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Open Geospatial Consortium

# Open Geospatial Consortium Meteorology & Oceanography Domain Working Group Progress

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2013-03-04/06

# Introduction

Met Ocean DWG:

- Short History
- WMO / Met Ocean DWG Interests & Progress
- Future works & Possibilities
- Questions & Answers

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# Met Ocean Domain Working Group

- Regular ECWMF Operations Workshop 2007: recommended workshop/conference on GIS
- Workshop on the Use of GIS/OGC Standards in Meteorology:
  - ECMWF, 2008-11-24/26
  - Review use of OGC (Open Geospatial Consortium) standards in geo-sciences in Europe & worldwide
  - Promote collaboration between meteorological services in order to define a set of common standards that will enhance interoperability
  - Recommended OGC involvement and establish Met DWG
  - Established major theme: **Web Map Services interoperability for National Met Services**

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# Met Ocean Domain Working Group

- Météo-France joined OGC 2007, UKMO 2008
- At OGC Tech Conf, Athens, 2009-03:
  - Meteorology DWG established
  - Hydrology DWG also established
- At OGC Tech Conf, Darmstadt, 2009-09:
  - Meteorology DWG converted itself to
  - Meteorology & Oceanography DWG
  - Stopped separate Climatology DWG
  - Environmental System Science DWG well established

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# Met Ocean Domain Working Group

- OGC and WMO signed MoU 2009-11 (Met, Ocean, Hydro)

  Short legal doc, flexible Annex, lightweight – let experts get on with work

- 2nd Workshop on Use of GIS/OGC Standards in Meteorology

  Toulouse, 23-25 November 2009

  Established second major work theme: **Conceptual modelling**

  Third workshop planned Exeter 2010, Observations theme

- 3rd Workshop on Use of GIS/OGC Standards in Meteorology

  Exeter, 15-27 November 2010

  Progressed previous work, re-established Interoperability Experiments, SLD/SE started

  4th workshop planned: Washington/Boulder/Offenbach?

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# Challenges for OGC standards in Meteorology

- Long history of interoperability at human/paper level
- Spatial & Temporal, 2D, 3D, 4+D, constantly changing
- Not MBytes, but GB, TB and PBytes of data daily.
- Regular & Irregular time intervals
- Timescales: hours,.., seasons,.., centuries, + & -
- Multiple Time attributes
- 'Regular' grids are not always regular
- Continual change of coordinate systems & projecting
- Eulerian versus Lagrangian viewpoints
- Vertical coordinates
- Cross-sections, height-time diagrams, T/φs, etc
- Ensembles: probabilistic distributions
- Significant 'Objects', features of interest

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# OGC Strategies

- ‘Old Guard’ “2D world” vs ‘New Guard’ “4D+ world”
- Restructuring standards in to Core + Extensions
- Moving from KVP Client/Service API to RESTful http based
- Keep using Interoperability Experiments and Test Beds
- Scenario and Use Case driven
- Establishing naming, registries & validation chains with URIs
- Expanding from US based to European to global
- Expanding out of traditional GIS communities
- Opened up Twikis, Mailing lists in response to MODWG
- Follow the money!

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# Example of Implementation Differences - WCS

| | Visual Weather WCS | THREDDS WCS (1.0.0) |
|---|---|---|
| Service | Data source (e.g. all Global model runs) | Single instance of data source (e.g. a single Global model run) |
| COVERAGE | Met parameter (e.g. temperature) but no standard names | Met parameter (e.g. temperature) but no standard names |
| Spatial domain | 2D BBOX + 'ELEVATION' range parameter | 3D BBOX + 'VERTICAL' range parameter |
| Time domain | TIME for validity time + 'DIM_RUN' & 'DIM_FORECAST' range parameters for analysis time and forecast period | TIME for validity time (Analysis time is covered by service) |

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# Met Ocean DWG work

Wiki (open) http://external.opengeospatial.org/twiki_public/MetOceanDWG/WebHome

Mailing list (open) meteo.dwg@lists.opengeospatial.org

Teleconferences most / many Tuesdays, 15:00 - 16:00 UTC

- WMS Best Practice, retrofit WMS 1.3:
  - TIME
  - (Climatological Periods & Time)
  - Vertical Coordinates, ELEVATION
  - Coordinate Reference Systems CRS (being tackled in other groups)
  - Customer / User orientated, so no Met traditional terminology
- SLD/SE wiki and GitHub https://github.com/chris-little/WorldWeatherSymbols
- Conceptual Modelling
  - Based on O&M
  - Jeremy Tandy leading, driven by Aviation, but other domains in longer term
- WCS, new WCS 2.0

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# Welcome to the MetOceanDWG web

The Meteorology and Oceanography Domain Working Group (Met Ocean DWG) is a community orientated working group of the Open Geospatial Consortium (OGC). The group does not directly revise OGC standards, but rather enables collaboration and communication between groups with meteorological and oceanographic interests. The Met Ocean DWG maintains a list of topics of interest to the meteorological and oceanographic communities for discussion, defining feedback to the OGC Standards Working Groups (SWG), and performing interoperability experiments. The DWG covers Oceanography as well, because of the long history of collaboration and shared institutions between meteorology and oceanography. Climatology is, of course, a subset of Meteorology.

The Met Ocean DWG is intended to be a public forum for communication, and both the email list and this Twiki are open to interested parties.

- **Charter :** Please see the current Met Ocean DWG Charter. *(The original charter is at Meteo DWG Charter )* .
- **Twiki :** Anyone can edit this wiki, but, of course, responsibly. Instructions can be found on the TWiki Text Formatting Rules page.
- **Email list :** Subscribe to the public email list at : https://lists.opengeospatial.org/mailman/listinfo/meteo.dwg

## Events

- **Met Ocean Teleconfs and Meetings Announcements** UPDATED, UPDATED
- **Last meeting Austin, Texas, USA : OGC TC/PC Meeting : 19 March- 23 March 2012 : MetOceanDWGAustin**
- **Next meeting Exeter, UK : OGC TC/PC Meeting : 18 June-21 June2012 :** MetOceanDWGExeter
- **Other connected events**
- **Met Ocean DWG Meetings archives**

## Current Activities

### * *WMS Best Practices:*

- **Minutes of all telecons on WMS Best Practices**
- **Met Ocean WMS Best Practices Hot Topics** _Cleaned up in March 2012 to focus on issues that really impact the Best Practices
- **Archives of older works on Met Ocean WMS Best Practices Hot Topics**

### * *SLD/SE Requirements:*

- Styling (using SLD/SE) in other words: **Weather Symbols**

### * *Conceptual Modelling:*

_UNDER REORGANISATION TO ENHANCE CLARITY

- Overview
- Use Cases for conceptual modelling
- Roadmap [TO BE DEFINED]

# WMO / Met Ocean DWG Interests

- WMS – Currently Proactive
  - Time – Several Proposals, consensus nearly achieived. Informal IE held
  - Elevation
  - Map Projections – changes to existing repositories in progress
  - SLD/SE – Aviation SigWx and standard WMO Plots Use Cases - slow
  - Tiling – WMTS now a separate standard – jigsaw edges – stationary!
- Conceptual Modelling - Currently Proactive
  - WXXM for Aviation
  - GML3.2.1, KML2.2
  - geoSMS for use with CAP??
- WCS/WFS – lots of 'churn' - Was Reactive, becoming Proactive
  - 4D, CRS,
  - payload formats,
  - vector vs raster
- CSW – compatibility with ISO23950, OpenSearch - Currently Reactive
- O&M, SWE increasing in importance - Currently Passive

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# WMO / Met Ocean DWG currently NOT* Interested

- GeoXAMCL – security at detailed feature level
- CityGML – city and building modelling
- OpenLS - Location Services ??
- WPS - Web Processing Service ??
- 3D and Augmented Reality ?? But some activity last week!
- Etc

* Or rather: no critical mass of interested volunteers

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# Met Ocean DWG: Some Interesting Domain WGs

Active dialogues

- Aviation
- Catalogues
- Co-ordinate Reference Systems
- Coverages
- Defence & Intelligence
- Emergency & Disaster Management
- Hydrology
- Metadata (Discovery, not Interpretation)

Not currently Active

- Data Preservation
- Decision Support
- Earth Systems Science
- Location Services
- Mass Market
- Sensor Web Enablement

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# Met Ocean DWG future work priorities

- Work on Met Ocean aspects of WCS2.0 proposals
- Extend WMS1.3 BP to other standards (WMTS… Other than WCS 2.0)
- Follow GeoTIFF & NetCDF WCS with WMO GRIB format
- Expand WMS1.3 BP with climatological periods, calendars, etc
- Carry on with weather symbols in SVG for SLD/SE on Github
- Interact more with the Aviation DWG for Met
- Express requirements/Change Request to WMS2.0
- Influence other OGC standards e.g. PubSub?, etc
- Extend the WMS 1.3 BP towards a Profile (+ Chair WMS SWG)
- Work on WMO Registries, SKOS, etc

Based on straw polls at TCs and Wiki nominations

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# OGC Met Ocean DWG Summary

OGC:

- is becoming global, rather than American
- has opened up processes to community groups
  - Twiki, mailing lists
- is updating standards from client/server to RESTful
- Is restructuring standards to a ‘Core & Extensions’ model
- In middle of ‘2D+Layers’ versus ‘4D+slice & dice’ churn
- Interoperability Experiments & Test beds are heavyweight,
  - To protect members’ IPR
  - Not an issue for Met Ocean community
  - Realistic Met & Ocean data needed, both volume and timeliness
- Has taken on Met Ocean requirements in key standards, even when Met Ocean people not actively involved

More volunteers and experts needed

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# Met Ocean DWG Summary

- Members: UKMO, M-F, DWD, ECWMF, EUMETSAT, met.no, FMI, CMC, NOAA, KNMI, (JMA, KMA, ??)
- WMS 1.3 Best Practice recommendations made
- Consistency between WMO, ICAO and OGC conceptual models achieved
- Work started on WCS & data payloads (NetCDF, GRIB, data tiles/cubes)
- Ad hoc group on TIME (CRS, Calendars, statistics, …)
- Non-WMO observations are increasingly important, so OGC observation standards will become important
- Lots of work, increasing importance, – join in!

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# Met Ocean DWG

- Questions and Answers?

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