

School at Sea - Sea level experiment

Eerste Resultaten GPS en Motion Sensor

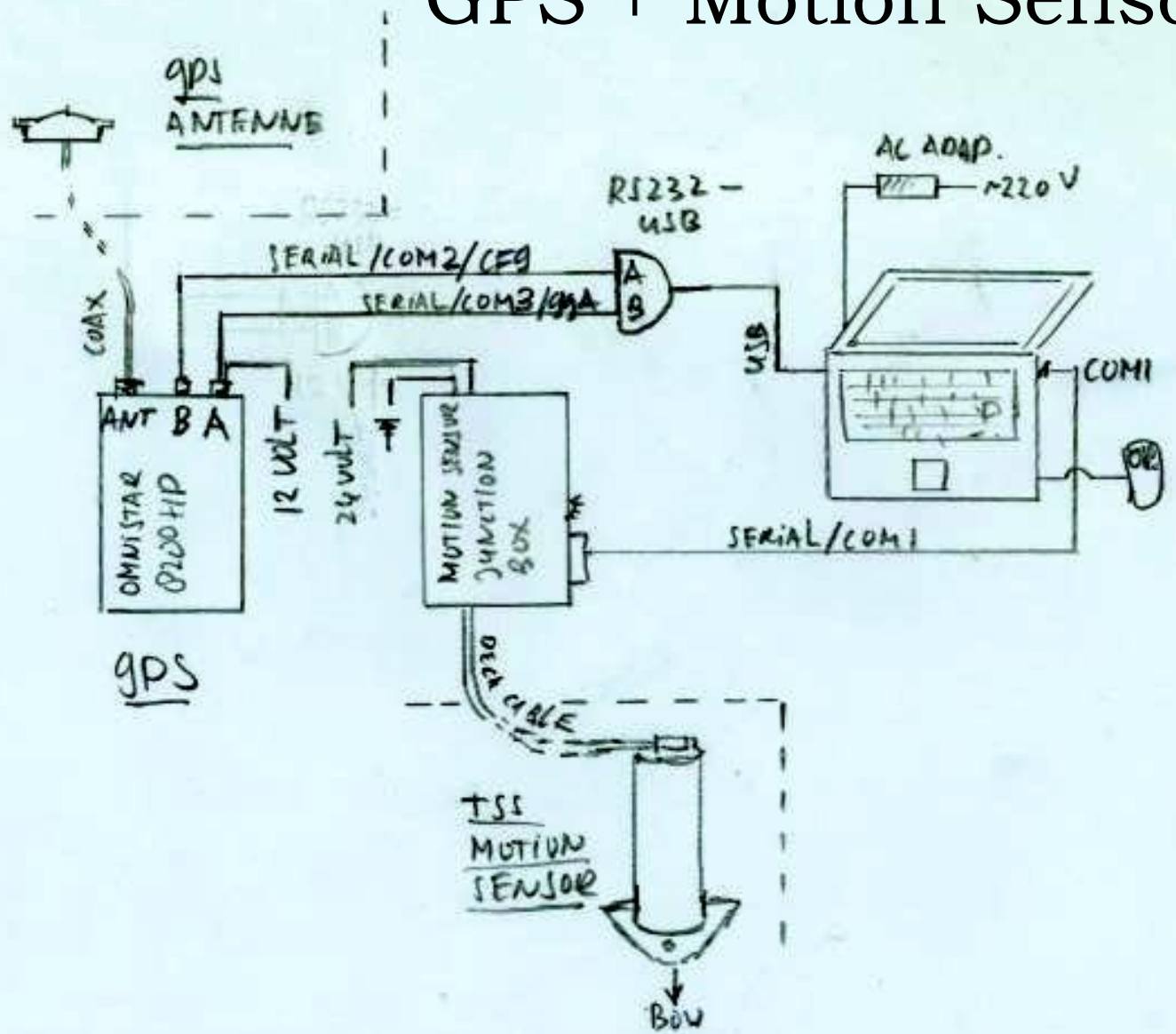
Hans van der Marel, Geoscience and Remote Sensing, CiTG

12-3-2012

S@S Sea level experiment

- Doel: meten van het zeeniveau
- Instrumenten: GPS & motion sensor
 - Omnistar XP systeem van Fugro Survey B.V.
 - GPS ontvanger met XP correcties (van geostationaire satelliet)
 - Motion Sensor (Pitch, Roll, Heave)
- Locale meting a/b Regina Maris (GPS Antenne -> zeeniveau)
- Referenties:
 - Presentatie Bert Vermeersen over Beagle II
 - Hans van der Marel, Zeeniveau Waarnemingen door School at Sea a/b Regina Maris, Versie 1.0b d.d. 24 October 2011

GPS + Motion Sensor



Ruwe metingen (1 Hz)

- GPS en Motion Sensor (Pitch, Roll, Heave) data

<http://gnss1.tudelft.nl/pub/schoolatsea/data>

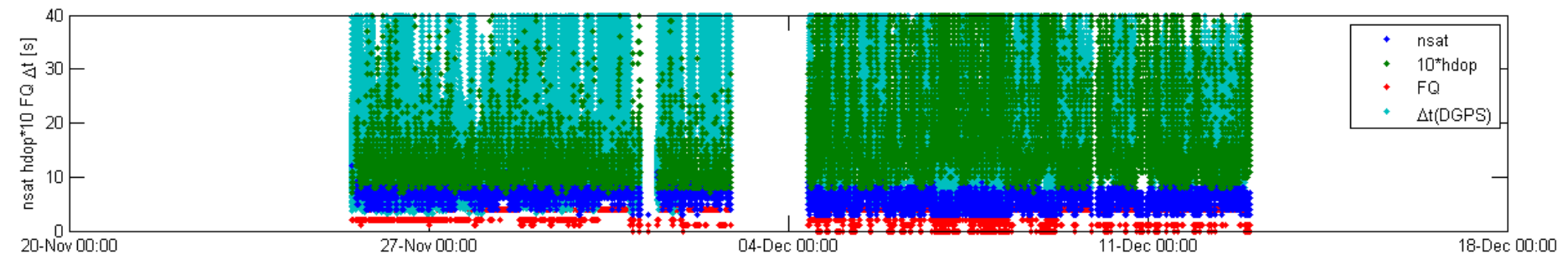
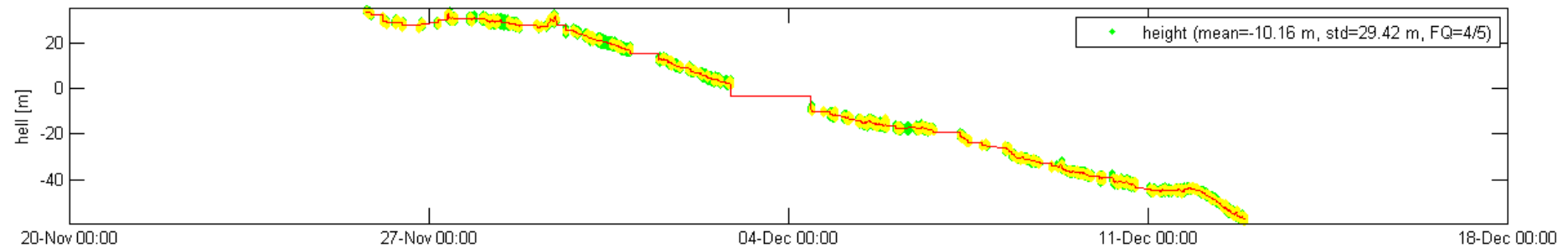
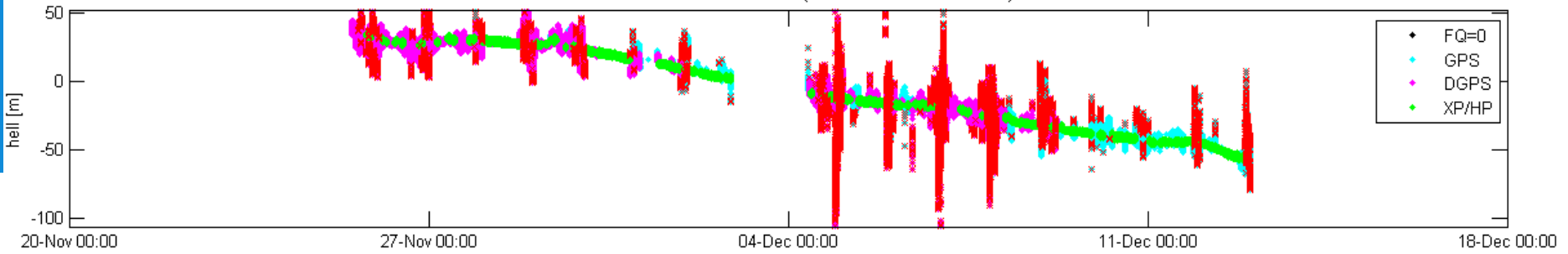
- GPS data is in het NMEA (ascii) format
- PRH (Pitch, Roll, Heave) is in ascii format

- Plots van de ruwe metingen zijn te vinden op

<http://gnss1.tudelft.nl/pub/schoolatsea/plots>

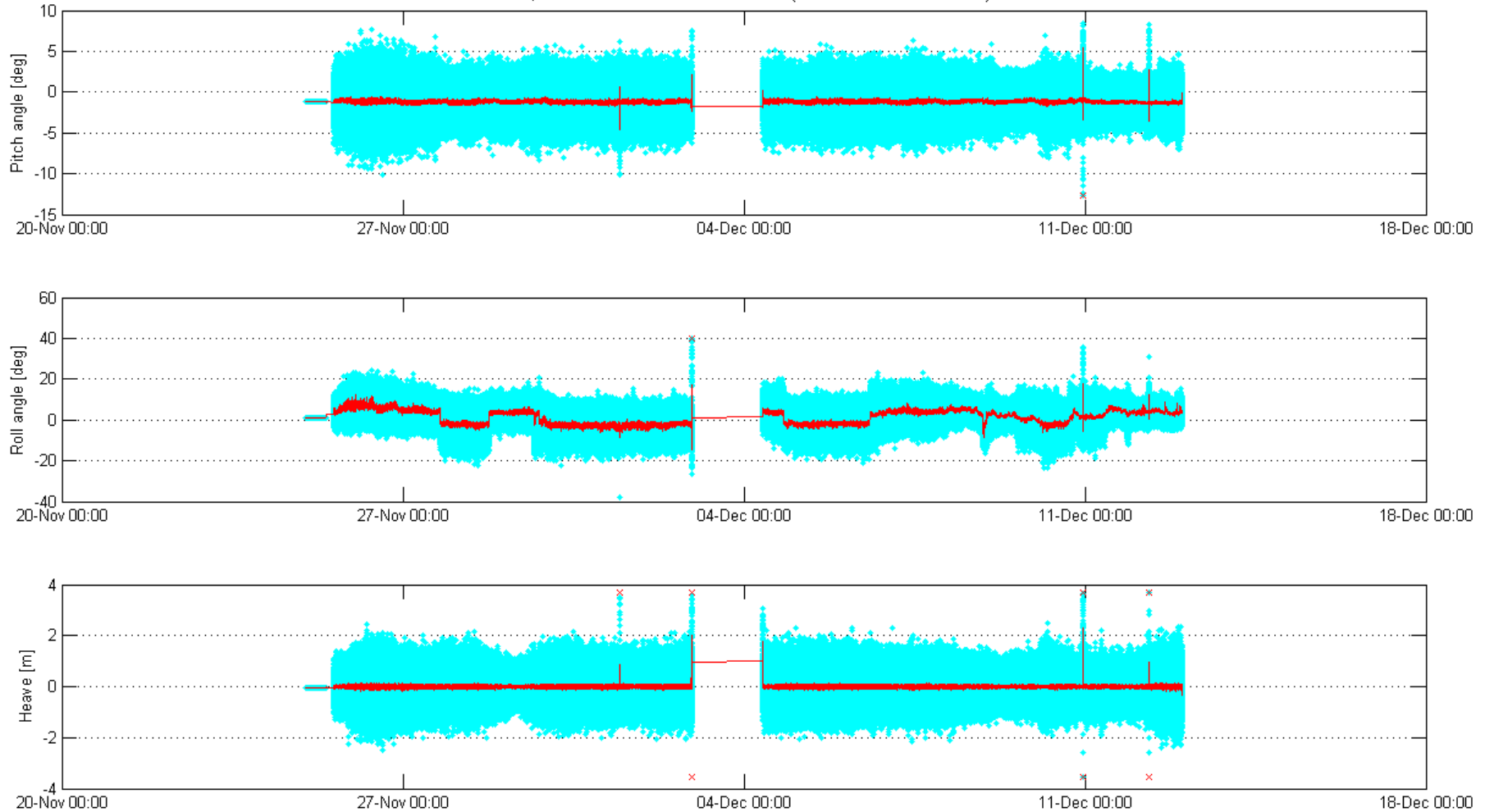
GPS Tenerife - Dominica

XP/HP GPS data School at Sea (25-Nov-2011 - 12-Dec-2011)



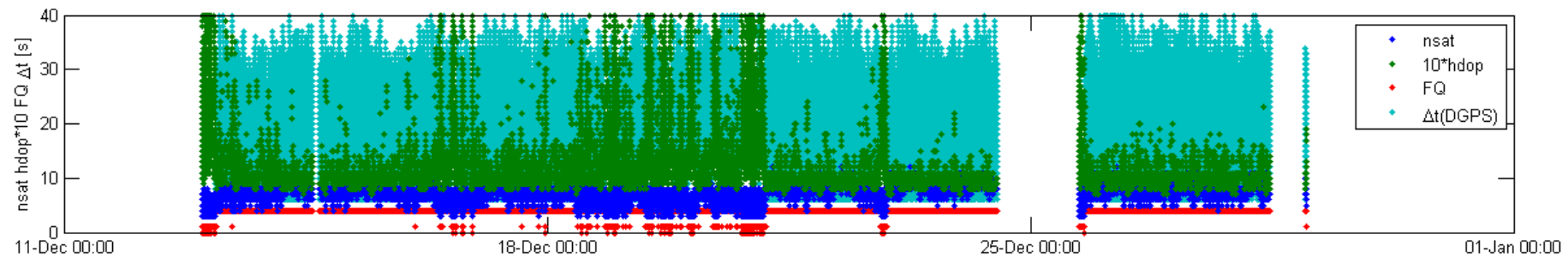
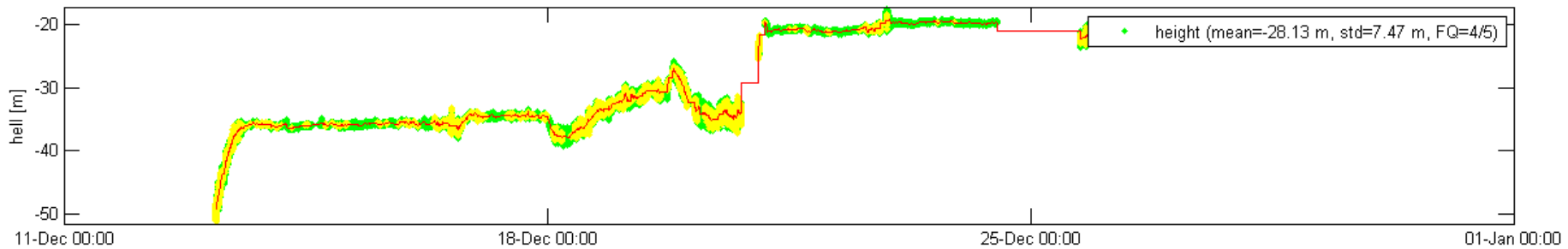
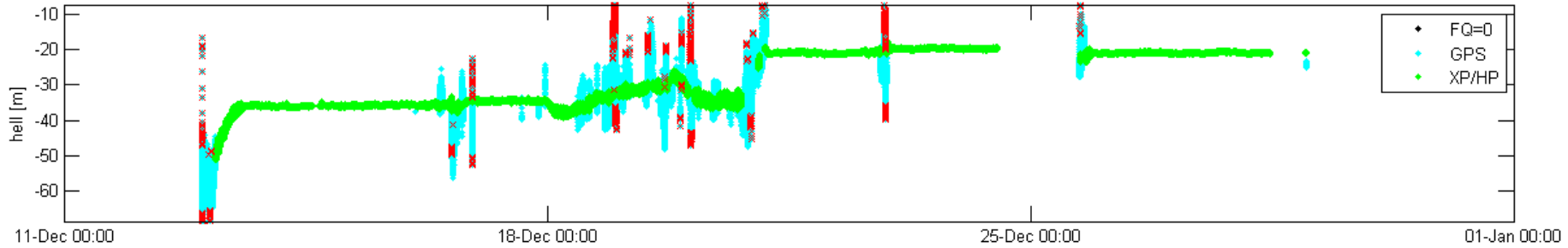
Motion Sensor Tenerife - Dominica

Pitch, Roll and Heave data School at Sea (25-Nov-2011 - 12-Dec-2011)



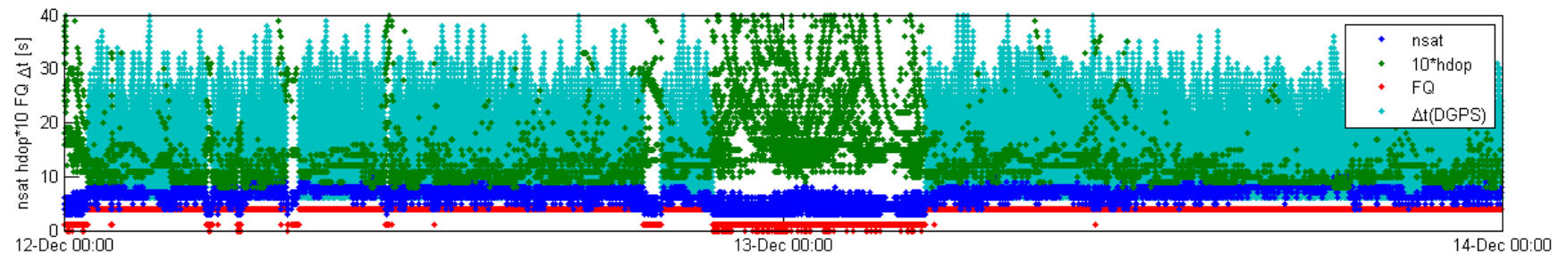
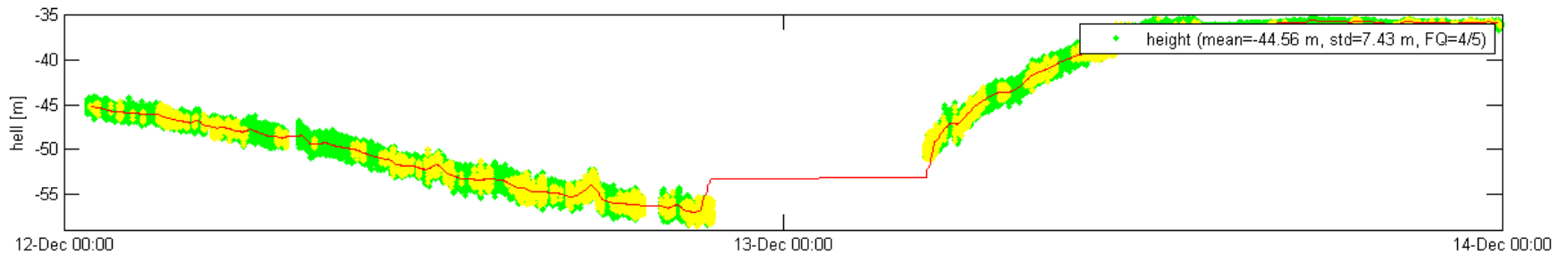
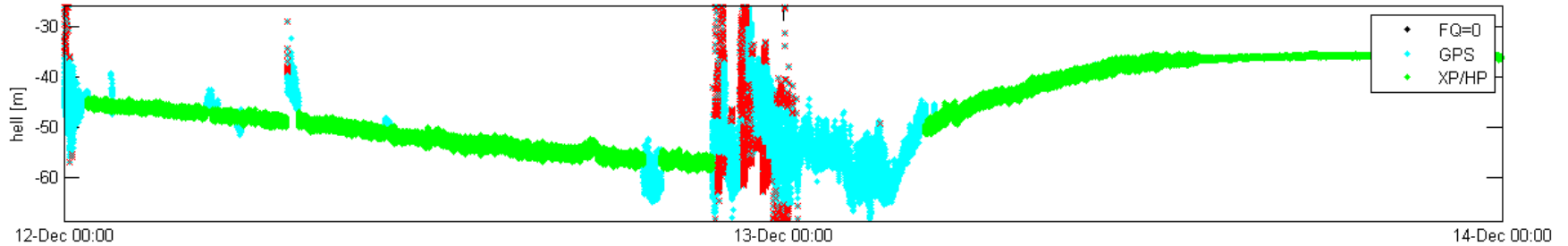
GPS Dominica - Aruba

XP/HP GPS data School at Sea (13-Dec-2011 - 28-Dec-2011)



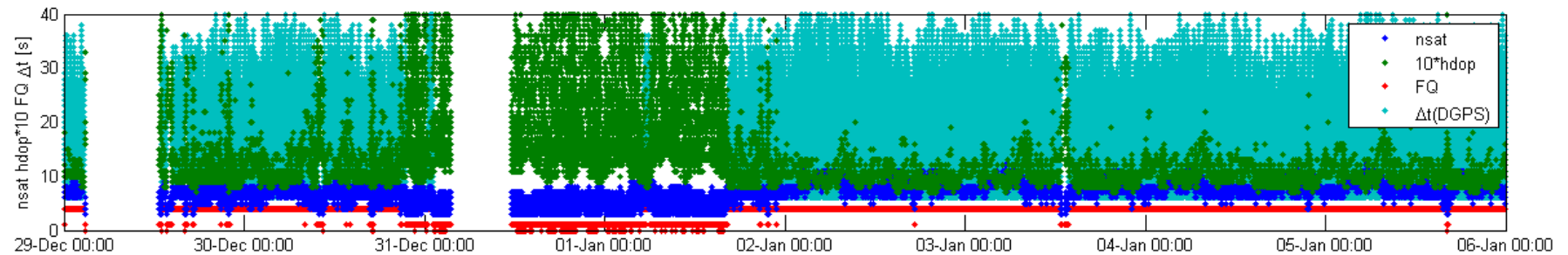
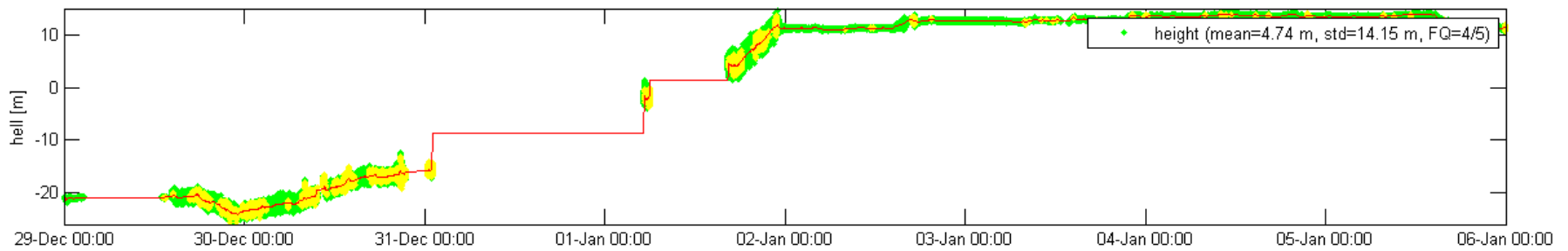
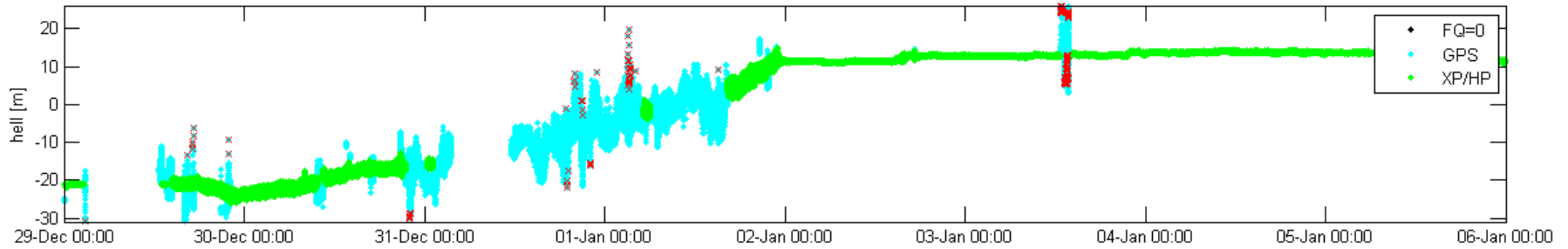
GPS 12 & 13 December (Dominica)

XP/HP GPS data School at Sea (12-Dec-2011 - 13-Dec-2011)



GPS Aruba - Panama

XP/HP GPS data School at Sea (29-Dec-2011 - 05-Jan-2012)

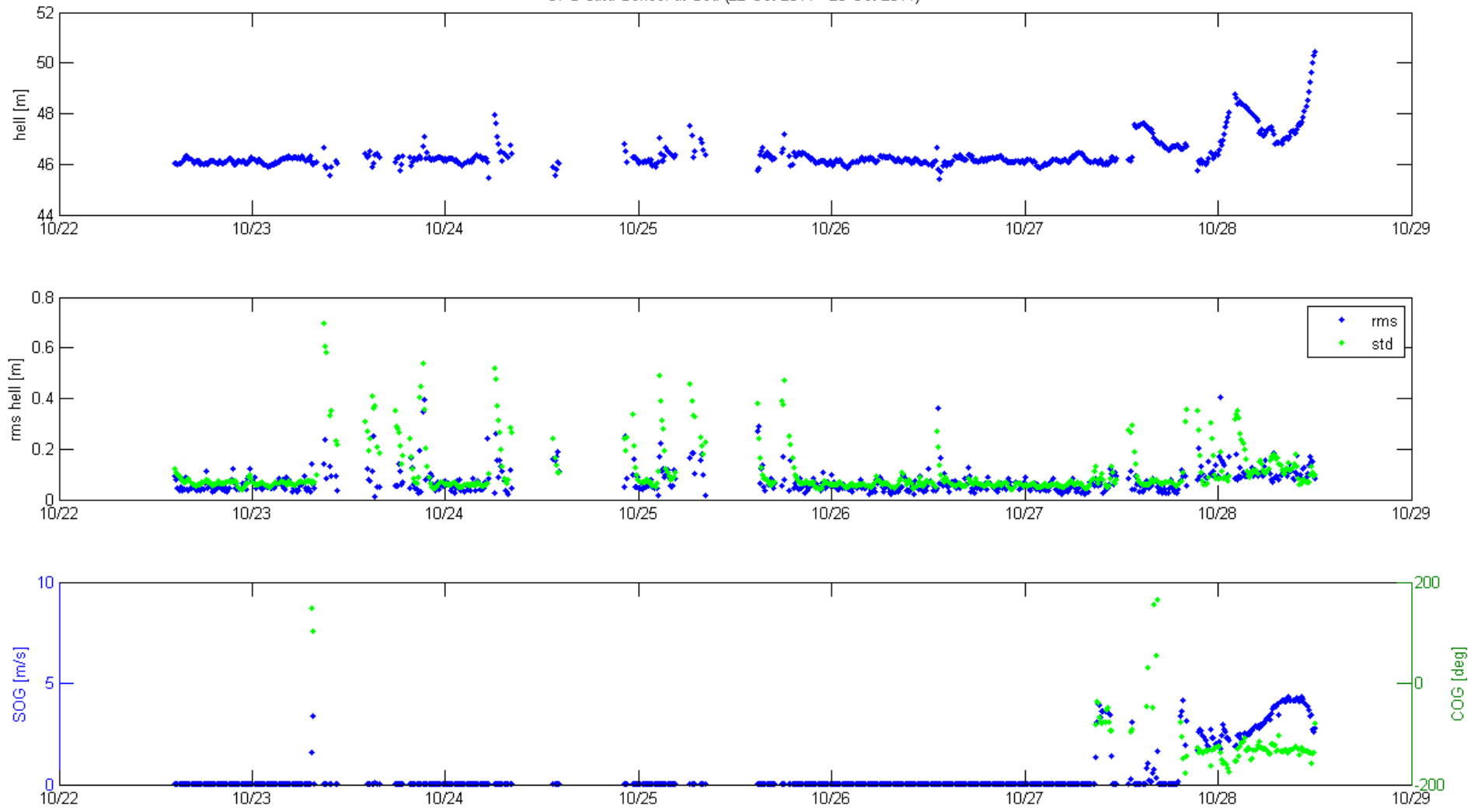


Bewerkte Metingen

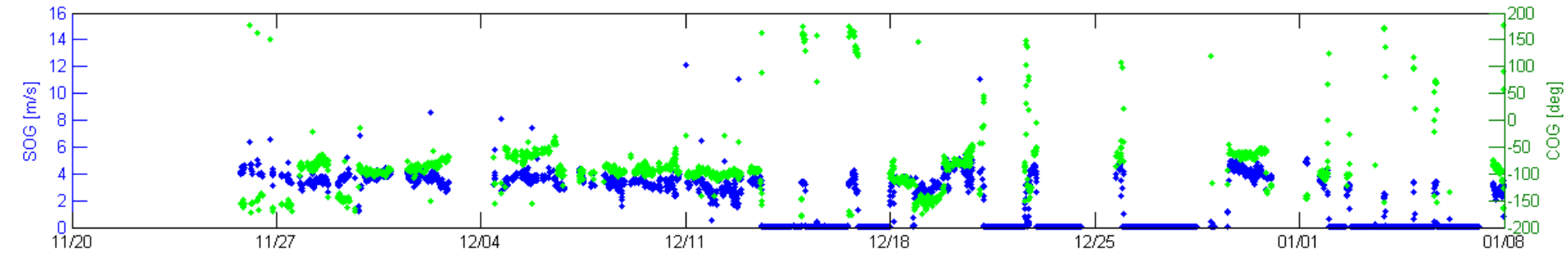
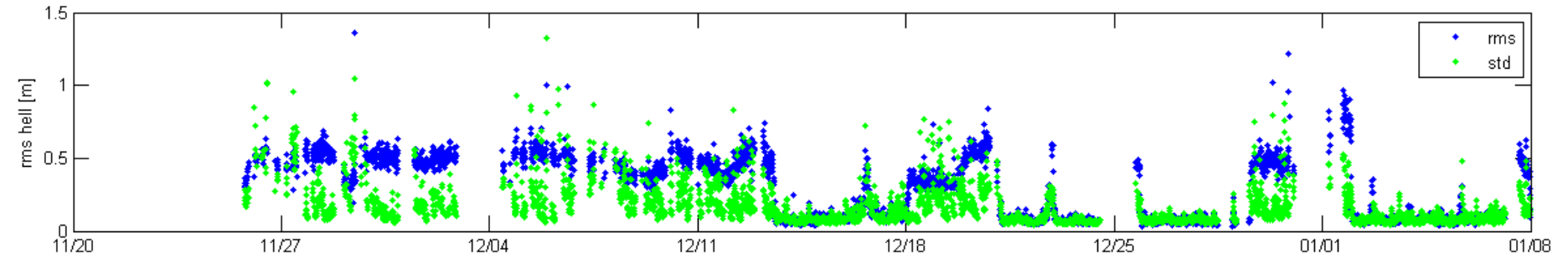
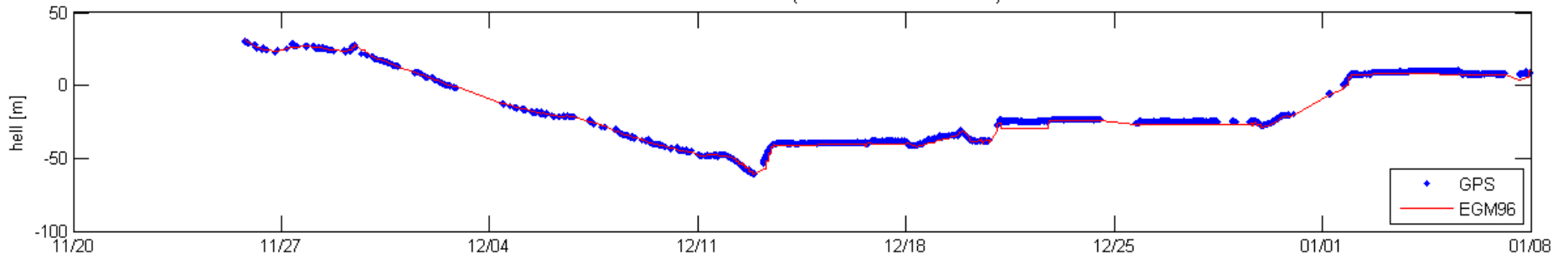
- Filter goede data
 - Alleen HP/XP oplossingen
 - HDOP < 3
 - #sat > 5
- Smooth over intervallen van 10 minuten
 - Fit 2e graads polynoom aan lengte en breedte -> positie, snelheid en koers
 - Gemiddelde hoogte en "Root-mean-Square" (RMS) van de hoogte
 - Gemiddelde standard afwijking van de hoogte (uit GPS)
 - Gemiddelde en RMS van de helling
- Beschikbaar als excel bestand (spreadsheet)

Correctie voor helling moet nog worden toegepast. Opdracht?

GPS data School at Sea (22-Oct-2011 - 28-Oct-2011)

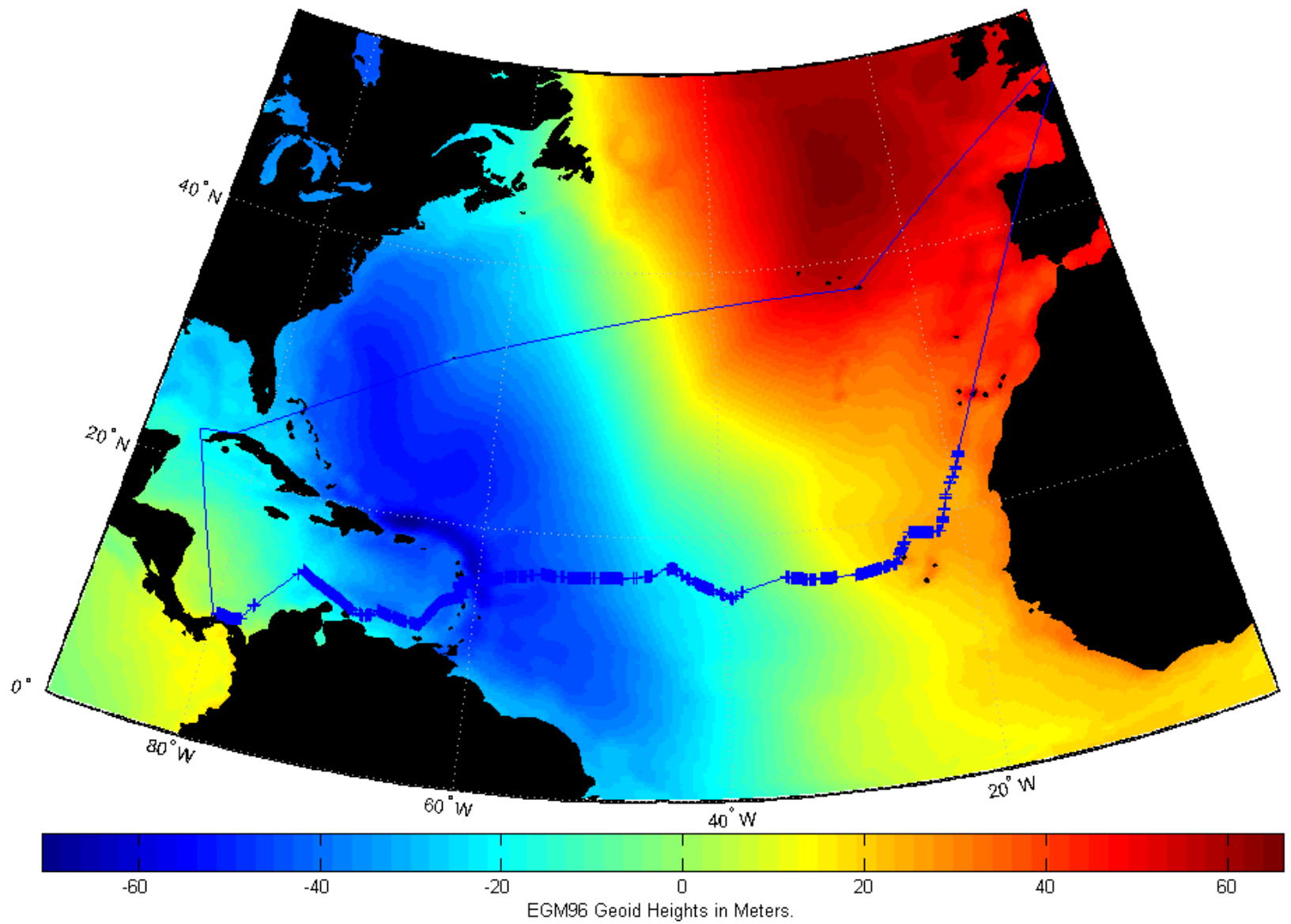


GPS data School at Sea (25-Nov-2011 - 07-Jan-2012)

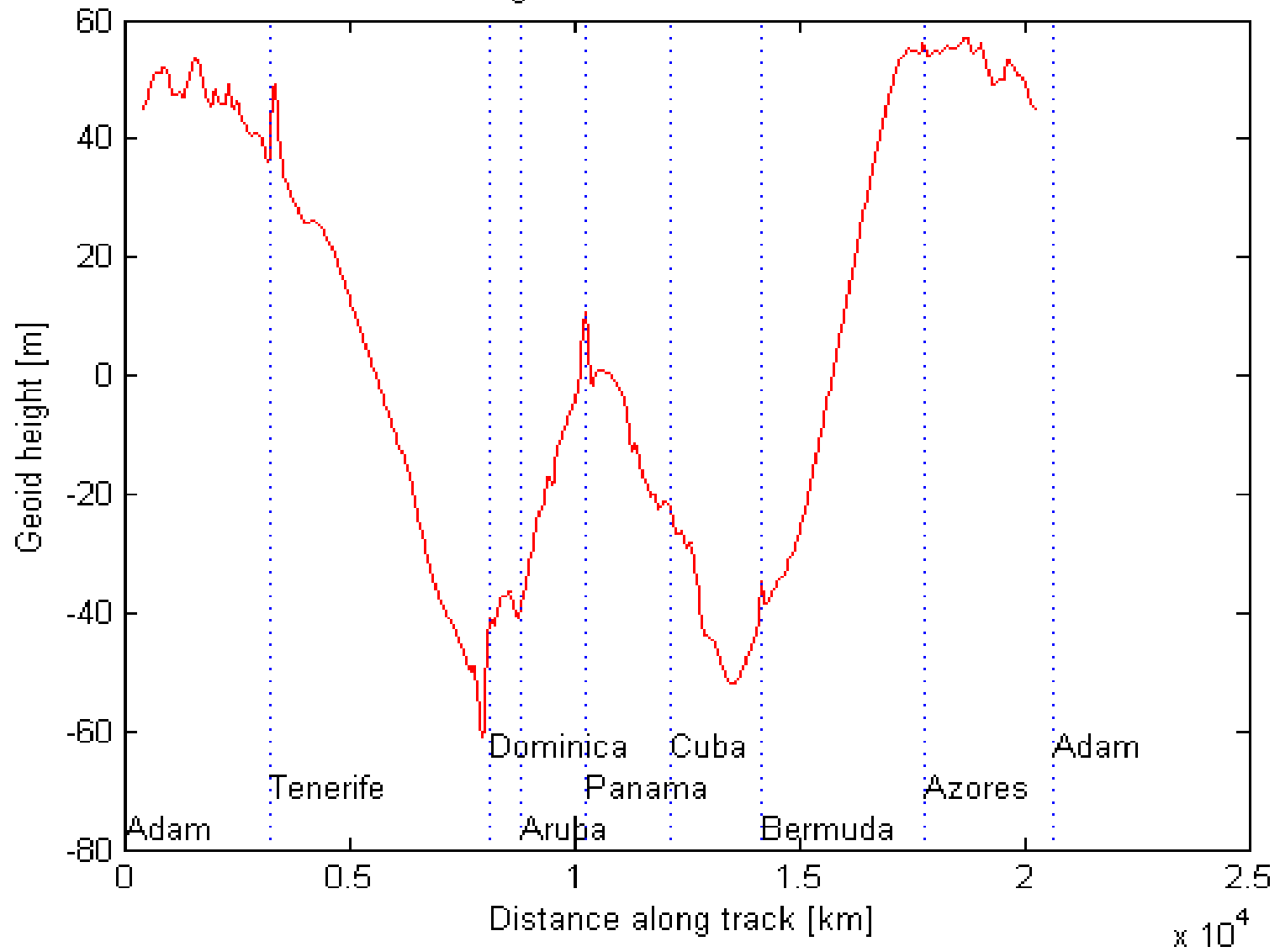


Wat kunnen we verwachten?

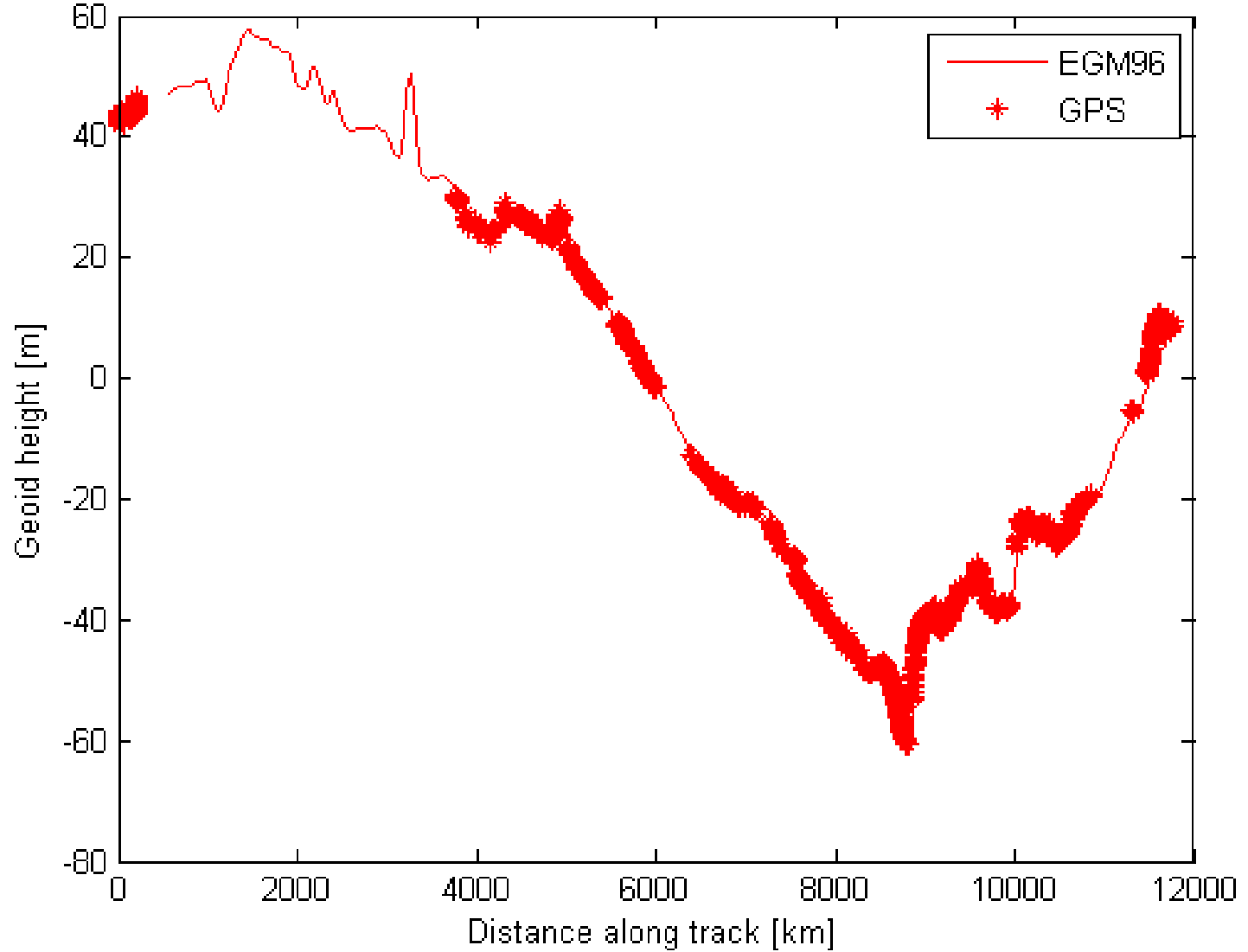
- Zie ook:
 - Presentatie Bert Vermeersen over Beagle II
 - Hans van der Marel, Zeeniveau Waarnemingen door School at Sea a/b Regina Maris, Versie 1.0b d.d. 24 October 2011
- Met eerste resultaten



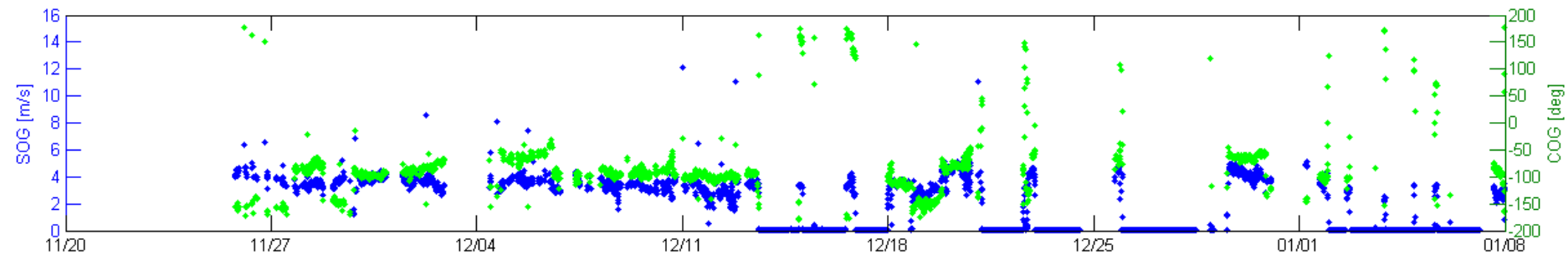
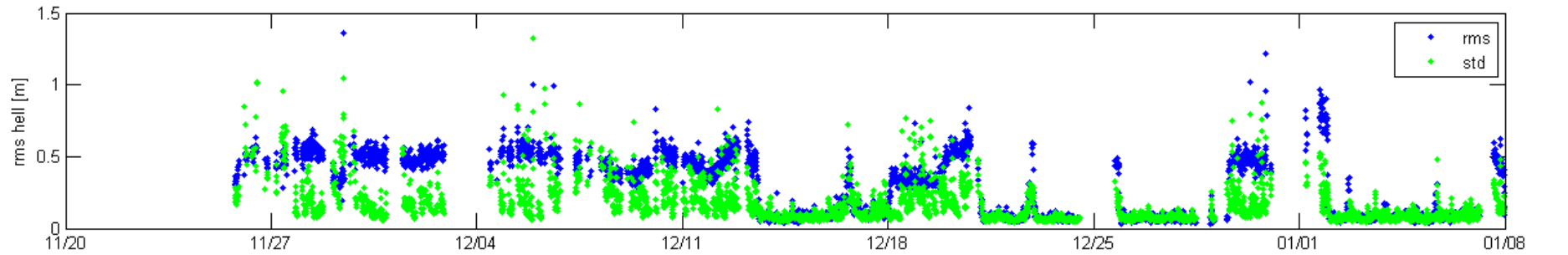
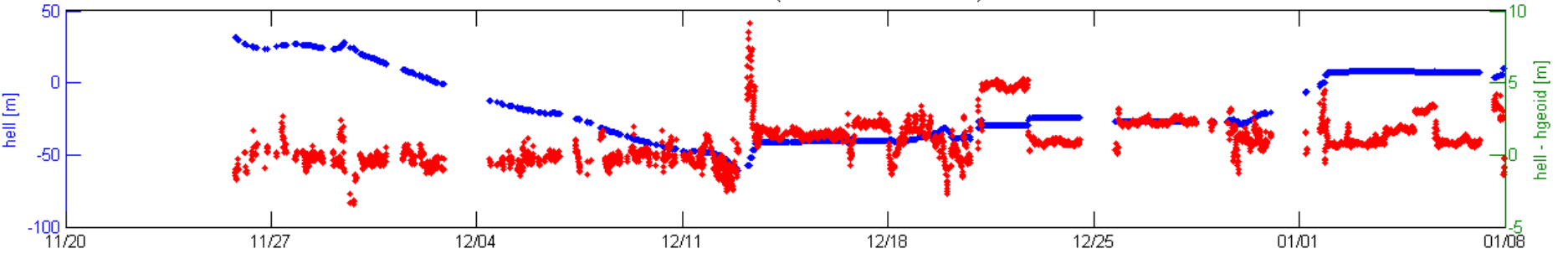
EGM Geoid Heights Amsterdam-Carribean-Amsterdam



GPS and EGM Geoid Heights Amsterdam-Carribean-Amsterdam



GPS data School at Sea (25-Nov-2011 - 07-Jan-2012)

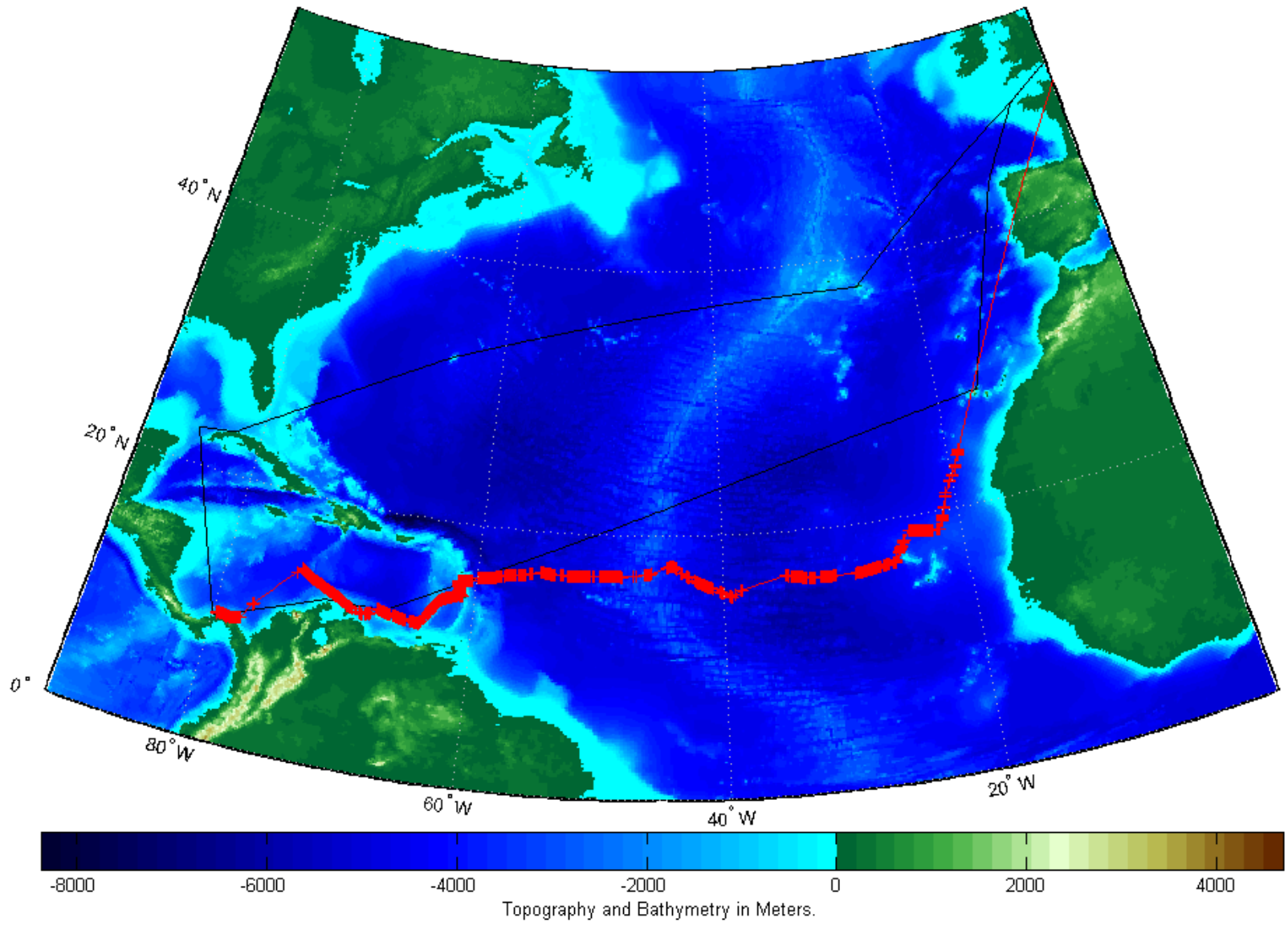


Conclusies

- Eerste resultaten zijn veelbelovend
- Technische problemen tgv interferentie korte golf radio
- Correctie voor helling schip moet nog worden toegepast

Opdracht: Bedenk hoe deze correctie moet worden uitgevoerd en test deze uit op een deel van de data

- Interpretatie van de resultaten moet nog worden gedaan



ETOPO5 Ocean Bathymetry Amsterdam-Caribbean-Amsterdam

