The National Center for Secure and Resilient Maritime Commerce and Coastal Environments

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Presented at
2009 University Programs Summit
Mission: Through advancement of the relevant sciences and development of the new workforce, the CSR team will support the DHS member agencies to achieve the goals of:

- Improving port security and the security of coastal and offshore (EEZ) operations;
- Improving emergency response to events in the maritime domain; and
- Improving the resiliency of the MTS, offshore operations, and our nation’s coastal environments.
CSR Primary Activities

- Basic research in support of technology development for Maritime Domain Awareness
- Basic research in support of Resiliency
- Education, Training, and Outreach
CSR Primary Activities

- Old axiom: publish or perish
  - Rationale – if nobody knows about it, it was never discovered
- New axiom: develop new knowledge that leads directly to new technologies to support security and resiliency
  - Rationale – if nobody uses it, it was never developed
- Keys to success:
  - partner with the end user to understand their needs;
  - partner with industry and universities to understand technology gaps and to work toward filling those gaps.
SPOT-4 – 10 m panchromatic

Collected on November 19, 2008

- 10 minutes of AIS data used
- From ~9 min prior to collection to ~1 min after collection

Collected: 11/19/2008
Scene Center time: 15:49:06 UTC
SYNTHETIC APERTURE RADAR

Space-based, cloud penetrating surveillance

Day and night and all weather

High resolution ~1 m

Multi-polarization
RADARSAT-2 GO-FAST TESTS

21 June 2008 @ 23:18:36 UTC
Duration of image take: 1.4 seconds
Beam mode: SpotLight – 3m resolution (SLA76, Asc, HH)

Wake from Mike-77
Wake from Mike-78

Cloudy skies, thunderstorms. Winds light/variable. Seas <1ft.

Wake from Mike-77
Wake from Mike-78

Close-up of Target “Mike-77”

Target Actual Position

Distance ~ 1.45 km

Estimated Velocity from Doppler Shift \( v_s = 63.2 \text{ mph} \)

Speed from GPS recording: 61 mph

Generated wake at time of satellite imaging

Mike-77
Mike-78

Type: Midnight Express
Length: 39’
Engines: 4
HP/Engine/Type: 225/Mercury Optimax V-6 Outboard
Total Power: 900 HP
Blades/Propeller: 4 / Outer Prop RH Spin
Inner Prop LH Spin
POC: Marty Wade;
ICE/CBP Miami Air & Marine Branch

CSTARS - 31 AUGUST
2008
A) CODAR HF Radar Network
Since 1998
Success Stories – Making a Difference

Optimizing HF Radar for SAR using USCG Surface Drifters

Art Allen
U.S. Coast Guard

Scott Glenn
Rutgers University
Drifter Test Results – CODAR Exceeds Present Methodology
SAROPS Before CODAR – Large Random Search Area

SAROPS After CODAR – Small Stratified Search Areas
Operational Ocean Observation and Forecast System
Forecasts out to 48 hours

Question: does this fill an information gap?
Is it useful (useable) by the stakeholders?
US Airways flight 1549
Real-Time Data

Weather
Currents
Water Level
Salinity
Temperature
Waves
January 15, 2009, 4:29pm

Thank you Professor,

…I have forwarded your email and followed up with our Watch Command Supervisor via telephone regarding this information. As always, we are very appreciative of your continued assistance and support.

Michael Lee

Director of Watch Command

NYC Office of Emergency Management
Partnerships for a Safer World

More than 20 add’tl industry collaborators
Thank you Professor,

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Michael Lee
Director of Watch Command
NYC Office of Emergency Management
3:26 pm takeoff from LaGuardia Airport
150 passengers
5 crew members

3:31 pm water landing into Hudson River

US Airways Flight 1549
January 15, 2009

flightpath.wmv