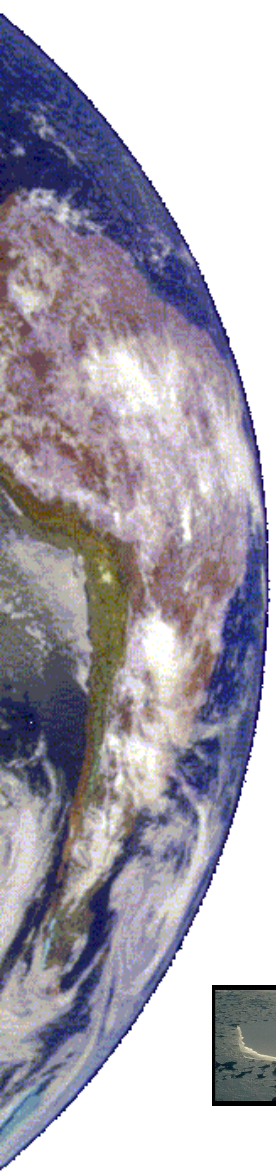
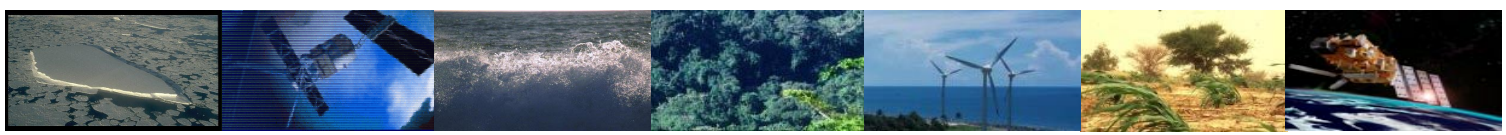


ERS-2 Scatterometer work at ESRIN

R. Crapolicchio° & P. Lecomte °°

°Serco S.P.A.
°° ESA-ESRIN



Content

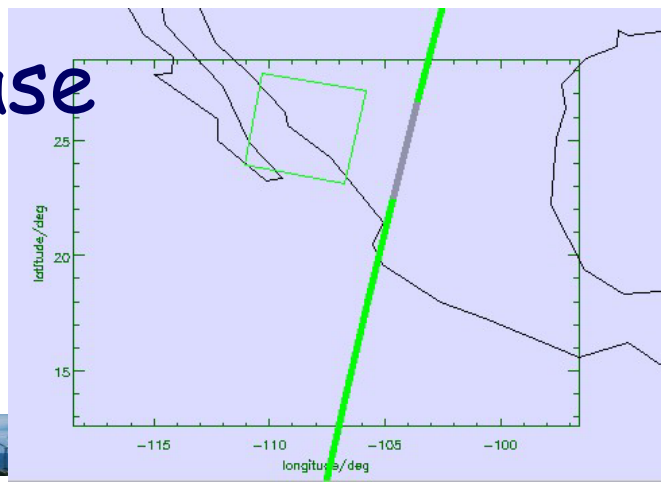
- Review open actions
- ERS Satellite & Ground segment events since last 24th Ascat SAG
- Long-loop Scatterometer Instrument monitoring
- Yaw angle monitoring
- Scatterometer products performances
- ASPS, TOSCA and re-processing status
- Question time

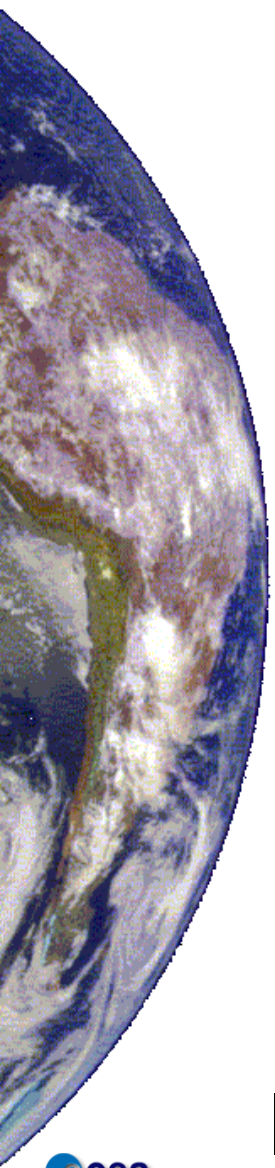
Review Open Actions

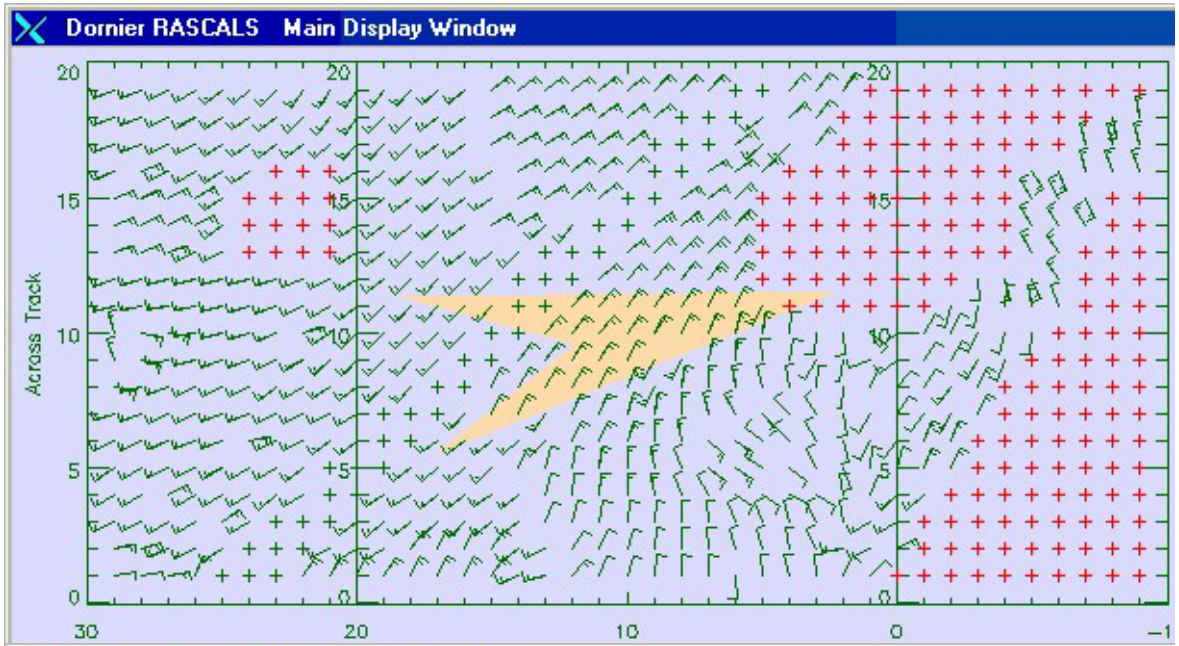
- **Action 24.3**
  - **R. Crapolicchio** and **H. Hersbach** to come up with an optimum threshold to establish an appropriate land mask for the ERS-2 ESACA product.
- ESRIN sent one cycle of Scatterometer data to ECMWF processed with: 1%, 5%, 10%, 20%, 30% and 40% of Land contamination
- ESRIN sent some data to KNMI

Review Open Actions

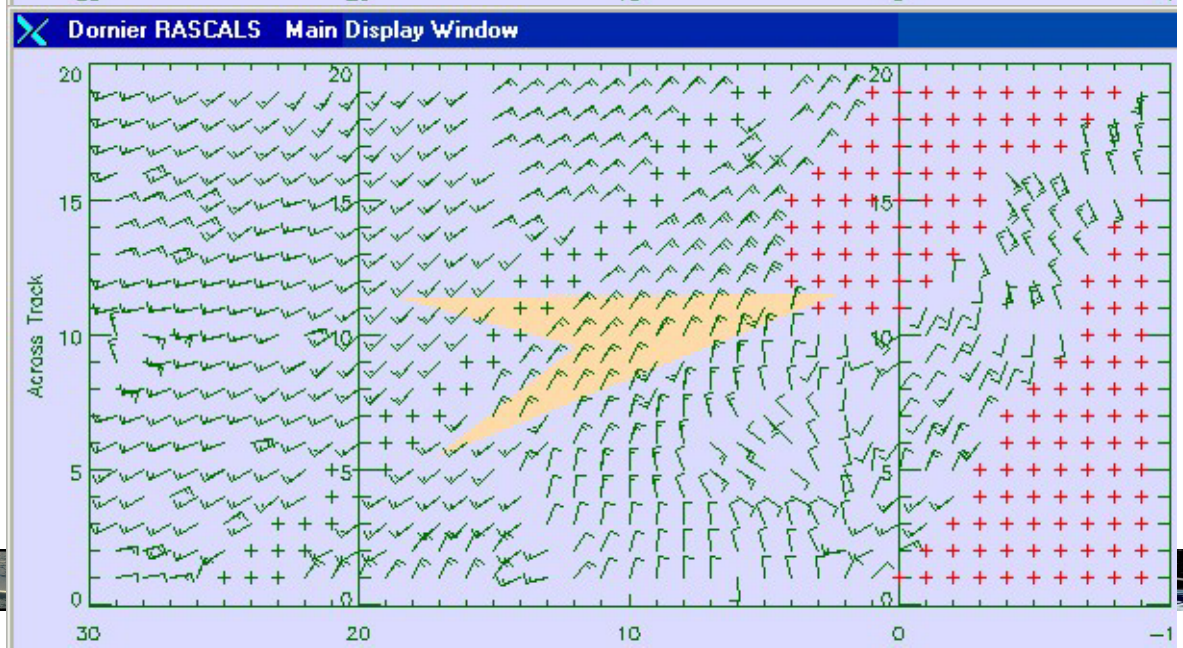
- 1% threshold is very safe
- Clear Land contamination above 10%
- Proposed 5% as trade off
- Mexico west coast case
  - Small islands in the Sea
  - Coastline
  - Plot only rank-1



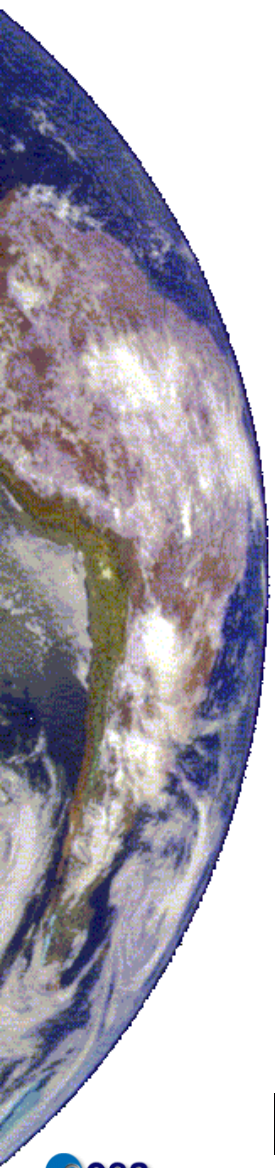


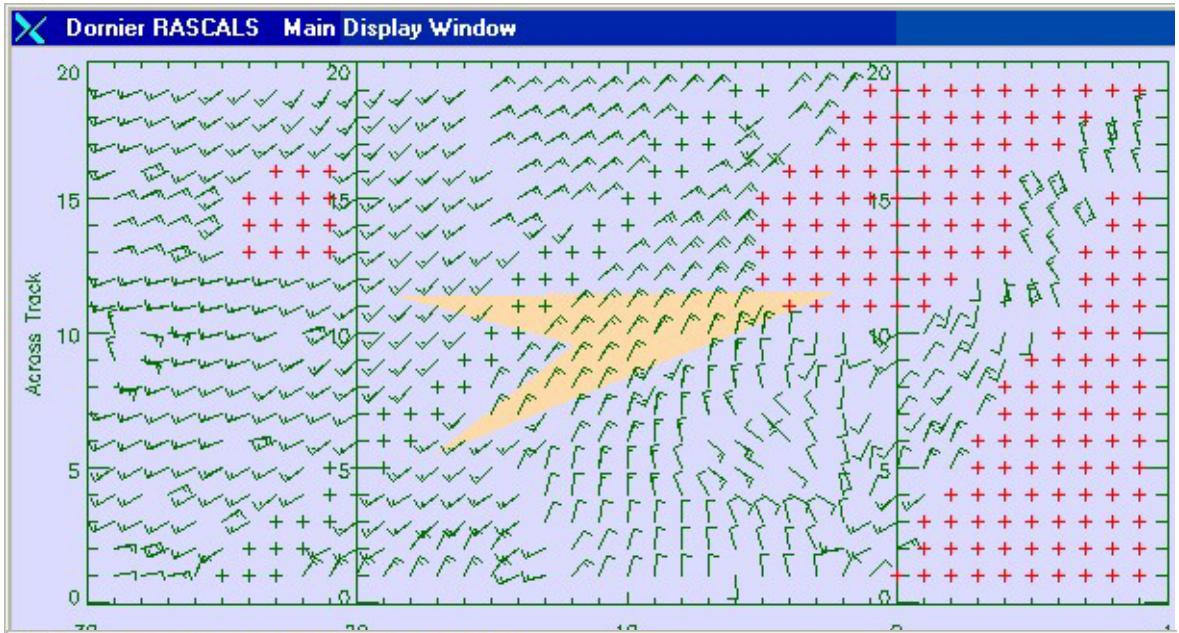

Dornier RASCALS Main Display Window
Across Track
20
15
10
5
0
30
20
10
0
-1

1%

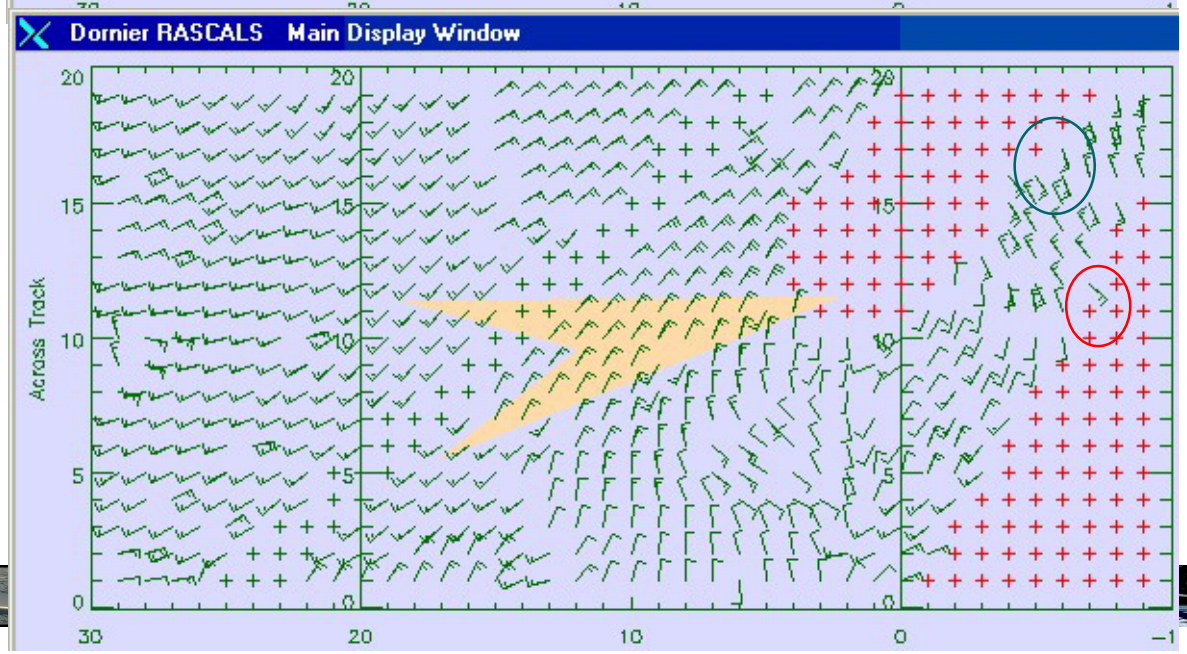

Dornier RASCALS Main Display Window
Across Track
20
15
10
5
0
30
20
10
0
-1

5%




Dornier RASCALS Main Display Window
Across Track
20
15
10
5
0

1%


Dornier RASCALS Main Display Window
Across Track
20
15
10
5
0
30
20
10
0
-1

10%

ERS Satellite & GS events

- 25th and 26th November 2003, 18th March 2004 satellite maneuvers.
- From 8th December 2003 to 14th January 2004 qualification phase for the new ground station in West Freugh (Scotland, UK) production of Scatt and telemetry data.
- Since 15th January 2004 Scatterometer data from West Freugh disseminated to the users.
- Since 25th February 2004 ATSR in High Rate over Land.

ERS Satellite & GS events

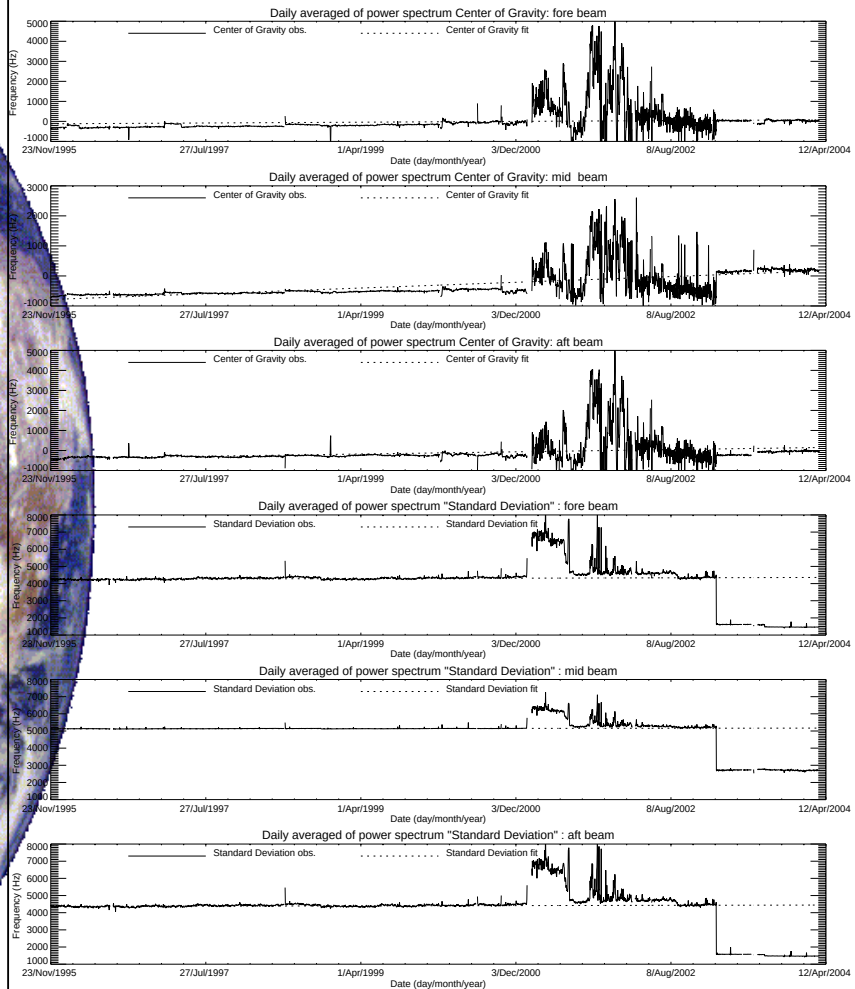
- Since 12th March 2004 a new ground station is operational in Matera (Italy) for Gome and telemetry data. Scatt raw data are archived and available for the re-processing.

Long-loop instrument monitoring

- Doppler compensation evolution
- Internal calibration evolution
- Noise Power evolution
- Instrument working modes

ERS-2 WindScatterometer: DOPPLER COMPENSATION Evolution (UWI)

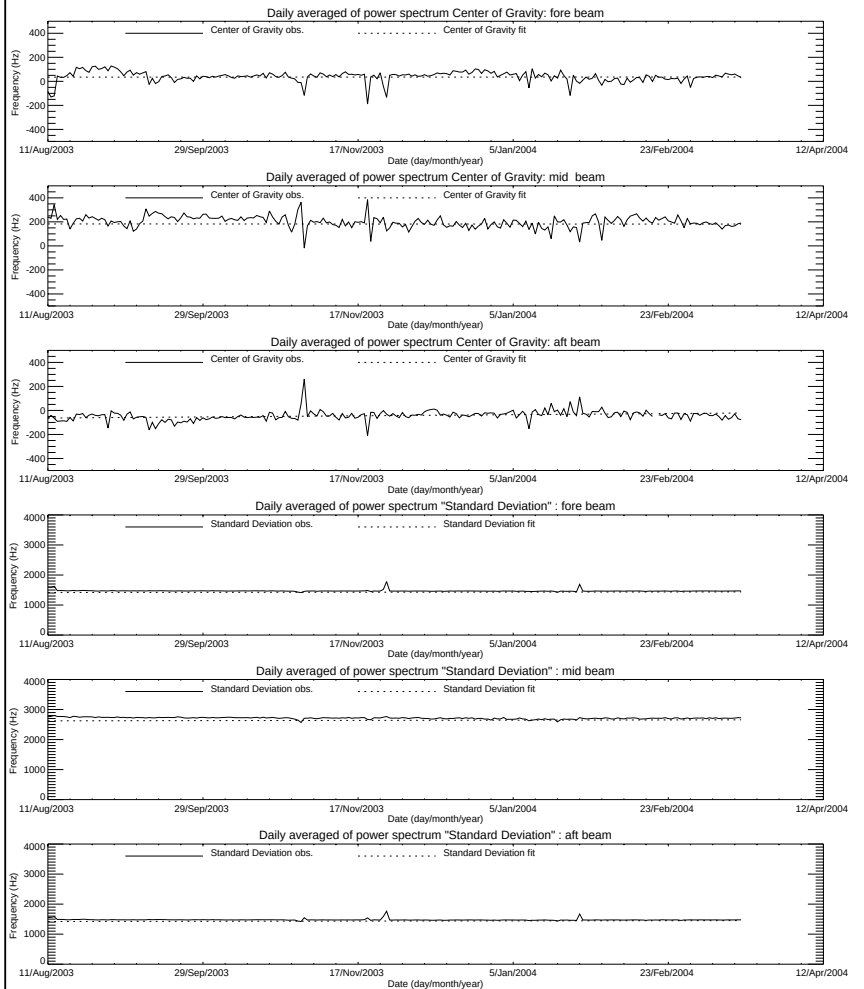
Least-square poly. fit fore beam	Center of gravity = -119.7 +(0.0648)*day	Standard Deviation = 4246.4 +(0.0368)*day
Least-square poly. fit mid beam	Center of gravity = -785.0 +(0.3118)*day	Standard Deviation = 5123.3 +(0.0146)*day
Least-square poly. fit aft beam	Center of gravity = -394.4 +(0.1787)*day	Standard Deviation = 4366.4 +(0.0256)*day



ESRIN/PCS

ERS-2 WindScatterometer: DOPPLER COMPENSATION Evolution (UWI)

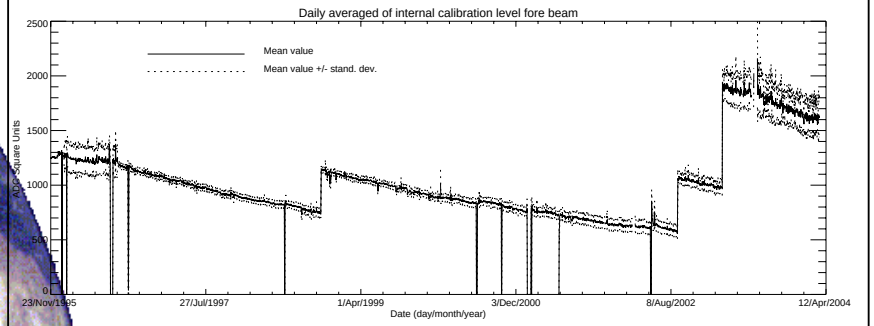
Least-square poly. fit fore beam	Center of gravity = 35.026 +(0.0044)*day	Standard Deviation = 1418.9 +(0.0851)*day
Least-square poly. fit mid beam	Center of gravity = 182.86 +(-0.006)*day	Standard Deviation = 2623.1 +(0.1558)*day
Least-square poly. fit aft beam	Center of gravity = -63.28 +(0.1910)*day	Standard Deviation = 1421.2 +(0.1386)*day

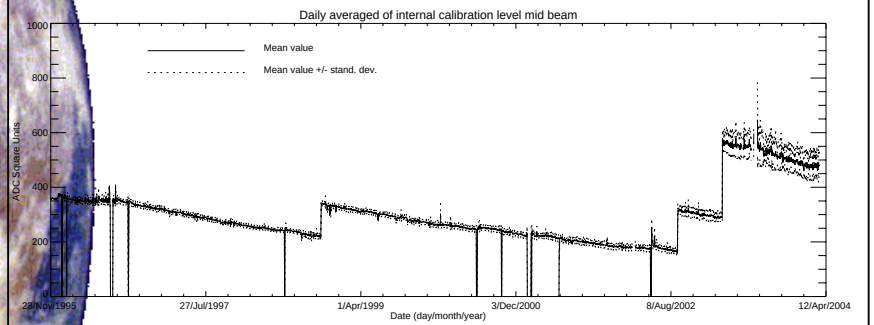


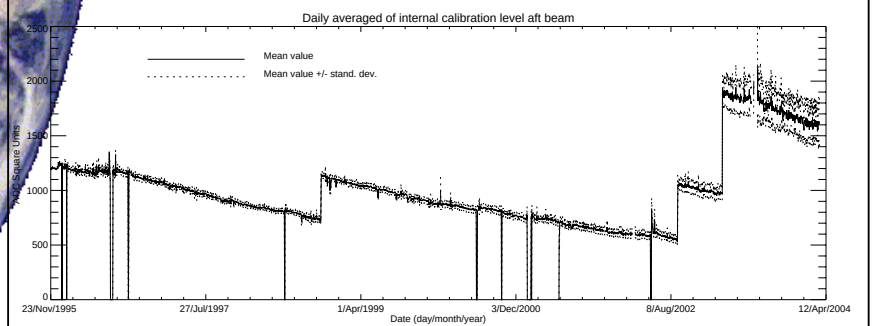
ESRIN/PCS

ERS-2 WindScatterometer: Internal CALIBRATION Level Evolution (UWI)

Least-square polynomial fit fore beam	gain (dB) per day 0.0000	979.048 +(0.00874351)*day
Least-square polynomial fit mid beam	gain (dB) per day 0.0000	287.680 +(0.00336959)*day
Least-square polynomial fit aft beam	gain (dB) per day 0.0000	961.260 +(0.0112175)*day



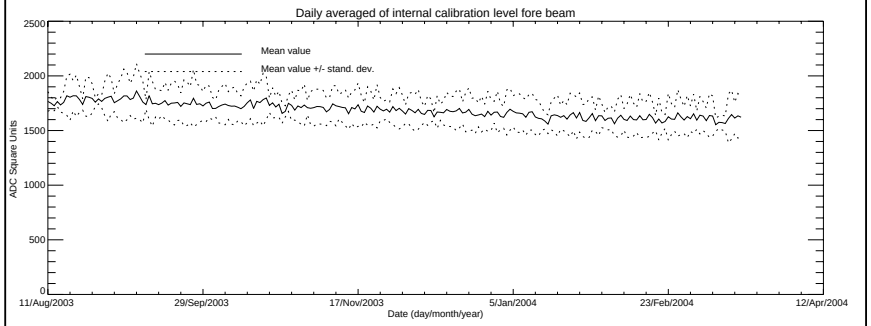


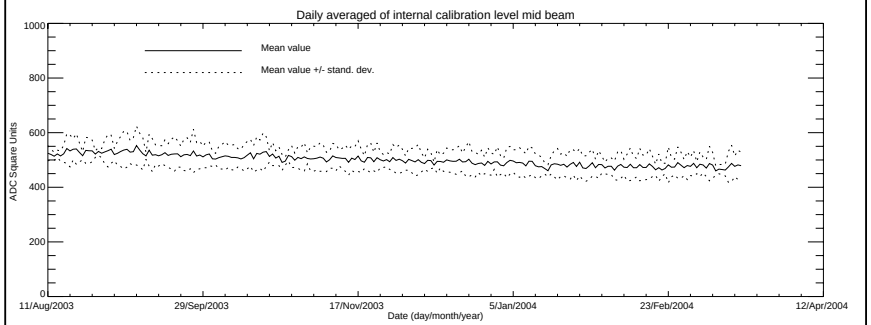


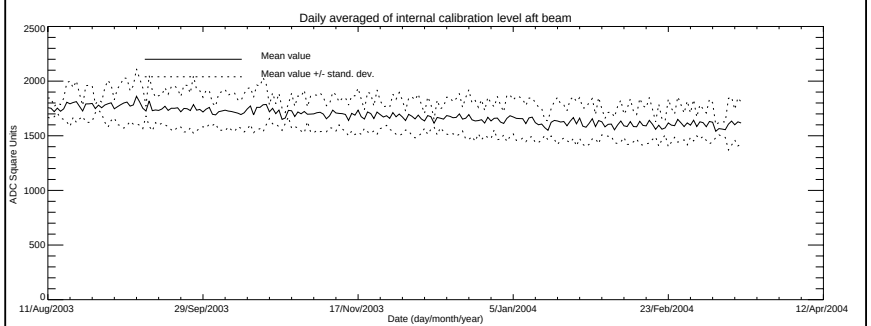
ESRIN/PCS

ERS-2 WindScatterometer: Internal CALIBRATION Level Evolution (UWI)

Least-square polynomial fit fore beam	gain (dB) per day -0.0010	1684.88 +(-0.384840)*day
Least-square polynomial fit mid beam	gain (dB) per day -0.0011	499.514 +(-0.122082)*day
Least-square polynomial fit aft beam	gain (dB) per day -0.0010	1673.33 +(-0.373928)*day



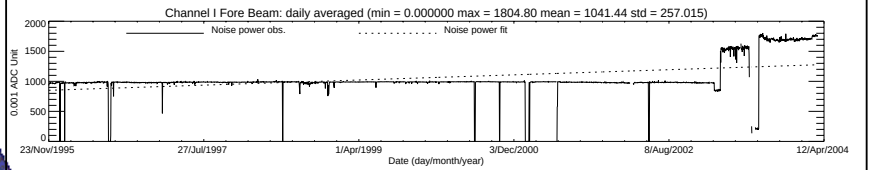


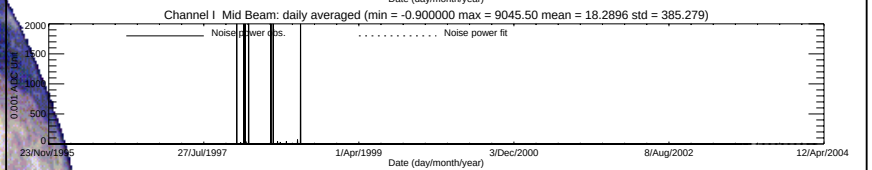


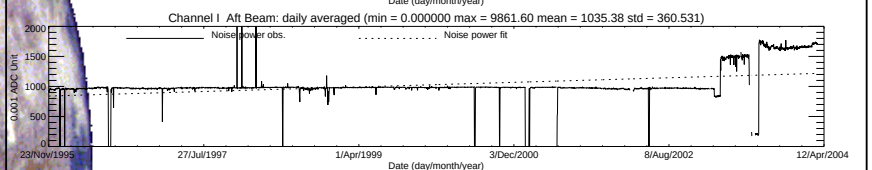
ESRIN/PCS

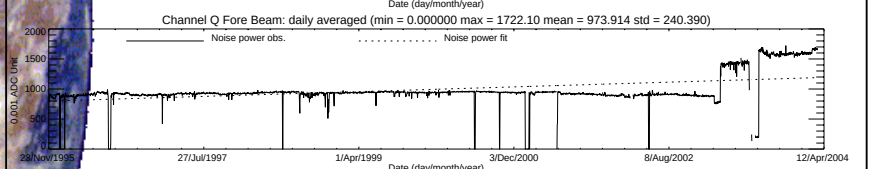
ERS-2 WindScatterometer: NOISE Level Evolution (UWI)

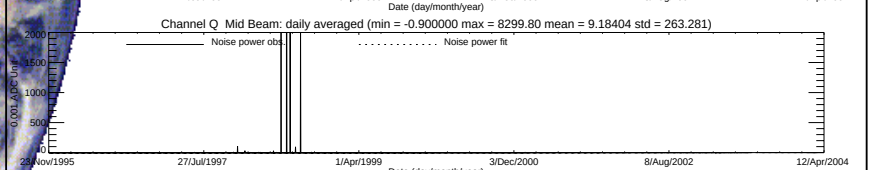
Least-square line fit fore beam: I = 851.03 +(0.1398)*day Q = 798.63 +(0.1287)*day
I channel: No line fit standard deviation too hight Q channel: No line fit standard deviation too hight
Least-square line fit aft beam: I = 840.12 +(0.1242)*day Q channel: No line fit standard deviation too hight

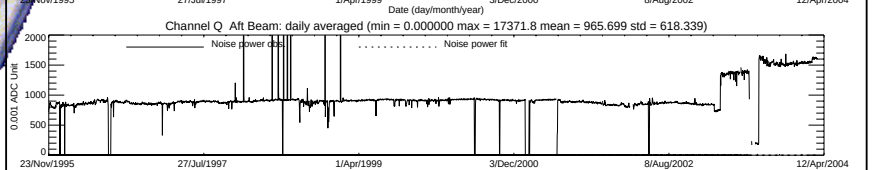








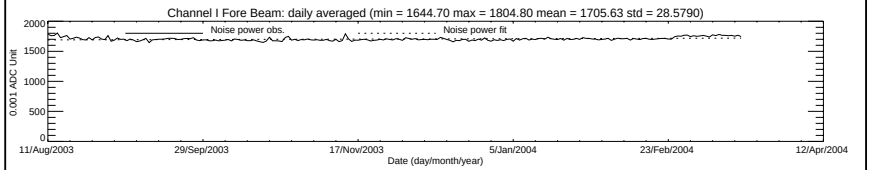


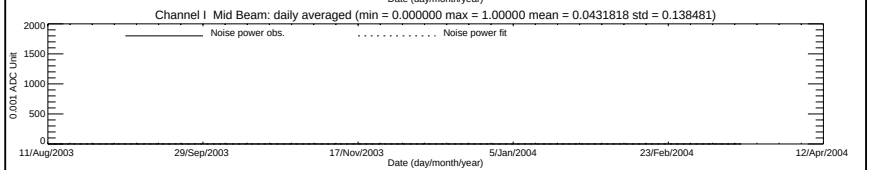


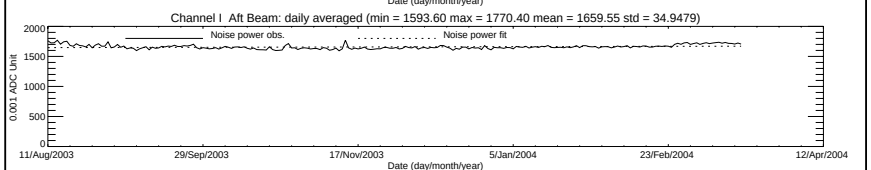
ESRIN/PCS

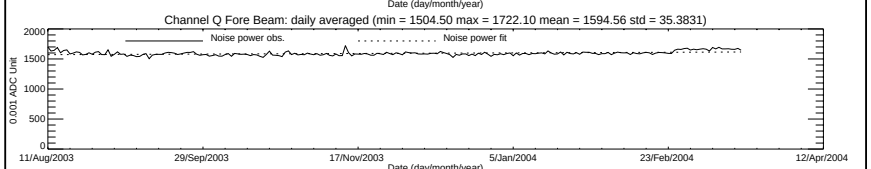
ERS-2 WindScatterometer: NOISE Level Evolution (UWI)

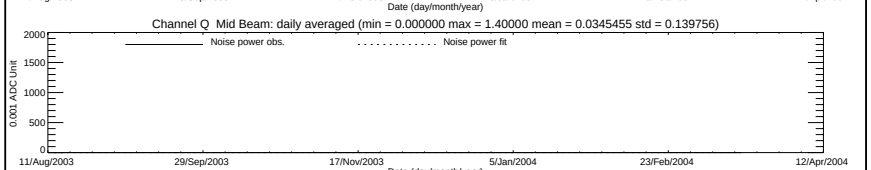
Least-square line fit fore beam: I = 1689.9 +(0.1348)*day Q = 1571.7 +(0.2031)*day
Least-square line fit mid beam: I = 0.0250 +(4.5482)*day Q = 0.0151 +(3.5275)*day
Least-square line fit aft beam: I = 1646.6 +(0.1082)*day Q = 1522.4 +(0.1631)*day

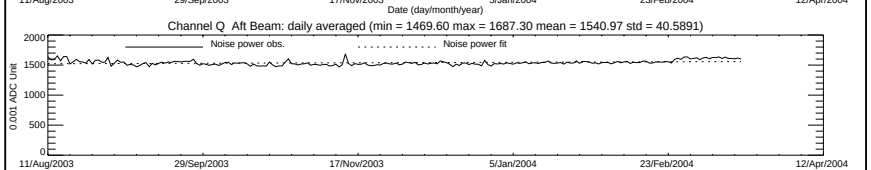




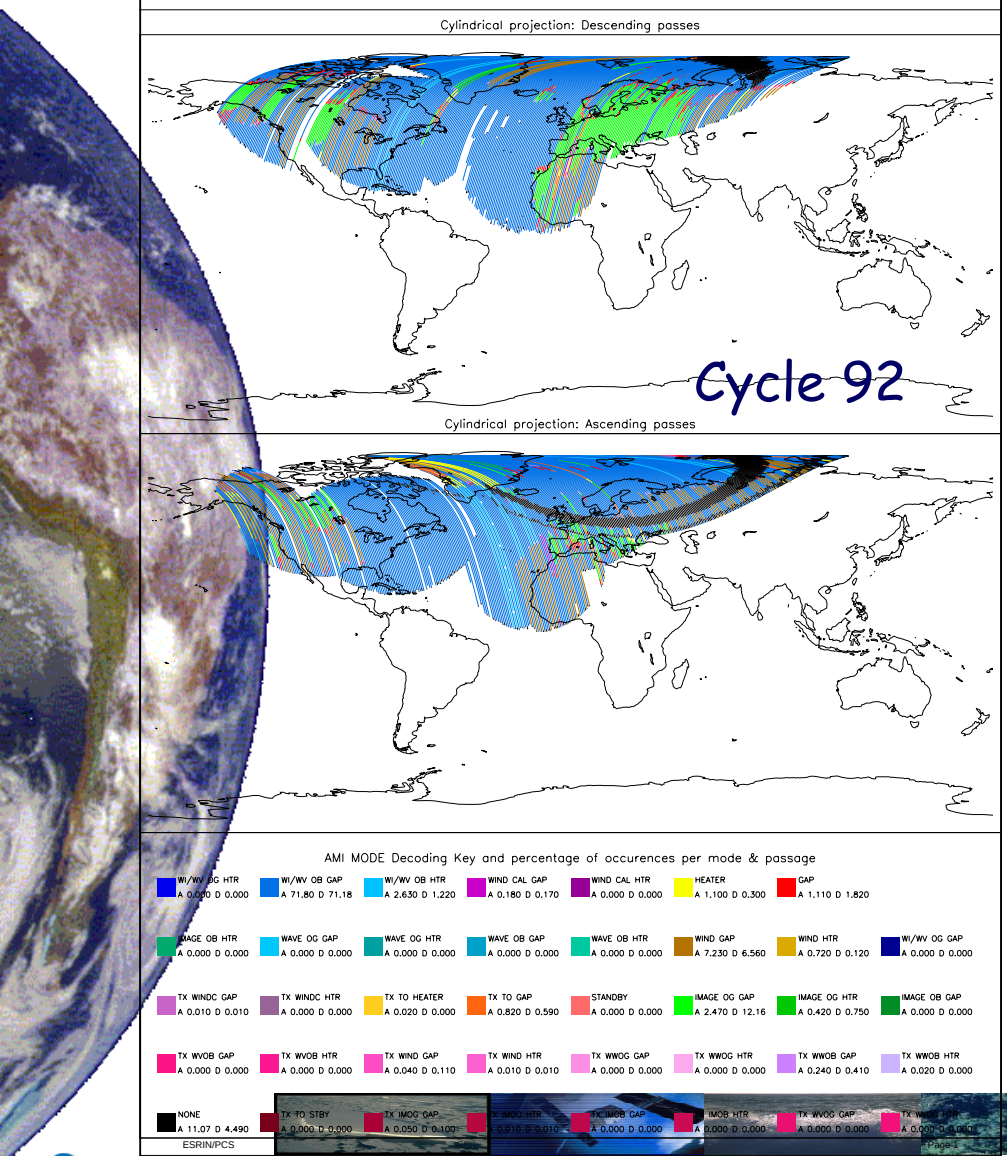


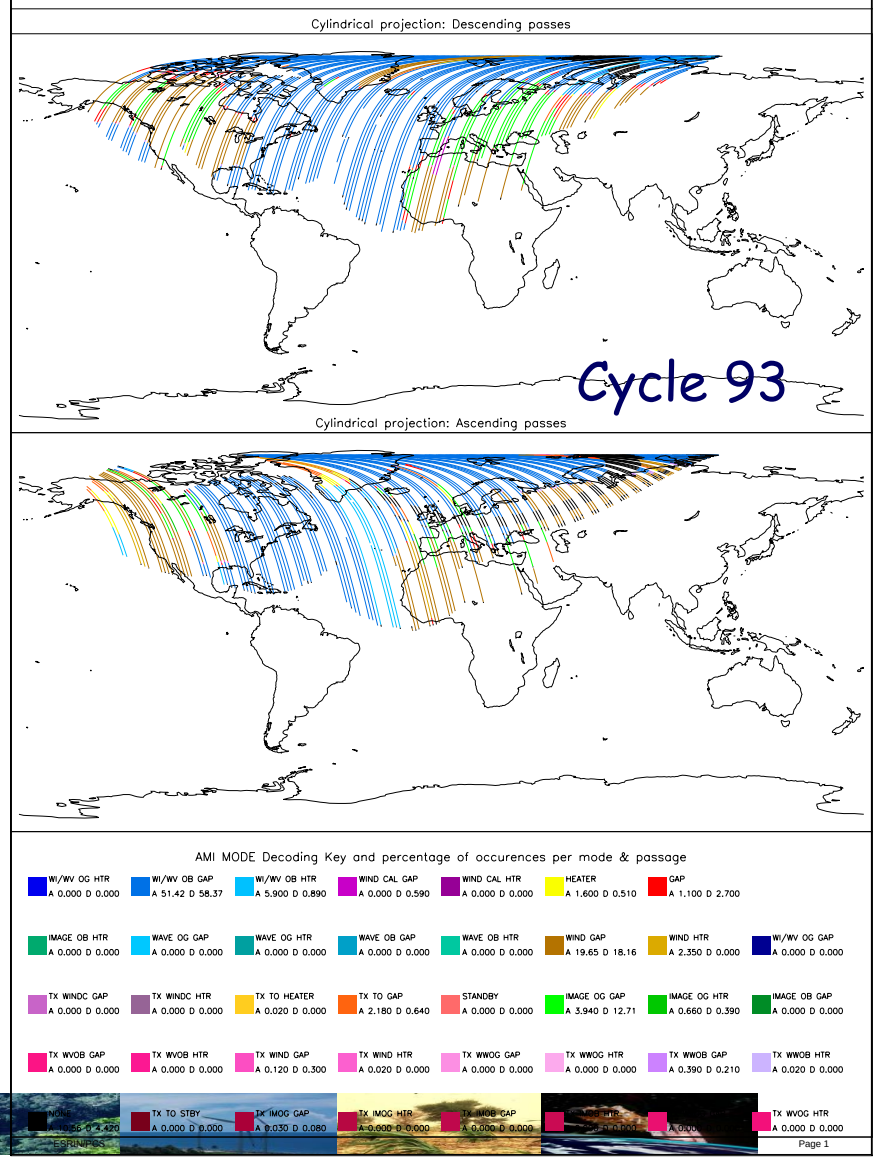






ESRIN/PCS


ERS-2 Active Microwave Instrument: Working modes
First product : 2/Feb/2004 0:42:08.485
Last product : 7/Mar/2004 23:23:28.962
Products found: 38561
Created : 18-MAR-2004 15:51:27.000
Cylindrical projection: Descending passes
Cycle 92
Cylindrical projection: Ascending passes
AMI MODE Decoding Key and percentage of occurences per mode & passage
ESRIN/PCS


ERS-2 Active Microwave Instrument: Working modes
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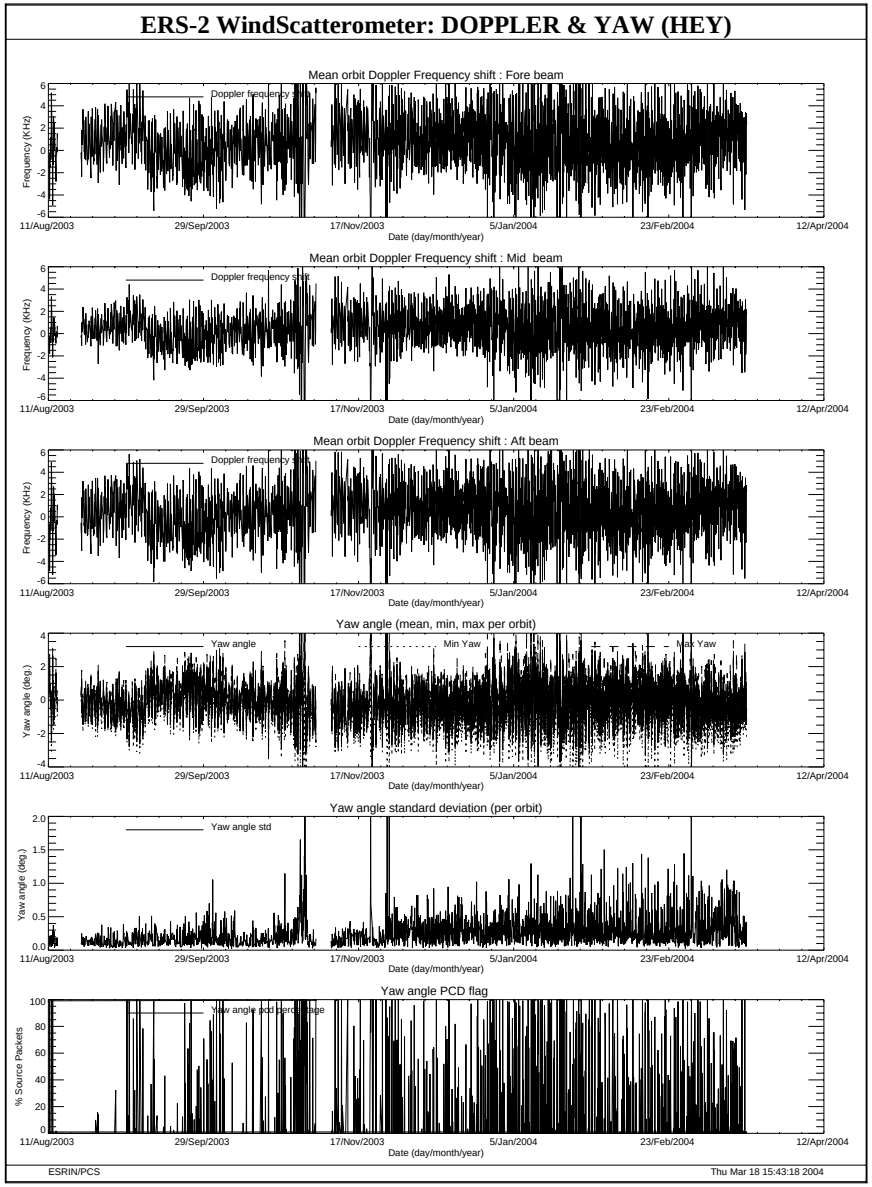
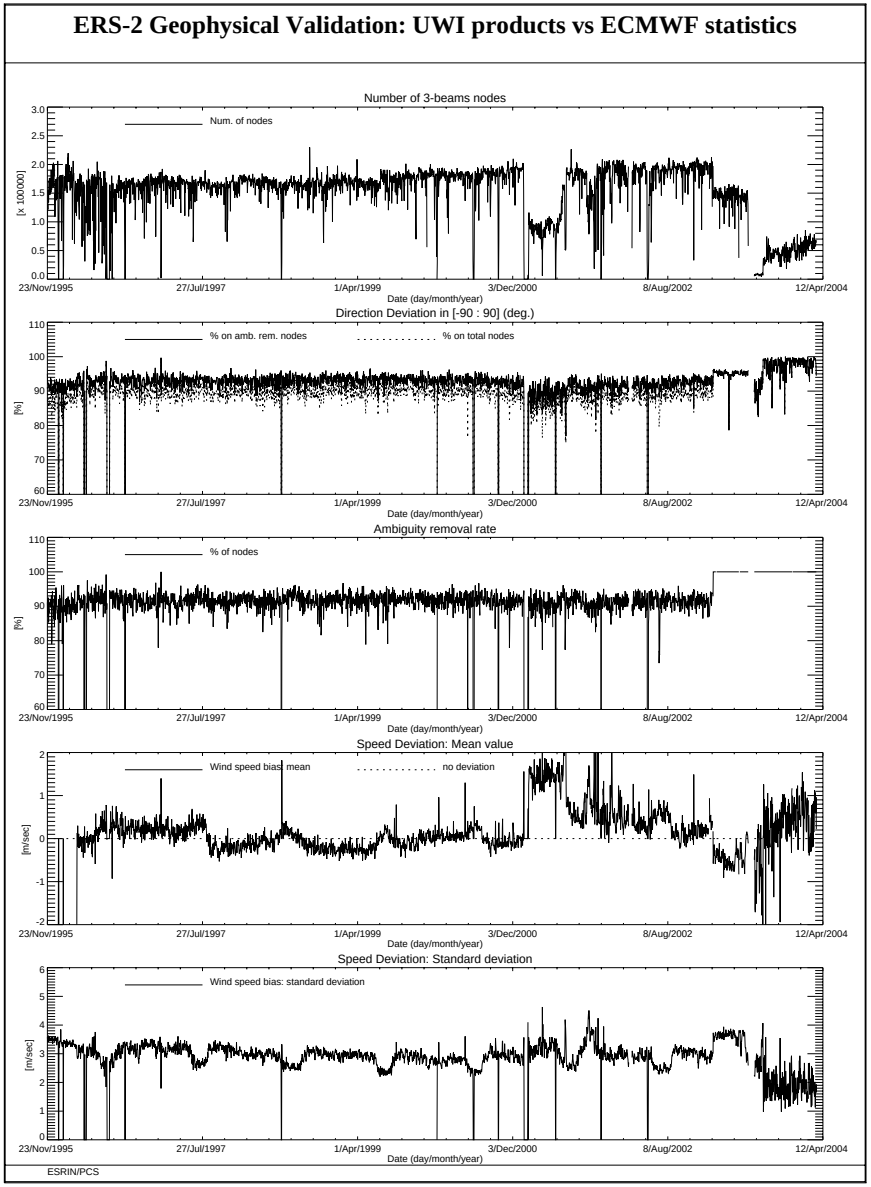
Last product : 11/Apr/2004 14:34:09.153
Products found: 11963
Created : 18-MAR-2004 15:52:39.000
Cylindrical projection: Descending passes
Cycle 93
Cylindrical projection: Ascending passes
AMI MODE Decoding Key and percentage of occurences per mode & passage
ESRIN/PCS
Page 1



- On average (one orbit segment) the yaw error angle is stable within +/- 2 deg.
- Slight increase of the yaw standard deviation since December 2003.



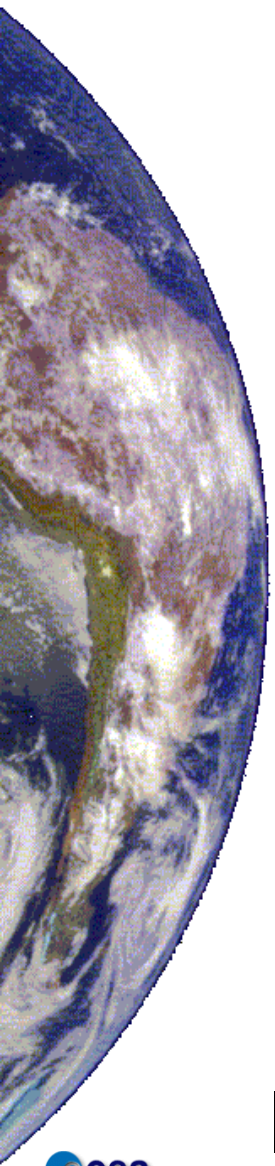
- PCS upgraded the monitor tool to filter out:
  - Land contamination
  - Yaw
  - Ice
- Noise in the wind speed statistics due to the regional mission scenario.
- Improvement in the wind direction deviation.
- Good agreement with FGAT comparison performed by ECMWF

ASPS & TOSCA status

- ASPS Osat in December 2003
  - Some minor NCRs still opened regarding the product format.
  - One cycle of UWI data is available for evaluation
- TOSCA (**TO**ol for **S**catterometer **CA**libration)
  - The contract has been negotiated with RMA
  - Kick-off beginning of April 2004

Reprocessing status

- What we still need
  - Load raw data and aux files in the AMS archive
  - Review the Scatterometer calibration with TOSCA (Transponder and rain forest data are not processed since January 2001) to feed ASPS with the most accurate gain constants.
  - Improve operational usage of ASPS



Question Time