Jennifer Veitch

SAEON (The South African Environmental Observation Network)

SOMISANA (A Sustainable Ocean Modelling Initiative a South AfricaN Approach)

Co-chair of OceanPrediction-DCC African Seas
OceanPrediction DCC

The voyage

“to galvanize and coordinate efforts towards the co-development and integration of worldwide ocean prediction activities, serving Decade objectives and in close collaboration with the Decade endorsed actions and other stakeholders”

2020: THE OCEAN FORECAST WE HAVE

- Useful but partially disconnected services
- Poor presence in under-resourced countries

OceanPrediction DCC VESSEL

Captain: UN Ocean Decade
Chief engineer: Decade actions and DTO
Crew: OceanPrediction DCC community
Navigator: OceanPrediction DCC

2030: THE OCEAN FORECAST WE WANT

- Connected community and services
- Many robust systems worldwide
OceanPrediction DCC
1. Regional Hubs: a global and tranversal community

“Focused on community and capacity development”

UNEP regional seas
GOOS regional alliances

Region 1: West Pacific and MSEA
Region 2: Indian seas
Region 3: African seas
Region 4: Mediterranean and Black Sea
Region 5: North-East Atlantic
Region 6: South and central America
Region 7: North America
Region 8: Arctic
Region 9: Antarctic
OceanPrediction DCC
1. Regional Hubs: a global and tranversal community

“Focused on community and capacity development”

Regional nodes support the objectives of OceanPrediction DCC:
- Promote the use of forecasting services for decision making
- Support decade actions related to ocean forecasting
- Map the landscape, identifying gaps and ways forward
- Capacity building
- Advocate for implementation of Best Practices, Standards and Tools
- Community building: both within and across hubs

Region 1: West Pacific and MSEA
Region 2: Indian seas
Region 3: African seas
Region 4: Mediterranean and Black Sea
Region 5: North-East Atlantic
Region 6: South and central America
Region 7: North America
Region 8: Arctic
Region 9: Antarctic
OceanPrediction DCC
2. The OceanForecasting Co-Design Team

Focused on alignment for Co-Design. Formed by experts on different topics of the ocean forecasting value chain.

- **Problem**: GAPS: systems technically disconnected.
  - During development: new systems require a development from scratch. “Core” services disconnected.
  - During exploitation: No possibility to use common tools for OOF5 validation, dissemination and exploitation.

- **Opportunity**: The decade as game changer: a new scenario for ocean forecasting will be possible by harnessing UN Decade and Digital Twin opportunities.

- **Towards a solution**: An “Ocean Forecasting Co-design Team”: will design a new architecture (standards, tools, best practices, etc.) in cooperation with related Decade programmes.
  - Results to inspire: Decade programmes development targets.
Defining the African Regional Hub
GOOS Regional Alliance & UNEP Regional Seas

Mercator global ocean analysis & forecast, 12 June 2023
Defining the African Regional Hub
GOOS Regional Alliance & UNEP Regional Seas

11-12 January 2023 OceanPrediction DCC Kick-Off
Confirmation of African Regional Chairs

Kouadio Affian
Cote d’Ivoire
Karim Hilmi
Morocco
Sivareddy Sanikommu
Saudi Arabia
Jennifer Veitch
South Africa

Regional contributions to the OceanForecasting Co-Design Team

Mercator global ocean analysis & forecast, 12 June 2023
Defining the African Regional Hub
GOOS Regional Alliance & UNEP Regional Seas

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- Kouadio Affian, Cote d’Ivoire
- Karim Hilmi, Morocco
- Sivareddy Sanikommu, Saudi Arabia
- Jennifer Veitch, South Africa

14 June 2023: 1st African Regional Hub Meeting
Nomination of Steering Committee - ongoing
Regional contributions to the OceanForecasting Co-Design Team
Identification of experts to support the OP-DCC forum

Mercator global ocean analysis & forecast, 12 June 2023
The African Regional Hub
Steering Committee

..to organize activities and promote actions related to the OP-DCC and to ensure connection between the different regional hubs as well as with the Co-Design Team.

<table>
<thead>
<tr>
<th>Thematic Area</th>
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<tbody>
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The African Regional Hub
Steering Committee

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Mercator global ocean analysis & forecast, 12 June 2023
Regionally Optimized Forecasts for African Seas

Mapping the Landscape

- Useful but partially disconnected services
- Poor presence in under-resourced countries

LIMITED REGIONAL COLLABORATION
Mapping the Landscape

- Useful but partially disconnected services
- Poor presence in under-resourced countries

LIMITED REGIONAL COLLABORATION

An opportunity!

- Develop interoperable systems according to standards and best practices informed by developed systems (but modified according to local needs)

THINK REGIONALLY!
Alignment with existing operational services

‘The development of regionally-optimised satellite observations and model-based forecast services focused on sustainable socio-economic development for the South and East African marine and coastal domains.’
I’d love to hear about the operational forecast services in your region!

Please contact me: ja.veitch@saeon.nrf.ac.za
Landscape of African forecast systems and services
Global forecast systems utilized for African Seas

ECMWF
Mercator Forecasts, CMEMS

INDOFOS, ESSO-INCOIS

RTOFS & GFS, NCEP/NOAA

OceanMAPS, BOM
Landscape of African forecast systems and services

Global forecast systems utilized for African Seas:

how are they utilized?

1. Bulletins
2. SMS alerts
3. Visualization of global forecast results
Landscape of African forecast systems and services

Global forecast systems utilized for African Seas:
how are they utilized?

- Core and transport of Agulhas Current
- SST anomalies and marine heatwaves
- Eddy-tracking

1. Bulletins
2. SMS alerts
3. Visualization of global forecast results
4. Adding value to global forecast results

Global Service: CMEMS
Landscape of African forecast systems and services

Global forecast systems utilized for African Seas:

how are they utilized?

1. Bulletins
2. SMS alerts
3. Visualization of global forecast results
4. Adding value to global forecast results
5. As boundary conditions for a local forecast system
Regional Forecasts

1. IBI-MFC Ocean & BGC. CMEMS
2. Mediterranean forecast system, CMCC

https://data.marine.copernicus.eu/viewer/

https://medfs.cmcc.it/
Regional Forecasts

1. IBI-MFC Ocean & BGC. CMEMS
2. Mediterranean forecast system, CMCC
3. Red Sea Forecast, KAUST, Saudi Arabia
Regional Forecasts

1. IBI-MFC Ocean & BGC. CMEMS
2. Mediterranean forecast system, CMCC
3. Red Sea Forecast, KAUST, Saudi Arabia
4. Wave and storm surge, South African Weather Service

https://marine.weathersa.co.za/Forecasts_Home.html
Regional Forecasts

1. IBI-MFC Ocean & BGC. CMEMS
2. Mediterranean forecast system, CMCC
3. Red Sea Forecast, KAUST, Saudi Arabia
4. Wave and storm surge, South African Weather Service
5. Multi-hazard early-warning system (RIMES), INCOIS

https://incois.gov.in/portal/osf/mozambique_rimes/index.jsp
Coastal Forecast Services
A South African example (https://somisana.ac.za/)

SOMISANA: 5 day forecasts of ocean physics

Global Service: CMEMS (ocean forcing) & GFS (atmospheric forcing)
Coastal Forecast Services
A Mozambiquan example

National Coastal Forecasting System for Mozambique (FEWS-INAM)

Subscribed users are provided daily bulletins by text message.

**Global Service:** GLOSSIS (storm surge) & GFS (atmospheric & wave forcing)
Alignment with existing operational services

MarCOSIO

‘the development of regionally-optimised satellite observations and model-based forecast services focused on sustainable socio-economic development for the South and East African marine and coastal domains.’