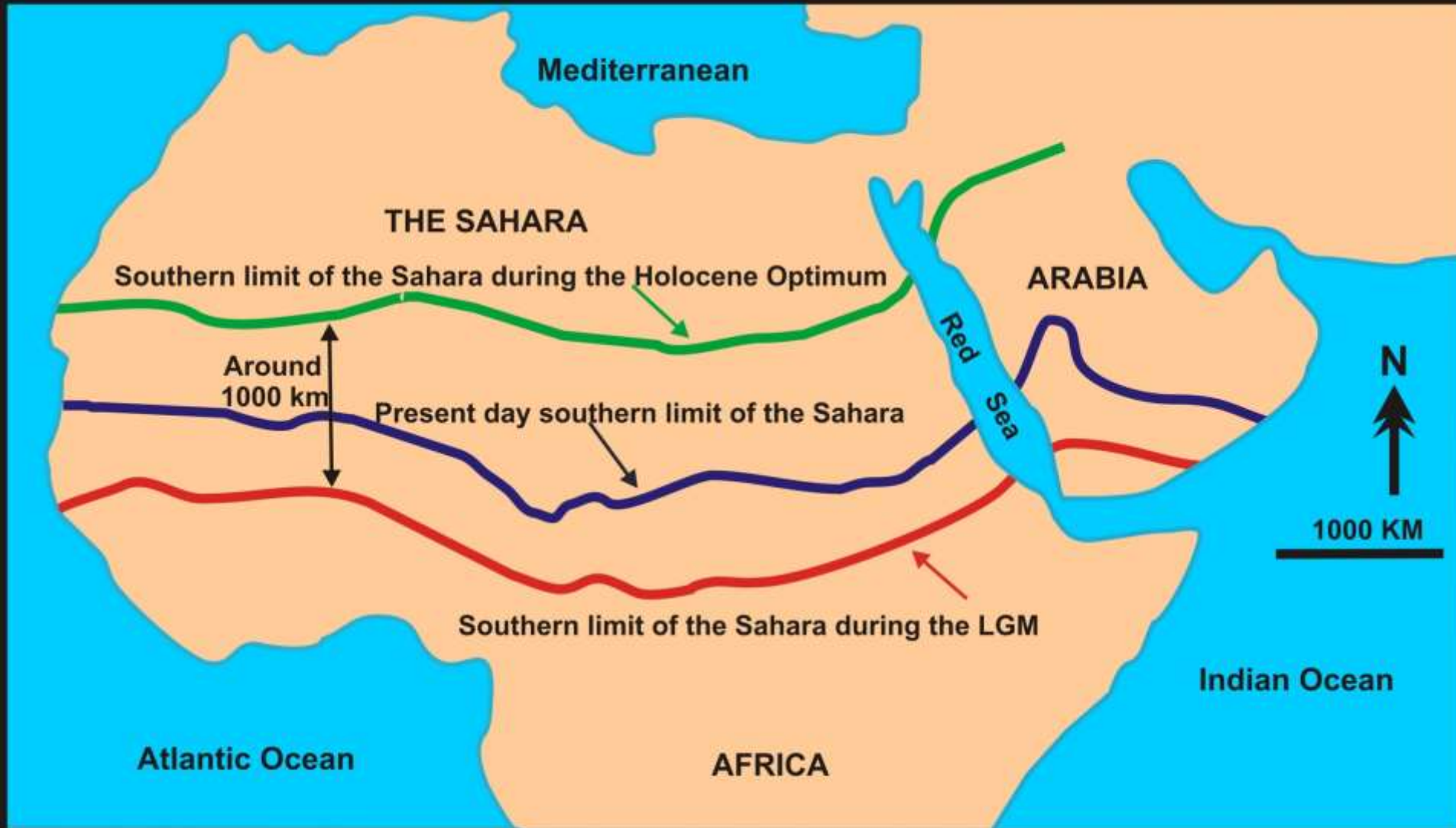
135 Ka

Negative climate change since 6000 years

Present



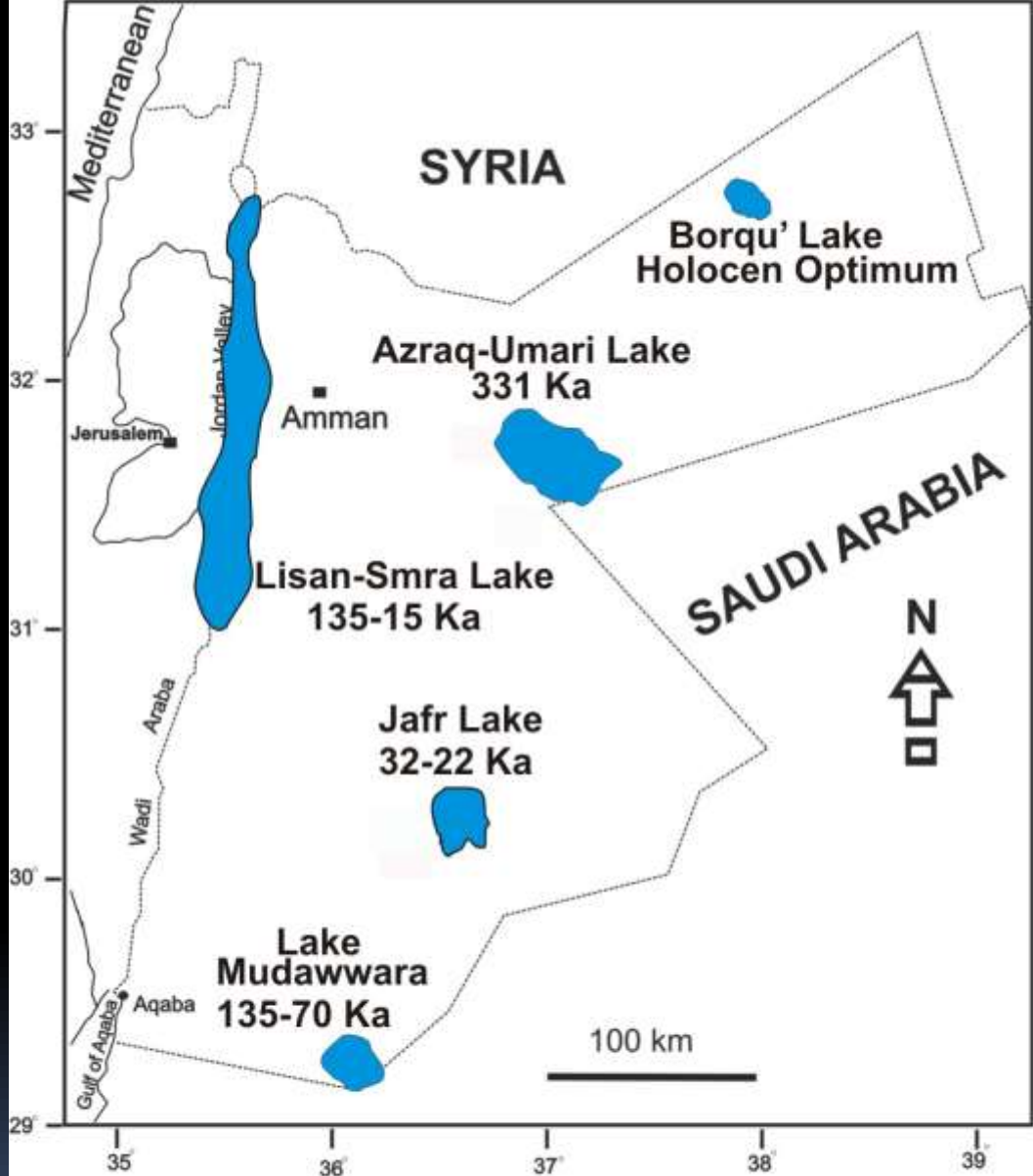
Paleoclimate of the Sahara and Arabia during the Holocene Optimum, 9500-6500 BC.

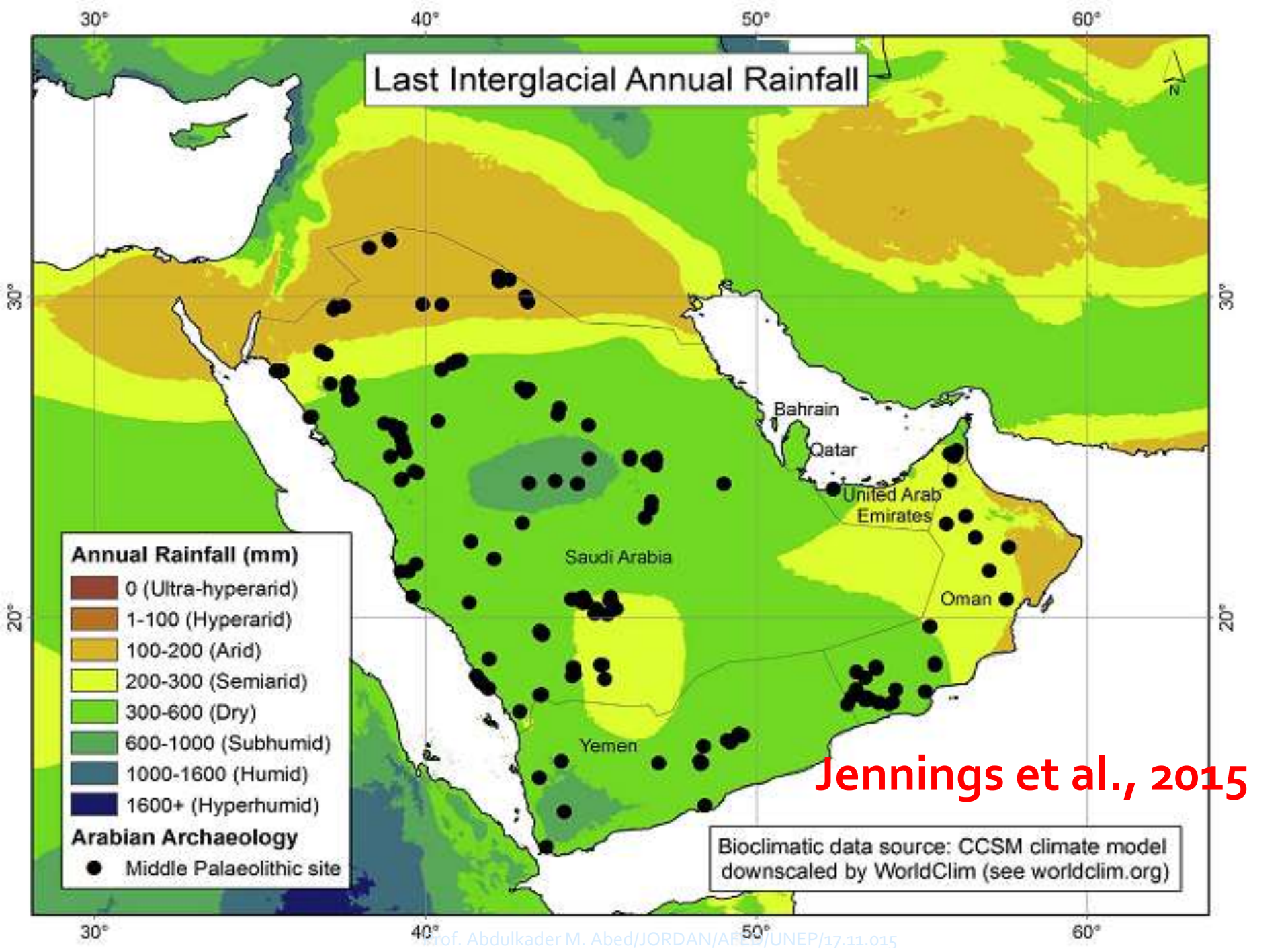


Hippopotamus teeth from a late Pleistocene lake SW Rub' Al-Khali



**Several paleolakes
In Jordan
During the warm,
Interglacial period
Of the Pleistocene**





Jennings et al., 2015

From the foregoing, climate is the main factor controlling the Arab land and limiting its carrying capacity.

When climate change is added, it reduces further the carrying capacity of the area.

Desertification

is simply transforming
the land towards arid conditions.

Desertification main cause in the Arab
land is **NATURAL**, due to the change in
climate from more humid to more arid.

Consequently, remedial actions have
little success, except possibly in some
marginal lands where precipitation is
higher.

Badiyat Ash Sham



However, Human-made causes also degrade the land and help desertifying it. In WA, human interference in land degradation can be seen in the following:

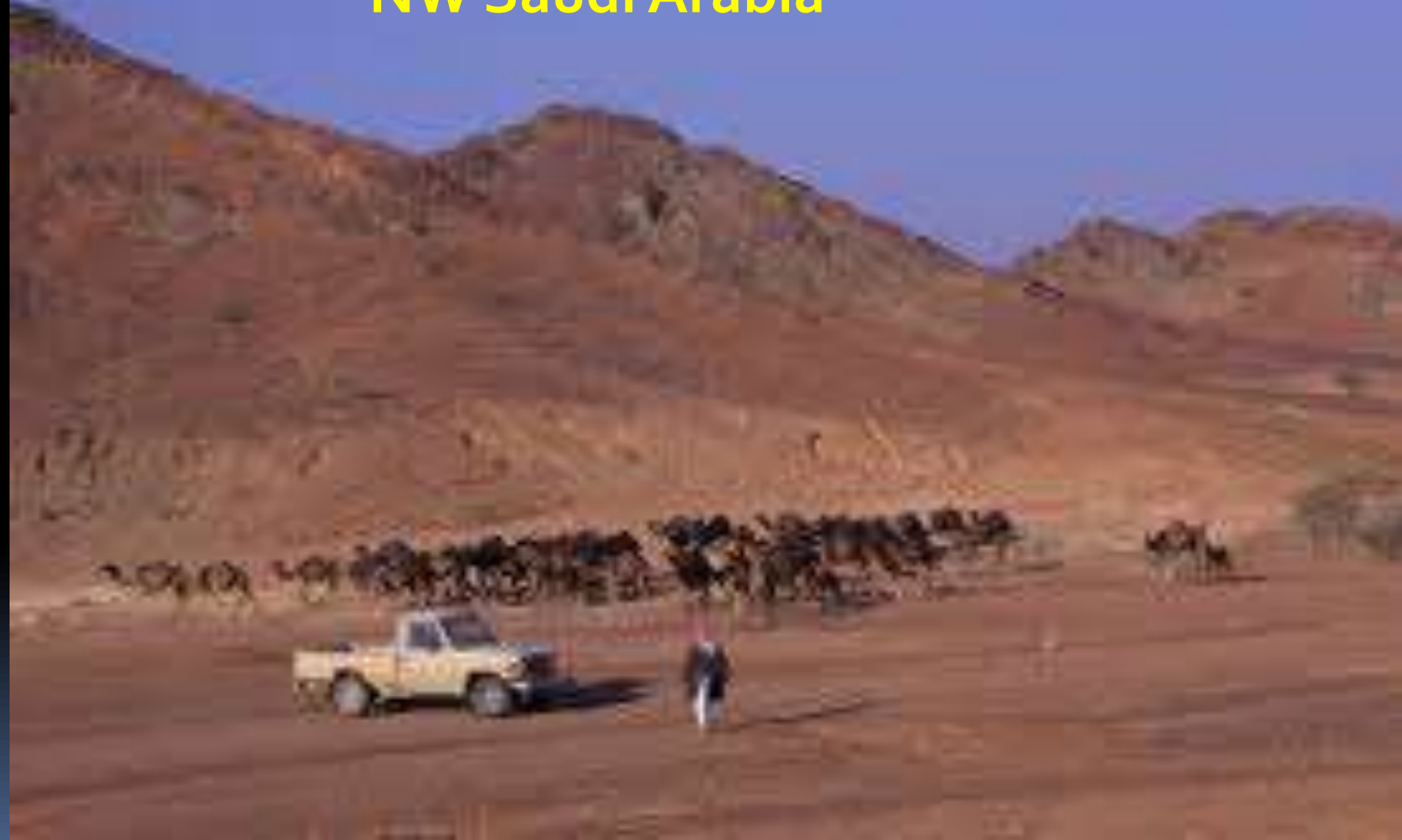
1. Population mass displacement in conflicts and wars; e.g. Iraq and possibly Syria.

2. Bad governance where political regimes failed to stop the migration from country side to cities, and abandoned their lands.

3. Bad governance associated with corruption where the political regimes failed to strictly implement the legislations preventing people from using the fertile land around the cities into buildings; what they call “urbanization” !!!

4. Overgrazing where the Bedouins are usually blamed for that. Authentic researches indicate that this is a minor factor in desertification. It is in fact the change to arid climate which hits the land and Bedouins alike.

NW Saudi Arabia



5. Bad practices when marginal lands are ploughed for wheat and barely with no enough precipitation. Consequently, these loose, fine soils are subjected to wind erosion and deflation causing soil erosion, degradation and dangerous dust storms.

6. Indigenous scientific research

Local, indigenous scientific research is crippled throughout WA/NA.

Political regimes are not interested and depend on foreign consulting companies.

This has been ongoing for more than 100 years, and led to severe backwardness in all fields

