

A sunset over the ocean with a palm frond in the foreground. The sun is low on the horizon, partially obscured by clouds, creating a bright glow and a reflection on the water. The sky is filled with large, dark clouds illuminated from below by the setting sun. The water is dark with a shimmering path of light from the sun's reflection. A palm frond is visible in the bottom left corner.

Climate change in Sudan

Samia Elhassan

Blue Nile National Institute for Communicable
Diseases

University of Gezira, Sudan

- Sudan is one of the largest countries in Africa, with 1.881 millions square Kilometers and a similarly large and very young population, with almost three quarters of the population living in rural areas.
- The country is suffering from continuous civil strife in the south and the west, leading to successive waves of massive population movement, coupled with drought and desertification, major floods in the northern part of the country.

- Sudan is typical of other least developed countries in Africa in being highly vulnerable to climate change and climate variability.
- The interaction of multiple stresses—endemic poverty, ecosystem degradation, complex disasters and conflicts, and limited access to capital, markets, infrastructure and technology—have all weakened people’s ability to adapt to changes in climate.

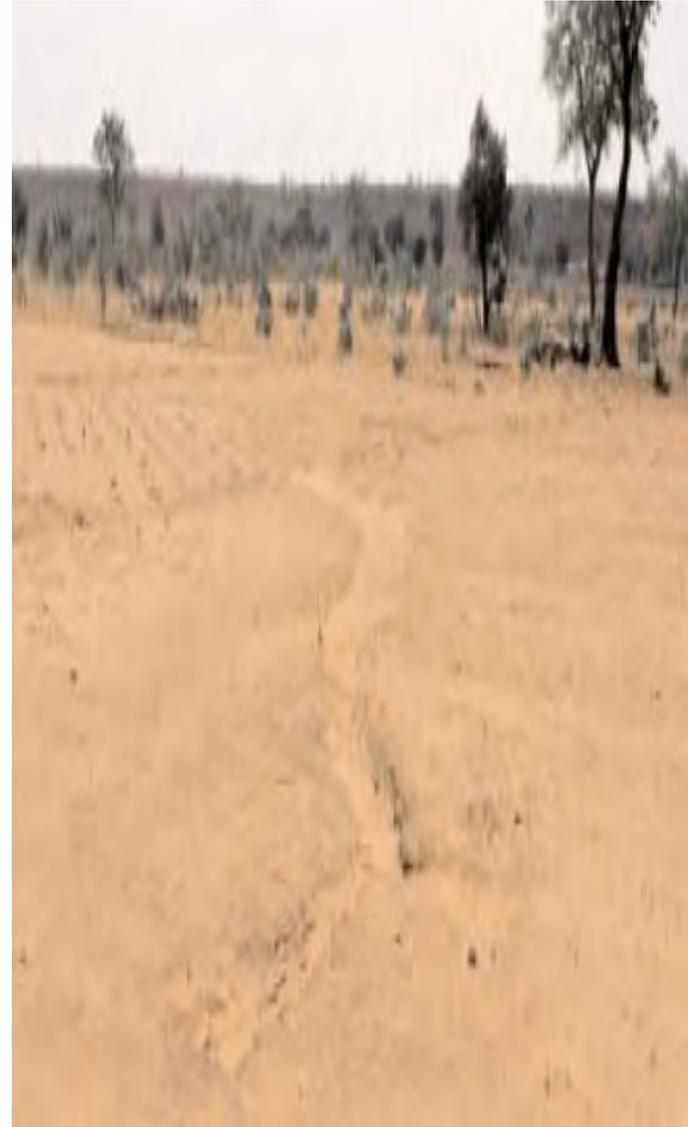
Effects on the biodiversity and the Ecosystem Productivity

- These systems are expected to be affected in the coming hundred years with an increased risk of extinction of some vulnerable species. The negative effects are expected to increase such as fire, drought and outbreaks of epidemics.
- The stresses of climate change in addition to other stresses, could affect the ecosystems such as land degradation and deforestation, and pollution threatens to inflict serious damage to some systems unique or completely lost and the extinction of some endangered species or critical threats to the already endangered species.



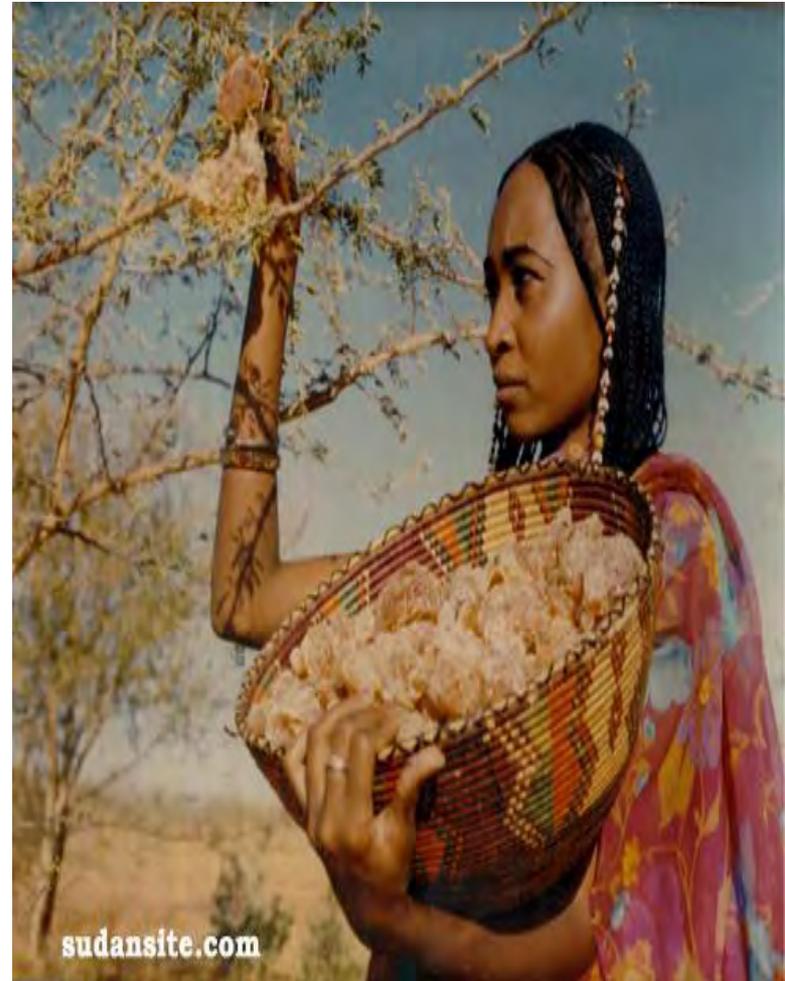
Effects on the soils

- Lack of depth in the soil due to erosion.
- lack of content of organic matter in the soil.
- lack of soil fertility.
- salinization of the soil or its transformation to alkaline
- Increased dust in the air and dust storms increase.
- Increase in the formation of sand dunes in the rate of its movement.



Effects on the vegetation

- lack of natural vegetation.
- change in the region's main plant species and distribution.
- the failure of the proliferation of some types of plants
- Lack of agricultural crop production



Effects on animal

- change in animals number and distribution in the region.
- change in the composition of herds of wild animals .
- lack of animal production.
- change in the habitats of wild animals



Socio-economics effects

- change in the circumstances and social conditions in general.
- change in the conditions of public health.
- an increase in conflicts in the relations between population groups in the region.
- change in the pattern of population stabilization and migration and displacement.
- Increased poverty of farmers and shepherd in the region



Effect of climate change in Health



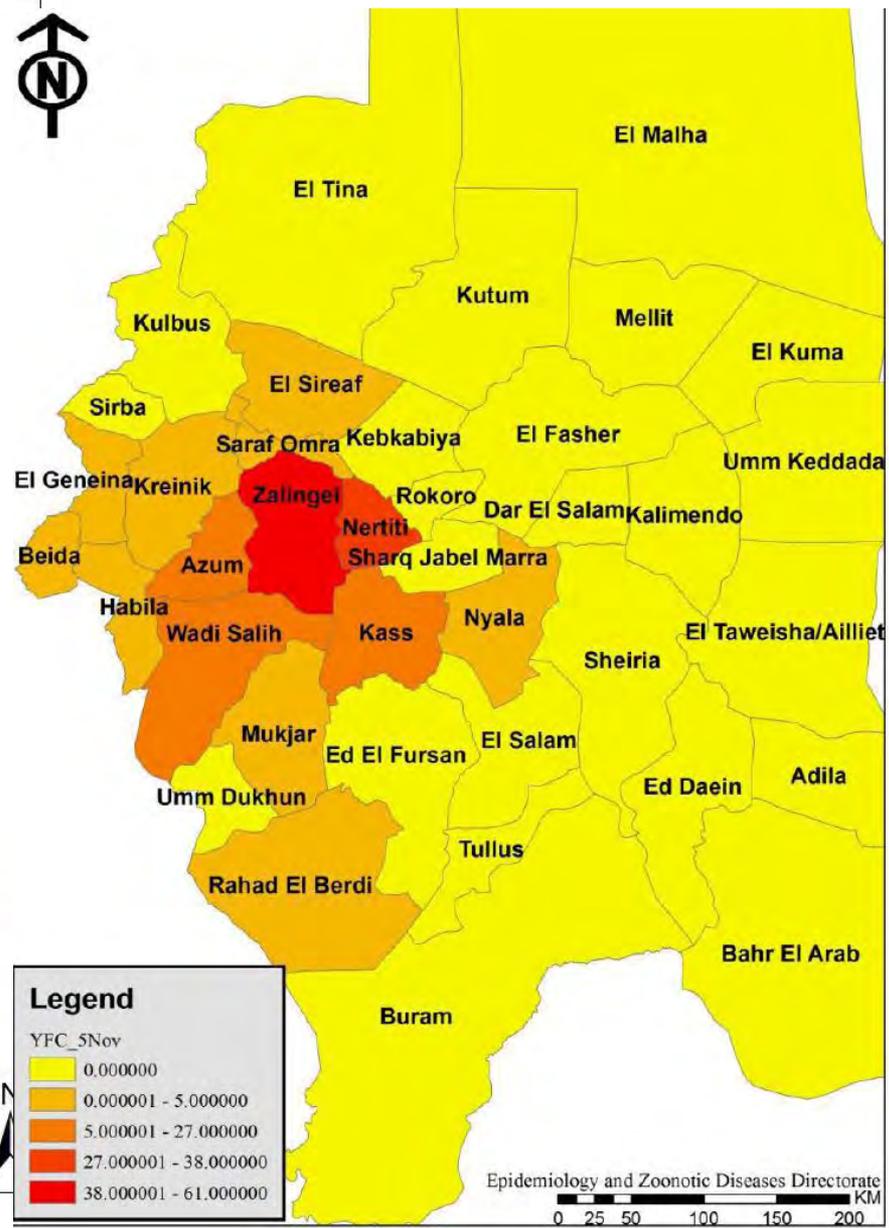
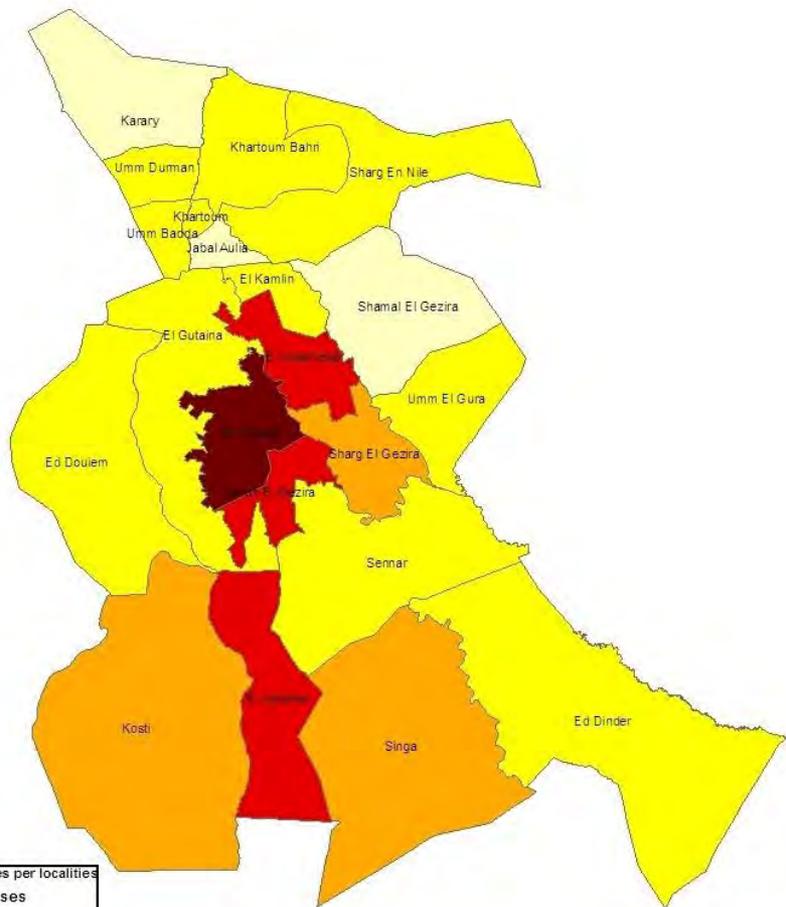
Climate change & Vector Borne Diseases

- Sudan carries a disproportionate share of the regional and global burden of vector-borne diseases. Eleven per cent of the global burden due to vector-borne diseases is found in countries of the Eastern Mediterranean where only 8% of the global population lives. Fifty percent of the regional burden (i.e 6% of the global burden) is found in Sudan.

- The literature to date indicates lack of strong evidence of the impact of climate change on vector-borne diseases (i.e. malaria, dengue, leishmaniasis, Rift valley, etc). New approaches to monitor the full latitudinal and altitudinal range of specific vector species are necessary in order to provide convincing direct evidence of climate change effects.

- Sudan's NAPA identified health among the sectors most vulnerable to climate change, with an expected significantly increased risk of malaria under climate change (NAPA, 2007) It is therefore important to determine, whether and how, climate change is affecting malaria and other major VBDs vector borne diseases as well

Map shows the distribution of Rift Valley Fever Cases in Sudan Localities during the period



RVF Cases per localities

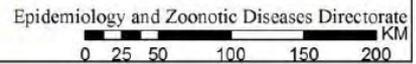
RVF_Cases
0
1 - 25
26 - 50
51 - 75
76 - 105



Legend

YFC_5Nov

0.000000
0.000001 - 5.000000
5.000001 - 27.000000
27.000001 - 38.000000
38.000001 - 61.000000



Epidemiology and Zoonotic Diseases Directorate



- **Key adaptation Activities in Agriculture**
- The major adaptation activities and needs that have been identified across the five ecological zones in the Sudan are as follows:

Key adaptation Activities in Agriculture

- Community-based forest and rangeland management and rehabilitation.
- Replacement of house goat herds with sheep herds to reduce pressure on fragile rangeland.
- Lessing of pressure on local forests through use of mud brick building design and alternative energy sources.
- Land use conservation from agricultural activities to livestock raising.
- Strengthening of agricultural and veterinary extension services including demonstrations

Key adaptation Activities in Agriculture

- Introduction of drought resistant seed varieties, poultry and fish production.
- Afforestation of areas denuded of trees for building construction and firewood.
- Drought early warning systems for disaster preparedness.
- Extension services in agricultural capacity strengthening for small scale farmers.
- Protection and or rehabilitation of rangelands including construction of shelterbelts to reduce windstorm impacts.

Key adaptation activities in water resources



- A summary of the priority adaptation activities and needs that have been identified across the five ecological zones in the Sudan are as follows:

Key adaptation activities in water resources

- Introduction of new water harvesting / spreading techniques making use of intermediate technologies.
- Promotion of greater use of effective, traditional water conservation practices.
- Rehabilitation of existing dams as well as improvements in water basin infrastructure
- Introduction of water conserving agricultural land management practices.
- Construction of dams and water storage facilities



Key adaptation activities in water resources

- Improvement of access to groundwater supplies by human and animals through installation of water pumps.
- Enhancement of capabilities of regional meteorological stations to monitor hydro-climatic variables.
- Introduction of a revolving micro-credit fund to support implementation of small water harvesting projects.
- Extension services in capacity strengthening in water capture and storage techniques for small-scale farmers.

Thank you

