

CRISTALair, the CRISTAL Airborne Demonstrator

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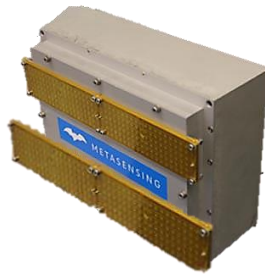
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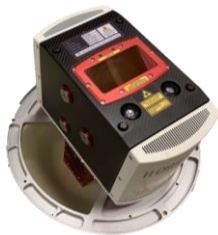
METASENSING



Sensing Instruments



Ku / Ka Radar Altimeter



Laser Scanner



RGB-NIR Camera

Support Equipment



Power Supply Unit

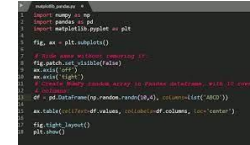


GNSS

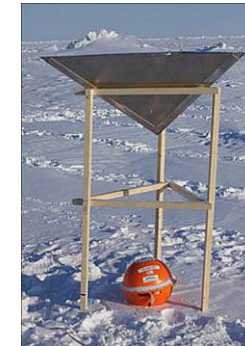


INS

L1 processor HW platform



Corner Reflectors



Kenn Borek Air Basler BT-67



Norlandair DHC-6 Twin Otter





- Project coordinator
- Processor
- Corner Reflectors



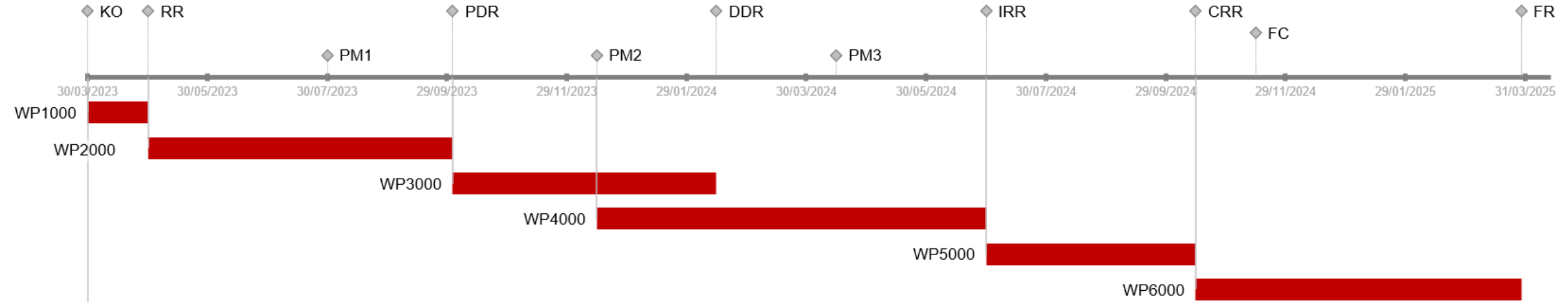
- Radar instrument
- Integration



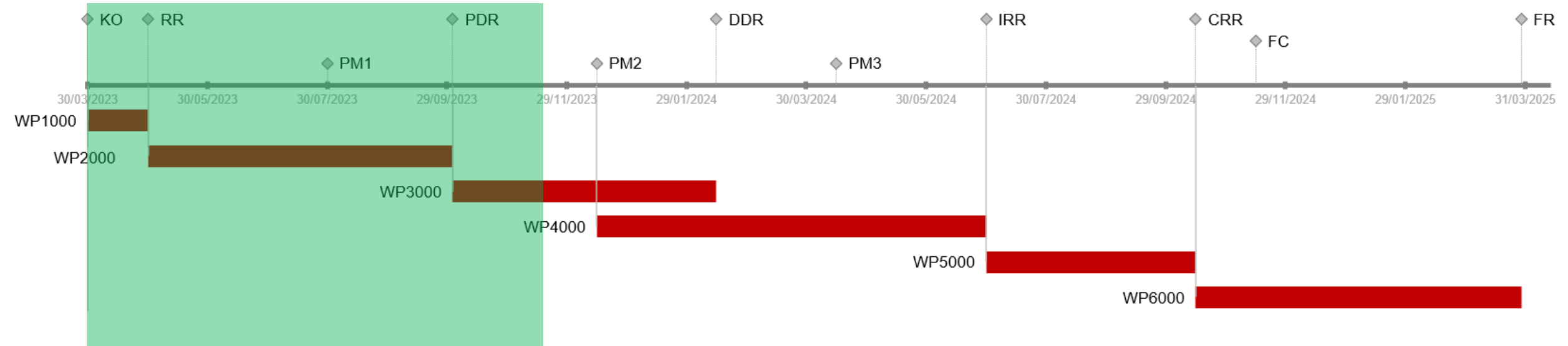
- Laser instrument
- Optical Camera
- Airborne Campaign test



- Project control
- Review
- Coordination with CRISTAL MAG



WP1000	Requirements Review
WP2000	Preliminary Instrument and Processor Design, Performance Analysis and Test Plan and Procedures Development
WP3000	Detailed Instrument Design
WP4000	System Implementation and Laboratory Tests
WP5000	Instrument Integration, On-Ground Tests and Functional Flight Campaign Preparation
WP6000	Functional Flight Campaign and Conclusion



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- Basler BT-67 or DHC-6 Twin-Otter.
- Up to 7000 meters wrt. sea level.
- 6 hours flight duration.
- Stability

Kenn Borek Air Basler BT-67



Norlandair DHC-6 Twin Otter

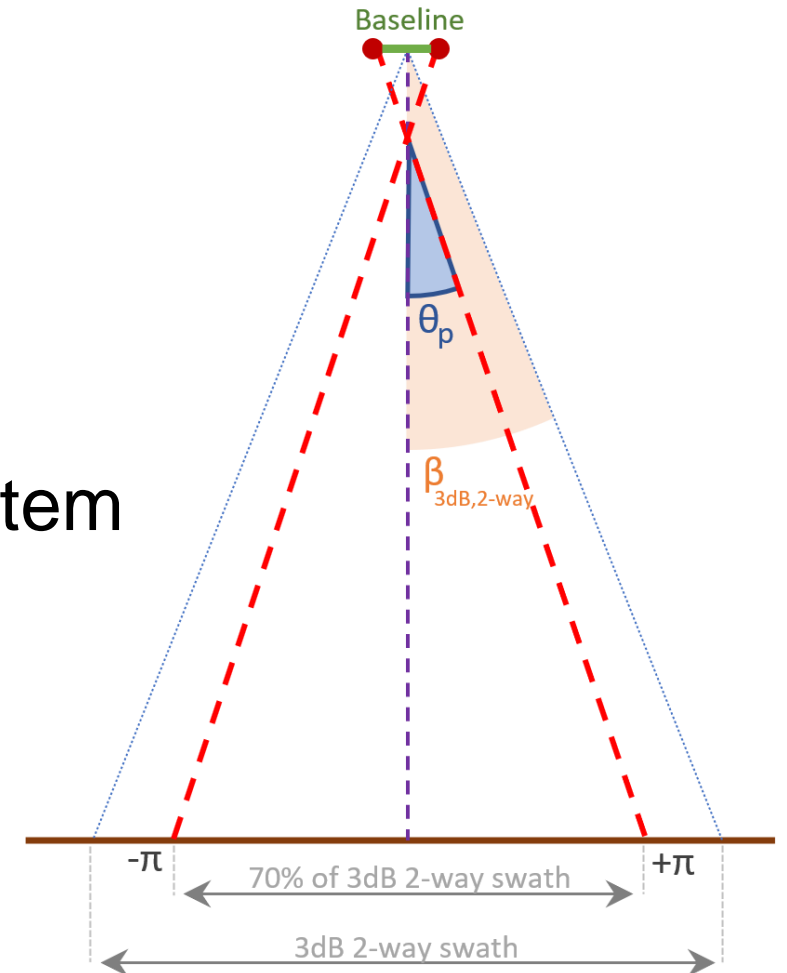


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Radar

- 1-4 km ground altitude
 - PRF, Pulse duration, duty cycle
- Interferometry in both Ku and Ka
- PRF > 10 kHz
- Automatic tracking (range and gain) system
- Swath > 200 m
- $\delta_{al} > 0.5$ m

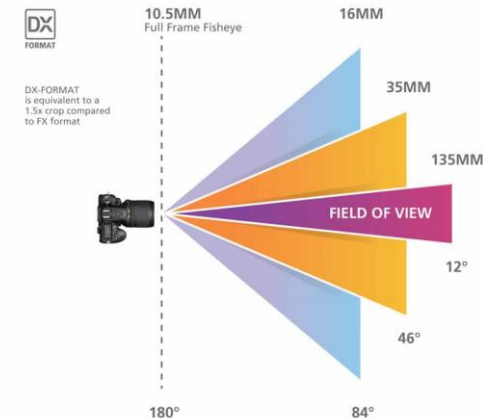
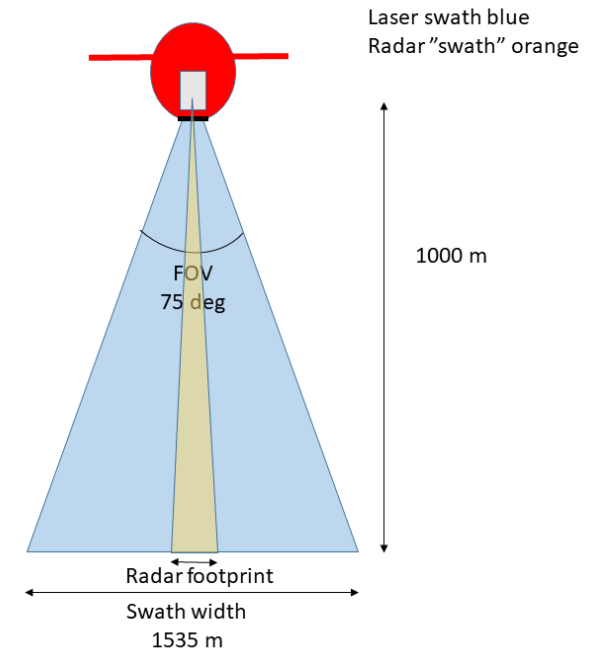


Laser

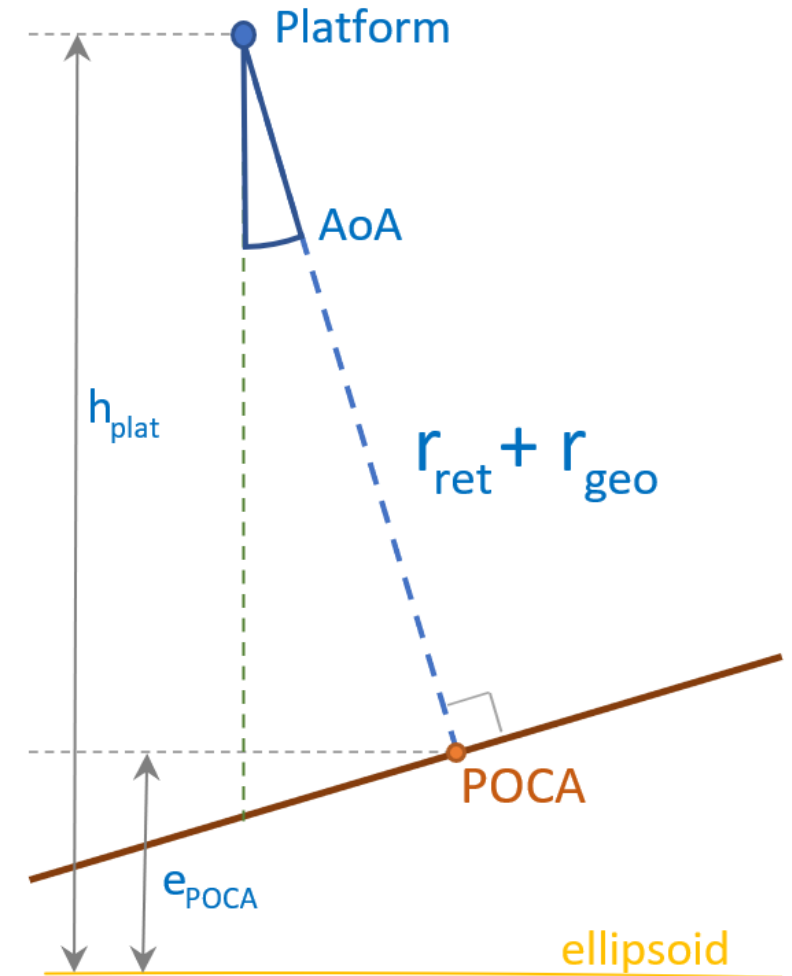
- Collocated measurements
- Accuracy and precision < 25 mm
- Laser snowfield

Camera

- Colour InfraRed
- Collocated measurements
- Pixel resolution < 1m



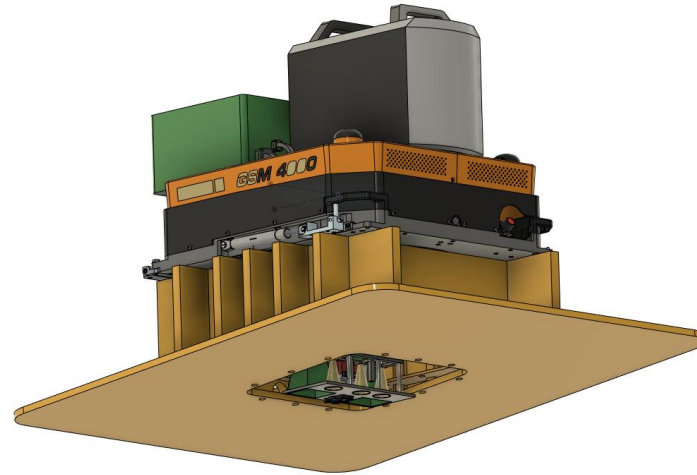
- Elevation uncertainty < 10 cm
- Range noise < 0.8 cm
- Altitude accuracy < 5 cm
- σ_0 accuracy < 0.7 dB
- PTR shape



- Open source
- Alignment between CRISTALair and CRISTAL products
- L1B LR, L1B HR, L1B FFSL and FFML
- Quick analysis Tool
- Performance analysis Tool



Norlandair DHC-6 Twin Otter



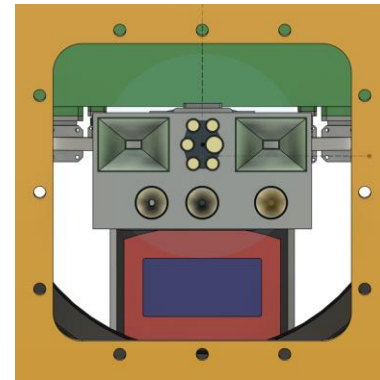
0.95 m triangular Corner Reflectors



Riegl VQ-580II

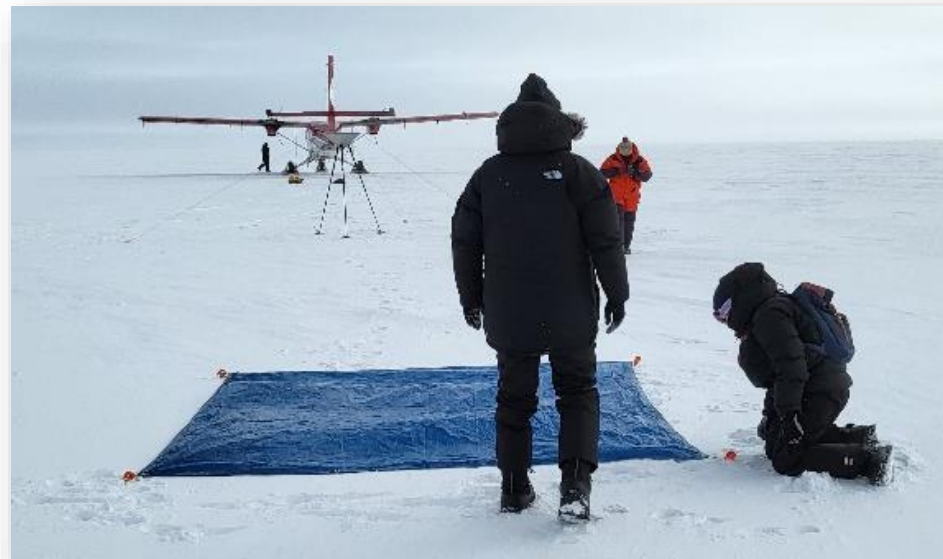


MicaSense RedEdge-P multispectral camera



Mechanical design within Twin Otter hatch

Akureyri to test area	Location	Distance (km)	Sea ice	Land ice	Challenges
Station Nord	Greenland	2,000	Fast ice by snow mobile Drifting sea ice	Local ice cap Flade isblink	Long transit flight
Iceland local flight	Iceland	100		Langajökull by snow mobile	No sea ice





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THANKS!!!

