Sensor Observation Service as an integral component of IOOS DMAC

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NOAA EDMC

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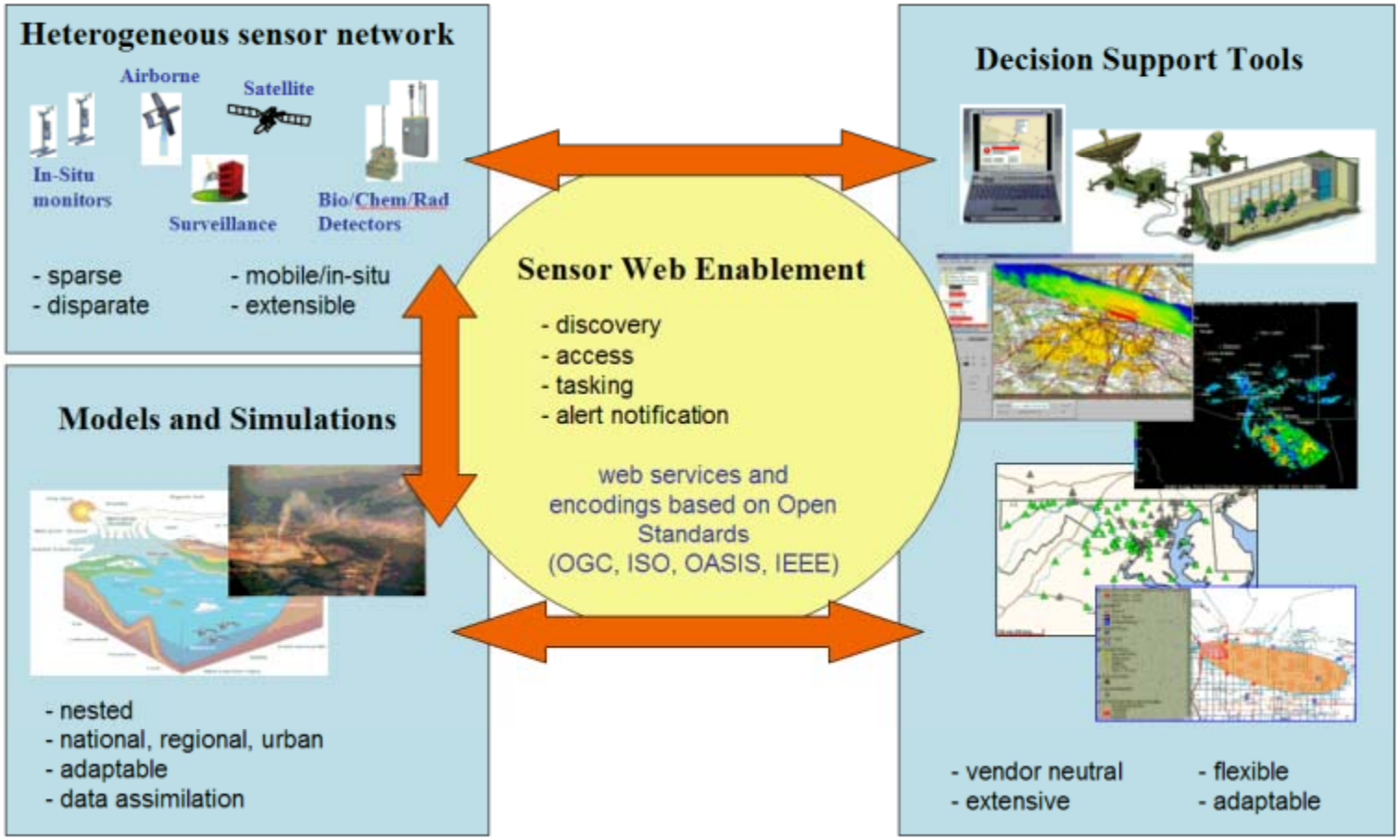
INTEGRATED OCEAN OBSERVING SYSTEM

IOOS®

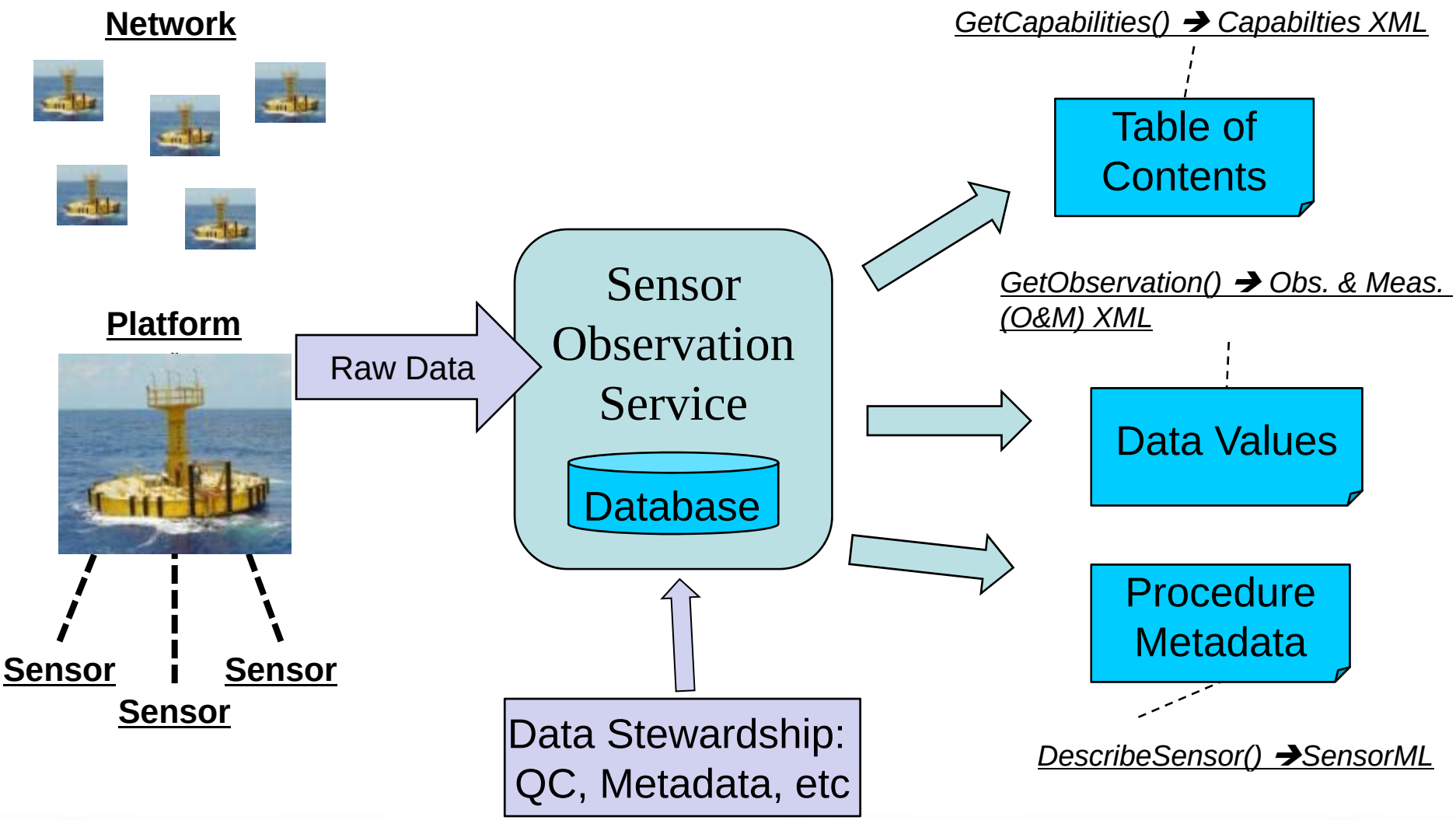
SOS is part of a framework (SWE)



[OGC 07-165]

M. Botts -2004

High-Level SOS Concept



SOS is an interface, not a data format

SOS Interface Details

ObservationOffering, Procedure

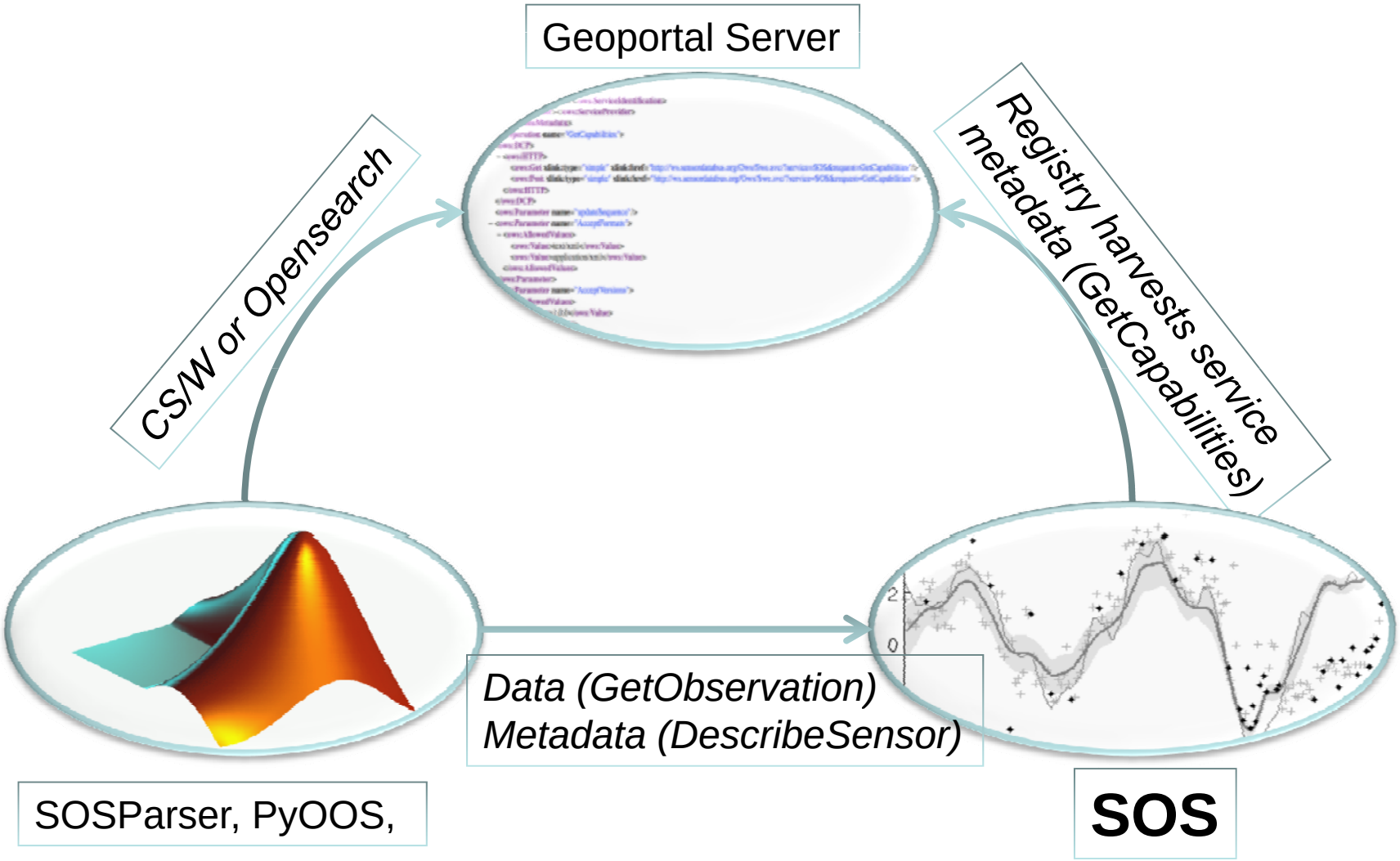
➔ Convenient grouping and filtering of datasets

spatial filters: Contains, Intersects, Overlaps, BBOX
temporal filters: T_Equals, T_After , T_Before, T_During
result filters:

- PropertyIsEqualTo
- PropertyIsNotEqualTo
- PropertyIsLessThan
- PropertyIsGreaterThan
- PropertyIsLessThanOrEqualTo
- PropertyIsGreaterThanOrEqualTo
- PropertyIsLike
- PropertyIsNull
- PropertyIsBetween

SOS is an interface, not a data format

SOS within IOOS



ncSOS: A THREDDS plugin implementing the SOS interface

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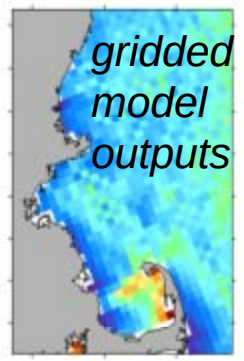
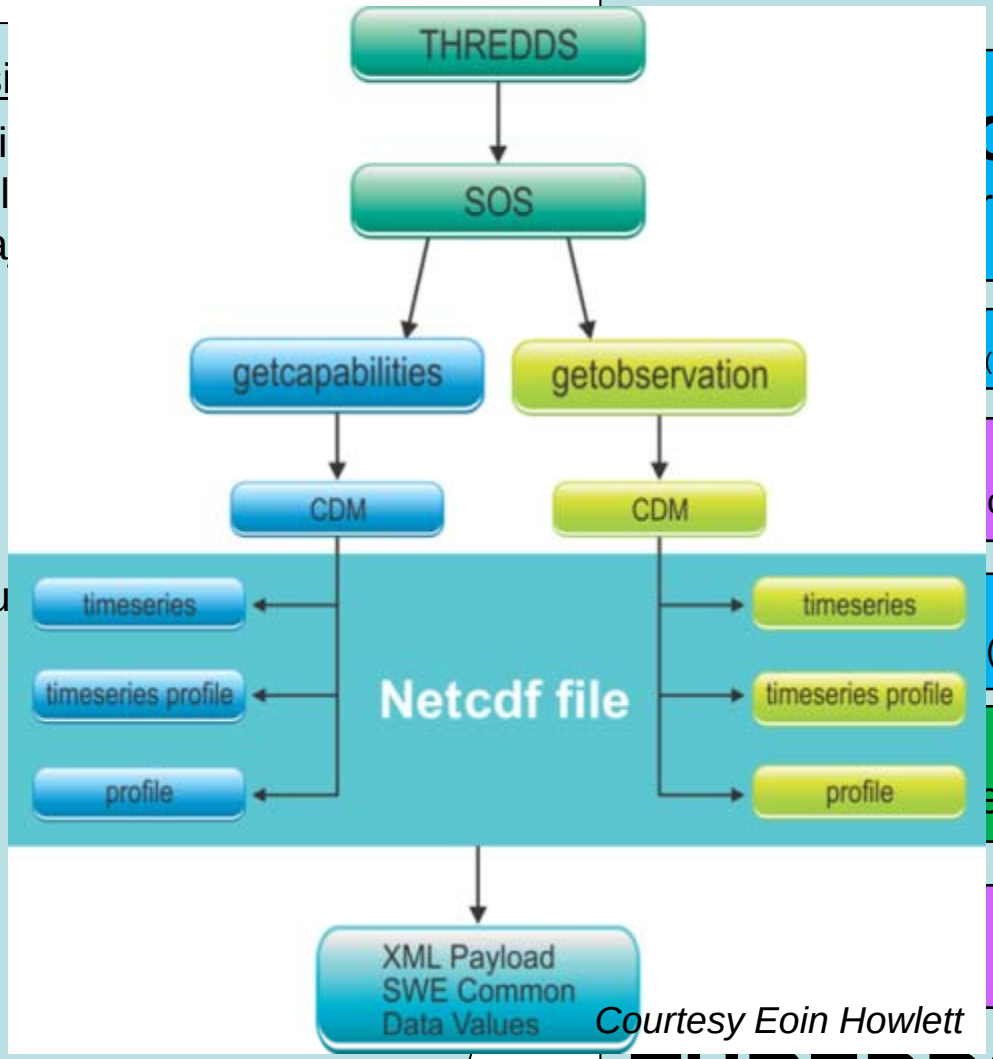
Structured Grids
(increasingly unstru



CF/ACDD



Courtesy Eoin Howlett

OS
rvation Service)

ISO
(TDS Catalog ➔ ISO 1911*)

col)

WCS
(Web Coverage Service)

e)

Etc…

THREDDS

Example THREDDS Catalog with ncSOS

Catalog
http://testbedapps-dev.sura.org/thredds/catalog/inundation/observations/noaa_nos/catalog.html

Data Set
http://testbedapps-dev.sura.org/thredds/catalog/inundation/observations/noaa_nos/catalog.html?dataset=inundation/observations/noaa_nos/8771510_Galveston_Pleasure_Pier_Ike_WL.nc

GetCapabilities
http://testbedapps-dev.sura.org/thredds/sos/inundation/observations/noaa_nos/8771510_Galveston_Pleasure_Pier_Ike_WL.nc?service=SOS&version=1.0.0&request=GetCapabilities&useCache=true

GetObservation
http://testbedapps-dev.sura.org/thredds/sos/inundation/observations/noaa_nos/8771510_Galveston_Pleasure_Pier_Ike_WL.nc?request=GetObservation&service=SOS&version=1.0.0&responseFormat=text%2Fxml%3B%20subtype%3D%22om%2F1.0.0%22&offering=urn:tds:station.sos:8771510&procedure=urn:tds:station.sos:8771510&observedproperty=Pred_6&eventtime=2008-09-08T00:30:00Z/2008-09-16T00:00:00Z

Initial development as part of Coastal Ocean Modeling Testbed project by ASA (Applied Science Associates) (testbed.sura.org)

Services above are in beta, contact Derrick if they aren't live when you visit.

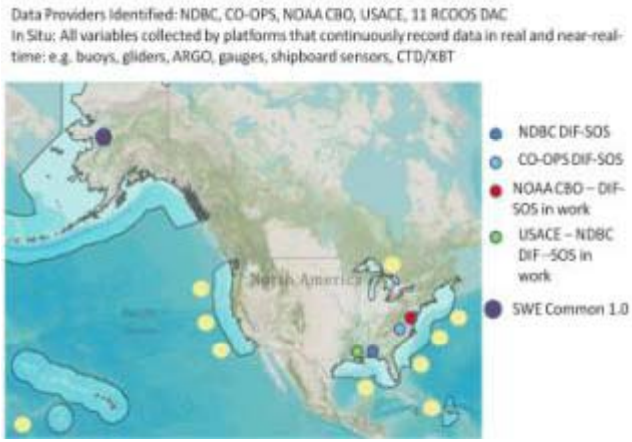
52North.org: SOS-T

Designed for RDBMS back end systems.

Full SOS transactional profile (includes RegistorSensor, InsertObservation)

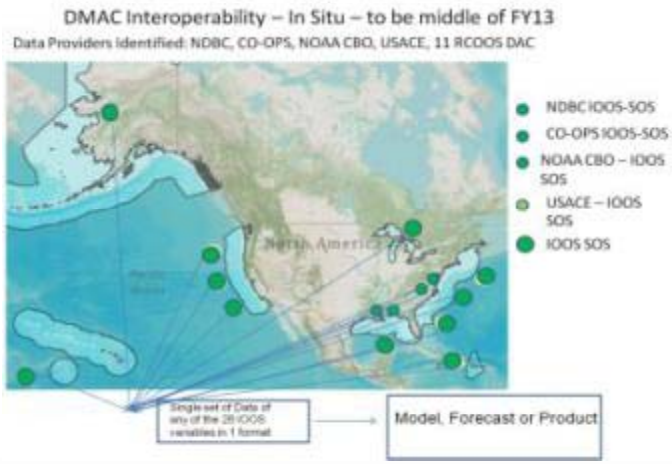
Out of the box load capability for many “national backbone” observing systems (via the transactional profile)

Recent and near term efforts will lower the barrier of entry for every region deploying SOS services



- Early adoption ➔ immature standard
- No commercial server options ➔ Build your own, or use developmental code with poor support
- Encoding standards were complex and poorly documented

- 52North.org port supporting IOOS format
- ncSOS THREDDS plugin
- Simplified encoding format with direct translation to netCDF

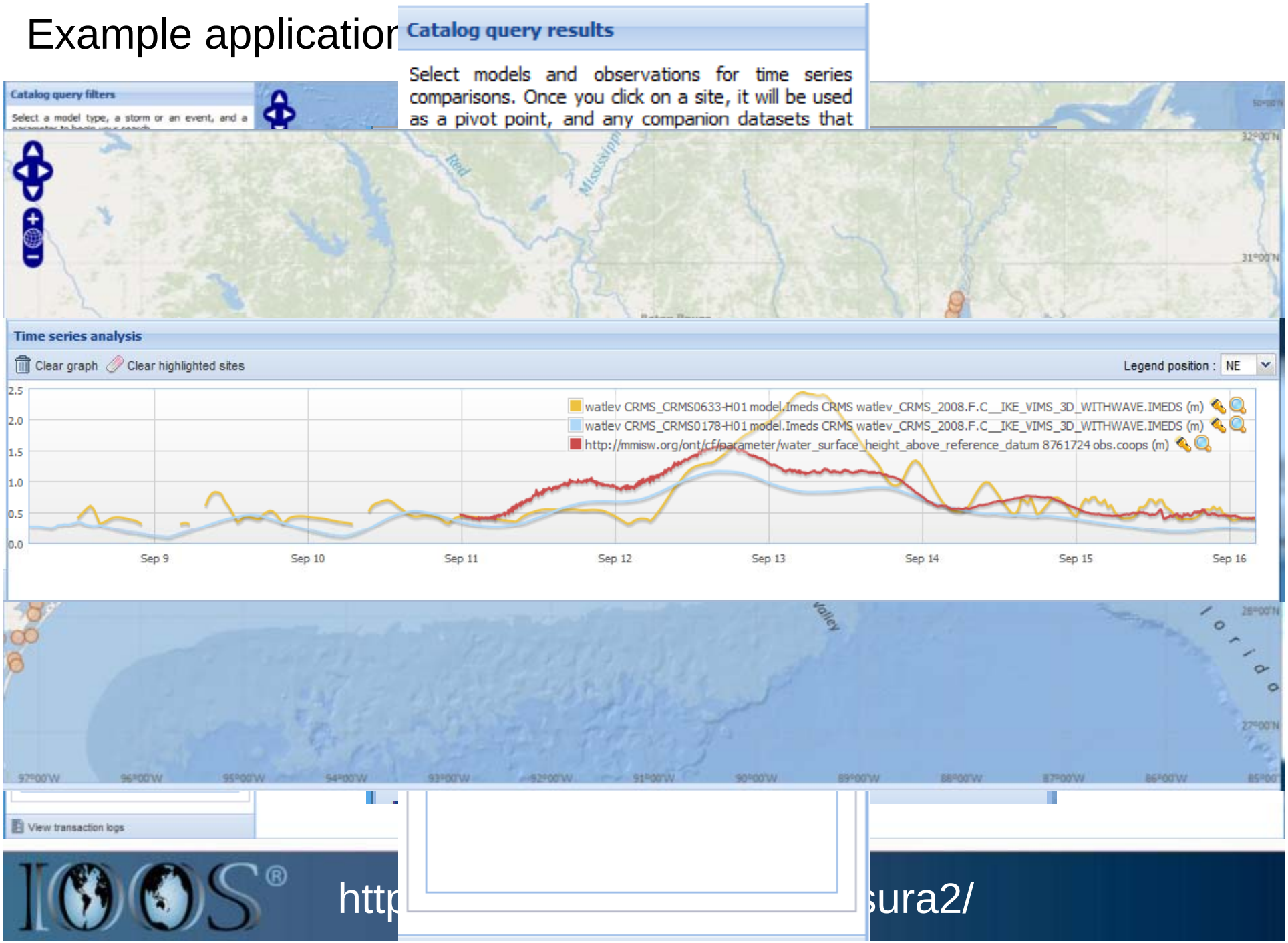


By Jan 2013

Summary

- netCDF/CF/ACDD forms a core content/format standard
- Common Data Model & CF Discrete Sampling Geometries: extends to in situ
- SOS as part of SWE is compelling, less certain about how well it stands alone
- Grouping and aggregation by THREDDS is not solved (ERDDAP does this well)
- netCDF model may not support the needs of streaming real time systems

Example application



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