



ASIRAS Radar Altimeter Characteristics

Bandwidth up to 1 GHz

5 usec pulse mode for low altitude flights

2 RX-channels for interferometry

Tracking by means of spectral Echo Observer

Internal control by 2(3) micro computers

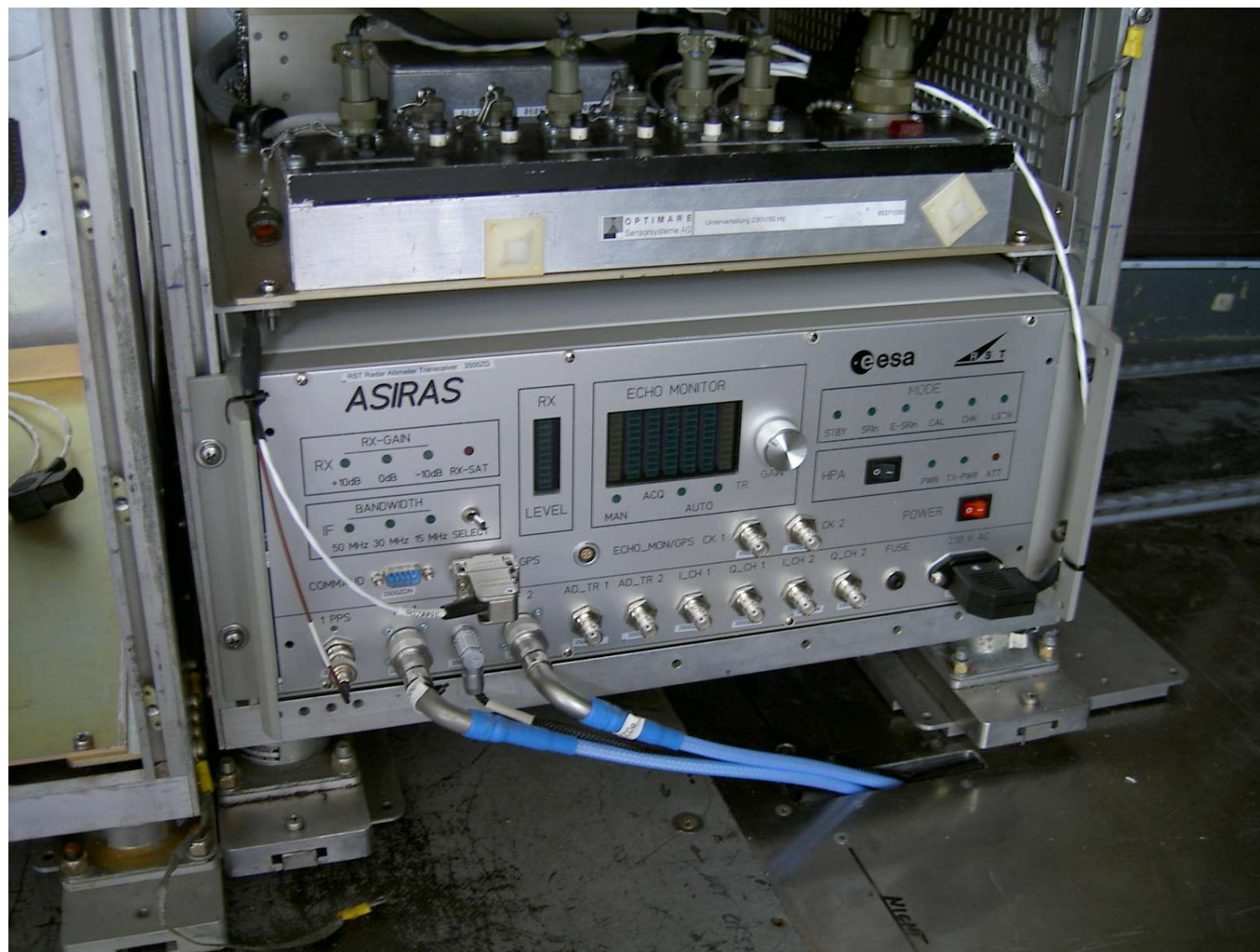
Flat array antennas, 2x 256 patches

12 Bit AD-conversion

37.4 MSamples/sec in 2x I/Q channels

Data storage on dedicated PCs (RAID arrays)

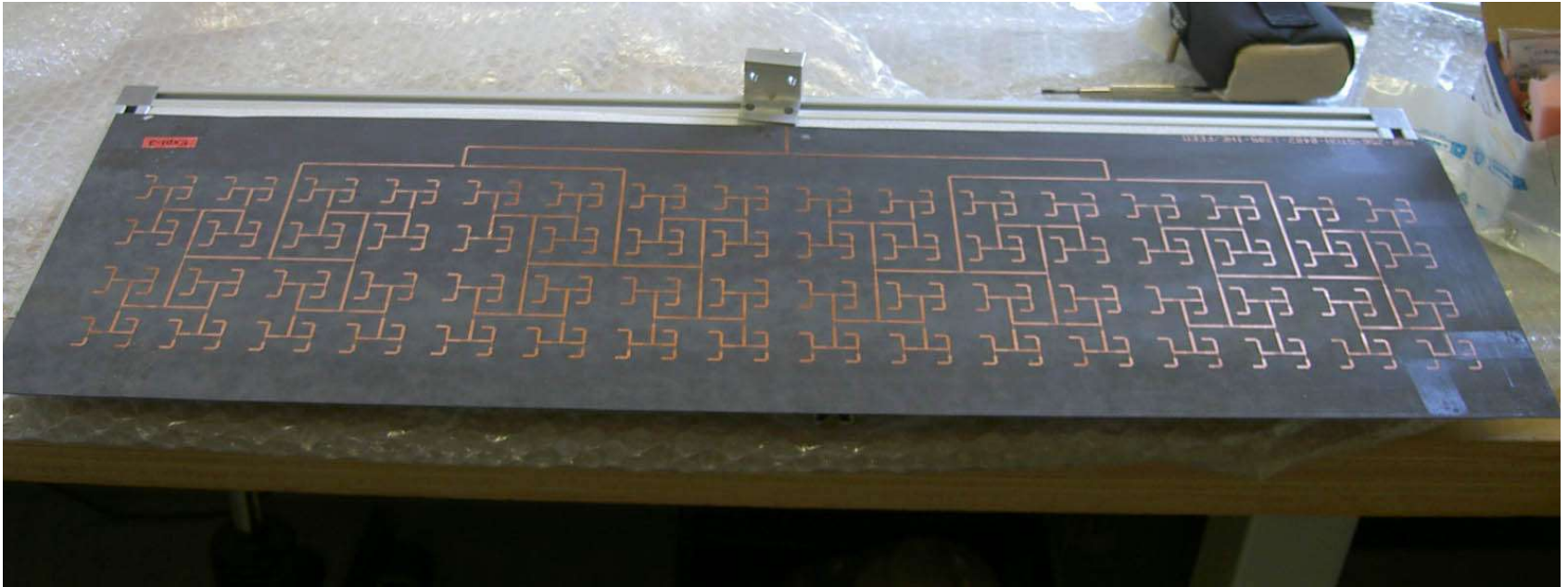
Laptop control PC



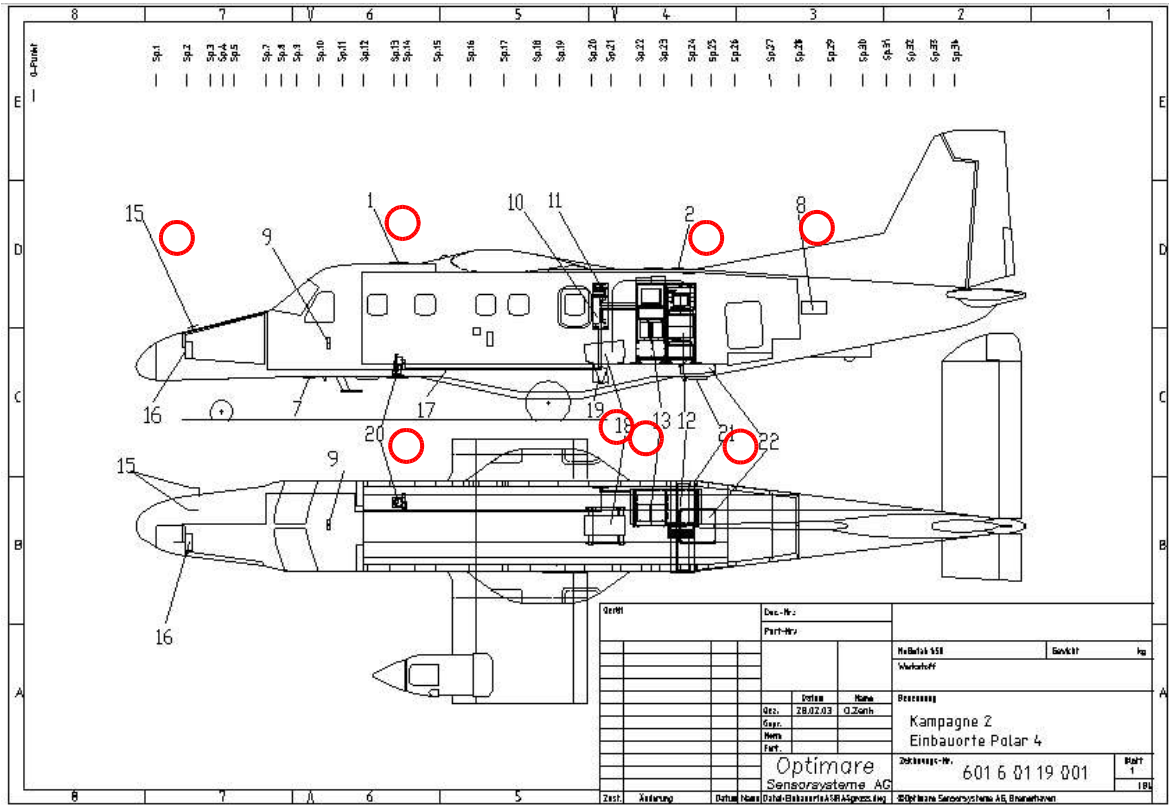








Flat array antennas, 2x 256 patches



1 + 2 GPS Antennen für Trimble

7 Radar Altimeter

8 INS

9 GNS-X

10 Power Distribution Module

11 Data Distribution Module

12 Rack I

13 Rack II

15 Basis Meteorology Sensors

16 BMET I/O Module

17 Fiber Optic

18 Riegl Laser Scanner LMSQ280

19 Riegl LD90 Laser Altimeter

20 Sony Video Camera

21 RST - ASIRAS Antenna

22 Antenna Cable Slot

Specifications

temperature: Rosemount
 pressure: Rosemount
 humidity: Aerodata AD-FS-78

A 16-bit AD-converter digitized the channels with 20 Hz in the front baggage compartment (BMET I/O Module). System time is attached to the data directly following the acquisition.

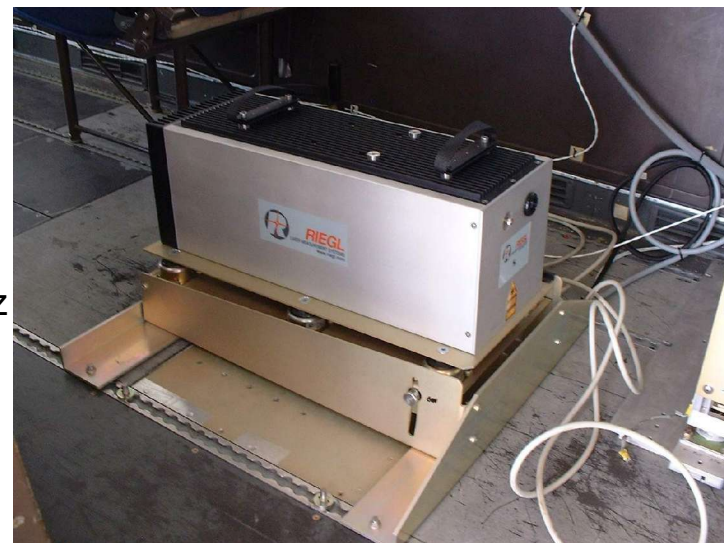


First results from test flights – before calibration

*in preparation
 for data check*

Specifications:

measurement range:	30 m up to 1280 m
measurement resolution:	20 mm with typ. ± 25 mm acc.
data channels:	range, amplitude, true color
measurement rate	PRR=18.5 kHz, data=9250 Hz
beam divergence	0.5 mrad
scanning range	nominal 45° up to 60°
scanning rate	4 Hz to 80 Hz



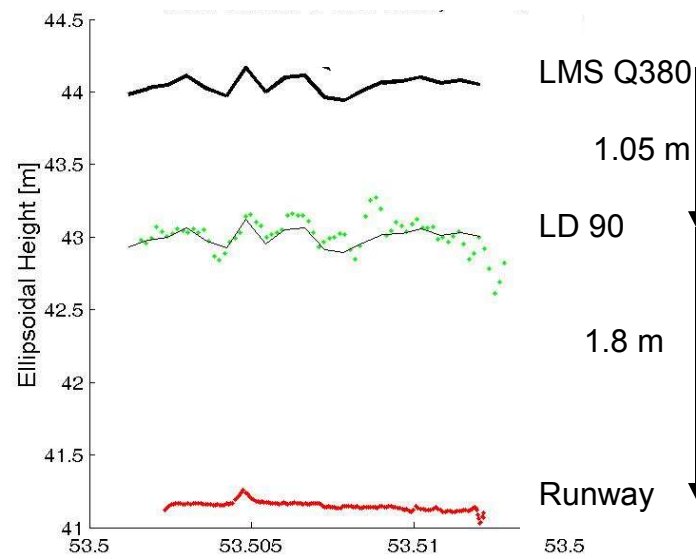
System integration:

electrics: <100 Watts @ 28 VDC

data: serial communication and parallel data interface (ECP)
MEDUSA via LS sensor processor

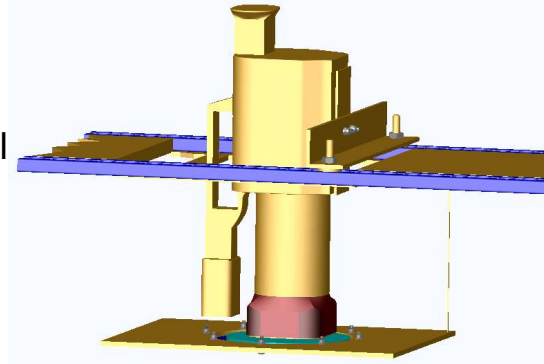
timesync.: 1 PPS sync. input
sensor processor

First Data:

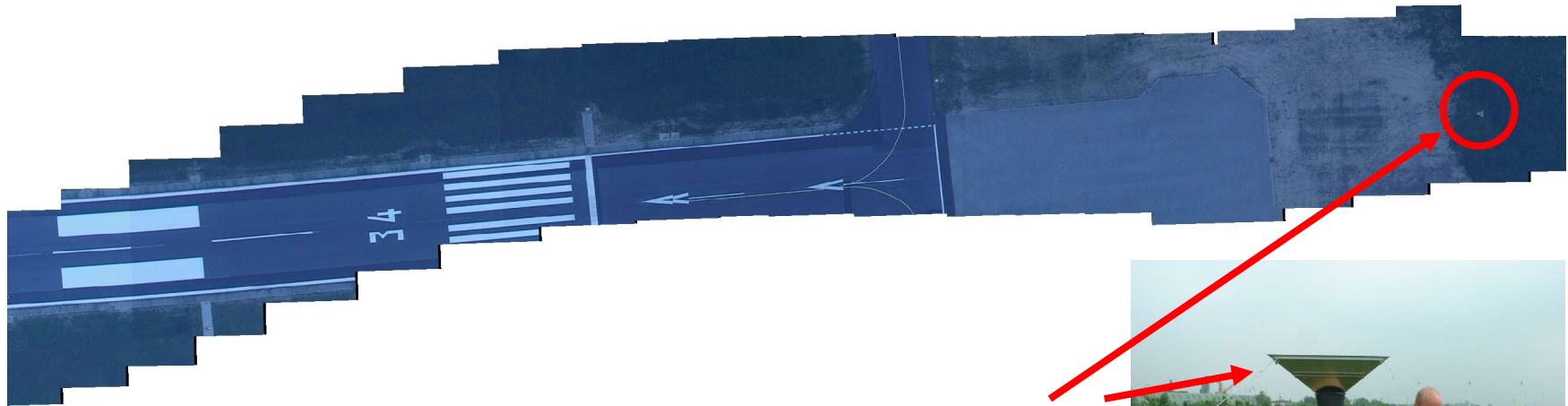


Specifications

3 CCD:	approx. 450 000 pixel
focal length:	6 –72 mm
frame rate:	25 FPS
overlap:	30 % @ 3 FPS rate

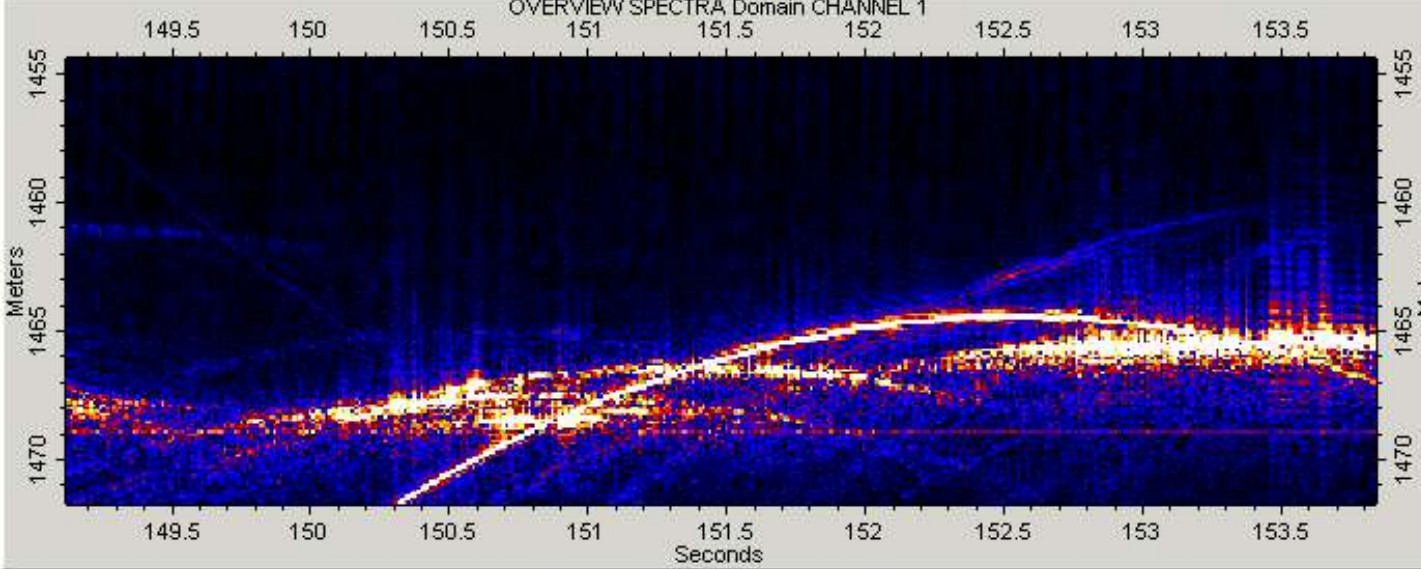


First results: over flight of runway @ ~ 1800 m altitude

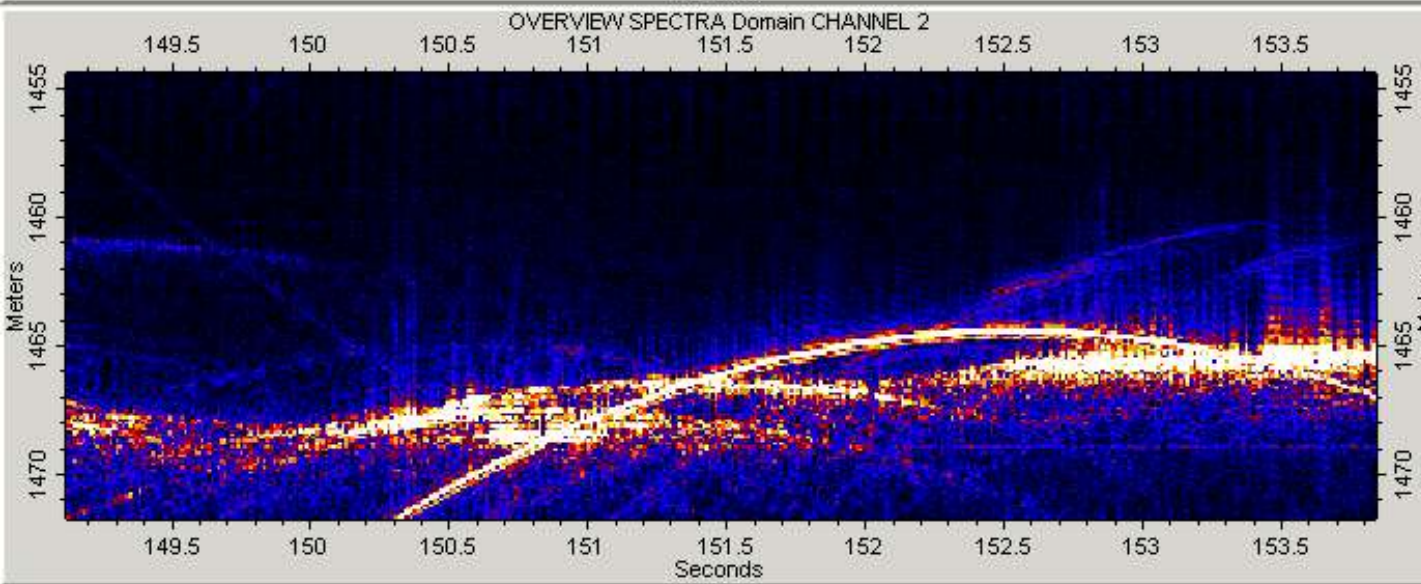


corner-reflector





Operat. Mode: SARIn
 Bandwidth [MHz]: 1000
 Pulse Length [s]: 5.0E-06
 PRF [HZ]: 5000 (Calculated: 4985)
 Range Window [m]: 22.00
 GPS Triggered: Yes
 Tracking Mode: Manual
 Config. File: no *.cfg loaded
 Log File: A031023_05.log
 File Ch. 1: A031023_05_1_00.dat
 File Ch. 2: A031023_05_2_00.dat



Number of Files: 1 / 1
Number of Pulses: 867480
Time Resolution [μs]: 200.581
Samples in each Pulse: 256

0 Seconds 174.00

Start [m] 9991.99 **F11 Enter**
End [m] 10308.40
First Pulse 743434
Last Pulse 766975

Scroll X F3 Left F4 Right

Zoom X F5 XOut F6 XIn

Scroll Y F7 Up F8 Down

Zoom Y F9 YOut F10 YIn

Intensity Level: 138/138

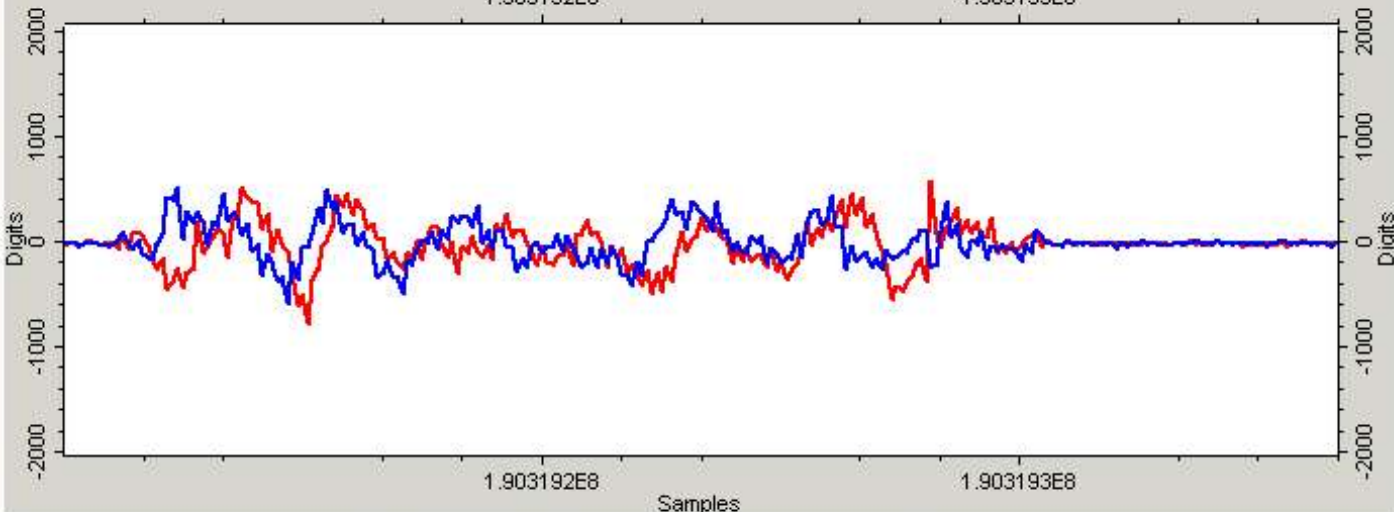
Default View
Data Report

F2 Time Domain

Capture Image Data File

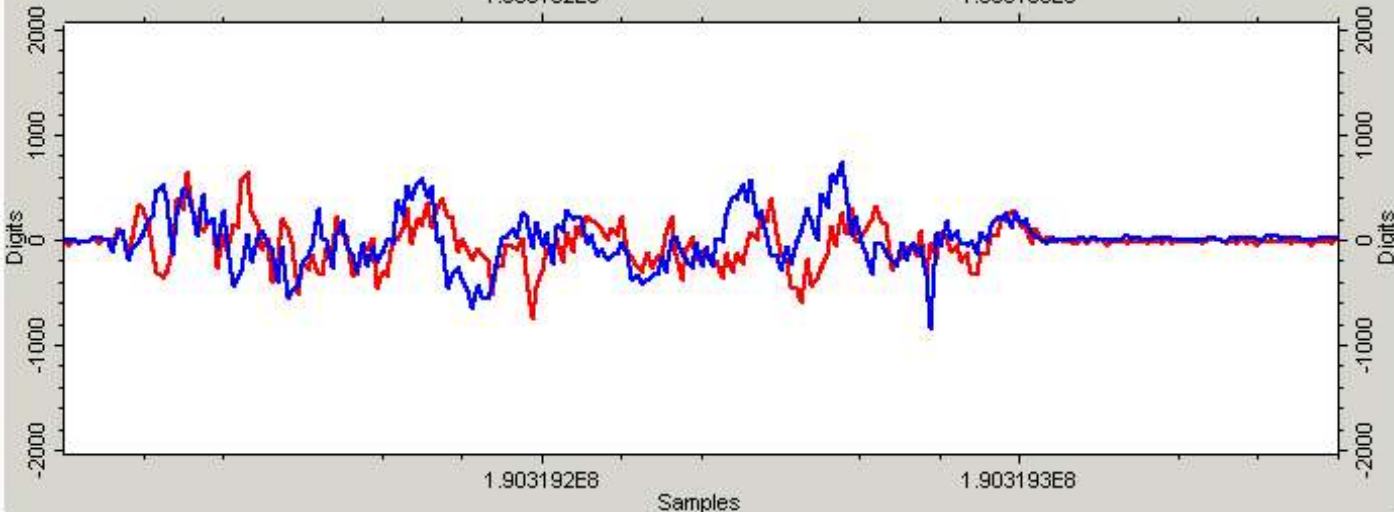
F1 Open

REAL-IMAGINARY TIME Domain CHANNEL1 Red-Real Blue-Imaginary
1.903192E8 1.903193E8



Operat. Mode: SARIn
Bandwidth [MHz]: 1000
Pulse Length [s]: 5.0E-06
PRF [HZ]: 5000 (Calculated: 4985)
Range Window [m]: 22.00
GPS Triggered: Yes
Tracking Mode: Manual
Config. File: no *.cfg loaded
Log File: A031023_05.log
File Ch. 1: A031023_05_1_00.dat
File Ch. 2: A031023_05_2_00.dat

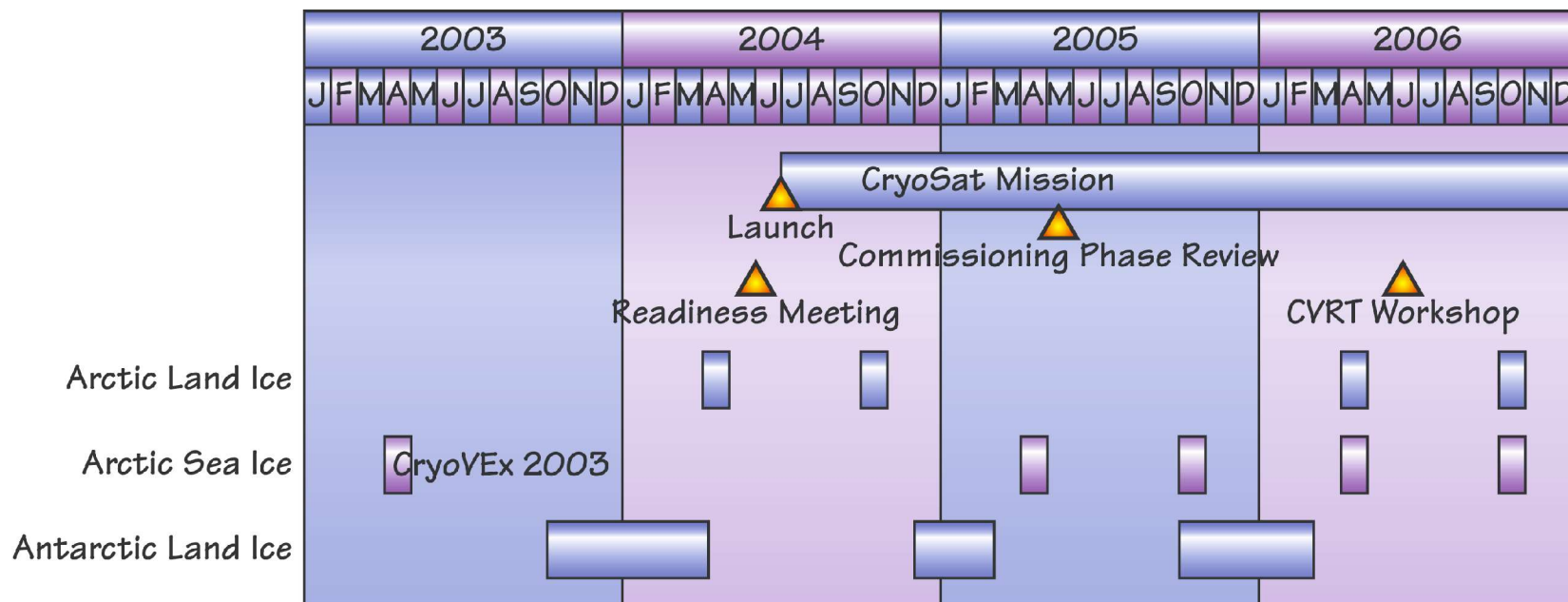
REAL-IMAGINARY TIME Domain CHANNEL2 Red-Real Blue-Imaginary
1.903192E8 1.903193E8



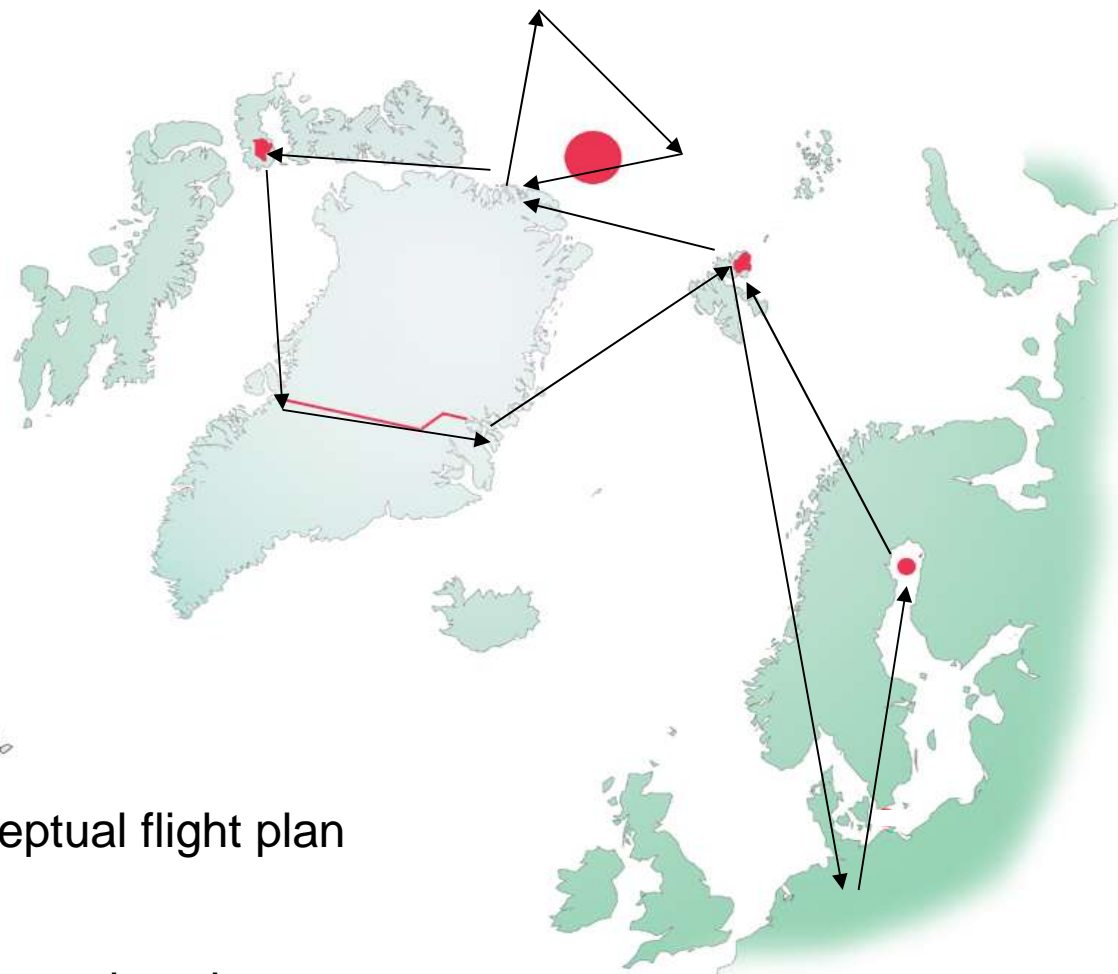
Number of Files: 1 / 1
Number of Samples: 222074880
Time Resolution [μs]: 200.581
Samples in each Pulse: 256

0 Samples 222074879
First Sample 190319104 **F11 Enter**
Last Sample 190319359
Position [m] 9991.99
Pulse 743434

Scroll X		Zoom X		Scroll Y		Zoom Y		Intensity Level: 138/138	Default View	F2 Spectra Domain	
F3 Left	F4 Right	F5 XOut	F6 XIn	F7 Up	F8 Down	F9 YOut	F10 YIn				Capture
								Data Report		Image Data File	



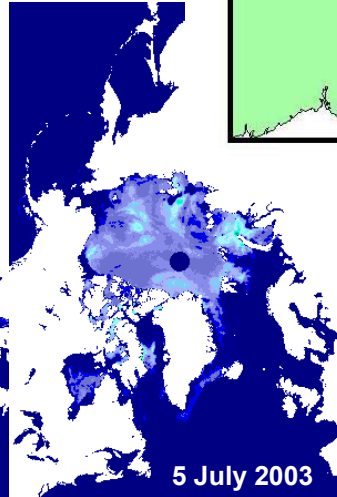
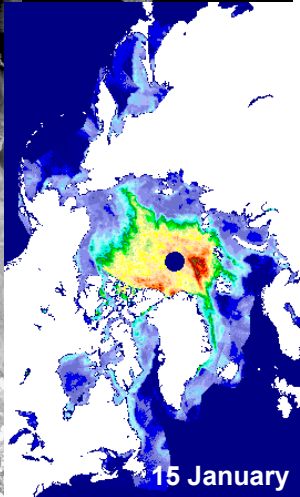
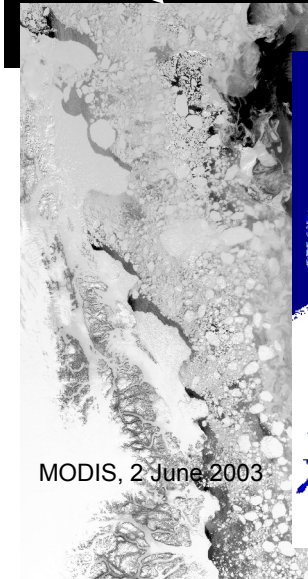
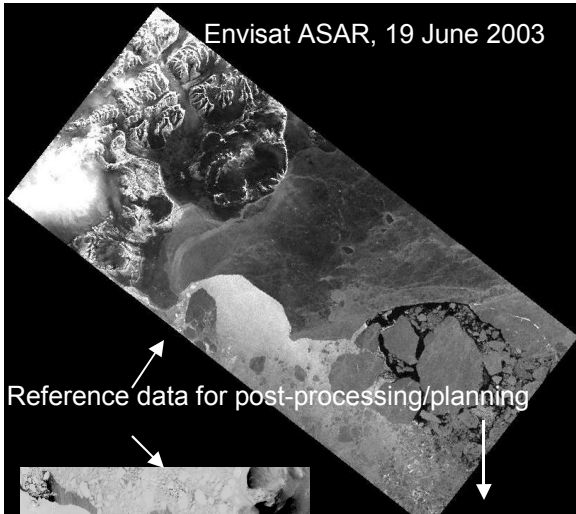
	Aircraft	time	2003		2004												2005	
			11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2
Transfer	Polar 2+4	3. Nov. - 26. Nov.																
ANT XXI	Polar 2+4	27. Nov. - 19. Feb.																
ASIRAS	D-CODE	Jan. / Feb.																
Transfer	Polar 2+4	20. Feb. - 14. Mar.																
Maintenance	Polar 2+4	15. Mar. - 18. Apr.																
VALHALA-Test	Polar 2+4	19. Apr. - 30. Apr.																
Transfer	Polar 2+4	1. May - 8. May																
VALHALA-Arctic	Polar 2+4	10. May - 17./24. June																
NGRIP	Polar 2	18. June - 30. July																
GREENICE	D-CODE	April																
Coastal Research	Polar 4 ?	July																
VALHALA-Integration	Polar 2	September																
Maintenance	Polar 2+4	October																
ASIRAS	D-CODE	October																
Transfer	Polar 2+4	3. Nov. - 26. Nov.																
ANT XXII	Polar 2+4	27. Nov. - 19. Feb.																



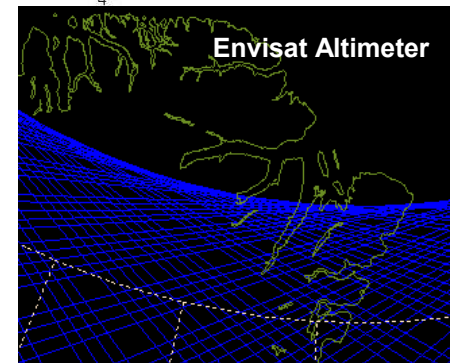
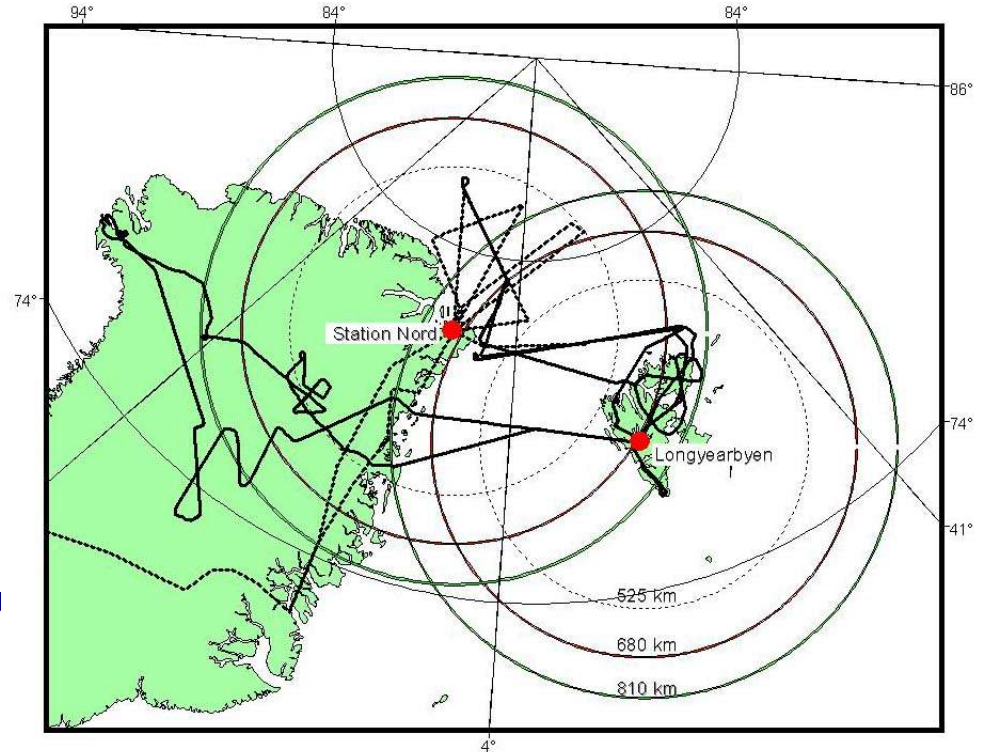
→ Conceptual flight plan

● Experiment location

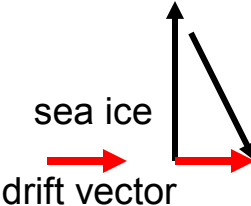
Satellite images: optical, microwave



Quickscat-Scatterometer-data



Envisat Tracks 20 June – 4 July 2003

- | | | |
|----------------------------------|---|---|
| Instrument performance | <ul style="list-style-type: none"> ➤ Stability of ASIRAS (daily repeated CAL experiments) ➤ Roll Experiments ➤ Long runs over open ocean | |
| Test of validation concept | <ul style="list-style-type: none"> ➤ Sea ice drift removal experiment |  |
| Surface type related performance | <ul style="list-style-type: none"> ➤ Dry inland ice at min/max flight altitude ➤ Sea ice north of Greenland ➤ Effect of penetration into dry ice ➤ Decorrelation of interferometric looks ➤ Angular dependence of reflectivity ➤ Identification of ice surface types ➤ Influence of humidity | |
| Previous Campaigns | <ul style="list-style-type: none"> ➤ Acquisition of comparable data sets ➤ Optimization of data processing | |



Agenda

- Introduction (ESA)
- Preliminary plans for the 2004 campaigns and outlook for the campaigns after launch (MD)
- Status of Cryovex 2003 after Copenhagen meeting (DW)
 - and ASIRAS (ESA)
- Proposal from AWI
- Proposal from KMS
- Proposal from UCL
- Financial aspects
- A. O. B.