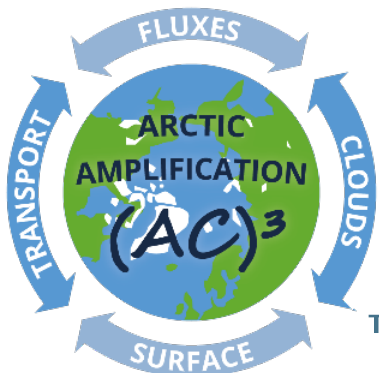


Arctic Amplification: Climate Relevant Atmospheric and Surface Processes, and Feedback Mechanisms (AC)³

HALO (AC)³—Overview

Polar 5 and 6 flights from Longyearbyen

C.Lüpkes, M. Wendisch, A. Herber, M. Mech, A. Ehrlich, et al.



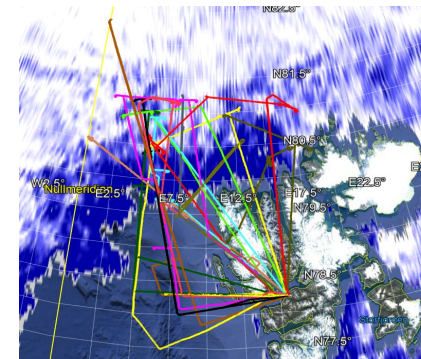
<http://ac3-tr.de>

We do not start from zero

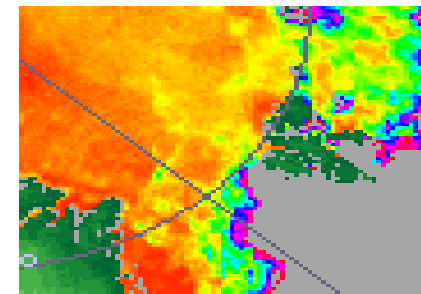


Similar weather/sea ice conditions can be expected as during AFLUX

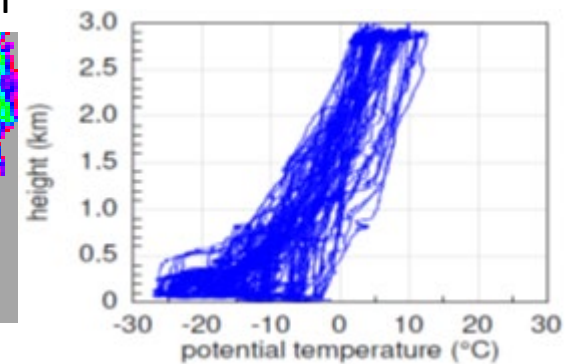
AFLUX



sea ice concentration

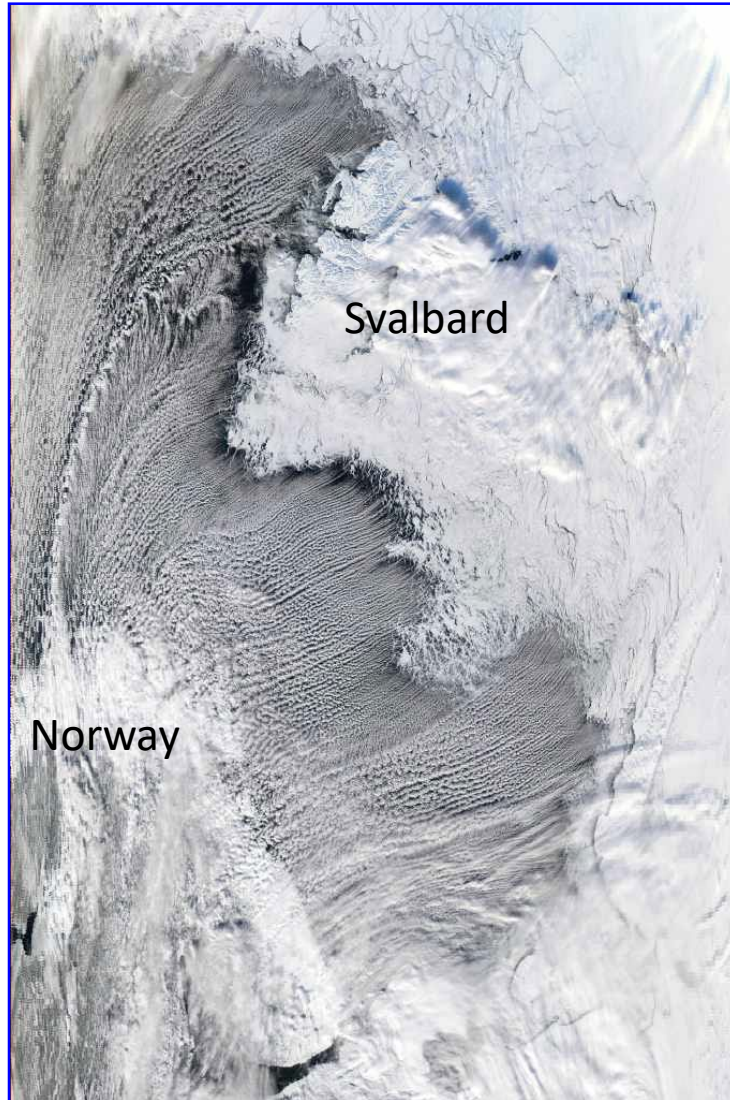


pot. temp.(all flights)

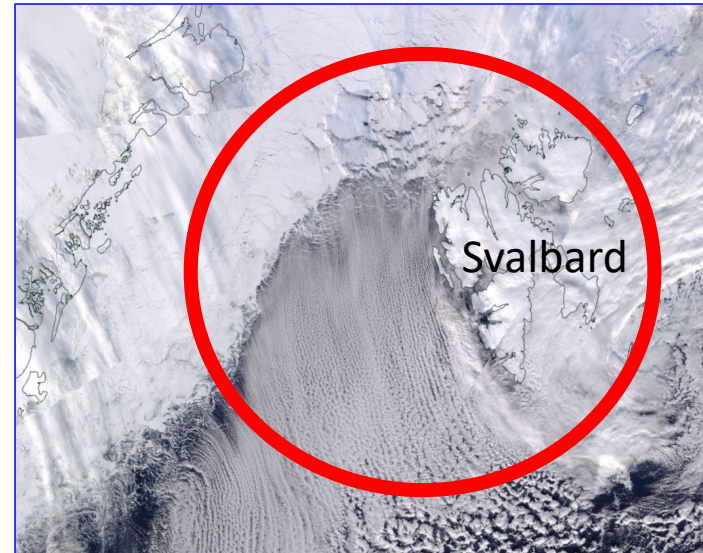


What do we want to do?

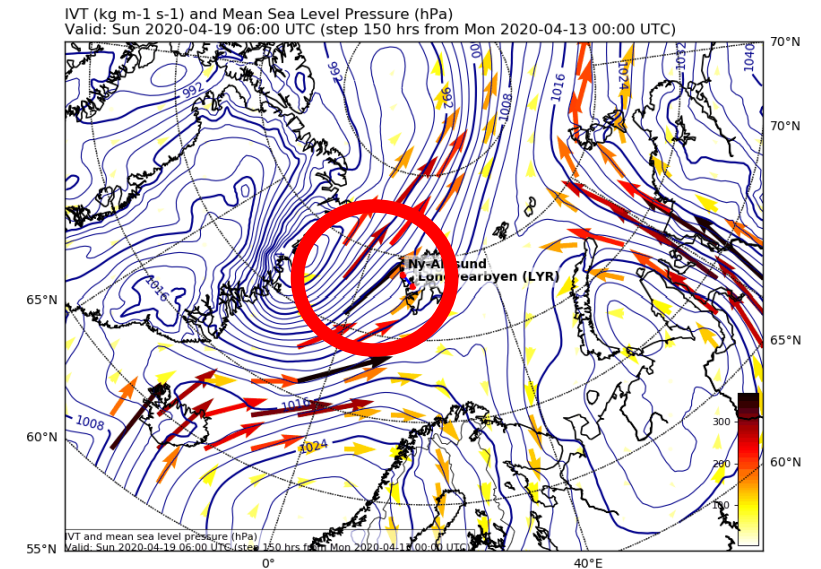
cold air outbreak



cold air outbreak



Warm air intrusion

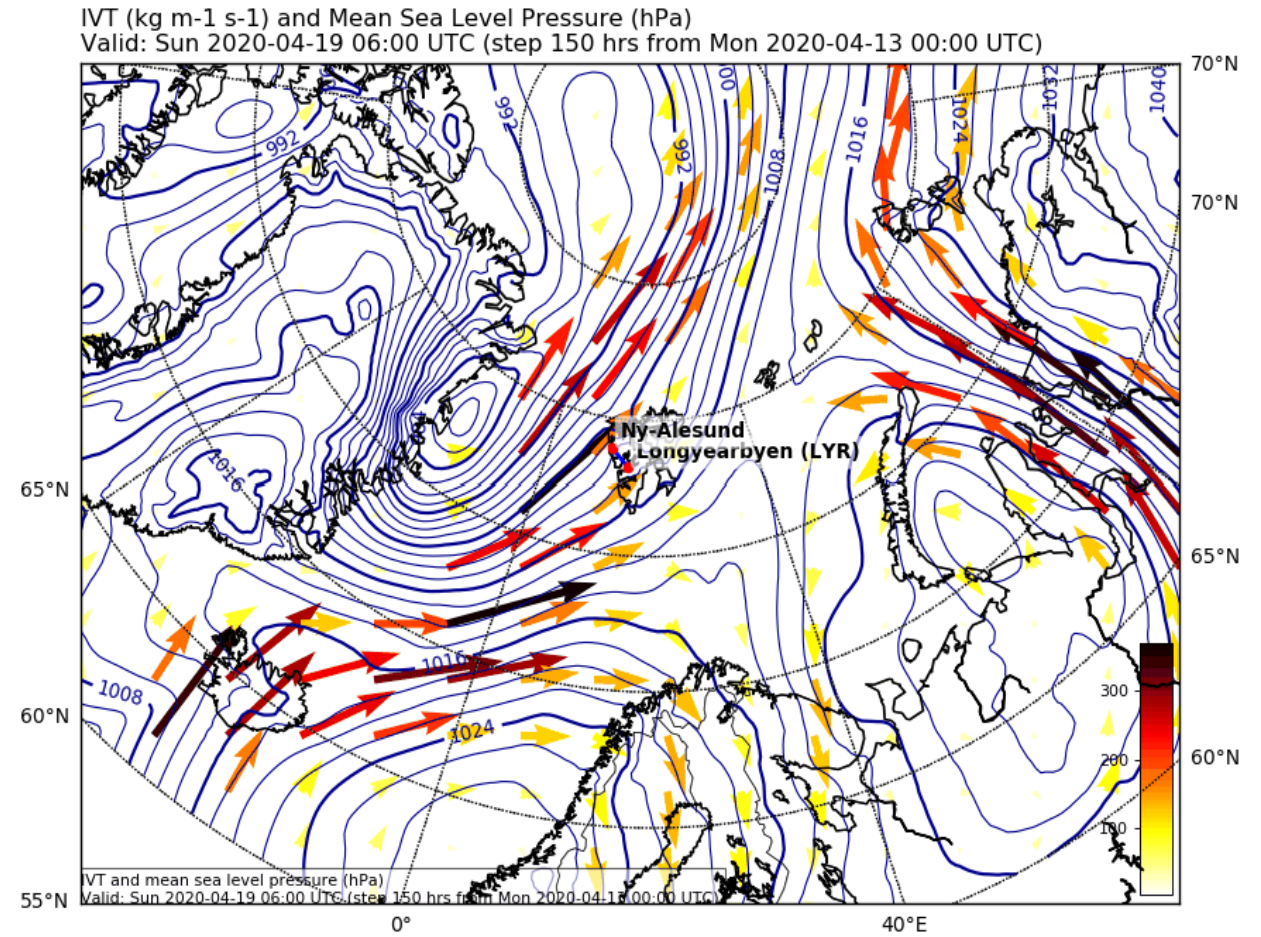
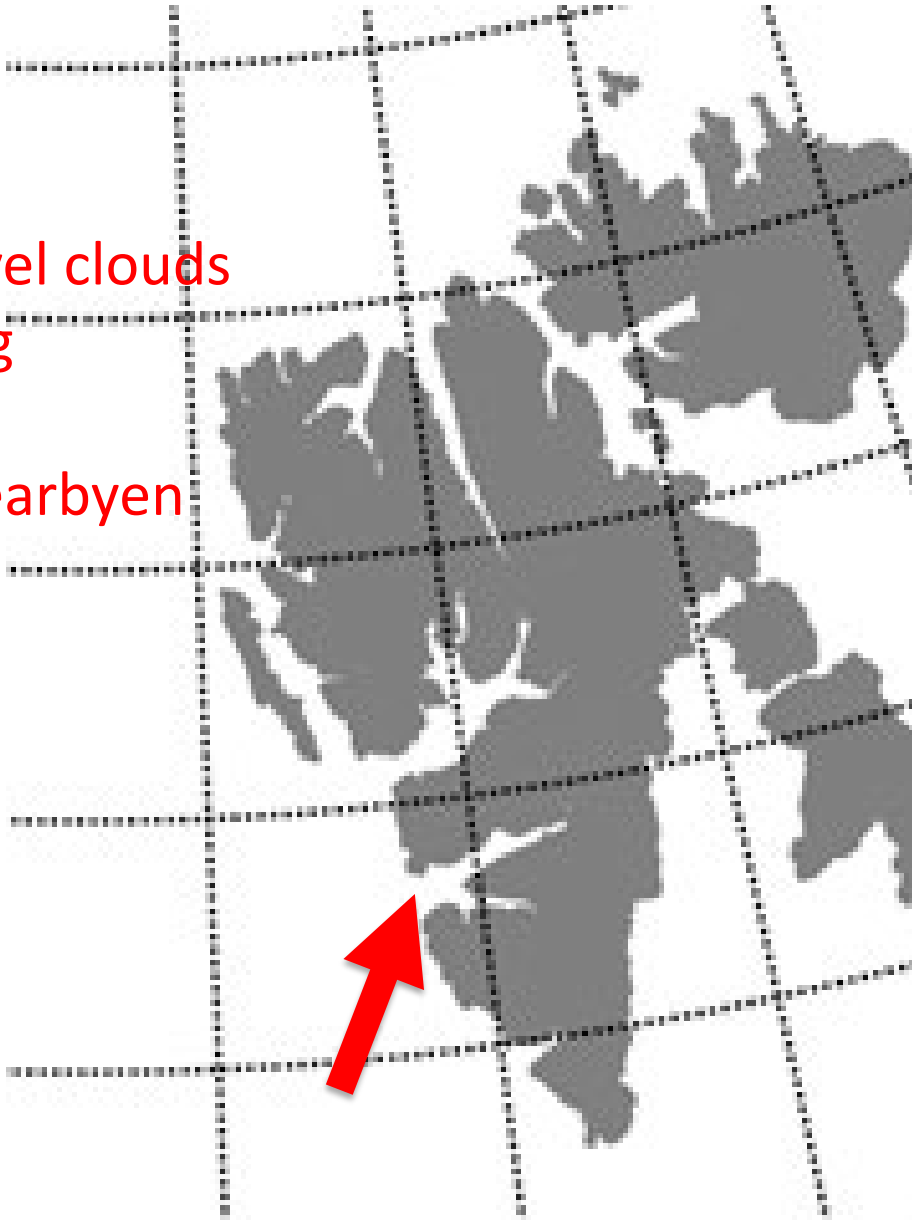


Main Goals:

- Lagrangian study of airmasses in CAOs and WAIs
 - as well as flow regimes with variable wind
 - study cloud processes dependent on forcing
- Due to the limited range of Polar 5 and 6 our focus is a regional one

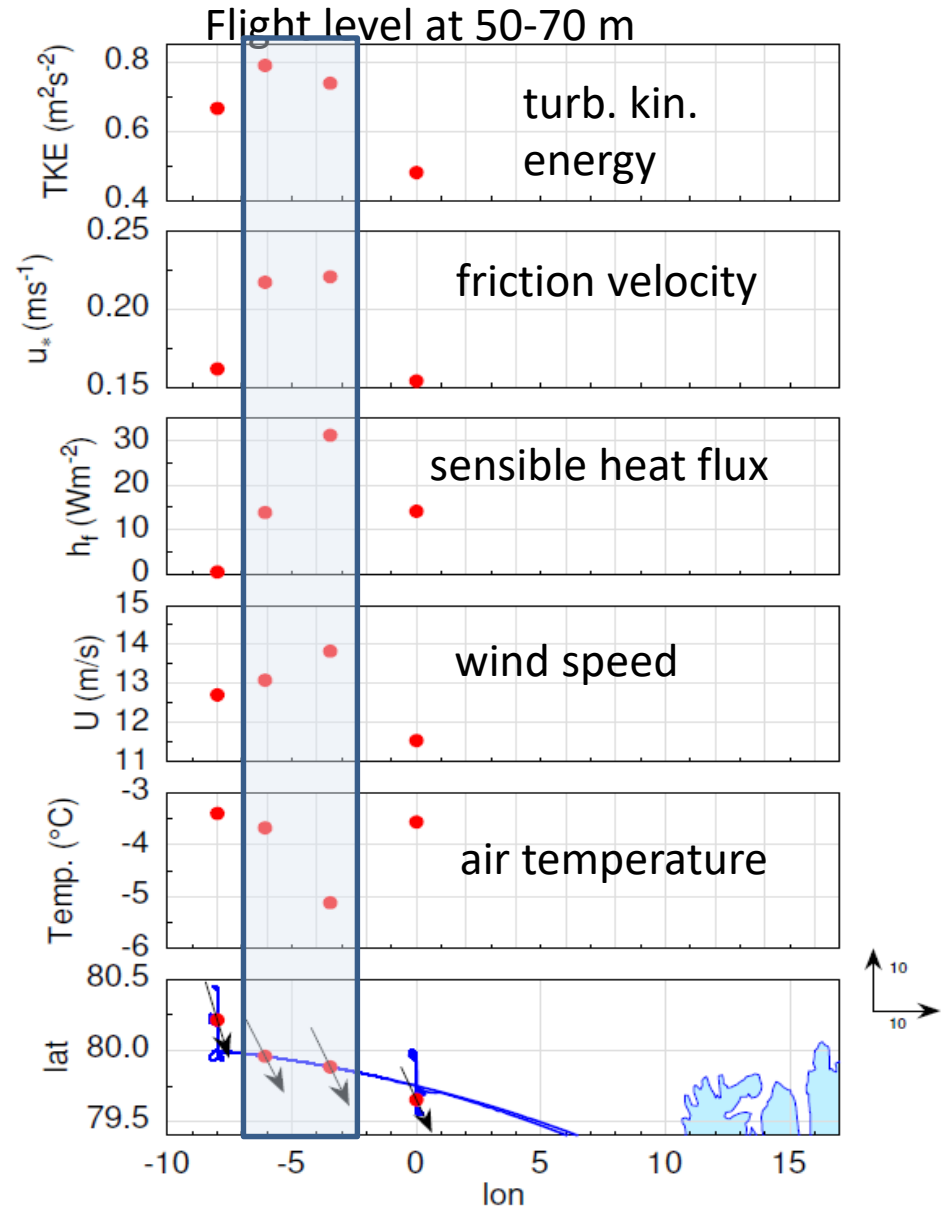
Possible Limitation of Flights during Warm Air Intrusions

Often
low level clouds
and fog
over
Longyearbyen



13 September 2020,

Example of a local study, Flight across the North Western Greenland Sea MIZ



westernmost position
95 % sea ice

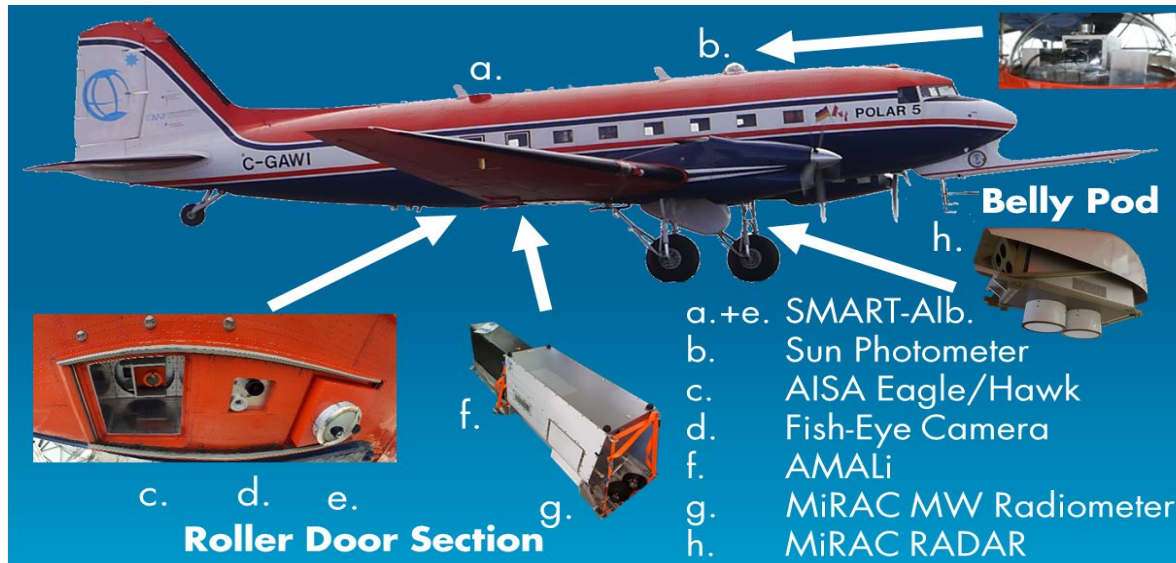


MIZ



MIZ near ice edge

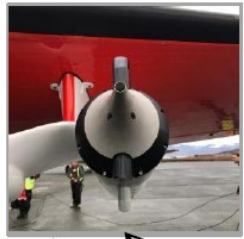
Our equipment



Polar 5:
Focus on remote sensing
but also equipment for
in situ (turbulence, radiation)

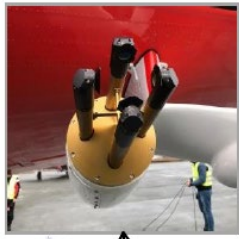
POLAR 5			
SMART-Albedometer	Passive Solar	Spectral Irradiance (Upward, Downward)	Uni Leipzig
		Spectral Radiance (Upward, $FOV = 2.1^\circ$)	
Aisa Eagle/Hawk	Passive Solar	Spectral Radiance ($FOV = 36^\circ$, 1028 px / 348 px)	Uni Leipzig
180° Fish-Eye Camera	Passive Solar	Spectral Radiance ($FOV = 180^\circ \times 180^\circ$, 3908 px \times 2600 px)	AWI/ Uni Leipzig
AMALi	Active Solar (Lidar)	Particle Backscattering Coefficient, Cloud Top Height, Particle Depolarization	AWI
MiRAC	Passive Microwave	Brightness Temperature	Uni Köln
	Active Microwave (Radar)	Radar Reflectivity Factor, Doppler Velocity, Doppler Spectra Width	Uni Köln
Sun Photometer	Passive Solar (direct Sun)	Spectral Aerosol Optical Depth (AOD)	AWI
Broadb. Radiometer	Broadband radiometer	Solar and terrestrial irradiance (Upward, Downward)	DLR, Uni Leipzig
Nose Boom	Five-hole probe	3D wind vector, temperature and humidity, turbulent fluxes	AWI

Our Equipment



LaMP
Laboratoire
de météorologie physique

PN



LaMP
Laboratoire
de météorologie physique

2D-S



DLR

PIP



DLR

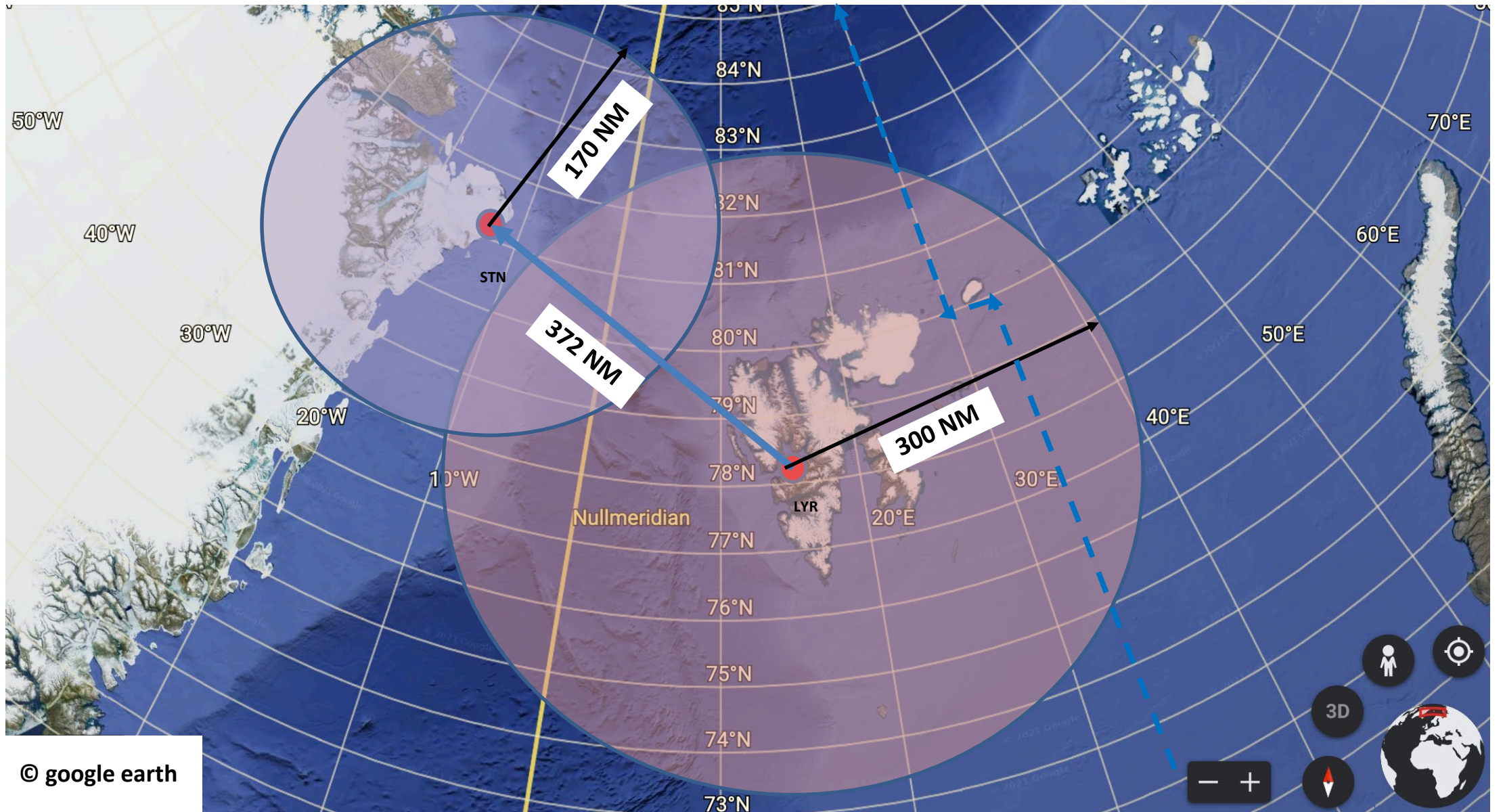
CCP
(CDP + CIP)



Polar 6:
Focus
on in situ
instrumentation

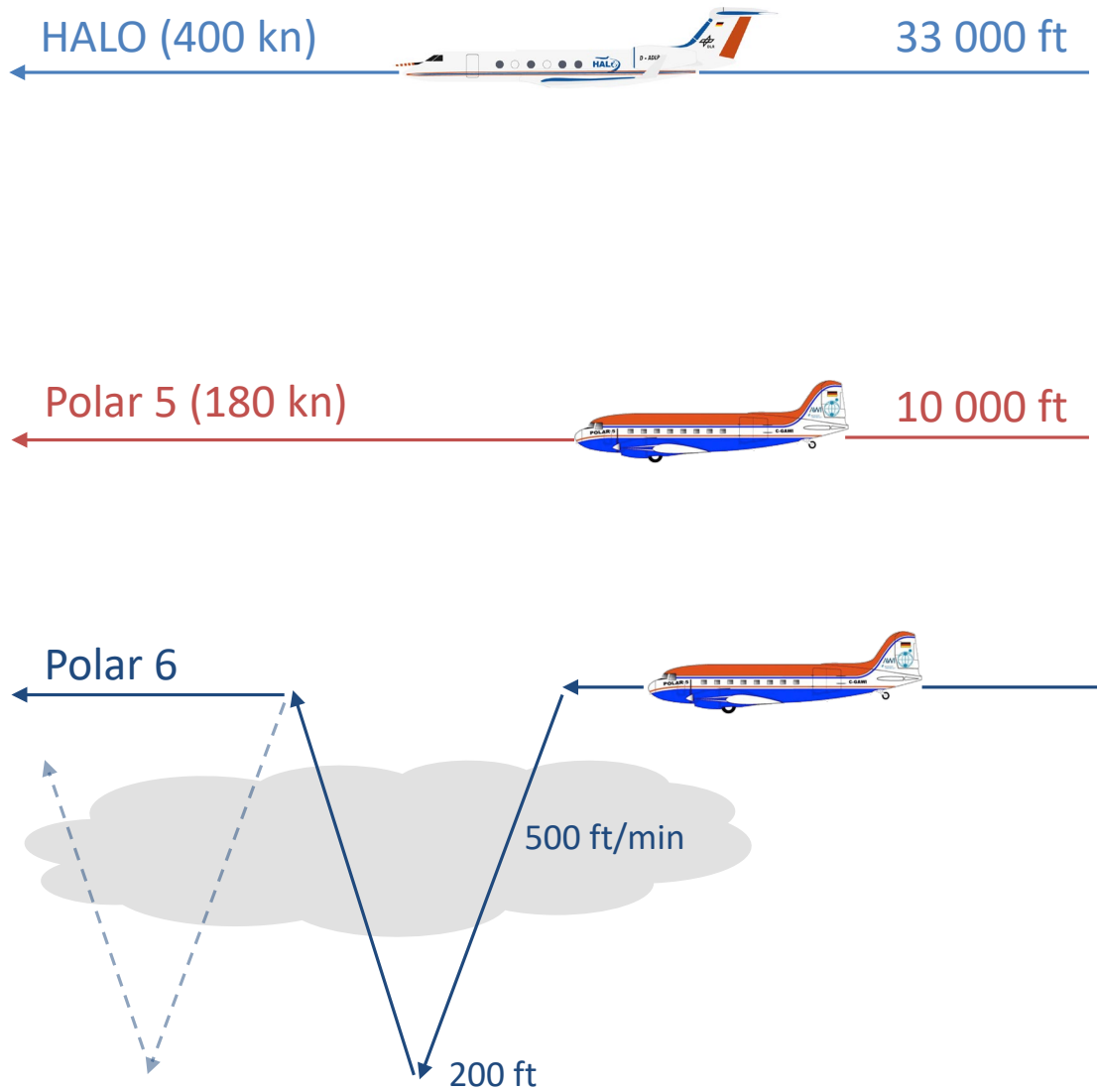
Names /Acronyms	Technique	Measured/Retrieved Quantities	Institution
Polar 6			
Polar Nephelometer 2	Cloud probe	Cloud particle scattering phase function	LaMP
2D-S	Cloud probe	Cloud particle shape and size, stereo particle images	LaMP
HSI	Cloud probe	Cloud particle shape and size	LaMP
PIP	Cloud probe	Precipitating particle size distribution and shape	DLR
CCP	Cloud probe	Cloud particle shape and size	DLR
BCPD	Cloud probe	Cloud particle shape and size	DLR
Nevzorov Probe	Cloud probe	Liquid and Total Water Content	AWI
CVI	Cloud residual inlet	Cloud particle residual sampling	TROPOS
CPC, UHSAS, OPC, PSAP	Optical particle counter	Particle number and size distribution, soot content	TROPOS
HERA	Aerosol Filter Sampler	Ice nucleating particles, laboratory particle analysis	TROPSO
SP2	Absorption photometer	Soot content	AWI
ALABAMA	Mass spectrometer	Particle chemical composition	MPI-Mainz
CO, CO ₂ , H ₂ O, O ₃ sensors	Trace gas analyser	CO, CO ₂ , O ₃ concentration and humidity	Uni Mainz
Broadb. Radiometer	Broadband radiometer	Solar and terrestrial irradiance (Upward, Downward)	AWI, Uni Leipzig
Nose Boom	Five-hole probe	3D wind vector, temperature and humidity, turbulent fluxes	AWI

Flight Pattern—Polar 5/6

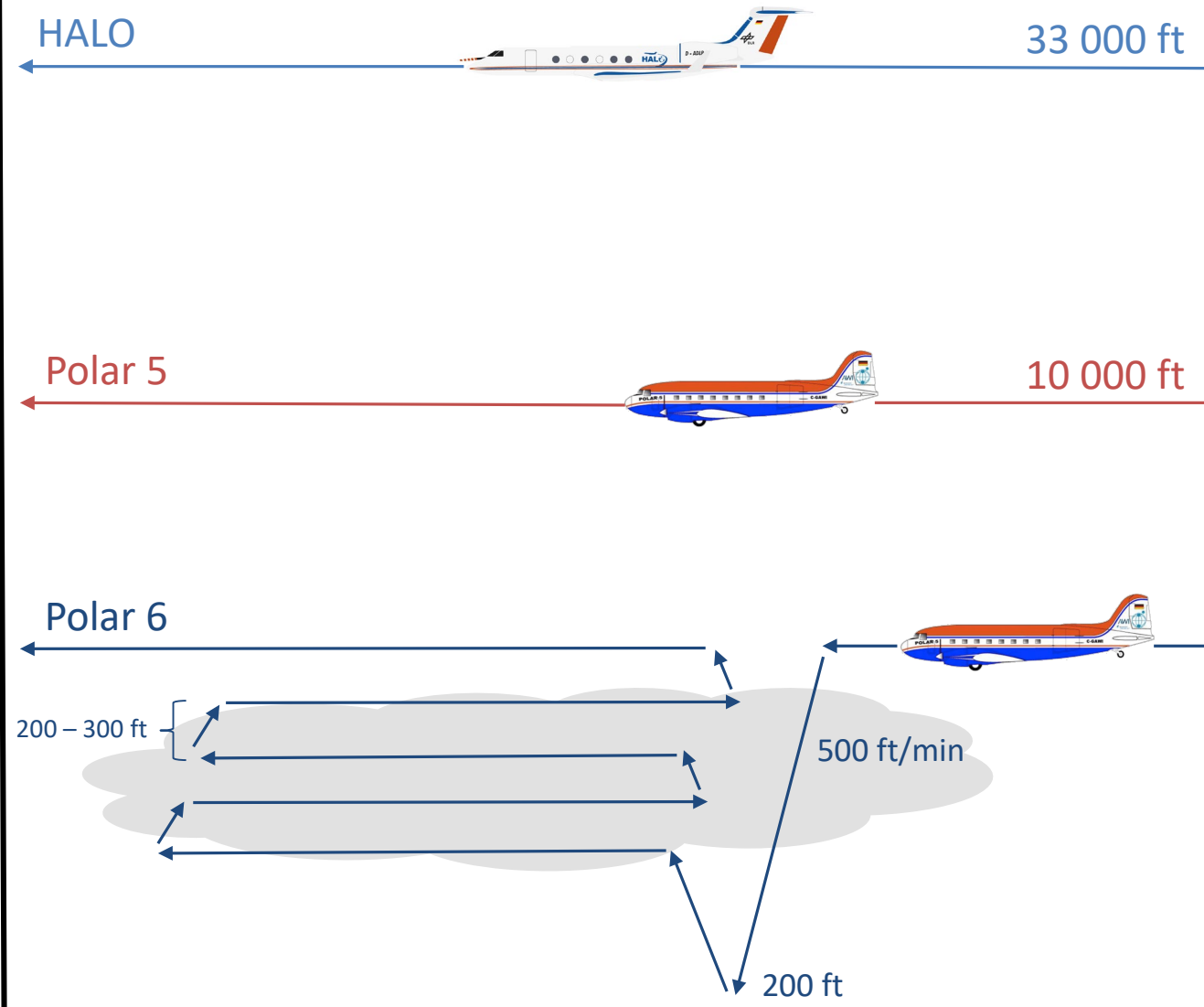


Flight Pattern—Polar 5/6

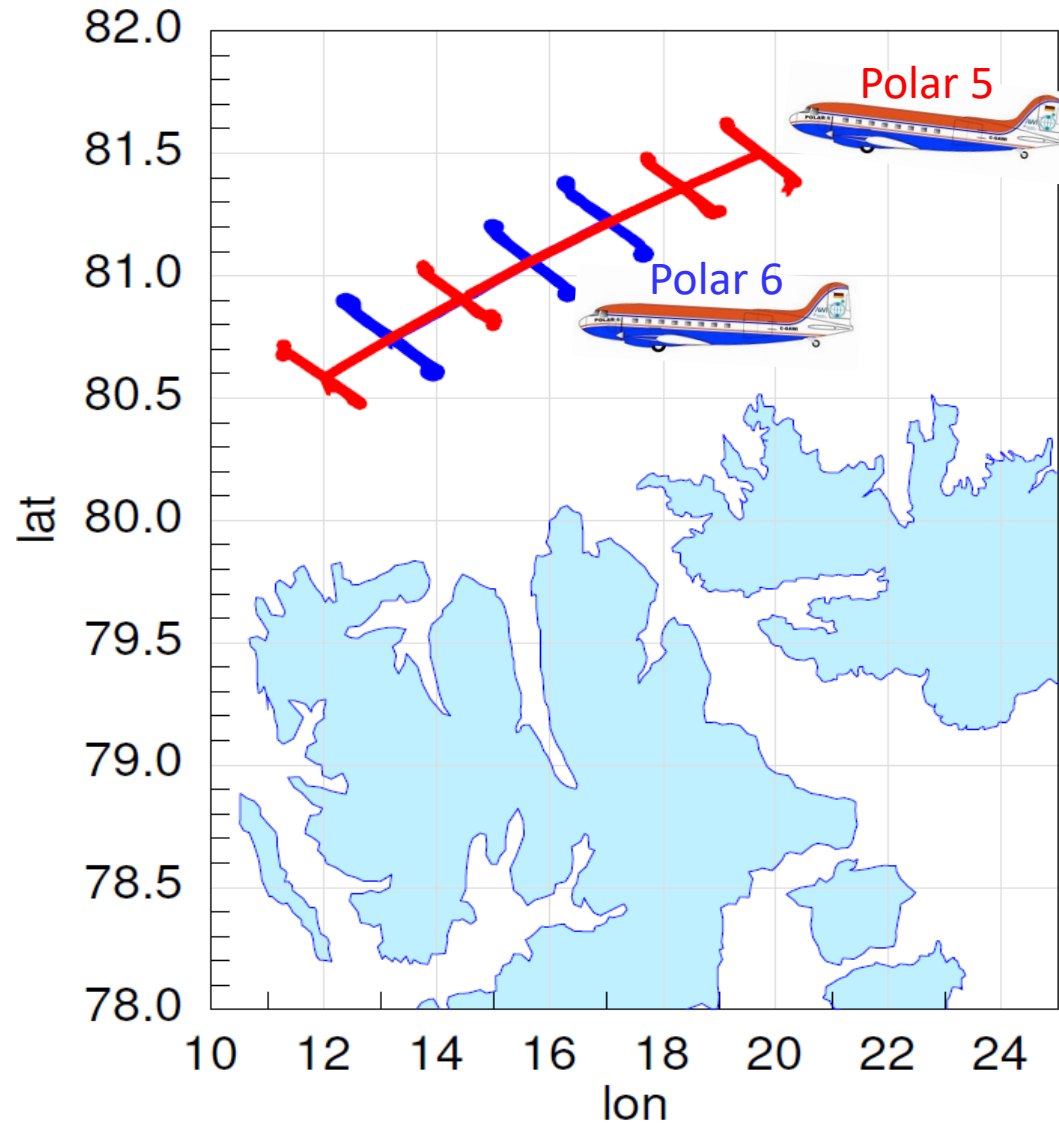
A) Sawtooth



B) Staircase



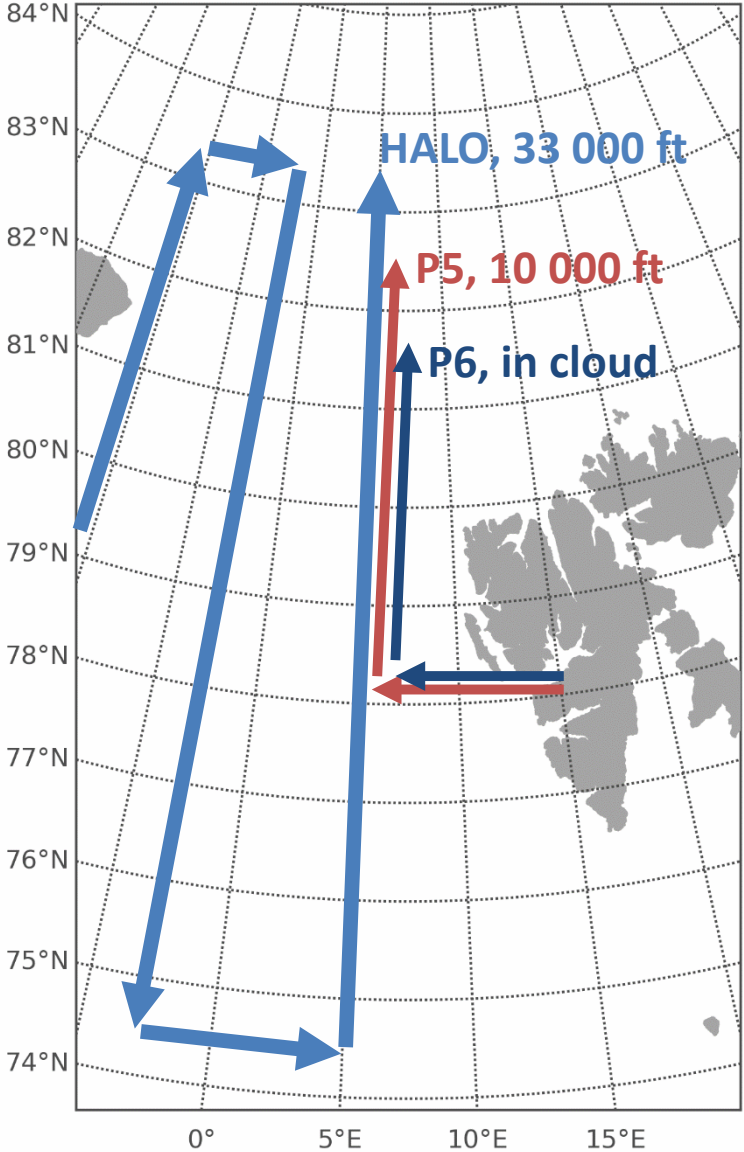
Flight Pattern Polar 5 and 6



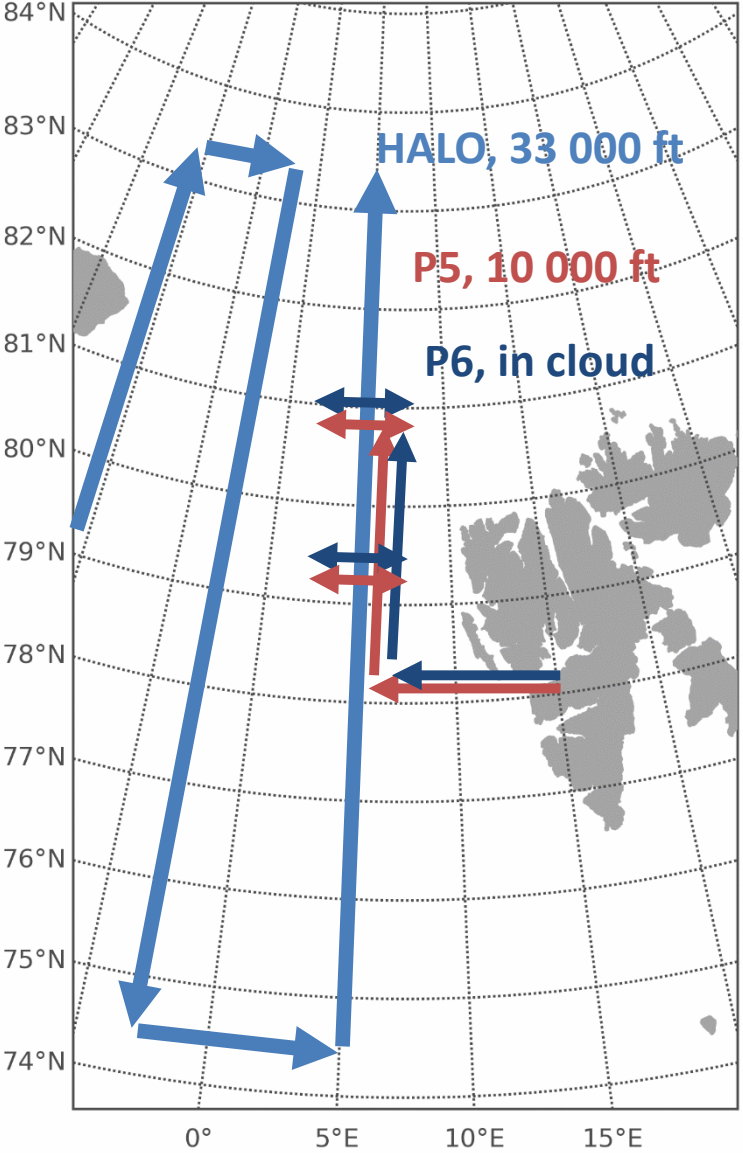
Both aircraft fly
Staircase patterns

Flight Pattern—Polar 5/6 and HALO combined

1. Triple decker

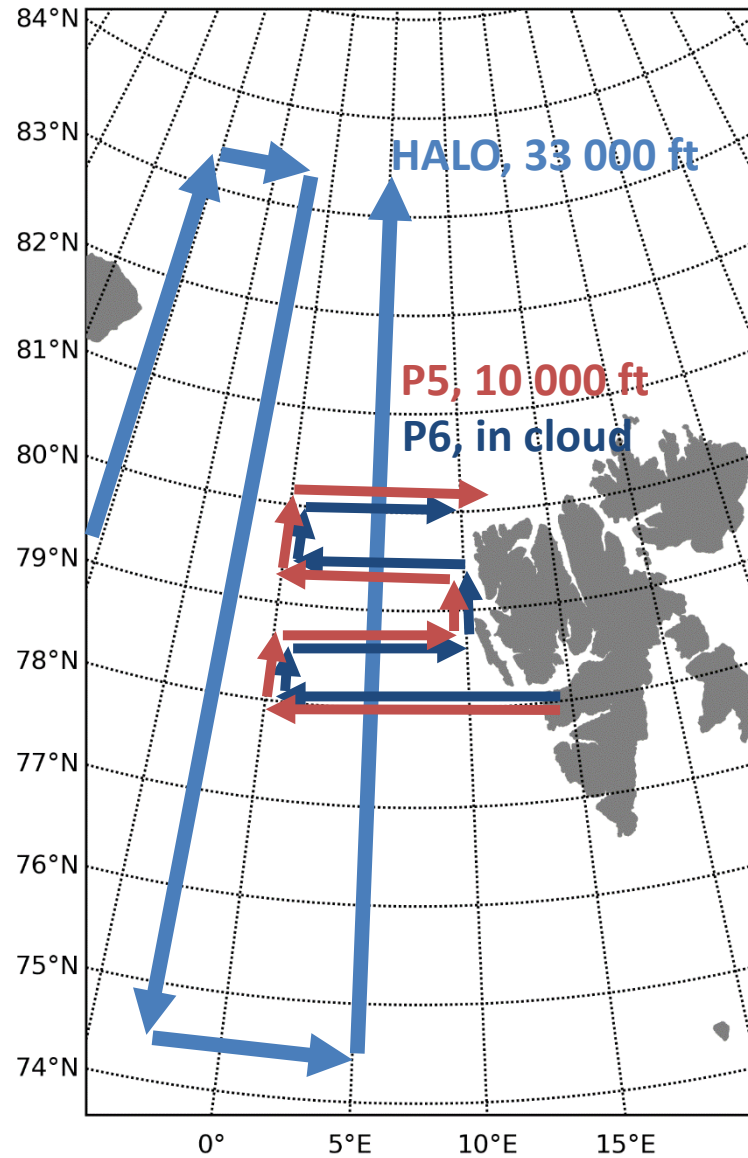


2. Staircases

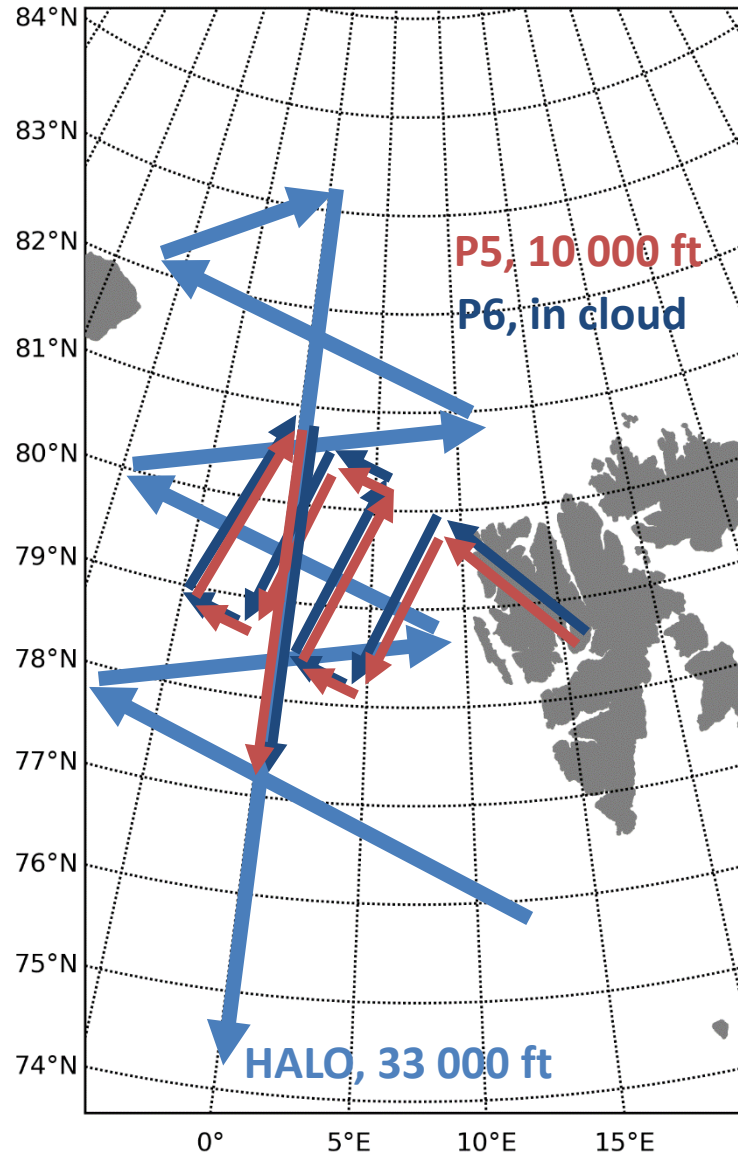


Flight Pattern—Polar 5/6 and HALO Combined

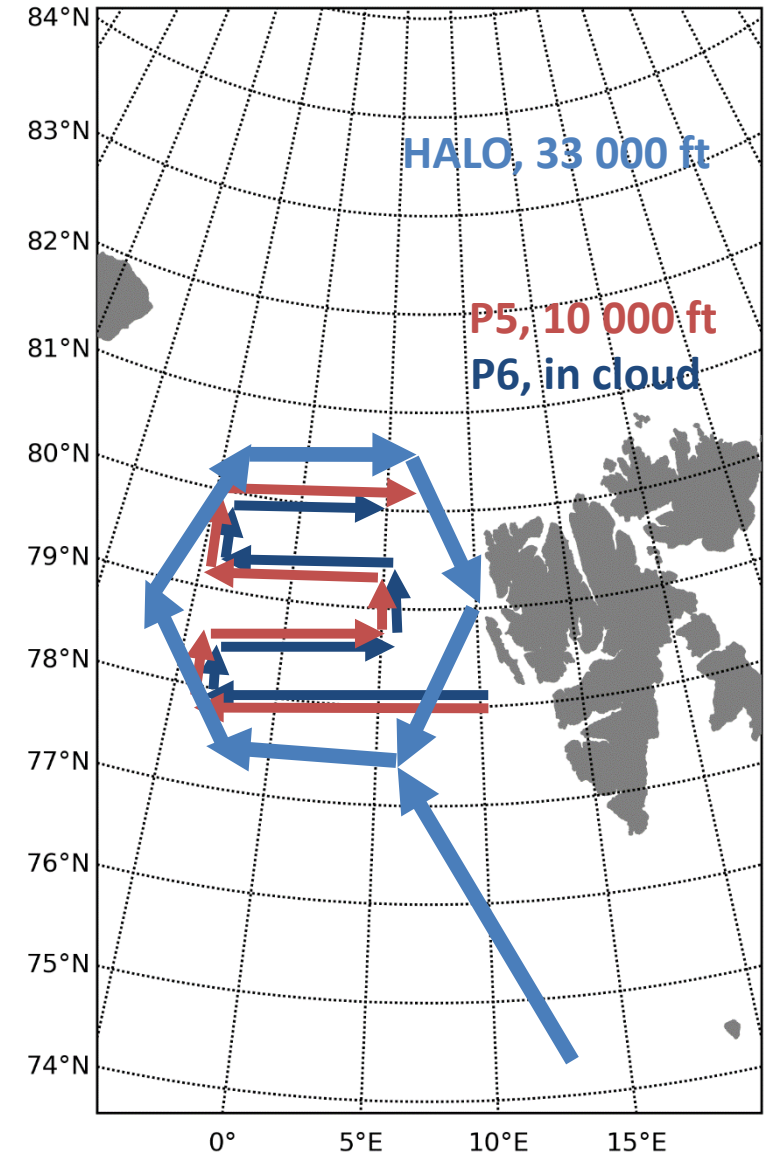
3. HALO cross



4. Combo pattern

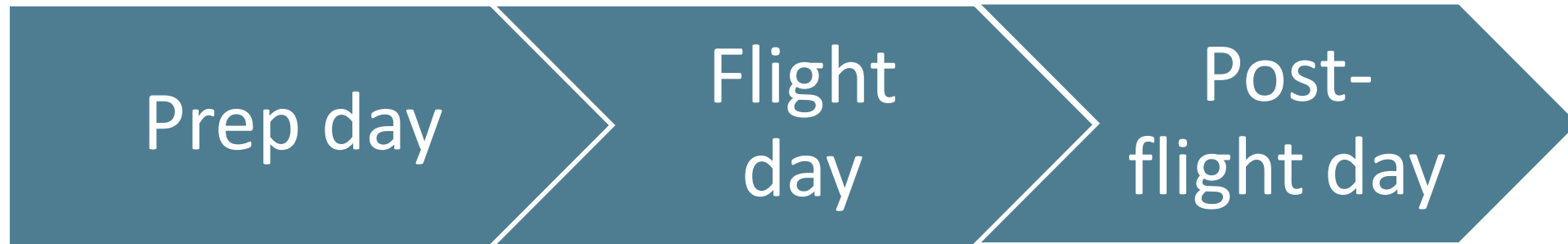


5. Fill a Circle



How do we plan the flights?



A mission includes ...



- 13:00 Met
 - Discussion with
 - Pis LYR- Pis Kiruna
 - 18:00 Met and Presentation of plan to all participants
- 08:00 Met
→ Go/NoGo
 - Flight
 - 18:00 De-briefing
- Flight report

Tools—Wiki/Slack

Wiki Webpage: https://home.uni-leipzig.de/~ehrich/HALO_AC3_wiki_doku/doku.php

HALO-(AC)³ Search Search André Ehrlich (andre)  

Trace: • start

HALO-(AC)³
Overview
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Blog
Meetings & Contacts

POLAR aircrafts
Weather & Briefings
Flight Logs
Quicklooks

HALO aircraft
Weather & Briefings
Flight Logs
Quicklooks


Dry Run
Weather & Briefings

Links
Weather
Miscellaneous
RSS Feed
Logo
How to use Wiki

HALO-(AC)³ Wiki

Quasi-Lagrangian airborne observations during HALO-(AC)³

15 March to 14 April 2022, Longyearbyen/Svalbard and Kiruna/Sweden



On these pages you will find all about:

- News
- Weather & Briefings
- Meetings & Contacts

Tools—Wiki/Slack

Slack Messenger: <https://halo-ac.slack.com>

EUREC4A ▾

📄 Threads

📁 Alle DMs

@ Erwähnungen & Reaktionen

🔖 Lesezeichen

⋮ Mehr

▾ Channels

- # bco
- # dinnerplans
- # general
- # halo**
- # preparation
- # weather_outlook
- + maria_s_merian
- + atr_42
- + workshop_paris
- + ron_brown
- + meteor

#halo ☆

🔖 1 | Thema hinzufügen

👤 **Heike Konow** 16:32 Uhr

Here is the crew for Sunday's flight. Any volunt

Screenshot 2020-02-07 at 11.29.29.png ▾

1	Sabrina Schnitt	PI, Dropsondes
2	nn	WALES
3	Marcus Klingebiel	HAMP, Dropsondes
4	Veronika Pörtge	SpecMacs
5	Tobias Kölling	Smart/Velox
6	Marc Prange	Dropsondes
7	Tim Cronin	Dropsonde Helfer
	Jule Radke	Ground support

👤 **Bjorn Stevens** 16:44 Uhr

Given my success with the dropsondes the other day I was wonde

👍 3

👤 **Stefan Hempe DLR-FX** 21:07 Uhr

Halo eta 1715ft. Parkplatz 19

👤 **Armin (DLR, HALO)** 23:19 Uhr

For tomorrows ground day it has been decided during debriefing t to parking position 1 shortly after, such that for the rest of the day

⋮

- @ Erwähnungen & Reaktionen
- 🔖 Lesezeichen
- ⋮ Mehr
- ▾ Channels
- # bco
- # dinnerplans
- # general
- # halo
- # preparation
- # weather_outlook**
- + maria_s_merian
- + atr_42
- + workshop_paris
- + ron_brown
- + meteor

👤 **Paul Barrett** 10:48 Uhr

- RH 70%
- Wind 083 at 10 m/s
- Wind 700 hPa 014 at 8 m/s
- LCL 750m

15 AScent from TBPB and UM analysis and CE and CW for 1100L T+33

2 Dateien ▾

