PML | Plymouth Marine Laboratory

Marine Matters

SEVENTH FRAMEWORK PROGRAMME

EAMNet: Europe Africa Marine-EO Network

Steve Groom, PML

EAMNet

Europe-Africa Marine EO Network

GMES

Observing our planet for a safer world

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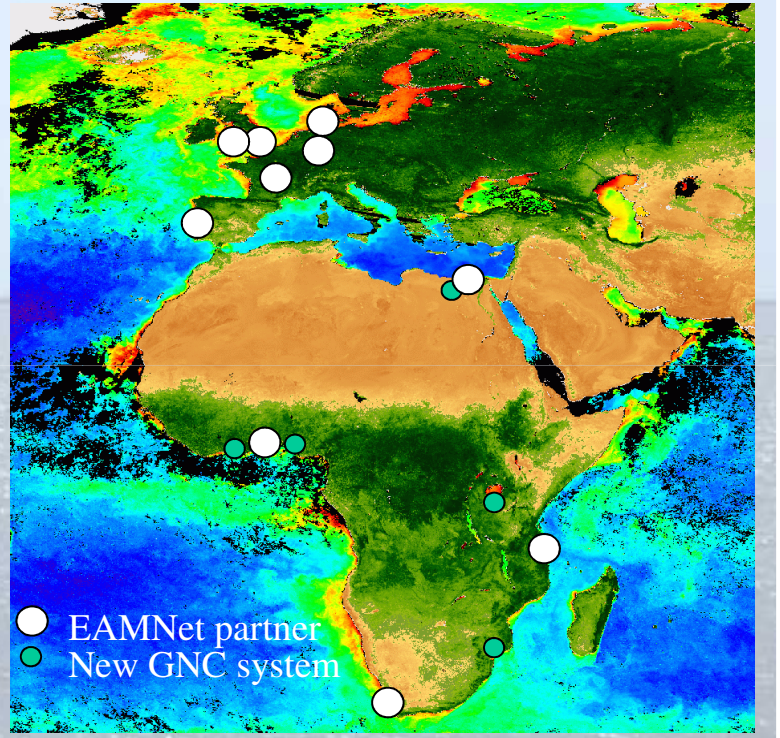
Overview

- Aims and objectives of project
- How EAMNet fits with marine and coastal baseline chapter
- Some EAMNet activities
- Relevant lessons
- Conclusions and contribution to GMES and Africa roadmap

Partners

- EAMNet is a Coordination and Support Action project financed by the EC (1M€ over three years) started in March 2010, ends Feb 2013
- Pan African (not sub-Saharan)
- PML, UK (coordinator)
  - Univ. Cape Town, S Africa
  - Univ. dar es Salaam, Tanzania
  - Univ. Ghana
  - NIOF, Egypt
  - NERC, UK; MF-CMS, France,
  - DMI, Denmark; IMAR, Portugal
  - Eumetsat
  - + Advisory Board:
    - Geoff Brundrit, GOOS-Africa; Rezah Badal, MOI and AMESD;
    - Justin Ahanhanzo, IOC UNESCO; Mark Dowell/Nic Hoepffner, JRC



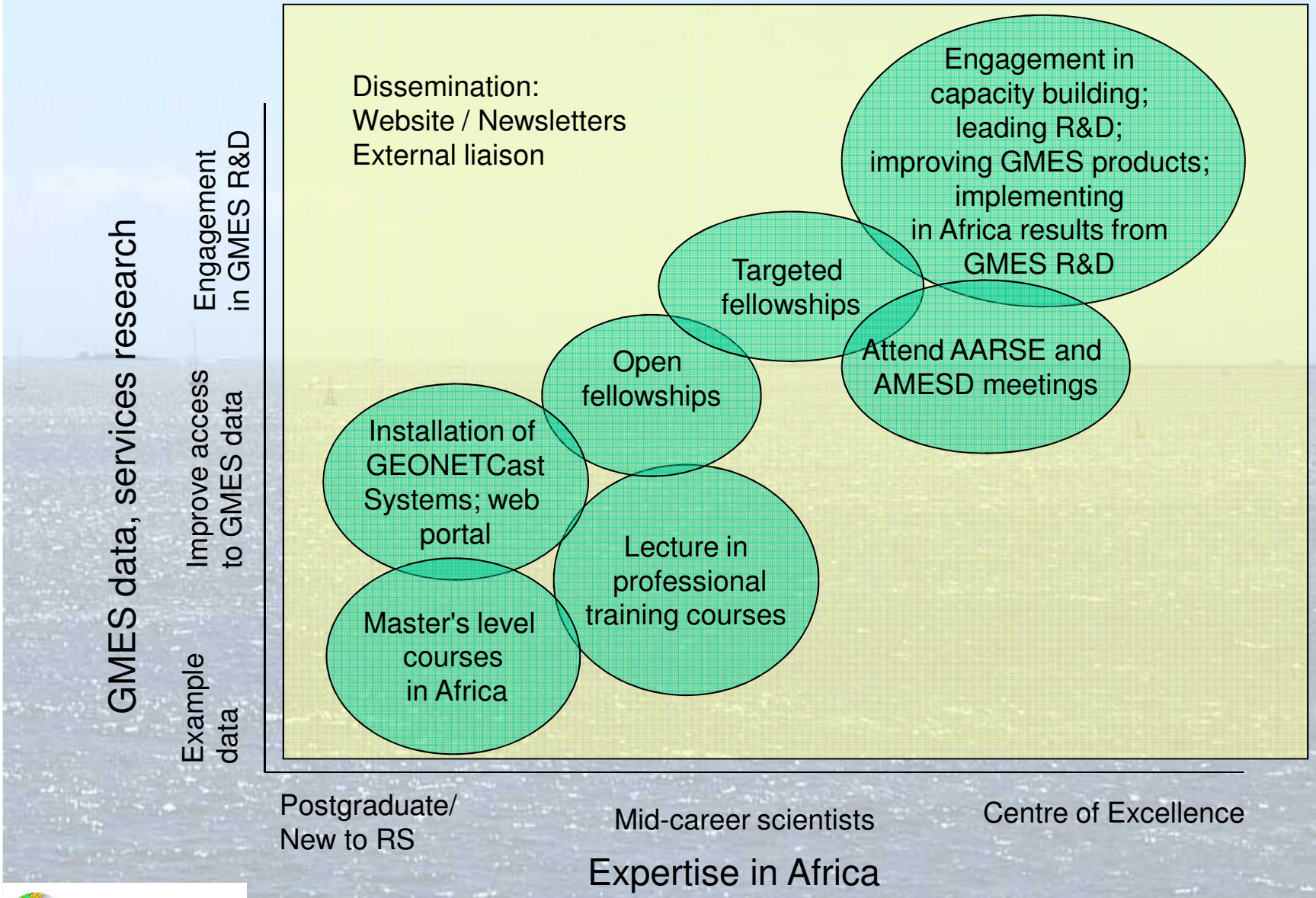
Overall Aim and Objectives of EAMNet

To construct a network linking Earth Observation information providers, user networks and centres of excellence in Europe and Africa in the area of coastal and marine observations

Specific objectives

1. To improve access to marine EO data, increase data exchange and encourage increased use of EO
2. To develop long-term sustainable approaches to capacity building and maintenance in marine Earth Observation
3. To support development of GOOS Africa as a contribution to a worldwide observation system and improve coordination of existing GMES research and services activities in Africa
4. To create a forum for African engagement in GMES Africa

Continuum of activities



Links to the marine and coastal baseline?

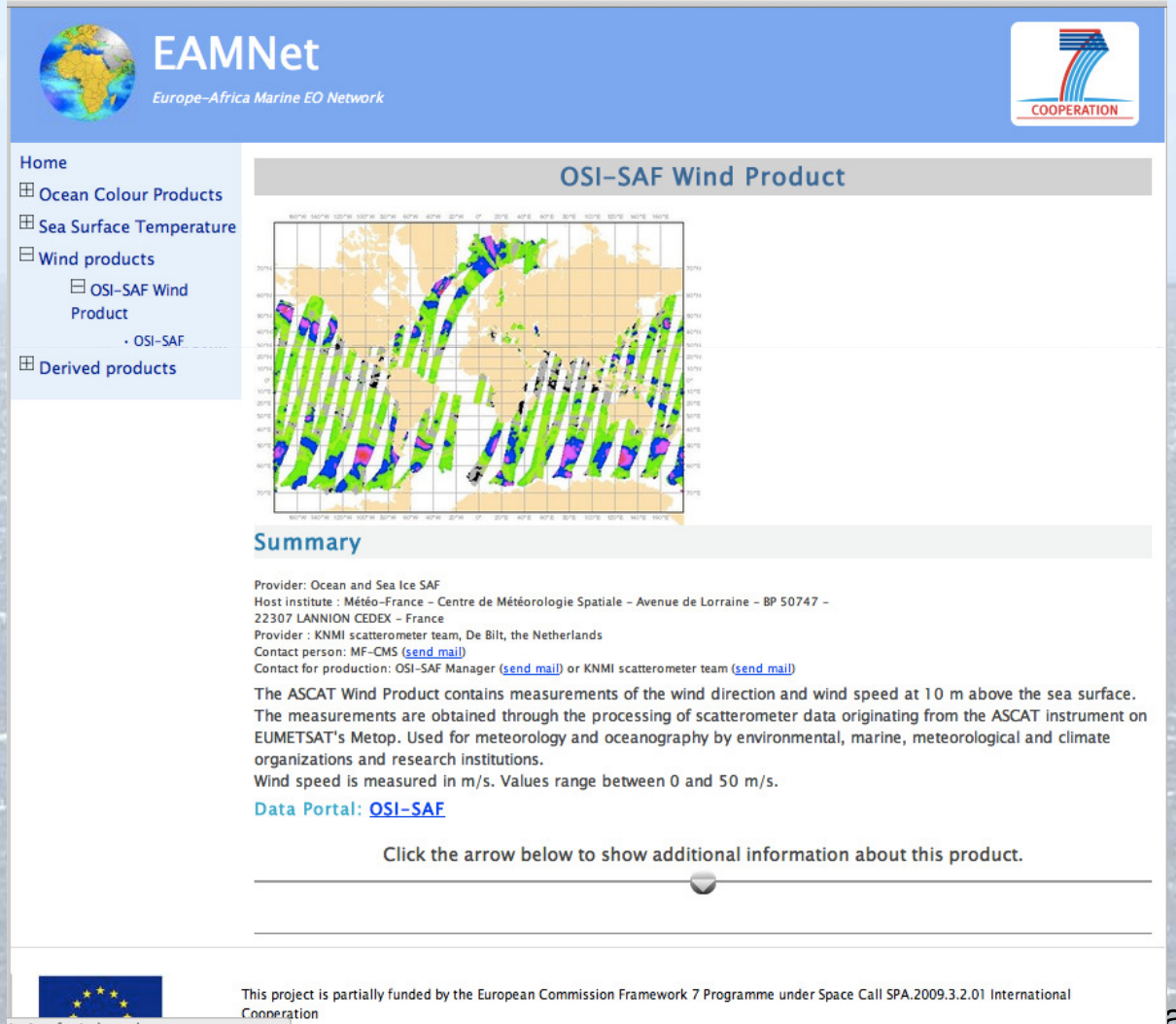
- Brundrit and Hoepffner were lead authors; Ahanhanzo, Dowell and Groom were contributing authors

- Mapping to the four baseline structures…

Candidate structure for GMES and Africa marine and coastal service	EAMNet
A Round Africa Network of Coastal Sentinel Stations	No – EAMNet did not consider in situ monitoring
An African Network of Marine Remote Sensing Analysis and Dissemination Centres	Yes
An African Forecast/Early Warning Facility	Very limited
An African Capacity Building Network of Higher Education Institutions	Yes

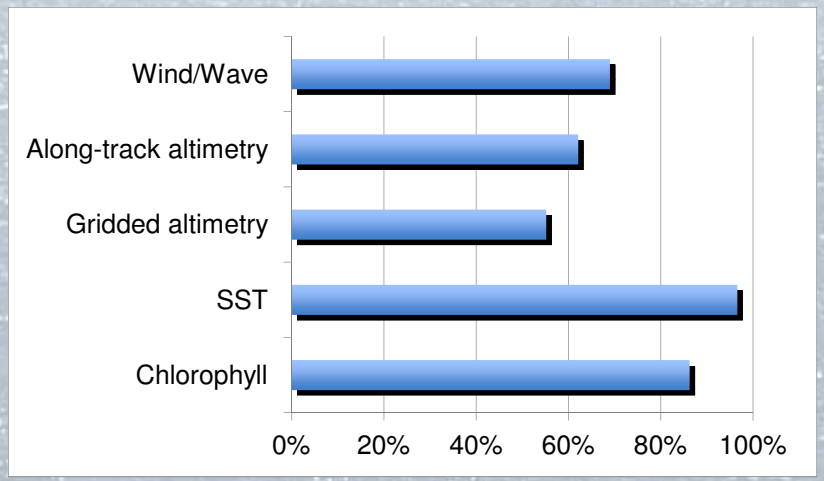
Objective 1: Data

- Web based catalogue shows what data available for Africa:
  - existing GMES/Eumetsat and produced specifically by EAMNet

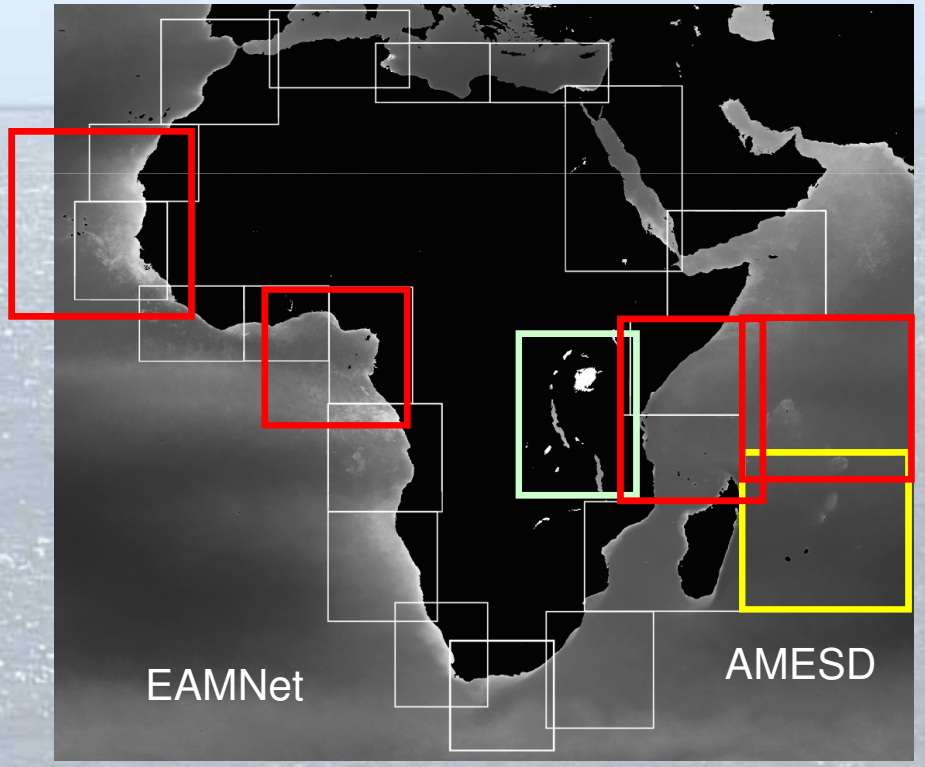


EAMNet data

- EAMNet provides data complementary to MyOcean / OSI-SAF
  - ocean colour and sea-surface temperature coverage of the entire African coast at 1km resolution: PML (MyOcean processor) + UCT
  - Additional areas & bespoke products for the African Monitoring for Environment and Sustainable Development (AMESD) project
  - High resolution lake coverage started with MERIS 300m data (for Ugandan receiving station on Lake Victoria)



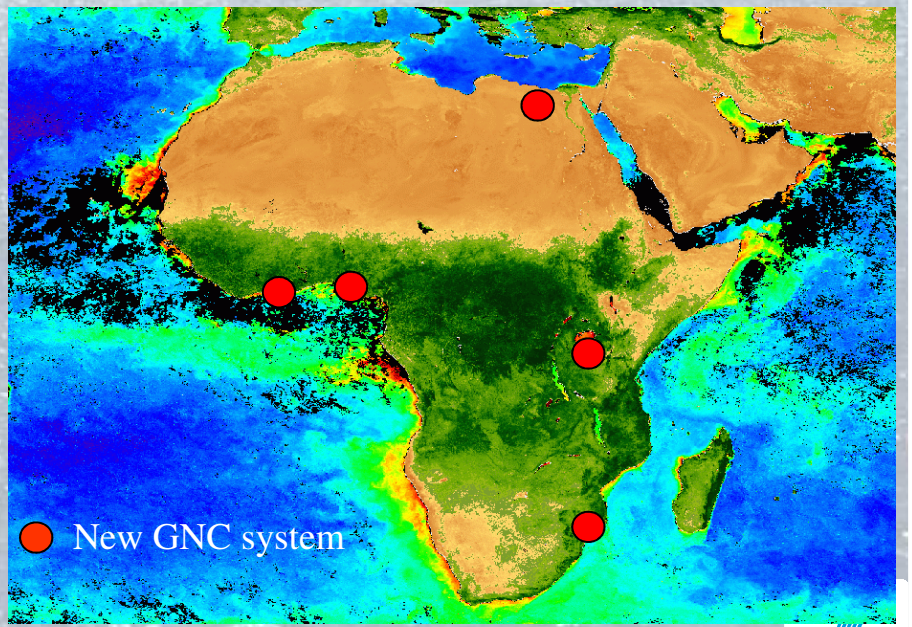
User survey on data required



GEONETCast Reception Stations Setup

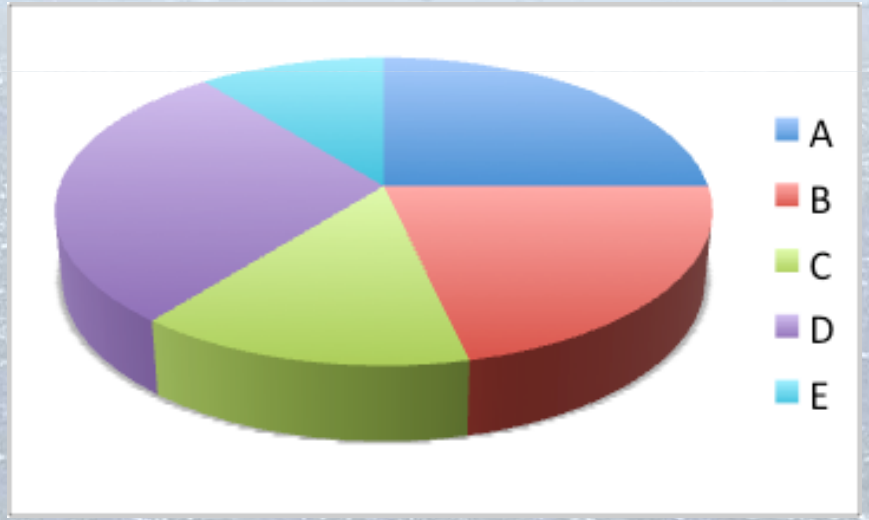
- Aimed to establish 5 new low-cost GEONETCast receiving stations
  - Provide access to data where the internet is limited
- Training on receiving stations completed
- Installation problematic due to a combination of
  - technical issues,
  - import bureaucracy and
  - civil unrest in some countries

➢ Lesson learnt: need much more time to install systems

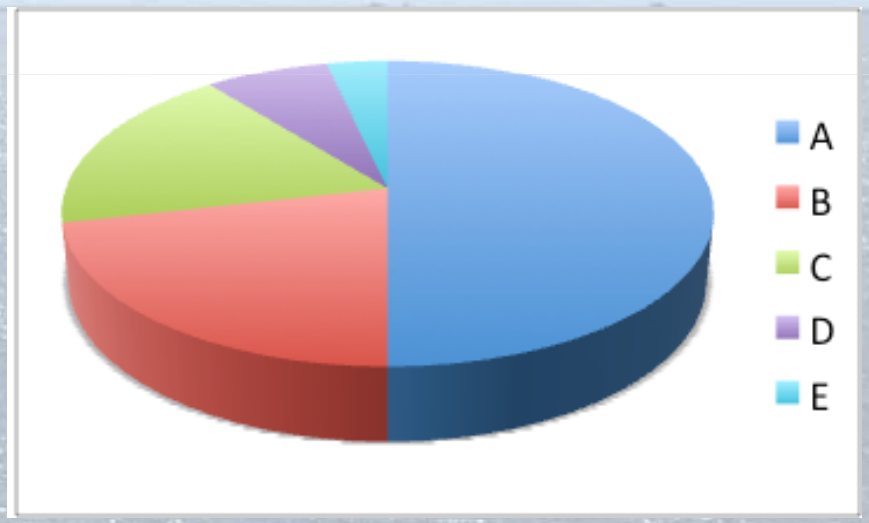


Obj 2: Capacity building & maintenance in EO

- Training survey
  - Still a need for specialist remote sensing training
    - Addressed in EAMNet
  - Key requirement is on high level computer programming
    - Beyond scope of EAMNet
    - ➢ GMES and Africa should consider specific courses in programming



A = No experience
E = Remote sensing expert



A = No experience
E = Expert programmer

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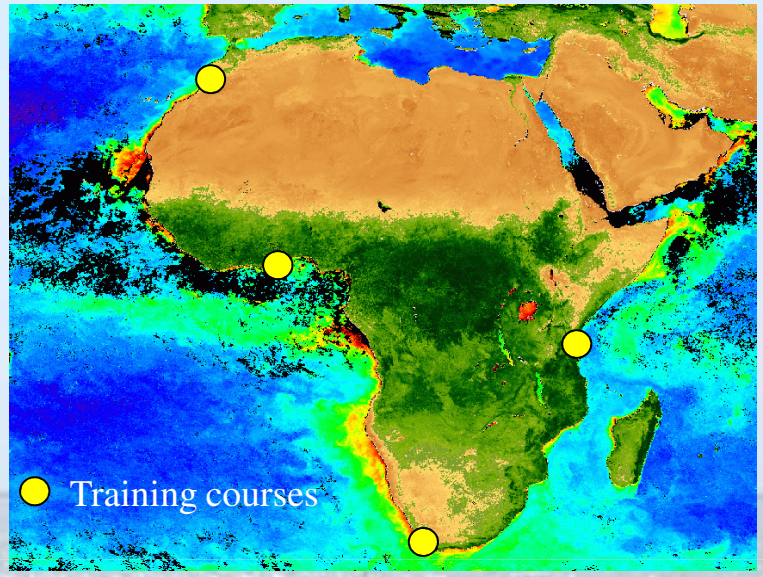
- Marine EO MSc course module developed
- Lectures available freely on the EAMNet website

Day	Session 1	Session 2	Session 3
1	Intro to Marine EO Christo Whittle (UCT)	Measuring SST Christo Whittle (UCT)	Prac: Global SST patterns Christo Whittle (UCT)
2	Intro to Ocean Colour Stewart Bernard (CSIR)	In water optics Stewart Bernard (CSIR)	Prac: Benguela Current System Christo Whittle (UCT)
3	Altimetry: SSH from space Helen Snaith (NOCS)	Altimetry: SSH from space Helen Snaith (NOCS)	Altimetry Prac: SSH from space Helen Snaith (UCT)
4	SeaDAS Tutorial Christo Whittle (UCT)	SeaDAS Tutorial Christo Whittle (UCT)	BEAM Tutorial: Mark Matthews (UCT)
5	Intro to Scatterometry Christo Whittle (UCT)	Intro to Synthetic Aperture Radar Marjolaine Rouault (CSIR)	Sourcing and combining EO data Mathieu Rouault (UCT)

Regional training courses

MSc course module used in:



•Joint EAMNet / Nansen- Tutu Centre African Operational Oceanography Workshop, June 2011 in Univ. Cape Town, South Africa

•West African regional training course in parallel with first M.Sc. module implementation 19 – 30 March 2012, University of Ghana, Accra

•University of dar-se Salaam, Tanzania regional course, in conjunction with first M.Sc implementation, August 2012

•Planning for JRC/EAMNet Satellite oceanography course in November 2012, in parallel with AARSE 2012 and annual EAMNet meeting, El Jadida, Morocco

Obj 3: Develop GOOS Africa….

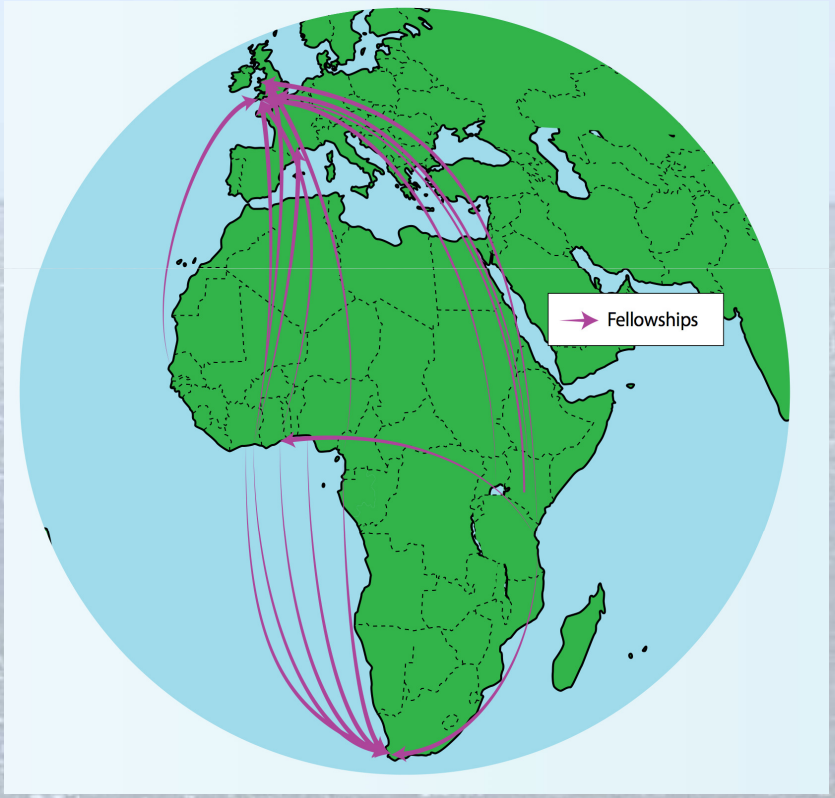
- Coordinate and harmonise Africa-EU R&D activities, spread best practices, Developing African “champions”
- Build upon expertise of existing early and mid-career African scientists
- Fellowships
  - targeted fellowships between EAMNet partners, either Africa to Africa or Africa to Europe and
  - open fellowships from *any* African marine institute / university to visit *any* African or European host

Fellowships

- Three open fellowship rounds were conducted: third round advertised in Spring 2012 and seven fellowship were awarded

- 16 fellowships in total during the project
- from North, South, West and East Africa
- 9 partner fellowships so far
- Fellows offered opportunity to attend AARSE

- Lesson: fellowships good at starting links, coordinating R&D…



PML | Plymouth Marine Laboratory Obj 4: Dissemination/engagement in GMES & Africa

- Website, newsletters, conferences and links with other networks

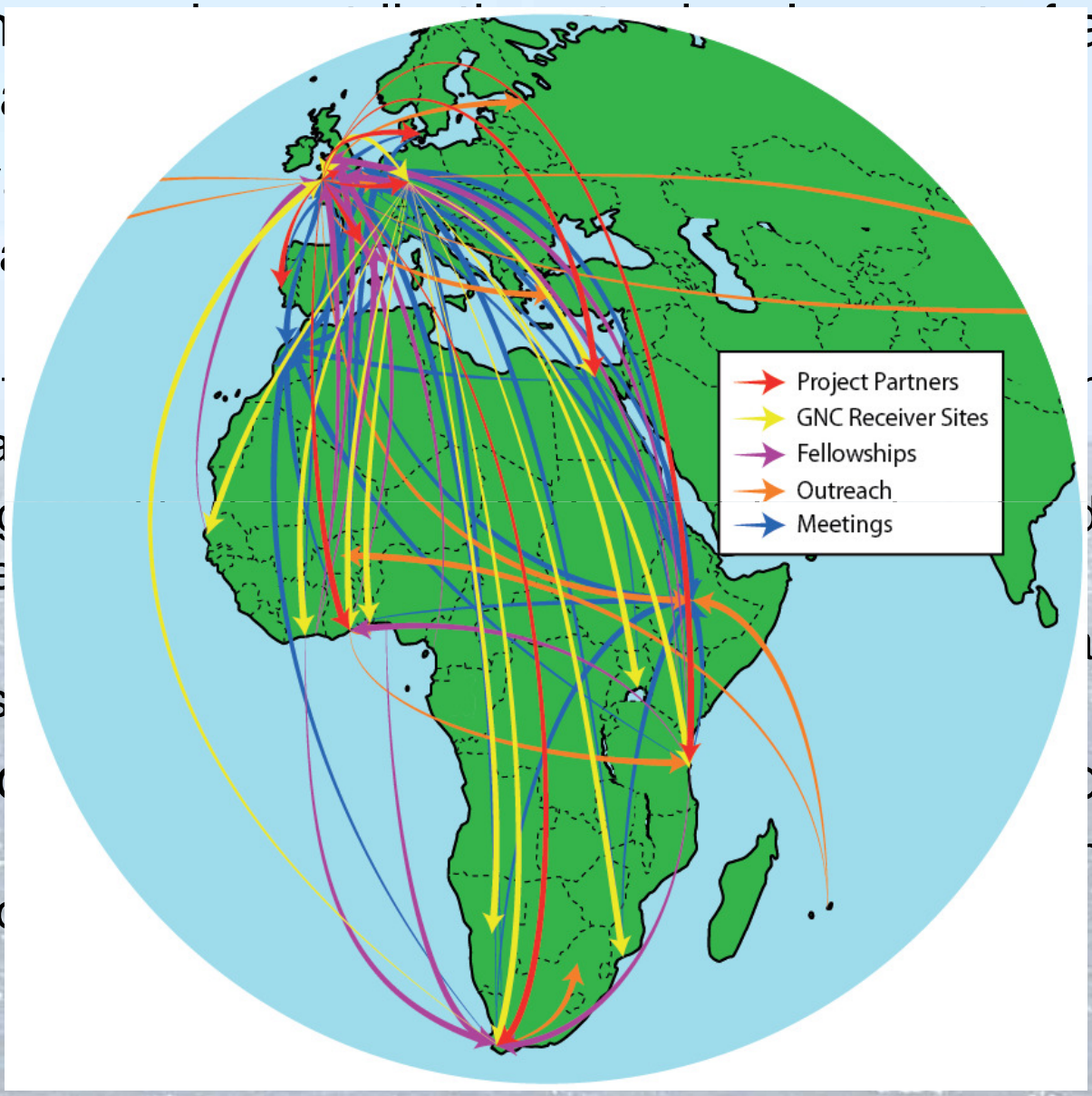
GMES and Africa / user interaction

- Input into GMES and Africa baseline
  - Comments to AquaKnow review of 2010 from partners and collectively
  - Update (Nic H) in 2011
  - Input to this workshop

- User consultation
  - OceanSAfrica and existing African GEO initiatives will serve as vehicles for science/policy interactions as direct iteration with South African environmental and science agencies, offering access to AU
  - Additional engagement with GMES & Africa workshop (Kenya Oct 2012, link with BRAGMA), MESA (2013 kick-off) and POGO (Cape Town, January 2013)
  - Government stakeholder engagement in Uganda with Department of Agriculture & Fisheries, and Ghana with Department of Environment (through EAMNet partners)

Conclusions

- EAMNet h… …a marine and coast…
- Also relev…
  - Additiona…
    - most …
  - Low cost … …nstallation period, a…
  - On-going … …d freely available…
  - 3 month … …t PhD/pos…
- Contributi… …d map
  - Clear & … …ntation plans central t…



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Road Map of Future Capacity Needs

Building sustainable research & operational networks based on a clearly focused long term strategy

Scientific expertise
Leadership skills
Mid-career professionals
Post-graduate & -doctoral development
Diaspora recovery

Domain expertise
Earth observation
Phys/BGC/Atm modelling
Physical oceanography
BGC oceanography
Coastal ecology
Fisheries & resource management
Socio-economic analysis

Scientific infrastructure
Instrumentation:
laboratory
field
low cost autonomous sensors & platforms
Marine logistics:
Sea going capabilities

Technical skills
Electronics
Analytical & laboratory
Communications
Interns & sustainability

Cyberinfrastructure
Computing:
Local & HPC
Storage:
Central & distributed data centers
Bandwidth:
GNC, internet, cellular

IT expertise
Systems engineering:
Linux & networking
Numerical programming:
Python & other O/S, geo-spatial engineering
Interns & sustainability

Recognisable impact on society in environmental and maritime domains

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Road Map of Future Capacity Needs

Building sustainable research & operational networks based on a clearly focused l strategy

Scientific expertise
Leadership skills
Mid-career professionals
Post-graduate & -doctoral development
Diaspora recovery

M.Sc. & PhD bursaries, fellowships & short courses

Earth observation
Phys/BGC/Atm modelling
Physical oceanography
BGC oceanography
Coastal ecology
Fisheries & resource management
Socio-economic analysis

Development of new low-cost distributed autonomous system

field
low cost autonomous sensors & platforms
Marine logistics:
Sea going capabilities

Technical skills
Electronics
Analytical & laboratory
Communications
Interns & sustainability

GNC & GSM training, linked to IT expertise

Local workstations/arrays, Training in CHPC systems, GNC continuity & cellular dissemination

Local & HPC
Storage:
Central & distributed data centers
Bandwidth:
GNC, internet, cellular

IT expertise
Systems engineering:
Linux & networking
Numerical programming:
Python & other O/S, geo-spatial engineering

M.Sc. bursaries, short courses & vocational training

Recognisable impact on society in envir and maritime domains