OGC®
Open Geospatial Consortium

Sponsored and hosted by
Météo-France

METEO FRANCE

Status update from Met-Ocean DWG conceptual modeling activity

OGC Technical Committee

Toulouse, France

Jeremy Tandy

September 2010

Standards incubation

The Open Geospatial Consortium (OGC) brings together commerce, government, academia and NGOs to develop geographic information standards for the benefits of all its constituents

The main stakeholders in this activity comprise:

- **WMO**
- **INSPIRE**
- **Aviation community**
- **Earth Science community**

OGC®

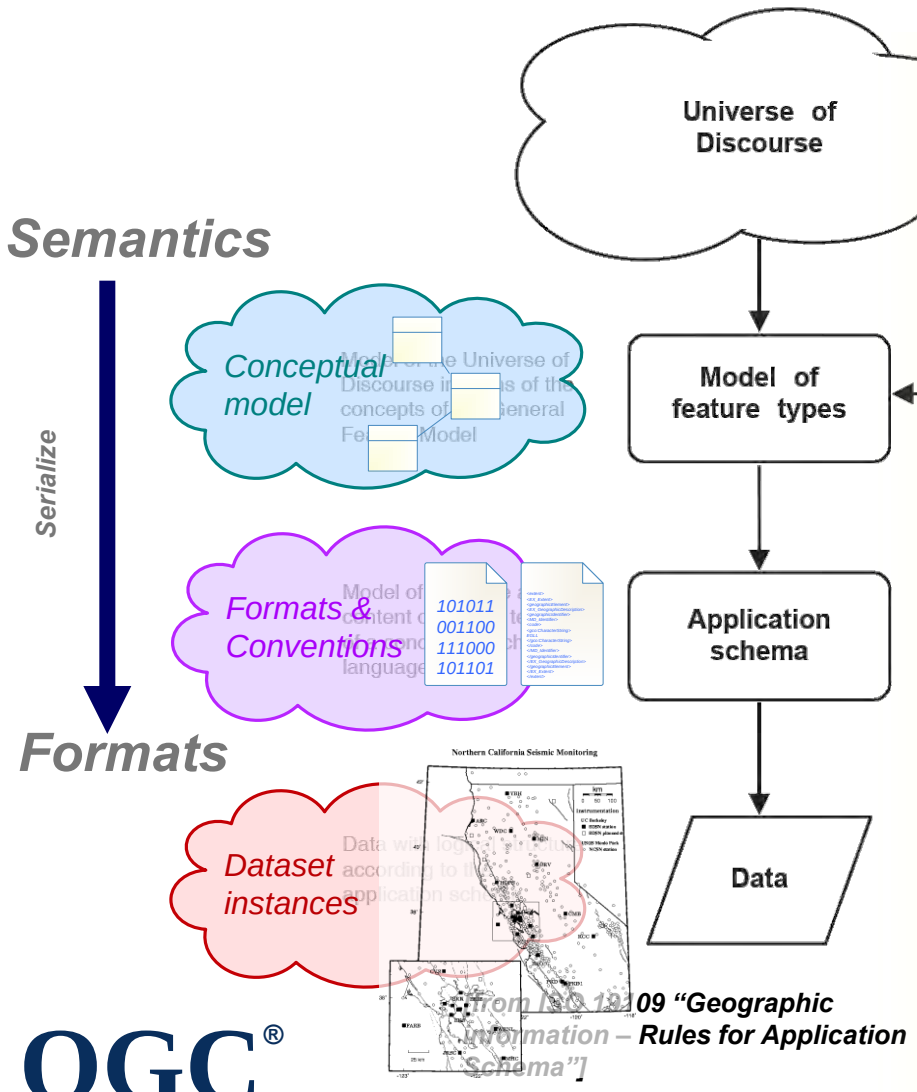
OGC Met-Ocean domain working group: Conceptual modelling

OGC Met-Ocean domain working group provides the forum for development of a harmonized data model for meteorology

INSPIRE Thematic Working Group:
Atmospheric Conditions & Meteorological Features

OGC®

Conceptual modelling for shared understanding *(ISO 19109)*



From ISO 19109 "Geographic information – Rules for Application Schema"]

Our goal is to establish a core conceptual model that meets the needs of our stakeholder community and maintains compatibility with existing data encodings such as GRIB, BUFR and netCDF – providing a mechanism to map content from one format to another.

A common conceptual model will enable tooling and software to sourced / provisioned from the breadth of the community that subscribes to the core conceptual model

OGC®

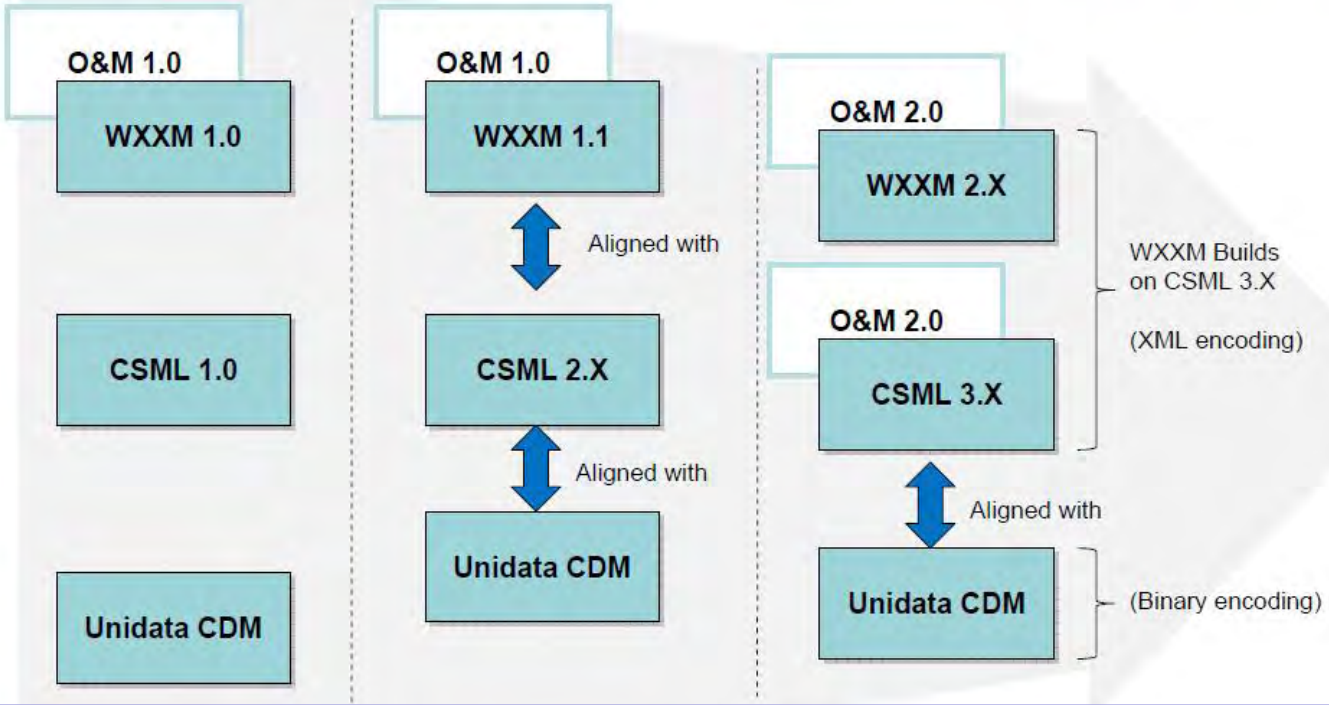
Candidates for convergence?

WXXM 2.0

WXXM 2.0

Weather Model Convergence?

Aaron Braeckel



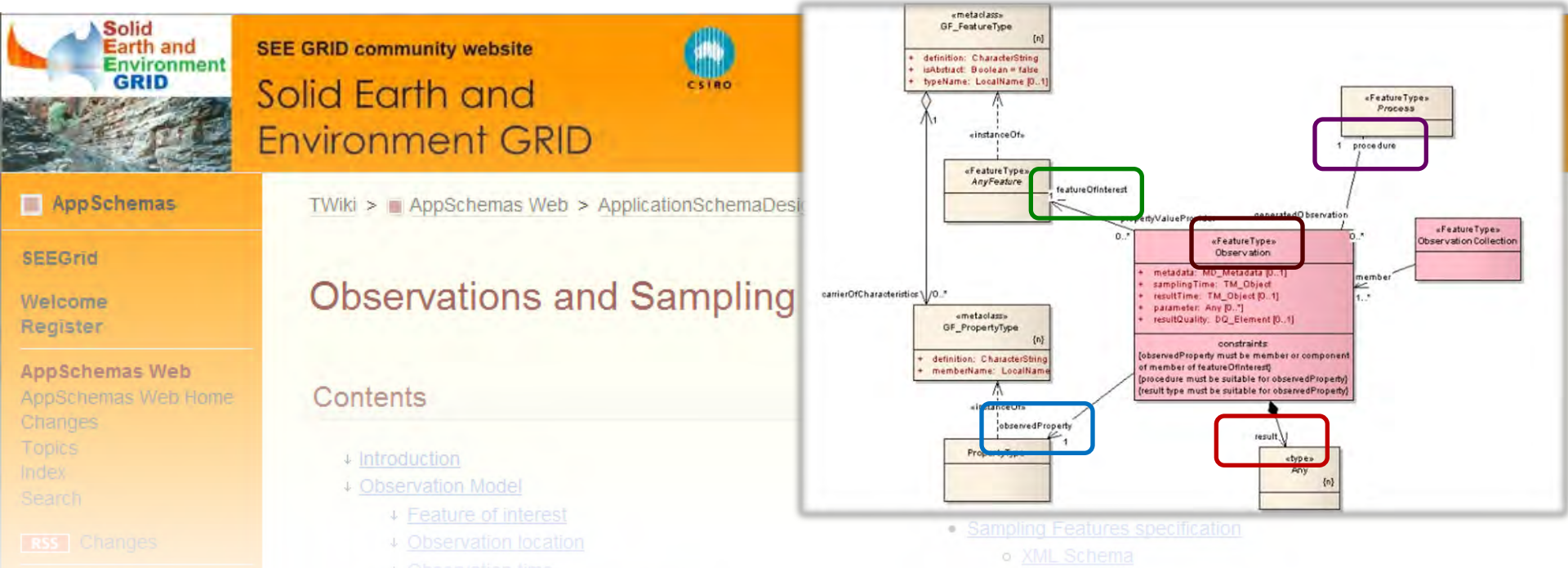
Briefing to W
04 May 201
National Cen
Boulder, CO

OGC Observations and Measurements (O&M)

now ISO/DIS 19156 Geographic Information – Observations and measurements

Observations and measurements

An Observation is an *action* whose Result is an estimate of the value of some Property of the Feature-of-interest, obtained using a specified Procedure



OGC Observations and Measurements (O&M)

now ISO/DIS 19156 Geographic Information – Observations and measurements

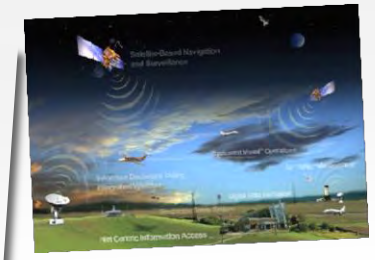
Methodology: use cases

Adopted variant of INSPIRE methodology for developing conceptual models

Develop narrative based on realistic & focused user scenarios

Use cases


current aviation

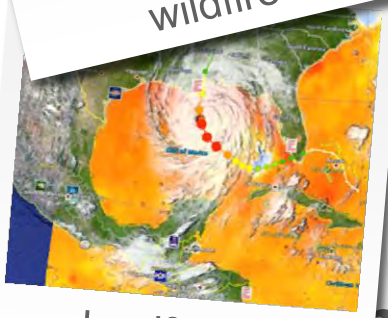

future aviation

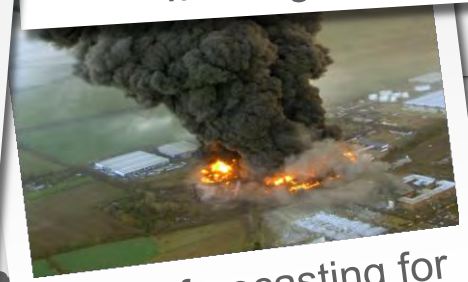

wildfire


severe weather warning service


sustained polar science campaign


climate assessment


landfalling hurricane


plume forecasting for emergency response


winter highways maintenance


riverine flood forecasting

OGC

Cross-domain use case

- UC11: **Riverine Flood Forecasting using Meterological Ensemble Forecasts**
- Potential for cross-domain engagement with **Hydrology DWG …**

we've been trying to work out HOW we might use this use case to establish how our domains may cooperate effectively, and also develop practices for developing cross-domain interoperability that can be used throughout the geospatial information 'landscape'.

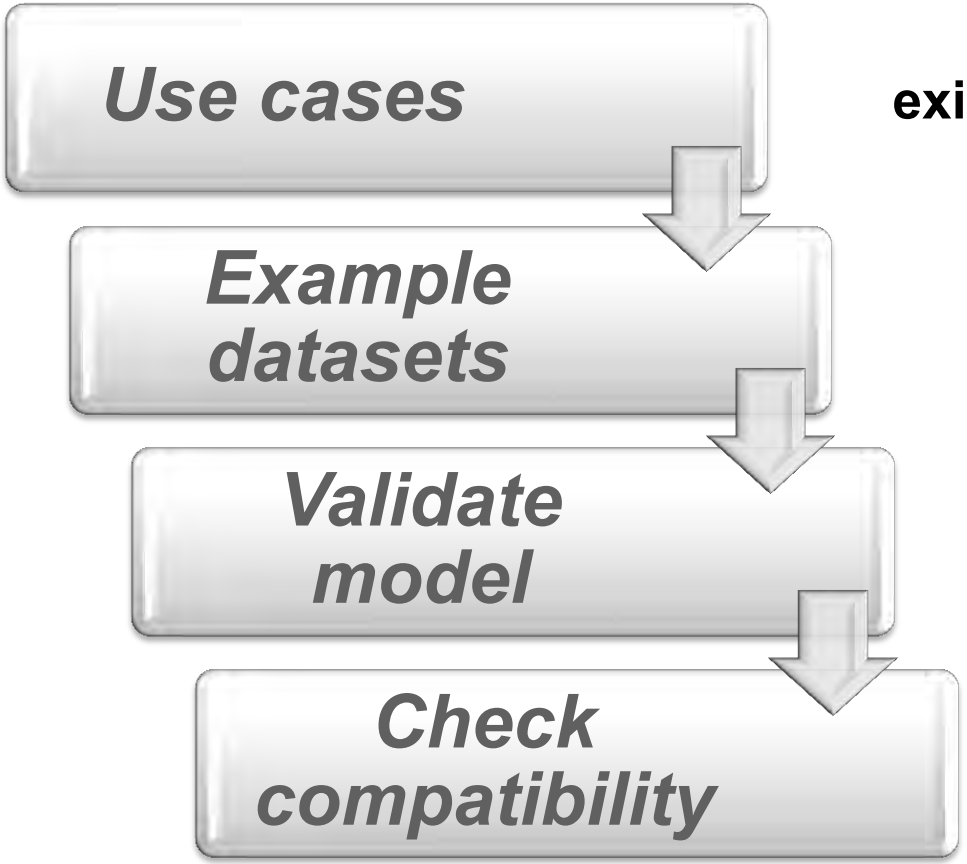
Some of the issues we've identified thus far include:
- Hydro.dwg are modelling TIME SERIES - we also need to do this & would benefit from shared insight to make sure we don't make arbitrary decisions that later lead to incompatibility
- Clearly the hydro & meteo models must co-exist, but should they be tightly- or loosely-coupled? Or expressed differently, are the two models coupled at the 'conceptual level' or is this binding delegated to implementation-level data-products? We need to take account of how data products will behave in the real world, which means we must understand the semantics of the relationships expressed within those data products. This will be strongly coupled to the operations that the data products (need to) support.

- Modelling and Governance practices:
-- COMMON CONCEPTS: how do communities develop models at similar levels of abstraction?
-- COMMON LOGISTICS: how can we simplify the effort involved in creating cross-domain models by using the same management frameworks?
-- DEPENDENCIES: how do we establish relationships between models & controlled vocabularies (etc.) that may span domain boundaries?
-- MECHANISM FOR PROFILING: how do we establish consistency in approaches to establishing profiles - enabling those profiles to be cross referenced?

OGC®

Methodology: Example datasets

Adopted variant of INSPIRE methodology for developing conceptual models



Extract example datasets from existing (or postulated) workflows described within use cases

GML – Simple Feature Profile
GRIB1
WXXM
Syndication Format
ATOM
CF-NetCDF
GeoRSS
BUFR
TAC
ISO19139
GRIB2
HDF-5
GML
CAP

OGC®

Methodology: Validate model

Adopted variant of INSPIRE methodology for developing conceptual models

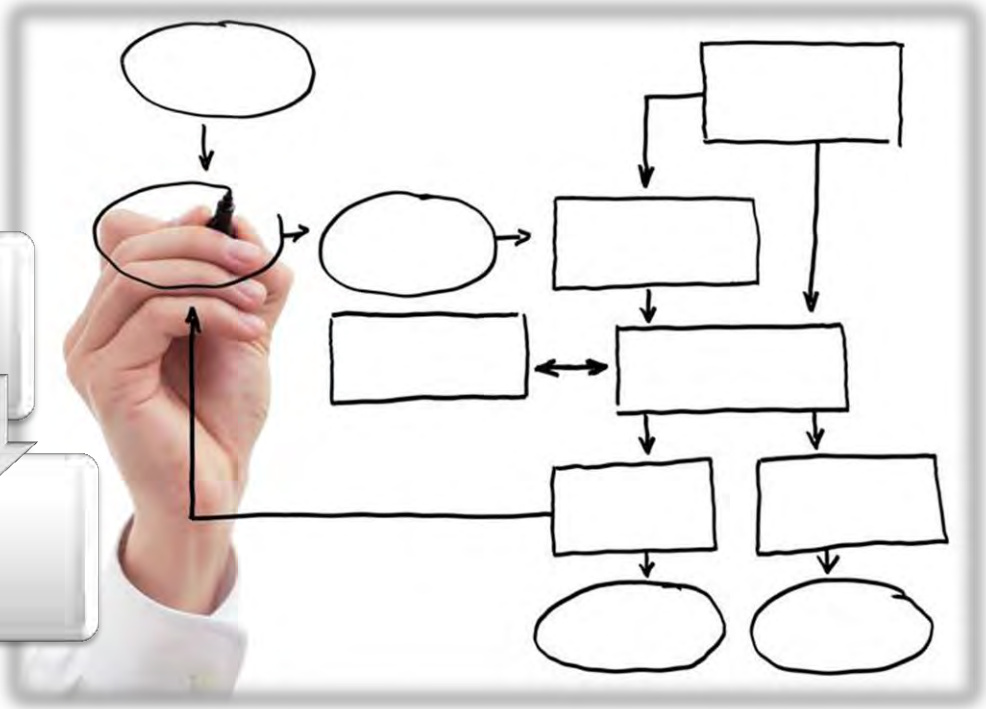
Attempt to map content of datasets onto O&M model – identifying restrictions, constraints, controlled vocabularies

Use cases **Is a *profile* of O&M valid for our user community?**

Example datasets

Validate model

Check compatibility



OGC®

Methodology: Check compatibility

Adopted variant of INSPIRE methodology for developing conceptual models

Identify compatibility of existing encodings (BUFR, GRIB, CF-netCDF etc.). Develop conventions (or amendments) for their use with the common conceptual model … and hence compatibility of the common conceptual model with existing tooling and practices within the community

- *Use cases*
- *Example datasets*
- *Validate model*
- *Check compatibility*

OGC®

Timelines

2009

2010

2011

2012

2013

2014

WMO CBS Nov 2010: propose candidate data model & outline workplan for formalization of model & governance procedures

WMO Executive Council May 2011: endorse proposed changes as policy, update terms of reference for Technical Commissions / Programmes & allocate budgetary resources

WXCM / WXXM 2.0 Q4 2010: publish candidate for industry implementation and further standardization

WXCM / WXXM 3.0 2012: publish standard for industry implementation

ICAO Annex 3 2013: amend to permit exchange of XML-encoded OPMET products

ICAO Divisional Meeting 2014: endorse transition from product-centric to data-centric OPMET information exchange

INSPIRE TWG Nov 2010: Annex 3 Themes v1 data-specification published for internal review

INSPIRE TWG Aug 2011: Annex 3 Themes v2 data-specification published for wider consultation and testing

INSPIRE TWG Jan 2012: Annex 3 Themes v2 data-specification published for development of implementing rules

INSPIRE May 2012: v1 of implementing rules for Annex 3 Themes published (2-further revisions expected)

Where next – and how?

"The momentum in the conceptual modelling activity has declined over the (Northern-hemisphere) summer, so this presentation also seeks to stimulate debate within the community about the value of the current engagement model and to solicit suggestions about how people would prefer to move forward."

OGC

Sponsored and hosted by
Météo-France

METEO FRANCE

Thank you