

Committee on Earth Observation Satellites
Working Group on Calibration and Validation

**Microwave Sensors
Subgroup**

Christopher Buck

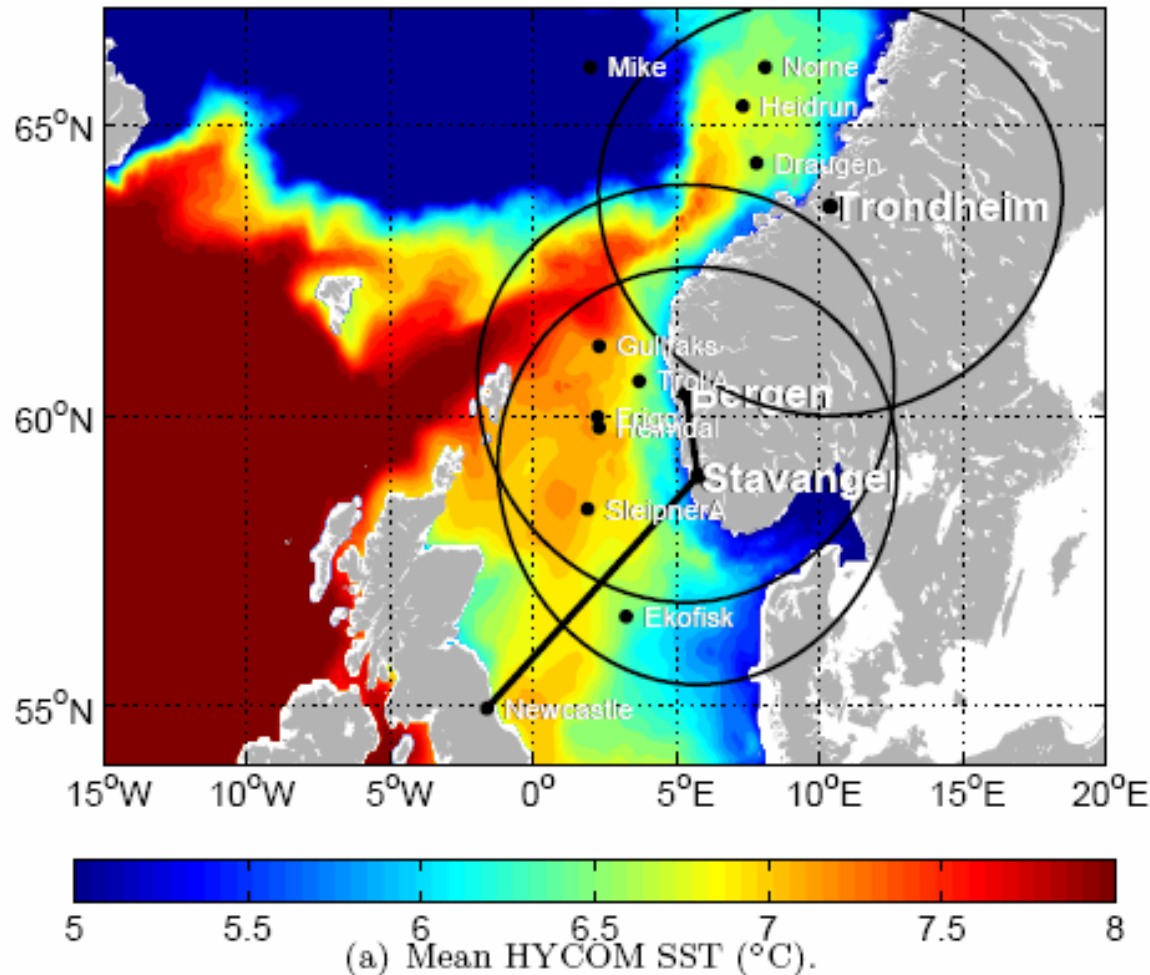
9 May 2006



- **CoSMOS-OS**
- **CryoVEx**
- **Sentinel 3**
- **PARIS Airborne Demonstrator**
- **PARIS on Vega**
- **Workshops**



- Campaign to use TUD developed radiometer in preparation for SMOS
- Fly out of Stavanger, Norway over a region of the North Sea with sharp temperature gradient





**Aircraft is SkyVan
operated by
Helsinki University
of Technology**



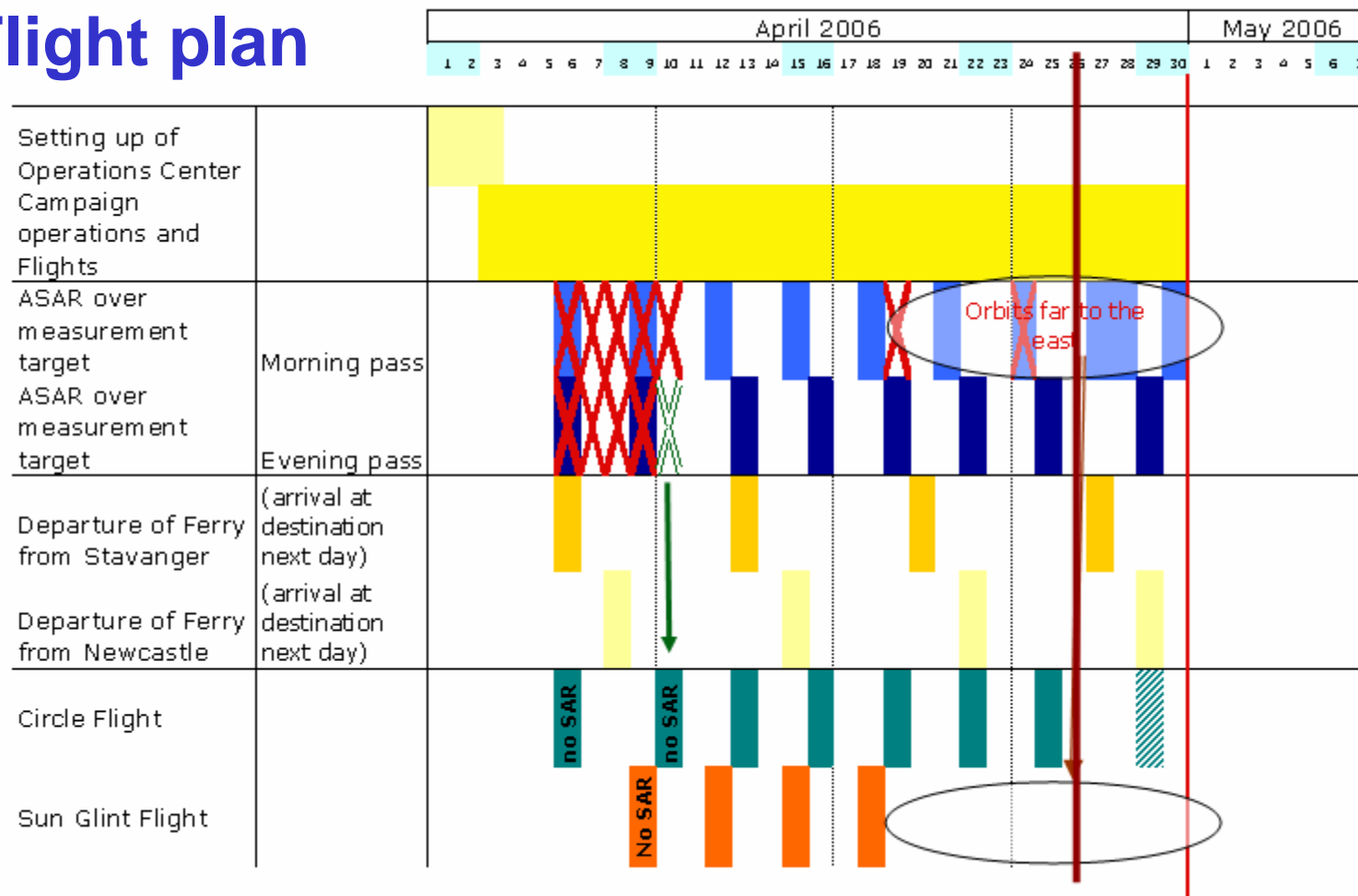
Ready for the first Sun Glint Flight.



Two radiometer horns point to nadir and aft at 45°



Flight plan

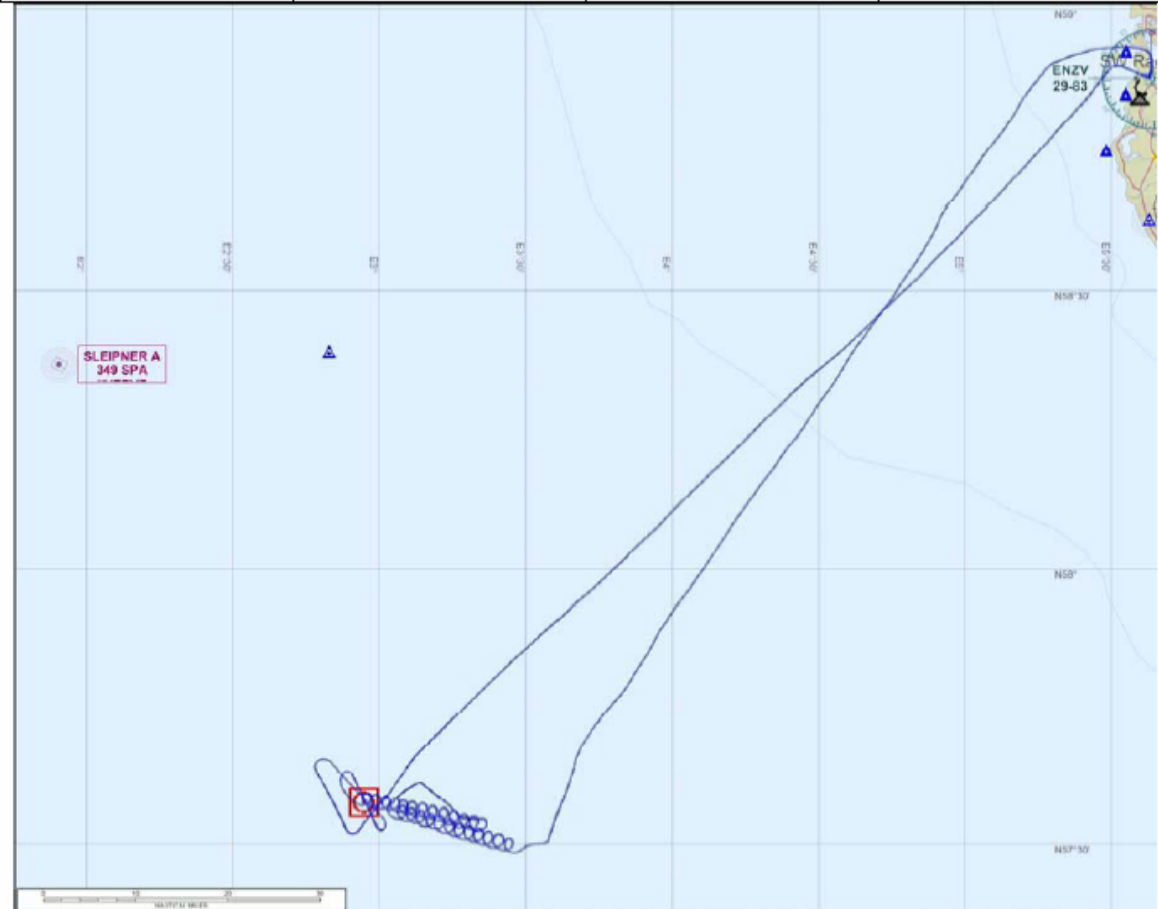


Close to:

- ## Sea state determined using:

- Flight information:

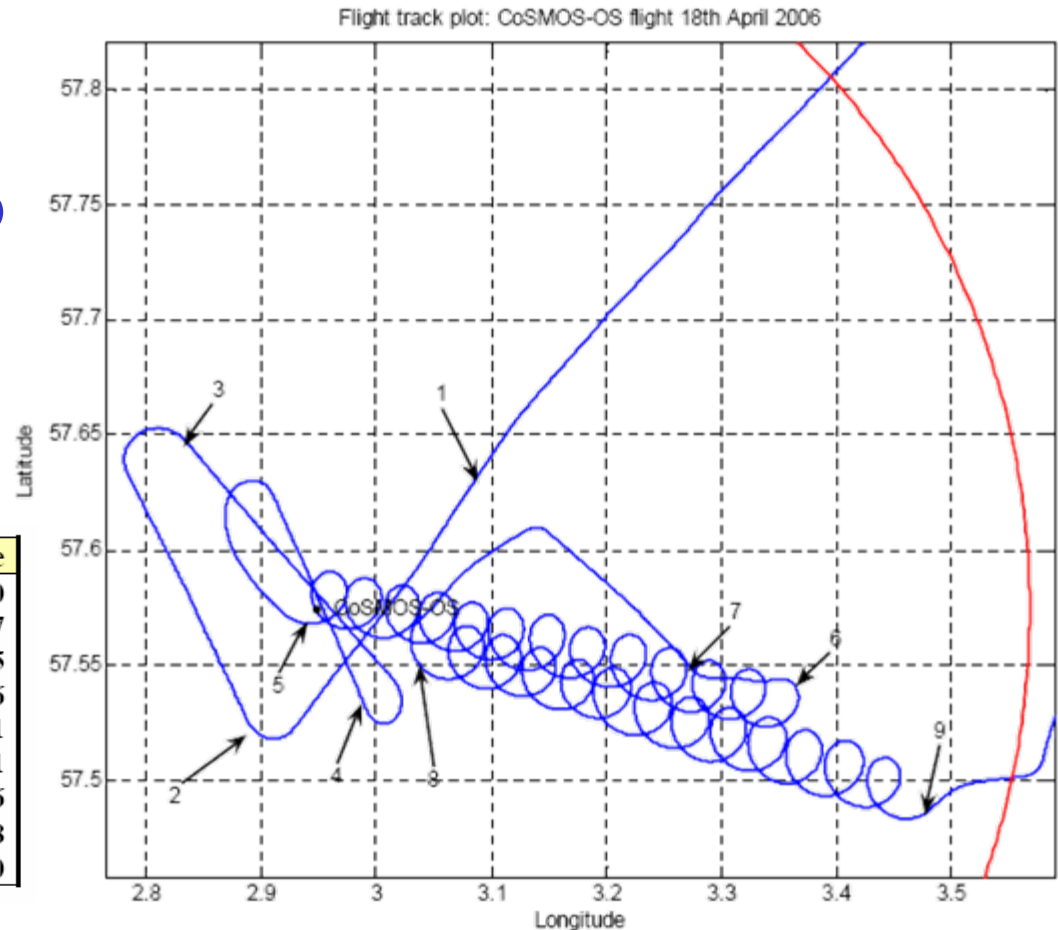
TakeOff	Landing	Airborne	MaxAlt[m]
08:46	11:56	03:10	2956



Flight profile: CoSMOS_08 flight 18th April 2008

Circles are
difficult to fly
perfectly due to
wind

#	Event	Time
1	Start of SG perpendicular	9:42:20
2	Start of SG out of sun leg, incl. dive	9:49:27
3	Start of SG into sun, incl. dive	9:54:25
4	Start of 2 nd SG out of the sun, incl. dive	9:58:56
5	Start of 1 st circles	10:04:51
6	End of 1 st circles	10:33:31
7	Start of SG 150° offset from Sun azim.	10:35:46
8	Start of 2 nd circles	10:42:28
9	End of 2 nd circles	11:11:30





- **Campaign has just completed**
- **Difficulties encountered due to:**
 - Poor weather
 - Minor equipment problems
 - Interruption of ENVISAT services
- **Nevertheless, invaluable dataset collected**
- **Data will be processed during coming months**



**CryoSat-2 now approved –
launch in approx. 3 years**

**CryoSat Validation Experiment
(CryoVEx) continuing**

**Current campaign now underway
(May 2006)**

Equipment consists of:

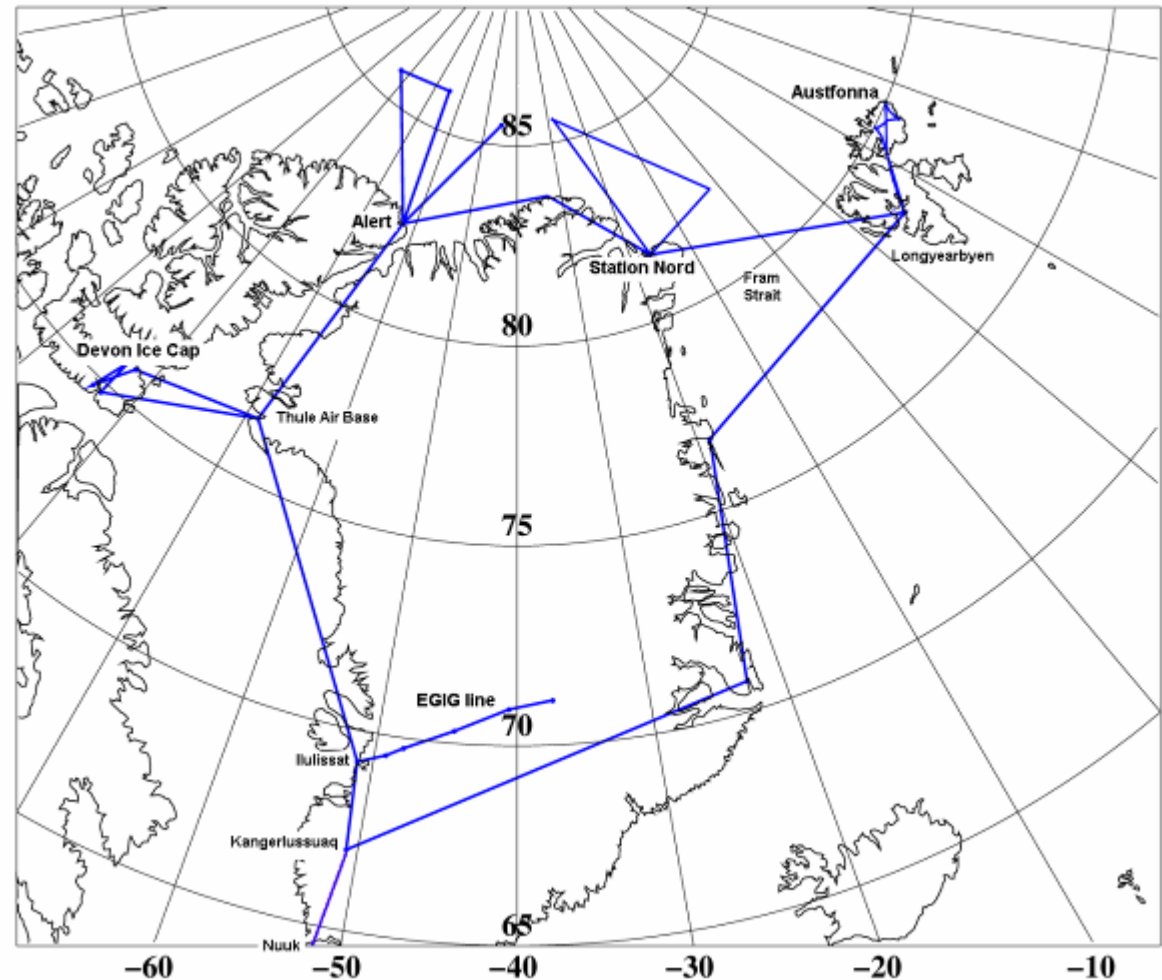
- ASIRAS (airborne version of SIRAL = CryoSat radar altimeter)
- Laser profiler
- PARIS instrument to collect GPS reflections off ice (piggyback experiment)



Aircraft is a De Havilland Twin Otter



Based initially on Svalbard, the aircraft will fly out over Greenland collecting measurements over both sea and land ice





- PCR held in March
- **Selection of dual-frequency Ku- and C-band altimeter (as Jason)**
 - Argument for heritage with S-band second channel of RA-2 outweighed by improved accuracy obtainable with C-band (twice available bandwidth)
- **Effort now concentrated on determining relative benefits of dual or triple frequency radiometer for troposphere correction**



- **CDR successfully held in April**
 - Now being built
 - First TRRs in July
- **Completion on schedule for February 2007**
- **Test flight likely to be over “hole” in floor of Irish Sea**
- **Plan for campaign to repeatedly “image” an ocean eddy over a period of a week**



- **First launch of Vega scheduled for December 2009**
- **PARIS could be a candidate payload**
 - Stripped down version with single wide beam suitable for PROBA platform or
 - Full version with 12 beams on a larger platform (eg MicroSat 100)



- **Workshop on RF Sensors for Earth Observation**
 - Dedicated CEOS WGCV Microwave Sensors Subgroup session
 - Dates: 5,6,7 December 2006
 - Location: ESTEC, The Netherlands
- **Workshop on GNSS Reflections (applications and techniques)**
 - Dates: 14-15 June 2006
 - Location: ESTEC, The Netherlands