Hydrographic Services and Standards Committee

Surface Current Production at NOAA using IHO's S-111 Format

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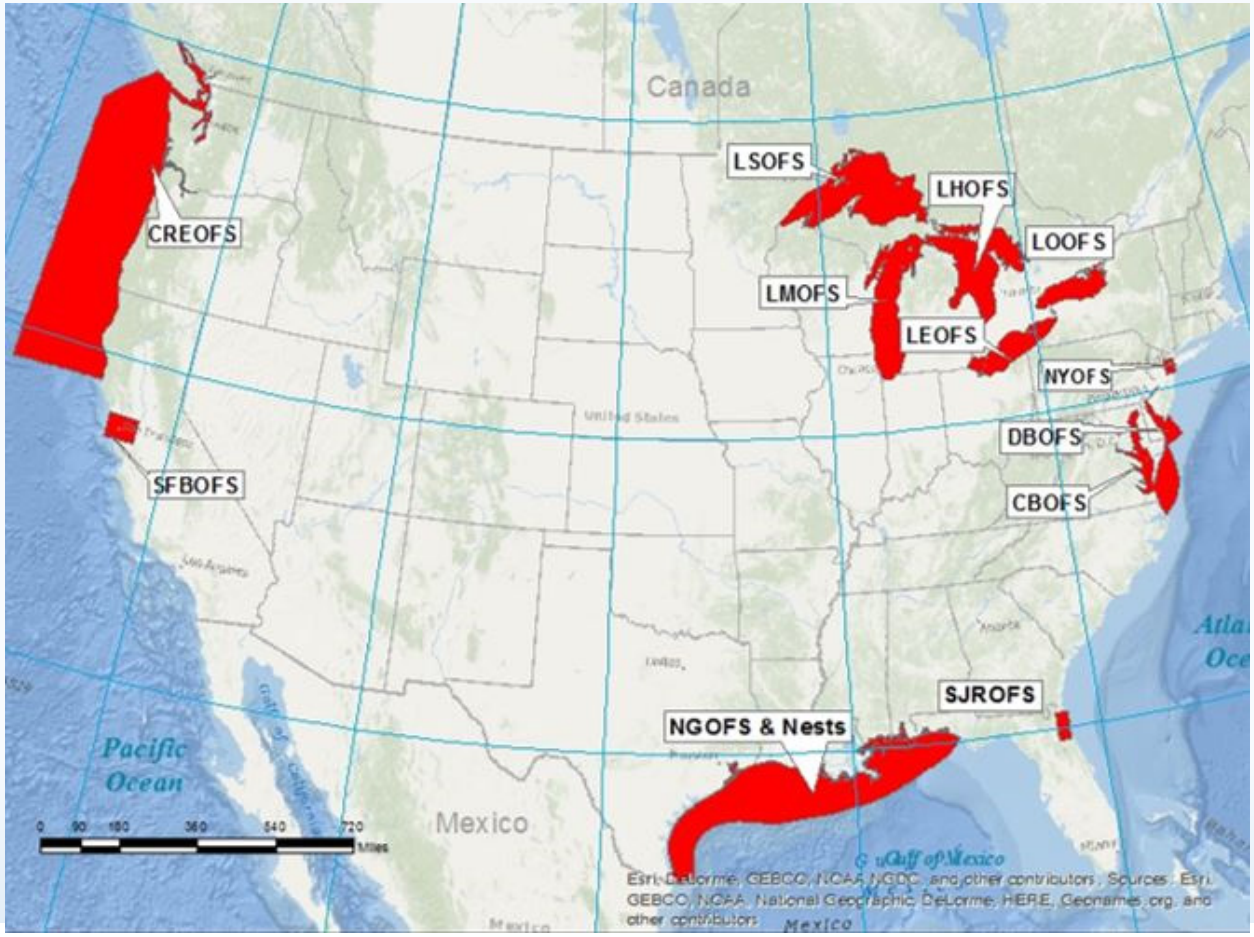
Operational Forecast Systems - OFS

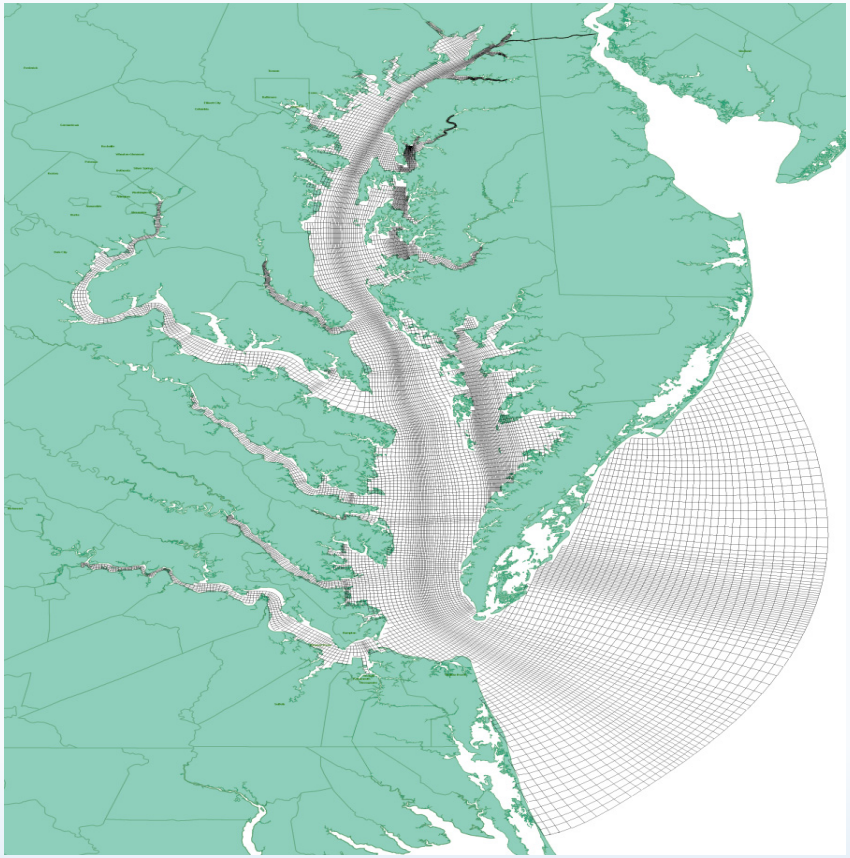
- NOAA operational nowcast and forecast models
- Run 24 hours per day; output every 6 hours
- Support NOAA mission goals and priorities
- Operational Forecast System - Data

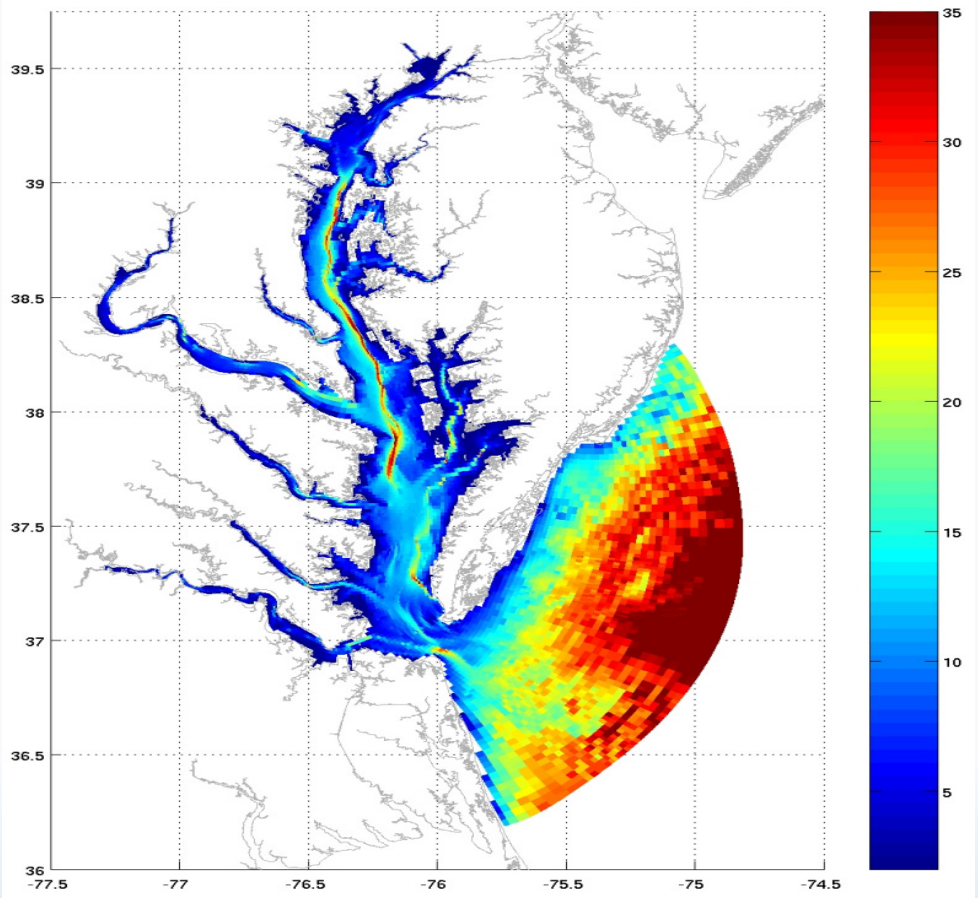
- Operational Forecast System - Components
  - Hydrodynamic model predictions
  - Product dissemination
  - Quality control monitoring

NOAA Operational Forecast Systems - OFS

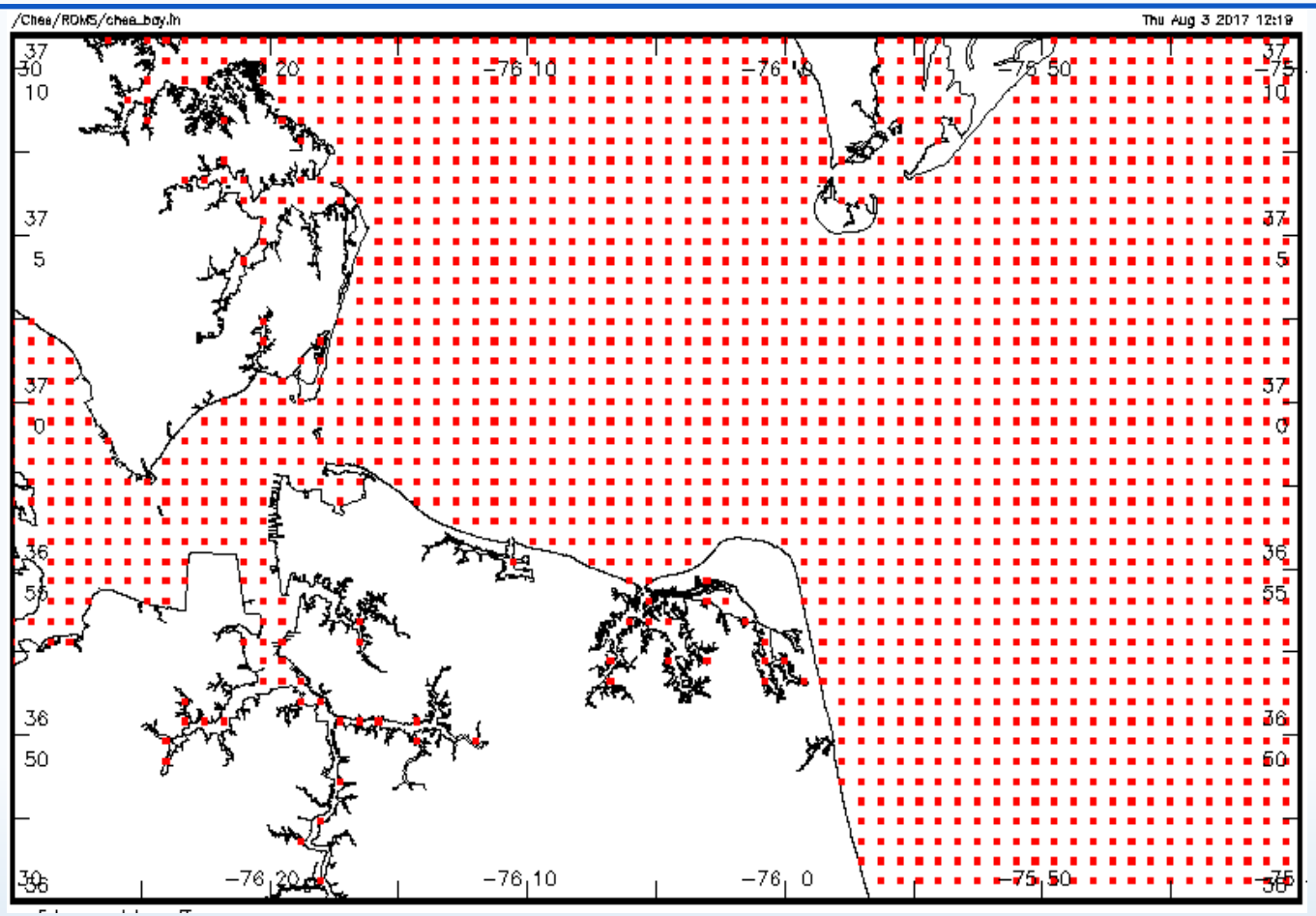


Chesapeake Bay OFS





Chesapeake Bay – Regular Node Spacing



Surface Currents - Operationalize S-111 Data

Description

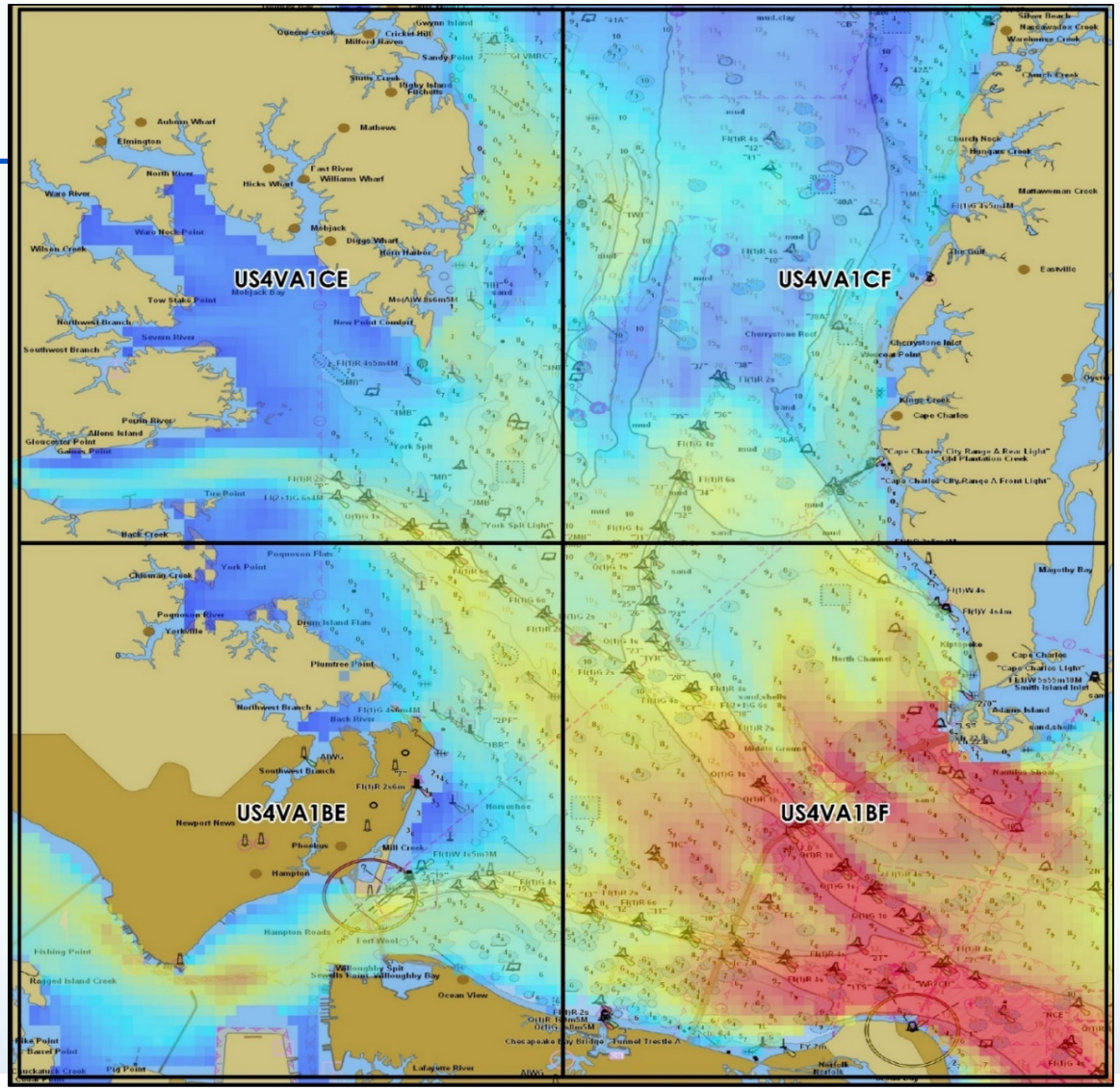
- Develop a service to disseminate OFS surface current data in the IHO's S-111 format
- For use in Electronic Navigation Systems
- S-111 data is designed for interoperability
- IHO product specifications based on S-100 Framework
- S-111 Surface Currents Product Specification adopted by IHO on February 13, 2019

Surface Currents S-111 Metadata

Variable	Value
IHO Specifications	S-100 Edition 4.0.0 S-111 Edition 1.0.0
Format	Hierarchical Data Format 5 (HDF5)
Operational Forecast System (OFS) Parameter(s)	Surface Currents
Coordinate System	WGS 84
Frequency	4 times daily cycle (0, 6, 12, 18 UTC)
Time Resolution, Duration	Hourly out to 48 hours
Time Zone	UTC
Resolution	~500 m (regular grid)
Depth	4.5 m below surface
Data Coverage	Chesapeake Bay, VA/MD/DC (CBOFS); Delaware Bay, DE/NJ (DBOFS) (as of Dec '18)
Hydrodynamic Model	Regional Ocean Modeling System (ROMS)

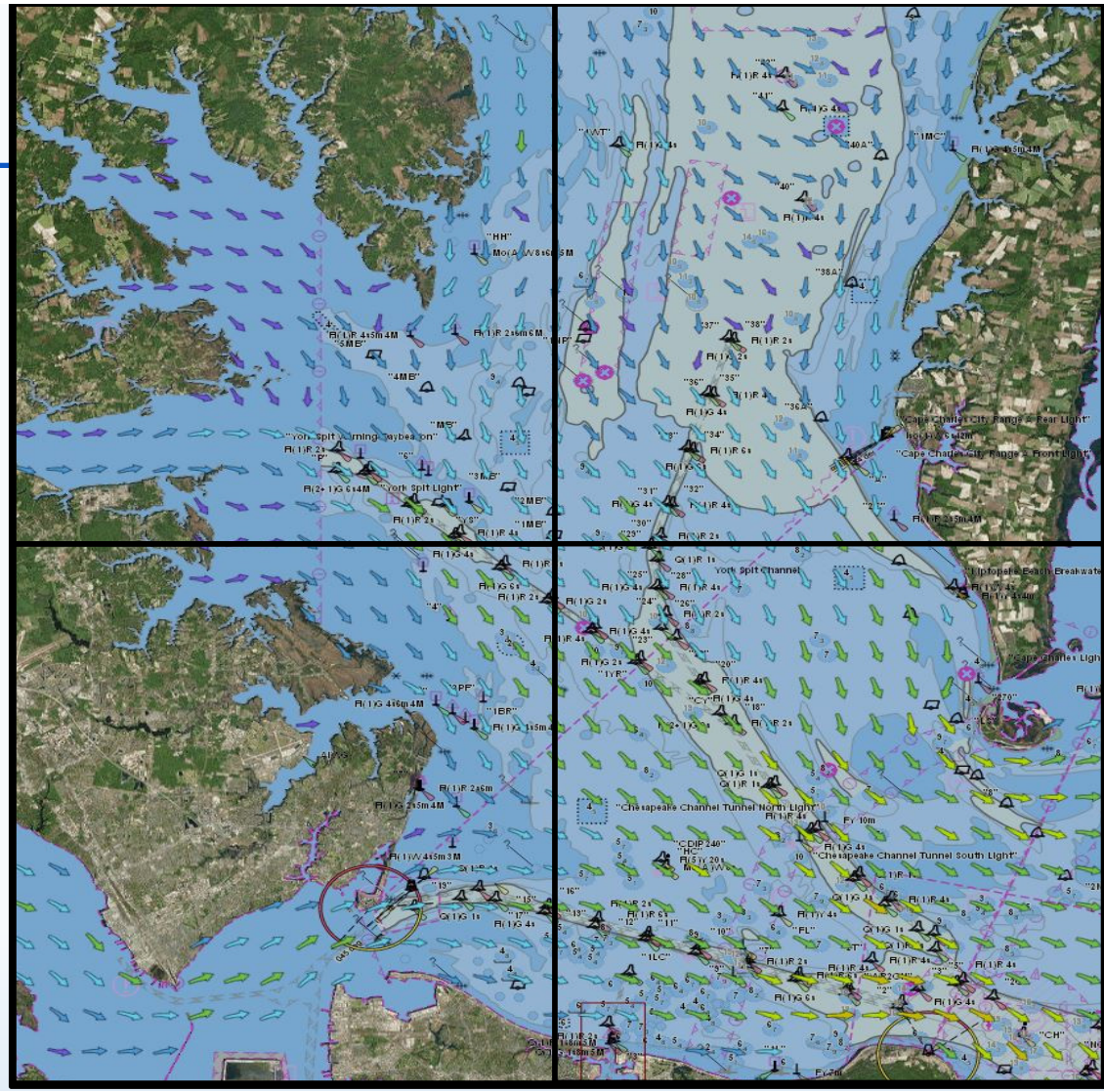
Lower Chesapeake Bay

ENC Band: 4
Format: S-111 w/ HDF5 encoding
Grid Resolution: 0.01 deg
Parameter: Surface currents
Coordinate System: WGS 84
Dataset: 72 hours, 1 hr intervals
Time Zone: UTC
Date: 19:00 December 3rd, 2018



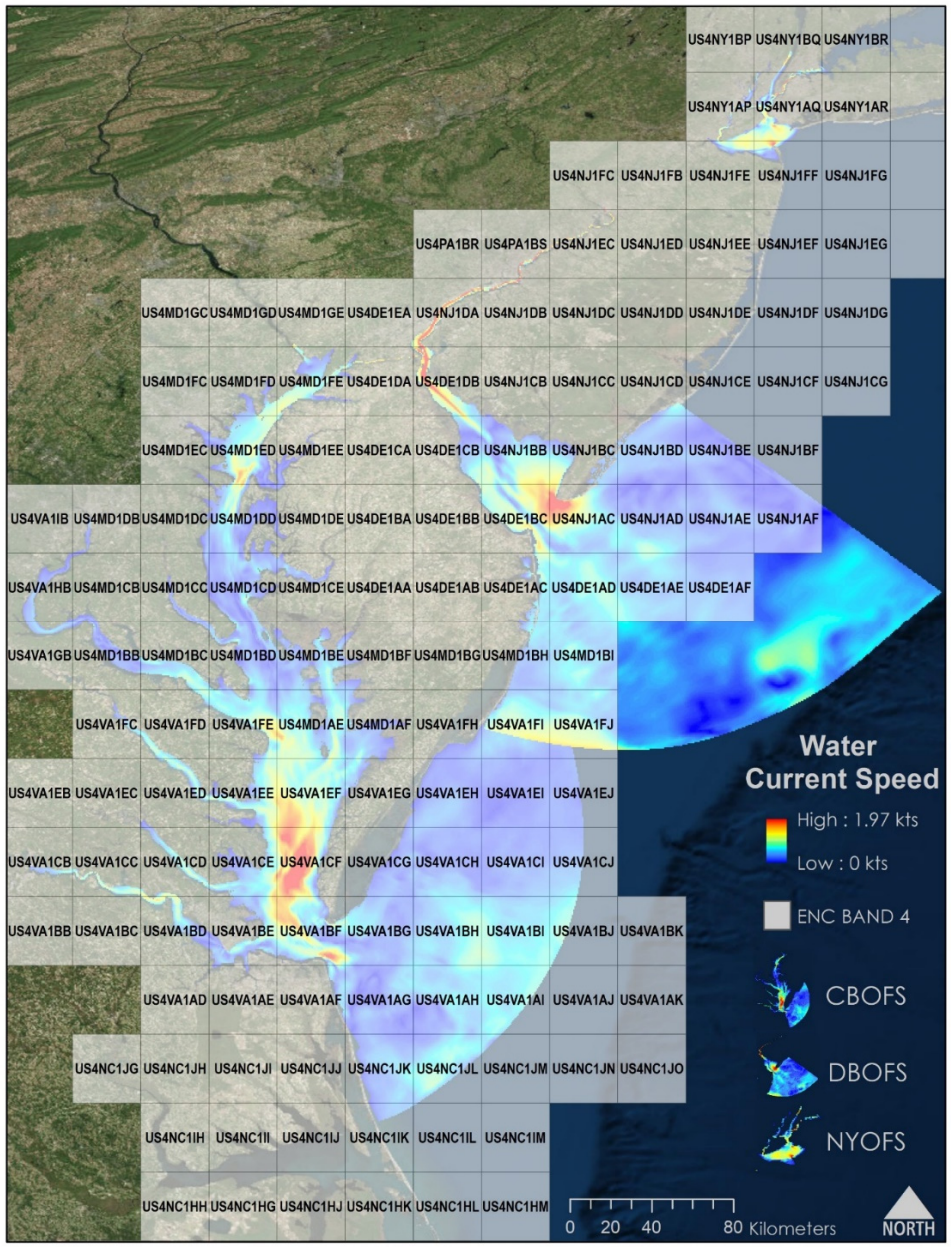
Lower Chesapeake Bay

ENC Band: 4
Format: S-111 w/ HDF5 encoding
Grid Resolution: 0.01 deg
Parameter: Surface currents
Coordinate System: WGS 84
Dataset: 72 hours, 1 hr intervals
Time Zone: UTC
Date: 19:00 December 3rd, 2018



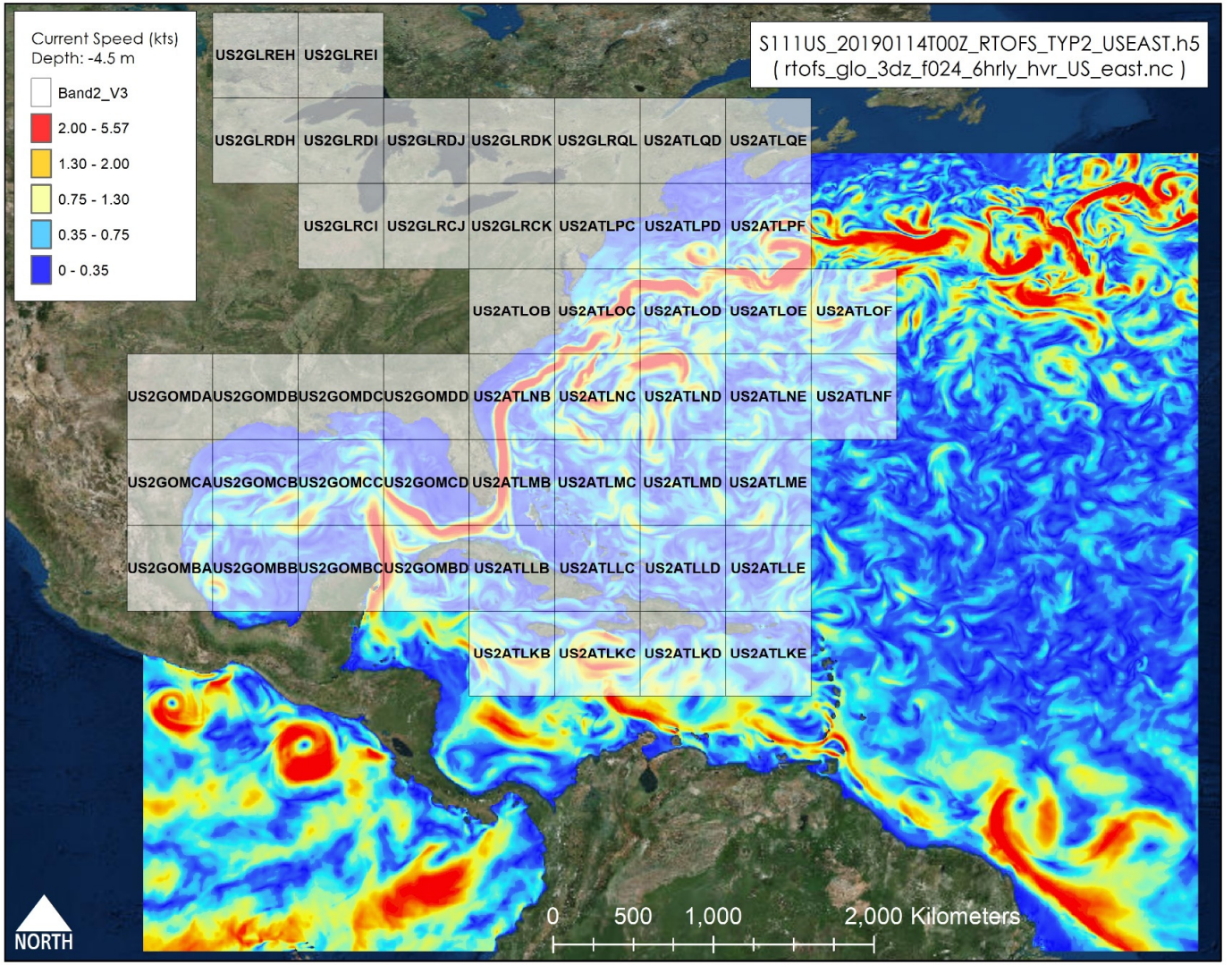
NOAA Electronic Navigation Charts (ENC)

ENC Band: 4
OFS: Chesapeake Bay, Delaware Bay, New York Harbor
Format: S-111 w/ HDF5 encoding
Grid Resolution: 0.01 deg
Parameter: Surface currents
Coordinate System: WGS 84
Dataset: 72 hours, 1 hr intervals
Time Zone: UTC
Date: 19:00 December 3rd, 2018



Western Atlantic

ENC Band: 2
Format: S-111 w/ HDF5 encoding
Grid Resolution: ~ 0.5 – 1.0 km
Parameter: Surface currents
Coordinate System: WGS 84
Dataset: 72 hours, 1 hr intervals
Time Zone: UTC
Date:



Surface Currents - Data Dissemination

Description

- Currently data available via anonymous FTP
- Develop database for metadata and exchange catalogues
- Develop a cloud-based service to disseminate OFS surface current data
- Consult with HSSC and IRCC colleagues on best way forward
- Look at existing infrastructures that disseminate data
- Provide support for other S-100 based products and services
- Investigate packaging and distributing data based on regions such as Metarea

Operational Forecast System - Applications

Hydrography

Route survey
Habitat mapping
Deep sea mining
Charting
EEZ survey

Environmental Monitoring

Emergency response
Water quality
Ecosystem assessment
Spill assessment

Shipping

Precision Navigation *
Baseline environmental assessment
Geophysical survey
Pipeline survey
Debris/clearance survey
Route optimization

Search & Recovery

Asset location
Marine archaeology

National Oceanic & Atmospheric Administration: www.noaa.gov
Office of Coast Survey: nauticalcharts.noaa.gov
International Hydrographic Organization: iho.int
U.S. Committee on Maritime Transportation System: www.cmts.gov

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