Module 2: Automatic Identification System Analysis Package (AISAP) Introduction

ERDC
Engineer Research and Development Center

http://ais-portal.usace.army.mil/

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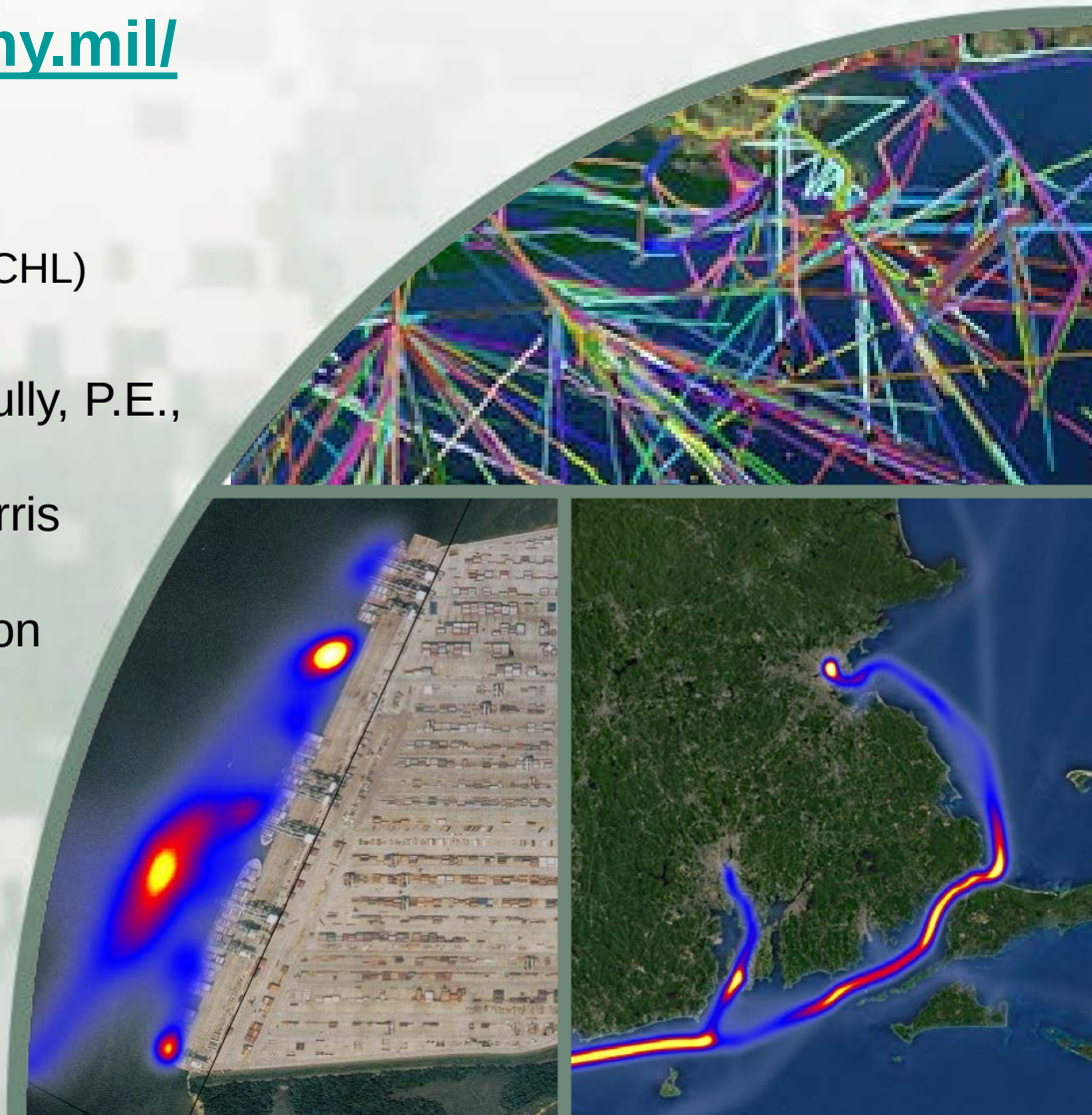
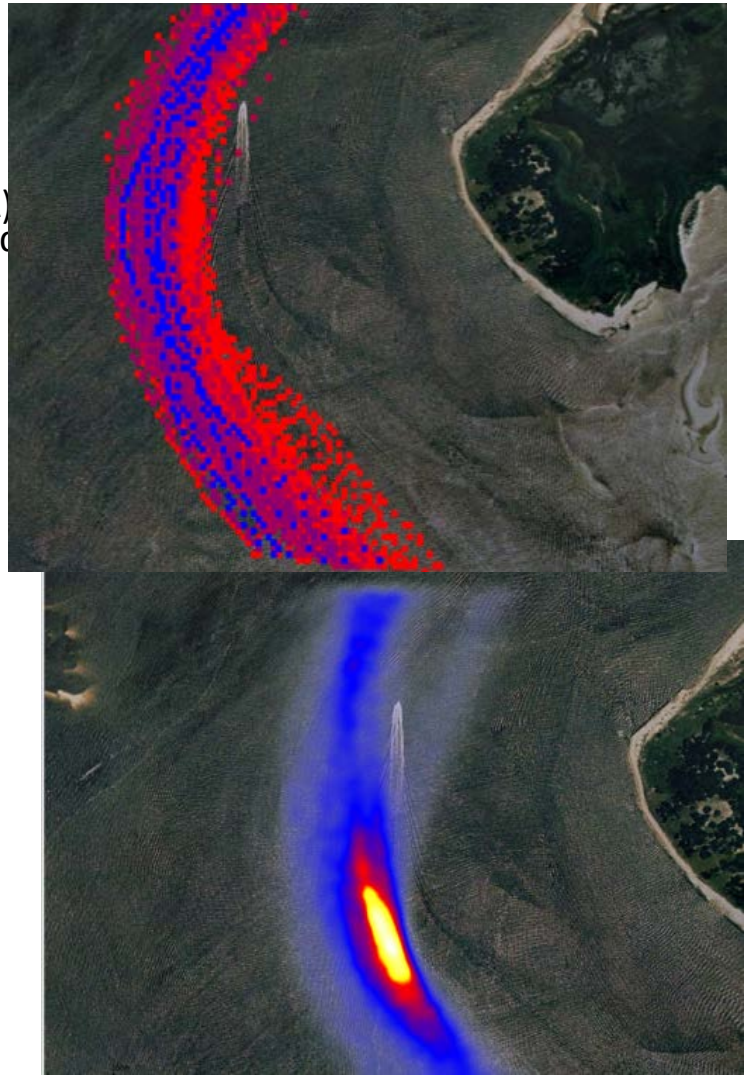
AISAP User Workshop
SWD – Dallas, TX
31 AUG 2016



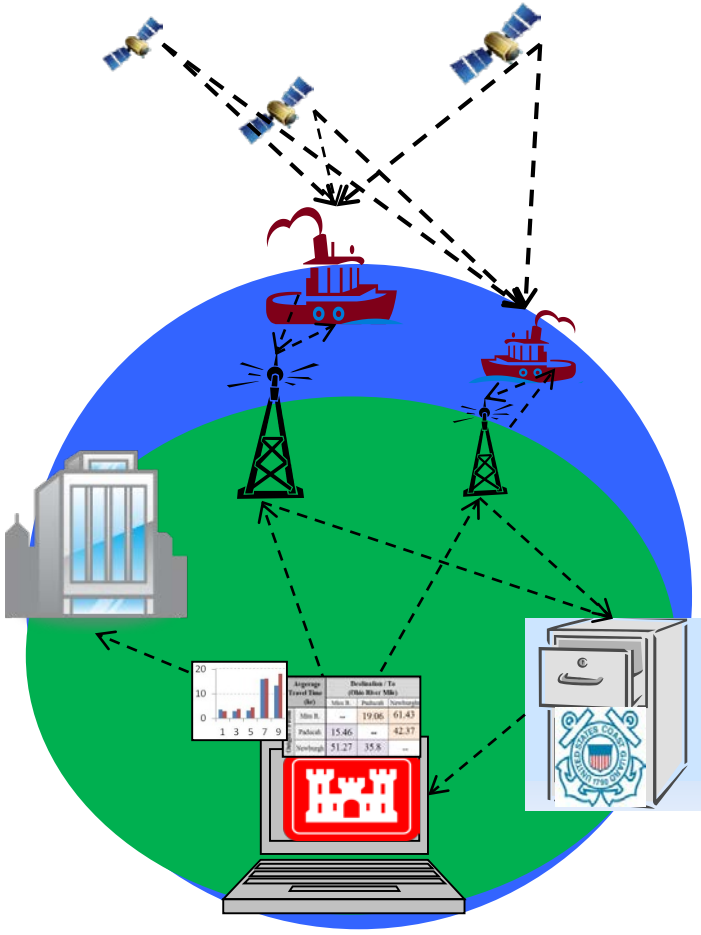
Background

- AISAP has existed as a desktop tool since FY12(!); Applied Research Associates (ARA)
- Corps and Coast Guard have an Interagency Services Agreement (ISA) to share NAIS data → suite of web services for accessing USCG-stored archival AIS data
- AIS has been used by many across the Corps on an *ad hoc* basis to support both inland and coastal studies and operational decision making.



US Coast Guard's Nationwide Automatic Identification System (NAIS)

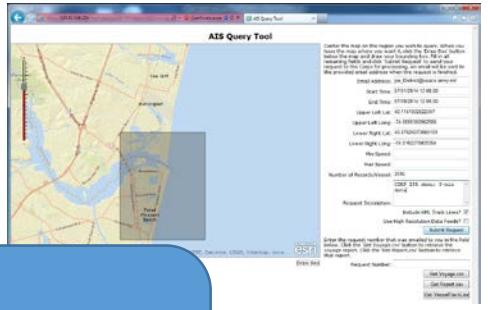
- http://www.navcen.uscg.gov/?pageName=NAISmain
- Information included in AIS:
  - Vessel identification
  - Location (longitude and latitude)
  - Time stamp
  - Heading
  - Speed
  - Vessel characteristics
- Discrete data points
  - Transmission frequency of 6 secs.
- Vessels act as passive probes



AISAP Functional Layout

USCG NAIS

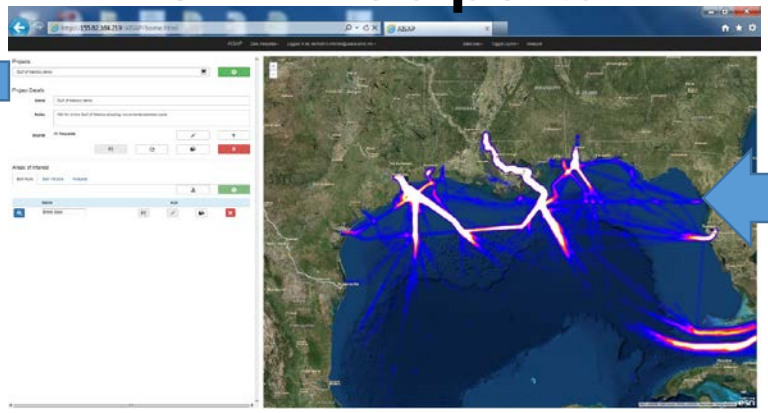
USCG web services



Scripts for batch service calls via GUI

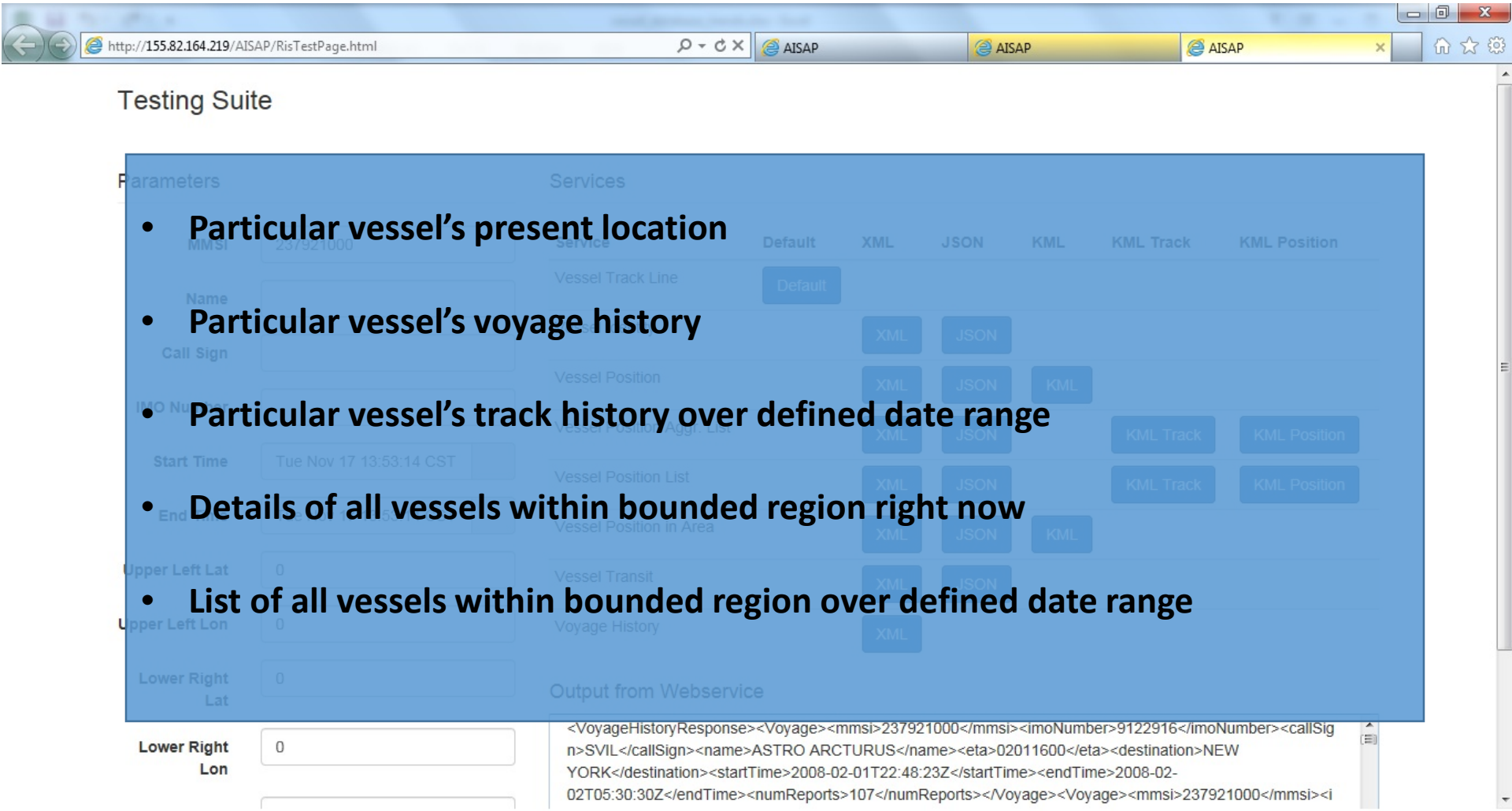
SAM-OPJ data cache

AISAP web portal



Basic data retrieval (.csv and .kml)

NAIS Web Services



- **Particular vessel's present location**
- **Particular vessel's voyage history**
- **Particular vessel's track history over defined date range**
- **Details of all vessels within bounded region right now**
- **List of all vessels within bounded region over defined date range**

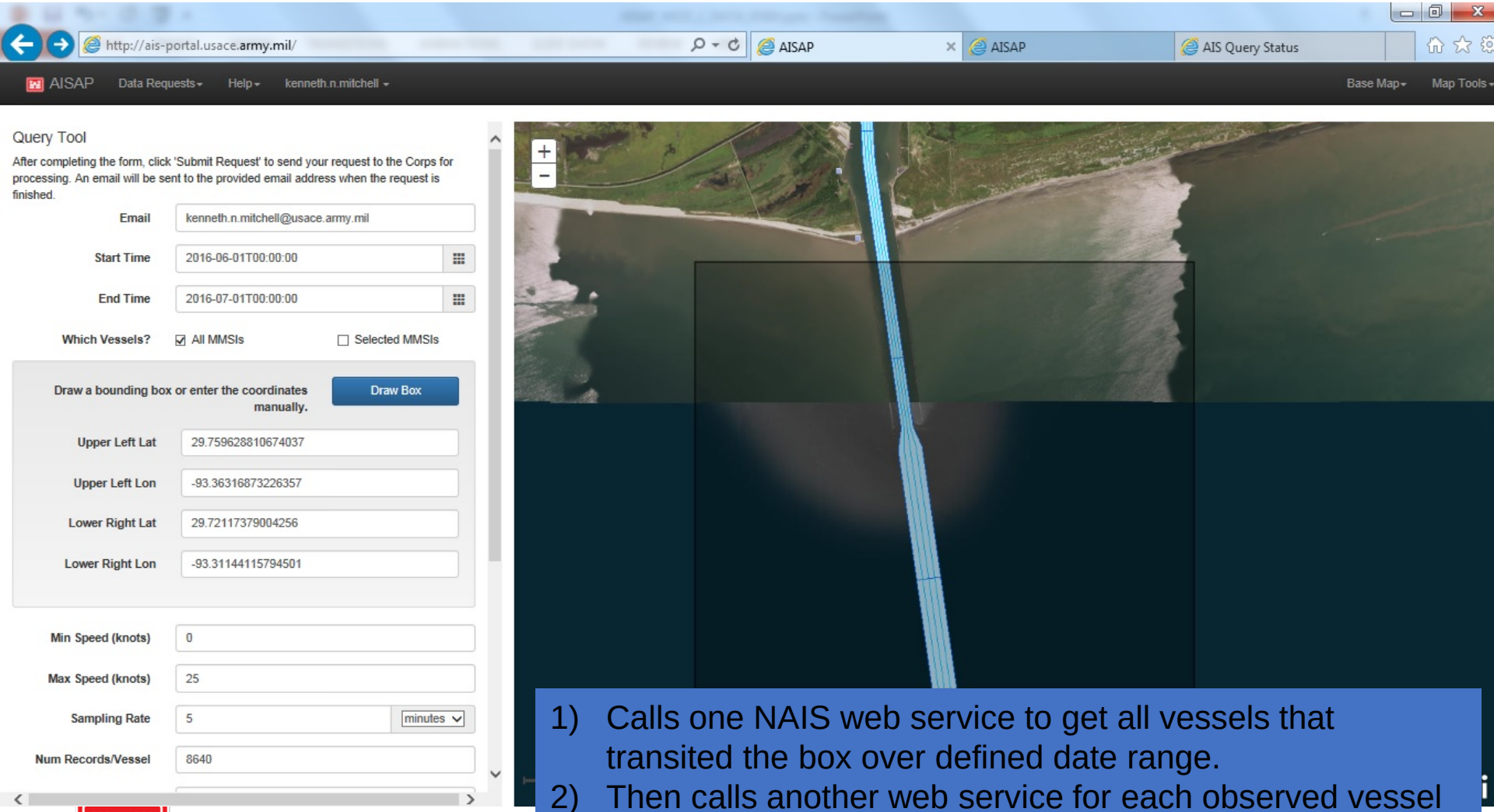
NAIS Web Services

Example:

https://service.uscg.mil/service/uscg.mda.position.vessel/nais/VesselPositionList-KMLPosition?argparent=VesselPositionListRequest&MMSI=338065964&StartDateTime=2011-06-01T00:00:00Z&EndDateTime=2011-06-03T00:00:00Z&DesiredNumberOfRecords=200

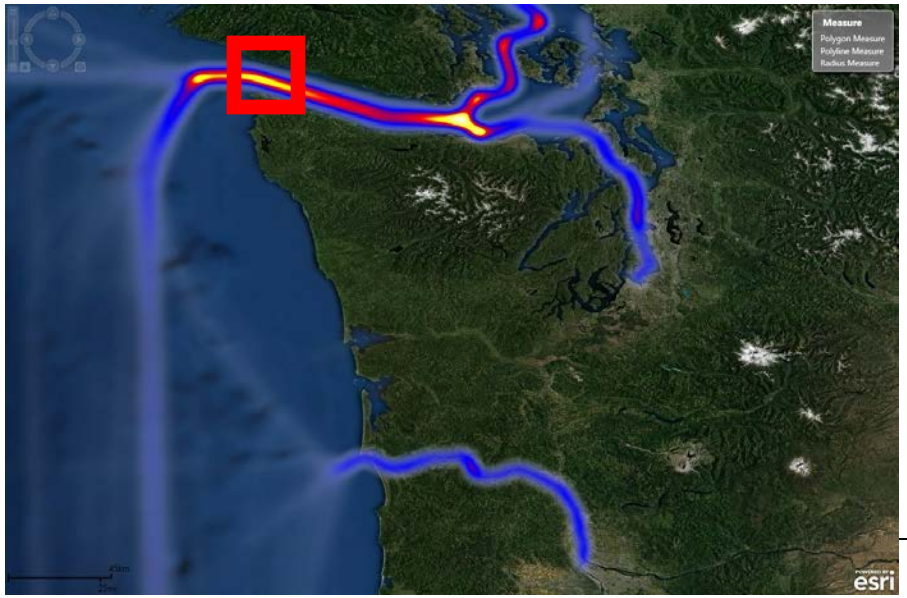
- NAIS web services provide the basic building blocks for the AISAP data acquisition architecture
- AISAP automates the process of repeatedly calling the various web services so as to assemble large amounts of archival NAIS data relevant to USACE decision making
- Important to understand these underlying components in order to know strengths and limitations of AISAP data requests

AISAP Data Requests



1) Calls one NAIS web service to get all vessels that transited the box over defined date range.
2) Then calls another web service for each observed vessel to return the vessel track over the defined date range.

AISAP Data Cache



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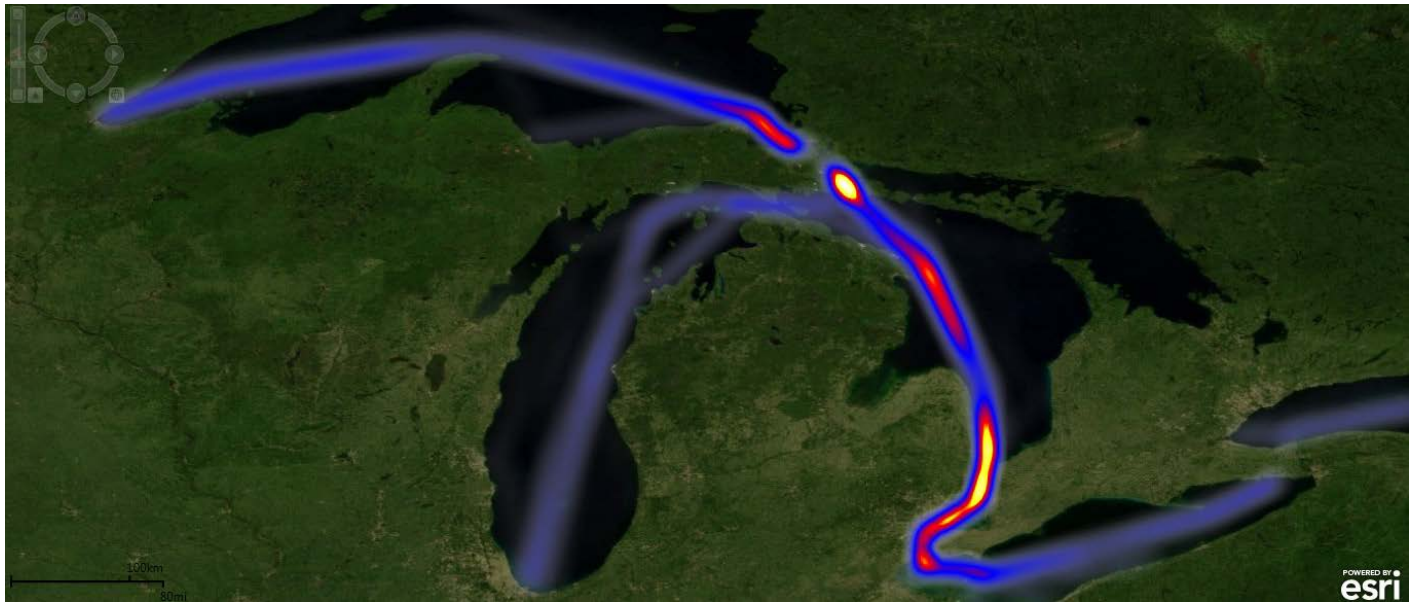
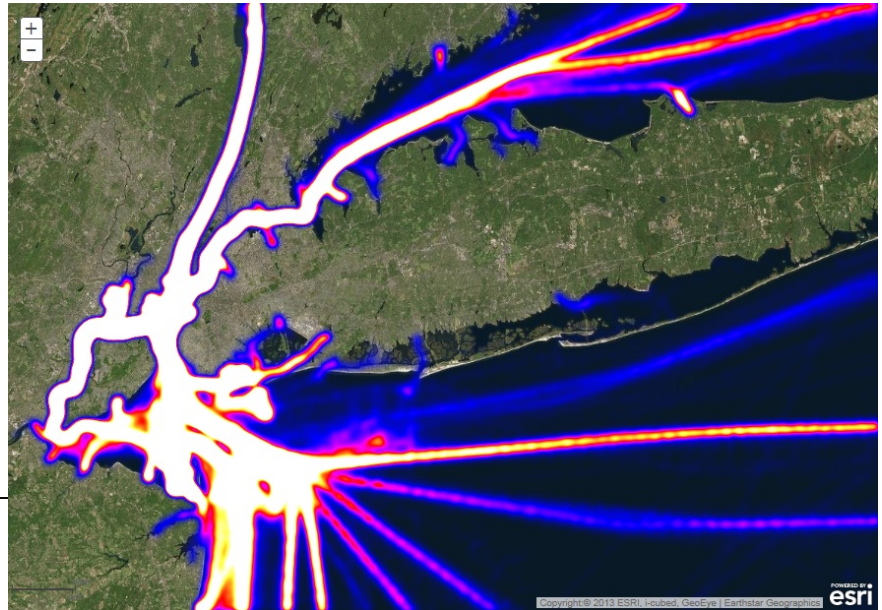
AISAP Data Cache





AISAP web portal

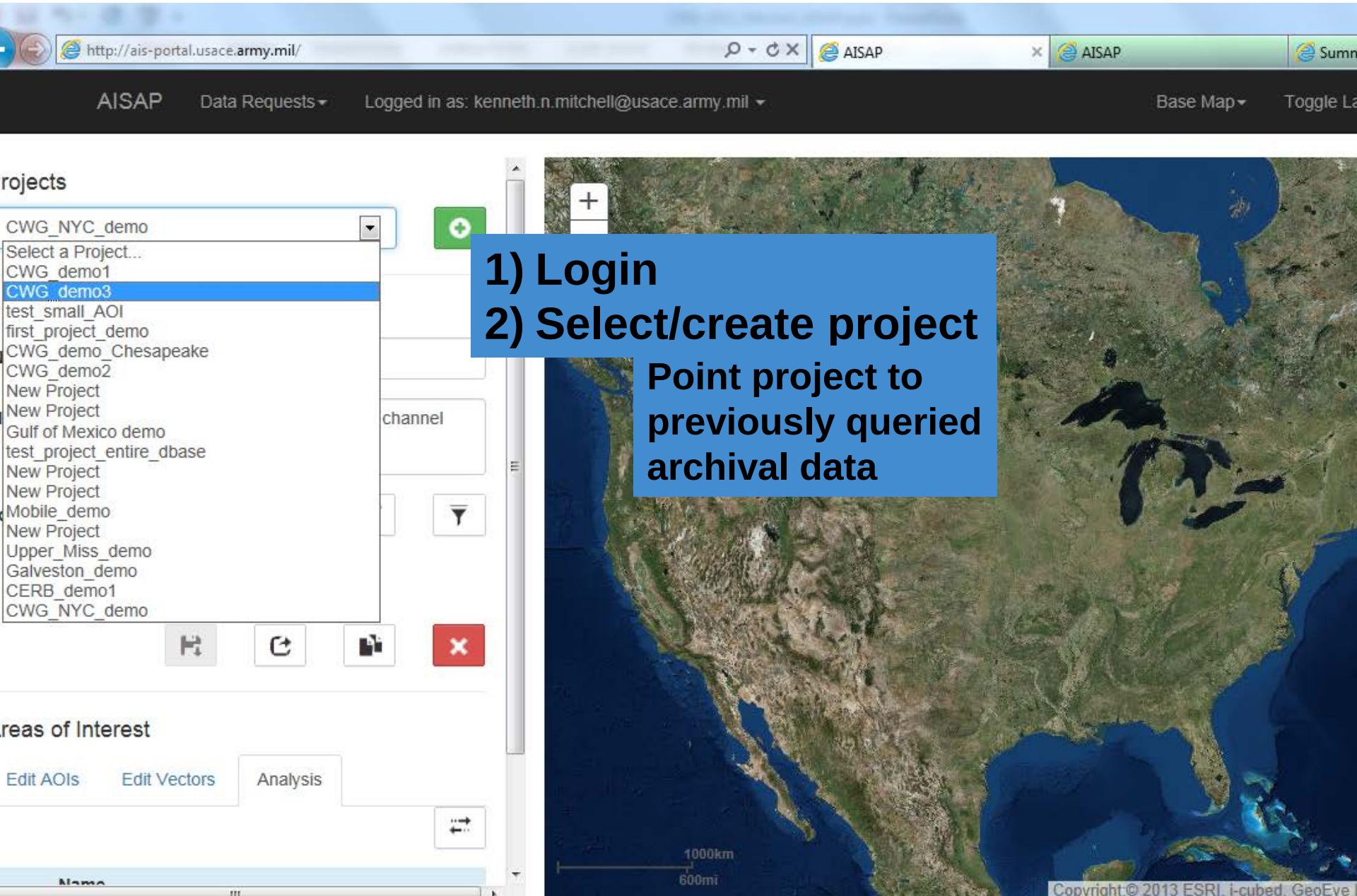
AISAP Desktop version

OPJ cache

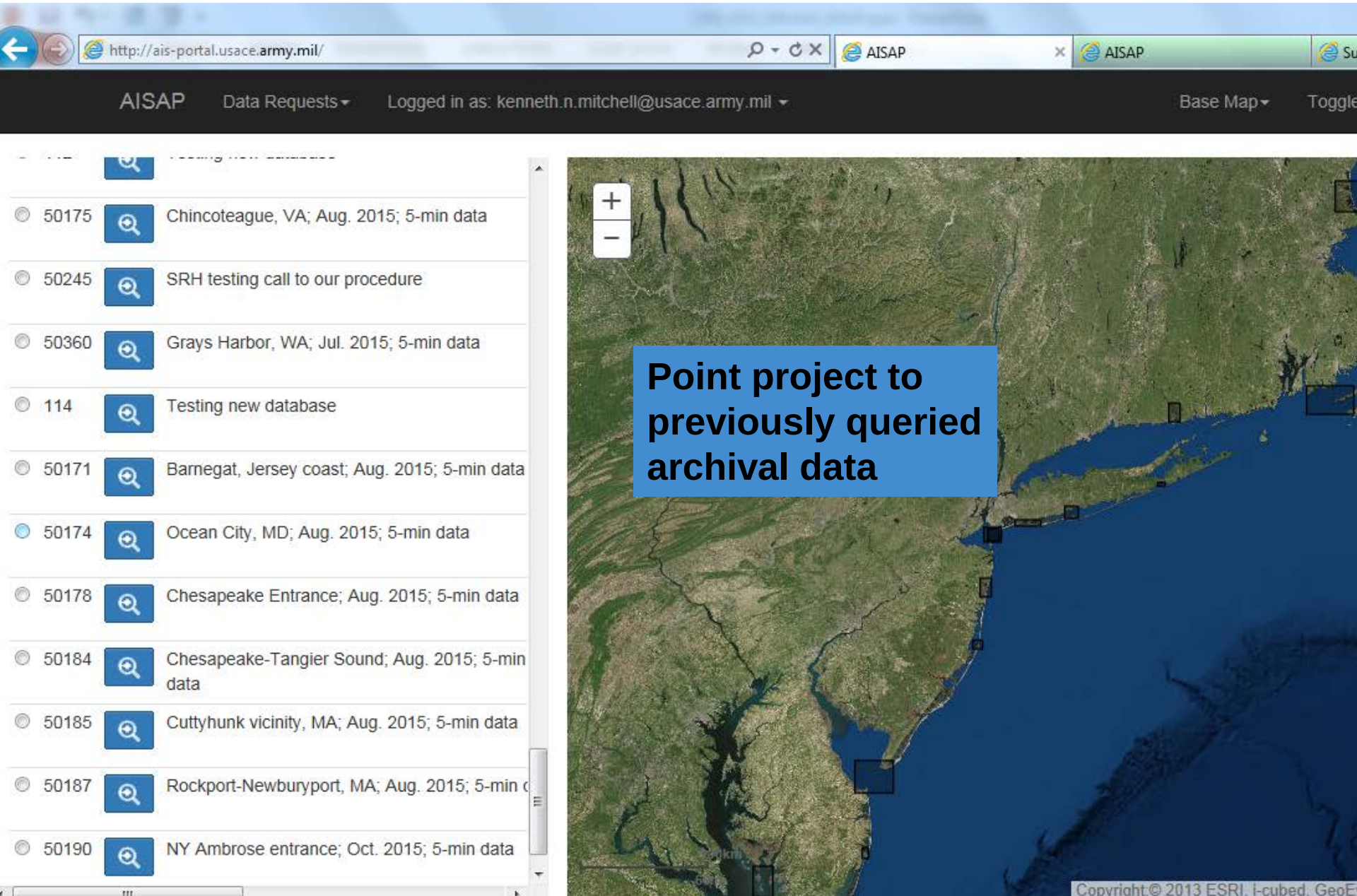
Communal database!

- **Revised AISAP architecture eliminates need for locally stored AIS data sets and associated file management efforts.**
- **Data cache is intended as a temporary, working repository, not a permanent replication of NAIS archives.**

AISAP web portal



AISAP web portal



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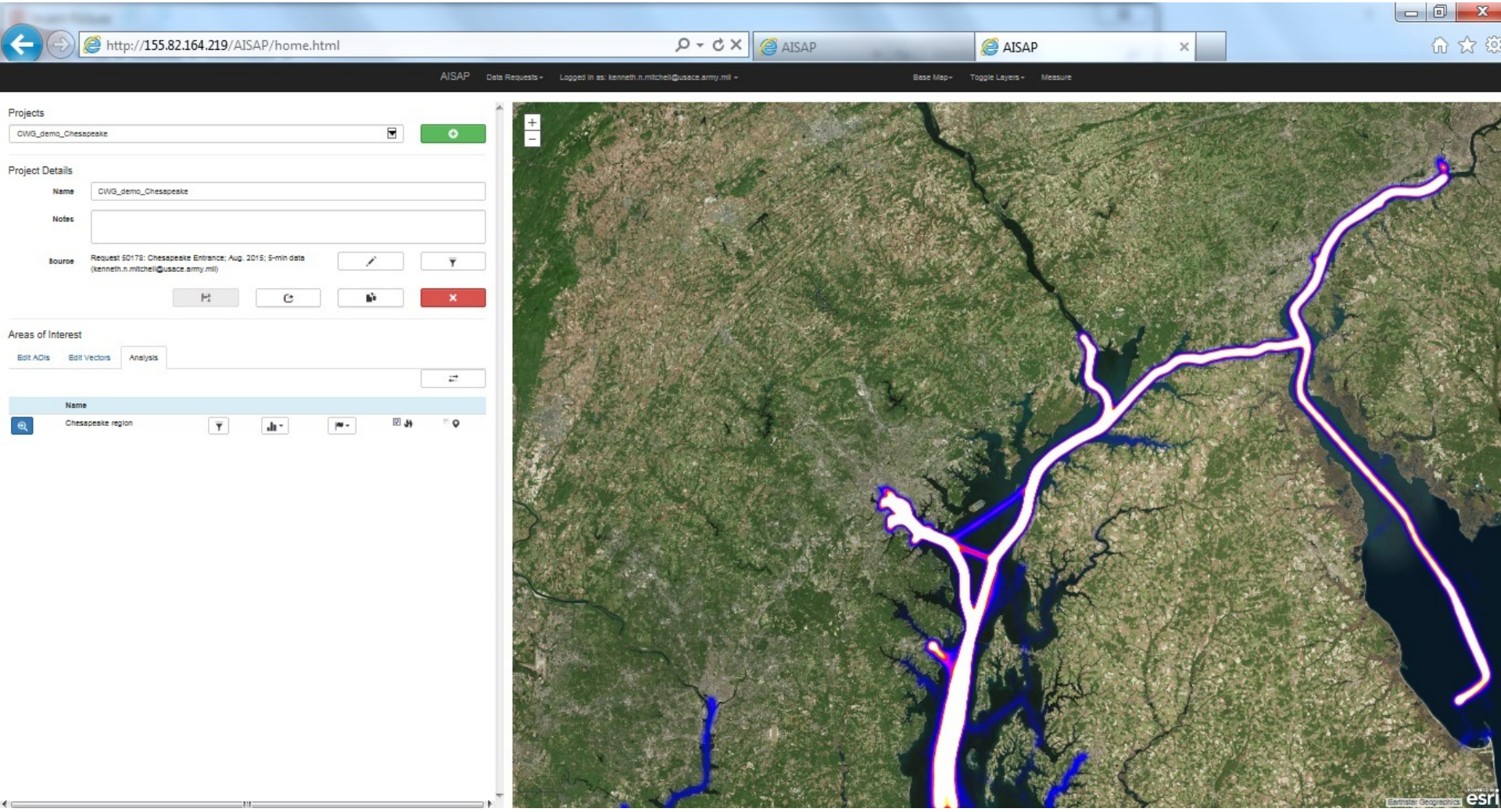

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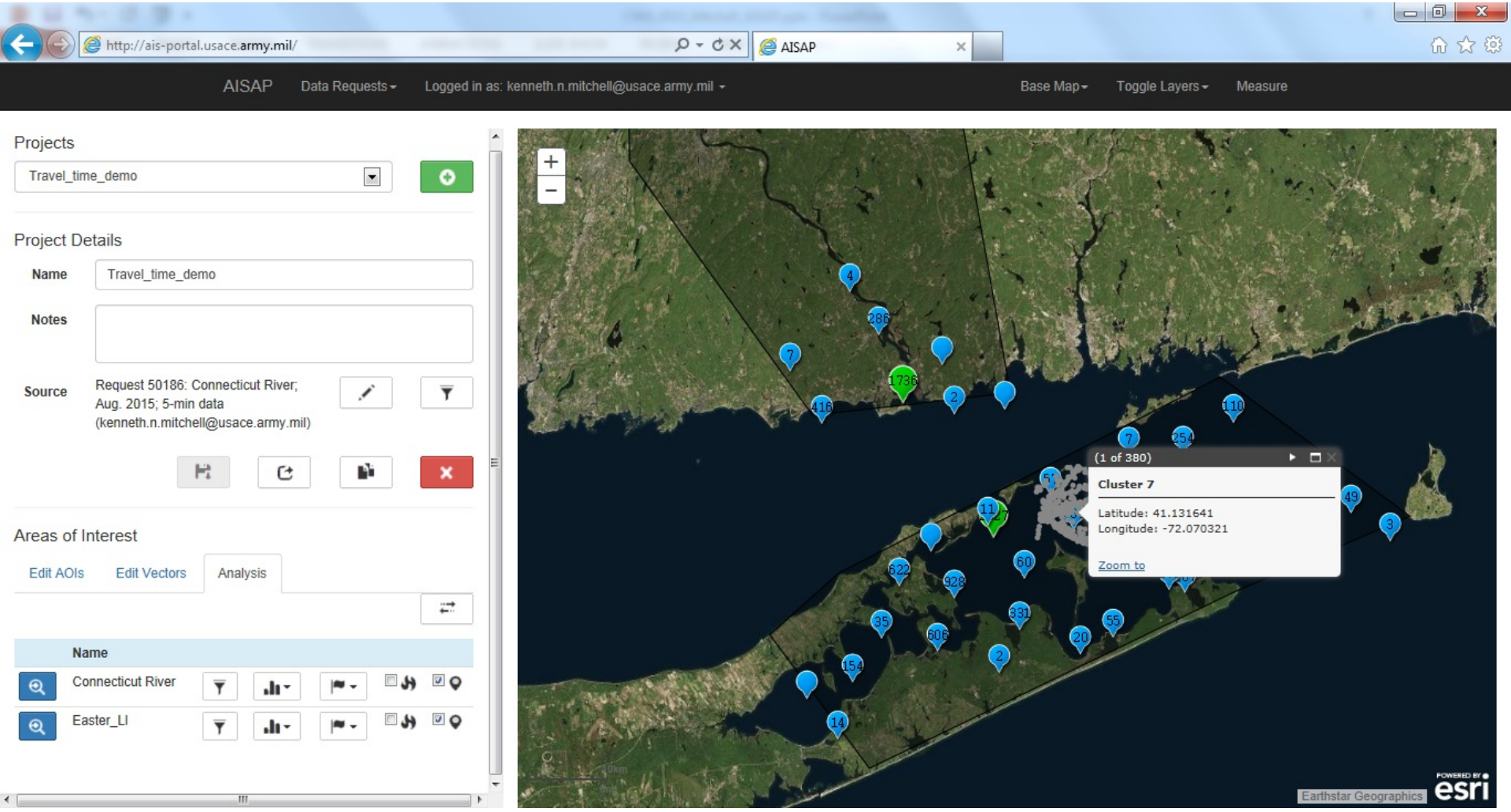


AISAP web portal

Summary

Report Date Range: 2015-02-28T18:00:00 to 2015-03-06T18:00:00

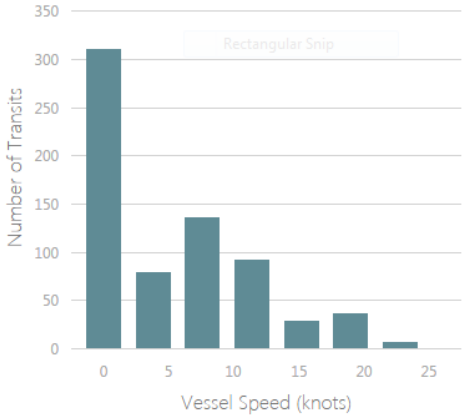
Num Reports: 6968

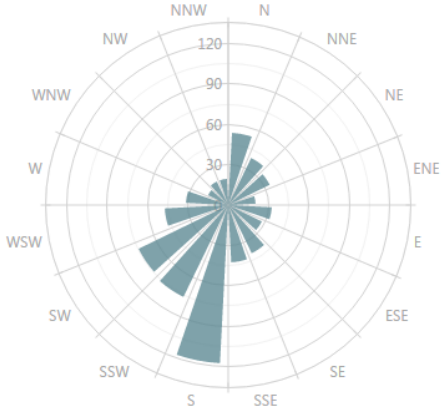
Num Unique Vessels: 68

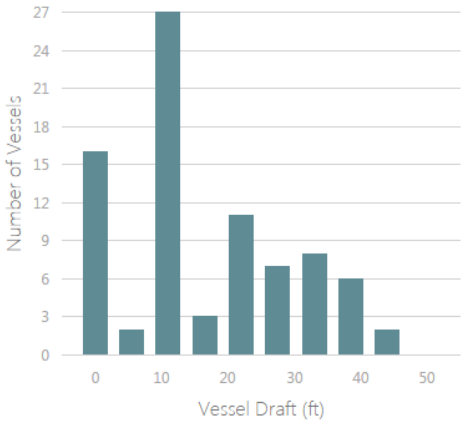
Num Transits: 688

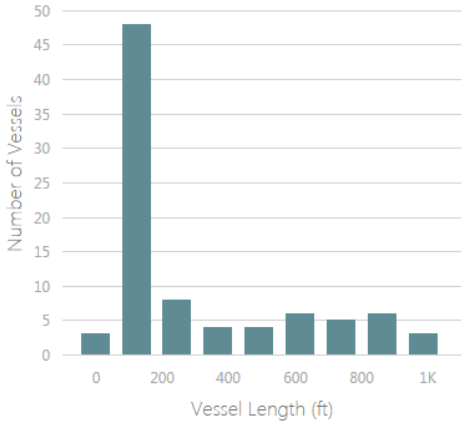
Traffic Sample Statistics

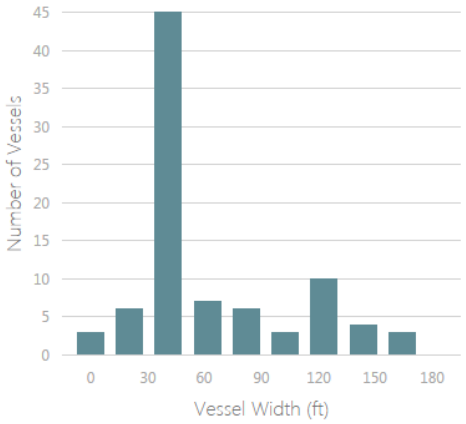
Metric	Mean	StdDev
Vessel Draft (ft)	14.73	11.94
Vessel Length (ft)	260.32	281
Vessel Width (ft)	53.13	40.06
Vessel Speed (knots)	4.24	1.31











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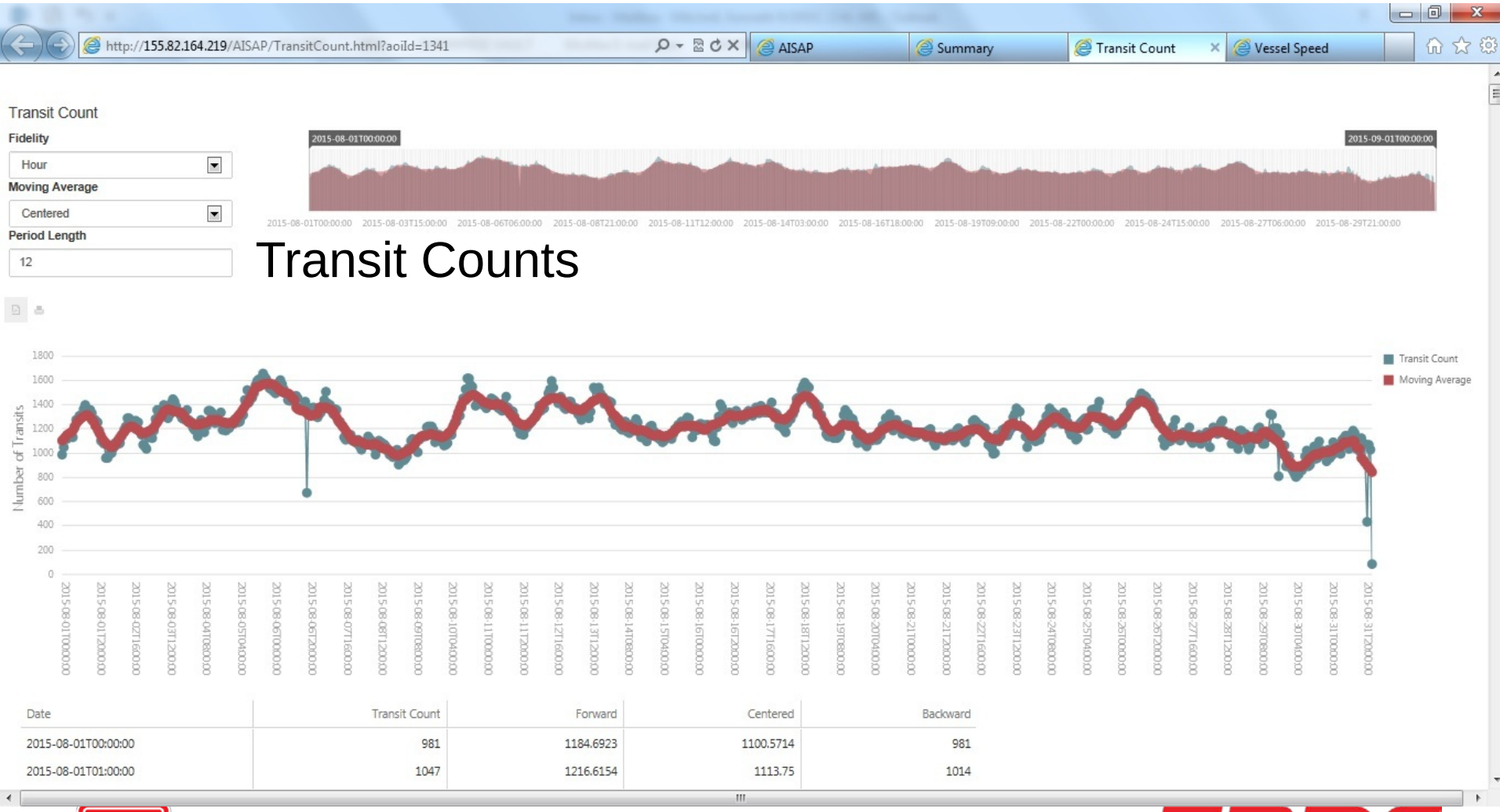

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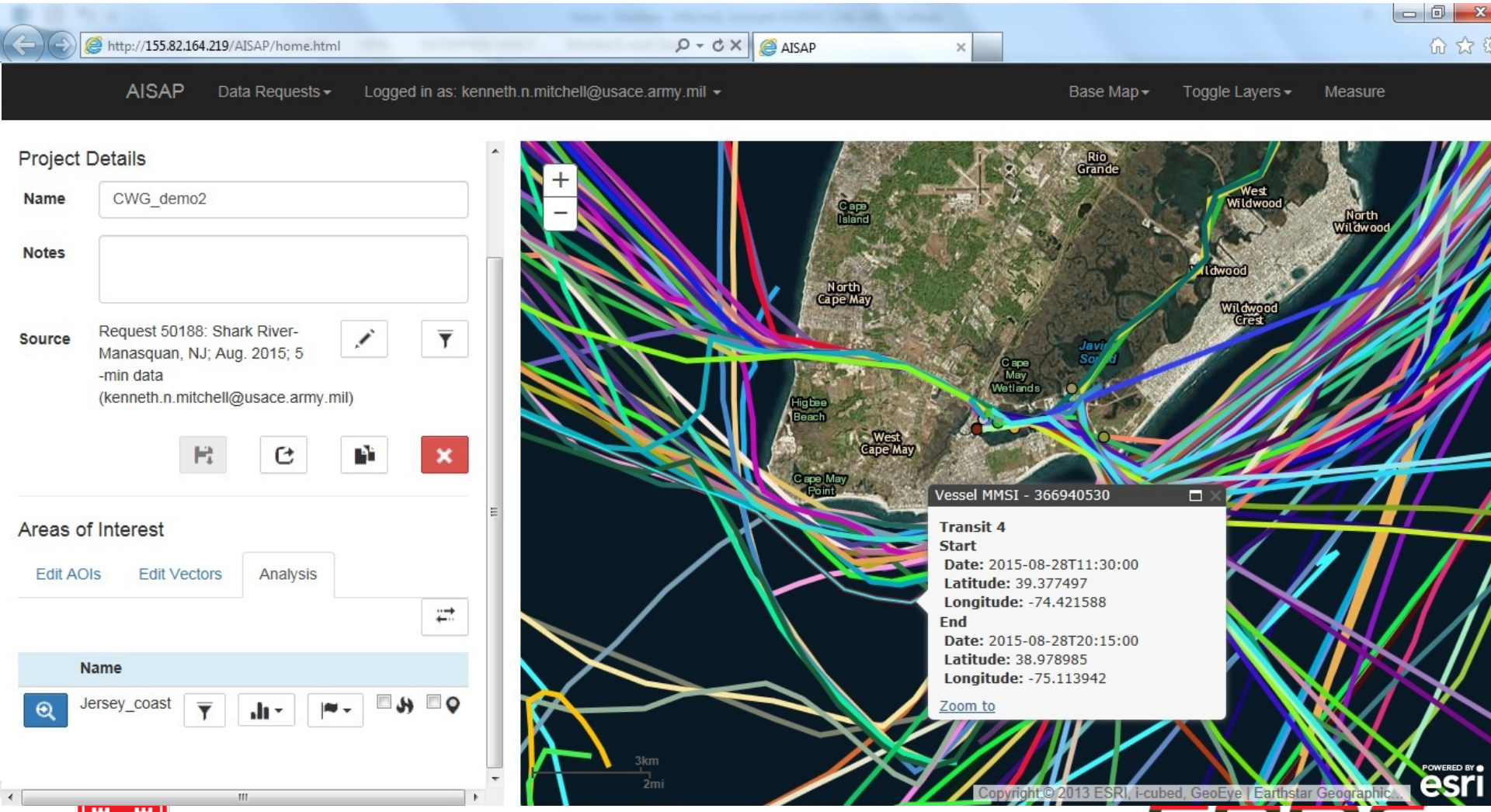

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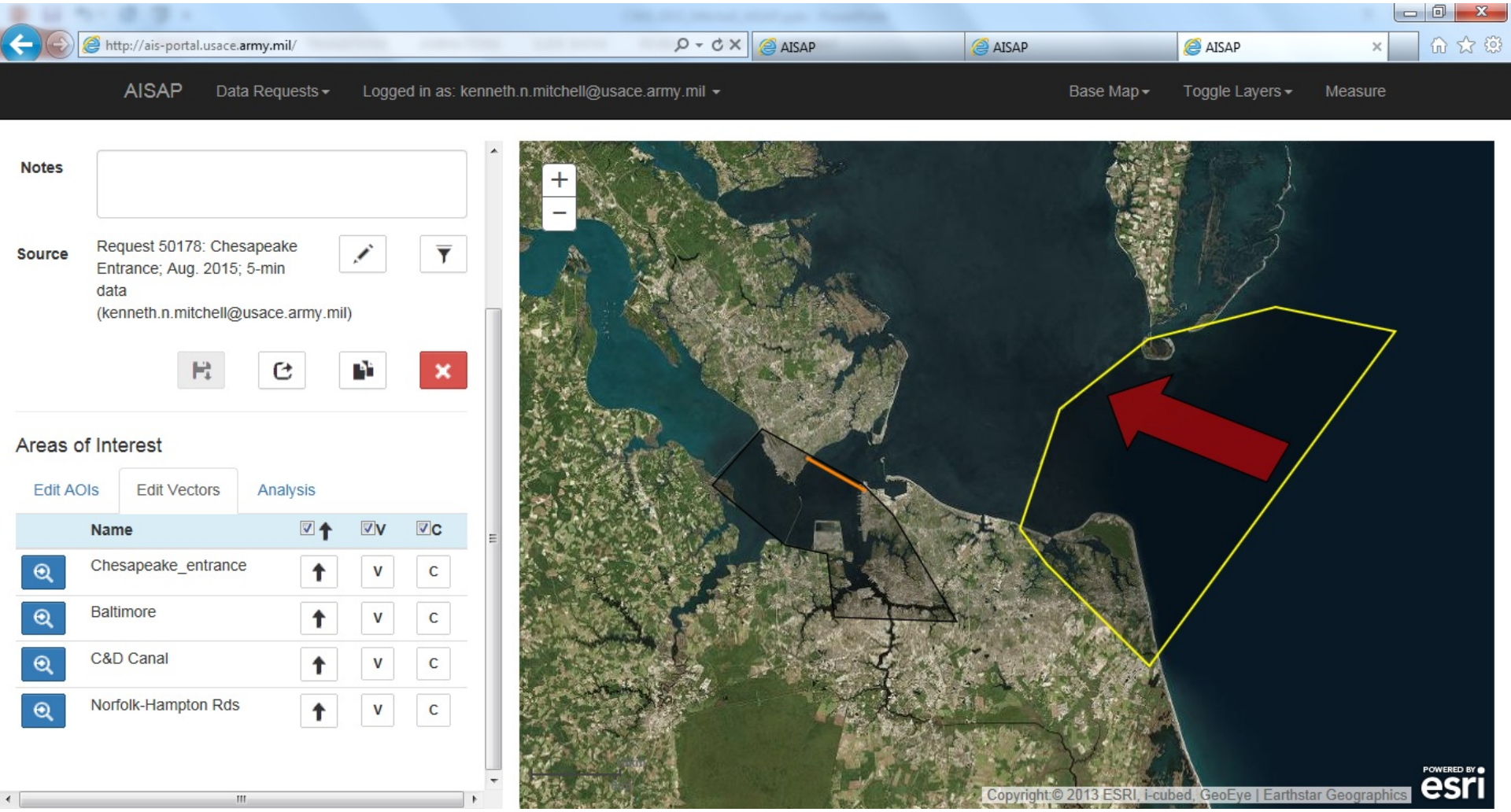

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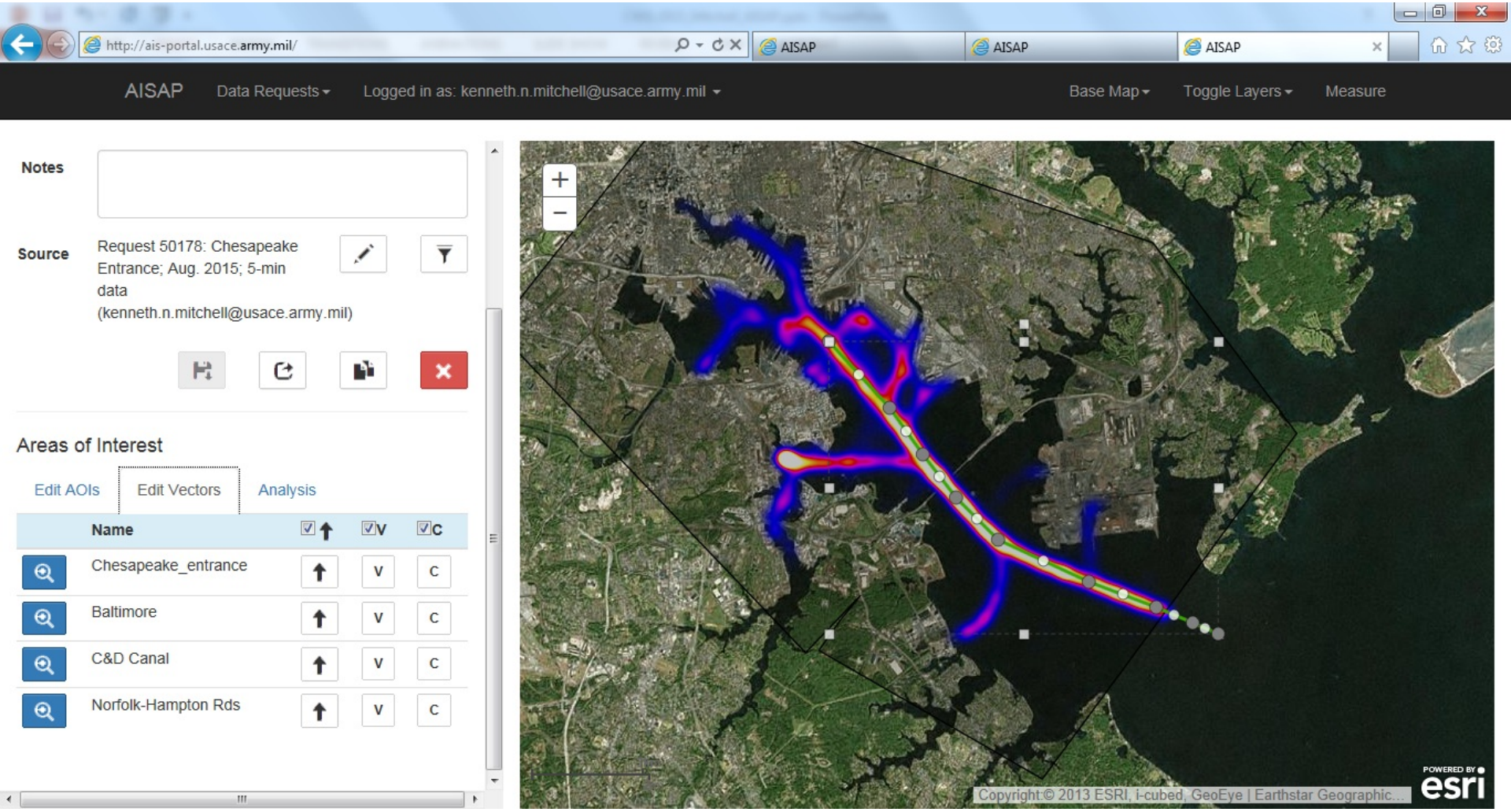

AISAP Future Development

- Future vision (continued development)
  - Short term: Additional automated analysis capabilities to meet District needs → need your feedback!
  - Mid-term: Foundation for a nationwide MTS health monitoring capability (e.g. inland travel time atlas, coastal port performance tracking, etc.)
  - Long term: Amazon cloud services…?
  - Long term: Enhanced suite of USCG web services