



# Decimeter differences in water level between 26GHz and 80GHz radars

NSHC TWG 27th meeting, 4-5 February 2025, Taunton, UK

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# The new stations

## Træna (okt. 23)

Improved water level model  
More knowledge ocean-coast

## Bruravik (nov. 22)

Improved water level model

## Leirvik (nov. 22)

Improved water level model

## Sandnes (nov. 21)

Test site  
Municipal needed more data

## Sirevåg (sep. 22)

Improved water level model

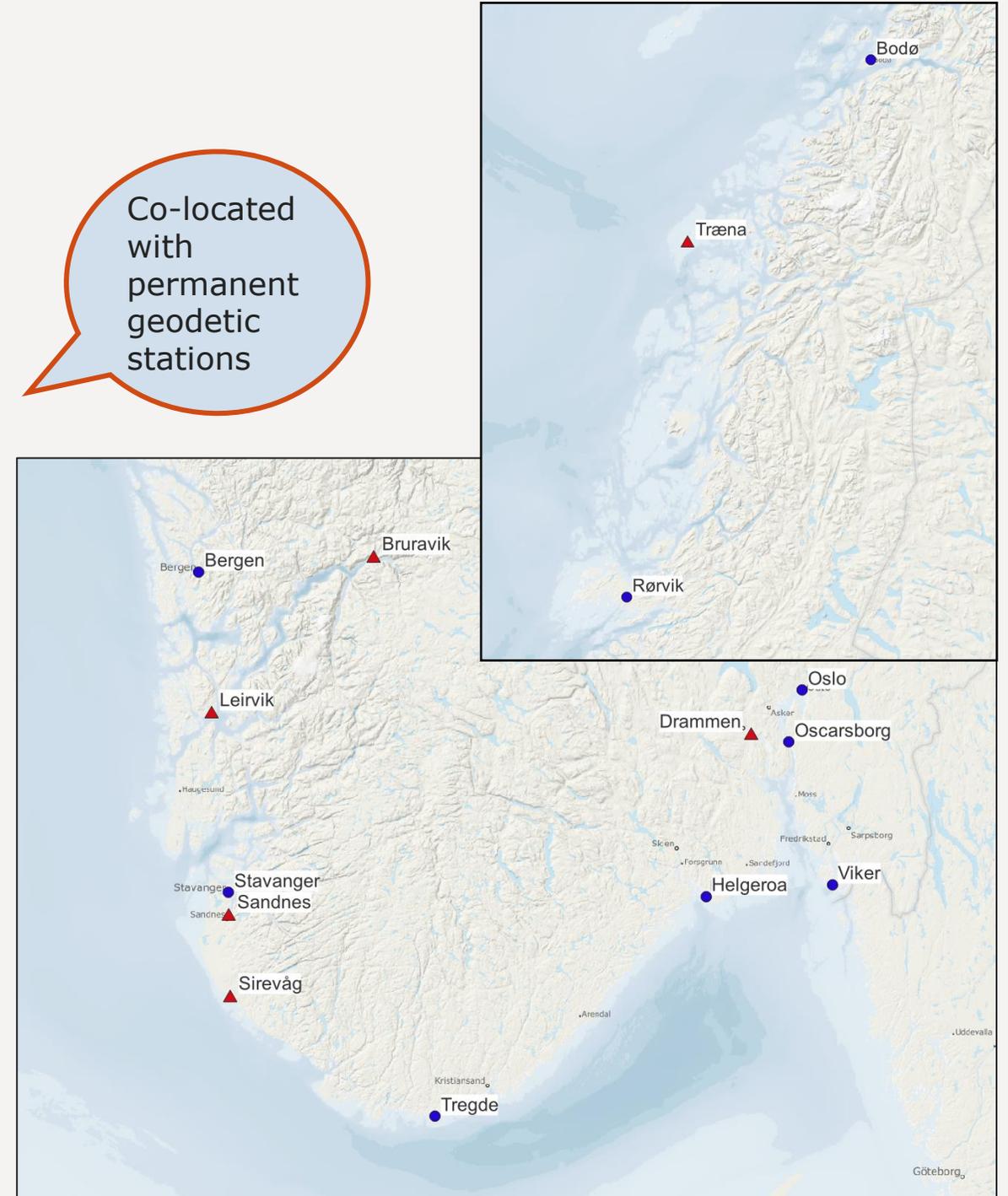
## Drammen (nov. 23/sept. 24)

Improved water level model  
Municipal needed more data

Co-located  
with  
permanent  
geodetic  
stations



Sandnes



# Radars

## Vega Vegapuls C23

- 80 GHz
- 4° beam angle



## Vega Vegapuls 61

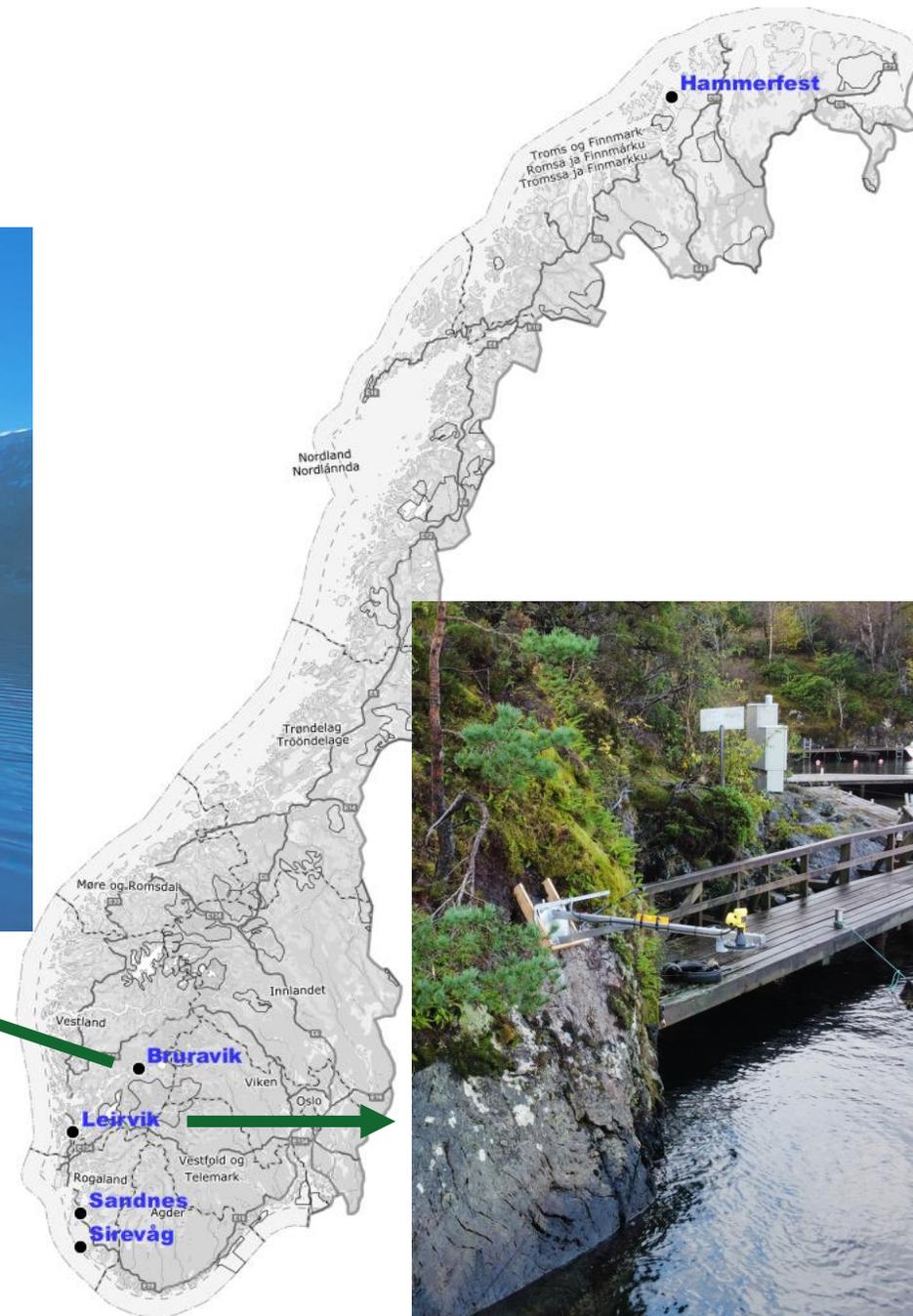
- 26 GHz
- 10° beam angle
- Flange for mounting on stilling tube



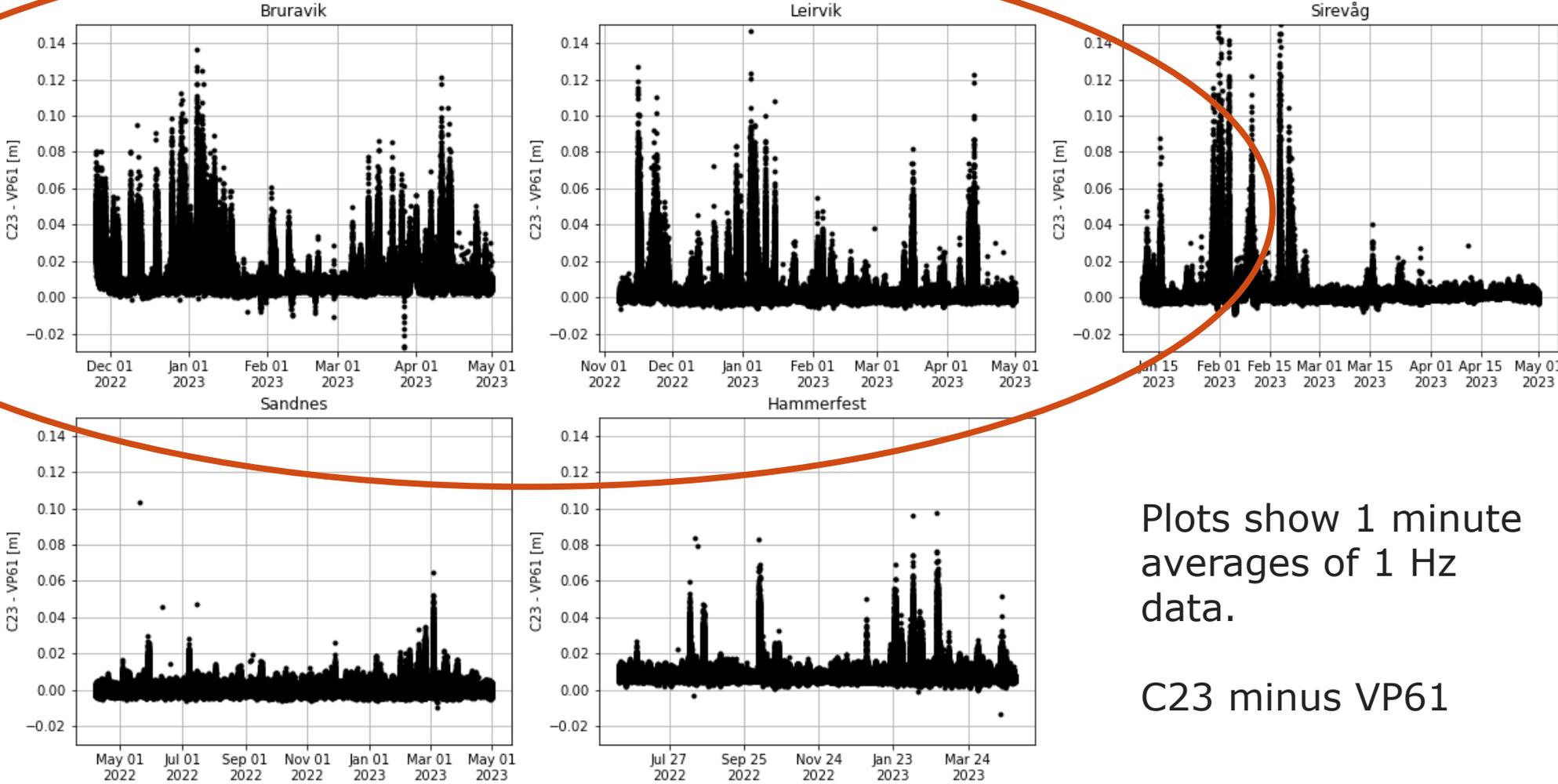
## Logging

- Radars sampled by data logger every second
- Average values saved every minute

# Stations



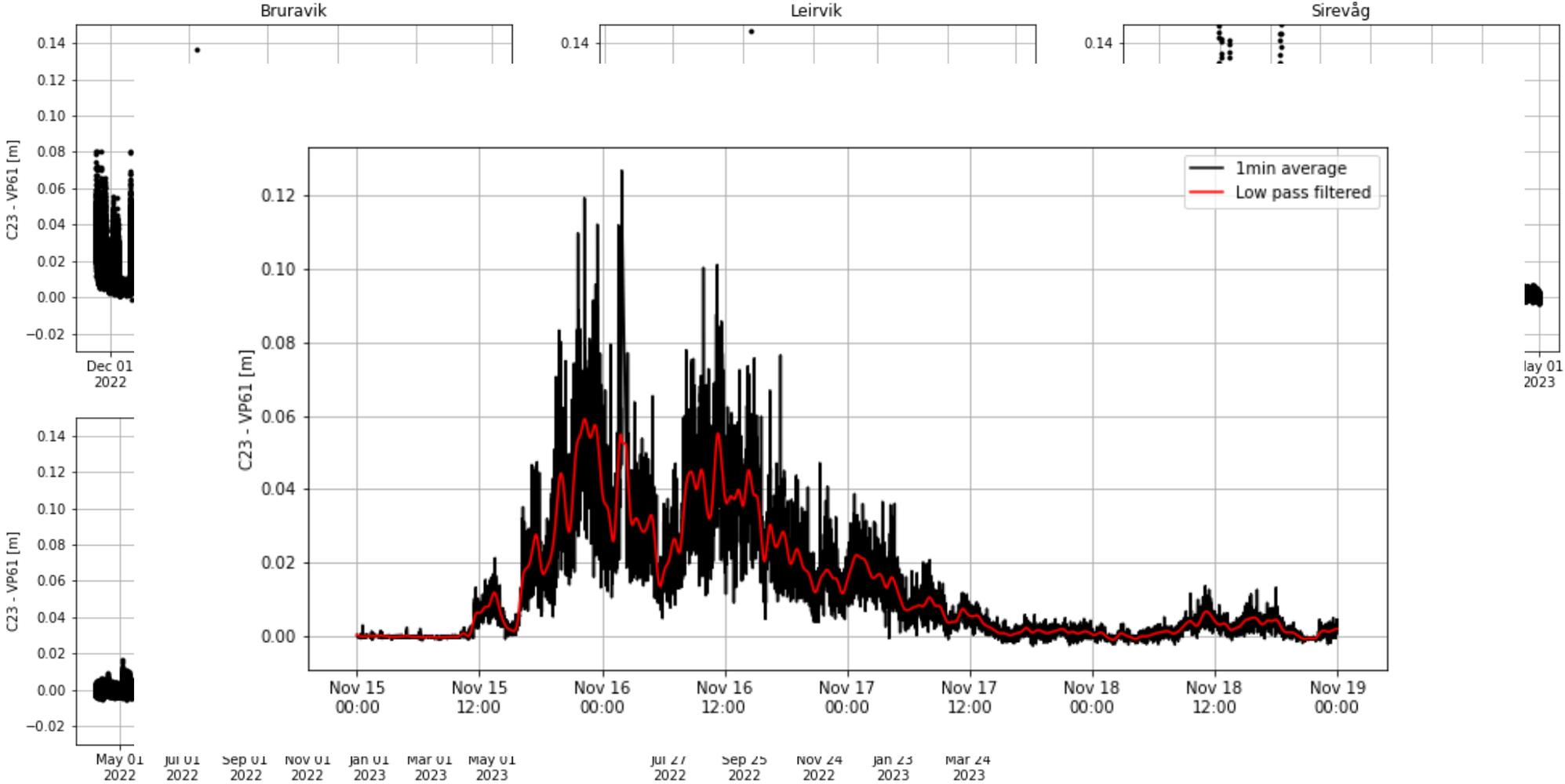
# Difference in measured water level



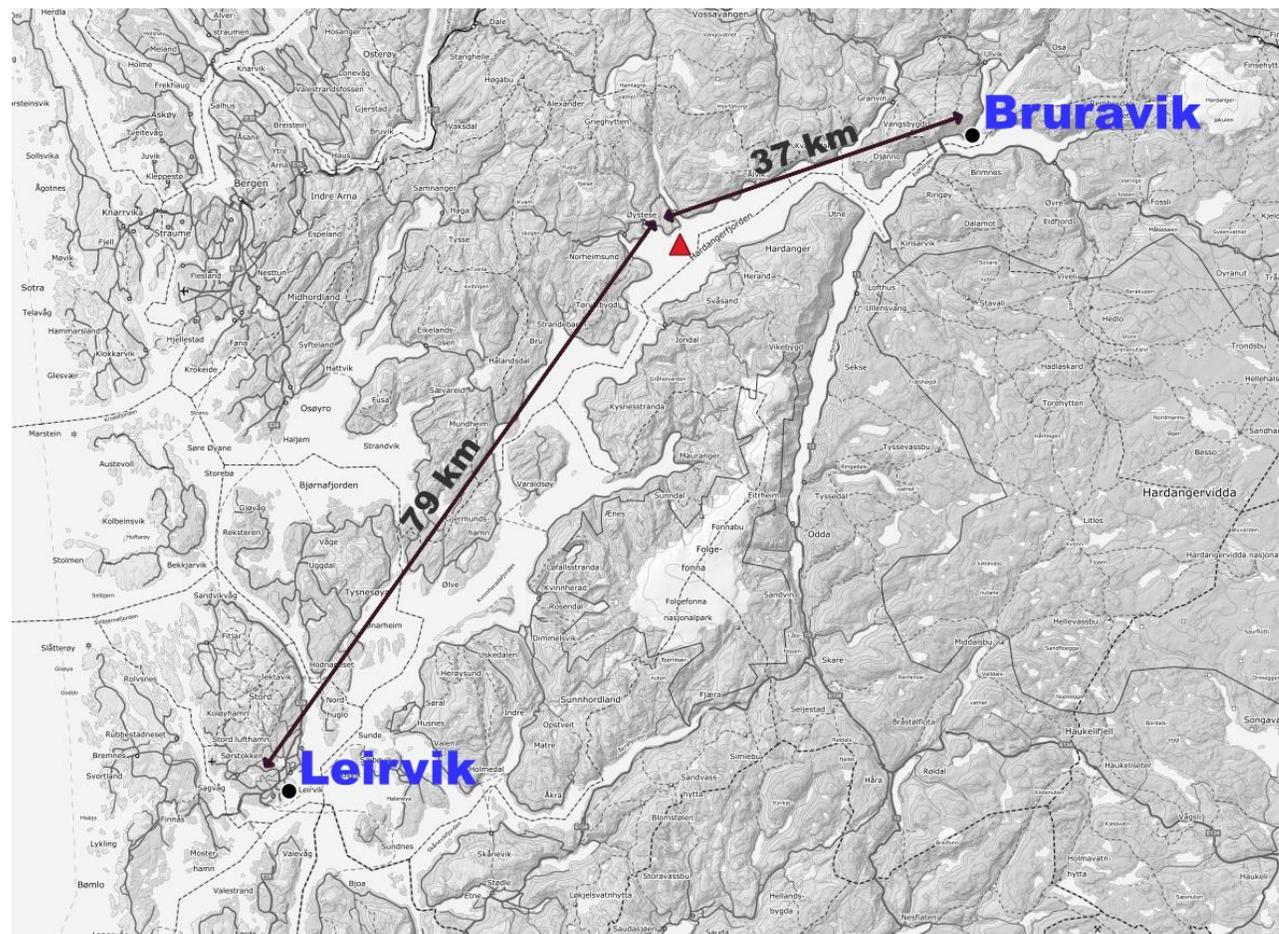
Plots show 1 minute averages of 1 Hz data.

C23 minus VP61

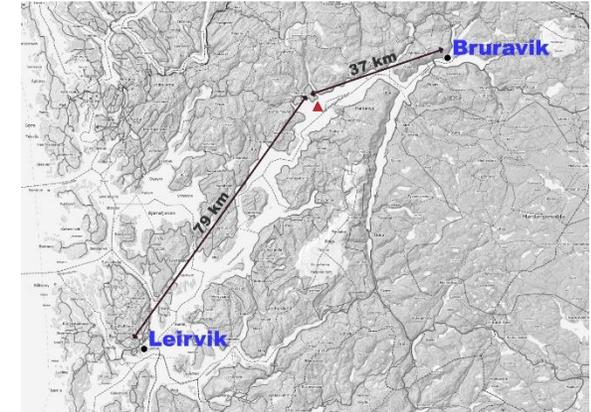
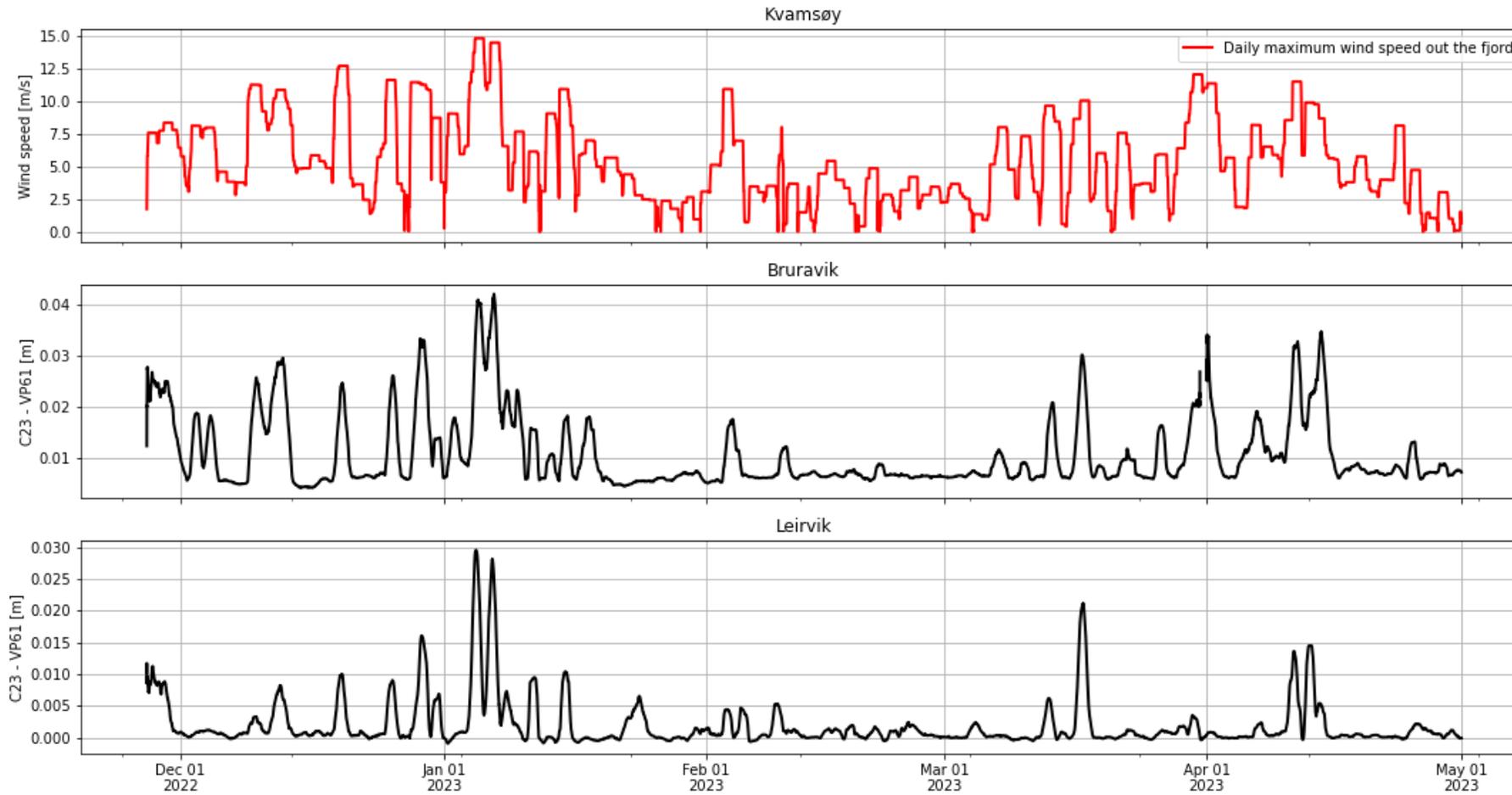
# Difference in measured water level



# Wind

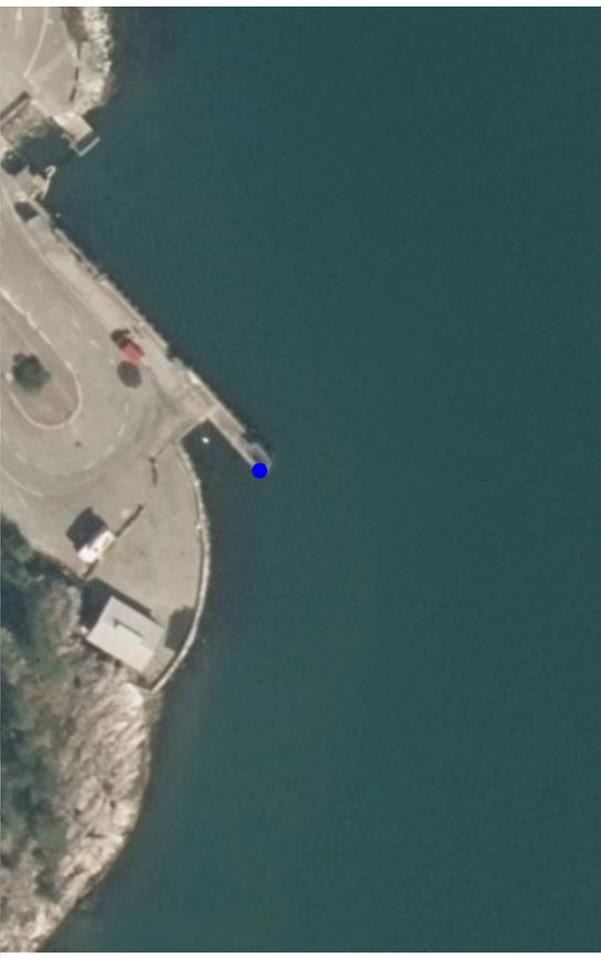


# Wind

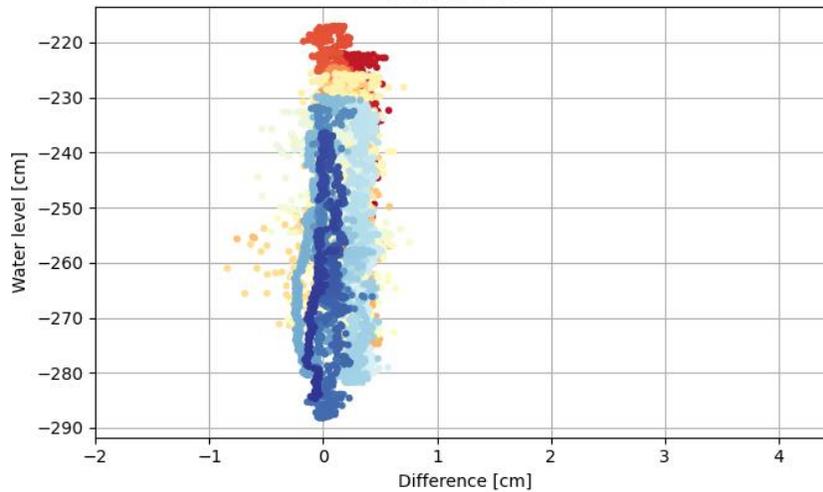
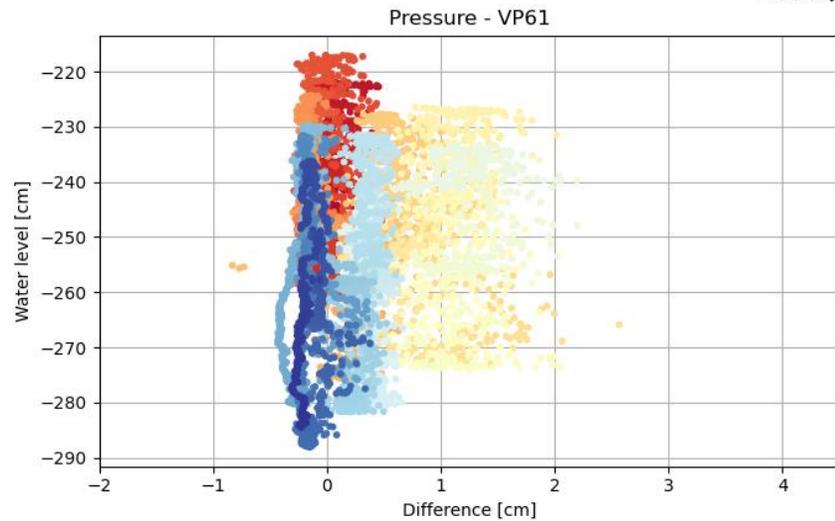
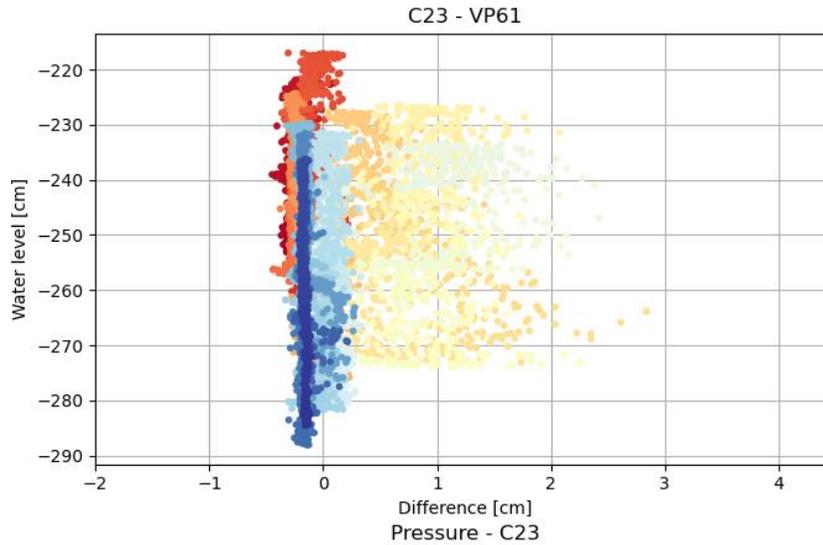
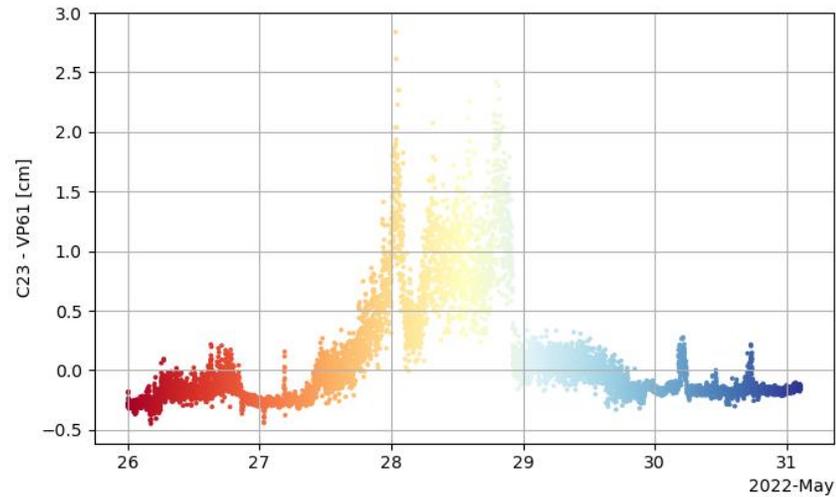


1 day running averages

# Bruravik



# Pressure sensor comparison



# Radar measurements in a pipe

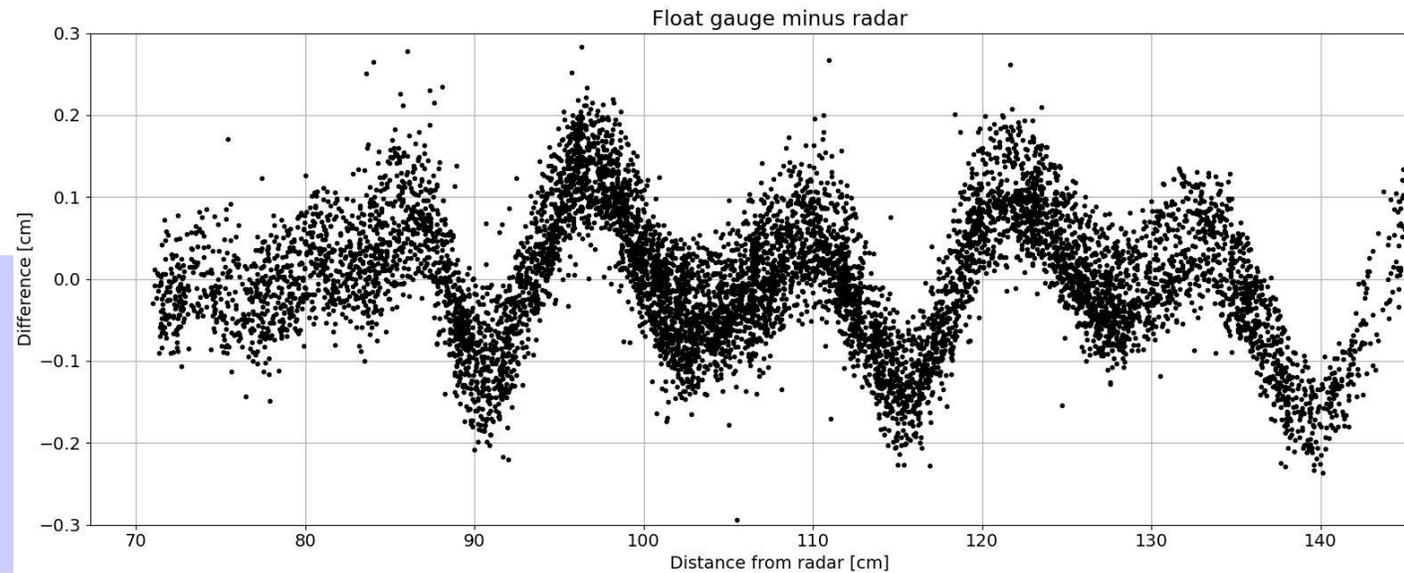
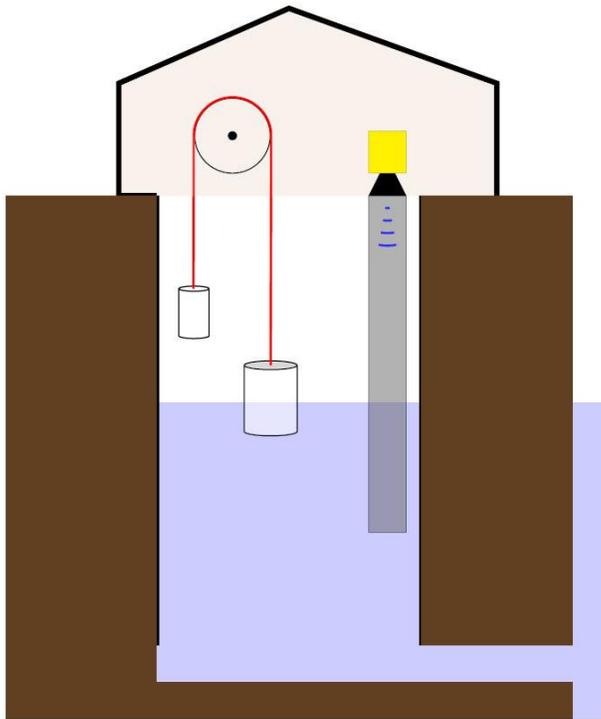


Photo from different installation



# What's next

## Vega Vegapuls C23

- 80 GHz
- 4° beam angle



## Vega Vegapuls 61

- 26 GHz
- 10° beam angle



## Geolux LX-80 10Hz

- 80 GHz
- 5° beam angle



## OTT RLS

- 24 GHz
- 5° beam angle



# What's next

## 2 Level troll pressure sensors



## Vega Vegapuls 61 in a pipe



# Summary

- Measuring water level with two different radars from Vega at each new site
- 1 min averages of 1 Hz data can differ by nearly 15 cm
- There are indications that Vegapuls 61 is the one that is adversely affected by a rough sea surface
- When measuring the water level with radar inside a pipe, interference seems to affect the measurements with a couple of millimeters
- The new test will hopefully provide us with a better basis for making informed decisions in the ongoing work to densify the permanent tide gauge network.



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