MetOcean Themes in INSPIRE

4th Workshop on the use of GIS/OGC standards in meteorology

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March 4th, 2013

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Outline

- Specification status and deadlines
- Data Specification on Atmospheric Conditions & Meteorological Geographical Features (AC-MF) Technical Guidelines :
    - Scope
    - Data Model
    - Metadata
    - Network services
- INSPIRE GCM and WMO MetCE

Specification progress

- Draft Technical Guidelines v3rc3 (release candidate 3 for Annex II & III data themes) are now available on the INSPIRE web site

http://inspire.jrc.ec.europa.eu

- In line with the draft Regulation amending Regulation (EU) N° 1089/2010 implementing Directive 2007/2EC as regards interoperability of spatial data sets and services (being translated in MS langages)
- UML models, draft XML schemas available on the INSPIRE web site
- Data models and schemas corresponding to draft Implementing Rules should be used with caution as they are still subject to change until IR has been adopted as Union legislation

Deadlines for MetOcean Themes (Annex III)

- December 3rd, 2013
  - Metadata available for spatial datasets and services
  - Fully compliant discovery, view, download services shall be provided
  - The data delivered by download services do not need to comply with the thematic data specification
- October 2015
  - Newly collected or extensively restructured datasets shall be made available via download services in a way that is compliant with both data specification and Implementing Rules on network services.
- October 2020
  - All datasets shall be made available via download services in a way that is compliant with both data specification and Implementing Rules on network services.

Scope : Mandatory data

- Caution : In Technical Guidelines, not legally binding
- Mandatory parameters
  - Wind speed and direction
  - Temperature
  - Relative humidity
  - Evaporation amount
  - Precipitation amount
- Spatial coverage and resolution
  - Data observed at the Regional Basic Synoptic Network (WMO RBSN)
  - Low resolution grids (2°)
- Temporal coverage and resolution
  - 6 to 24 hours
  - “Past” and “present” data “as available”
- Typically “WMOEssential” data (Ref WMO Resolution 40, cg XII)

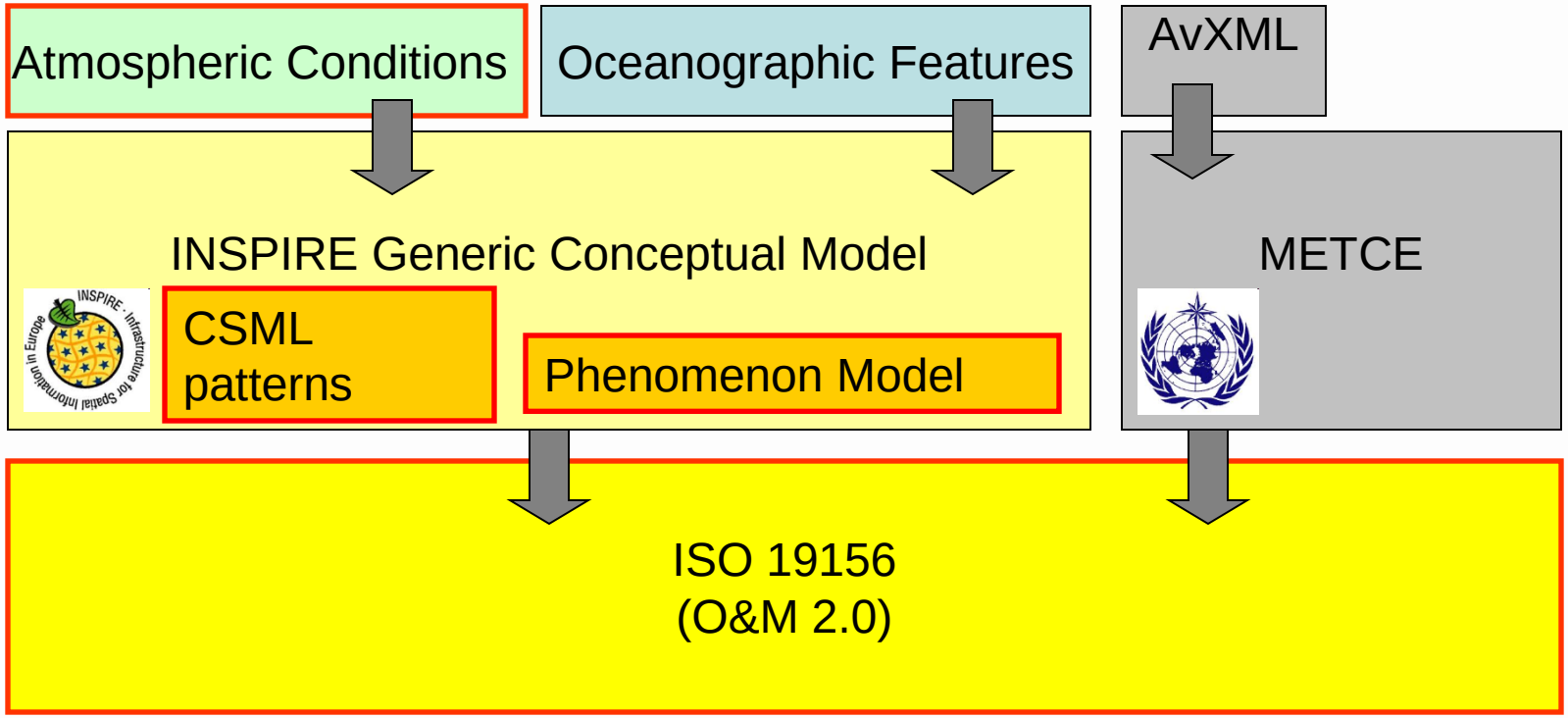
Scope : Recommended data

- Recommended parameters
  - Mandatory parameters, plus :
  - Wind gust speed
  - Precipitation rate
  - Precipitation type
  - Total snow depth
  - Pressure reduced to Mean See Level
  - Total cloud cover
  - Visibility
  - Global, long wave, short-wave radiation
- Spatial coverage and resolution
  - In line with the current practice in operational meteorology
- Temporal coverage and resolution
  - “Past”, “present”, and ”forecast” data (latest numerical model run)
  - In line with the current practice in operational meteorology

Out of scope

- Offline archive stored on tapes
- Model diagnostic data
- Non operational data
- Research data
- Calibration information
- Aviation
- Commercial products

INSPIRE GCM and WMO METCE



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Metadata

- For data and network services
- Has to be compliant with :
  - INSPIRE Implementing Rules (Technical guidelines based on EN ISO 19115 and EN ISO 19119)
  - WMO Core Metadata Profile of ISO 19115 (v1.2)
  - Member State national recommendations
- At “ Dataset Serie” level (not temporal “instance” level)
- Critical for discovery (Quality of Titles, Abstracts, keywords)
- What granularity for MetOcean INSPIRE Data Sets ? Do we need harmonization of practices ?

Delivery

- Services shall be compliant with INSPIRE IR on network services (Technical Guidance for the Implementation of download services, view services, discovery services)
- Download Services
  - Pre-defined Dataset Download services
    - ATOM + Open Search Implementation
    - WFS 2.0 “Simple WFS” CC (Stored Queries) + INSPIRE Extensions (Multilingual support)
  - Direct Acces Download Services
    - WFS 2.0 “Basic WFS” CC (Filter Encoding capabilities) + INSPIRE Extensions
- View Services
  - WMS 1.3.0 + INSPIRE Extensions + MetOcean Best Practice for usingOGC WMS with time dependant and elevation dependant data
  - WMTS 1.0.0 + INSPIRE Extensions

Delivery

- MetOcean Data Set : A collection of observations (features)
- Coverages as results of observations (excerpt for PointTimeSeries Observation).
- GML (XML) as default encoding (for observations)
  - http://inspire.jrc.ec.europa.eu/draft-schemas/
- Different options for delivering coverage data
  - GML Application Schema for coverages [OGC 09-146r2] – Multi-part representation
  - Range encoded as an external binary file
  - Range encoded in-line (suitable for small datasets)
  - Domain expressed in GML (GMLJP2- OGC 05-047r2]) in a JPEG 2000 file
- No recommendations for alternate encodings at the moment
- Benefit of having a pure binary encoding for AC-MF acknowledged (specifically GRIB, NetCDF)
- And delivered through WCS 2.0 … or 2.1 ?
- GRIB 3 should be O&M compliant

Sampling coverage observation delivery ...

INSPIRE Download Service

Get Spatial Object

Range Set "Out-Of-Band"

Range Set "In-Band"

"In-Band" Multi-part

Observed Property
Process
Feature of Interest

Result (gml coverage)

Domain Set

GML

Binary formats:
GRIB2
NetCDF
GeoTiff

Range Set

Link to external file

Observed Property
Process
Feature of Interest

Result (gml coverage)

Domain Set

Range Set

GML

Observed Property
Process
Feature of Interest

Result

Domain Set

GML

Range Set

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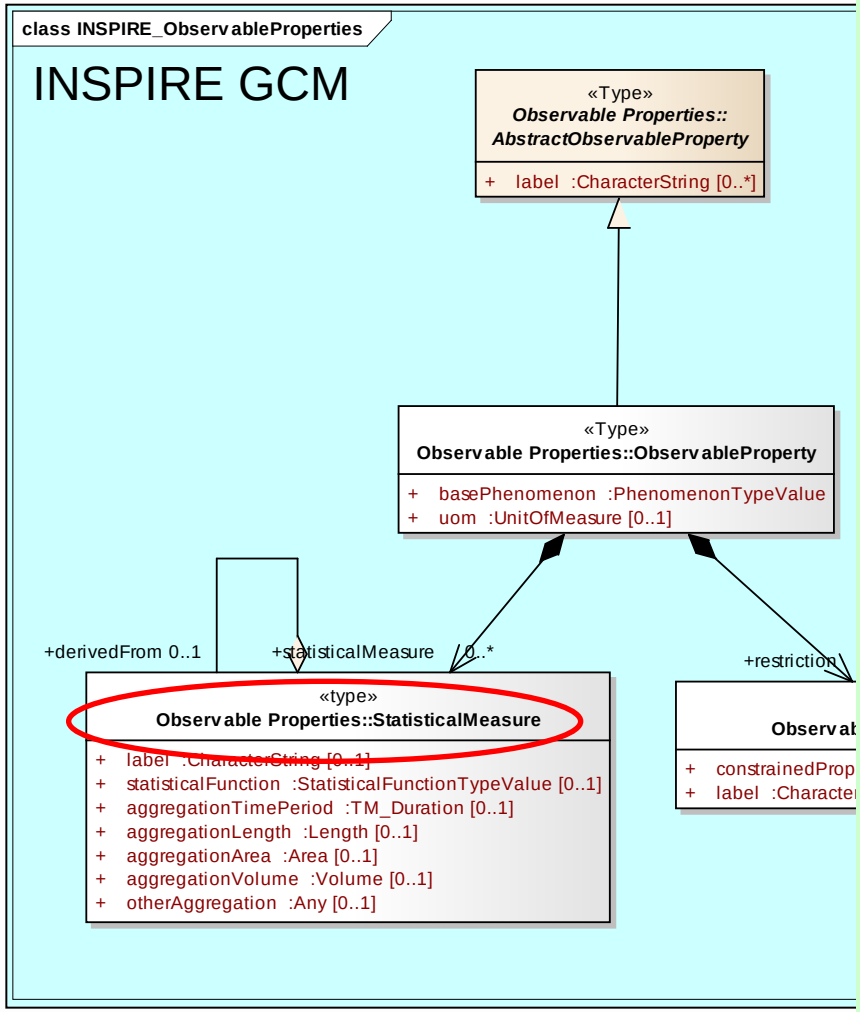
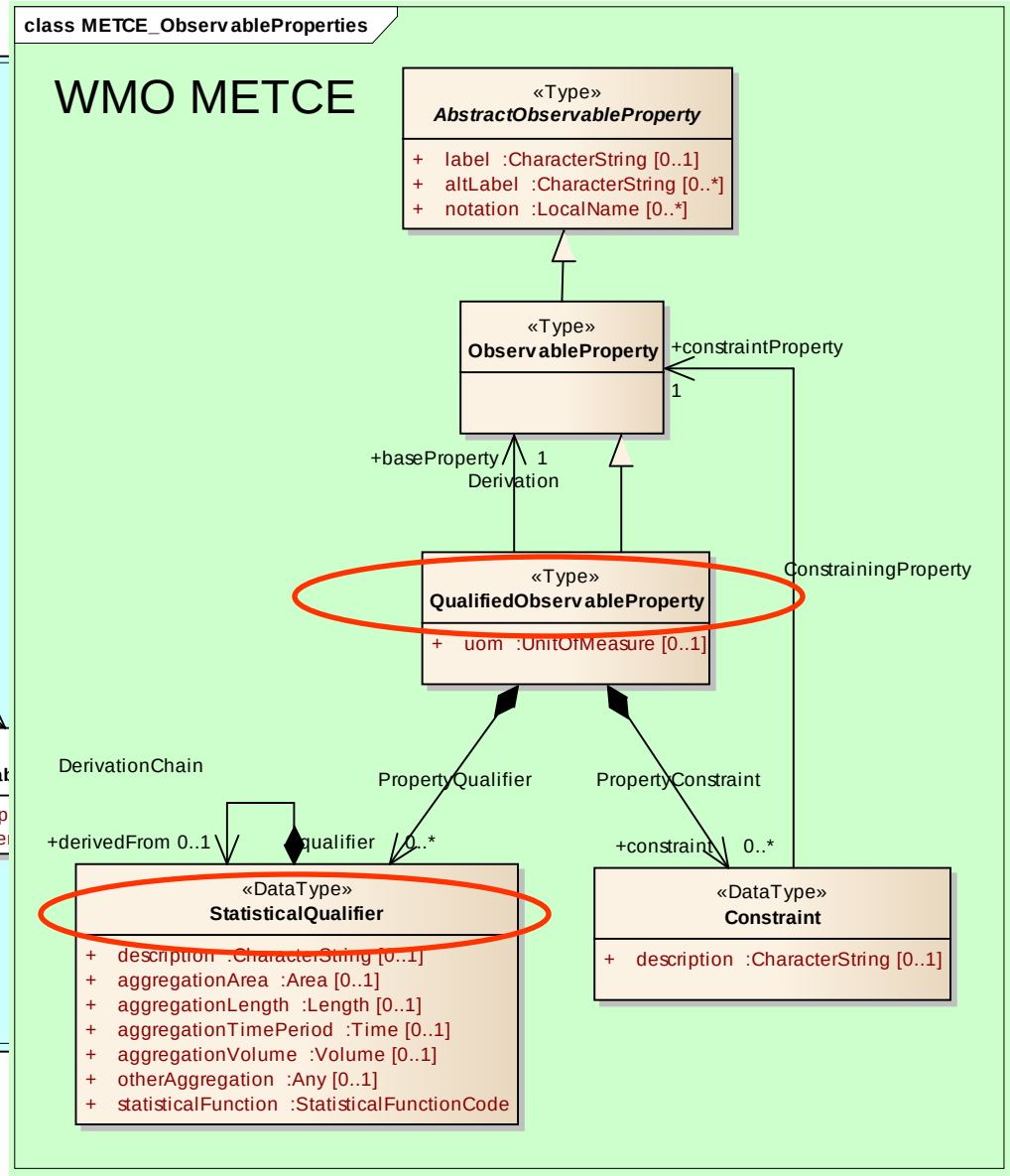
INSPIRE GCM and WMO MetCE

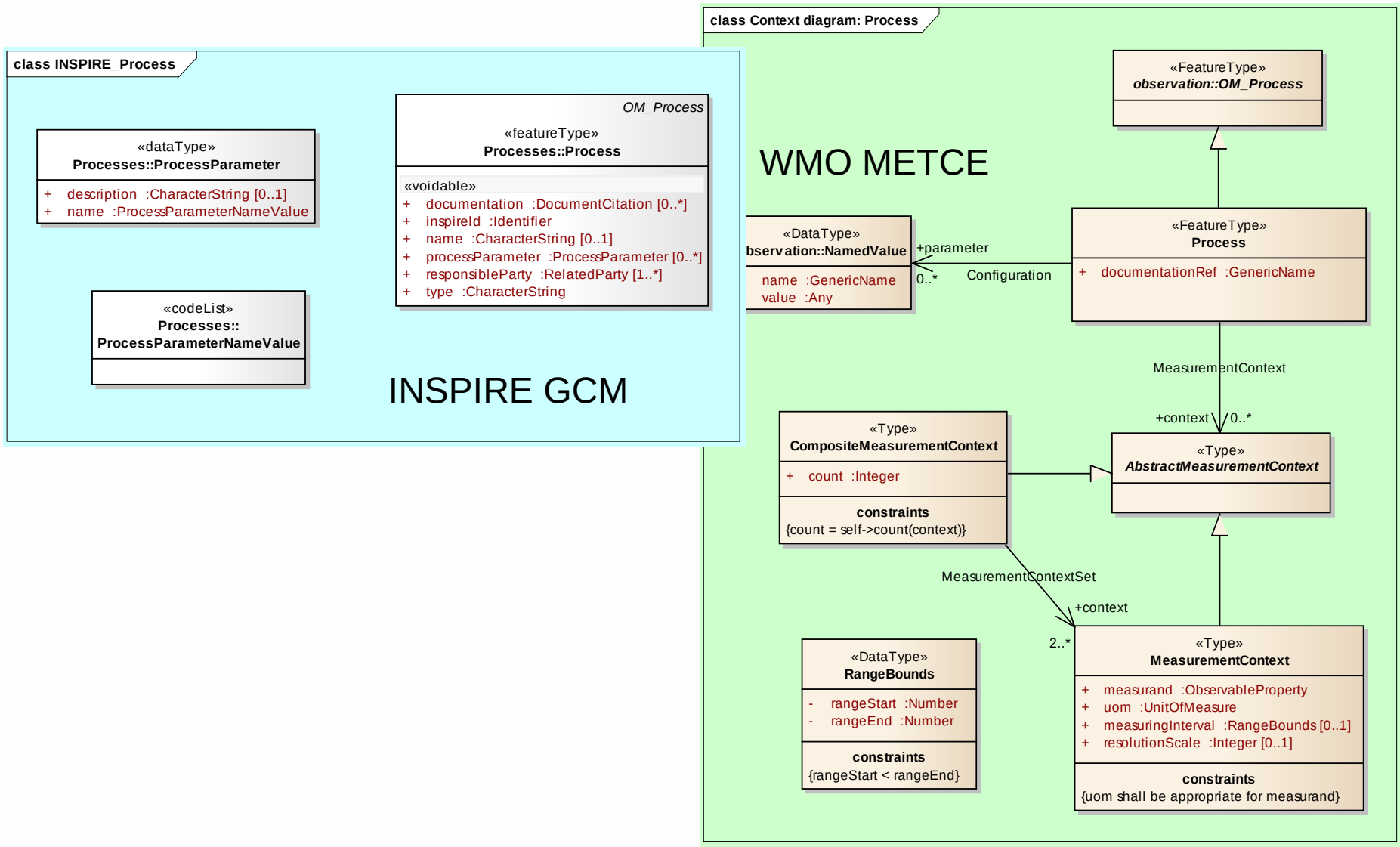
- How to ensure consistency between WMO, OGC, and INSPIRE threads of work ?
- Especially :
  - Data models (WMO MetCE and INSPIRE GCM)
  - Network Services (INSPIRE Extensions of OWS
- Discrepancies will result in costly transformations

GCM and MetCE discrepancies
Observable Property





GCM and MetCE discrepancies: Processes



Thank you for your attention

Any questions ?

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