Surface currents services at CHS: The details

SCWG 2

Quebec May 2014

Pêches et Océans Canada

Fisheries and Oceans Canada

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Introduction

- Paper Atlas for current predictions
- Internal DFO forecast models running
- External requests
- …

Prediction and Forecasting models

- Two forecasting models, DFO
- STLE >Trois-Rivières to Saguenay
- MOGSL Québec City to Gulf
- MOGSL > forecast, forecasted surface winds, gulf surface temp observations, tidal prediction boundary , fully coupled with atmoshepric forecast and ice https://weather.gc.ca/grib/grib2_Gulf-St-Lawrence_e.html
- STLE > prediction + mean river flow, non standard format, home made ASCII

Resolution (Time and Space)

- MOGSL
  - Run every 24 h
  - Forecast contains 48h of data
  - Spatial = 5 km temporal = 1 hour
- STLE
  - Run every 24 h
  - Prediction contains 48h of data
  - Spatial = 400 m temporal = 1 hour

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Formats involved internally

- MOGSL = GRIB2 STLE= ASCII non-standard
- Everything converted to HDF5 for internal manipulation.
- No interpolation done just conversion
- File structure to store info. Year/month/day/model/type
- The intention to keep 1 year of data live
- Steps handled by Java Scripts

Catalog Service

- First step. Query service to know what is avalaible, spatial extent, time extent
- OGC services where not ready at the time, now we could use OGC default catalog services
- SOAP technology used, xml language, well known by programmers

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Display Service

- Web Mapping Service powered by mapserver(open source)
- Symbology generated using custom shapefiles used by mapserver.
- Your not looking at vector information is just a dumb WMS image
- If you download you get a composed raster image(arrows + google background)
- If you download you get the full model extent not just you have on the screen.

File Service, format supported

- HDF5 Native
- NetCDF
- ASCII text
- We don't store the 3 formats internally we convert on request only via the file service
- http://www.unidata.ucar.edu/software/netcdf/conventions.html

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File Service, sample request

http://ws.ns-shc.qc.dfo-mpo.gc.ca/OO-CurrentsIceWeb/ExportData?model=stle&format=text&data=u,v&dates=20111222000000,20111223000000

Model = STLE
Format = text
Data = u,v
Dates = DEC 22 00h00 to DEC 23 00h00
(yyyyMMddhhmmss)

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Metadata in Headers

water = "1" ;
Delta_Latitude = "0.0025" ;
Delta_Longitude = "0.003999999999999995" ;
Maximum_Latitude = "49.5" ;
Product = "Current forecasts database (400 m resolution)" ;
land = "0" ;
organization = "Institute Maurice-Lamontagne, Departement of Fisheries and Oceans, Canada" ;
Minimum_Latitude = "46.0" ;
Maximum_Longitude = "-68.0" ;
Minimum_Longitude = "-72.6" ;
Number_Of_Cells_South_North = "1400" ;
Number_Of_Cells_West_East = "1150" ;
generatedDateTime = "20140420_000000" ;

Missing : Projection, reference systems...

Extents of models vs. Cell approach (S-102)

- 2 models > two blocks of data
- S-102 cell approach
  - Harbour entry
  - Coastal
  - Overview
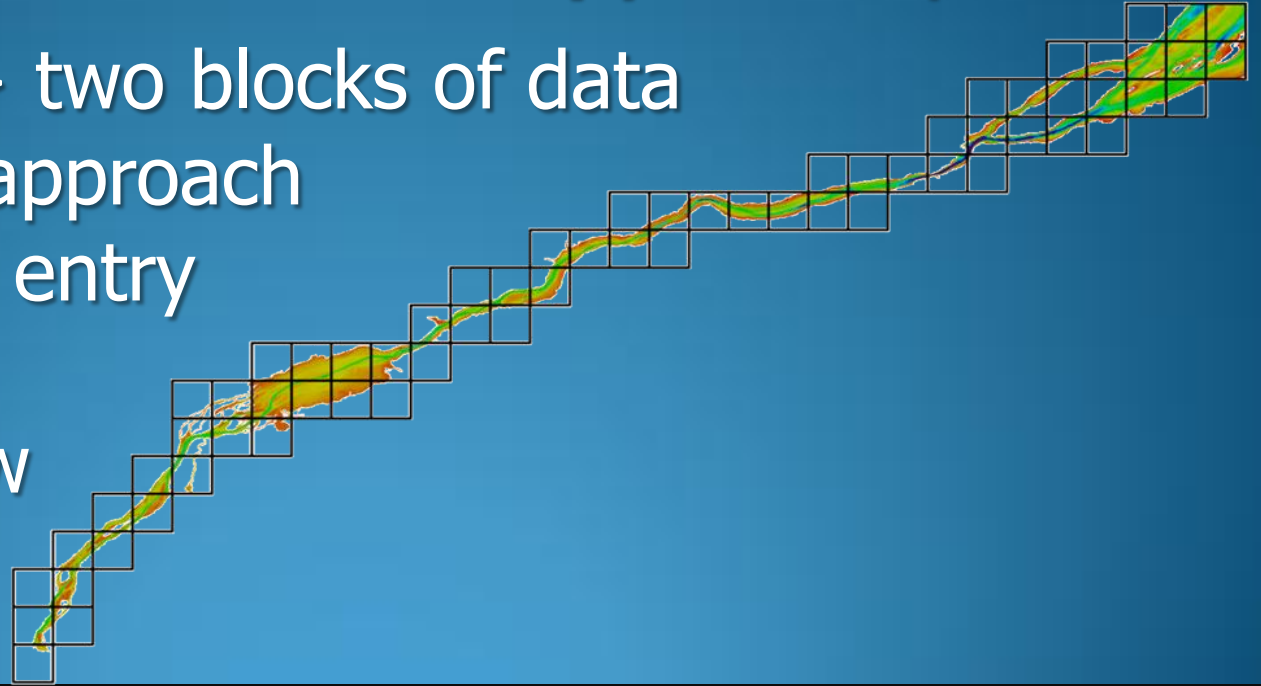
Conclusion

- First implementation
- Migrate to S-111
- Test dataset ?