

# “SAMOSA” an ESA SAR Altimetry Ocean, Coastal Zones and Inland Water Development Study

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# SAR ALT Study

- ESA has launched on 31 July 07 a 15-month research and development activity, coined:
  - “Development of SAR Altimetry Mode Studies and Applications over Ocean, Coastal Zones and Inland Water”
  - “SAMOSA”
  - Consortium lead by SOS, with DNSC, DMU, NOCS, Starlab



# SAR ALT Study

- The development of exploitation of samples of SAR Altimetry mode data over water, aims at making progress in ocean and coastal zones oceanography, ocean floor topography (bathymetry), gravity field and inland water monitoring.
- CryoSat-2 will be the first satellite that will provide such data (launch in 2009), followed by Sentinel-3.
- This development will use simulated and possibly airborne data.
- ENVISAT RA-2 Individual Echoes can be also used to test some of the findings of this development.

# Purpose 1

- 1) Compare the precision of simulated SAR altimetry mode data against the performance of a conventional altimeter concerning:
  - a. Range retrieval random error due to speckle as a function of significant wave height
  - b. recovery of short-wavelength geophysical signals, (above all in areas of large ocean surface waves), short spatial scale sea surface slope signals associated with ocean floor topography and assessment of accuracy of marine gravity field mapping
  - c. observability of coastal zones, estuaries, rivers and lakes



# Purpose 2

- 2) Develop an echo model and the associated retracker for SAR processed waveforms, accounting for the non-circular ground resolution cell and the multi-looking.

# Work Packages

- WP1a State of the art assessment
- WP1b Ordering, provision and management of simulated data sets
- WP2 Range error as a function of ocean surface
- WP3 Recovery of short wavelength geophysical signals
- WP4 SAR altimeter echo model over water
- WP5 New re-tracking method over water
- WP6 Improvement of coastal zones, estuaries, rivers and lakes
- WP7 Assessment of RA-2 individual echoes over water
- WP8 Validation using ASIRAS data



# Deliverable Items

- | Deliverable Title   | Due date |
|---|----------|
| D1.1 State of the art assessment                            | T0+1     |
| D1.2 Data requirements                                      | T0+1     |
| D2 Range error as a function of ocean surface               | T0+3     |
| D3 Recovery of short wavelength signals                     | T0+4     |
| D4 Theoretical echo model development                       | T0+7     |
| D5 Specification of new re-tracking method                  | T0+11    |
| D6 Results over coastal waters, estuaries and inland waters | T0+12    |
| D7 Assessment of RA-2 individual echoes                     | T0+14    |
| D8 Exploitation of ASIRAS data                              | T0+15    |