

# ACLOUD Flight #13 – Polar 6 – 170605

Mission PI P6: Johannes Schneider

Objectives: Satellite meeting, low cloud profiling at Polarstern, vertical profile to 12000 ft.

Crew:

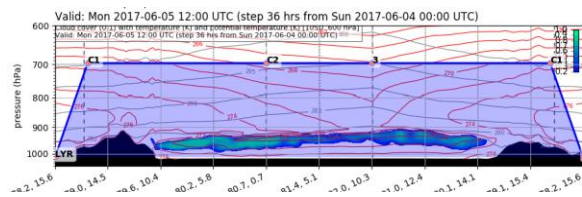
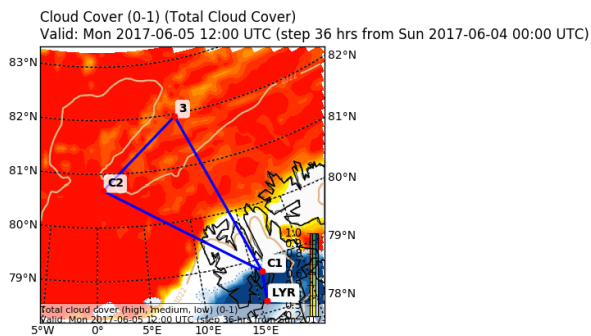
Polar 6	
PI	Johannes Schneider
Basis Data Acq.	Martin Gehrmann
ALABAMA	Hans-Christian Clemen
CVI	Udo Kästner
Gas/AWI-Aerosol	Heiko Bozem
PMS	Delphine Leroy Martin Schnaiter

Flight times:

Polar 6	
Take off	10:43:34 UTC
Touch down	14:44 (approx.) UTC

Weather situation as observed during the flight (compare to forecast):

Forecast:



The cloud situation over Polarstern was as predicted, low level clouds between 200 and 1400 ft. Conditions at LYB were worse than predicted, with low clouds in the morning, causing a 3-hour delay of the flight, and fog moving in during early afternoon.

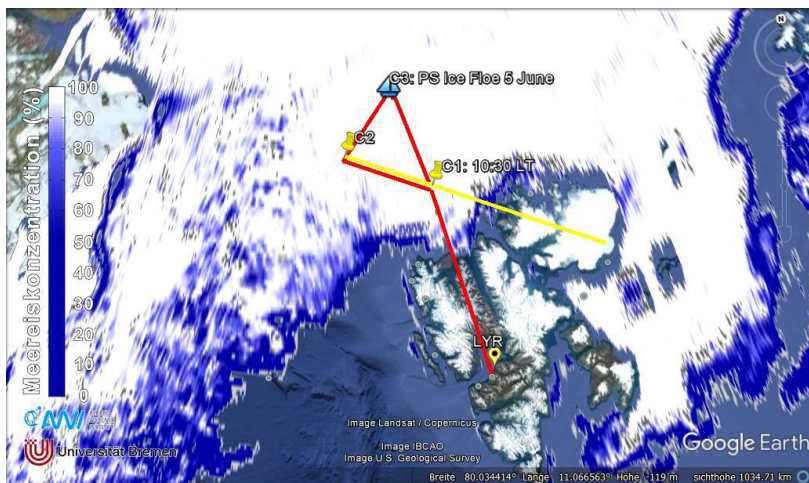
Overview:

Flight started with 3 hours delay due to low clouds at Longyear airport. Therefore, the satellite meeting was not possible and the flight track was modified (waypoint C2 was cancelled). After start P6 climbed to 5000 ft, after a 5 min level to 10000 ft. The we descended to reach cloud level over ice and started cloud profiling. Cloud top was at 1400 ft, cloud base around 200 ft. Three cloud profiles

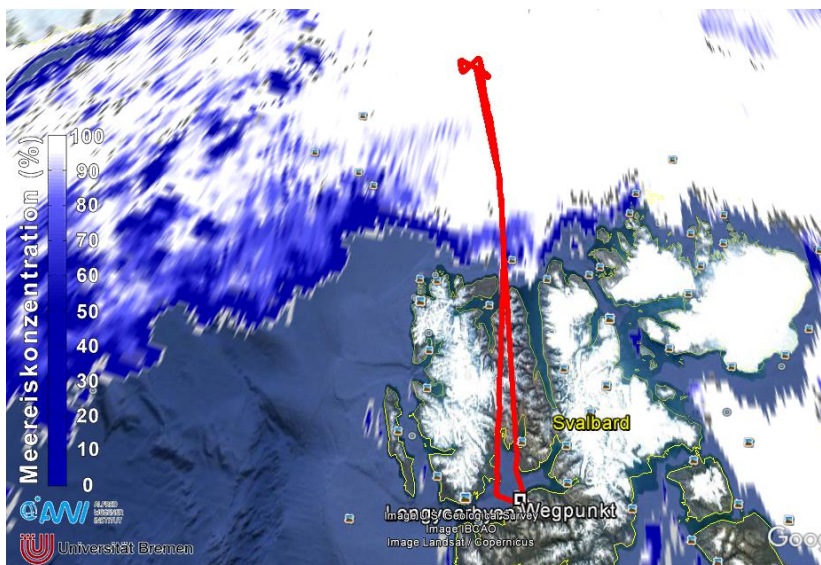
were conducted until Polarstern. At Polarstern "double-triangle" pattern at 200, 800, 1000, 1200, 1700, and 1300 ft. 1700 was above cloud top. After finishing the pattern we stayed at 2500 ft for de-icing, then did two more cloud profiles on the way back, then ascended to 12000 ft, descended to 9000 ft before landing at LYB. During return weather forecast for Longyear airport predicted low clouds and fog, landing occurred under foggy conditions.

### Flight track and pattern:

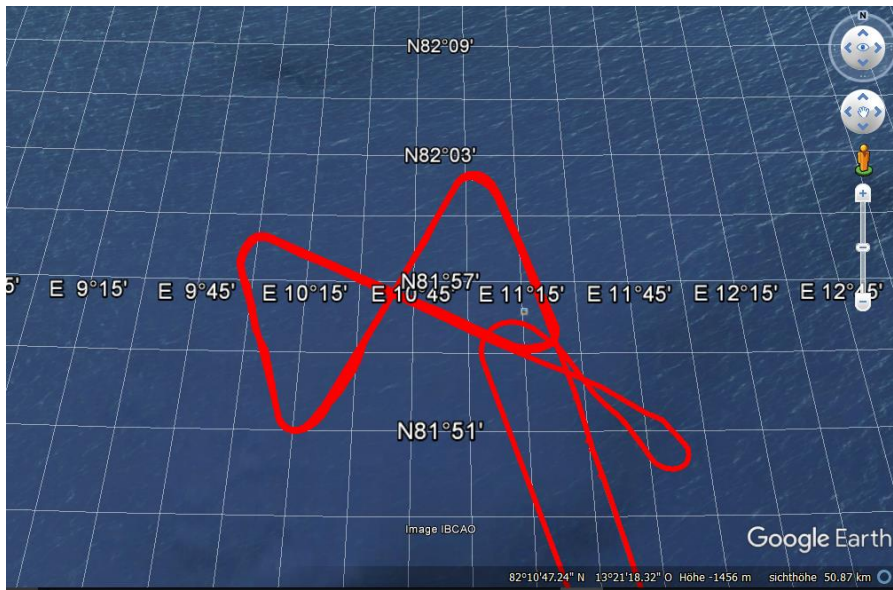
Flight plan:



### Actual flight track:



Pattern over Polarstern:



**Instrument Status:**

<b>Polar 6</b>	
Basis data acquisition	
Nose Boom	
ALABAMA	
CVI	
Trace Gases	
AWI Aerosol	
KIT PMS	
LAMP PMS	

**Comments:**

Some issues with the network inside P6 occurred.

**Detailed Flight Logs (Name of author... more than one is possible):**

**Johannes Schneider (times UTC)**

- 10:43:34    Take off
- climb to 5000 ft
- 10:50:35    reach 5000 ft, stay for 5 min
- 10:55:46    climb to 10000 ft
- 11:06:08    reach 10000 ft
- 11:12:15    start descent
- 11:16        closed sea ice below, clouds observed in front below us
- 11:16        2500 ft, 5°C, still above clouds

11:28:20 start cloud profile with 200 ft/min descent rate, 140 kn  
Cloud top 1400 ft  
PMS reports some ice, but mainly droplets

12:32 +1°C

11:33 cloud base is very low

11:34:18 200 ft cloud base  
PMS: some small ice crystals and larger columns below cloud

11:43:30 C1, start ascent through cloud

11:46:25 cloud base

11:49:30 cloud top (1800 ft)

11:54:45 next descent

11:56:20 1700 ft, cloud top  
PMS: ice in upper layer

12:01:16 big ice particles (lower edge of cloud)

12:04 cloud base  
PMS: ice precipitation continues  
Stay here until Polarstern (7 minutes)

12:06:10 200 ft

12:12:15 turn right

12:13:00 see Polarstern on left side

12:19:30 start 1<sup>st</sup> leg of "double triangle" at 200 ft, 120 kn

12:22:00 Polarstern on right side

12:25:30 end of line, turn and climb

12:28:40 800 ft

12:29:42 turn and start 2<sup>nd</sup> leg (in cloud), 800 ft, close to cloud base

12:35:50 turn

12:37:20 climb to 1000 ft

12:39:57 turn and start 3<sup>rd</sup> leg,  
PMS: more large droplets  
ALABAMA: Hitrate increases

12:45:50 turn and climb to 1200 ft

12:50:15 start 4<sup>th</sup> leg at 1200 ft, close to cloud top

12:56:00 end, turn, climb to 1700 ft -> above cloud, >0°C, de-ice  
5<sup>th</sup> leg above cloud

13:05:50 turn and descend to 1300 ft, try to do 6<sup>th</sup> leg just below cloud top

13:07:40 reach cloud top, start 6<sup>th</sup> leg

13:16:00 turn and climb to 2500 ft to de-ice

13:26:00 descent for profile through cloud, 200 ft/min, free speed

13:27:40 cloud top

13:31 cloud base at 800 ft

13:34:50 200 ft, level for 5 min

13:39:50 start next ascent 200 ft/min

13:42:15 cloud base  
Call from LYB, weather conditions become worse, have to stop cloud profiling and go  
back to LYB fast  
Ascent to 12000 ft

13:56 aerosol layer around 1000 ft  
14:01 12000 ft  
14:12 start descent to 9000 ft  
14:44 touch down (approximate time)

**Pictures:**

Low cloud close to LYB after take off:



200 ft level close to Polarstern:



Highest leg in clouds (1300 ft), just below cloud top (13:13 UTC)



Fog over LYB shortly before landing:



**Quicklooks:**

Not available yet