1st GMES & Africa Workshop
Marine and Coastal Areas
Mombasa
Kenya
9-10 October 2012

Working Group 3 Outputs

EO Science & Technology for Marine and Coastal Areas

Working Group 3 Topics

3.1. Sentinel Stations and in-situ EO Data Calibration of Marine and Coastal Parameters (Ground Truthing)

3.2. Earth Observation Methods and Modelling for Marine and Coastal Management

3.3. Capacity Building and Maintenance

Topic 3.1 Sentinel Stations and in-situ EO Data Calibration of Marine and Coastal Parameters (Ground Truthing) – Specific Questions

3.1.1. Which specific marine and coastal environmental parameters are required?

➔ **Specific Environmental Parameters requiring Calibration**

What are the one-time or continuous (frequency?) ground truthing requirements?

➔ **Necessary Calibration Frequency**

3.1.2. Is there currently a ground truthing system of some kind in place in Africa, and if yes, how does it work, which countries and institutions are participating and how is this system coordinated?

➔ **Existing M&C Ground Truthing Systems**

Topic 3.1 Sentinel Stations and in-situ EO Data Calibration of Marine and Coastal Parameters (Ground Truthing) – Specific Questions (ctd.)

3.1.3. What kind of specific/ special technical capacities and skills are/ would be needed for ground truthing of marine and coastal parameters and do these already exist?

➔ **Necessary Capacities/ Skills for Ground Truthing**

3.1.4. What kind of technical infrastructure/ equipment is would be needed for ground truthing of marine and coastal parameters and does it already exist?

➔ **Necessary Infrastructure/ Equipment for Ground Truthing**

Topic 3.1 Sentinel Stations and in-situ EO Data Calibration of Marine and Coastal Parameters (Ground Truthing) – Specific Questions (ctd.)

3.1.5. Which are your (Country's) current partner organisations (IO, RO, REC, etc.), programmes and projects supporting marine and coastal parameter calibration?

➔ **Current Partner Organisations, Programmes and Projects (EO Parameter Calibration/ G.-Truthing)**

3.1.6. Which regional or international organisations, programmes or projects would you identify/ suggest for intermediate technical and financial support to in-situ data calibration of marine and coastal parameters? ➔ **Suggestions for technical and financial support action, projects and institutions (EO Parameter Calibration/ G.-Truthing)**

WG3 – Sentinel Stations and in-situ EO Data Calibration of Marine and Coastal Parameters - OUTPUTS

Question	WG Session 1 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	ST	MT	*LT
3.1.1. Specific Parameters requiring Calibration	Ocean colour (core biogeochemical) synergy	Need for infrastructure		x	x
	Sea-surface temperature (physical oceanography)	Need for infrastructure		x	x
	Radar (metocean and physical oceanography)	Maintain, improve and enhance network	x	x	
3.1.2. Existing M&C Environ-mental Para-meters Ground Truthing Systems	ChloroGIN Africa - is a framework but little in situ capacity	Develop in situ resource – equipment and staff to complement satellite data	x	x	
	LMEs, OceanSAfrica and AMESD have temperature networks	Expand and improve – linking regions	x	x	
	Sea-level network (GLOSS)	Maintain, improve and enhance network of stations	x	x	
3.1.3. Necessary Calibration Frequency	ChloroGIN (depends on resources i.e. Ships or autonomous) Ideally biogeochemistry daily = autonomous	As above			
	Temperature/salinity/mixed layer depth – hourly or better				
	GLOSS – 15minutes				

WG3 – Sentinel Stations and in-situ EO Data Calibration of Marine and Coastal Parameters - OUTPUTS

Question	WG Session 1 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	ST	MT	*LT
3.1.4. Necessary Infrastructure/ Equipment for Ground Truthing	Autonomous systems in all cases BGC: lab based equipment (chl-a, absorption etc.)	Scoping and resourcing (human capacity is implicit)	x	x	x
	SST: CTD type sensors				
	Radar; sea level; ADCP; echo sounder ECH (for bathymetry)				
3.1.5. Current Partner Organisations, Programmes and Projects (EO Parameter Calibration/ G.-Truthing)	ChloroGIN Africa & EAMNet (satellite) / OceanSAfrica /LME/AMESD have BGC capabilities	Scoping exercise followed by resourcing	x	x	
	LMEs, OceanSAfrica and AMESD have temperature networks				
	Sea-level network (GLOSS); ODIN-AFRICA				
3.1.6. Suggestions for technical and financial support action, projects and institutions	Scoping,		x		
	planning using and maintaining existing capacity and institutional frameworks. Building regional sentinel stations. Based on LME.		x	x	x

Topic 3.2 Earth Observation Methods and Modelling for Marine and Coastal Management – Specific Questions

3.2.1. What management centred earth observation methods (EO) and modelling solutions exist and which ones are possibly applied in your Country, your Region, Africa and what is their quality?

➔ **Existing management-oriented EO and Modelling Solutions for M&C Areas**

3.2.2. What kind of models would be most valuable for improved sustainable coastal and marine development strategies, planning and management

➔ **Suggestions for management-oriented EO and Modelling Solutions for M&C Areas**

Topic 3.2 Earth Observation Methods and Modelling for Marine and Coastal Management – Specific Questions (ctd.)

3.2.3. What data types of which parameters and at what resolution and frequency would be needed for an effective EO-based modelling for marine and coastal management?

➔ **Necessary Data Types, Parameters, Resolutions, Frequencies**

3.2.4. Which are your Country's current partner organisations (IO, RO, REC, etc.), programmes and projects supporting existing, or the development of new EO-based modelling for marine and coastal management and does this support include networking aspects (targets)?

➔ **Current Partner Organisations, Programmes and Projects (EO-based Modelling)**

Topic 3.2 Earth Observation Methods and Modelling for Marine and Coastal Management – Specific Questions (ctd.)

3.2.5. Which regional or international organisations, programmes or projects would you identify/ suggest for intermediate technical and financial support to such an EO-based modelling for marine and coastal management?

➔ **Suggestions for technical and financial support action, projects and institutions (EO-based Modelling)**

Question	WG Session 2 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	S T	M T	* L T
3.2.1 Existing management-oriented EO and Modelling Solutions for M&C Areas	Fisheries / PFZ (AMESD; Benguela TAC; U Ghana); Productivity (e.g. MESO-BIO); HAB and water quality (UCT)	Maintain and enhance (see below)	x	x	x
	Oil spill (UG, Mauritius...) and pollution; VMS (MU, TANZ and SA); coastal erosion; bathymetry; ocean circulation (EU:MyOcean2; SA and MU)	„			
	Coral reef monitoring (early stage UDSM)	„			
3.2.2. Suggestions for management-oriented EO and Modelling Solutions for M&C Areas	Fisheries / PFZ: management, regulation and operation; State of the environment: ; Coral reef monitoring HAB and water quality: monitoring and early warning	Scoping exercise. Enhance rationality and spreading best practice in Africa and internationally; best available technology	X		
	Coastal erosion; bathymetry; coastal vulnerability (i.e. impact of sea on land, human pressure on coast)				
	Sea state monitoring: waves, storm surge, circulation; oil spill monitoring and pollution; VMS; se-ice				

Question	WG Session 2 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	ST	MT	*LT
3.2.3. Necessary Data Types, Parameters, Resolutions, Frequencies	EO: ocean colour (<1km daily; 300m near coast; 10m for coasatl vuln), SST (variable and multi-sensor), altimetry, (focus on coastal alt < 7km); sea-state (wave dynamics), surface wind (sub daily), salinity; sea-ice	Continued EAMNet type reviews (scoping); Continuation of existing data and dissemintaion mechansism	X X	X	
	Models: Mercator type (0.4deg global, sub daily); higher resolution regional as appropriate; coupled physical-ecological models; ecosystem and habitat model	Develop capabilities based on OceanSAfrica and MyOcean forexample	x	x	

ST: short term, MT: mid term, LT: long term

Question	WG Session 2 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	S T	M T	* L T
3.2.4. Current Partner Organisations, Programmes and Projects (EO-based Modelling)	Fisheries / PFZ (AMESD/MESA; Benguela TAC; U Ghana; EAMNet); Productivity (e.g. MESO-BIO; EAMNet); HAB and water quality; OceanSAfrica for all of these		x	x	x
	Oil spill (UG, Mauritius...) and pollution; VMS (Mauritius , TANZ and SA); coastal erosion; bathymetry; ocean circulation (EU:MyOcean2; SA and Mauritius); OceanSAfrica for all of these				
	Coral reef monitoring (early stage UDSM)				
3.2.5. Suggestions for technical and financial support action, projects and institutions (EO-based Modelling)	(Fisheries and ecosystems etc.) AMESD/MESA, EAMNet, OceanSAfrica (Coral reef) WCS/Kenya; Tanzania/UNEP; ASCLME?;CORDIO	Maintain or extend scope as appropriate	x	x	
	(Coastal erosion....) UG&GCLME, UDSM	Ditto	x	x	
	(Sea state monitoring....) UEM, MOZ; AMESD/MESA; OceanSAfrica	Ditto	x	x	

Topic 3.3 Capacity Building and Maintenance - Specific Questions

3.3.1 What are the specific capacities (technical, HR, time, infrastructure) needed throughout all sectors to effectively maintain a system integrating EO-based data and information into marine and coastal area management and do these capacities exist (in your Country?)

➔ **Necessary Capacities for EO System Maintenance**

3.3.2 If yes, which organisations, institutions and authorities do have such infrastructure and are employing such personnel and staff?

➔ **Existing Institutions with EO Maintenance Capacities**

Topic 3.3 Capacity Building and Maintenance - Specific Questions (ctd.)

3.3.3. Which educational institutions are currently providing practical capacity building for EO systems application in marine and coastal area management?

➔ **Institutions providing Capacity Building in EO System Maintenance**

3.3.4. Which are your Country's current partner organisations (IO, RO, REC, etc.), programmes and projects supporting existing, or the development of new capacity building and maintenance programmes for EO-based management of marine and coastal areas?

➔ **Current Partner Organisations, Programmes and Projects (EO Systems Maintenance)**

Topic 3.3 Capacity Building and Maintenance - Specific Questions (ctd.)

3.3.5. Which regional or international organisations, programmes or projects would you identify/ suggest for intermediate technical and financial support existing, or the development of new capacity building and maintenance programmes for EO-based management of marine and coastal areas?

➔ **Suggestions for technical and financial support action, projects and institutions (EO Systems Maintenance)**

WG3 – Capacity Building and Maintenance - OUTPUTS

Question	WG Session 3 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	S T	M T	* L T
3.3.1. Necessary Capacities for EO System Maintenance	HR: Science/ICT/ engineering skills 1. Specialist postgraduate courses (MSc and technical equivalents); 2. Outreach (attracting students to science); degree courses in science /ICT/ engineering; PhD maintain skills: fellowships 3. Retaining skills in Africa; diaspora recovery	With ref to EAMNet slides: MSc modules /fellowships PhDs etc. Long term commitment	X	X	x
	Infrastructure: in situ capabilities (see above) GNC, software & hardware Cyberinfrastructure/internet Long term investment in the infrastructure	• Extend existing cap • Remote access/country/ pan-African provision • Long term commitment/open source SW e.g. Bilko	X	X	x

WG3 – Capacity Building and Maintenance - OUTPUTS

Question	WG Session 3 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	S T	M T	* L T
3.3.2. Existing Institutions with EO Maintenance Capacities	Few institutions cover all the capabilities i.e. in situ AND EO systems				
	THIS IS A PARTIAL ANSWER Many have some of the capabilities: e.g. Take in situ data: PERSGA (Red Sea); receive satellite data (San Marco,Malindi; GNC systems) ; EO product generation				
3.3.3. Institutions providing Capacity Building in EO System Maintenance	Marine science : UCT, UG, UDSM, Univ Alexandria, Benin (U Abomey Calvi), Nigeria (NASDA + Univ Lagos NIOMR), NARSS (Egypt) , Senegal, NIOF, Tunisia, KMFRI, U Cocody-Abijan (Cote D'Ivoire), UEM (Moz), TAFIRI (Tanz)	Share and distribute existing modules in marine EO (UCT/EAMNet)	x		

ST: short term, MT: mid term, LT: long term

WG3 – Capacity Building and Maintenance - OUTPUTS

Question	WG Session 3 Answers (max. 3) - please delete table rows if not needed -	Suggested Actions towards GMES & Africa Service	S T	M T	* L T
3.3.4. Current Partner Organisations, Programmes and Projects (EO Systems Maintenance)	OceanSAfrica; EAMNet partners: UCT, UG, UDSM,NIOF; AMESD/MESA: MOI, TAFIRI, KMFRI	See below			
3.3.5. Suggestions for technical and financial support action, projects and institutions (EO Systems Maintenance)	AMESD/MESA EAMNet OceanSAfrica [Greater inclusivity i.e. extending partnerships using continuum approach and tie-up between these projects]	On-going Extend aspects (geographically) Extend and expand geographically and remit	X		

ST: short term, MT: mid term, LT: long term

Thank You

Merci

Obrigado