

# Climate change and its impact on Algeria

**By El-Hadi BENYOUSSEF**



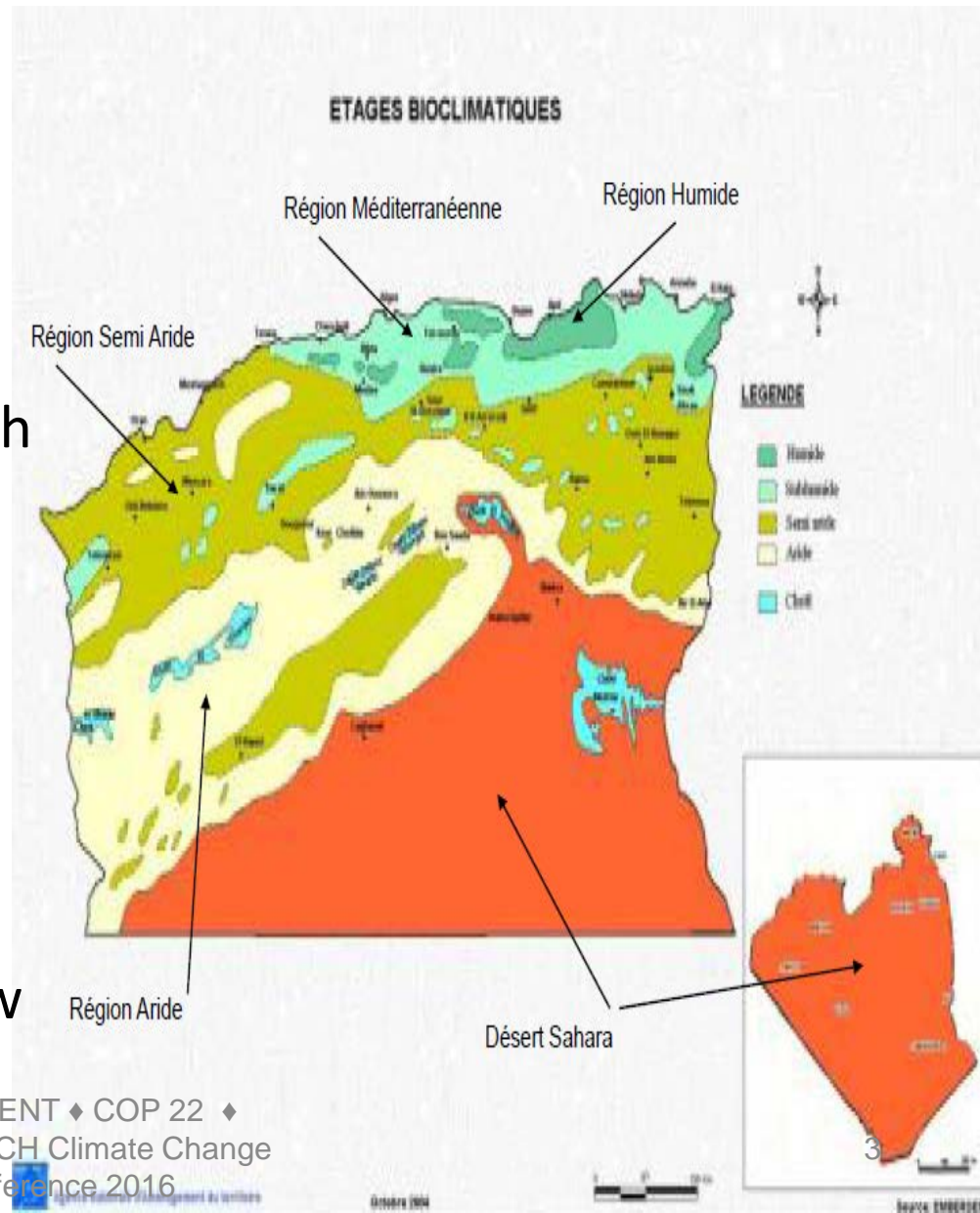
**Ecole Nationale Polytechnique  
Laboratory for Fossil Fuel Development**

# The situation in Algeria

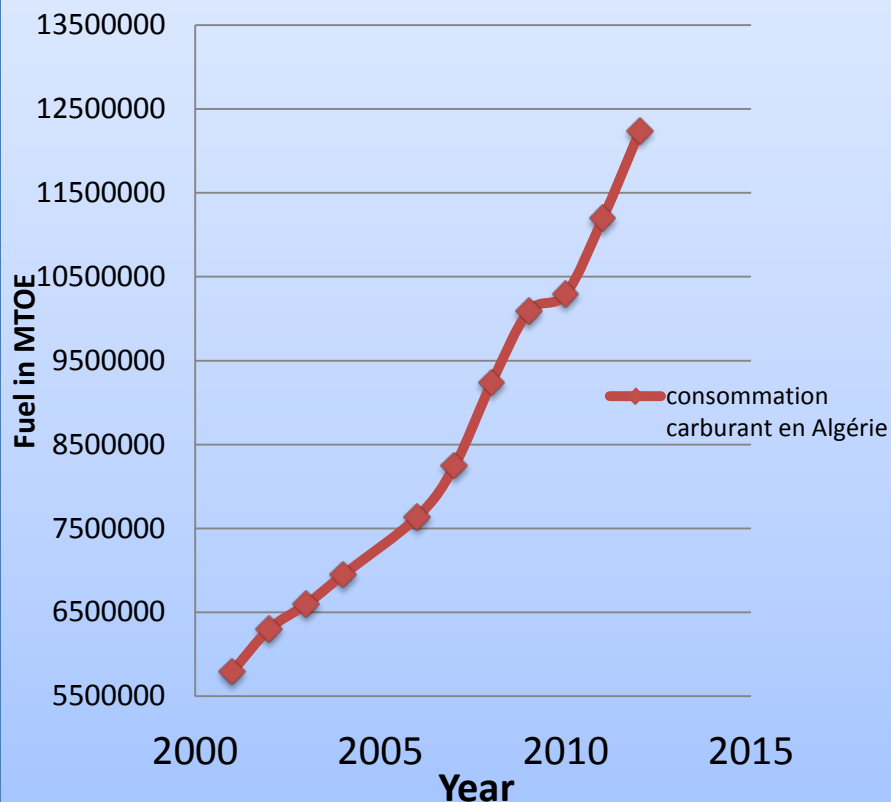


# Climate in Algeria

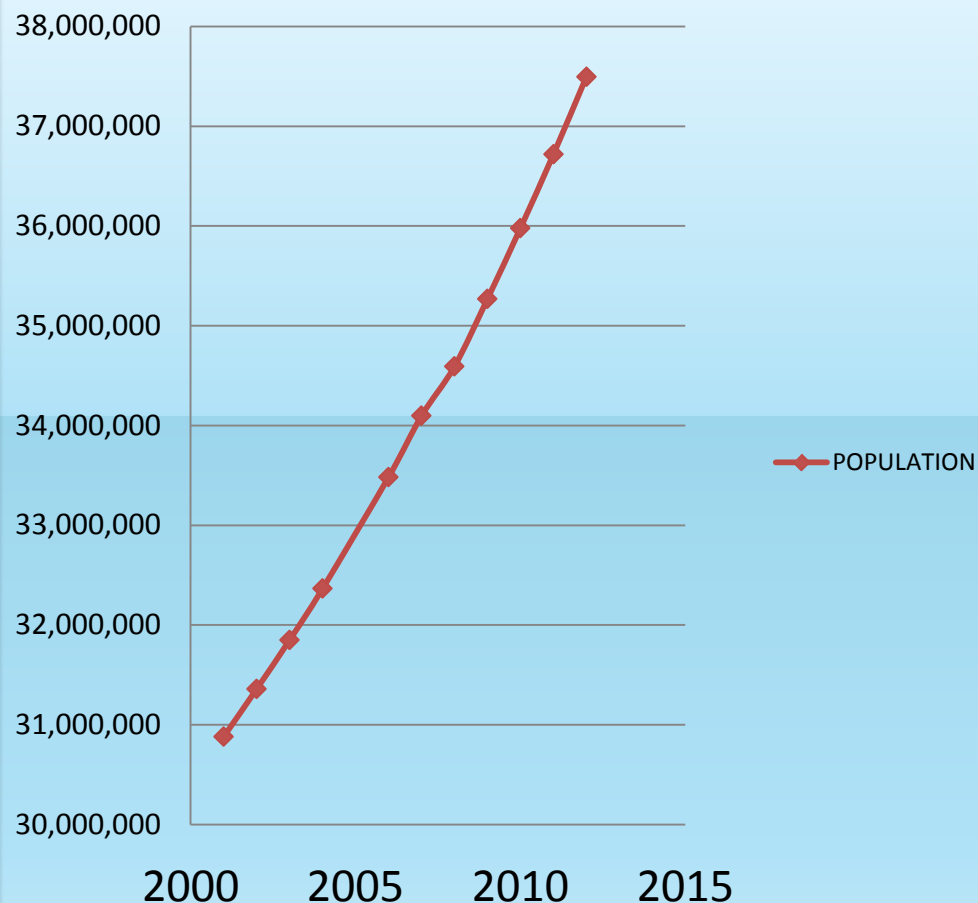
- ❖ A mediterranean climate along the coasts and the Tell Atlas Tellien mountains.
- ❖ A arid climate on the south of the Atlas Tellien (dry and tropical).
- ❖ A continental climate of the high plateau and Saharan Atlas.
- ❖ A desertic climate with scarce and irregular showers.
- ❖ Sahara is one of the hottest regions in the world where day temperatures can reach 50 ° C or higher whereas night temperatures are extremely low (in winter it often freezes).



## Fuel consumption in Algeria



## POPULATION



Energy consumption in Algeria is growing at a relatively worrying pace; by 2030 annual consumption levels will reach 38,000,000 TOE

Algeria's population growth is linear. The annual growth rate is 2.18%, rising from 30 million in 2001 to 37.5 million in 2012. The population will reach 48 million by 2030

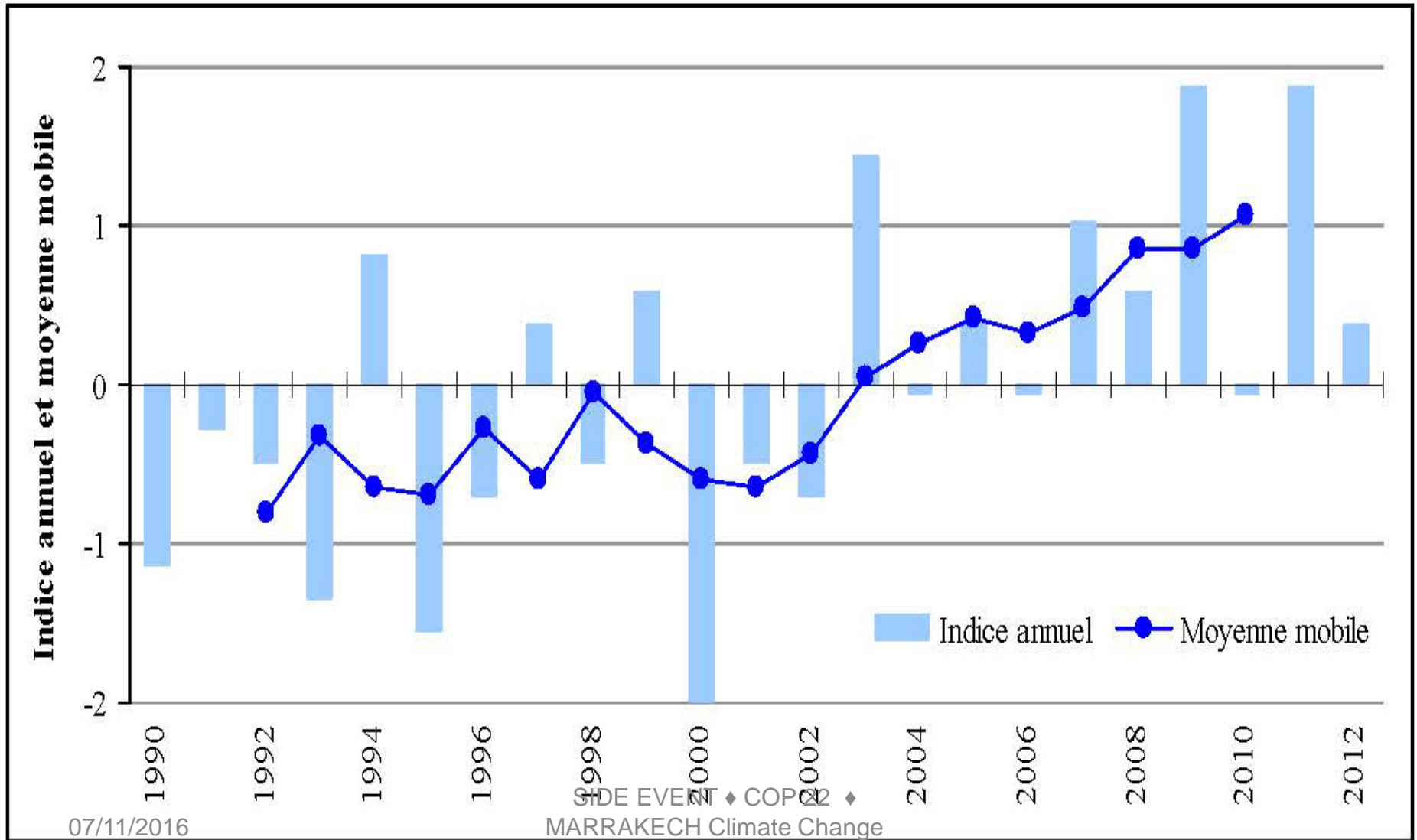
# Average annual precipitation on the Algerian coast

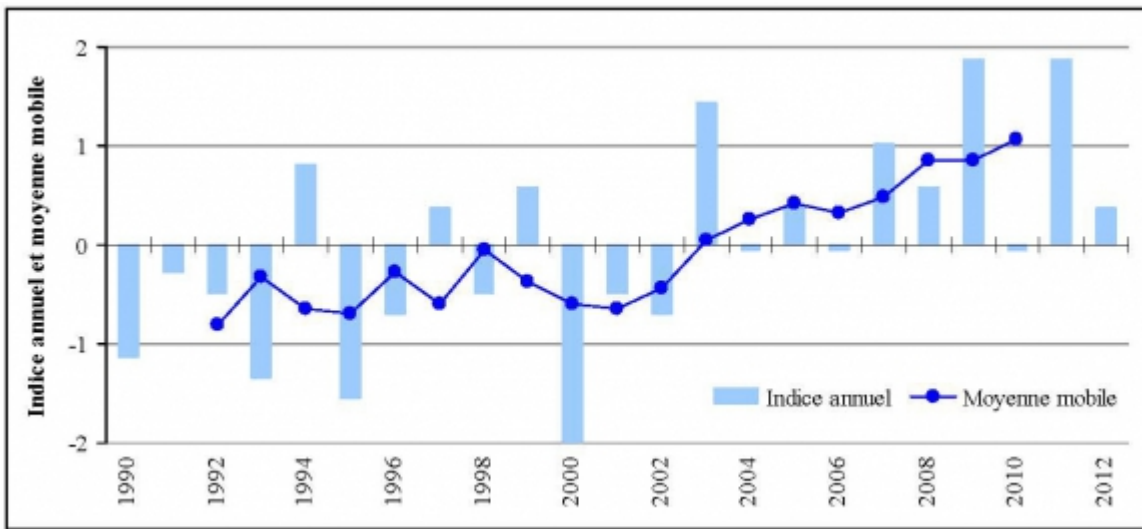
	Latitude	Longitude	Altitude (m)
Oran	35°38' N	0°36' O	90
Echlef	36°13' N	1°20' E	143
Dar El Beida	36°41' N	3°13' E	25
Bejaia	36°43' N	5°04' E	1,7
Skikda	36°53' N	6°54' E	1,3
Annaba	36°50' N	7°49' E	8,0

	Oran	Echlef	Dar El Beida	Bejaia	Skikda	Annaba
Minimum	172	213	280	320	492	409
Maximum	609	577	1169	1373	1148	1126
Écart-type	93,2	96,5	186	206	156	152
Moyenne	352	382	643	798	735	651
CV	0,26	0,25	0,29	0,26	0,21	0,23

**Source: Zeineddine Nouaceur, Benoit Laignel et Imen Turki,** « Changements climatiques au Maghreb : vers des conditions plus humides et plus chaudes sur le littoral algérien ? », *Physio-Géo*, Volume 7 | 2013.

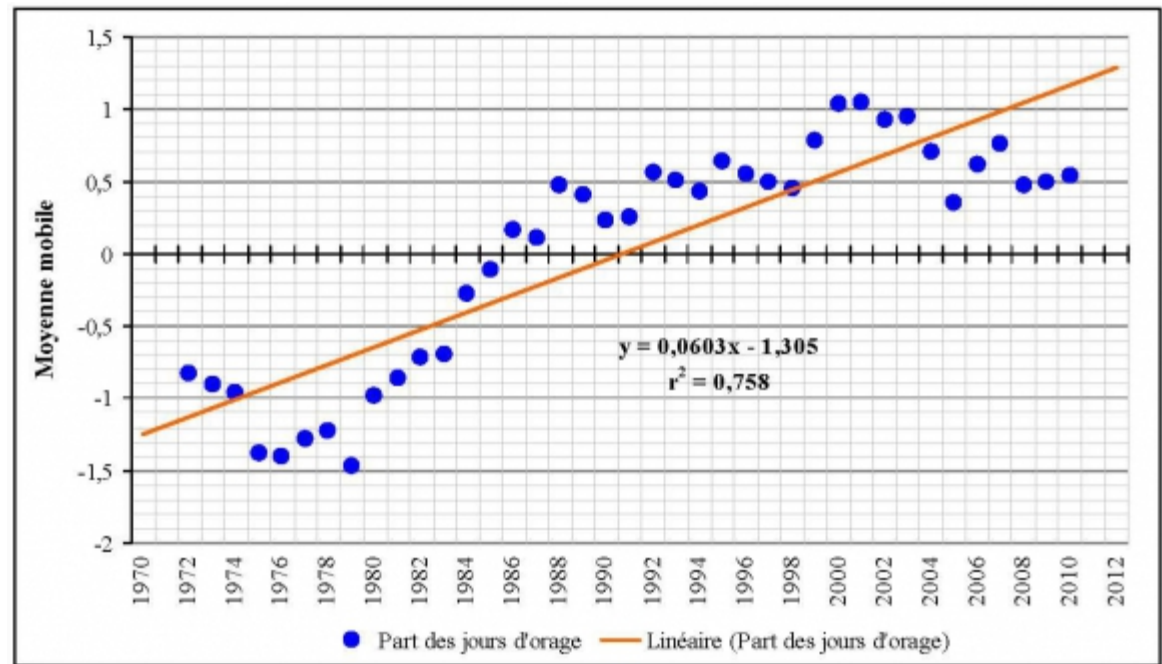
# Annual reduced centred index indicating severe disruptions (cumulated rainfall of over 30 mm in 24 hours)





Five-year moving average of reduced centred index of number of rainstorm days from 1970-2012

Five-year moving averages of annual reduced centred index of number of rainstorm days and average maximum daily temperatures at the six measuring stations from 1970-2012.



Source: Zeineddine Nouaceur, Benoit Laignel et Imen Turki, « Changements climatiques au Maghreb : vers des conditions plus humides et plus chaudes sur le littoral algérien ? » *Physio-Géo*, Volume 7 | 2013.

# Remarks

- An analysis of minimum and maximum temperatures on the Algerian coast indicates real changes over the study period. Maximum temperatures saw the greatest increase.
- In terms of precipitation, a significant drought in Algeria lasted nearly fifteen years from 1987 to 2002. The return to a wet climate since 2003 has been accompanied by a high number of severe rain events.



# Impacts

## Algeria: catastrophes 2001-2014

- **Number of events: 132**
- **Number of victims: 3,934 dead, 13,536 injured**
- **Average severity (out of 6): 2.33**
- **5 most severe events:**
  - **10/11/2001 : Torrential floods in Algeria: 921 dead**
  - **21/05/2003: Earthquake magnitude 6.2 in Algiers: 2,274 dead, 11,452 injured**
  - **21/06/2003: Heatwave in central Algeria: 40 dead**
  - **14/12/2008: Floods in northern Algeria and Morocco: 11 dead**
- **12/01/2009: Northern Algeria struck by bad weather: 7 dead**

# Flooding in Algiers (June 2014)



# Torrential rain led to the death of a child and the disappearance of a dozen people (October 2016)



# Bad weather caused 10 deaths in northern Algeria (October 2011)



# Heatwaves, sand storms



**Desert covers 90% of Algeria and continues its advance to the north**

## **Water stress:**

- **Standard water shortage: Consumption <1700 m<sup>3</sup>/person/year,**
- **Water stress: Consumption <1000 m<sup>3</sup>/person/year.**

**Average consumption in Algeria: from 400 to 600 m<sup>3</sup>/person/year  
(including desalinated water)**

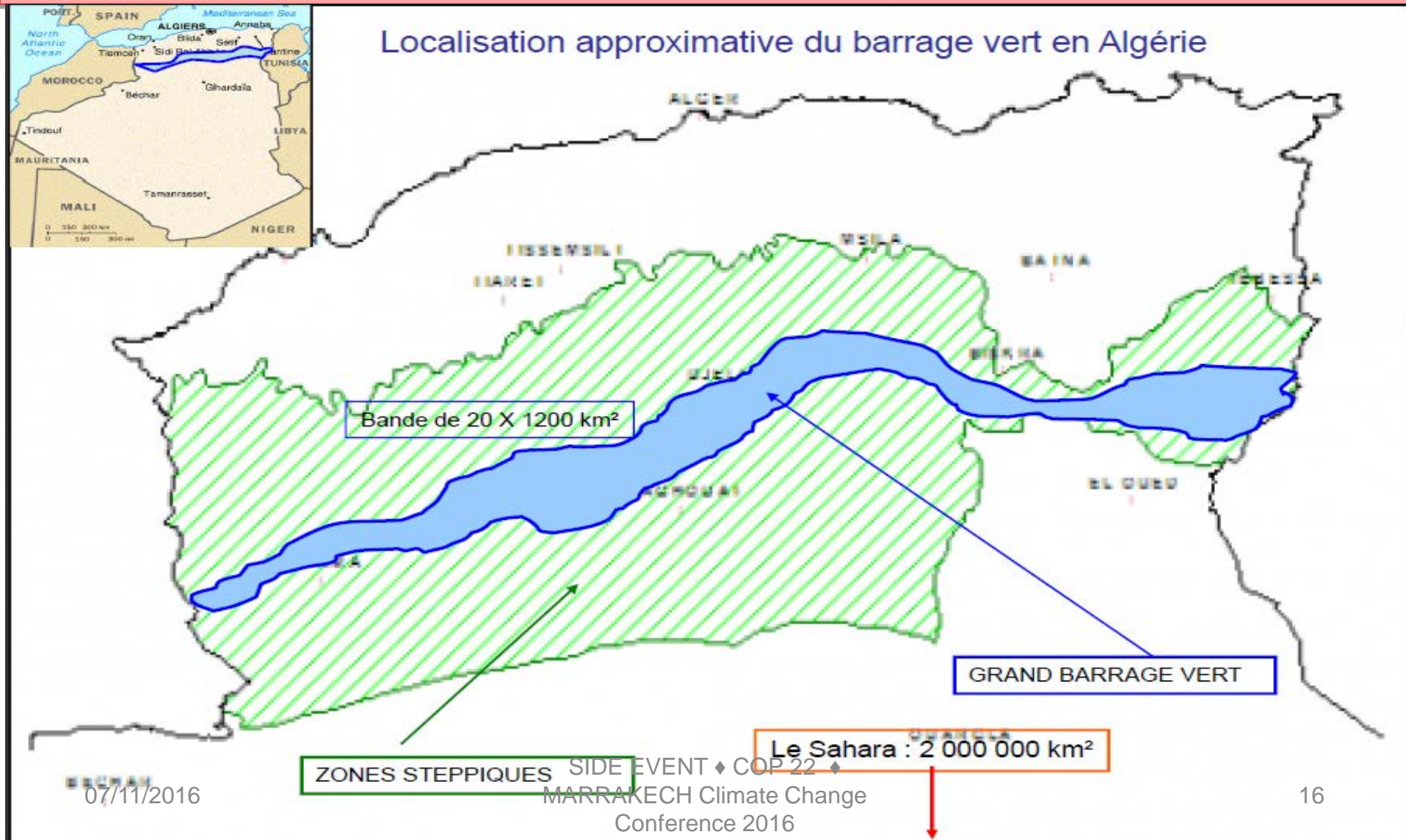
# ❖ Drop in agricultural production

- Lower vegetable yields
- Reduced wheat harvests



# Construction and reinforcement of green dam

Localisation approximative du barrage vert en Algérie





# Thank you for listening

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