OIL SPILL TRAJECTORY PREDICTION AND VALIDATION IN INDIAN WATERS

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ROLE OF SPACE BORNE RADAR MISSIONS IN VALIDATION OF OIL SPILL TRAJECTORY PREDICTIONS

OIL SPILL TRAJECTORY PREDICTION - METHODOLOGY

METHODOLOGY

1. Translational view

2. Migration of spilled oil

METHODOLOGY

1. GNOME, an oil spill trajectory model developed by NOAA is used in this prediction system.
2. The model is run for the next 10 days.
3. The predicted trajectory will be compared in a common platform.

DESCRIPTION

- GNOME, an oil spill trajectory model developed by NOAA is used in this prediction system.
- The predicted trajectory will be compared in a common platform.

MV RAK CASE STUDY, AUGUST 2011

LOCATION: 19° 33' N, 72° 48' E

TYPE: CRUDE OIL

QTY: 70 TONS

The predicted trajectory from GNOME is compared with the signatures of ENVISAT-SAR data obtained 22.01.2011, 23.00 HRS. A deviation of 4.16 km was estimated from the comparison.
ROLE OF EO SENTINEL MISSIONS – INDIA ON ALERT DUE TO SUNDARBAN OIL SPILL - 09.12.2014 to 15.12.2014

HISTORY OF THE INCIDENT

• OT SOUTHERN STAR 7 was anchored in sela river at 22.355614° N, 89.672696° E and was struck behind by another vessel on 09.12.2014, 05.00 hrs.
• The spill has covered the upstream and entered Pasur river.
• On 11.12.2014, spill signatures (from landsat 8 data) were noticed near sundarbans delta.
• It was towed a 4 km upstream in sela river on 12.12.2014 at (22.366242°N, 89.643055°E) and was shown in sentinel -1 A dataset.
• Sentinel – 1 A dataset has shown the bright signature of the towed vessel and oil spill in the sela and pushpa river streams on 12.12.2014.

Signature of the spill in Sela /Pushpa river on 12.12.2014- Sentinel-1 A, ESA

Spill Signature (11km) obtained on Landsat 8 image obtained on 11.12.2014 at the river mouth near sundarbans delta
ROLE OF RADARSAT IN VALIDATING SUNDARBN OIL SPILL TRAJECTORY PREDICTION - 15.12.2014
SIGNIFICANCE OF SPACE BORNE MISSIONS IN OIL SPILL MODELING/ MONITORING

- Space borne Radar Missions like ENVISAT – ASAR, RADARSAT AND SENTINEL – ESA, helps the research community in validating the oil spill executions.
- It also helps in monitoring the reach of the pollutant in restricted zones.
- They also help in deriving the climatological parameters like wind fields, SST and the Hydrographic parameters like waves, currents and bottom topography etc.,
- As a whole, the space borne Earth Observation mission is a potential demand for the Regulatory authority and the Scientists/Engineers of oceanography.