AUTOMATIC IDENTIFICATION SYSTEM ANALYSIS PACKAGE

AISAP LESSON 6:
CURRENT APPLICATIONS

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AISAP Training Class
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Team: Ned Mitchell, PhD, Brian Tetreault, Marin Kress, PhD, SAM-OPJ, ARA
ARRIVAL PROCESS MINING

How many vessels arrive per day?
How long between arrivals?
When do they arrive?

Vessel Call Frequency, Portland, ME

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<tr>
<th>Day</th>
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</table>

Hour (GMT)

Vessel Call Frequency, Los Angeles, CA

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</table>

Hour (GMT)

2012 Interarrival Times, Cargo and Tanker Vessels

- Red: Los Angeles, CA (1938)
- Blue: Portland, ME (287)
TIDAL ANALYSIS
What tide stage do vessels prefer?

POC: Dr. Brandan Scully
UNDERKEEL CLEARANCE

Can we estimate how much depth was available during a transit?

POC: Dr. Brandan Scully
CLOSE CALL FORENSICS

Can we document and learn from operational near-misses?

POC: Dr. Brandan Scully
DREDGING INFLUENCE ANALYSIS

Do vessels behave differently after dredging?

POC: Dr. Brandan Scully
VEssel Structure Interaction

Can we measure the effect of structures on vessels in transit?
Can we use these measurements to infer structure condition?

POC: Dr. Brandan Scully

Tillamook Bay-Ocean Dike, OR

San Pedro Middle Breakwater LA/LB
WATERWAY TRANSIT TIME STATISTICS AND TRENDS

VESSEL TRAVEL TIMES – OHIO RIVER, 2017

0-2 hours
2-4 hours
4-6 hours
6-8 hours

VESSEL TRAVEL TIMES – OHIO RIVER MILE 59-69

AVERAGE TRAVEL TIME ABOVE BASELINE PER TRANSIT – OHIO RIVER, 2017

US Army Corps of Engineers • Engineer Research and Development Center
ONLINE TRAVEL TIME ATLAS

- Automated, near real-time estimations
- Travel time estimates accessible on publically available website
- Travel time predications

Select the waterway reach starting point and destination for which you want travel time estimates.

Choose starting point:
- RM 0 Ohio River's Upstream End / Port of Pittsburgh Upstream Boundary
- RM 1 Emsworth L&D: 5 miles upstream
- RM 4 Emsworth L&D: 2 miles upstream
- RM 8 Emsworth L&D: 2 miles downstream

Choose destination:
- RM 0 Ohio River's Upstream End / Port of Pittsburgh Upstream Boundary
- RM 1 Emsworth L&D: 5 miles upstream
- RM 4 Emsworth L&D: 2 miles upstream
- RM 8 Emsworth L&D: 2 miles downstream

Choose time period:
CORRELATE LOCK EVENTS AND DELAY

Travel time above baseline (hr)

- navigable pass
- lockage
- scheduled closure-repair or maintenance
- unscheduled closure-repair or maintenance
- unscheduled closure-accident or collision
- unscheduled closure-weather
- unscheduled closure-other

date (mm/dd/yyyy)

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RESILIENCY STUDIES
HURRICANE MATTHEW 2016 – NET VESSEL COUNT

Port of Savannah - Cargo and Tanker Net Vessel Count

- Pre-storm normal
- CLOSED
- RECOVER
- Post-storm normal

Captain of the Port declares port CLOSED on 10/06/2016 at 18:00 UTC

Hurricane Matthew declared a tropical storm 9/28/2016 00:00 UTC

PSAV fully reopens to vessel traffic on 10/12/16 at 07:00 UTC

Bayesian changepoint algorithm detects changepoint from recovery to “post storm normal” on 10/22/16

POC: Katherine Chambers
Hurricane Harvey Cargo and Tanker Vessel Signal Density Plots

Created with ERDC Automatic Identification System Analysis Package (AISAP)

August 1, 2017
Tropical Storm Harvey will be named August 16

August 24, 2017
USCG declares Port of Houston under condition Yankee

August 25, 2017
USCG declares Port of Houston under condition ZULU

August 26, 2017
Hurricane Harvey makes landfall at Rockport & becomes a tropical storm over inland Texas

August 28, 2017
Harvey recedes towards the Gulf, record rainfall recorded at 51.88 in

September 4, 2017
Vessels queue at anchorage areas, Port reopens with restrictions September 6th.

ERDC Navigation Data Performance Team: Katherine Touzinsky, Kenneth N. Mitchel, Patricia Djoseph, Marin Kress

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THANK YOU

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