



Alfred Wegener Institut Helmholtz Zentrum für Polar- und Meeresforschung

16. Nationales GCOS Treffen
14.-15.03.2022
Virtuell



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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.



AWI, 2019: <https://www.awi.de/forschung.html>

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Geophysik



Marine Geochemie



Glaziologie



Marine Geologie



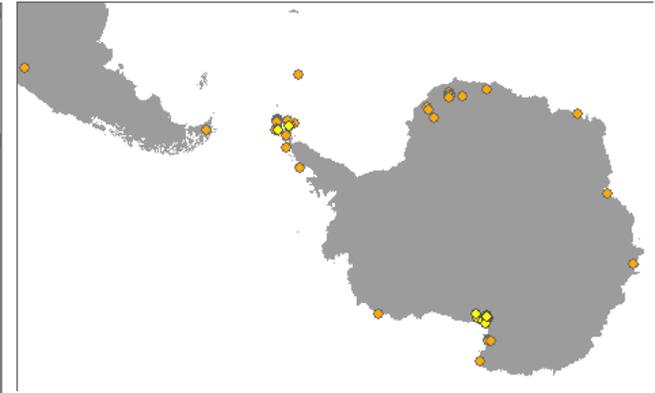
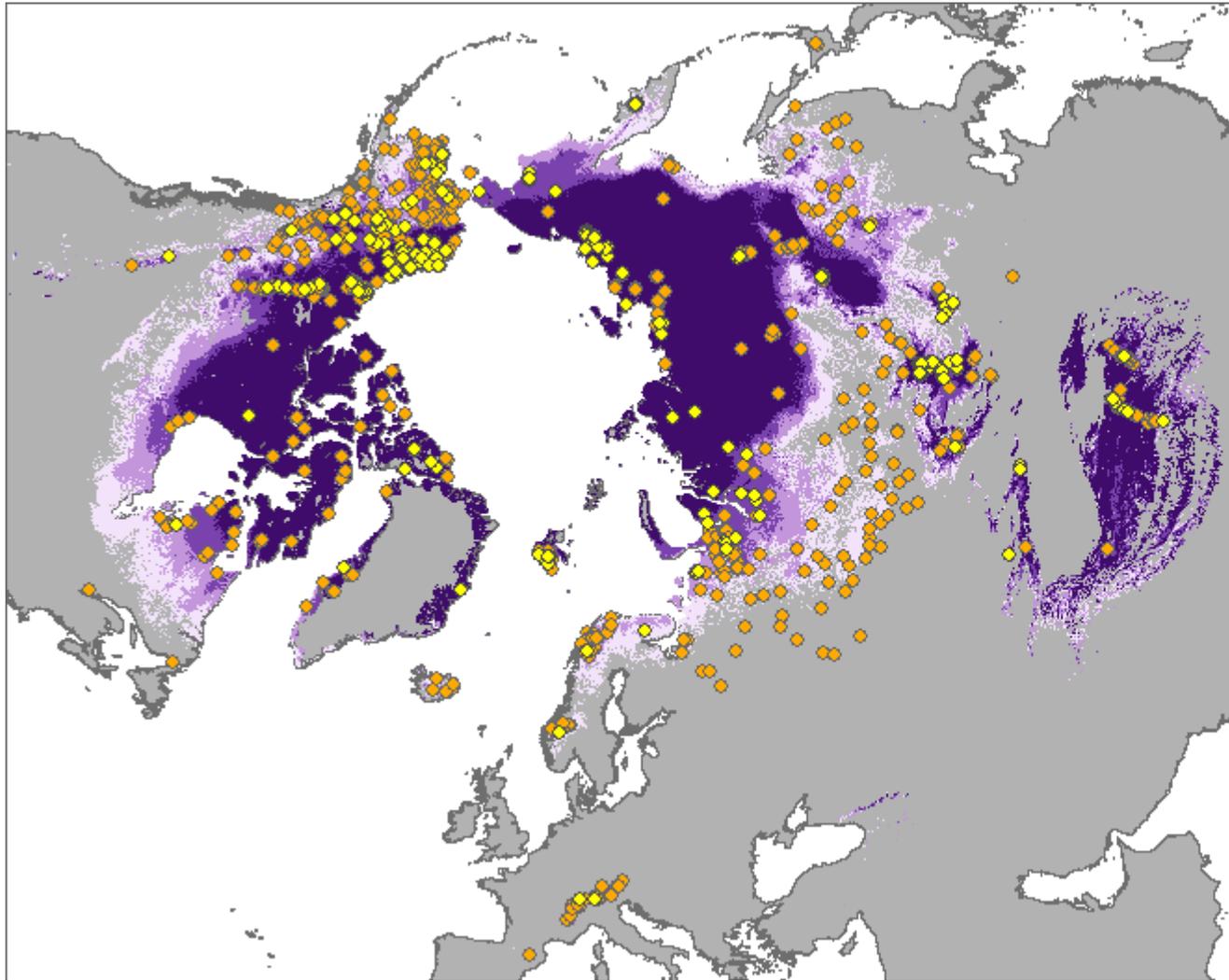
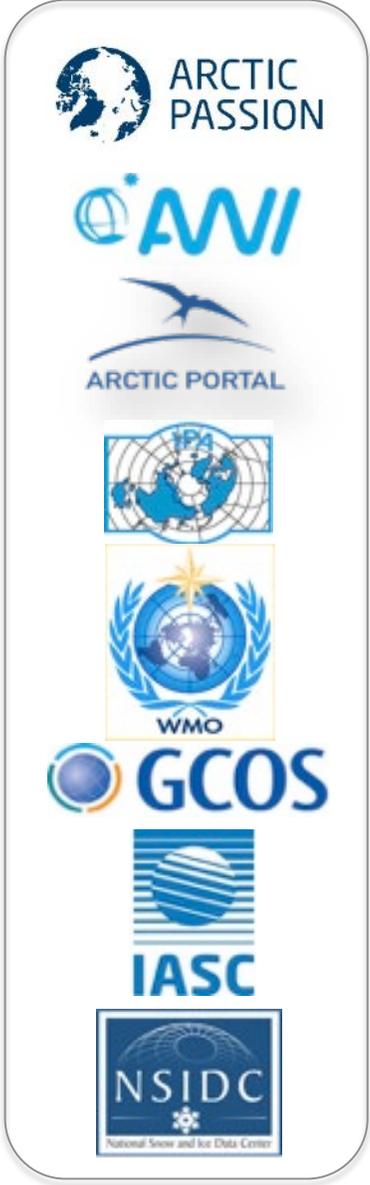
Permafrostforschung



Polare Terrestrische Umweltsysteme



2 Messgrößen: PT: Permafrost Temperature ALT: Active Layer Thickness



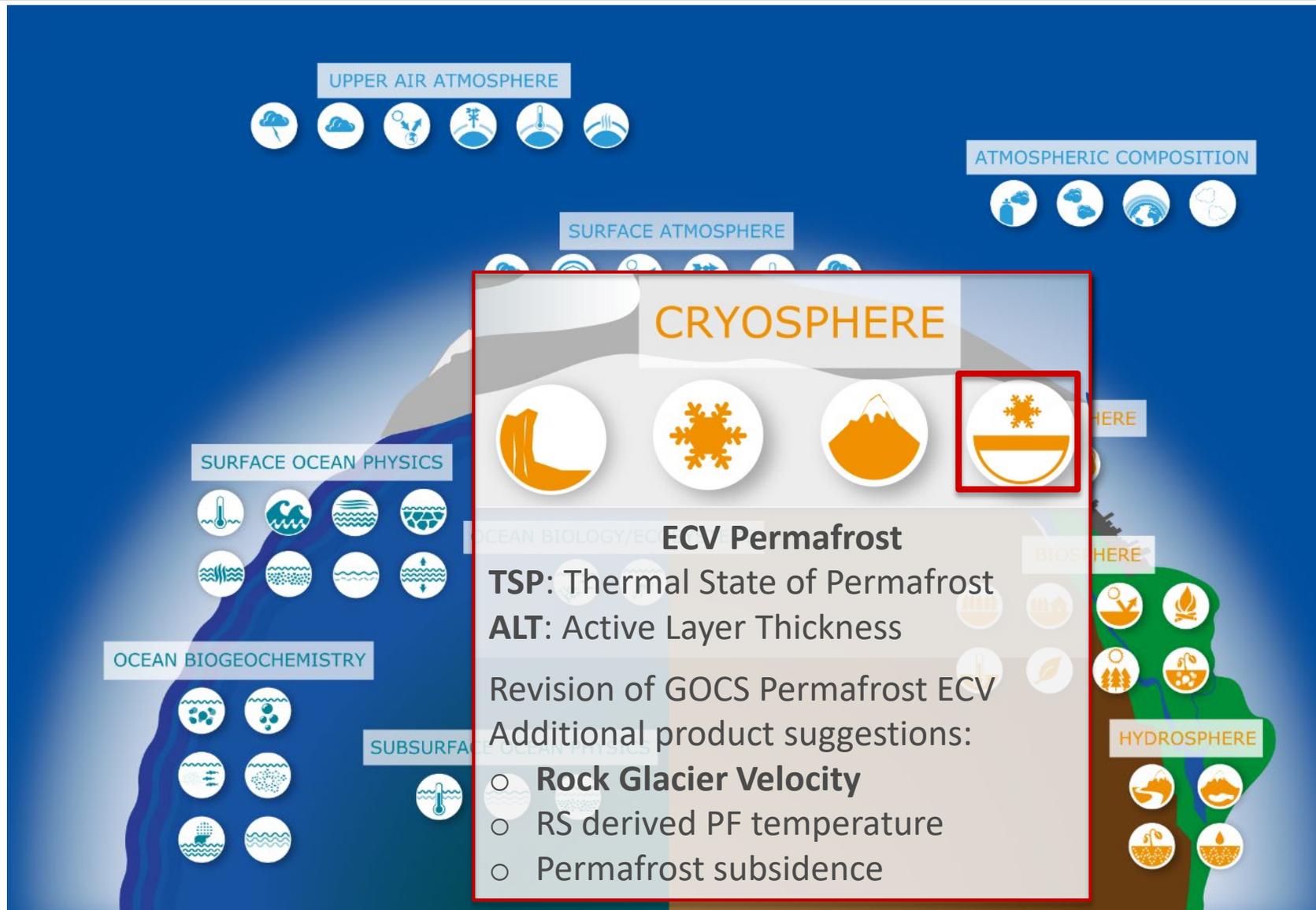
>1350 Bohrlöcher
250 active layer Sites

- Active Layer Sites
- Boreholes

Permafrost Zones

- Continuous permafrost (>90 % coverage)
- Discontinuous permafrost (50 - 90 % coverage)
- Sporadic permafrost (10 - 50 % coverage)
- Isolated patches (0 - 10 % coverage)

ECV: Permafrost (Dauerfrostboden)



Das Permafrost ECV Produkt **Rock Glacier Velocity** wurde positiv begutachtet und wird durch GCOS als neues Produkt aufgenommen

WMO Permafrost Best Practice Task Team



Permafrost Measurement Best Practice:
GCW's contribution to standardize global observations

GTN-P Global Terrestrial Network for Permafrost
GCOS GLOBAL CLIMATE OBSERVING SYSTEM
GCW Global Cryosphere Watch
WMO WORLD METEOROLOGICAL ORGANIZATION

Anna Irrgang (Alfred-Wegener Institute Helmholtz Centre for Polar and Marine Research) - Andrea Merione (Istituto Nazionale di Ricerca Metrologica) - Kelli Isakson (Norwegian Meteorological Institute) - Jeannette Noeltzi (WSL Institute for Snow and Avalanche Research SLF) - Philippe Schoenelich (Institut d'Urbanisme et de Géographie Alpine, Université Grenoble Alpes) - Lijuan Ma (World Meteorological Organization) - Rodica Nitu (World Meteorological Organization)

The Need
 There are many different ways to measure cryospheric variables, such as snow, ice, or permafrost. Thus, the measurement procedures, the devices used, their calibration, the frequency and the uncertainty of measurements vary considerably. This puts constraints on data quality and comparability, which is crucial when assessing the current state and evolution of the cryosphere.

The Approach
 The WMO establishes and recommends best practices for conducting measurements of physical variables, aiming for data homogeneity and interoperability. Some of the best practices were summarized in the Guide of Instruments and Methods of Observation (GIMO). Measurement best practices of permafrost and seasonally frozen ground are hardly available today and are now being established by a Permafrost Task Team, which consists of Global Cryosphere Watch (GCW) members and permafrost experts. The measurements best practice for permafrost aims to define reference methods for the configuration and operation of stations for in situ observations in both high mountains and polar regions.

The Aim
 The permafrost best practices will:
 • address gaps in the existing permafrost monitoring systems
 • define methods for establishing and documenting measurement traceability
 • recommend instrumental characteristics and calibration procedures
 • provide measurements uncertainty evaluation tools
 • improve comparability within and among networks
 • promote capacity building by recommending the creation of permafrost observation networks and reference sites

How We Do It
 The permafrost best practices will incorporate the ongoing revision of Products and Requirements of the Global Climate Observing System (GCOS) Permafrost Essential Climate Variable (ECV), including existing variables measured by the GTN-P (Global Terrestrial Network for Permafrost), as well as the needs of developing Essential Arctic Variables (EAV) and Shared Arctic Variables (SAV) identified at the Arctic Observing Summit (AOS). The permafrost best practices will fund as an overall umbrella which concerns all these different approaches.

GCOS ECV Global Climate Observing System Essential Climate Variable
EAV Essential Arctic Variables
SAV Shared Arctic Variables
GTN-P Global Terrestrial Network for Permafrost

METEOMET Network for Metrology
 Recommendations on the evaluation of uncertainty and traceability of permafrost temperature measurements are being established in collaboration with Meteomet.

Proposed Permafrost Best Practices
 Permafrost Task Team synthesizes different methodologies, standards, variables etc.

Permafrost Community Involvement
 The proposed best practices will be presented to and discussed with the broad permafrost research community to ensure scientific acceptance and wide application.

Publication of Permafrost Best Practices in WMO Guide no.8, 2022

Implementation by Research and Observing Stations

The goal of the best practices is to ensure data interoperability and data comparability across all permafrost regions. This will enable us to study large scale responses of permafrost to a changing climate.

Contact: anna.irrgang@awi.de



Permafrost Task Team erarbeitet die Definitionen und Messstandards für Permafrostmessungen über die GCOS ECVs hinaus, welche in das nächste Update des WMO Guide No. 8 mitaufgenommen werden.

In 2021 hat das Permafrost BP große Fortschritte in der Erarbeitung des Dokumentes gemacht. Das Dokument geht voraussichtlich Ende 2022 in die interne Begutachtung bei der WMO und wird 2023 veröffentlicht.



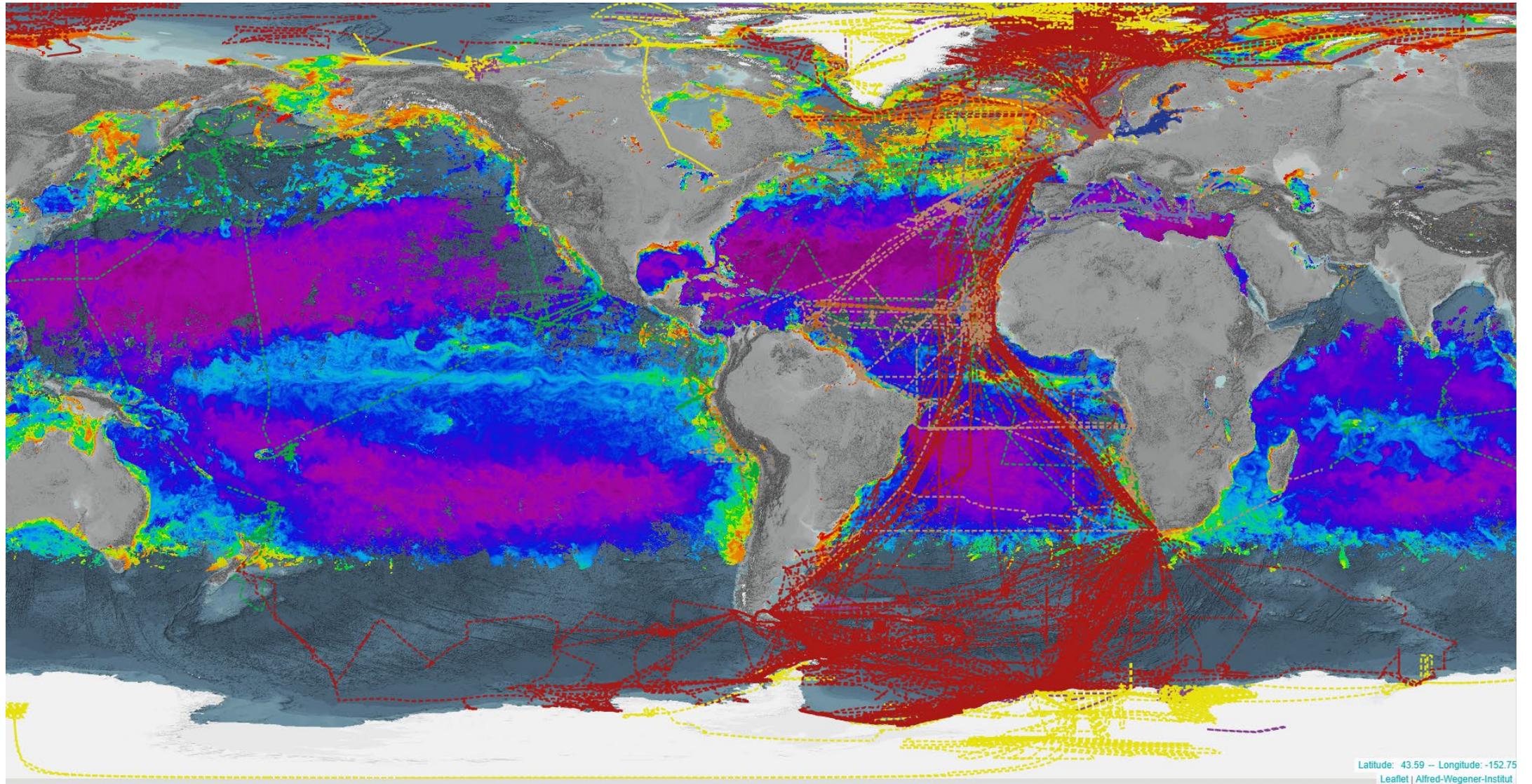
- 2021 gab es, bedingt durch die Pandemie, erneut viel weniger Einträge in die GTN-P Datenbank
- GTN-P hat den neuen [Strategy and Implementation Plan](#) und die GTN-P [Measurement Recommendations and Guidelines](#) veröffentlicht
- Das GTN-P Office wird bis 2024 durch das neue Horizon 2020 Projekt Arctic PASSION finanziert, welches unter der Leitung des AWIs 2021 angelaufen ist
- Für die Zeit nach 2024 sucht das GTN-P Office eine permanente Lösung

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

MOSAiC 2019-2020

The largest Arctic research expedition in history



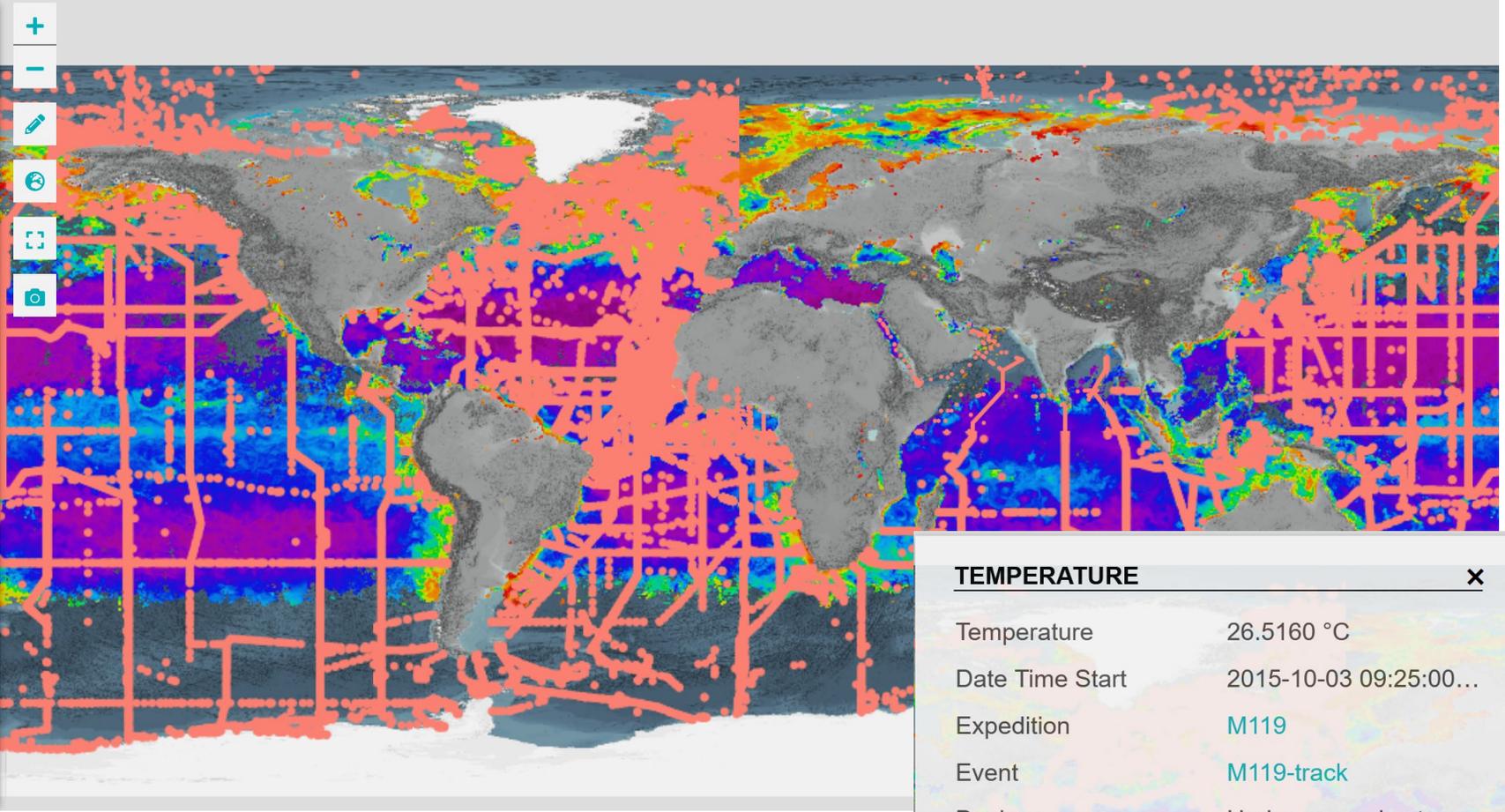


Search for author, expedition, project, ...

OCEAN OBSERVATORY VIEWER

LAYER TREE

- Expeditions
 - Tracklines
 - Expedition Events
- Water
 - Samples
- In-Situ
 - Chlorophyll
 - Current
 - Pressure
 - Salinity
 - Temperature
 - Turbidity
 - Alkalinity
 - Oxygen
 - Videos
- Remote Sensing or Modelled



TEMPERATURE

Temperature	26.5160 °C
Date Time Start	2015-10-03 09:25:00...
Expedition	M119
Event	M119-track
Device	Underway cruise tra...
Method	unspecified
DOI	https://doi.org/10.15...

show more

◀ previous 1 / 51 next ▶▶

<https://marine-data.org/?site=viewer&id=oceanobs>

Neues von AWIPEV, Ny-Alesund



Seit 2012

Anlaufende Kooperationsgespräche GRUAN Netzwerk - PANGAEA

GCOS Reference Upper-Air Network



© GRUAN Lead Centre (November 2021)

Neues von Neumayer/Antarktis

WIGOS Station Identifiers



DBLK



0-22000-0-2TDJJ8J (Bodenbeob.)
0-22000-0-JKFA7QZ (Radiosonden)



89002



0-20000-0-89002 (Bodenbeob.)
0-20001-0-89002 (Radiosonden)
0-20008-0-NMY (GAW Aerosol etc.)



89003

89011

89047

89507



0-20000-0-89003 (Halvfarryggen)
0-20000-0-89011 (Sorasen)
0-20000-0-89047 (Filchner)
0-20000-0-89507 (Kohnen)

Neues von Neumayer/Antarktis

Metadaten in OSCAR



https://oscar.wmo.int/surface/#/search/station/stationReportDetails/0_20008_0_NMY

OSCAR Observing Systems Capability Analysis and Review Tool

Home Search Critical review Search

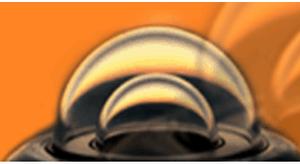
Station: Neumayer (Germany) in WMO Region Antarctica

Last updated: 2021-10-19 by Schmitz-Helger

Station characteristics					
Name:	Neumayer				
Station alias:					
Date established:	1981-01-21				
Date closed:					
Declared reporting status:	Operational				
Assessed reporting status:	Unknown				
Station type:	Land (fixed)				
WIGOS Station Identifier(s):	<table border="1"> <thead> <tr> <th>WIGOS Station Identifier</th> <th>Primary</th> </tr> </thead> <tbody> <tr> <td>0-20008-0-NMY</td> <td><input checked="" type="checkbox"/></td> </tr> </tbody> </table>	WIGOS Station Identifier	Primary	0-20008-0-NMY	<input checked="" type="checkbox"/>
WIGOS Station Identifier	Primary				
0-20008-0-NMY	<input checked="" type="checkbox"/>				
WMO region:	Antarctica				
Country / Territory:	> Germany				
Coordinates:	> 70.6680003862°S, 8.235969764°W, 42m				
Time zone:	> UTC				

URL SENSOR API: <https://sensor.awi.de/api>

Neues vom Baseline Surface Radiation Network



WRMC-BSRN

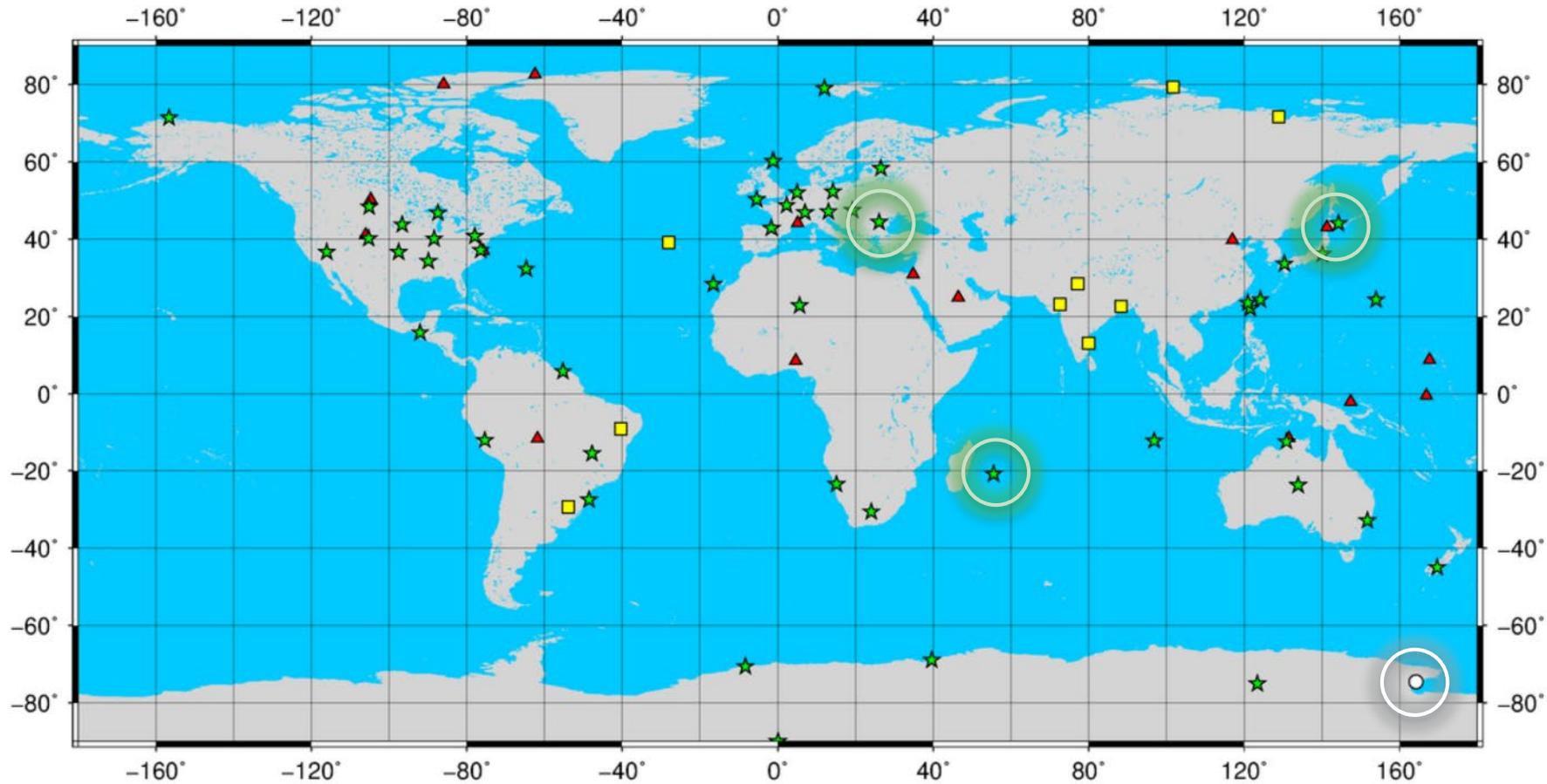
World Radiation Monitoring Center- Baseline Surface Radiation Network

Datenbestand Überblick, Stand 03-2022 (2020)

1	LR 0100: Global, Diffuse, Direct, Long-wave down	76 (72) stations
2	LR 0300: Reflex, Long-wave up	19 (19) stations
3	LR 0500: UV	13 (13) stations
4	LR 1000: Synops	15 (14) stations
5	LR 1100: Upper air soundings	33 (32) stations
6	LR 1200: Total ozone	9 (9) stations
7	LR 1300: Ceilometer data	3 (3) stations
8	LR 30x0: Radiation measurements from tower	13 (13) stations

Stand März 2022 **>12,300 (>12,000) Monatsdatensätze** = mehr als 1,000 Jahre

Running, inactive, planned and closed BSRN Stations, December 2021



BSRN in Gesprächen, mit GCOS um ein „GCOS recognized network“ zu werden



Herschel Island, 2012, © B. Radosavljevic

Danke!



POLARSTERN, © S. Hendricks