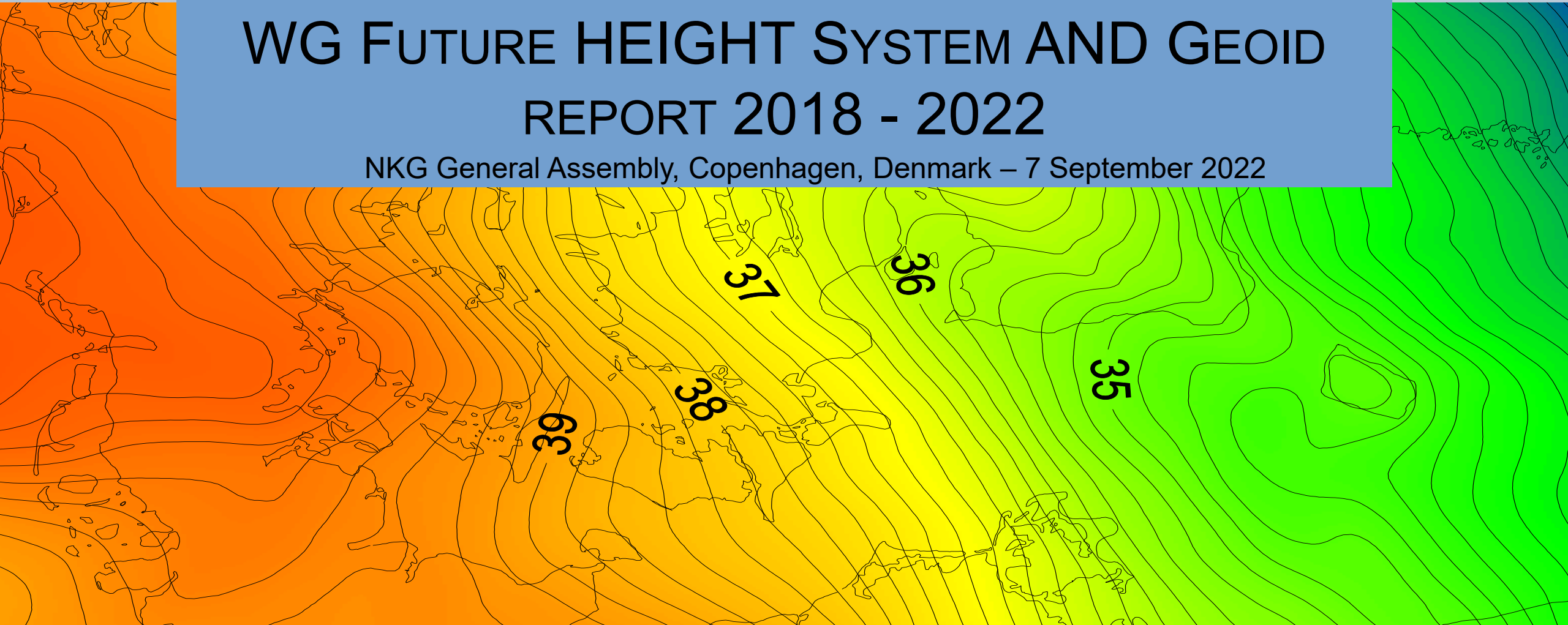




WG FUTURE HEIGHT SYSTEM AND GEOID REPORT 2018 - 2022

NKG General Assembly, Copenhagen, Denmark – 7 September 2022



Meetings

- Back-to-back meetings with WGGEO
- Once a year; Week 11, Lunch-to-lunch-to-lunch
- Mailing list: nkg_wgfhsg@freelists.org

Topics 2018 - 2022

Gravity measurements

EVRF2019

BSCD2000

Temporal variations in heights due to mass transport

IMU measurements

Geoids

BIFROST2020

FAMOS

Sea level variation in a fjord

Mass distribution using zenith camera

IHRF

Digital twin

Levelling

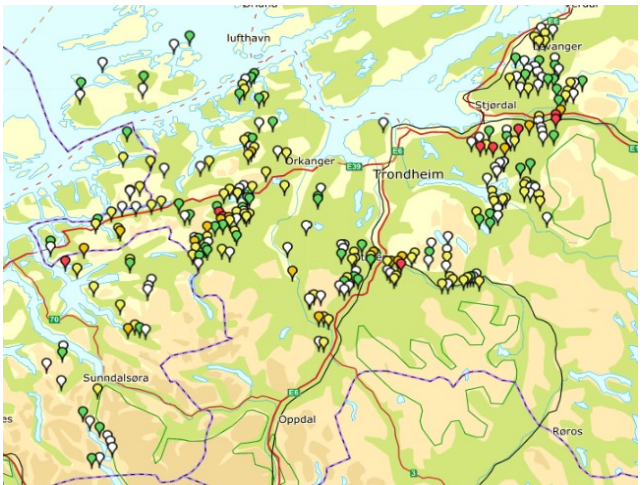
NKG gravity database

European Velocity Model

InSAR

Gravity measurements

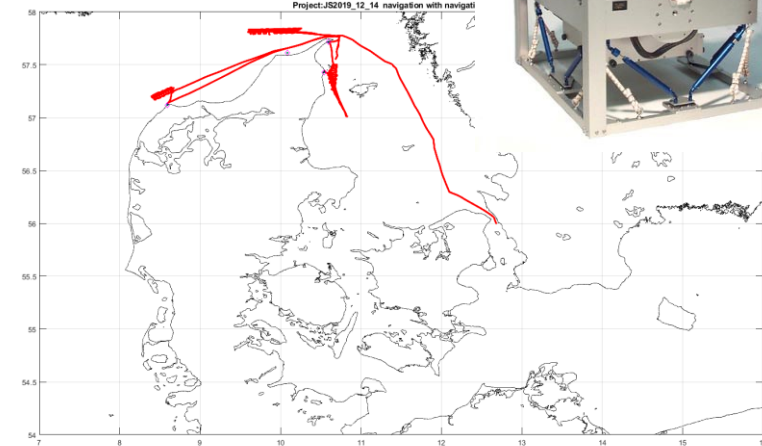
Land



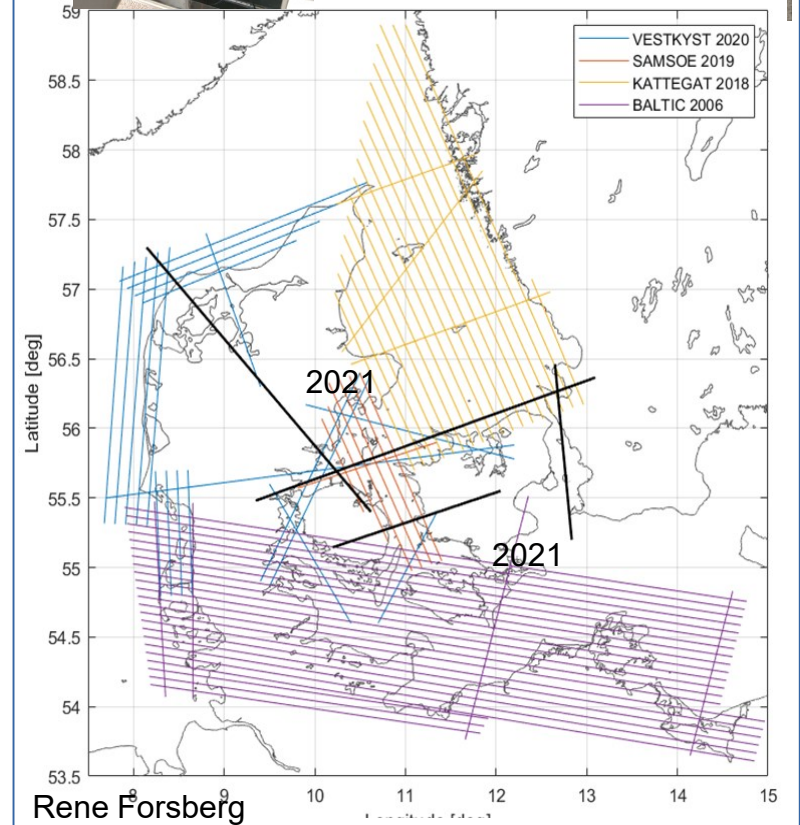
Marine



Per-Anders Olsson



Airborne

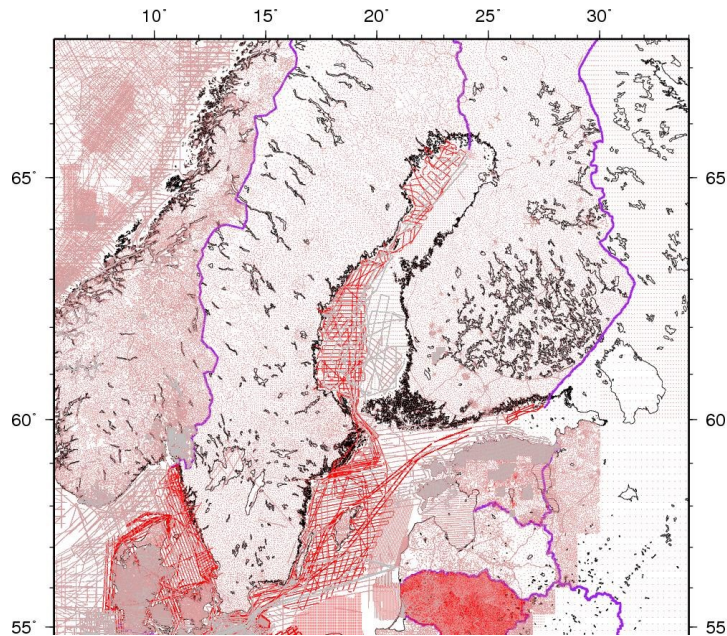


Global contribution

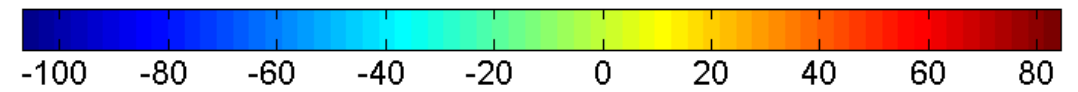
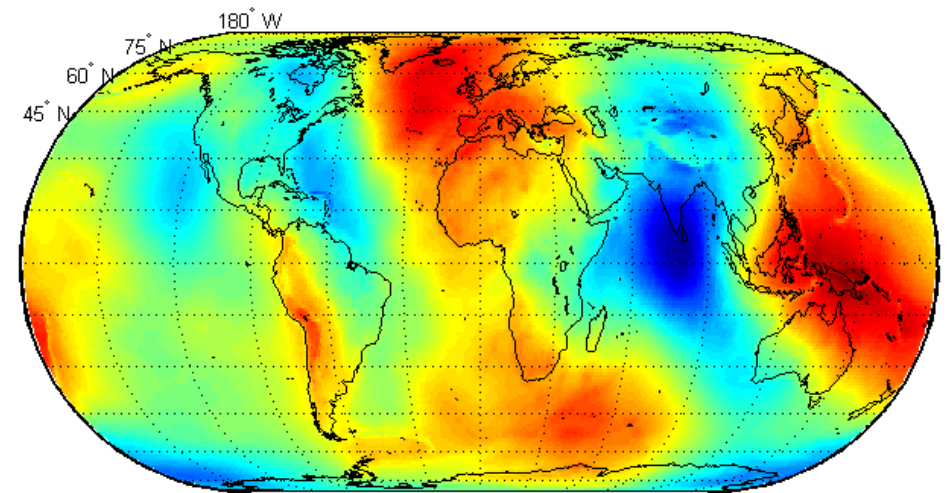
NKG Gravity Database



EGM202X



J. Schwabe



EGM96 geoid heights in m. Wikipedia

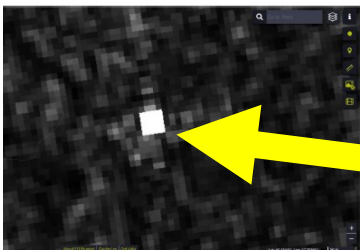
InSAR

Reflector

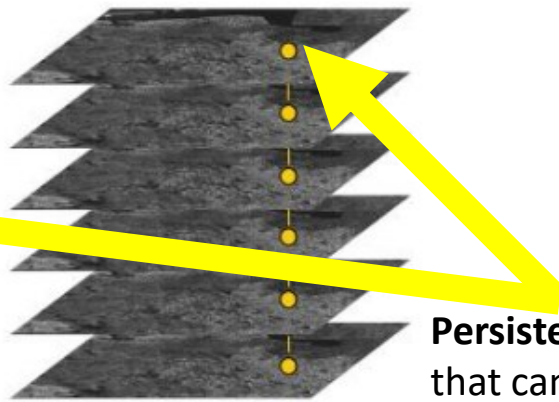
Passiv



Active

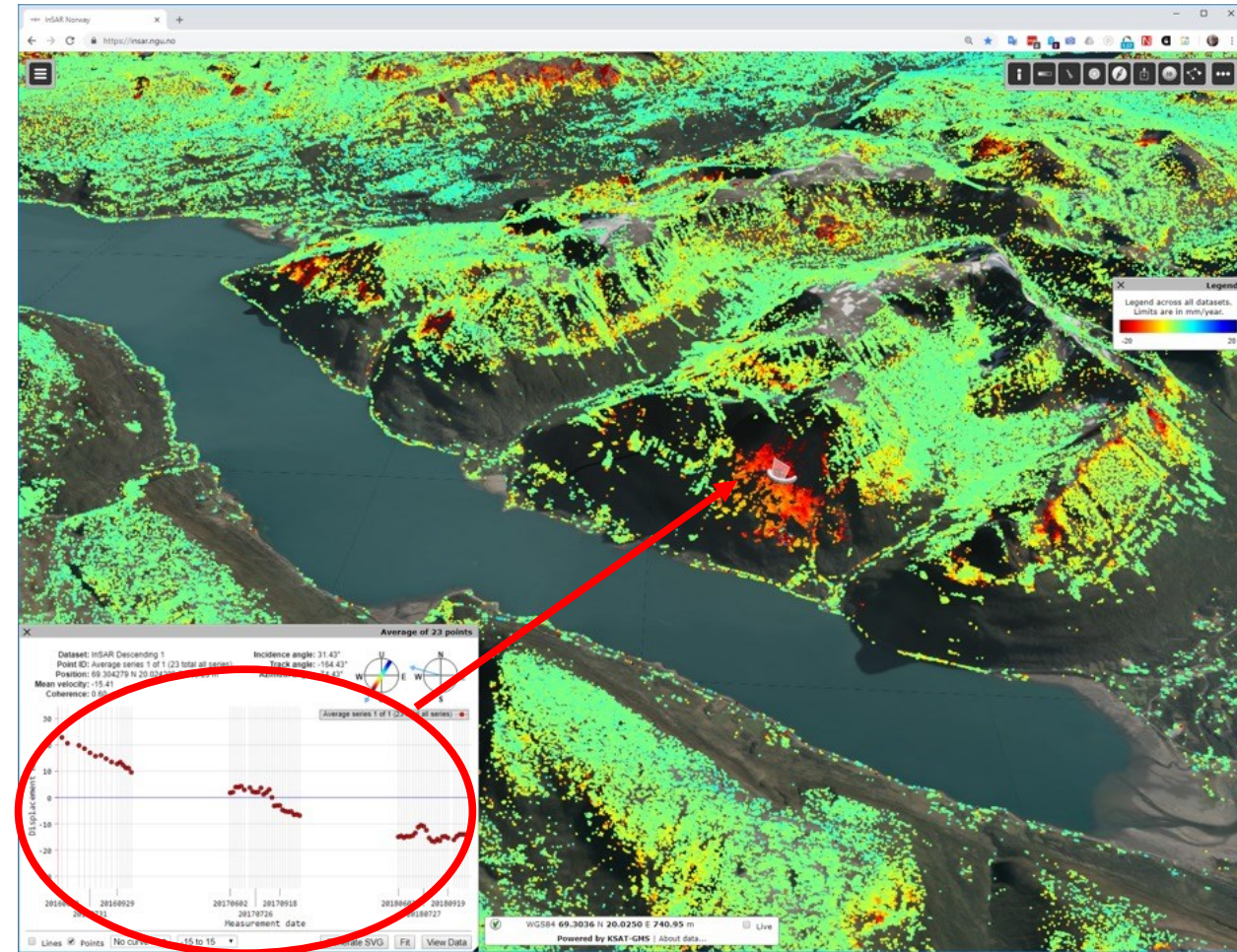


Nureldin Gido



Persistent scatters are coherent radar targets (PS) that can be clearly identified in all radar images and do not vary in their properties

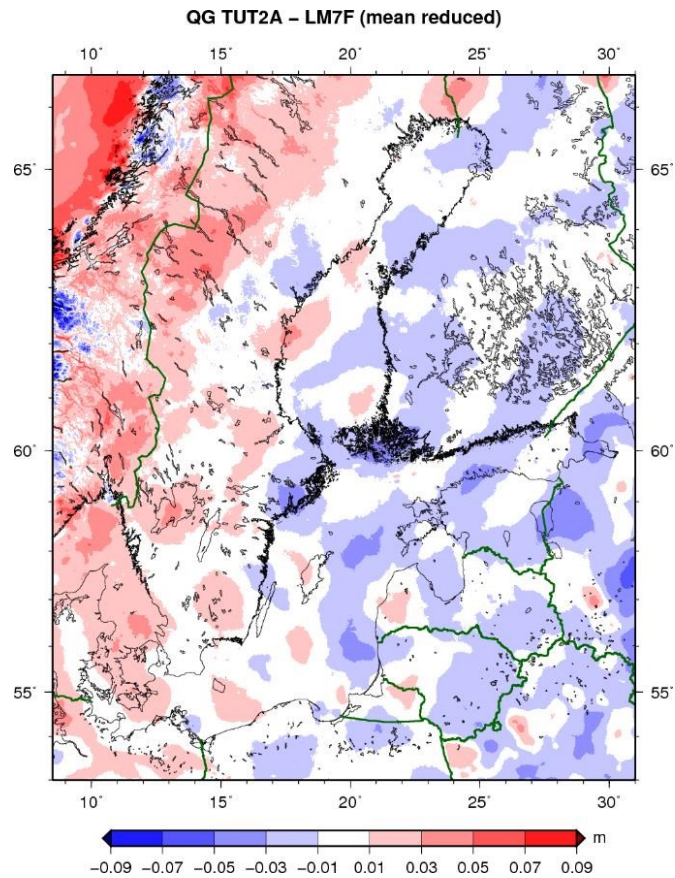
InSAR Norway shows ground motion [wrt GNSS model]



John Dehls

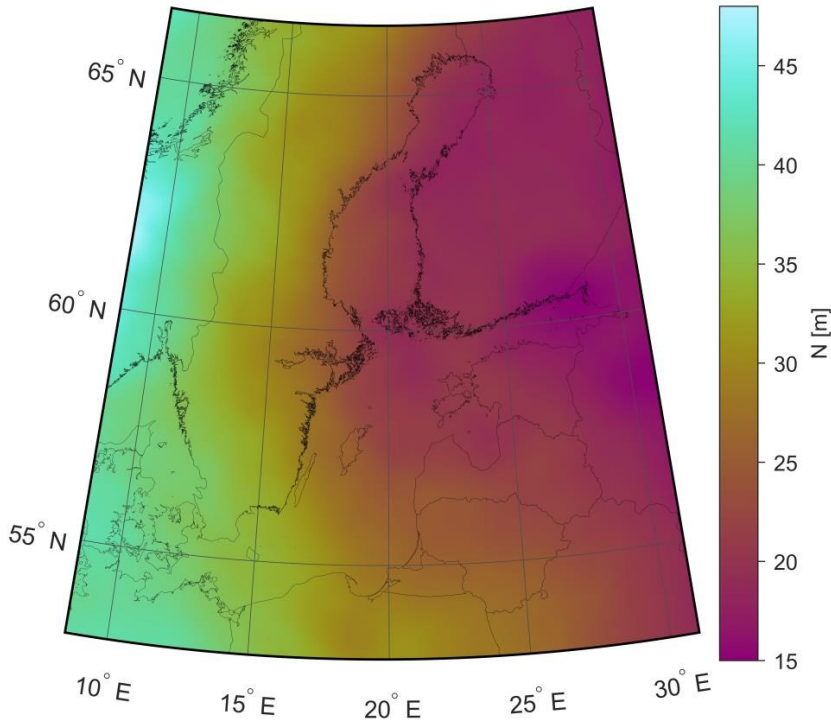
Geoids

FAMOS



J. Schwabe

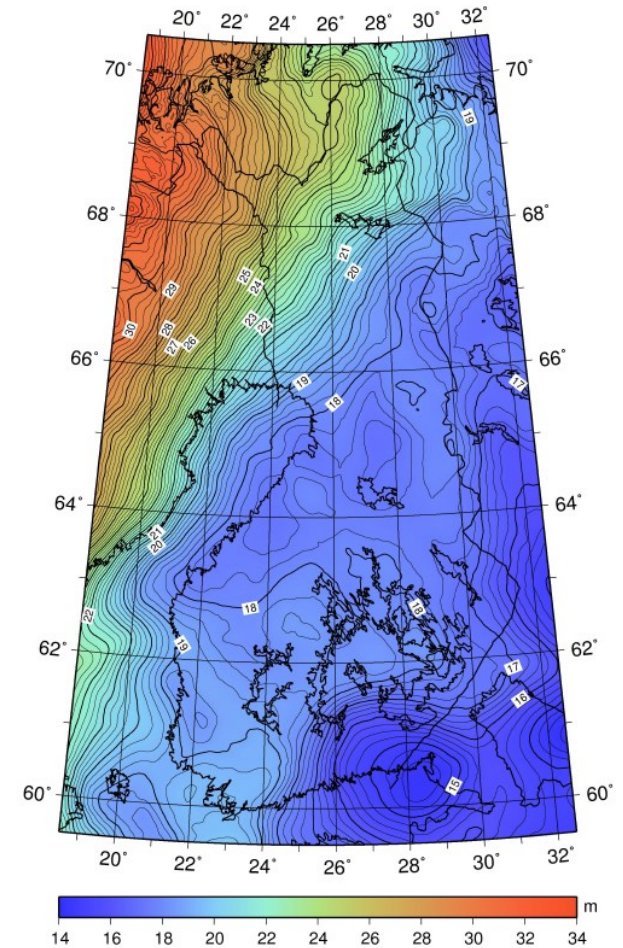
Gulf of Finland



Min = 14.948 m Mean = 27.184 m
Max = 48.053 m SD = 8.130 m

Sander Varbla

Finlan FIN2005N00



Mirjam Bilker-Koivula

International Height Reference Frame

- Fixed vertical potential reference level at the geoid, ($W_0 = 62\,636\,853,4 \text{ m}^2 \text{ s}^{-2}$)
- Mean-tide
- Vertical coord. given as potential numbers

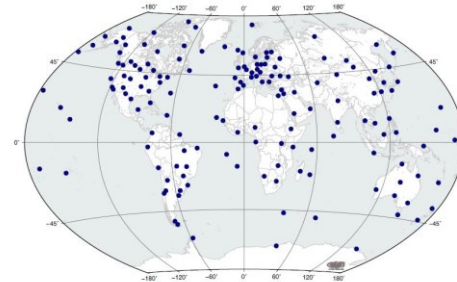
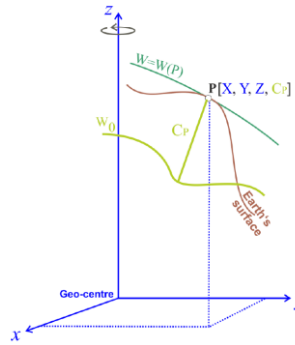
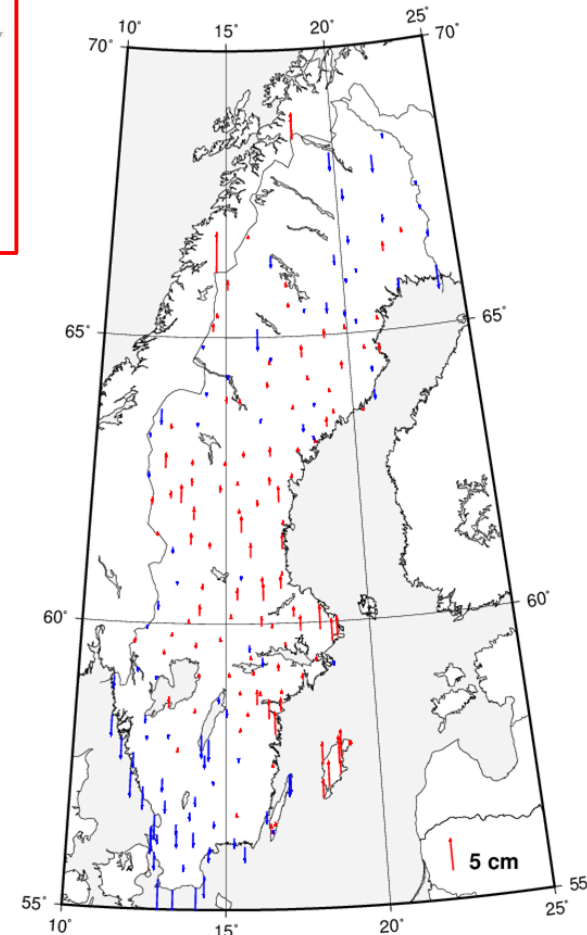


Fig. 10 IHRF reference network (as of October 2020)

IHRF - RH 2000



Anders Alfredsson

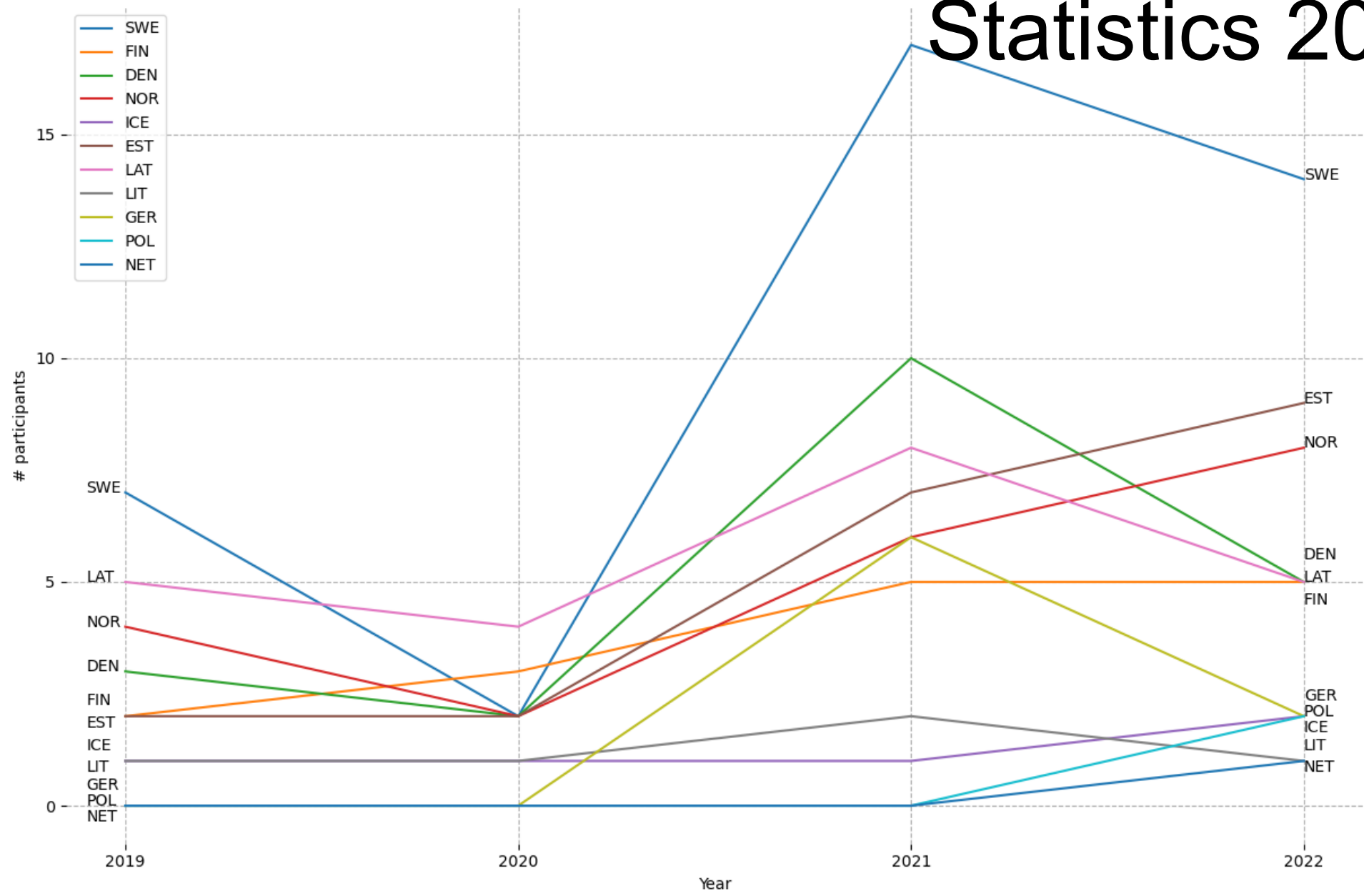
PRELIMINARY POTENTIAL VALUES DELIVERED TO LAURA SANCHEZ AT JANUARY 11, 2022

Table 1. Potential values, geopotential numbers and normal heights in IHRF computed based on the **gravimetric NKG2015 quasigeoid model**.

Station	ITRF2014, epoch 2021.04			NKG2015 (zt, 2021.04)	IHRF (Sanchez et al., 2021a, 2021b)		
	Latitude	Longitude	Ell. Height	Height anomaly	Normal height	Geopotential number	Potential
	[Deg.]	[Deg.]	[m]	[m]	[m]	[$\text{m}^2 \text{s}^{-2}$]	[$\text{m}^2 \text{s}^{-2}$]
METG10503	60.24196776	24.38417794	59.6998	19.1768	40.5709	398.378	62636455.022
RIGA12302	56.94862159	24.05877914	34.7296	21.3082	13.4634	132.166	62636721.234
ONSA10402	57.39530102	11.92552194	45.6181	36.8232	8.8377	86.760	62636766.640
SVTL12350	60.53286384	29.78088118	76.7160	15.7246	61.0398	599.380	62636254.020

Jonas Ågren

Statistics 2018 - 2022



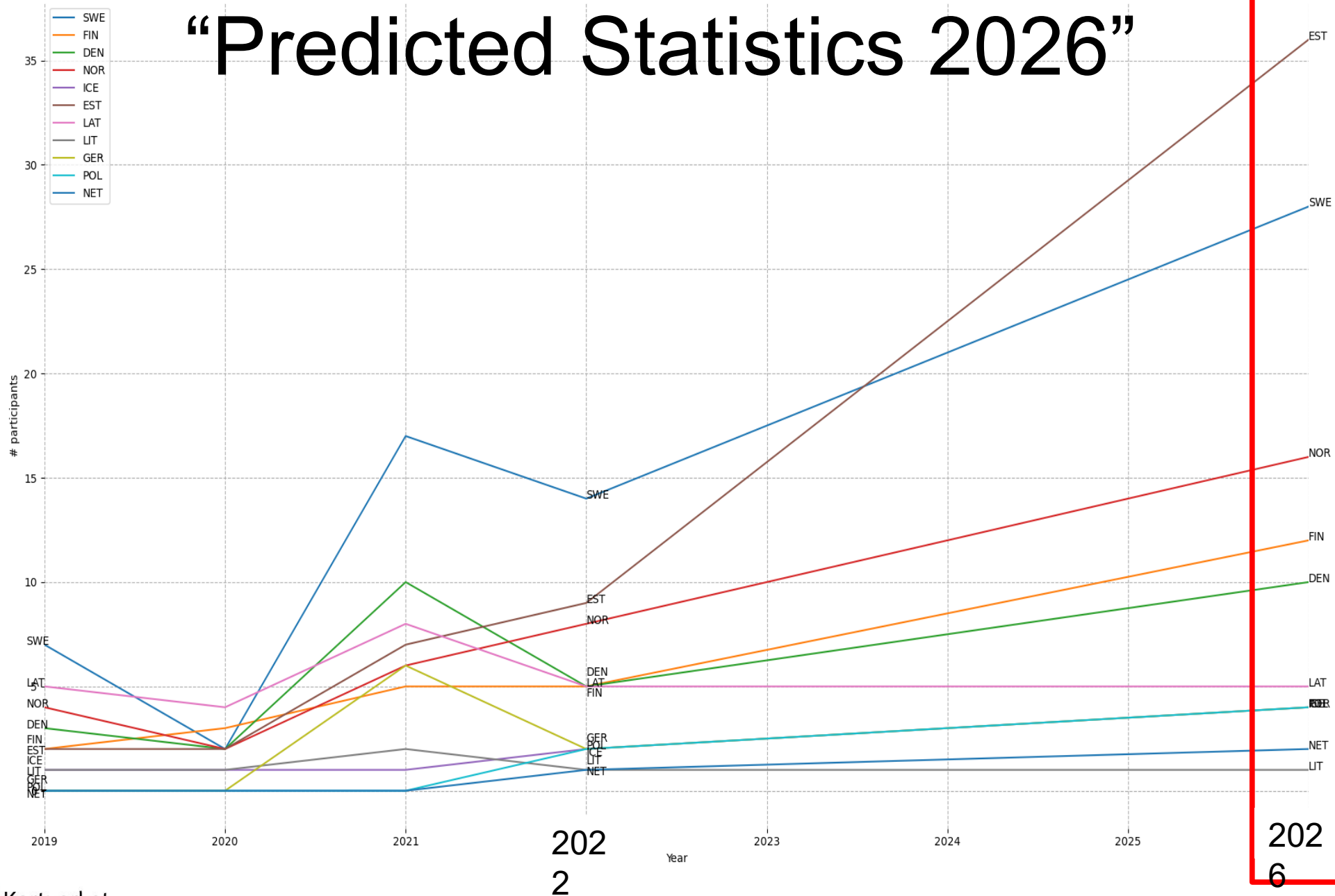
Participants

2019	2022
25	54

Countries

2019	2022
8	11

“Predicted Statistics 2026”



Participants

2019	2022	2026
25	54	116

Countries

2019	2022	2026
8	11	15

The most important is you ...

Anders Alfredsson
Armands Celms
Chrishan Fonseka
Eirik Mysen
Farzad Mostafavi
Guðmundur Valsson
Indika Prasanna
Janis Kaminskis
Jonas Ågren
Katerina Morozova
Kristian Keller
Ludwig Schröder
Majbritt Sörensen
May Ritt V Pedersen
Nicole Depeche
Örjan Josefsson
Rebekka Steffen
Simonas Valotka
Tim Enzelberger
Vahidreza Jahanmard
Vents Zuševics

Andreas Engfeldt
Artu Ellmann
Diana Haritonova
Erik Lysdal
Fredrik Dahlström
Hergeir Teitsson
Jaakko Mäkinen
Jānis Sakne
Juergen Mueller
Kristian Breili
Linda Alm
Maaria Nordman
Markku Poutanen
Mirjam Bilker-Koivula
Nureldin Gido
Ove Omang
Rene Forsberg
Tarmo Kall
Tong Ning
Vegard Ophaug
Viesturs Sprogis

Andres Rüdja
Aslak Meister
Eimuntas Parseliunas
Famaraz Nilfouroushan
Gabriel Strykowski
Holger Steffen
Jaanus Metsar
Joachim Schwabe
Karin Kollo
Kristian Evers
Lubova Šuļakova
Madara Znotiņa
Matt Simpson
Mohammad Bagherbandi
Olav Vestøl
Per-Anders Olsson
Sander Varbla
Thomas Knudsen
Tõnis Oja
Veikko Saaranen

Ksenija Kosenka
Ivars Liepins
Jānis Kokins
Vytautas Puškorius
Dagny Lysaker
Halfdan Pascal Kierulf
Tim Jensen
Per Steffen
Maxime Mouyen
Hadi Amin
Jesse Reusen
Tobias Nilsson
Joanna Balasis-Levinsen
John Dehls
Jyri Näränen
Lukas Ruesch
Majid Mostafavi
Małgorzata Szelachowska
Oliver Stimmer
Przemyslaw Dykowski
Thorarinn Sigurdsson
Yiting Cai

Welocme to Workshop in SAR and Geodesy!

Otaniemi, Finland

13.-14.3.2023

More information coming through
email later.

Working group meetings of GEO and
HG after the workshop.

