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Icedrift from ENVISAT ASAR WSM data

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Outline

- Cross correlation method
- Initial GMM ice drift, augmented by WSM in 2006
- NRT Ice drift from WSM images from June 2007

Method - Cross correlation

- area of reference r=5km
- correlation area r>30km
- distance between vectors 10 km





It all started with ASAR GMM data in 2004

From January 2006, WSM data at 1km resolution was added to fill gaps





New DTU dataset available from June 1, 2007

- Daily drift vectors from all available ENVISAT ASAR WSM swath data
- 1-day drift (12-36 hours between swaths)
- 10 kilometer resolution (correlation of a circular area r=5km)
- 10 kilometer grid (drift vector every 10 kilometers)
- Arctic and Antarctic

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• **Examples: (**Only daily average displacements are shown in the following examples)





WSM 1-day ice drift June 19-20, 2009

Arctic







Accurate start and end time Drift is calculated from swath data

- All swaths from day 0 are correlated with all swaths from day 1 $(12h < \Delta t < 36h)$
- Enables accurate start and end time of drift vectors, contrary to the use of daily mosaics
- Works fine all year, no Summer gap as we see with icedrift from scatterometer or passive microwave data



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Validation with IABP buoy data:

 RMS difference to AOBP-ARGOS buoy drifts 750m/day for the 1-day WSM drift at 10 kilometer resolution. Most likely limited by the accuracy of the buoy data.

Movement of fast ice off East Greenland: – RMS: <80m/day for the high resolution ice motion (2000 observations)





Data being produced operationally at DTU

- Originally developed and distributed in PolarView
- Presently produced in PolarView
- Is becoming part of MyOcean data stream

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