Space Technologies in Sudan

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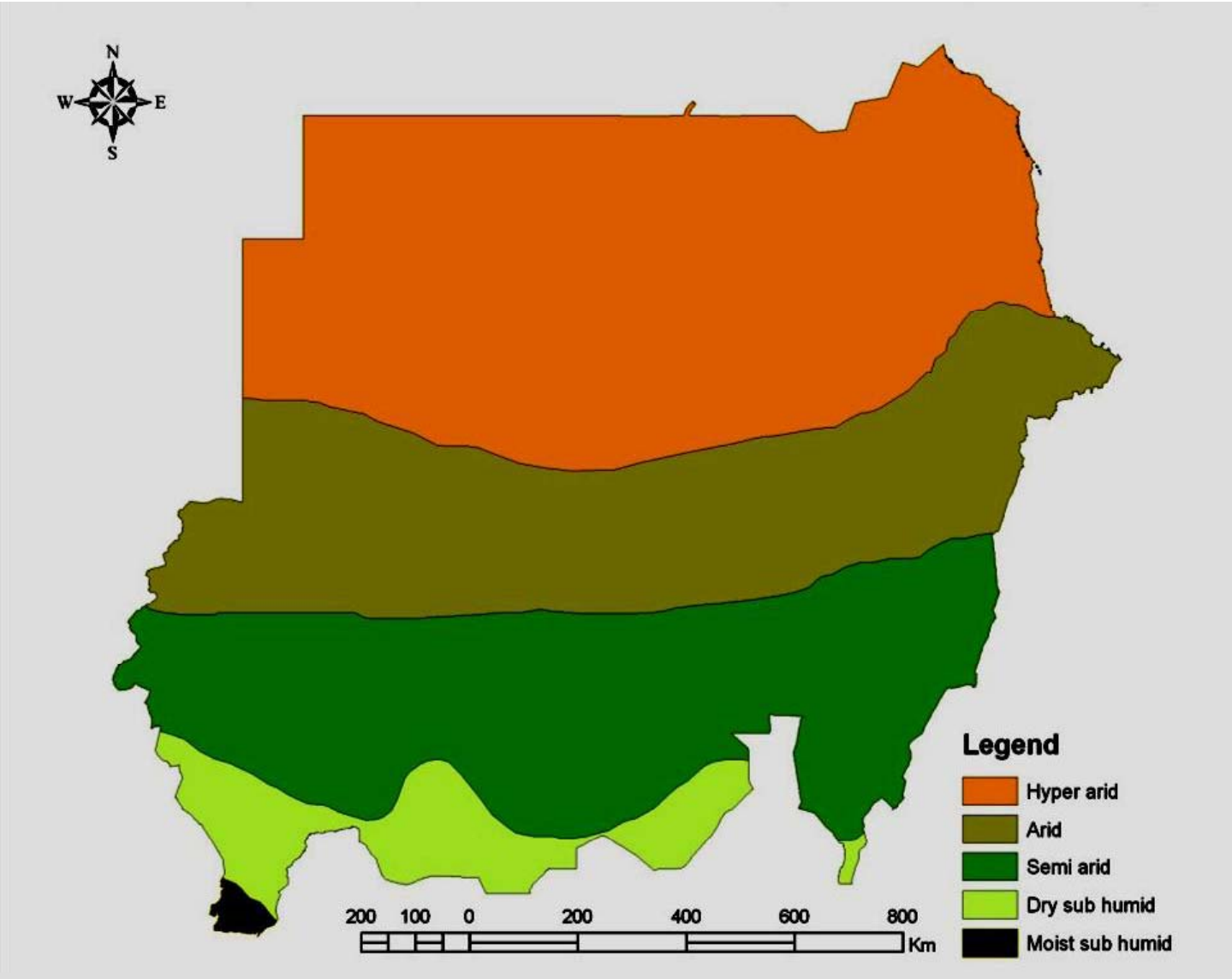
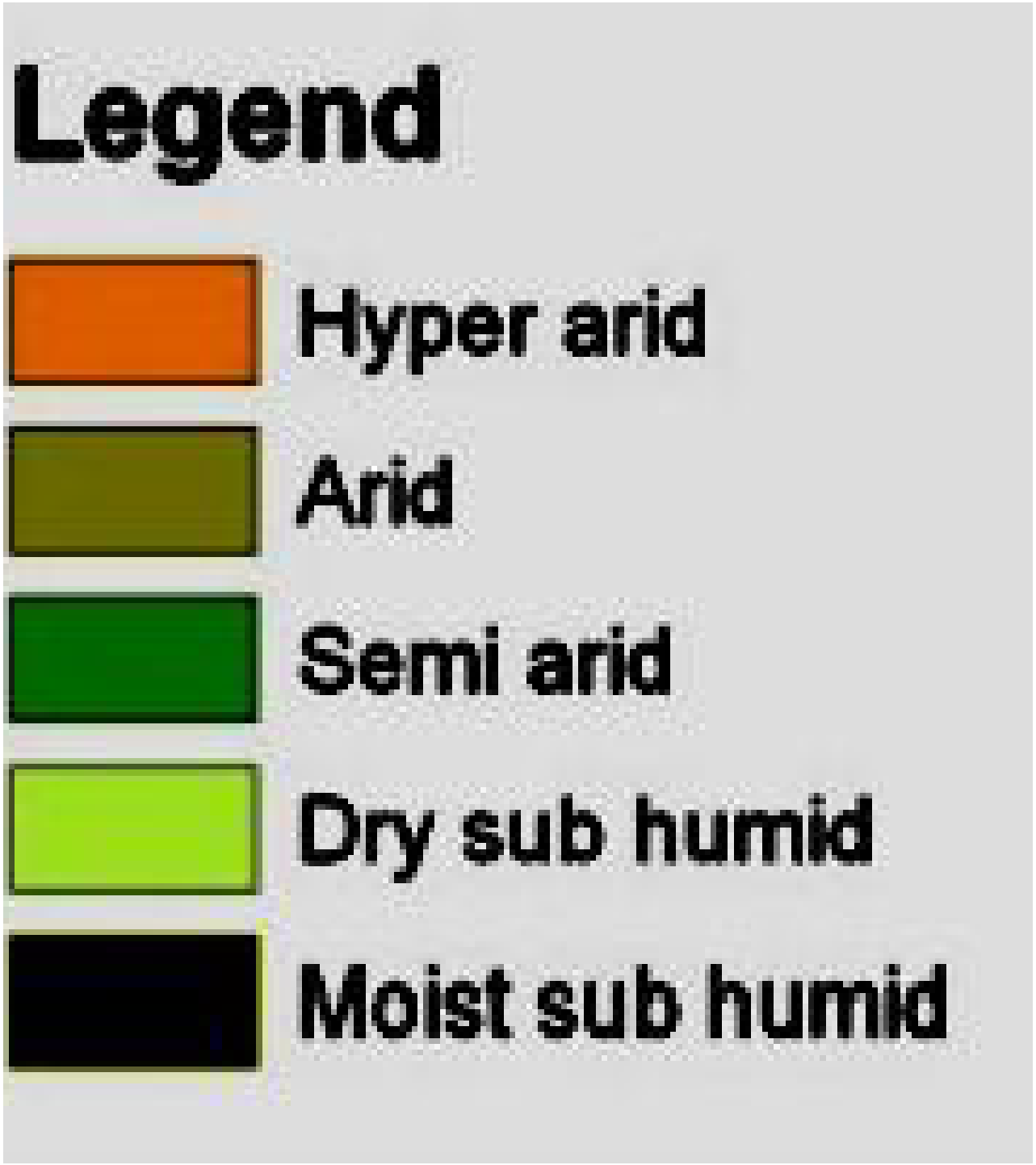
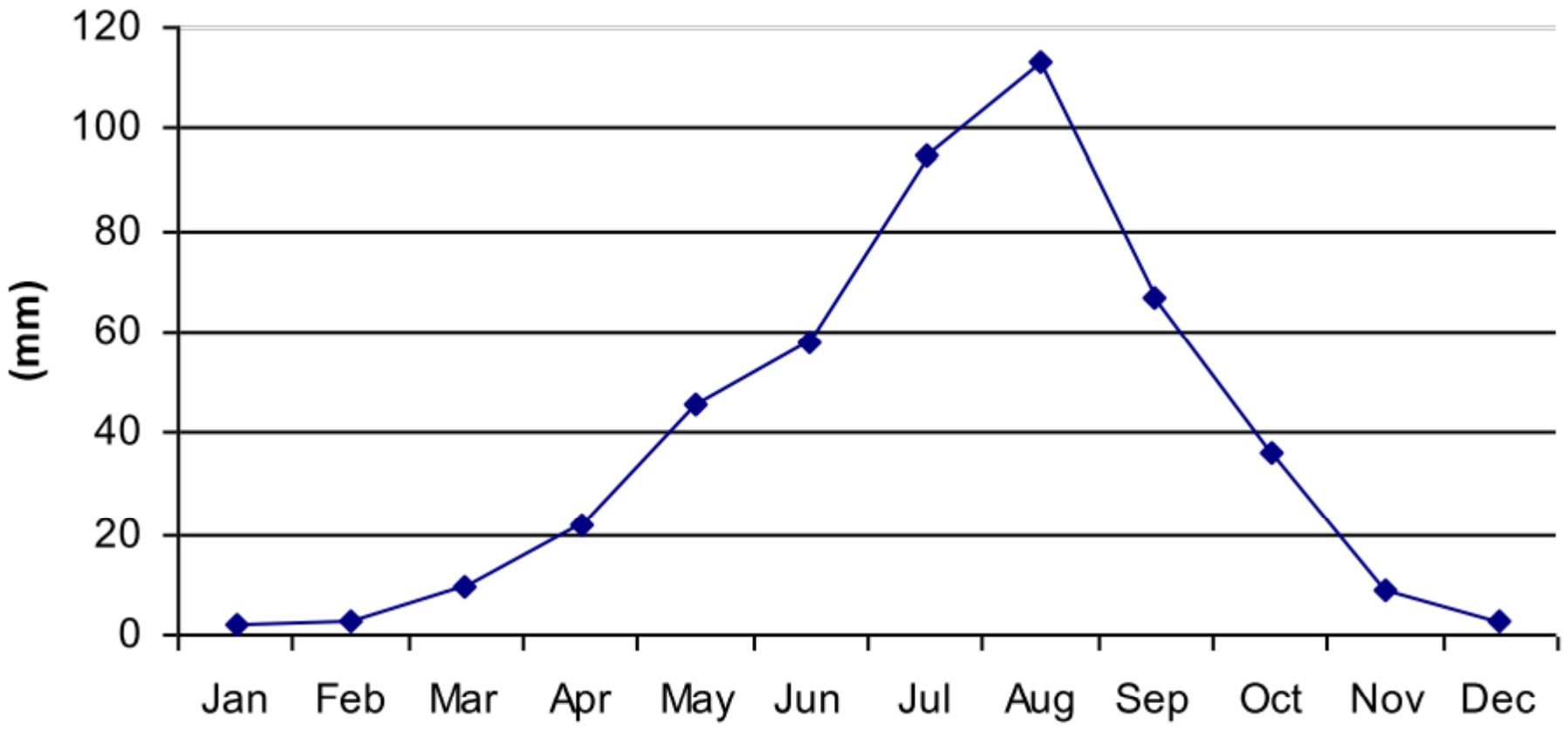
Sudan Climatic Zones




Legend
Hyper arid
Arid
Semi arid
Dry sub humid
Moist sub humid

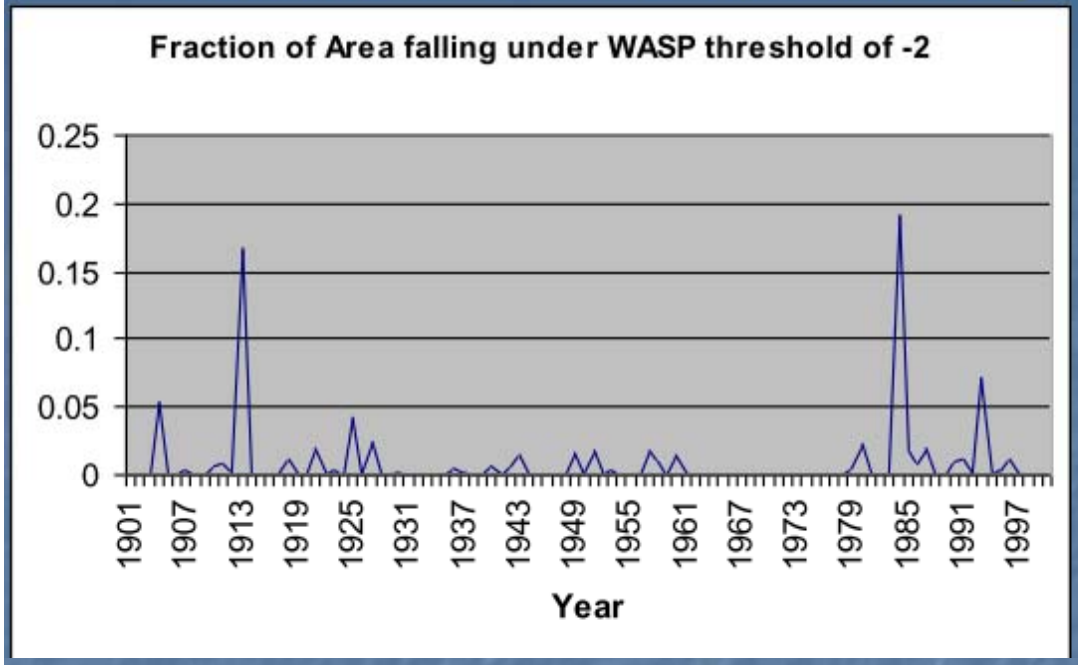
Sudan Monthly Distribution of Precipitation



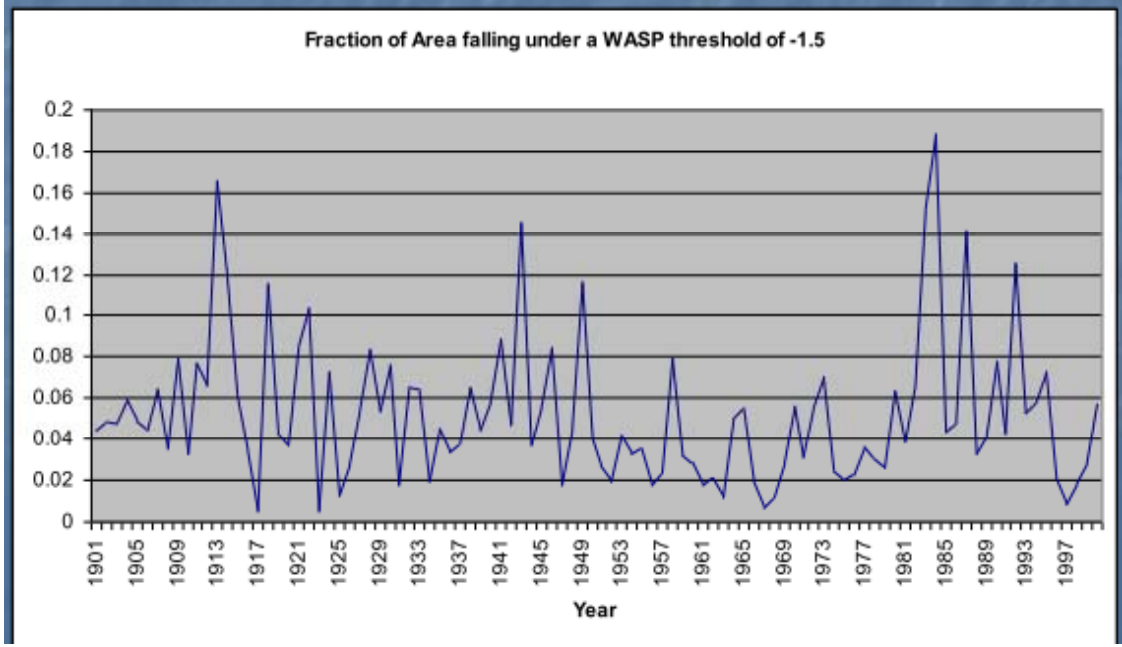
Drought Impact Situation in Sudan

Year	Drought Coverage	Consequence
1906	Affecting all Sudan	Severe famine
1984/85	Localized (part of Sudan)	Severe famine
1989/90	Localized (part of Sudan)	
1997	Localized (part of Sudan)	
2000	Localized (part of Sudan)	
2003	Localized (part of Sudan)	**food shortage in some**
2011	Affecting most of South **country**	**food shortage in some areas**

Sudan Climate Variability: Droughts over Time



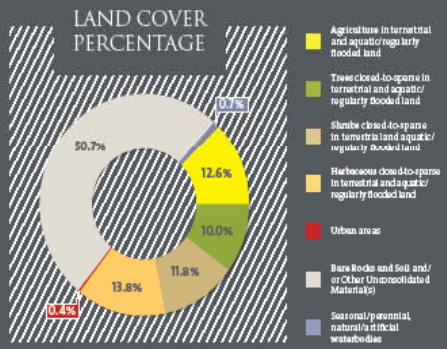
Extreme Droughts



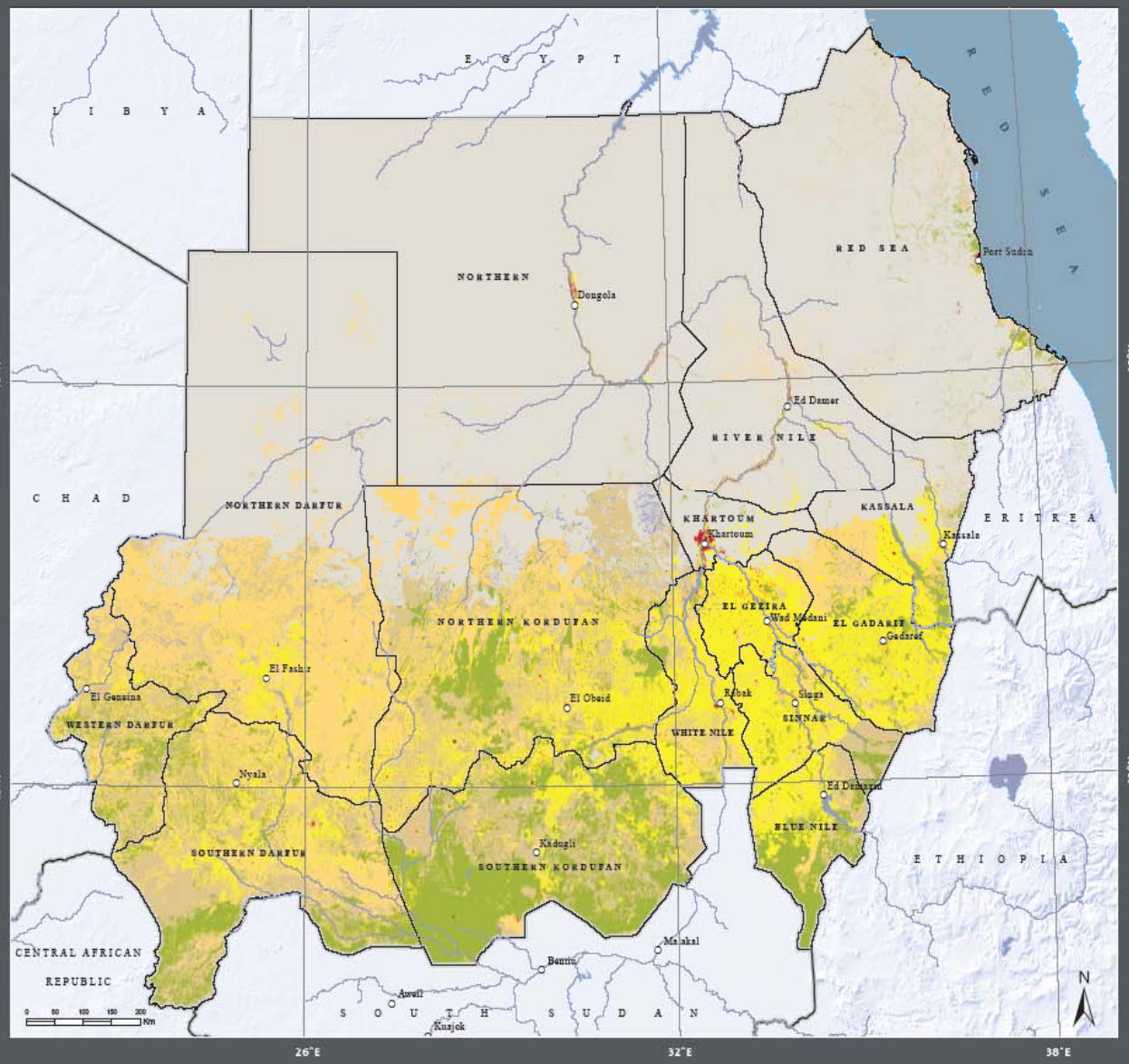
Intermediate Droughts

WASP – Weighted Anomaly of Standardized Precipitation (Columbia Univ., IRI)

THE LAND COVER OF *Sudan*



The land cover database was produced in the framework of the Sudan Institutional Capacity Programme: Food Security Information for Action (FSIA), a Government of Sudan programme funded by the European Union (EU) and implemented by the Food and Agriculture Organization of the UN (FAO), with the technical assistance from NRL-FAO (Natural Resources and Environment, Land and Water division). The database was a collaborative effort between FAO and Government line ministries, including the Food Security Technical Secretariat (FSTS) of the Ministry of Agriculture and Irrigation, the Remote Sensing Authority (RSA) of the Ministry of Science and Technology, and the Forests National Corporation (FNC) of the Ministry of Environment.



The presentation will cover the :

- Sudan Climatic Zones
- Drought Impact Situation in Sudan
- Space Technology centre in Sudan
- Young Space Activities Overview in Sudan
- Satellite Receiving Station
- Recently in Sudan
- Sudan land cover atlas
- Agriculture sector
- Benefits of space Technology
- The country needs of the space technology

Space Technology centre in Sudan

- The centre was established in computer Man College in year 2000. The centre provides consultancy for local and international companies in Sudan .In addition; the centre gives a technical support in space technology infrastructure development for Sudan and some African nations.

Young Space Activities Overview in Sudan

- In Sudan these activities are still in their first steps. The governmental space program is mainly represented by the Remote Sensing Authority and the Sudan Institute for Natural Resources.

Satellite Receiving Station

- The Satellite Receiving Station receives images from satellites which can be used for studying the atmosphere, for example clouds and weather phenomena the , sea temperatures and the surface features of the land.

Recently

The government has begun to study the establishment of the **Sudan Space Agency**, which will be a significant step for space sciences in Sudan working towards participating effectively in the development of the country.

Also some engineers are starting to work in designing a small satellite for multipurpose use as a new innovation and this is under discussion.

Sudan land cover atlas

- FAO launches new Sudan land cover atlas
- April 18th, 2012 KHARTOUM: A new land cover atlas of Sudan shows that less than 13 percent of land is used for agriculture. More than 50 percent is desert, 10 percent is covered by trees and a tiny 0.7 percent is covered by water.

- The atlas is also being used for a study of the supply of wood fuels in Sudan, called WISDOM (Woodfuel Integrated Supply and Demand Overview Mapping), that will help in sustainably managing the renewable natural resource.

- The atlas is based on an updated database of high-resolution satellite images that have been analyzed and categorized by FAO experts and(Sudan Integrated Food Security Information for Action) SIFSIA-trained government specialists.
- The atlas is divided into maps of each state of the country

- The atlas provides a detailed view of Sudan's natural land cover such as vegetation, bare rock, soil and water. It shows a great expanse of desert across the north speckled with pockets of settlement, agriculture and tree coverage. In the south-east indicate agricultural intensity ,agriculture trace and the River Nile's path from south to north.

- The atlas is used to identify available agricultural land and pastures and to monitor water sources, land degradation and climate change It will significantly assist planning and environmental policy decision making in Sudan.

Agriculture sector

- Sudan area is1.949million square kilometers.
- Sudan population is about 32millions.
- Annual rainfall amount exceeds 800mm in the South and below 100 mm in the extreme north the country.
- Three major types of agricultural systems are practiced in Sudan:
- (1)Irrigated agriculture,
- **(**2)Mechanized rain-fed agriculture, and
- (3)Traditional rain-fed agriculture**.**

- Agriculture sector is expected to be significantly impacted by climate change, in many cases negatively affecting rural populations and food security, unless urgent action is taken both to reduce the rate of climate change and also adapt agriculture to changing climatic conditions such as water availability.

- Through Space technology should explore the ways in which mitigation and adaptation benefits can be derived from the careful design and management of agricultural systems and surrounding landscapes.

Benefits of space Technology

- The use of any technologies has been proven useful in mapping vulnerability to climate change in Sudan and it shows the importance of using maps show areas subjected to climate change and those projected to be impacted most in the future to climate variability .

- The use of the space technology to identify vulnerable areas and what sectors are going to be impacted most(water, agriculture and livestock, health etc).

- Improve the peaceful uses of outer space
- The use of science and technology for the economic and social development of the country.
- Conducts training courses, workshops, seminars ,

- And other activities on applications and capacity building in subjects such as:
- *R*emote sensing,
- Communications,
- Satellite meteorology,
- Search and rescue,
- Basic space science,
- Satellite navigation and space law.

The country needs of the space technology

- space technologies have a central role to play in providing early warning to communities that are at risk to incorporate the use of space technology-based solutions so there is a need to increase awareness on the space- technologies.

A need to build national capacity and also develop solutions that are appropriate to the needs of the country.

A need to strengthen international and regional cooperation

- Climate change mitigation and adaptation actions related to agriculture a need to be integrated into strategies to help the sector adopt more sound land use options and the use of soil conservation techniques

Space technologies into operational programmes in Sudan a need to focus on:

- Natural resources management,
- Environmental monitoring
- Disaster management.

THANK YOU

- RERENCES

1- Policy Recommendations for

Agriculture and the NFCCC Eighteenth meeting of the Conference of the Parties 26 November – 7 December, 2012 Doha, Qatar

2- The Use of Space Technology in the Sudan

Meteorological Authority

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3-Land Cover as a Base for Food Security in Sudan

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