

**IPCC WGII Fourth Assessment
Report –
Chapter 9: Africa**

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Lead Author

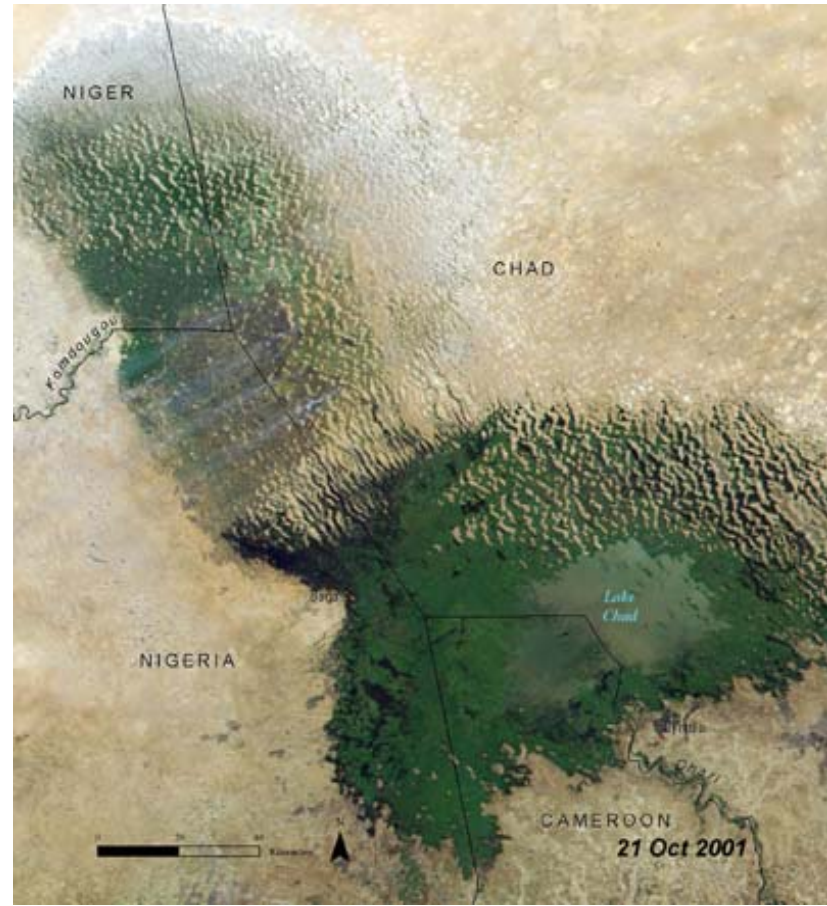
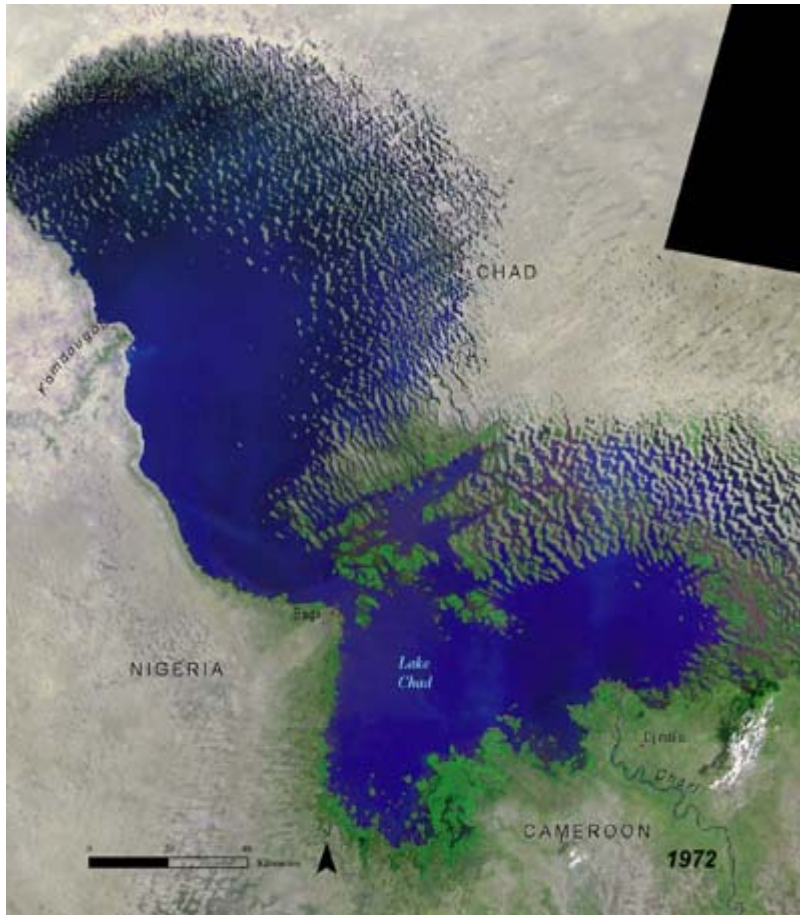
Key findings

- **Africa is one of the most vulnerable continents to climate change and climate variability, a situation aggravated by the interaction of ‘multiple stresses’, occurring at various levels (very high confidence).**

Key findings

- **Changes in the primary production of large lakes will have important impacts on local food supplies. For example, Lake Tanganyika currently provides 25-40% of animal protein intake for the population of the surrounding countries and it is expected that climate change may impact on primary production of the lakes that may reduce catches by around 30%.**

Lake Chad (from the TAR)



This image set displays a continued decline in lake surface area from 22 902 km² (8 843 square miles) in 1963 to a meager 304 km² (117 square miles) in 2001.

Key findings

- **African farmers have developed several adaptation options to cope with current climate variability but such adaptations may not be sufficient for future changes of climate (very high confidence).**
- Human or societal adaptive capacity that was identified as being low for Africa in the Third Assessment Report is now better understood and supported by several case studies of both current and future adaptation options. However, these adaptations may be insufficient for future changes of climate.

Key findings

- **Agricultural production and food security (including access to food) in many African countries and regions will likely be severely compromised by climate change and climate variability (very high confidence).**
- A number of countries in Africa already face semi-arid conditions that make agriculture challenging and climate change will likely reduce the length of growing season as well as force large regions of marginal agriculture in Africa out of production. Projected reductions in yield in some countries could be as much as 50% by 2020 and crop net revenues could fall by as much as 90% by 2100, with small scale farms being the most affected. This would adversely affect food security in the continent

Key findings

- **countries that are not at risk will become at risk of water stress (very high confidence).**
- Climate change and variability will likely impose additional pressures on water availability, water accessibility and water demand in Africa. Even without climate change, several countries in Africa, particularly in northern Africa, will exceed the limits of their economically useable land-based water resources before 2025. The proportion of the African population at risk of water stress and scarcity could increase from 47% in 2000 to 65% in 2025. A 3°C temperature increase could lead to 0.4 – 1.8 billion more people at risk of water stress.



Key findings

- **Changes in a variety of ecosystems are already being detected, particularly in southern African ecosystems, at a faster rate than anticipated** (very high confidence).
- Climate change, interacting with human drivers such as deforestation and forest fires are a threat to Africa's forest ecosystem. Changes in grasslands and marine ecosystems are also noticeable. It is estimated that by the 2080s, parts of arid and semi-arid lands in Africa will likely increase by 5-8% Climate change impacts on Africa's ecosystem will likely have a negative effect on tourism as between 25 and 40% of animal species in national parks in sub-Saharan Africa will become endangered

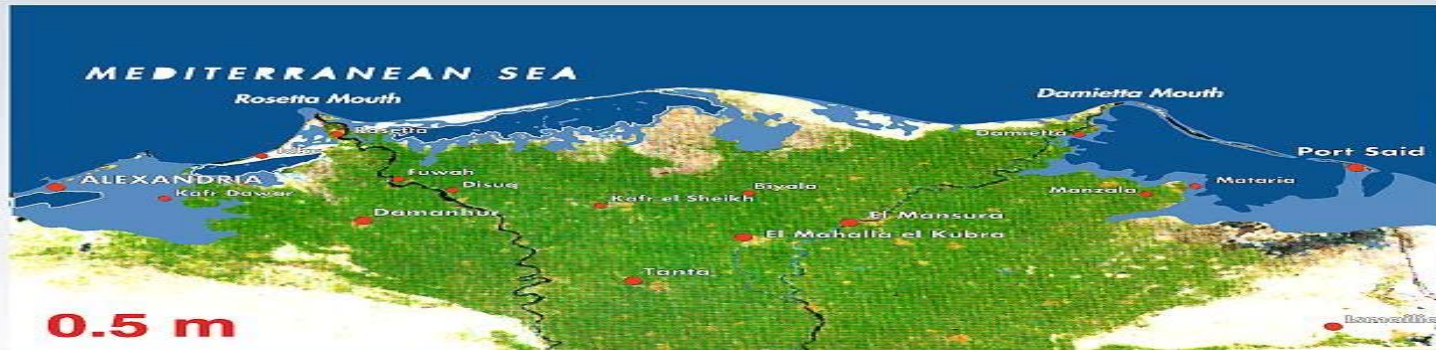
Key findings

- **Climate variability and change could result in low-lying lands being inundated, with resultant impacts on coastal settlements** (high confidence).
- Climate variability and change, coupled with human-induced changes, may also affect ecosystems (mangroves and coral reefs), with additional consequences on fisheries and tourism. The projection that sea level rise would increase flooding, particularly on the coasts of eastern Africa will have implications for health. Sea level rise will likely increase the high socioeconomic and physical vulnerability of coastal cities. The cost of adaptation to sea level rise could amount to at least 5-10% of GDP.

Potential impacts of SLE Nile Delta (From TAR)

Potential impact of sea level rise: Nile Delta

Population: 3 800 000
Cropland (Km²): 1 800



Population: 6 100 000
Cropland (Km²): 4 500



GRID
Arendal

UNEP

IUCC
WORLDWIDE
SCIENCE CENTER

0 50 km

Key findings

- **Human health, already compromised by a range of factors, could also be further negatively impacted by climate change and climate variability (e.g. malaria in southern Africa and the East African highlands) (high confidence).**
- It is likely that climate change may alter the ecology of some disease vectors in Africa and consequently the spatial and temporal transmission of such diseases. Most assessments on health have concentrated on malaria and still there are debates on the attribution of malaria resurgence in some African areas. The need exists to examine the vulnerabilities and impacts of future climate change on other infectious diseases such as dengue fever, meningitis, cholera, *etc.*

Change on Mt Kilimanjaro and climate interaction

February 17, 1993

February 1993



February 01, 2000

February 2000



Extreme climatic conditions (drought and floods)

