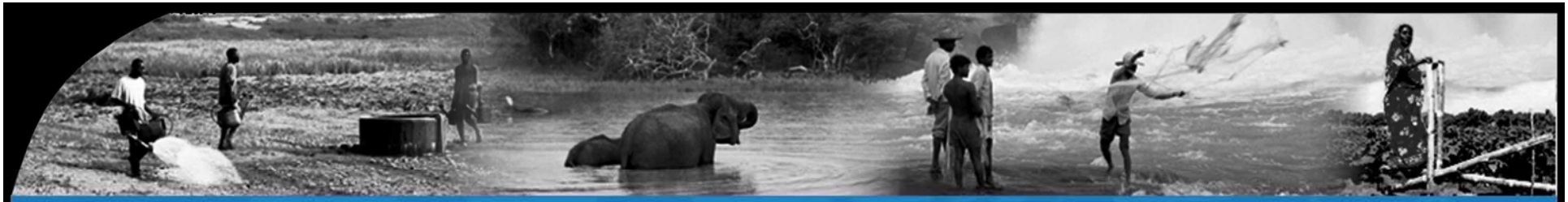


K&C Science Team Phase 1: Project Report

Lisa-Maria Rebelo

International Water Management Institute
Addis Ababa, Ethiopia

Background: Wetlands and Agriculture

- Increasing demand for water
- For sustainable use, development activities need to integrate biodiversity considerations
  - Livelihoods may be damaged
  - Freshwater biodiversity, ecosystem services lost
- 50% loss in wetland habitats globally (mainly caused by agriculture)
- Information on wetland ecosystems in Africa is widely dispersed, disorganised and largely inaccessible to decision makers

Provision of water for irrigation/HEP/drinking may impact upon integrity of wetland ecosystems and associated biodiversity. Planning to minimise potential impacts requires integration of information on distribution, ecology

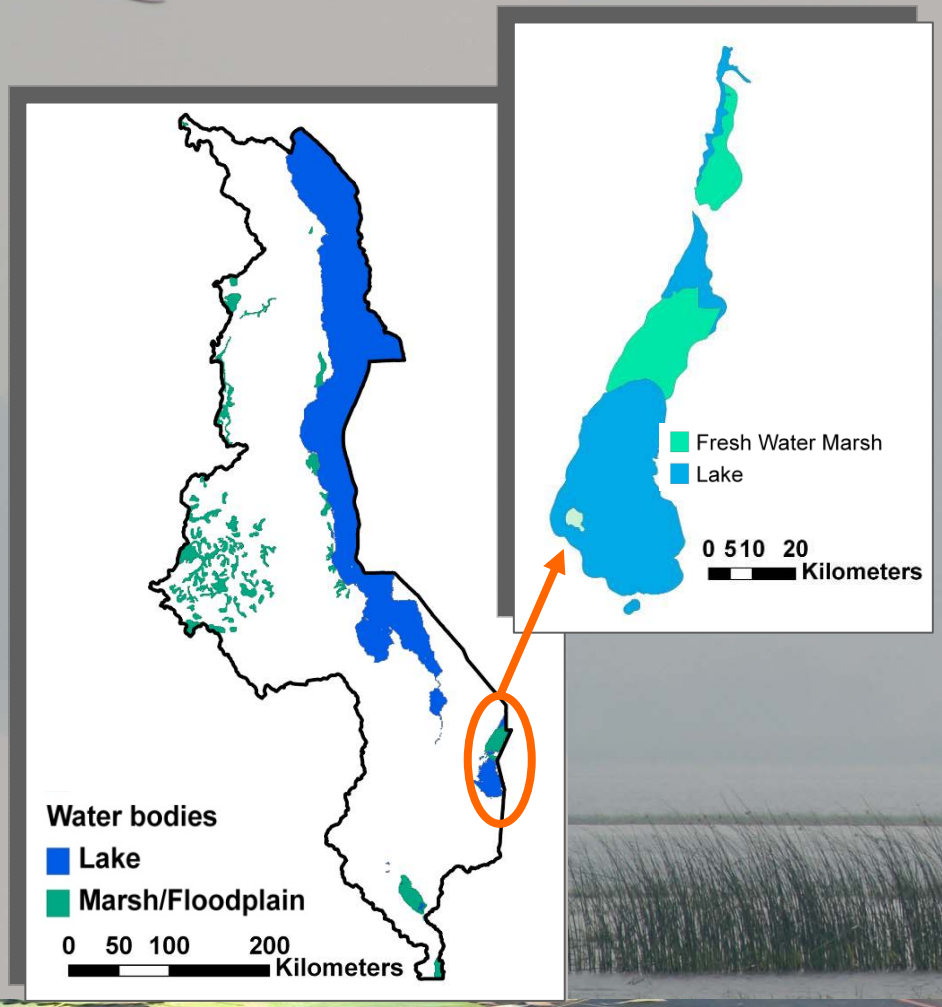
K&C Science Team: Phase 1

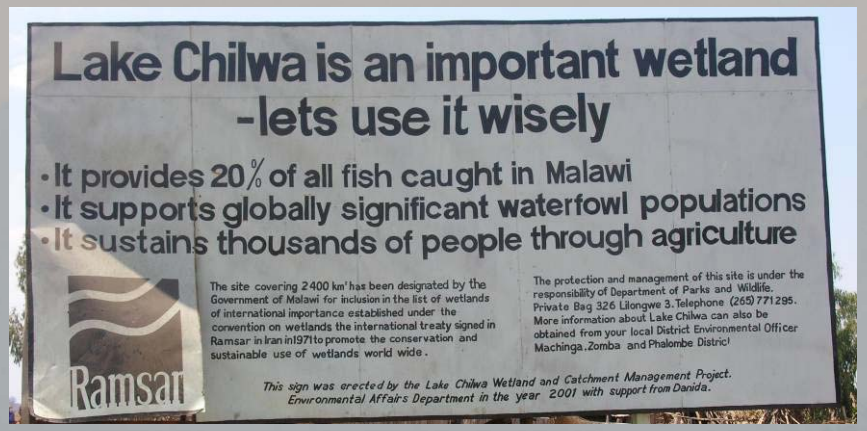
- Collaboration between IWMI, Ramsar and WI
- Mapping of globally significant wetlands to improve nature conservation, environmental protection, sustainable development
- Support the information needs posed by the Ramsar Convention on wetlands
- Focus on “prototype areas” - Africa

A non-profit scientific research organization focusing on the sustainable use of water and land resources in agriculture and on the water needs of developing countries.

IWMI works with partners in the South to develop tools and methods to help these countries eradicate poverty through more effective management of their water and land resources.

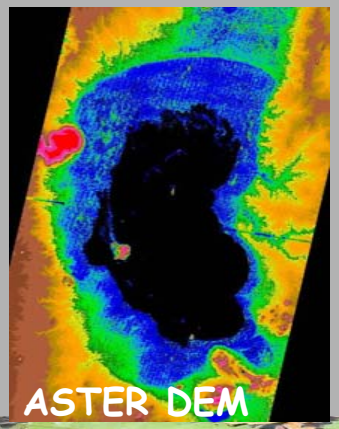
Characterisation of the Lake Chilwa wetland, Malawi

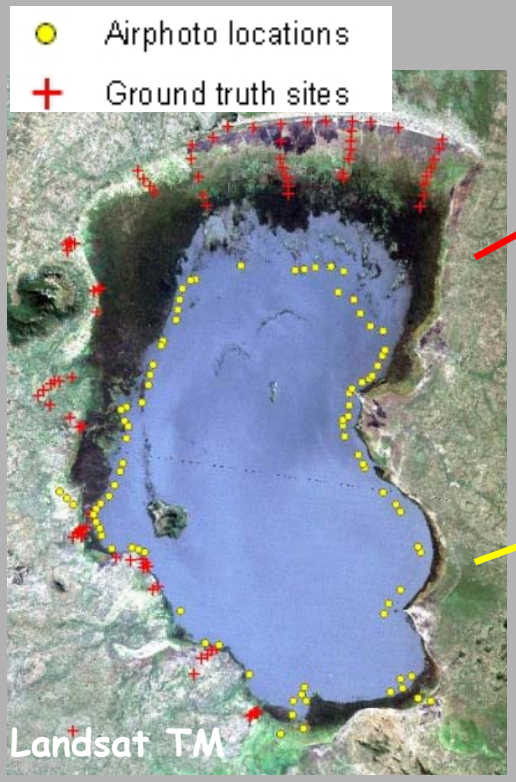




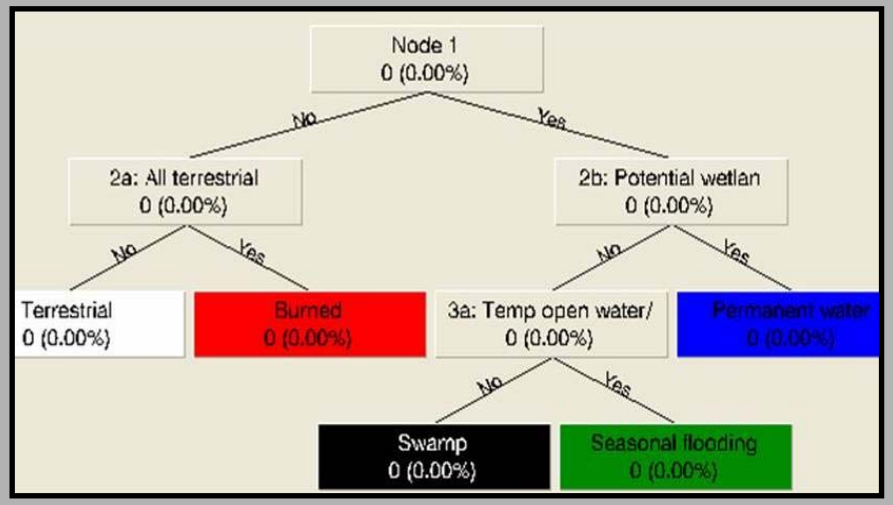
Characterisation of the Lake Chilwa wetland, Malawi

- Generate knowledge to assist in the sustainable management of wetlands
- Assist countries to put in place mechanisms that minimize degradation
- Provide baseline wetland information from remote sensing data
- Generate generic guidelines, tools and methodologies

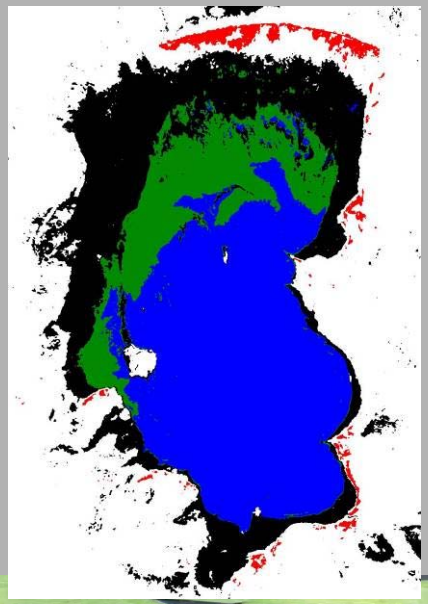




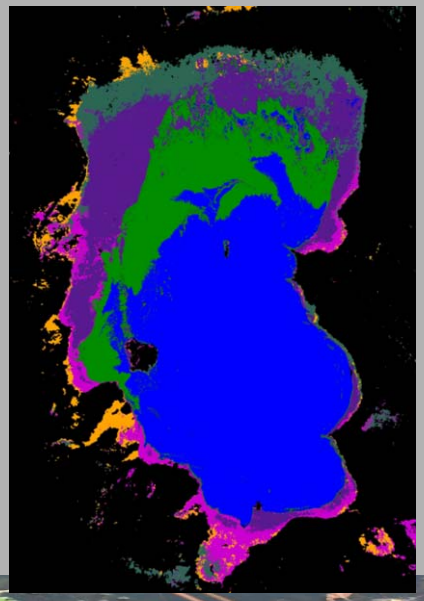
Characterisation of the Lake Chilwa wetland, Malawi



Recently burned (May 2006)
Permanent open water
Seasonal Flooding
Seasonal swamp



Broad wetland classes derived from annual flood dynamics

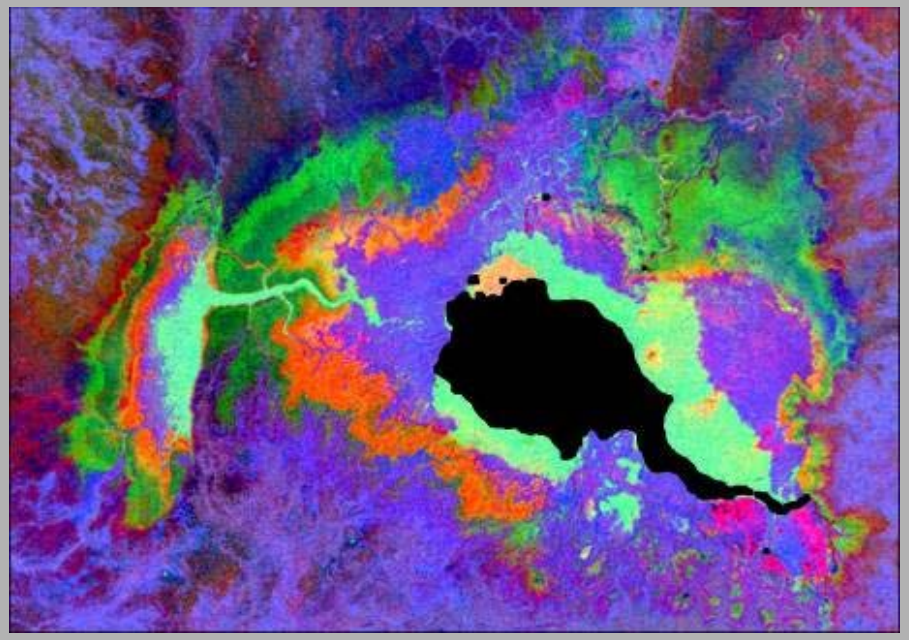


Permanent open water
Seasonal open water
Typha dominant
Vossia dominant
Sedges/tall grass
Cultivation

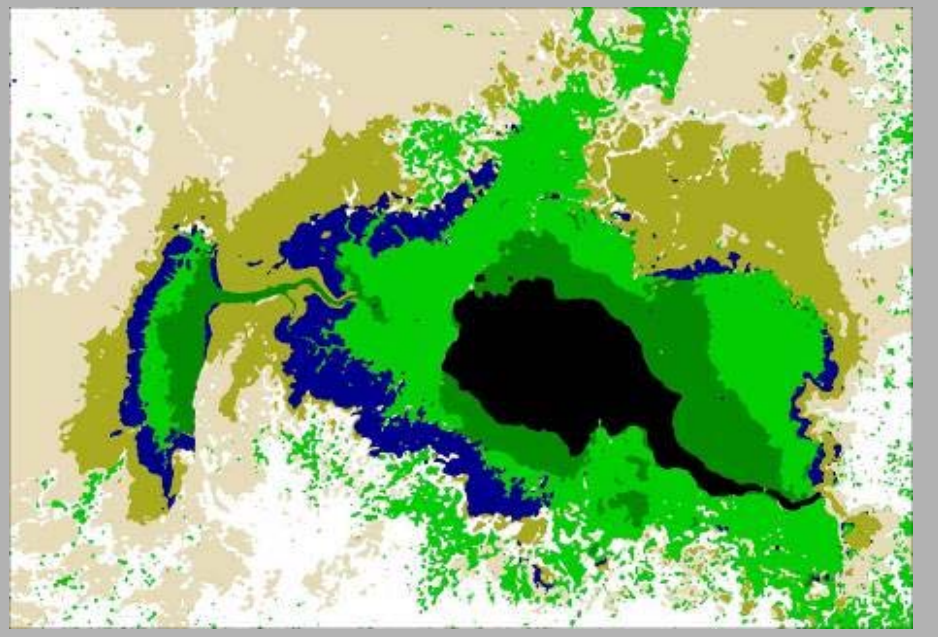
Distribution of wetland vegetation

Characterisation of the Lake Urema wetland, Mozambique

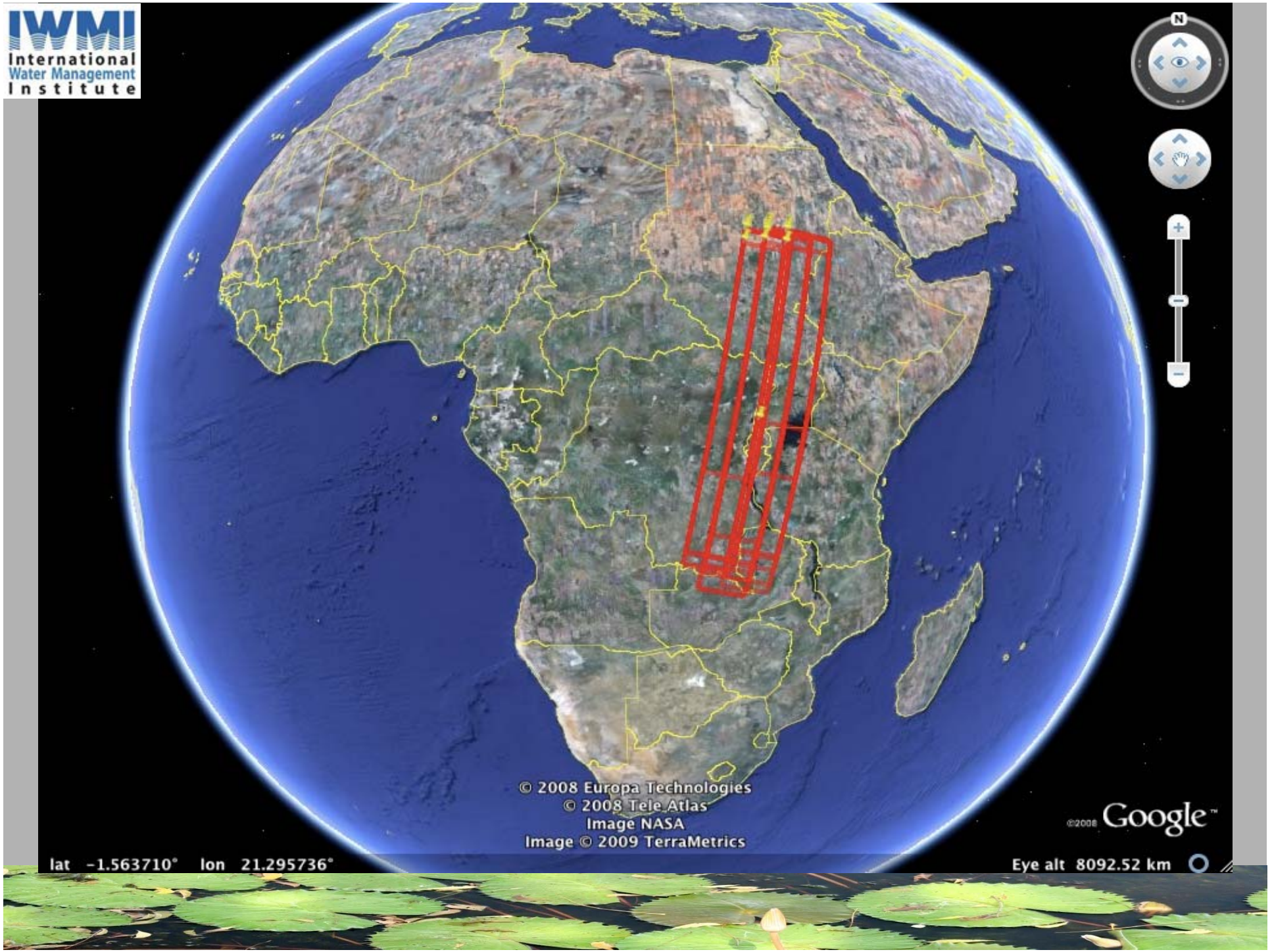
Characterisation of the Lake Urema wetland, Mozambique



PALSAR Multi-temporal dataset: Principal Components Analysis highlights flood patterns



Identification of wetland classes based on flooding regime


IWMI
International
Water Management
Institute
© 2008 Europa Technologies
© 2008 Tele Atlas
Image NASA
Image © 2009 TerraMetrics
©2008 Google
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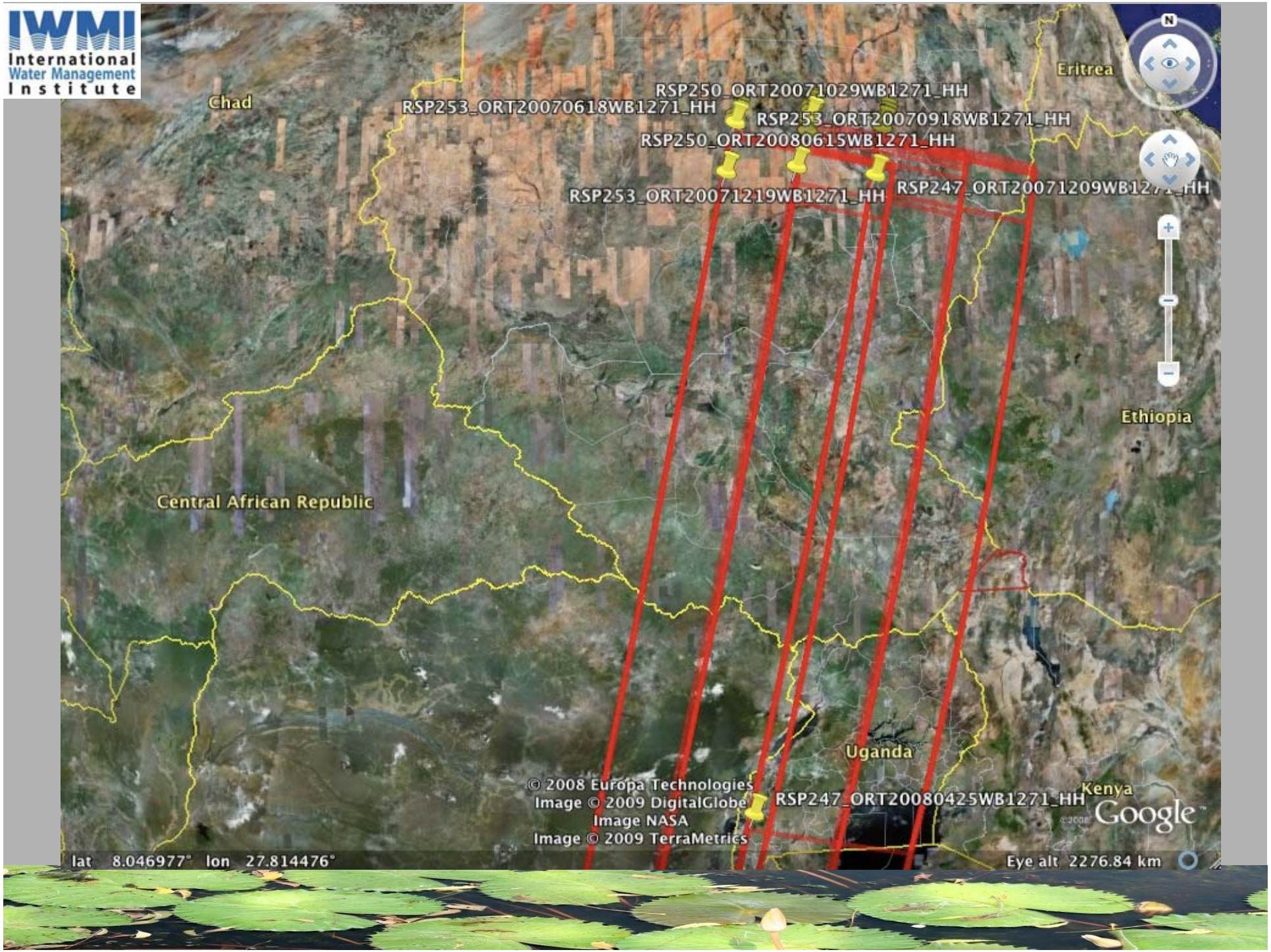
Eye alt 8092.52 km


IWMI
International
Water Management
Institute
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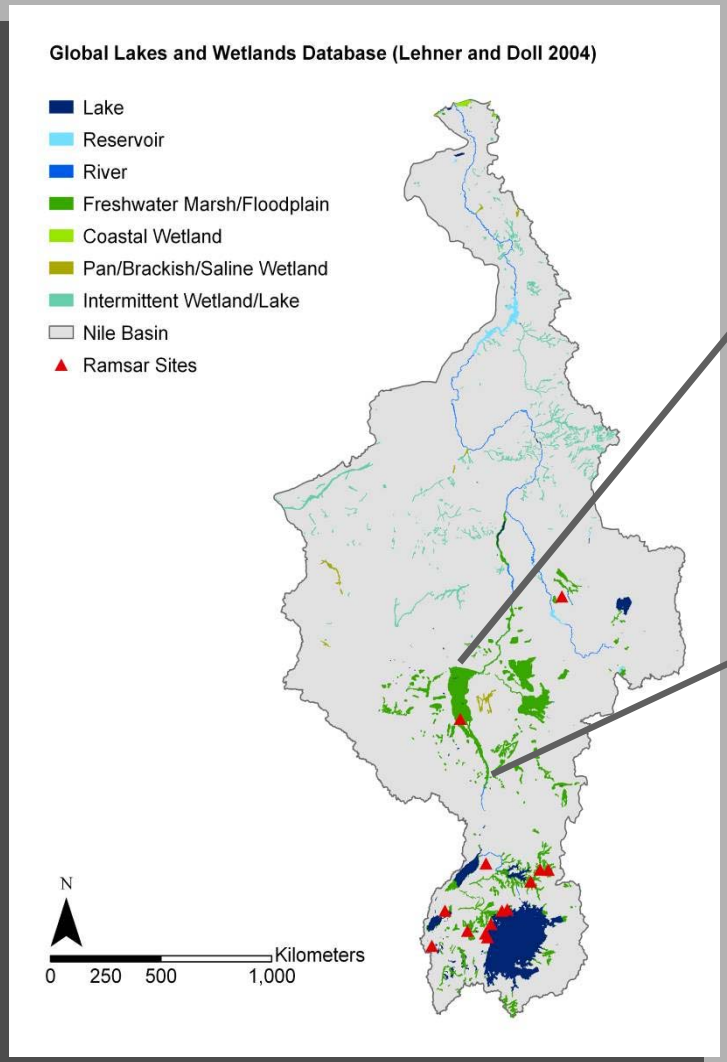
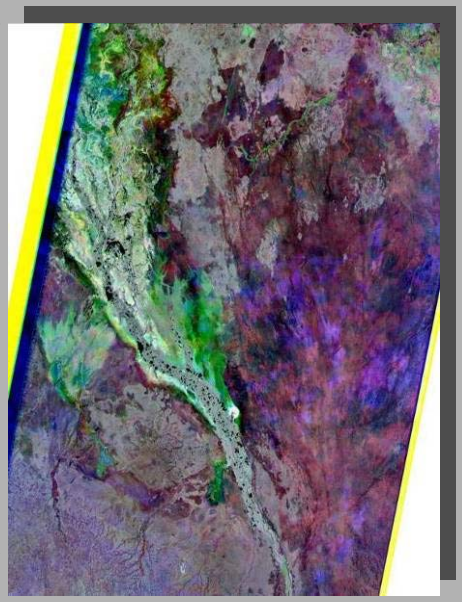
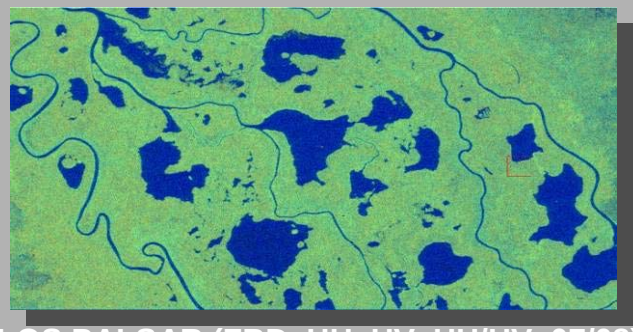
Ethiopia
Central African Republic
Uganda
Kenya
RSP247_ORT20080425WB1271_HH
© 2008 Europa Technologies
Image © 2009 DigitalGlobe
Image NASA
Image © 2009 TerraMetrics
Google
lat 8.046977° lon 27.814476°
Eye alt 2276.84 km

Mapping seasonal patterns of inundation:



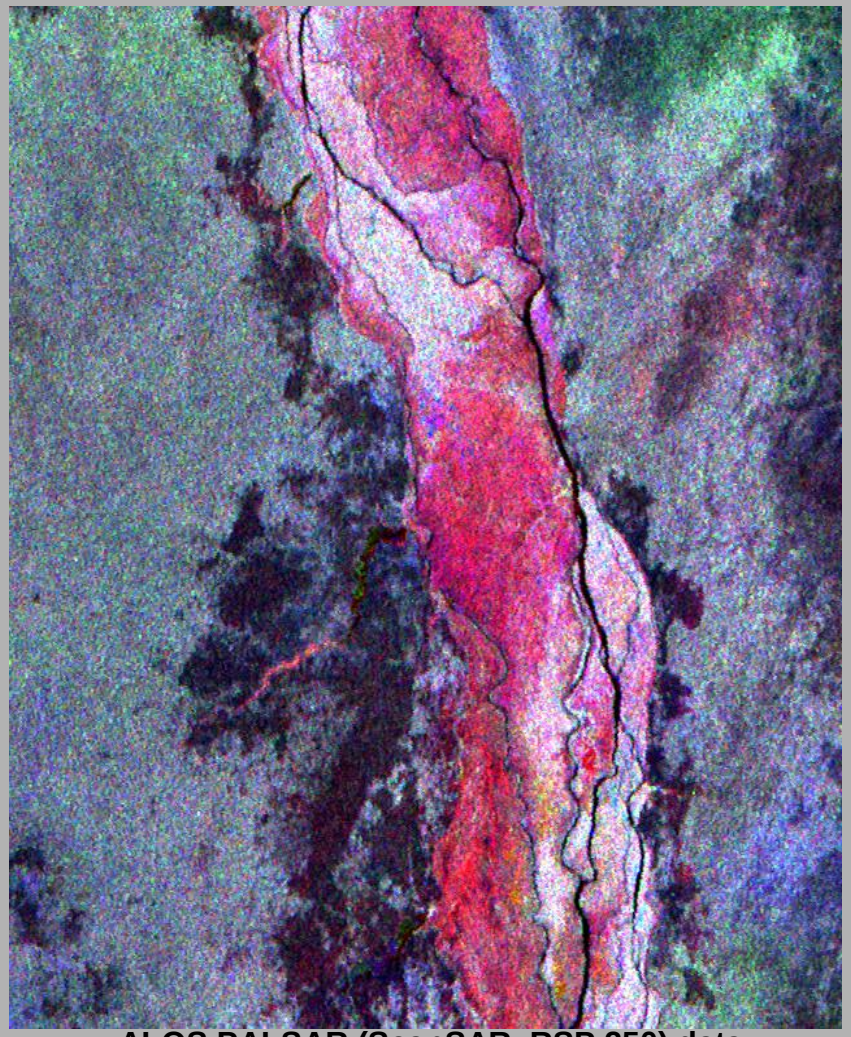


ALOS PALSAR (ScanSAR, RSP 250) data (07/07, 01/08, 06/08), The Sudd Wetland

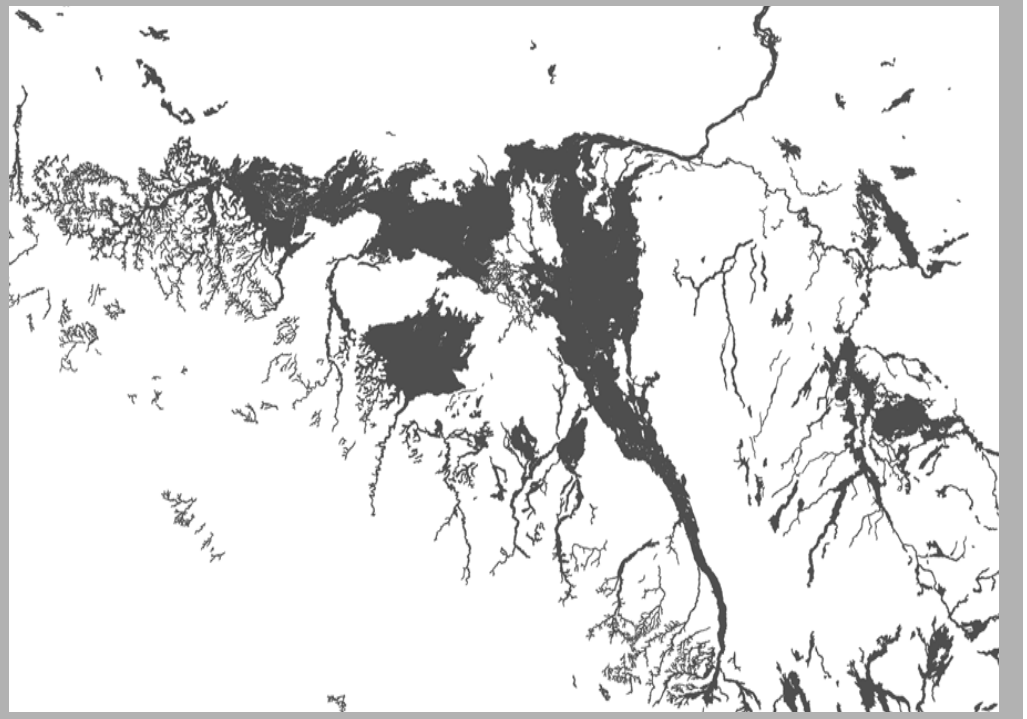


ALOS PALSAR (FBD, HH, HV, HH/HV, 07/08), The Sudd Wetland

Mapping seasonal patterns of inundation:



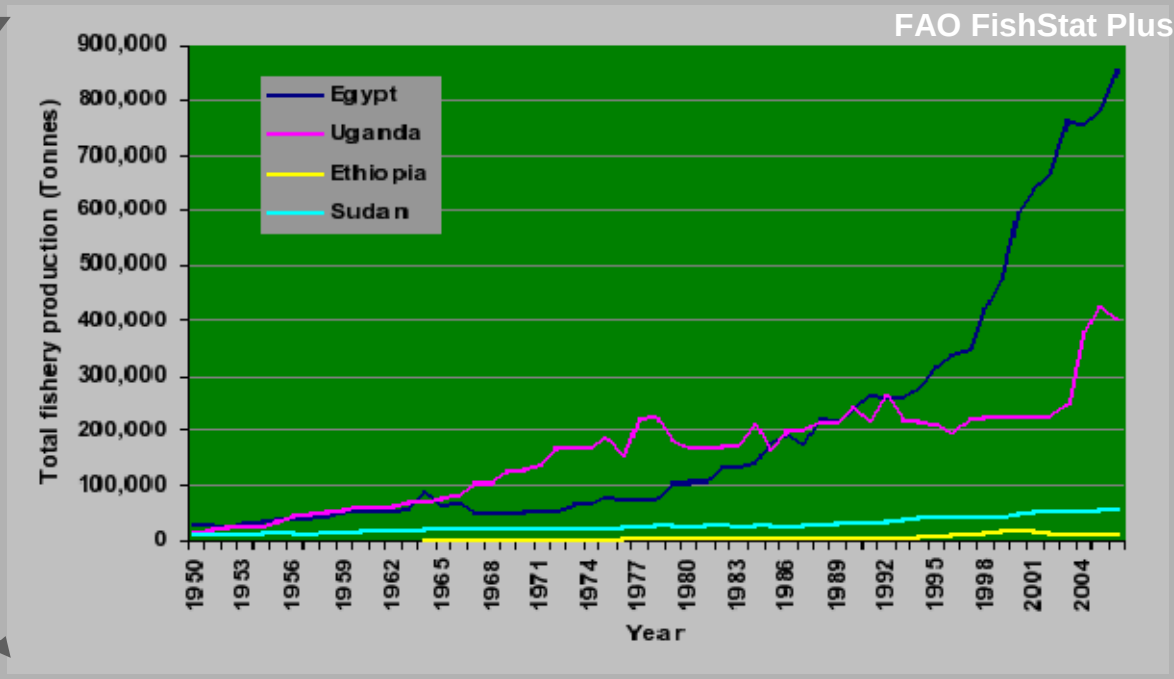
ALOS PALSAR (ScanSAR, RSP 250) data
(07/07, 01/08, 06/08), The Sudd Wetland



Mapping spatial patterns of inundation:

Inland fisheries in Africa:

- Food security, income, employment
- Lack of information hinders management
- Threatened by degradation of environment, loss of habitat, overexploitation



First step: to inventory and characterise the waterbodies which support fisheries

RS and fisheries habitats:

Broad inventory of inland fisheries habitats (kind, quantity, area)

Country	Fisheries habitat (mha)	Production (Tonnes, 2006)	Productivity (kg/ha)
Egypt	2.9 (2.1)	851,318	288.32
Sudan	16.6 (7.1)	58,900	3.56
Ethiopia	2.9 (2.2)	9,890	3.43
Uganda	5.7 (5.0)	399,491	70.44

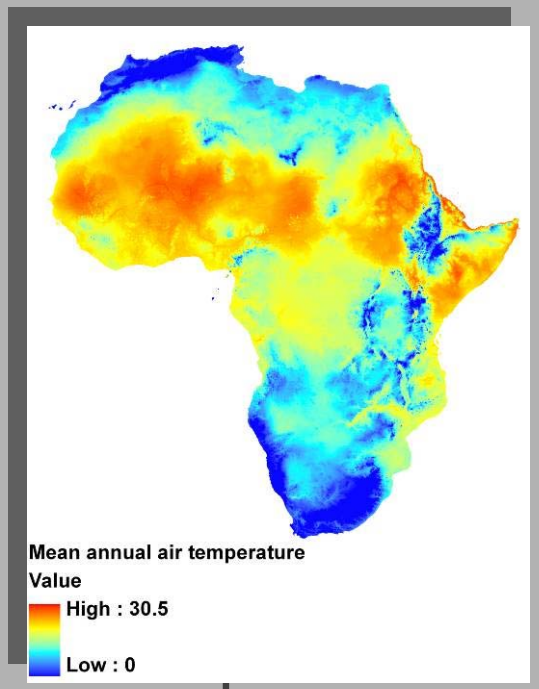
Predicting potential fish yields:

- Few/no estimates of annual catch available for individual waterbodies

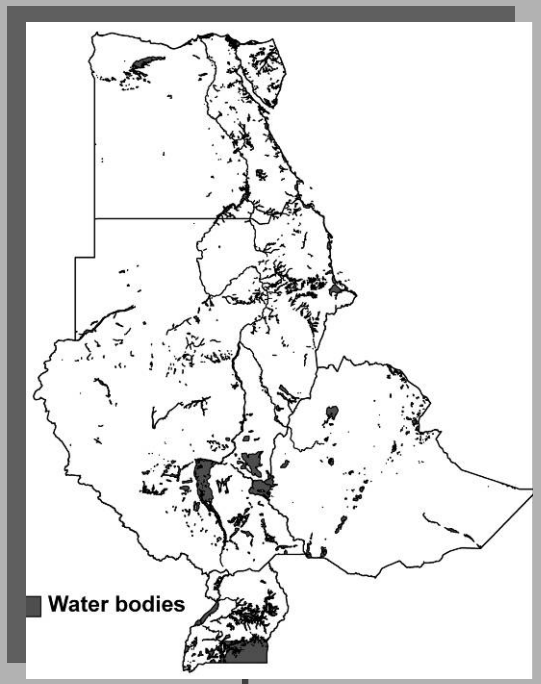
Potential predictor variables (Halls 1999):

- Surface area of the waterbody and catchment mean annual air temp

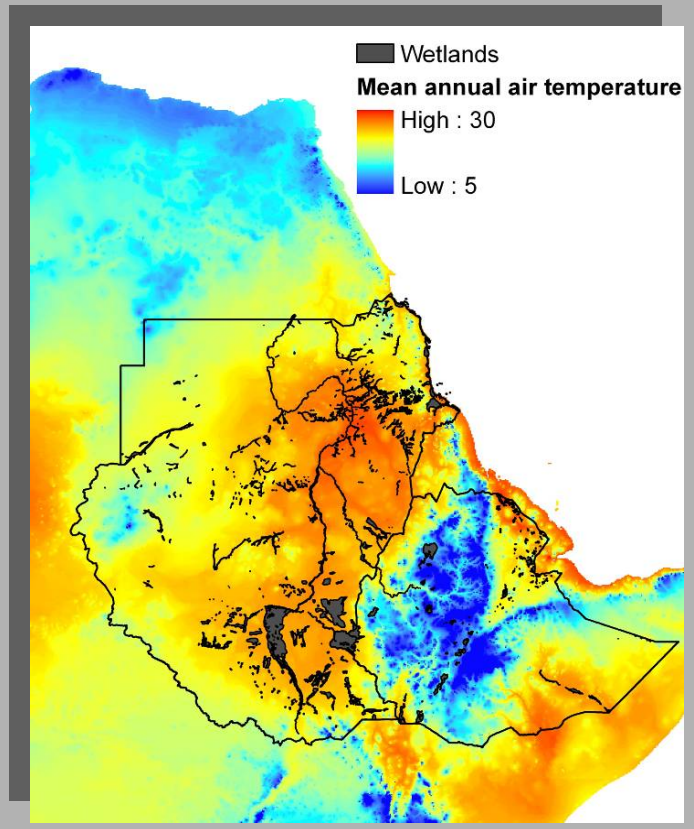
RS and fisheries productivity: predicting potential yield



Sets rate of biological production



Determines fish habitat availability



RS and fisheries productivity: predicting potential yield

Country	Fisheries habitat (ha)	Actual Productivity (kg/ha)	Potential productivity (kg/ha)
Egypt	2,952,640	288.32	99.4
Sudan	16,556,700	3.56	94.9
Ethiopia	2,885,080	3.43	86.2
Uganda	5,671,170	70.44	97.8

Across broad areas or where better data are not available simple models based on environmental variables can provide insight

Thank you!