



AMESD/MESA & GMES and Africa

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AUC-REA

Outline

- Background
- MESA: objective and expected results
- Thematic actions & services

Some concerns about natural resources

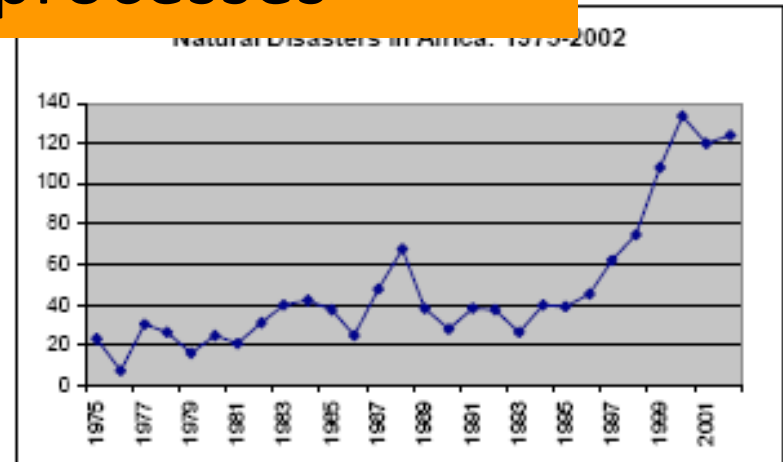


- Land degradation

Inform and influence policies and decision-making processes



- Overgrazing
- Wild fires
- Habitat degradation
- Species extinction
- Depletion of fish stocks
- Increased frequency, magnitude & impact of disasters



Source: Vordzorgbe 2003

Monitoring for Environment and Security in Africa (MESA)

- Uses GIS applications, space-based and *in situ* EO data and information products for environment, security & SD
- Builds on the Meteorological Transition in Africa (MTAP/PUMA) & AMESD projects
- EU- Funded (10th EDF): €37M; Timeframe: 2013-2018
- Technical support from JRC & EUMETSAT
- Coverage: Five sub-Saharan Africa Regions & Continental
- RICs/CIC for the implementation of MESA:

Region	IC
CEMAC	CICOS
ECOWAS	AGRHYMET
	University of Ghana
Continental	ACMAD

Region	IC
IGAD	ICPAC
IOC	MOI
SADC	BDMS

MESA Objective & Purpose

- ❑ **Overall Objective:** To support African decision-makers and planners in designing and implementing national, regional and continental policies and development plans towards sustainable development, thereby advancing the socio-economic progress and well-being of African populations towards achievement of the Millennium Development Goals (MDGs)
- ❑ **Purpose:** To increase the information management, decision-making and planning capacity of African continental, regional and national institutions mandated for environment, climate, food security and related responsibilities by enhancing access to and exploitation of relevant Earth Observation applications in Africa

Expected Results (1)

1. Improved and sustainable access by African stakeholders to EO data and information at continental, regional and national levels
 - Infrastructure: installation, upgrading, repair
 - Enabling environment: relevant policies; and agreements and licences with data providers (e.g. European/African ones)
2. Improved EO data and information services that contribute to better decision-making and planning at continental, regional and national levels
 - New and improved services for THEMA established under AMESD (e.g. climate services, and forest information)
3. Promote **cross-fertilisation** (geographically & thematically) among regions on the African continent and with European partners, and pursue the **continentalisation of services**

Expected Results (2)

4. Strengthen political and policy development frameworks for use of EO to ensure an active and sustainable participation of African stakeholders in initiatives concerning EO for environment and security
5. Capacity development and training of African stakeholders at continental, regional and national levels

MESA Thematic Actions

<i>Regional Economic Community - REC</i>	<i>Regional Thematic Action - THEMA</i>	<i>Regional Implementation Centre – RIC</i>
CEMAC	Management of Water Resources (for fluvial transportation and environmental assessment)	CICOS, Kinshasa
ECOWAS	Water Management for Cropland and Rangeland Management	AGRHYMET, Niamey
ECOWAS	Coastal and Marine Resources Management <i>NEW</i>	University of Ghana
IGAD	Land Degradation Mitigation & Natural Habitat Conservation & <u>Forest Information System</u> <i>NEW</i>	ICPAC, Nairobi, with support from RCMRD and another centre Tbd
IOC	Coastal and Marine Resources Management	MOI, Quatre-Bornes
SADC	Agricultural and Environmental Resource Management	BDMS, Gaborone
Continental	Support to Climate Services (Climate Change Monitoring) <i>NEW</i>	ACMAD

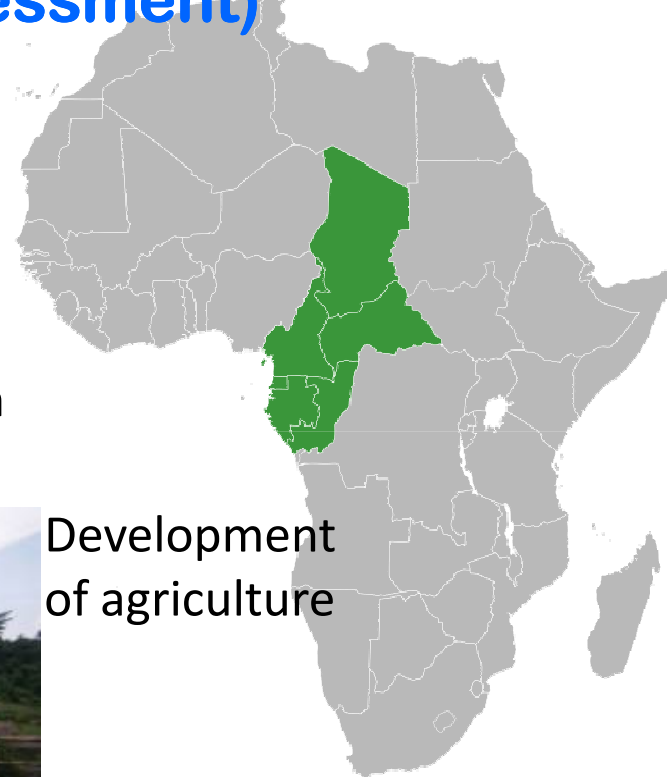
CEMAC: Concerns

Management of Water Resources (for fluvial transportation and environmental assessment)

Improve river navigation



Biodiversity Conservation



Forest management



Development of agriculture

Infrastructure development (water, energy, etc.)

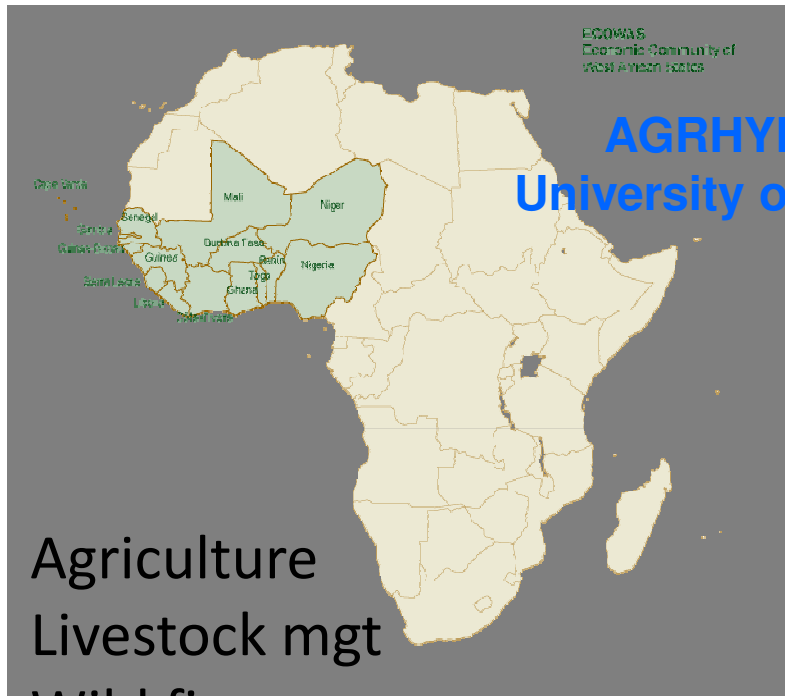


CEMAC: Services

- Service 1: Early warning system of water levels in the major sub-basins of the region
- Service 2: Monitoring the hydrological cycle in the major sub-basins of the region
- Monitoring water balance of the major sub-basins of the region
- Estimation & monitoring of flooded forest in the central basin areas



ECOWAS (1): Water Management for Cropland and Rangeland Management



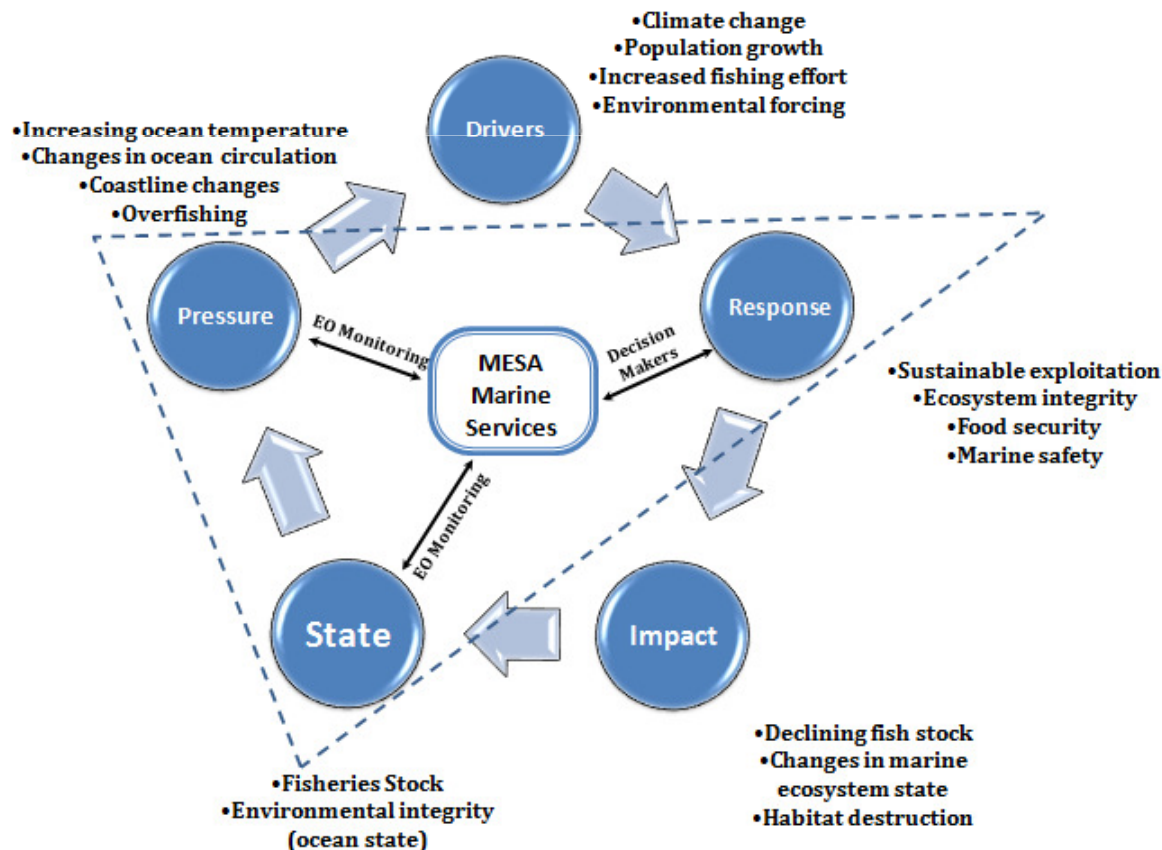
- Agriculture
- Livestock mgt
- Wild fires

- Fisheries resources
- Coastal erosion
- Coastal & marine pollution
- Marine met & oceanography

- Near real time monitoring of water bodies for livestock mgt
 - Periodic reporting on seasonal trends in water resources and soil humidity
 - Status Reports on small water bodies, key lakes and rivers (Chad, Volta, Niger, Senegal and Gambia, Mano basin, etc)
- Cropland monitoring for yield estimation and seasonal follow-up (Early Warning)
- Rangeland monitoring and primary biomass production estimation for livestock mgt
- Wild fires

ECOWAS (2): Coastal and Marine Resources Management

Integrated model for resource mgt (DPSIR) framework

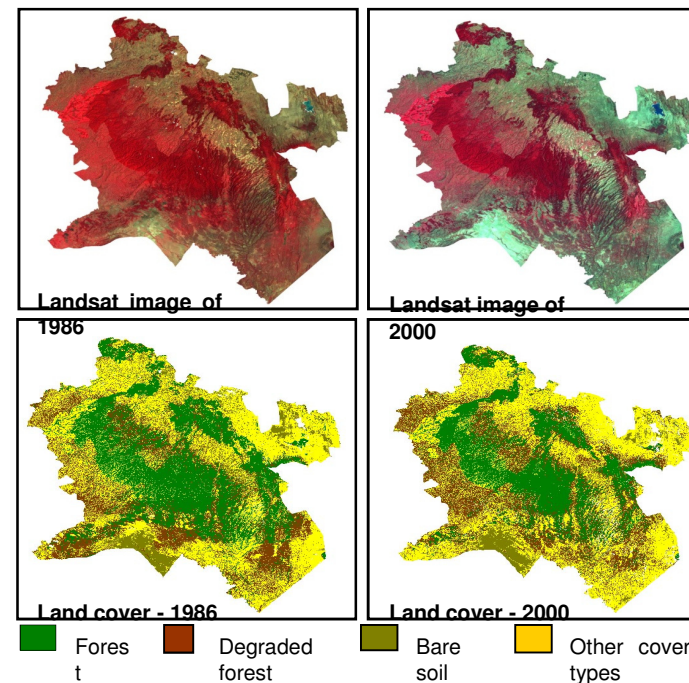


- Marine meteorology & oceanography (winds, waves, currents, forecast, sea surface temperature, etc)
- Fisheries resources monitoring & management
- Coastal and marine pollution monitoring & management
- Marine transport & maritime security
- Coastal erosion monitoring (sea level rise, erosion risk assessment and reporting, etc)
- Monitoring of soil & water conditions for agriculture

IGAD

Thematic Action: Land Degradation Mitigation & Natural Habitat Conservation & Forest Information System

- Natural habitat Conservation
- Forest Monitoring
- Land Degradation



Cover area changes over the Mau complex 1986-2000

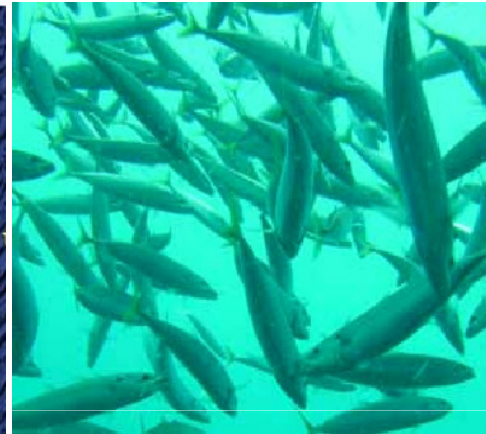
Area of forest in 1986 = 4,350.7 Km²

Area of forest in 2000 = 3,516 Km²

Deforested area = 824.7 Km²

Average rate of deforestation = 58.9 Km²/year

IOC: Coastal & Marine Resources Management



IOC: Services

- Service 1 – **Marine Resources Management**
 1. Oceanographic charts for detection of Potential Fishing Zones (PFZ);
 2. Monitoring of Oceanography Variables (Biological and Physical);
- Service 2 – **Monitoring of Coastal Environment**
 1. Wave and Surge Monitoring;
 2. Coastal Area Management



Coastal and Marine Areas

Buoys



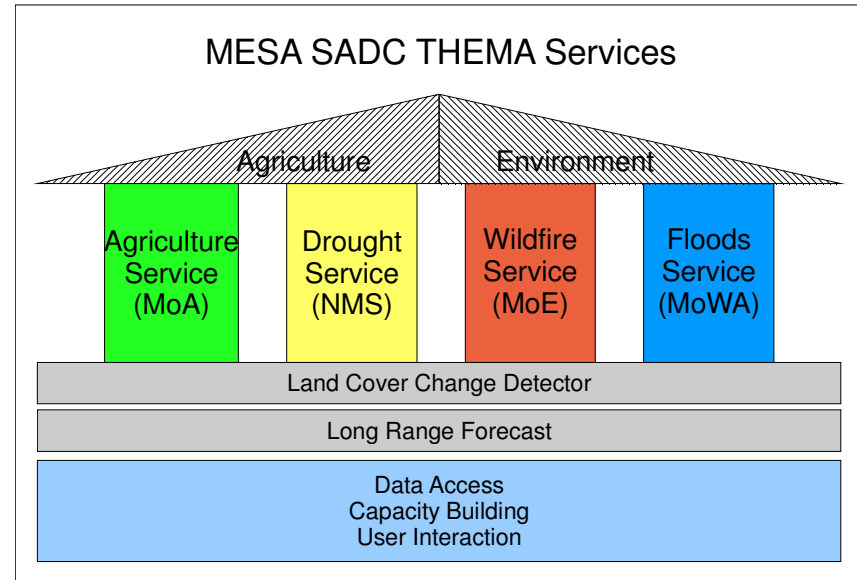
SADC



Agricultural and Environmental Resources Management

SADC: Services

- **Agricultural Service:** State of **crops** and **rangeland** & provide yield outlook.
- **Drought Service:** drought stress, water availability, grazing capacity, & wildfire
- **Wildfire Service:** prediction of wildfire risk (before), active wildfire monitoring (during) and burnt area assessments (after)
- **Floods Service:** Provide flood risk indication and a flash flood forecast (before), flood modelling (during) and flood damage assessments (after)



- A common “Land Cover Change Detector” (LCCD) and a “Long Range Forecast” (LRF) support service: Complement the Four core services and provide seasonal forecast outlook
 - LCCD provides the core services with an indication of Land Cover Change
 - LRF provides a forecast dimension at seasonal scale

Africa: Climate Change Monitoring

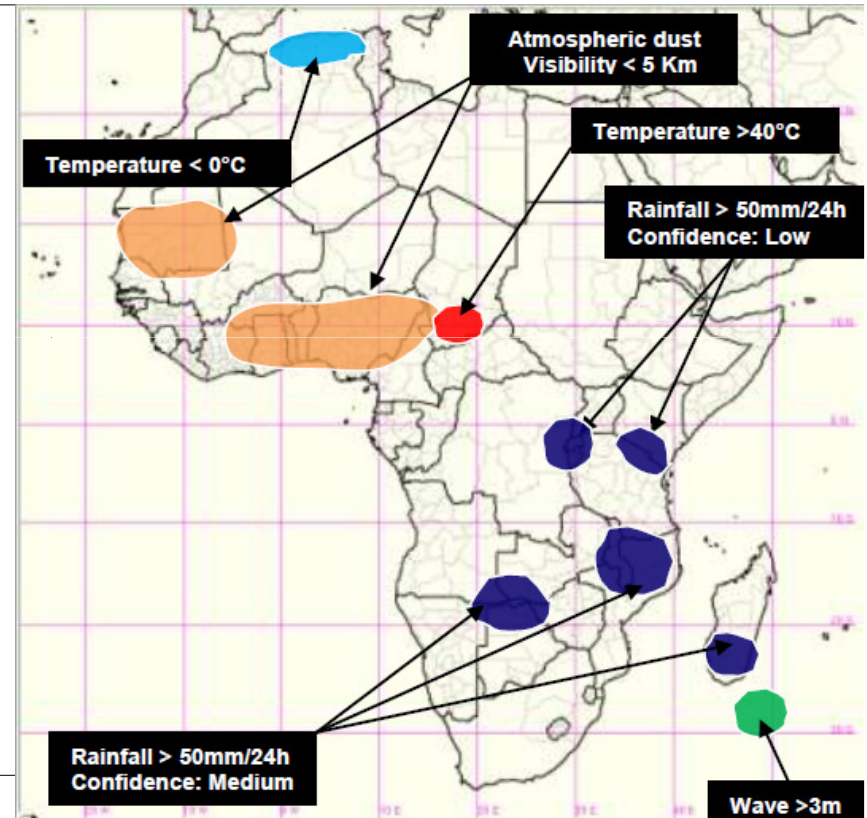
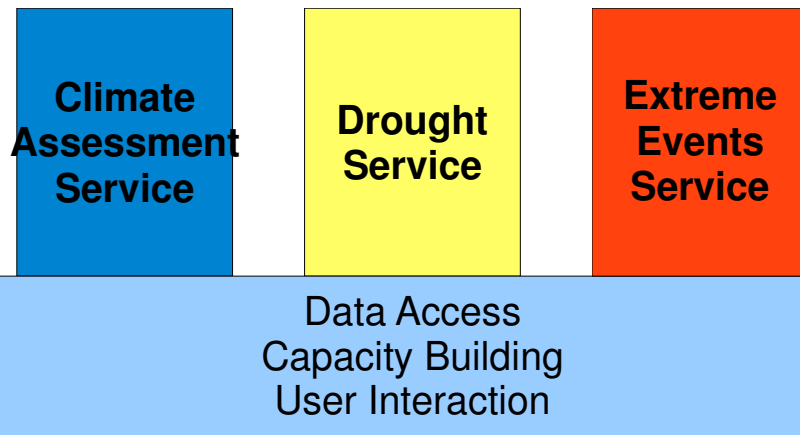
- ❑ Services (using GIS & RS analysis tools):
 - Climate Change Assessment
 - Drought Monitoring and Forecasting
 - Extreme events monitoring and forecasting:
 - Heat waves, cold waves.
 - Heavy rains and flash floods.
 - Strong winds, dust storms, cyclones...



Support to Climate Services
(Climate Change Monitoring)

Climate Services

MESA CONTINENTAL THEMA Services



Extreme Events: 05 February 2013



THANK YOU

