



Alfred Wegener Institut Helmholtz Zentrum für Polar- und Meeresforschung

17. Nationales GCOS Treffen
01.03.2023
Bremerhaven & online



Dr. Anna M. Irrgang
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Forschung

Bereiche



Fachbereich

Biowissenschaften

Biowissenschaften untersuchen Indikatorarten in marinen Ökosystemen und deren Funktion.



Fachbereich

Geowissenschaften

Geowissenschaften erforschen Klima- und Umweltzustände des Erdsystems.



Fachbereich

Klimawissenschaften

Klimawissenschaften erforschen physikalische Vorgänge in Atmo-, Kryo- und Hydrosphäre der Erde.



Forschung

Bereiche



Biowissenschaften

Biowissenschaften untersuchen Indikatorarten in marinen Ökosystemen und deren Funktion.

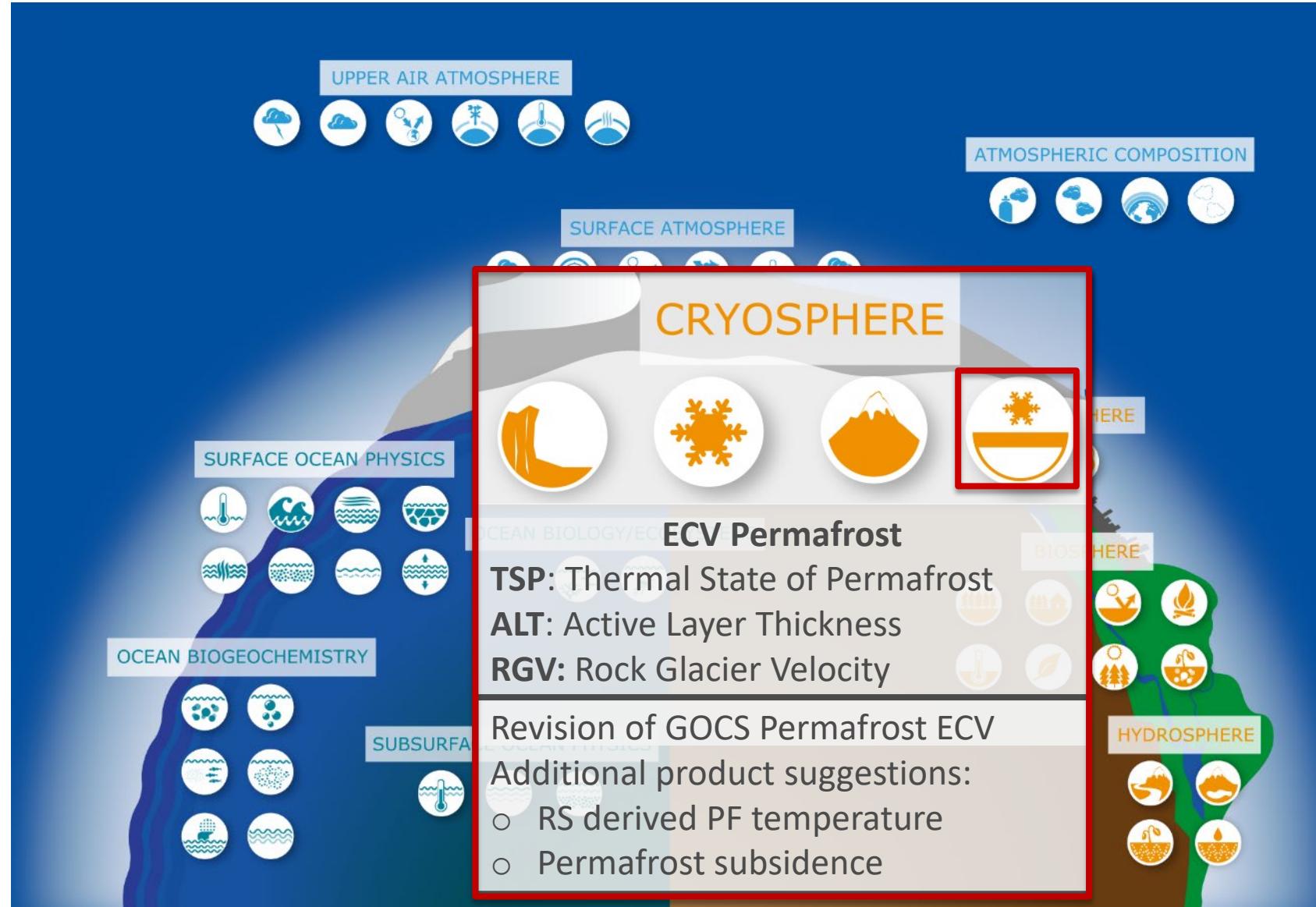


Geowissenschaften

Geowissenschaften erforschen Klima- und Umweltzustände des Erdsystems.



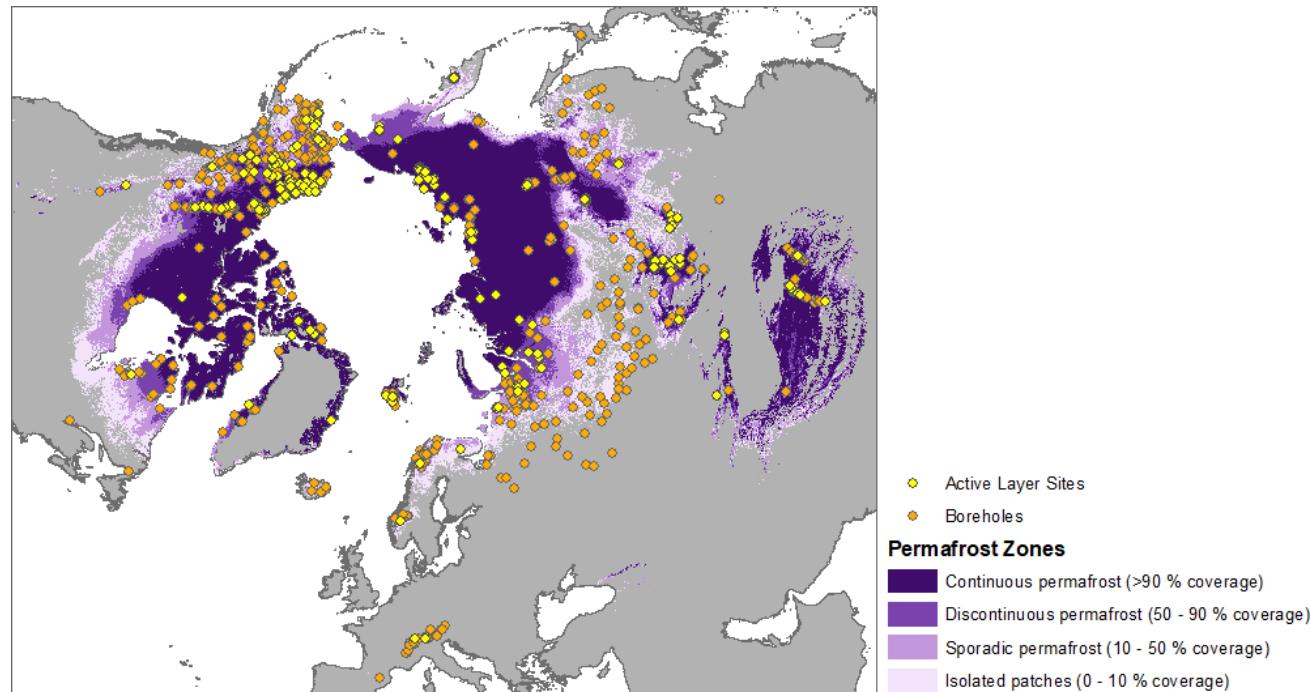
ECV: Permafrost



The proposed product **Rock Glacier Velocity** was positively evaluated and implemented by GCOS as a new Permafrost ECV product



- GTN-P is a GCOS recognized network, established by the IPA in 1999 as a part of GCOS and GTOS
- The GTN-P office is based at AWI Potsdam
- We are hosting a database for Active Layer Thickness and Permafrost Temperature
- We have data entries from more than 1350 boreholes and over 250 active layer sites from the Arctic, the Third Pole and Antarctica
- Data flow from Russian sites almost entirely stopped with the war



The 2022 GCOS Implementation Plan

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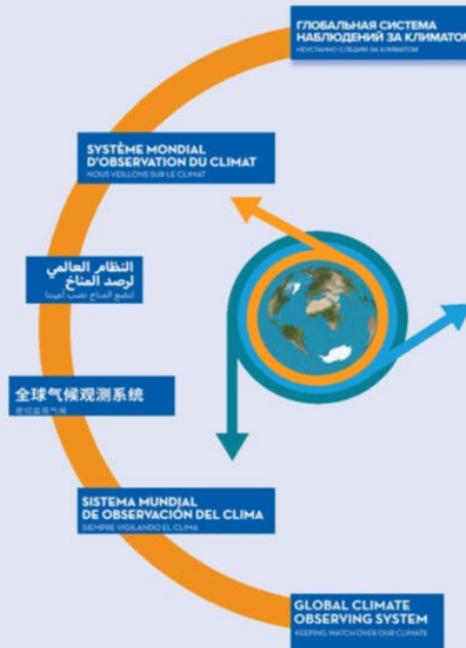


GCOS – 244
GOOS – 272

- The document was released together with the GCOS ECVs requirements in October 2022
- The GTN-P Steering Committee provided input on where it sees opportunities for the development of additional permafrost measurement techniques
- The focus laid on the development of new products which are derived from remotely sensed data (in this case satellite data)

GCOS – ECVs Requirements 2022

The 2022 GCOS ECVs Requirements



GCOS – 245



GLOBAL CLIMATE
OBSERVING SYSTEM
EVERYONE WATCHES OVER ONE CLIMATE



WMO



IOC



International
Science Council



UN
environment
programme

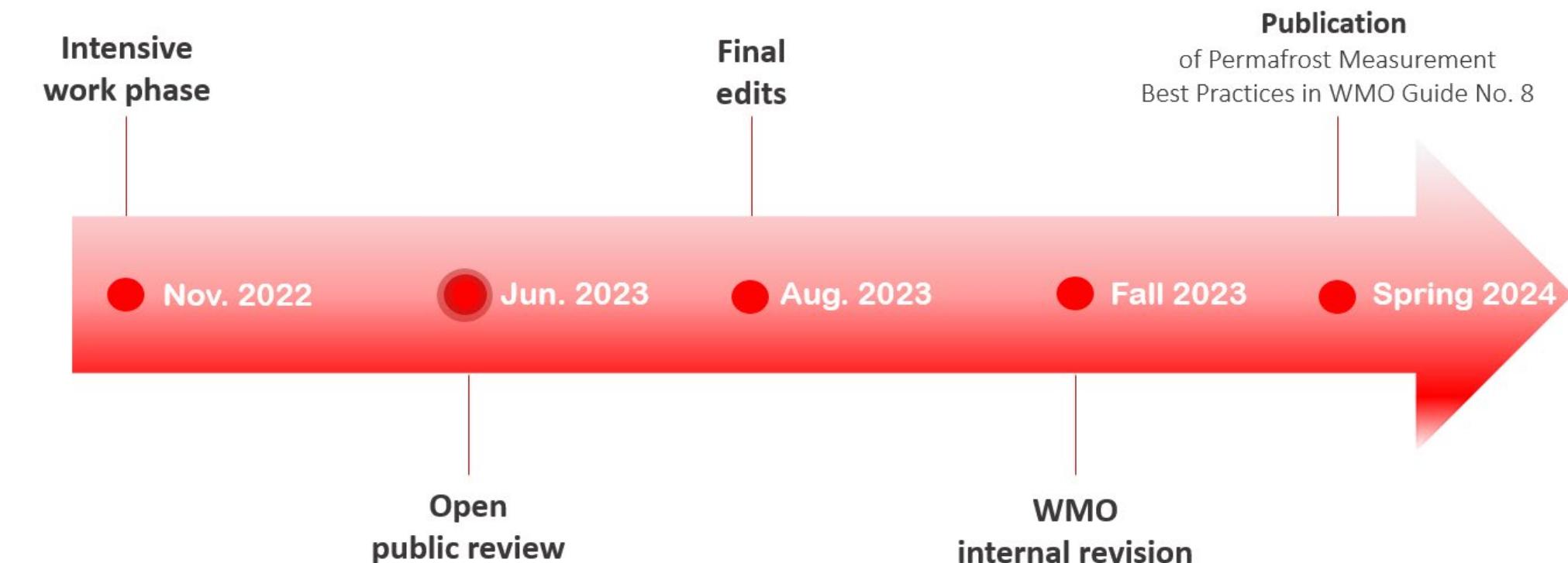


Copernicus
ERVICE CLIMATIQUE

- The document was released in October 2022
- The GTN-P is a GCOS recognized network
- The GTN-P Steering Committee worked on updating the requirements and adding the new ECV product
- Permafrost ECV is implemented with three products: Permafrost Temperature, Active Layer Thickness and Rock Glacier Velocity
- The GCOS ECVs Requirements are in accordance with the WMOs Permafrost Best Practices

The Permafrost Best Practice Task Team

- sets standards for the measurement of Permafrost
Temperature, Active Layer Thickness and Rock Glacier Velocity
- Led by AWI-based researcher Anna Irrgang

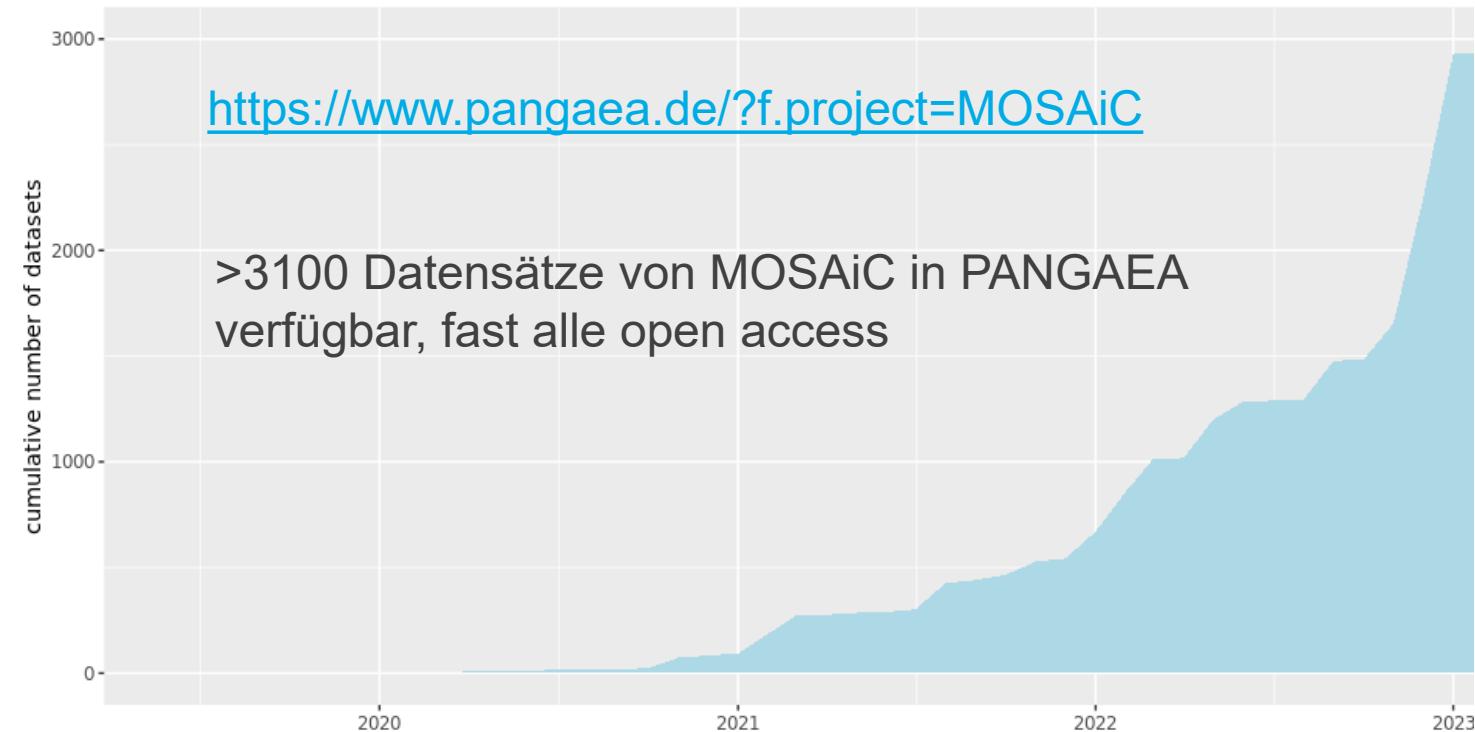


GTN-P next steps in 2023

- Prior to the European Conference on Permafrost (EUCOP), GTN-P is organizing a workshop and National Correspondents and Young National Correspondents Meeting
- Workshop will focus on a next version of the GTN-P database
- Implementation of Rock Glacier Velocity product in GTN-P database
- Finding new ways of how to derive information on the state of permafrost with remotely sensed data (especially in light of data gap in Russia)

- Forschungseisbrecher POLARSTERN => Neues von MOSAiC
- Forschungsstation AWIPEV (Spitzbergen)
- World Radiation Monitoring Center (WRMC) des BSRN
- Forschungsstation Neumayer III (Antarktis)

MOSAiC in PANGAEA



<https://www.pangaea.de/expeditions/bybasis/Polarstern>

2nd MOSAiC conference: 13-17 February 2023, University of Colorado, Boulder, Colorado, USA

Neues von AWIPEV, Ny-Alesund



Seit 2012



Position: Ny-Ålesund am Kongsfjord auf Spitzbergen

- Rezertifizierung der Ny-Alesund GRUAN site im Oktober 2022
- Marion Maturilli unterstützt GRUAN als co-Chair “Task Team Sites”, regelmäßige Teilnahme an den GRUAN Arbeitsgruppen Meetings
- Aktive Beteiligung beim GRUAN ICM-14 auf La Réunion, 28 November - 2 Dezember 2022

Neues vom Baseline Surface Radiation Network



WRMC-BSRN

World Radiation Monitoring Center- Baseline Surface Radiation Network

Datenbestand Überblick, Stand 03-2023 (2022)

1	LR 0100: Global, Dif, Dir, LW down	76 stations
2	LR 0300: Reflex, Long-wave up	19 stations
3	LR 0500: UV	13 stations
4	LR 1000: Synops	15 stations
5	LR 1100: Upper air soundings	33 stations
6	LR 1200: Total ozone	9 stations
7	LR 1300: Ceilometer data	3 stations
8	LR 30x0: Radiation from tower	13 stations



Stand März 2023 ~12,800 (12,300) Monatsdatensätze = mehr als 1,066 Jahre

Neues vom Baseline Surface Radiation Network

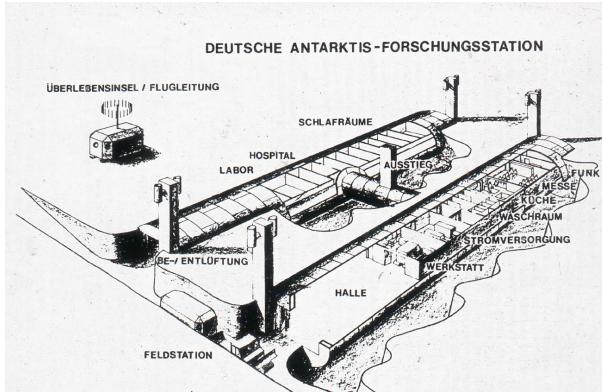


- BSRN seit September 2022 offiziell ein GCOS Recognized Network
- Durch Covid haben einige Stationen Probleme => mussten auf “inactive” gesetzt werden
- Derzeit Bemühungen die Pyrgeometer Rohdaten aller aktiven Stationen mit aufzunehmen (“LR4000”)
- Antrag auf Gelder für die Umprogrammierung/Neuprogrammierung der BSRN Toolbox

40 Jahre meteorologische Beobachtungen an der Neumayer Station

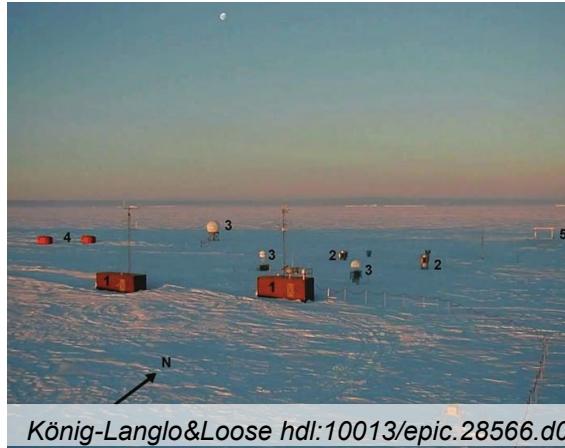


1981



https://doi.org/10.2312/BzPM_0742_2020

1992



König-Langlo&Loose hdl:10013/epic.28566.d001



D. Enss/Polarmar hdl:10013/epic.29955.d001

2009



Holger Schmithüsen (AWI)



König-Langlo&Loose hdl:10013/epic.28566.d001

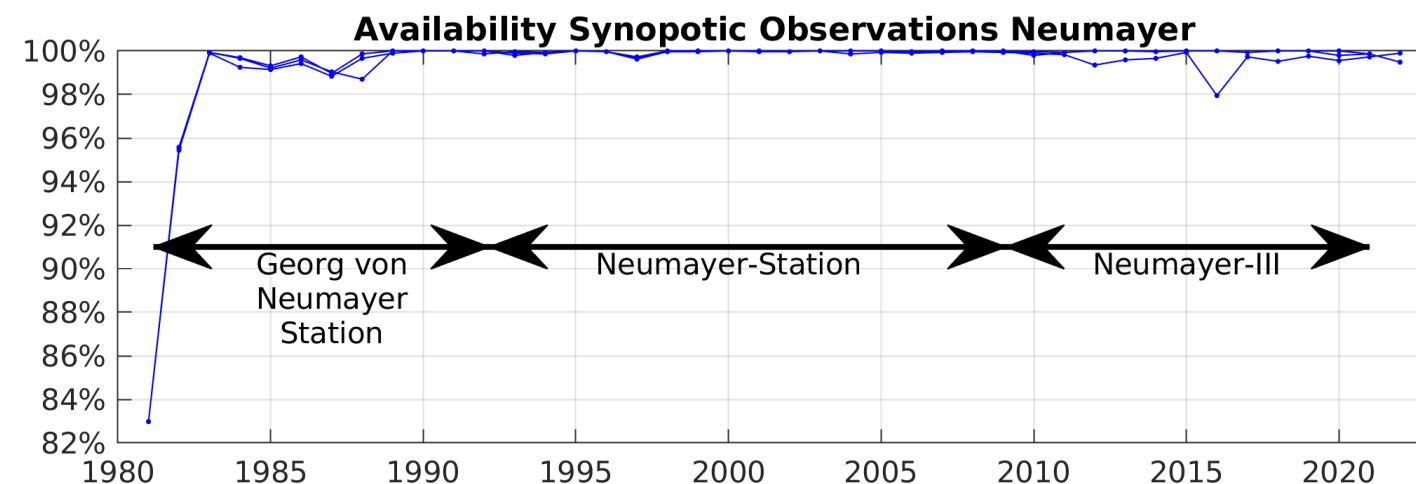
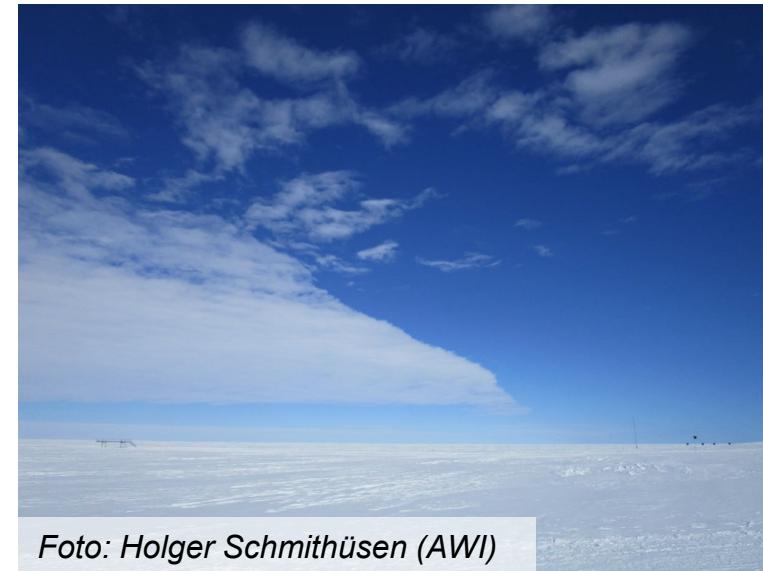


Holger Schmithüsen (AWI)



Synoptische Beobachtungen

SYNOP Meldungen
alle 3 Stunden
seit Januar 1981





Standard Parameter

10m Mast für
Temperatur, Wind,
Feuchte
seit März 1982

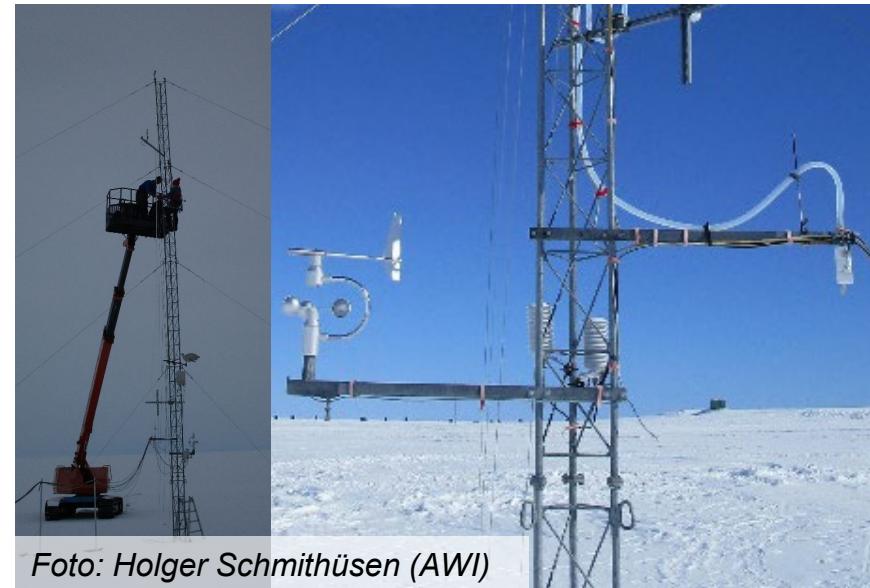
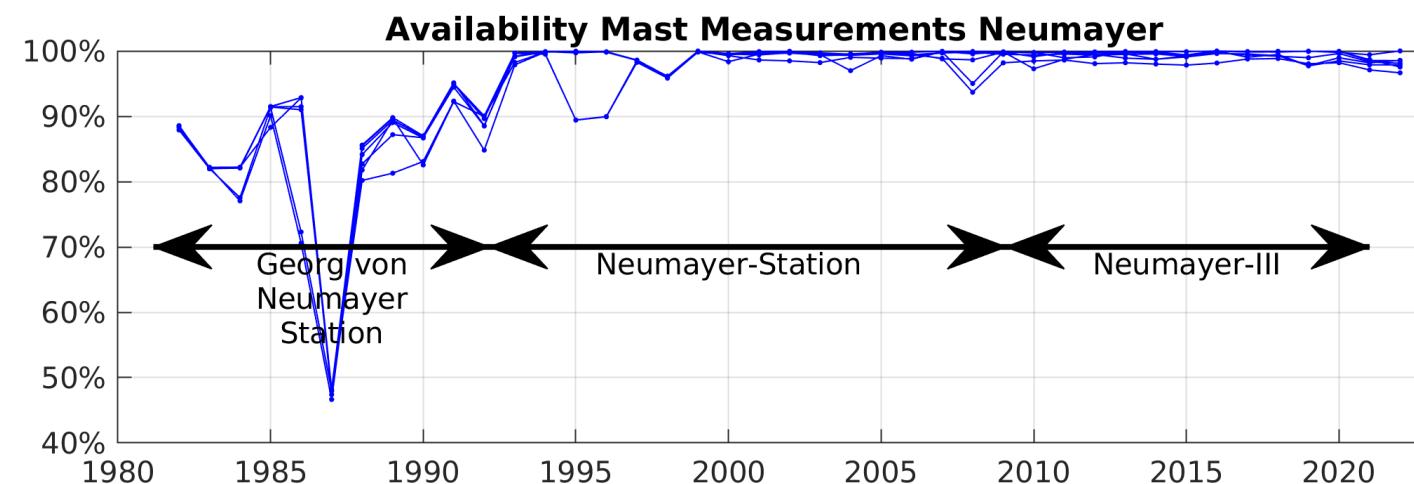


Foto: Holger Schmithüsen (AWI)

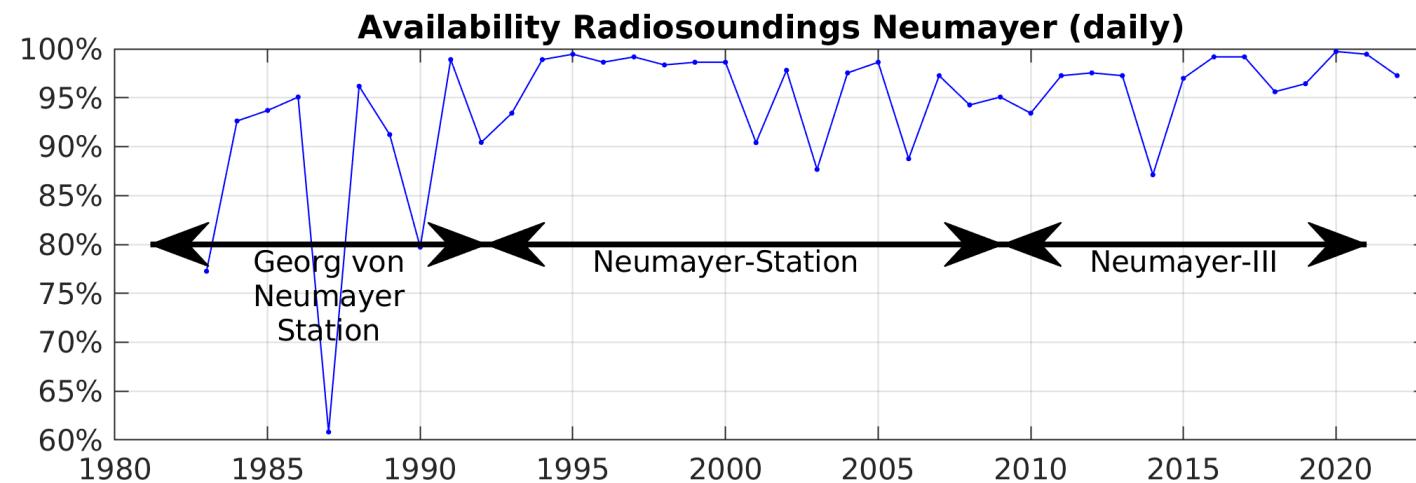




Radiosondierungen

Tägliche Sondierung (12 UTC)
seit Februar 1983

GRUAN Beitrag seit 2020
(Zertifizierung ausstehend)



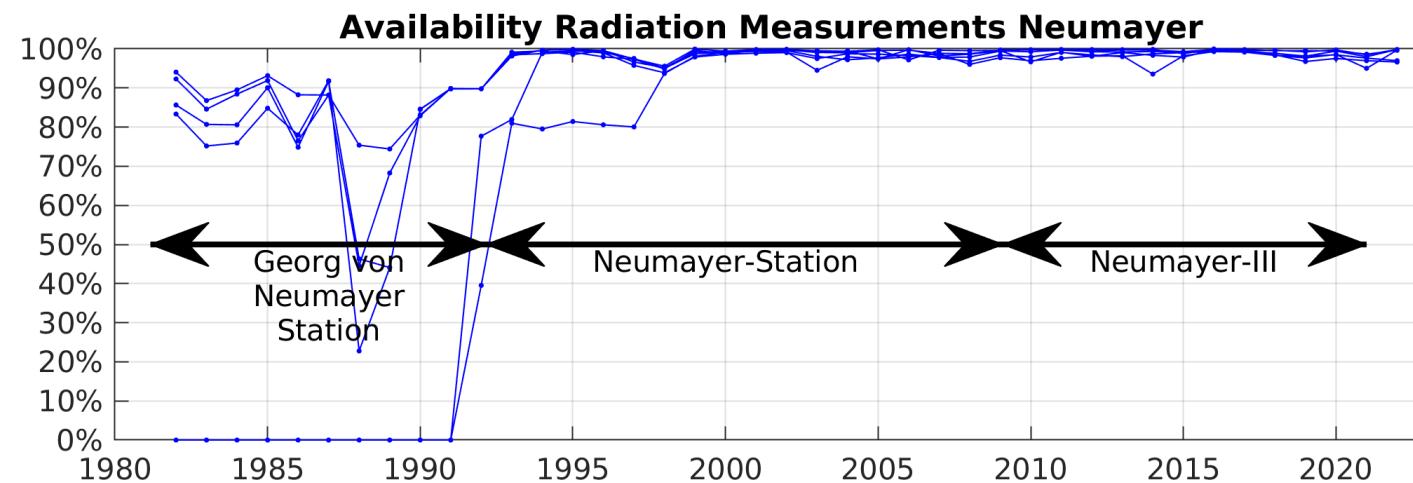


Strahlungsmessungen Neumayer



Strahlungsmessungen
seit März 1982

BSRN-Station seit Gründung
April 1992





Fernerkundung an Neumayer



Remote sensing of aerosol and clouds (ST 1.2+2.1)

Cloud
Radar



radiometer-physics.de

Wind Lidar



halo-photonics.com

Micropulse Lidar



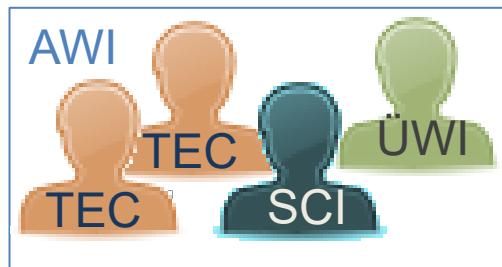
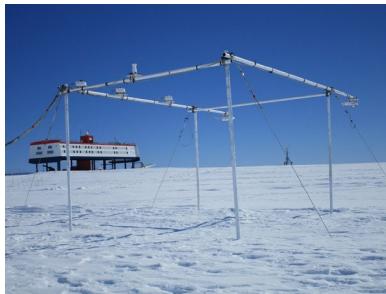
dropletmeasurement.com



Betrieb Observatorium Neumayer



OBSERVATORY to ARCHIVE

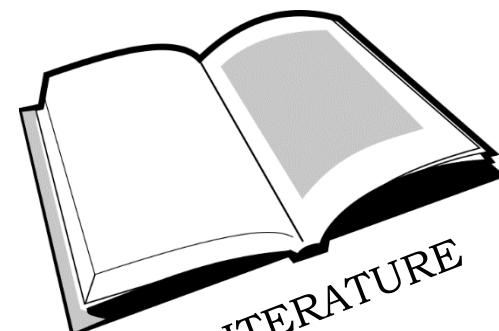


PANGAEA.

ARCHIVE to LITERATURE



PANGAEA.



LITERATURE

HELMHOLTZ



Herschel Island, 2012, © B. Radosavljevic



Danke!



<https://www.awipev.eu/>



POLARSTERN, © S. Hendricks

HELMHOLTZ