POLAR EPSILON AND CANADIAN MDA

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Canada

RADARSAT-2

- Launch March 2007

- Altitude 800 km

- Sun-synchronous polar orbit

- Repeat cycle 24 days

- C-band Synthetic Aperture Radar (SAR)

SYNTHETIC APERTURE RADAR

- High resolution; e.g. Swath width 20 km, Resolution 3 m

- Quad-pol; Swath width 25 km, Resolution 10 m.

- Wide area surveillance, e.g. ScanSAR Narrow; swath width 300 km, Resolution 50 to 75 m

- GMTI; Swath width 50 km, Resolution 8 m.

PRINCIPAL CANADIAN USERS

- Canadian Forces
  - MDA, Arctic
- Environment Canada
 - Ice Service, ISTOP

POLAR EPSILON

- Ship detection: SOR

  - 25 m ships, PD = 90%, PFA = 10^{-9}, Sea State 5

  - 15 min time latency

- Oil detection

- Surface wind extraction

POLAR EPSILON
MDA (BASIC)

- Ground stations at Halifax and Esquimalt

- OceanSuite/CSIAPS software

- Maritime Satellite Surveillance Radar (MSSR)

- Environmental sensing

OCEANSUITE

Directorate of Space Development, NDHQ, Ottawa
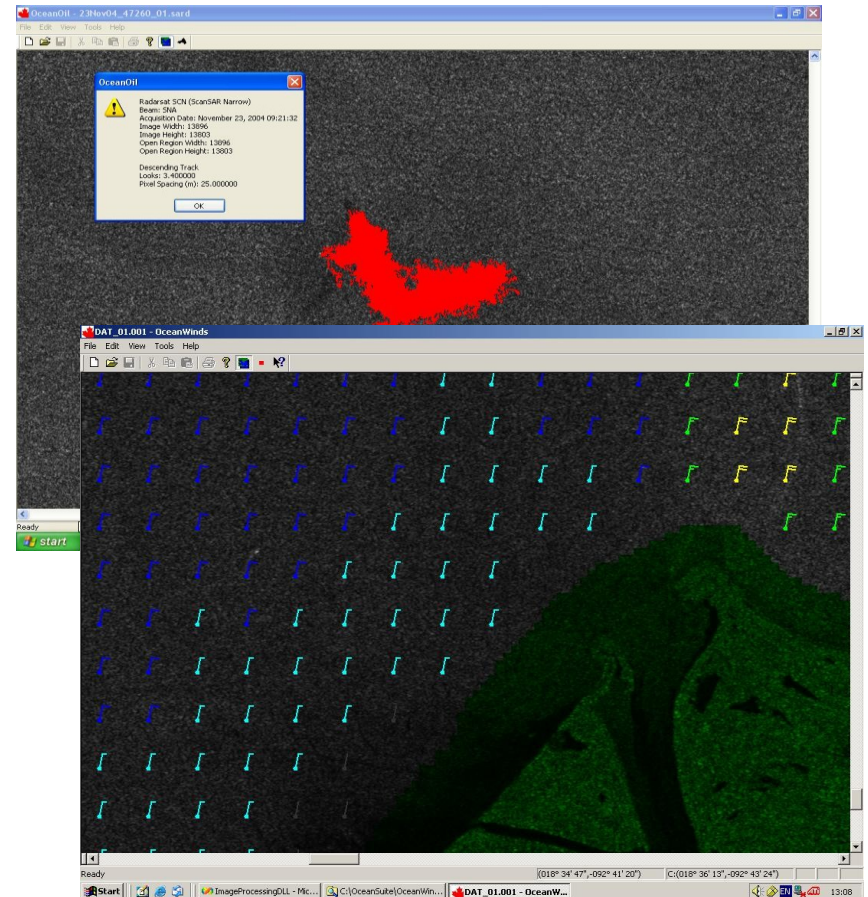
MDA

- Detect

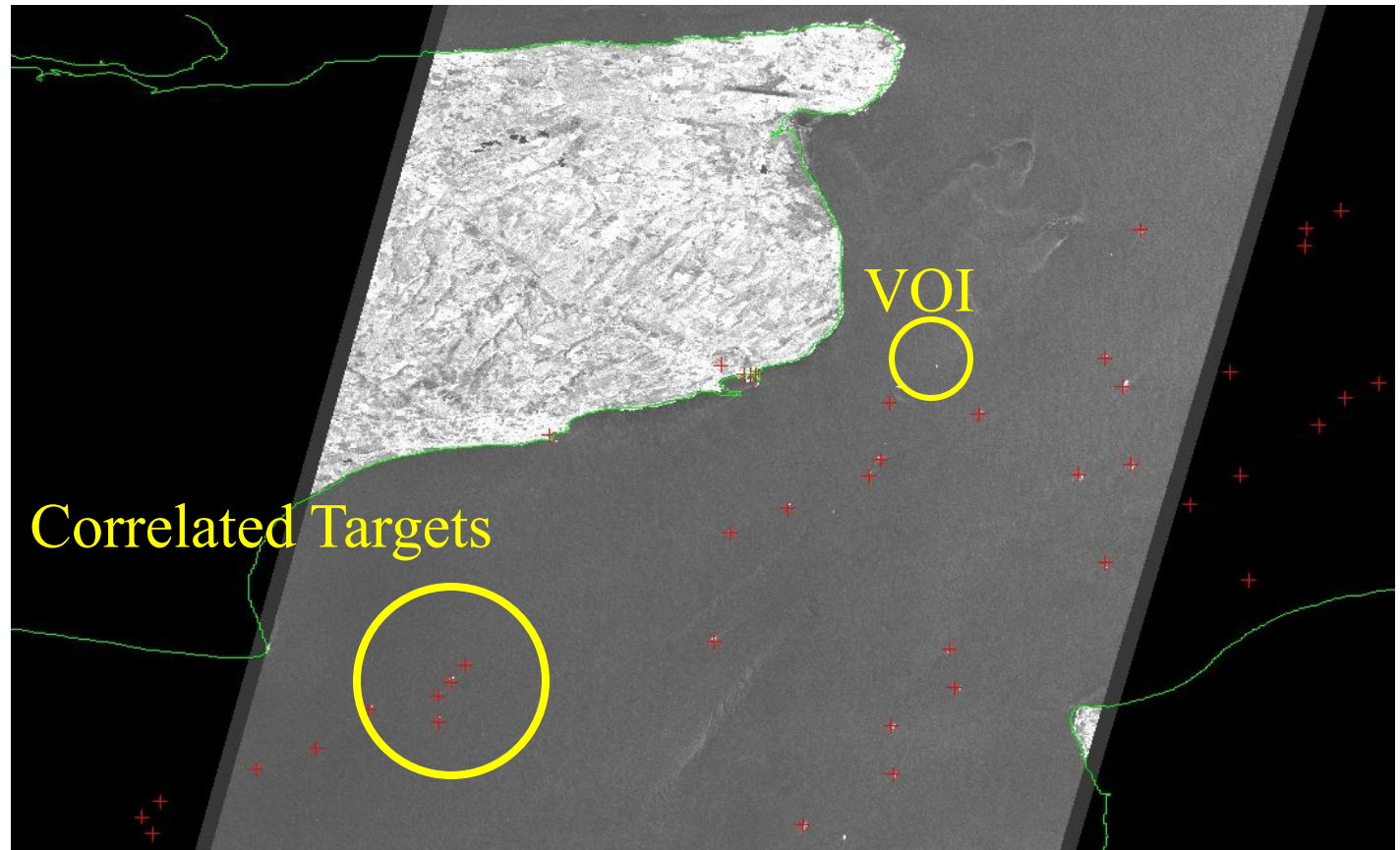- Classify

- Identify

- Track

- Intent

POLAR EPSILON
MDA (ENHANCED)

- AIS
  - Self-reporting
  - Space-borne USCG/ORBCOMM
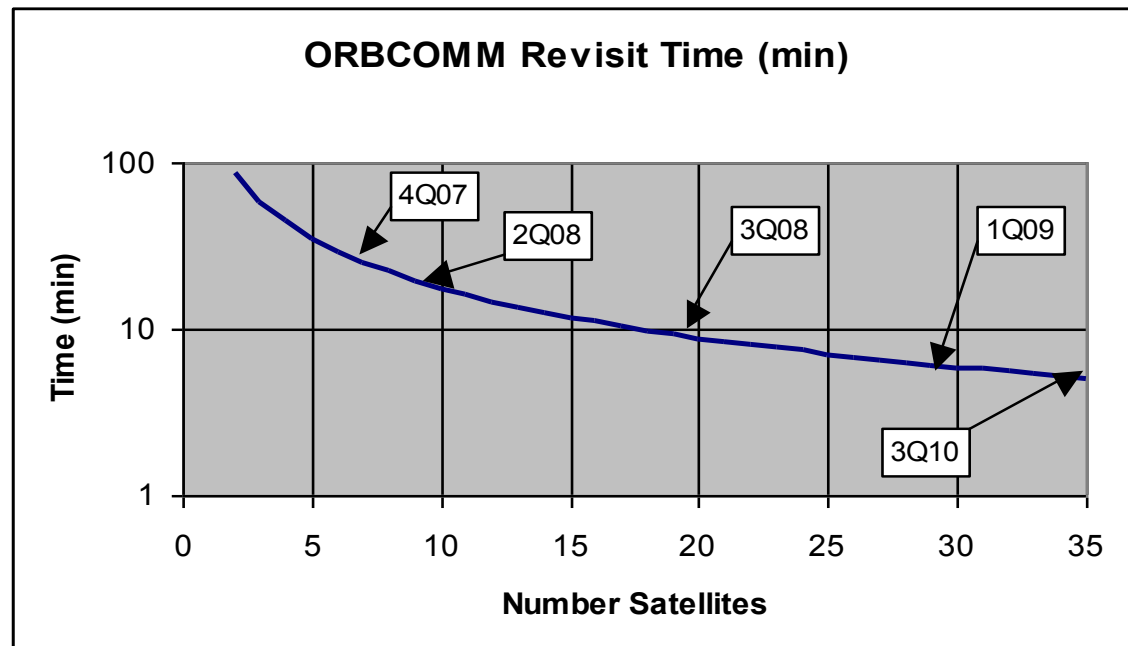- Considering RADARSAT Constellation as follow-on
  - 3 to 6 satellites

RADARSAT-1/AIS Fusion

ORBCOMM Revisit

SUMMARY

- **Value added to RMP**: ship ID, heading, etc.
  - Cross validation of AIS and RADARSAT
  - Fusion of RADARSAT and AIS data
  - Non-compliant ships identified
- Polar Epsilon/D Space D/USCG real-time trial planned Dec 2006