

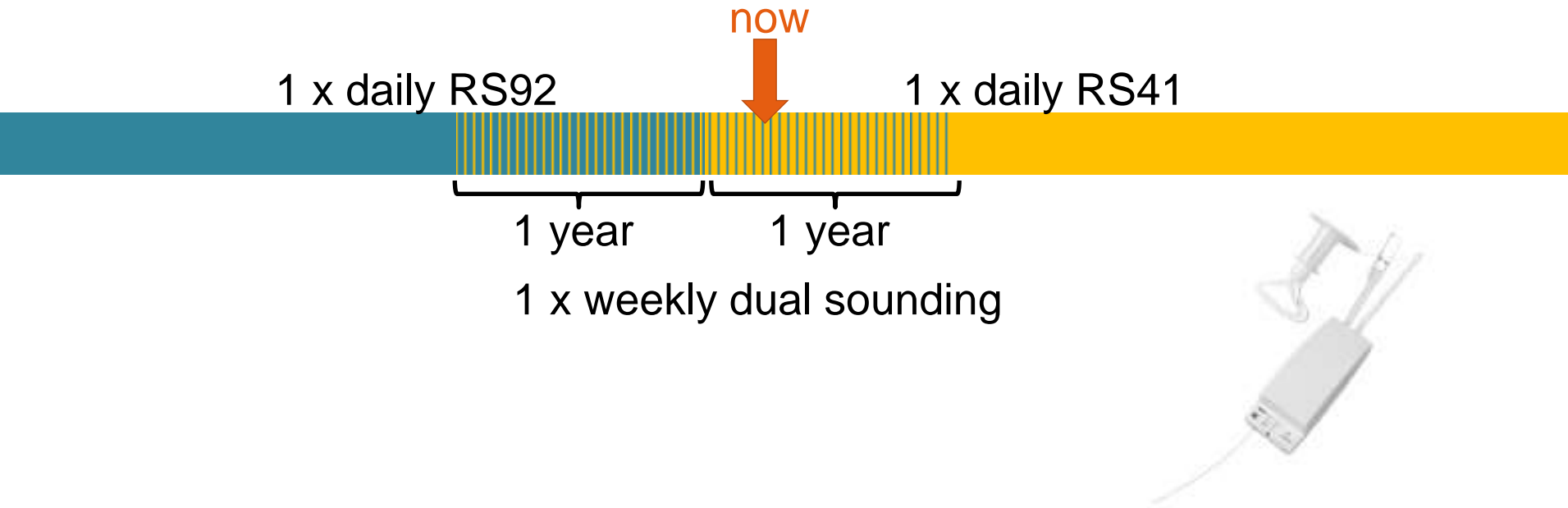
Ny-Ålesund: Site Update & Atmosphere Flagship Program

*Marion Maturilli, Sandro Dahlke,
Roland Neuber, Andrea Merlone*



Transition from RS92 to RS41

Ny-Ålesund



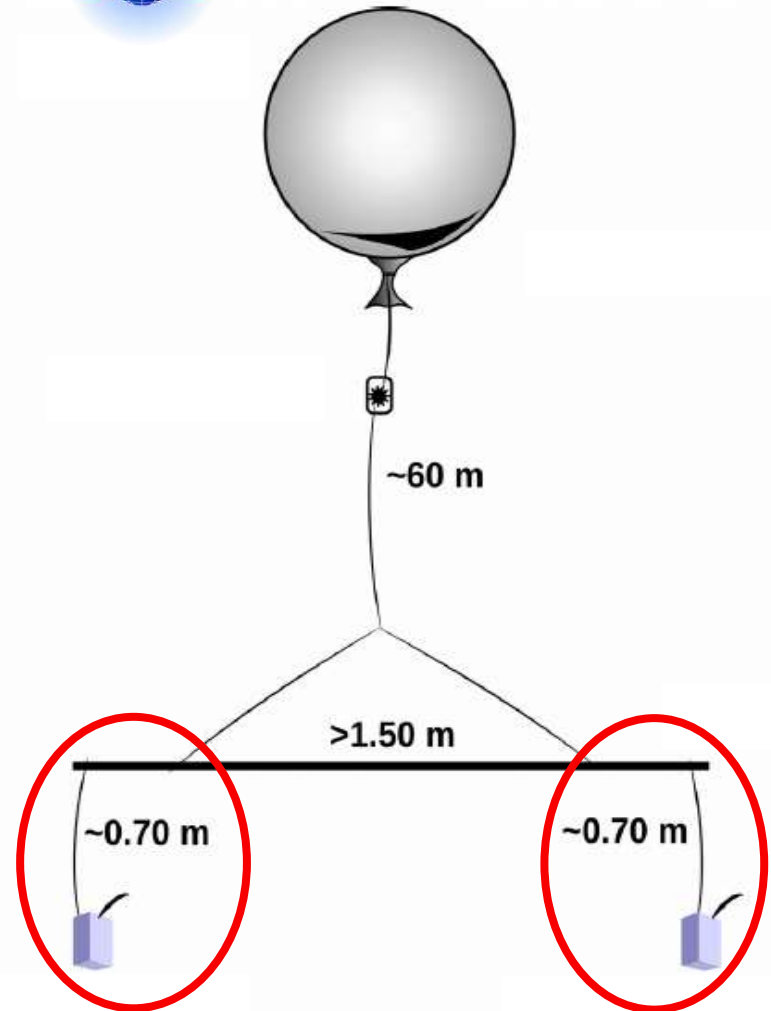
1 April 2017 Ny-Ålesund standard radiosonde changed to RS41
(RS41 currently no GRUAN data product)

Ny-Ålesund Dual Soundings RS92-RS41



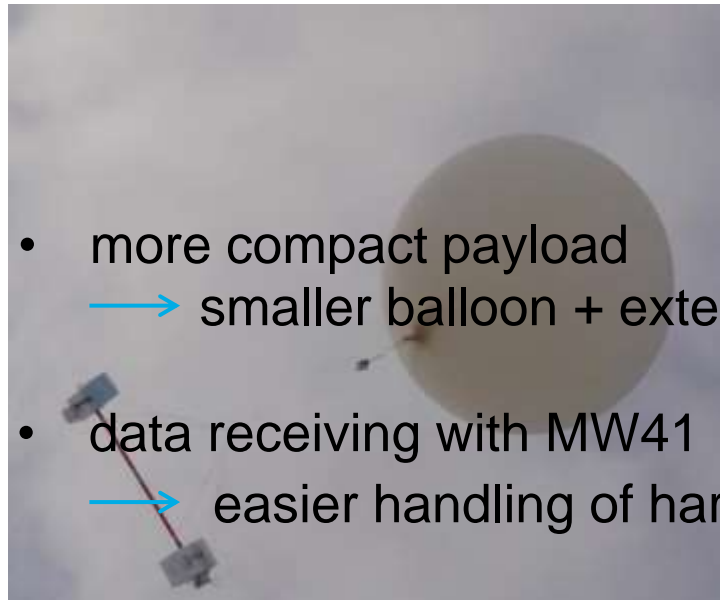
RS92-RS41 dual sounding , May 2017.

GRUAN recommendation

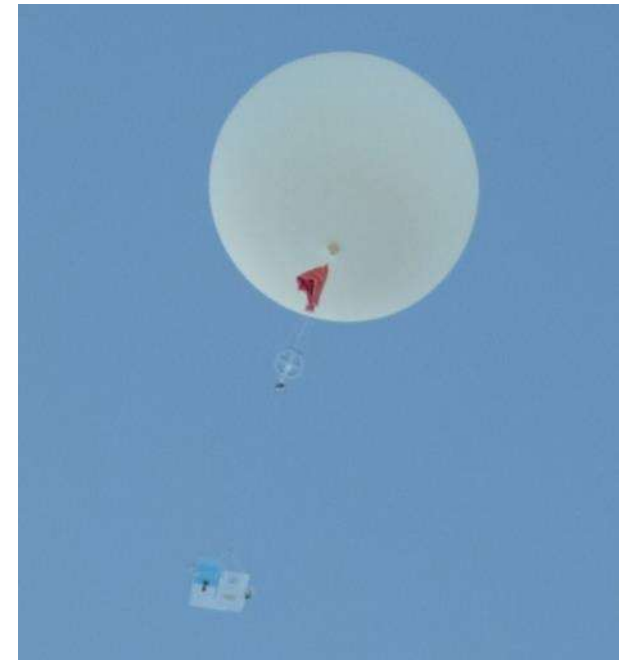


[von Rohden et al., GRUAN-TN-7]

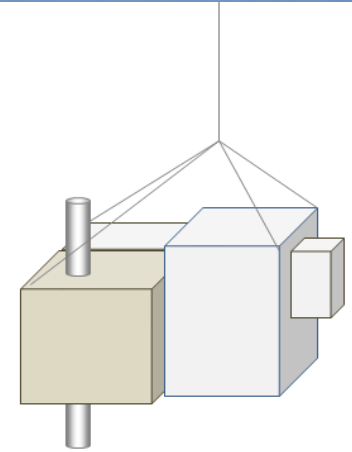
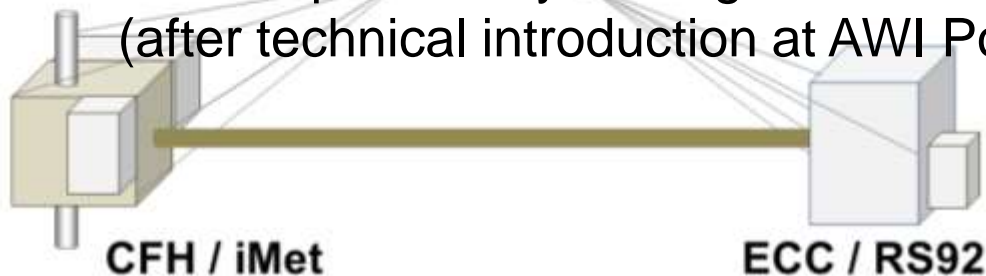
Ny-Ålesund CFH Soundings



with RS41



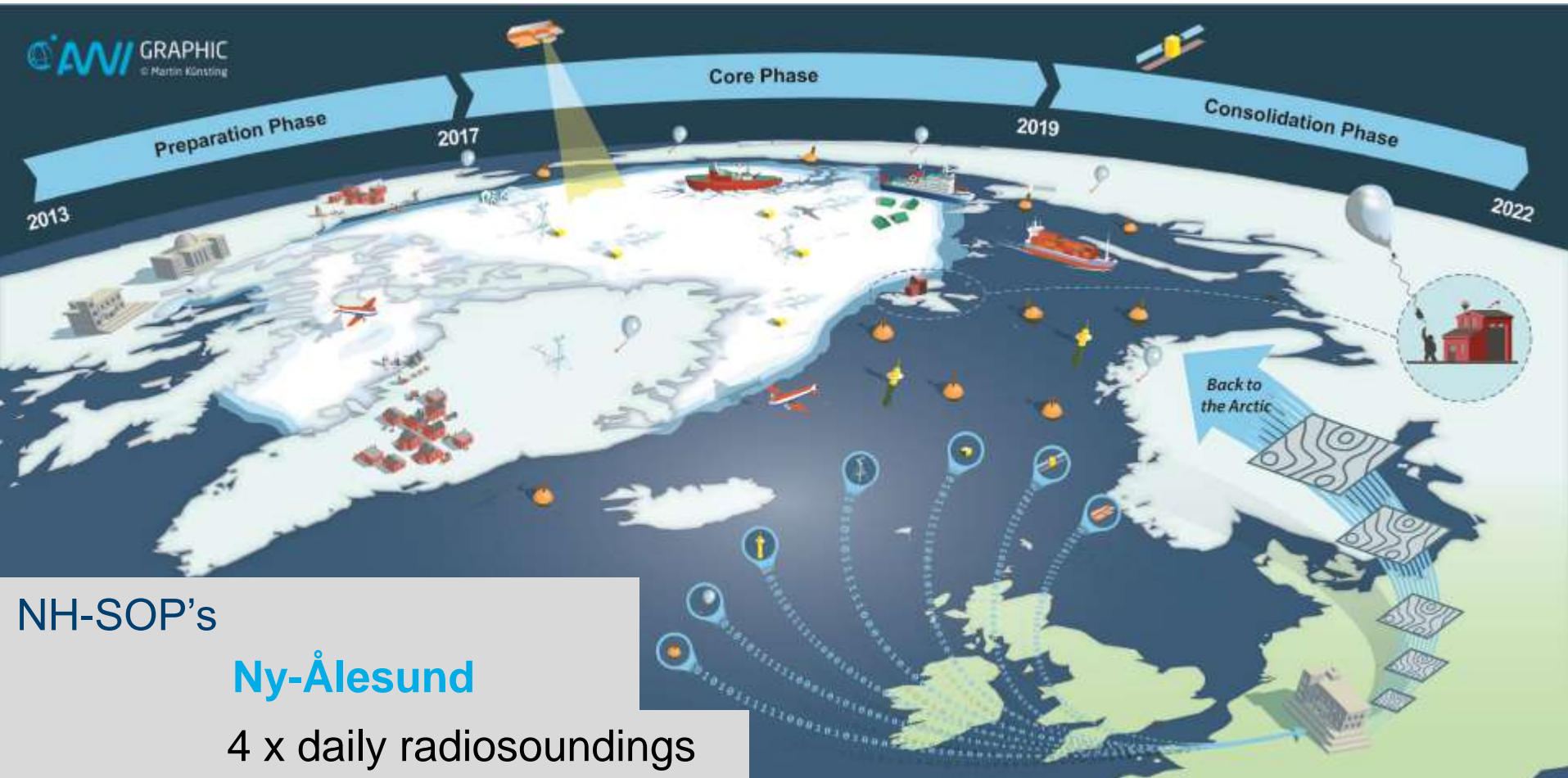
- more compact payload
→ smaller balloon + external parachute
- data receiving with MW41
→ easier handling of hard- and software
- generally easier operation
- Future CFH launches in Ny-Ålesund will be operated by the regular station personnel (after technical introduction at AWI Potsdam).



CFH / ECC / RS41

Upcoming Activities

Northern Hemisphere
Special Observing Periods



NH-SOP's

Ny-Ålesund

4 x daily radiosoundings

Currently Activities

Campaign as part of

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

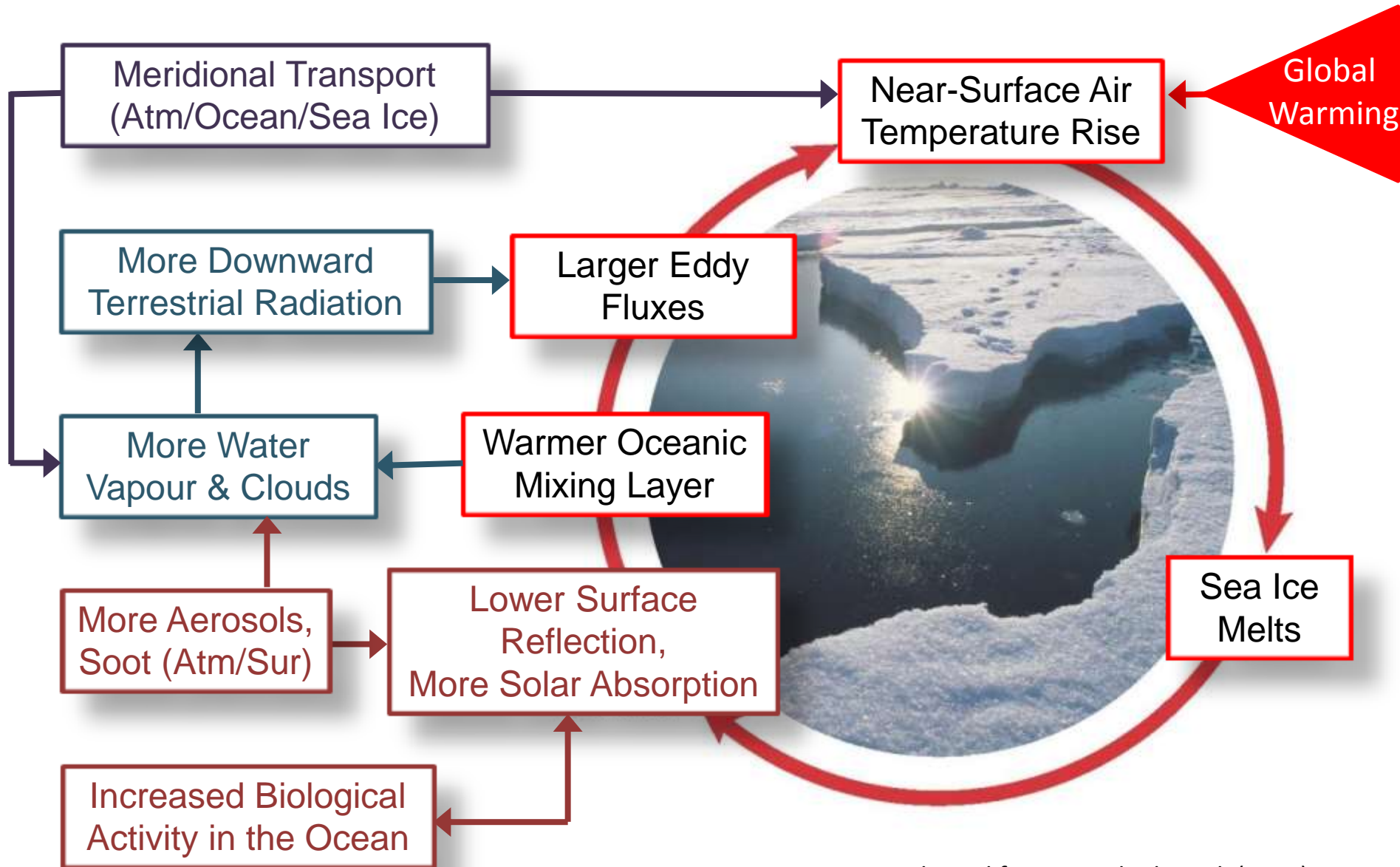


funded 2016 – 2019 by the German Science Foundation (DFG)

UNIVERSITÄT LEIPZIG



Arctic Amplification



Adapted from Wendisch et al. (2013)

Current Activities

Campaign as part of

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



PASCAL ship-borne campaign
Polarstern

ACLOUD air-borne campaign
Polar-5 and Polar-6

Ny-Ålesund observatory

- cloud radar
 - aerosol lidar
 - microwave radiometer
 - surface radiation
- ...and others

4 x daily radiosoundings

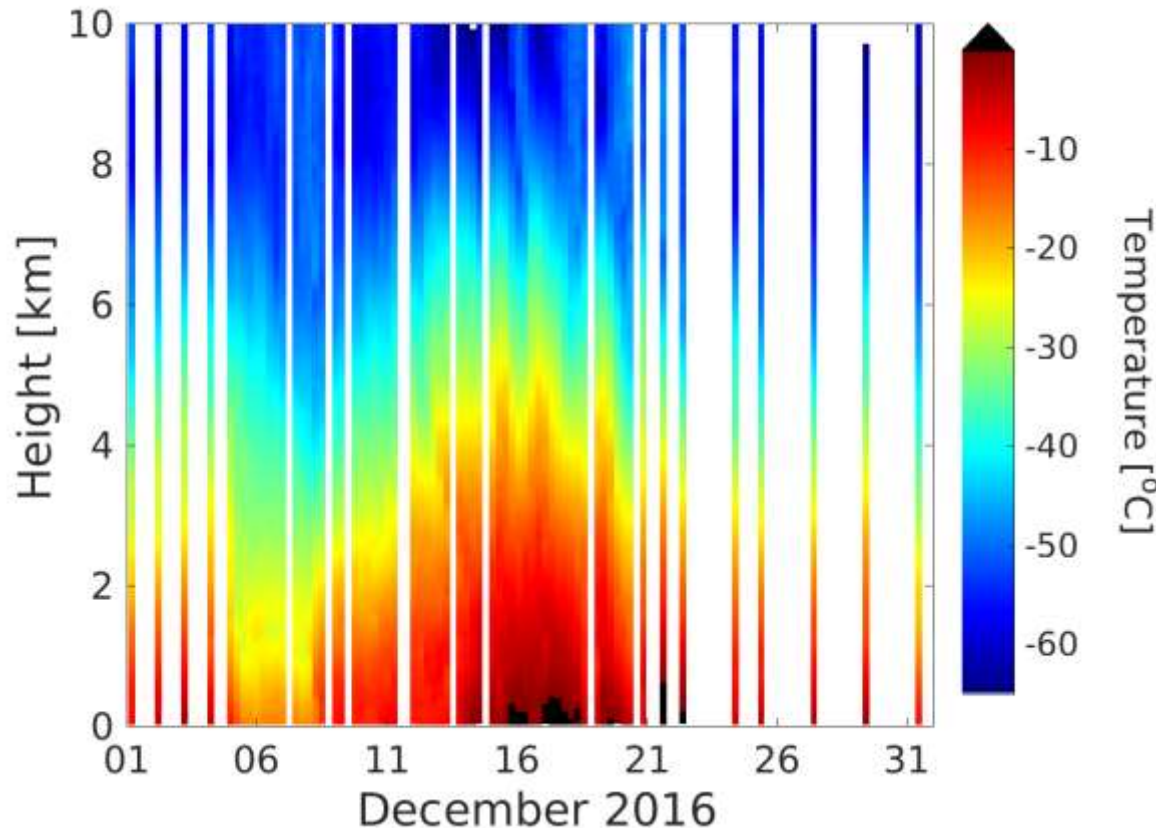
26 May – 22 June 2017

Recent Activities

- Radiosonde Campaign December 2016

4 x daily radiosonde launches

5 – 22 Dec 2016



Recent Results

▶ Increased persistence of extreme cyclone events in early winter

[Rinke et al., submitted to Env. Res. Lett.]

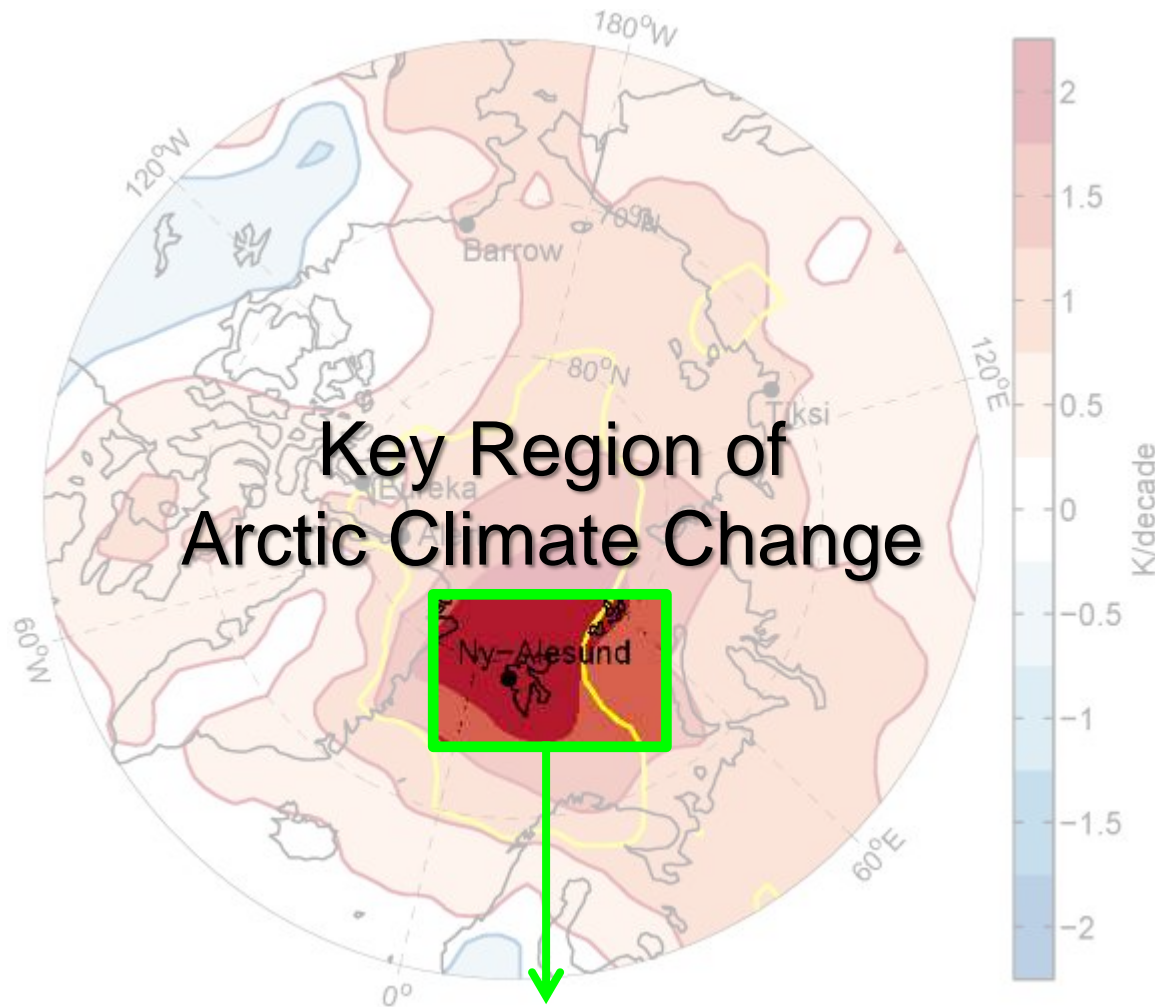
▶ Increase in advection from lower latitudes

[Dahlke and Maturilli, manuscript in preparation]

Arctic Winter Temperature Trend

1996-2016

(December-January-February)



Key Region of
Arctic Climate Change

Ny-Ålesund

K/decade

2

1.5

1

0.5

0

-0.5

-1

-1.5

-2

@1000 hPa, from ERA-Interim

The 'Ny-Ålesund Atmosphere Flagship'

— significant trend (95% confidence level)

Ny-Ålesund

International Research Community, 11 nations



hundreds of research projects



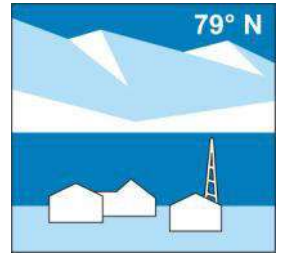
different research topics



similar research topics

Ny-Ålesund Science Managers Committee (NySMAC)

... was established to enhance cooperation and coordination among researchers and research activities in Ny-Ålesund.



Roland Neuber (Chair), Alfred-Wegener Institute, Germany
Hans-Christian Hansson (Co-chair), Stockholm University, Sweden
Ove Hermansen, Norwegian Institute for Air Research, Norway
Boris Ivanov, Arctic and Antarctic Research Institute, Russia
Grzegorz Karasiński, Polish Academy of Sciences, Poland
Satheesan Karathazhiyath, NCAOR, India
Christina A. Pedersen, Norwegian Polar Institute, Norway
Masataka Shiobara, NIPR, Japan
Vito Vitale, CNR, Italy
Young Jun Yoon, KOPRI, Korea



Initiative supported by Svalbard Science Forum (SSF):

Ny-Ålesund Science Plan

To coordinate research within four flagship programmes...

4 overarching science programmes for Ny-Ålesund:

Flagship programmes

Four flagship programmes for Ny-Ålesund are established. The research community is tasked to further develop the science within the flagships. Detailed information about the flagships can be found in the Flagship documents, and on each flagship's webpages.

<http://tinyurl.com/atmoflag>



Atmosphere Research



Terrestrial Ecosystem



Kongsfjorden System



Glaciology Research

Atmosphere Flagship Goals and Topics

- Work groups with specific foci
- Work group meetings in 2016
- Symposium in fall 2017
- Planning and organization of joint field work
- Jointly publish papers
- Online meta data base for atmosphere data

Svalbard Science Conference
6 – 8 November 2017
Oslo



Atmosphere Flagship Working Groups

WG1 Clouds, humidity, precipitation
(M. Shiobara, H.-C. Hansson)

WG2 Long-term observations and trends
in temperature, precipitation, clouds and radiation
(M. Maturilli)

WG3 Boundary layer meteorology
(C. Ritter, A. Viola)

WG4 Interaction of snow, atmosphere, and aerosols
(H.-W. Jacobi, J.-C. Gallet)

WG5 Atmospheric aerosol
(R. Krejci)

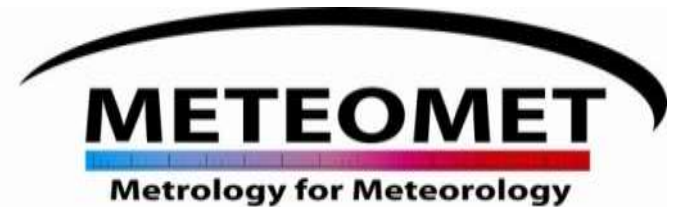
WG5 Variability in surface UV irradiance
and ozone column
(B. Petkov)

Some General Activities

3rd Arctic Metrology Workshop

Ny-Ålesund 10 May 2017

- **Seminar on metrology for Arctic Environmental research**
- **Metrology lab visit**
- Develop common lab infrastructure (e.g. metrology lab)



What's in the boxes?

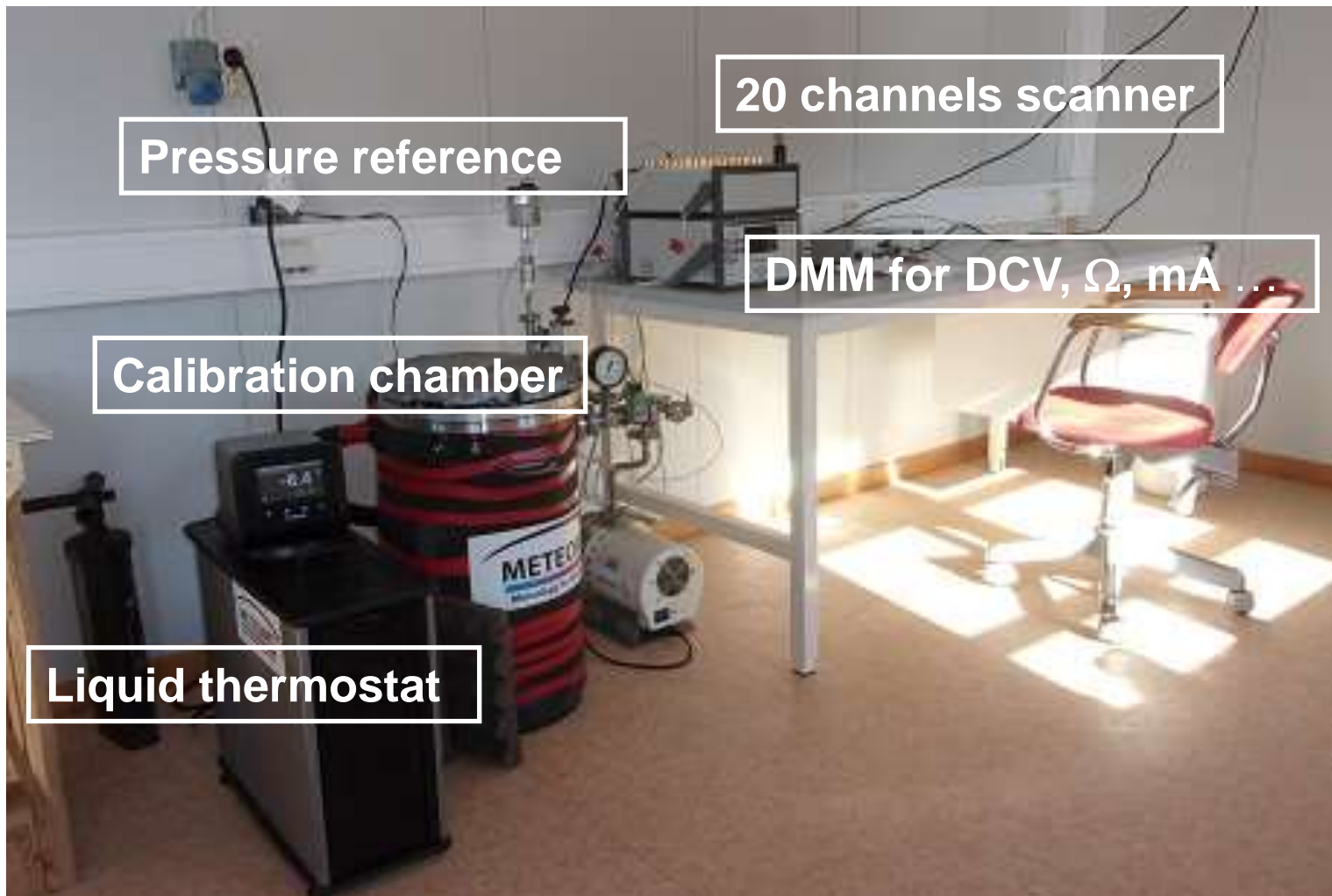
Spring 2017



What's in the boxes?

Spring 2017

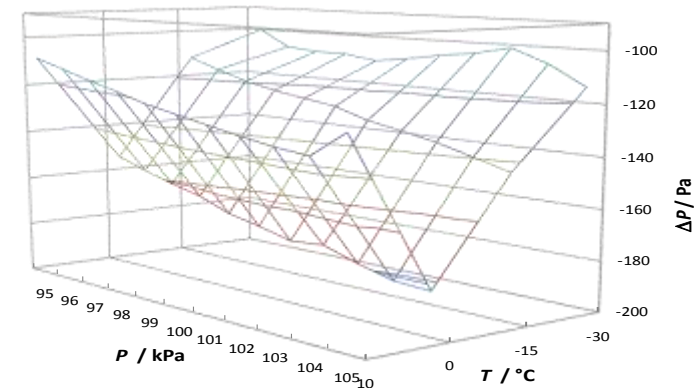
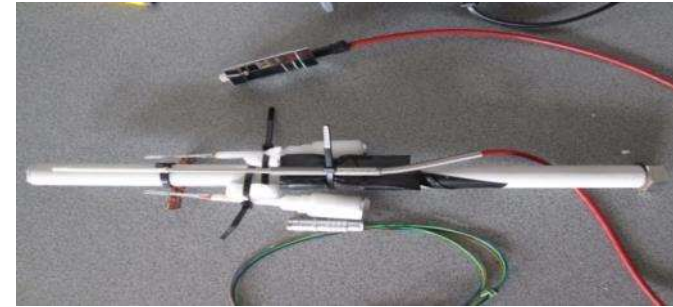




Now available:

Calibration of

- Air temperature
(PT, PRT, PT100, thermocouples, thermistors)
- Soil, ice, water, permafrost temperature
- Air pressure
- Combined calibration of pressure sensors
including temperature correction curve.



Ny-Ålesund Metrology Lab
in Implementation Phase

Summary

Ny-Ålesund Site Update

- successful change to RS41
- dual launches RS92-RS41 ongoing, total of 2 years
- CFH soundings now operated with RS41
- Upcoming YOPP activities in 2018
- Early winter cyclone events
- Ny-Ålesund located in key region of Arctic warming

Ny-Ålesund Atmosphere Flagship

- Cross-station joint research activities
- Metrology lab on site (MeteoMet initiative)

