Activities, Plans, and Requirements of the DMAC Committee

Matthew Howard
Texas A&M University
GCOOS DMAC Committee

- Steve Beaudet (Chair) (SAIC/NDBC)
- Ed Kearns (Chair-elect) (S. Florida Nat. Resource.Center)
- Steve Anderson (Horizon Marine)
- Brenda Babin (LUMCON)
- Bill Burnett (NDBC)
- Jennifer Colee (Mobile Dist, USACE)
- Scott Duff (TAMU Corpus Christi)
- Jay Ratcliff (New Orleans Dist. USACE)
- Robert Raye (Shell)
- Susan Stark (NCDDC)
- Vembu Subramanian (USF)
- Matthew Howard (TAMU)
DMAC Action Plan

1) **Revise DMAC parts of GCOOS Business Plan**
   DMAC members contribute edits to Matt Howard and Susan Starke

2) **Implement National DMAC in GCOOS-RA (create implementation plan)**
   DMAC members contribute edits to Matt Howard and Susan Starke

3) **Establish data standards committee**
   Bill Burnett, Scott Duff, Brenda Babin

4) **Consider/Recommend DMAC-related pilot projects**
   Steve Beaudet, Ed Kearns

5) **Build a GCOOS data portal**
   Vembu Subramanian, Brenda Babin, Scott Duff, Matt Howard

6) **Demonstrate interoperability by pushing GCOOS data and model output from GCOOS providers to OPENIOOS**
   Vembu Subramanian, Ed Kearns, Matt Howard

7) **Review the regional operations center concept**
   Bill Burnett, Steve Beaudet, Susan Starke

8) **Identify potential new DMAC committee members**
   DMAC members provide information to the chair
1) **Revise DMAC parts of GCOOS Business Plan**

DMAC members contribute edits to Matt Howard and Susan Starke

- No action
  - Priority demoted. Waiting for certification criteria to be developed by Altalo and Ocean.US lawyers.
2) Implement National DMAC in GCOOS-RA (create implementation plan)
DMAC members contribute edits to Matt Howard and Susan Starke

- No formal action taken.
- It’s premature to write a detailed plan.
- Why premature?
  - National Guidelines not established
  - Motivation for data providers is not there.
2) Implement National DMAC in GCOOS-RA (continued)

• IOOS DMAC progress is slow
  – Two active Expert Teams submitted recommendations in May
  – Recommendations are high-level (meaning not specific), and are incomplete.
  – Draft of Version 1.0 IOOS Guide for Data Providers June 2, 2006 is being reviewed internally.
  – Cookbooks, best practices, and training are needed
  – Recommendations tied to standards that are still being developed
  – The IT landscape is changing under their feet (SensorML & SWE)
2) Implement National DMAC in GCOOS-RA (continued)

• Motivation not there
  – Why put data in netCDF & OPeNDAP?
    • Who is using this now? (Only a few and not in compete system).
  – Why worry about metadata?
    • What interoperable systems are enabled?
    • Who “discovered” your data via NASA/GCMD or other catalog service?
  – If it’s that important, someone will fund it.
2) Implement National DMAC in GCOOS-RA (continued)

• Keys to implementation
  – It must be perceived as worth doing
    • Valuable to data provider
    • Valuable to sponsor
    • Valuable to community

• Prelude to Implementation
  – Build Community through
    • Joint OOS community projects (joint-RA pilots)
    • Get the IT types communicating, learning & sharing.
    • Staff-up (DMAC is an additional task, need more IT people).
2) Implement National DMAC in GCOOS-RA (continued)

• Implementation Steps
  – Establish OPeNDAP netCDF server at each data provider site (and XML SOA architecture soon)
  – Adopt data dictionary for metadata and parameter descriptions, XML schema, and OGC WXS standards
  – Adopt QA/QC Flag conventions (QARTOD)
  – Aggregate to centralized server and relational database
    • Point data
    • Profile data
    • Model and raster data
3) Establish data standards committee
Bill Burnett, Scott Duff, Brenda Babin

• No Action
  – Planned to meet at QARTOD IV in Woods Hole but were not able to get together.
4 & 7) Consider/Recommend DMAC-related pilot projects

Steve Beaudet, Ed Kearns

- Two pilots reviewed and comments made
  - Modeling Center
  - Regional Operations Center Concept
5) Build a GCOOS Data Portal
Subramanian (lead) with Howard, Duff, Babin

• July - discussions initiated (Vembu & Matt)
• Surveyed other RA Data Portals
• Considered Data Portal in relation to
  – GCOOS Regional Operations Center
  – GCOOS Modeling Pilot
• Decided we should build a Data Portal
  – Require funding
  – Will use local talent (budget approach) or add people
    (professional approach)
  – Transition Data Portal to ROC when the time comes
5) Build a GCOOS Data Portal (cont.)

• What is the value of a Data Portal?
  – Visual Catalog of what is available
  – Depiction of Current Environmental Conditions
  – Aggregation of related data (one-stop shopping)
  – Public Relations Tool
  – Idea Incubator
  – Provides basic products
  – Instigates implementation of DMAC standards.
5) Build a GCOOS Data Portal (cont.)

- GOMOOS, AOOS, SEACOOS, SCCOOS Data Portals were examined.
- Staffing typically
  - Web programmer (Apache, Plone, Php, +) - full time
  - Programmer (python, perl, java, database, GIS) - full time
  - Domain Specialist (Analysist, graphics, products) - full time
  - Manager - 25% time
  - $250K/yr
AOOS Data Portal

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SEACOOS Data Portal

Observations Interactive Map

Merged observations from a wide range of platforms are available for interactive display.
PACOOS Portal Tools

Live Access Servers

Coastwatch Browsers

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5) Build a GCOOS Data Portal (cont.)

- Advantages we have in coming late
  - A growing community exists
  - We can borrow existing software
    - Online cook books
    - Open source software
    - Wiki, listserv, NOAA/CSC Community Data Repository and Data Transport Lab
  - We can learn from their mistakes
  - Cherry pick
5) Build a GCOOS Data Portal (cont.)

- Issues
- A Data Portal has significant overlap with an Operations Center
- Data Portal will serve low level products and may be perceived as competing.
- The Modeling Pilot has overlap in the area of ingested fields but doesn’t include non-physical parameters.
5) Build a GCOOS Data Portal (cont.)

- Cannot be built on volunteer effort.
- Cannot be built by one person.
- Low budget - Order $100K using a few man months of existing people in RA
- Full budget - crude estimate ~$250K/yr
- Need to fund tasks at the provider level
6) Demonstrate interoperability by pushing GCOOS data and model output from GCOOS providers to OPENIOOS
Vembu Subramanian, Ed Kearns, Matt Howard

- USF demonstrates interoperability by serving fields to SEACOOS
- TAMU Supplied fields to OPENIOOS and Texas Mesonet Sites
  - TGLO TABS Data
  - TGLO Model Output
  - (But they are not being displayed yet).
This interoperability demonstration represents a coastal sciences community effort. Our partners include several federal agencies and dozens of the top research universities in the country. We rely heavily on Open Geospatial Consortium (OGC) standards.

**Real-time sea surface temperatures**

*August 23, 2006 16:00 UTC*

Click on map for latest Sea Surface Temperature.
TAMU MapServer Implementation

TGLO/TABS Gulf of Mexico MapServer

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<thead>
<tr>
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Additional Layers
- None
- SSH
- Buoys

Submit Choice(s)

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# ROMS for OPENIOOS

## Accessing the TGLO/TABS Prediction Simulations WMS Server

We perform a 48-hour simulation (using NCEP wind forcing) of the Gulf of Mexico four times per day, so every 6 hours we have a new prediction simulation for the next 48 hours. In the table below, each of the columns with a UCT time label represents the results of a single simulation (with time increasing as you proceed to the right in the table). When a new \textit{wms.map} file is created, it will contain 48 LAYERS, one for each of the 48 hourly fields in the simulation. Each LAYER will be labeled as shown in the table, i.e. in YY-MM-DD-HH format. When a new simulation is finished 6 hours later, another new \textit{wms.map} file is created, wherein the first 42 LAYERS have names identical to LAYERS found in the previous \textit{wms.map}. These will overwrite the previous files as they are fresher results. The only new LAYER names are those of the last six. The first six LAYERS of the previous simulation (and all of the simulations previous to that) will be kept as part of a nowcast/hindcast archive, but will not be available in the current \textit{wms.map} as it will only contain 48 LAYERS at any given time.

A menu for these files can be programmatically created via parsing the YY-MM-DD-HH string in the LAYER names.

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To test the server, a typical GetCapabilities request looks like:

\[ \text{http://csgadn.tamu.edu/cgi-bin/mapserv?map=/bf6000/TGLO/\textit{wms.map}&SERVICE=\textit{wms}&VERSION=1.1&REQUEST=GetCapabilities} \]

which will retrieve an XML file detailing what is available at our WMS server.

A typical GetMap request looks like:

\[ \text{http://csgadn.tamu.edu/cgi-bin/mapserv?map=/bf6000/TGLO/\textit{wms.map}&SERVICE=\textit{wms}&VERSION=1.1&REQUEST=getmap&LAYERS=sfcvec-06-08-16-01} \]

We produce a 48 hour Gulf of Mexico surface circulation prediction four times per day - at 0000, 0600, 1200 and 1800 hours UCT. As part of the post-processing, a new \textit{wms.map} is produced for each of the four simulations per day.
Texas Mesonet Site
8) Identify potential new DMAC committee members

DMAC members provide information to the chair

- Chair reports good mix and no changes needed at this time.