



# SWEDISH MARINE GRAVITY MEASUREMENTS, 2019

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LANTMÄTERIET

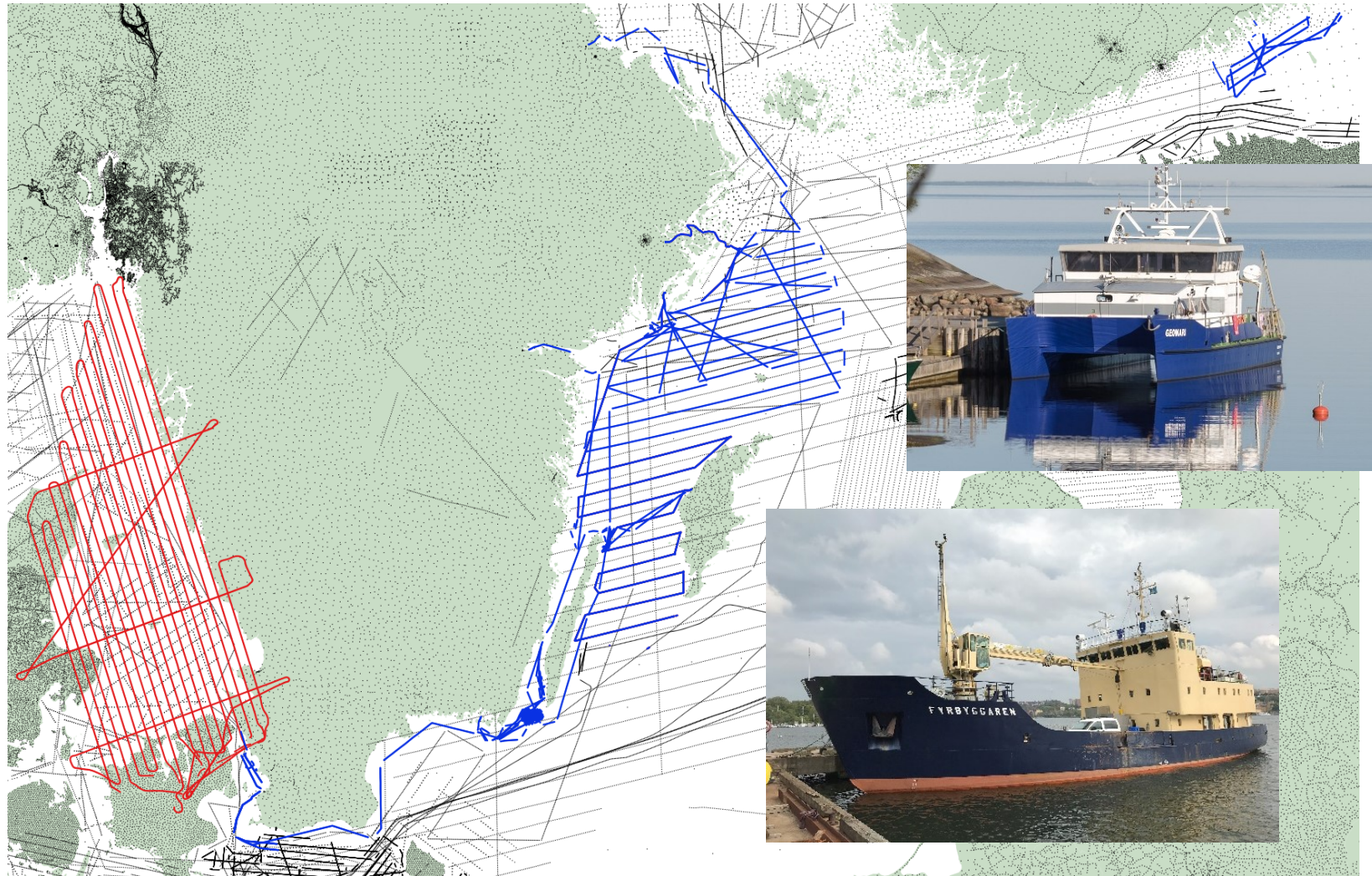


# BACKGROUND

- ZLS-D13, purchased 2017
- Co-financed by FAMOS (EU)
- Purpose: complement and check old gravity data in the Baltic Sea
- Piggyback and/or dedicated campaigns
- Preliminary results!

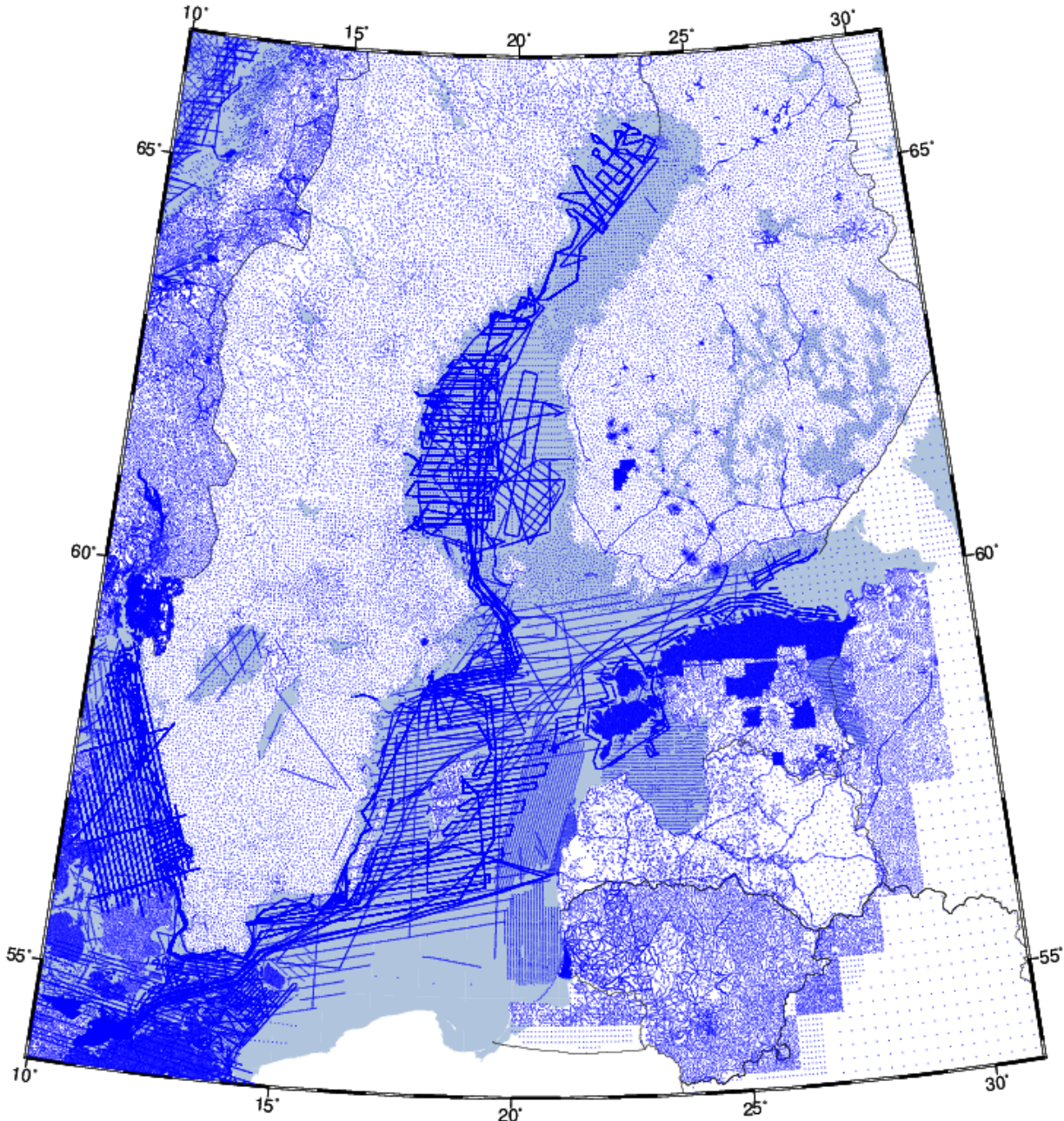


# CAMPAIGNS 2017-2018



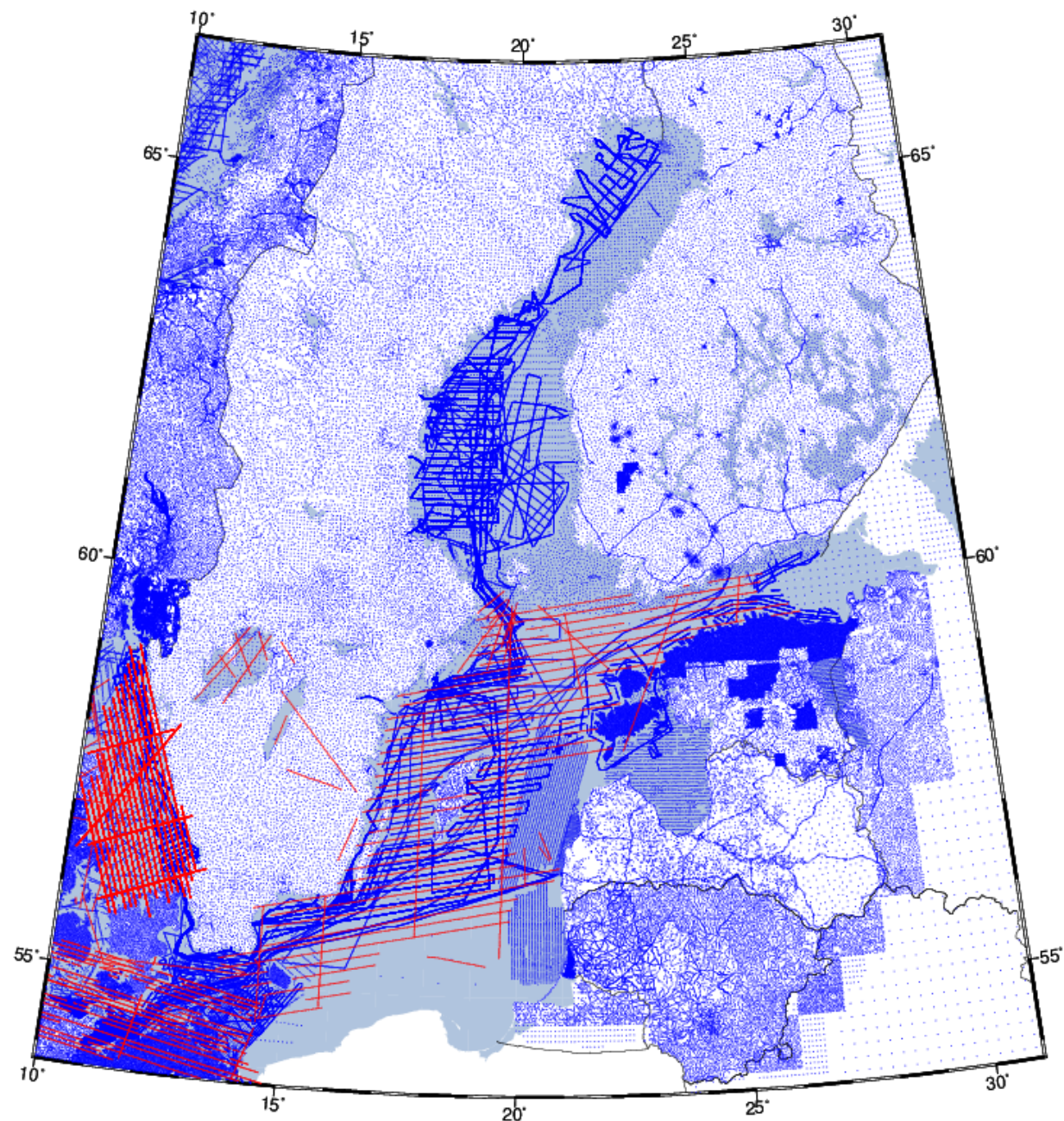
# STATUS

Status\_2019-09-10



# STATUS

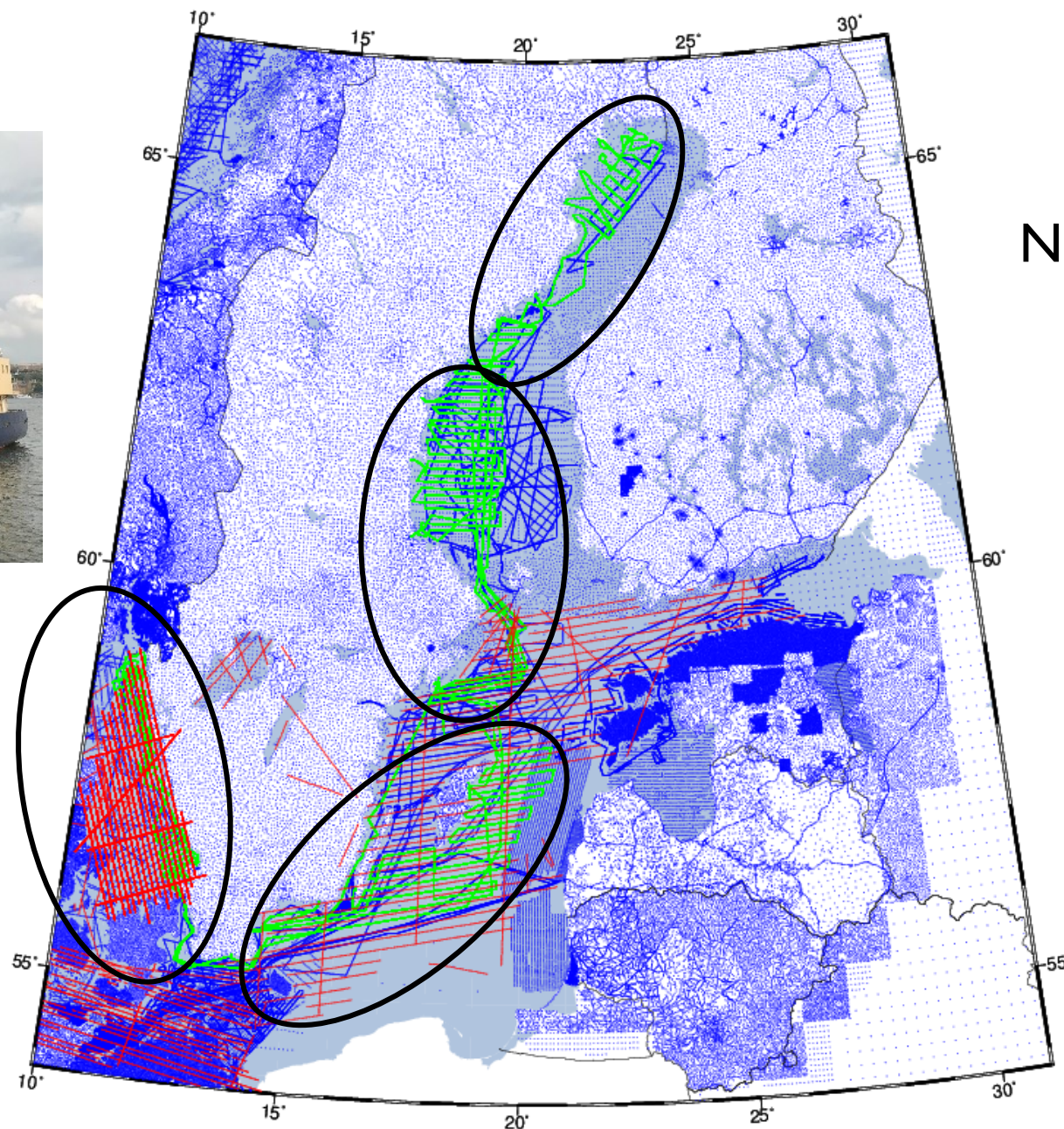
Status\_2019-09-10



# STATUS



West



North

Middle

South

# SOUTH

Date: June 07-16

Harbour ties:

- Muskö
- Slite
- Degerhamn
- Karlskrona
- Slite
- Muskö

Internal cross-overs

Number : 26

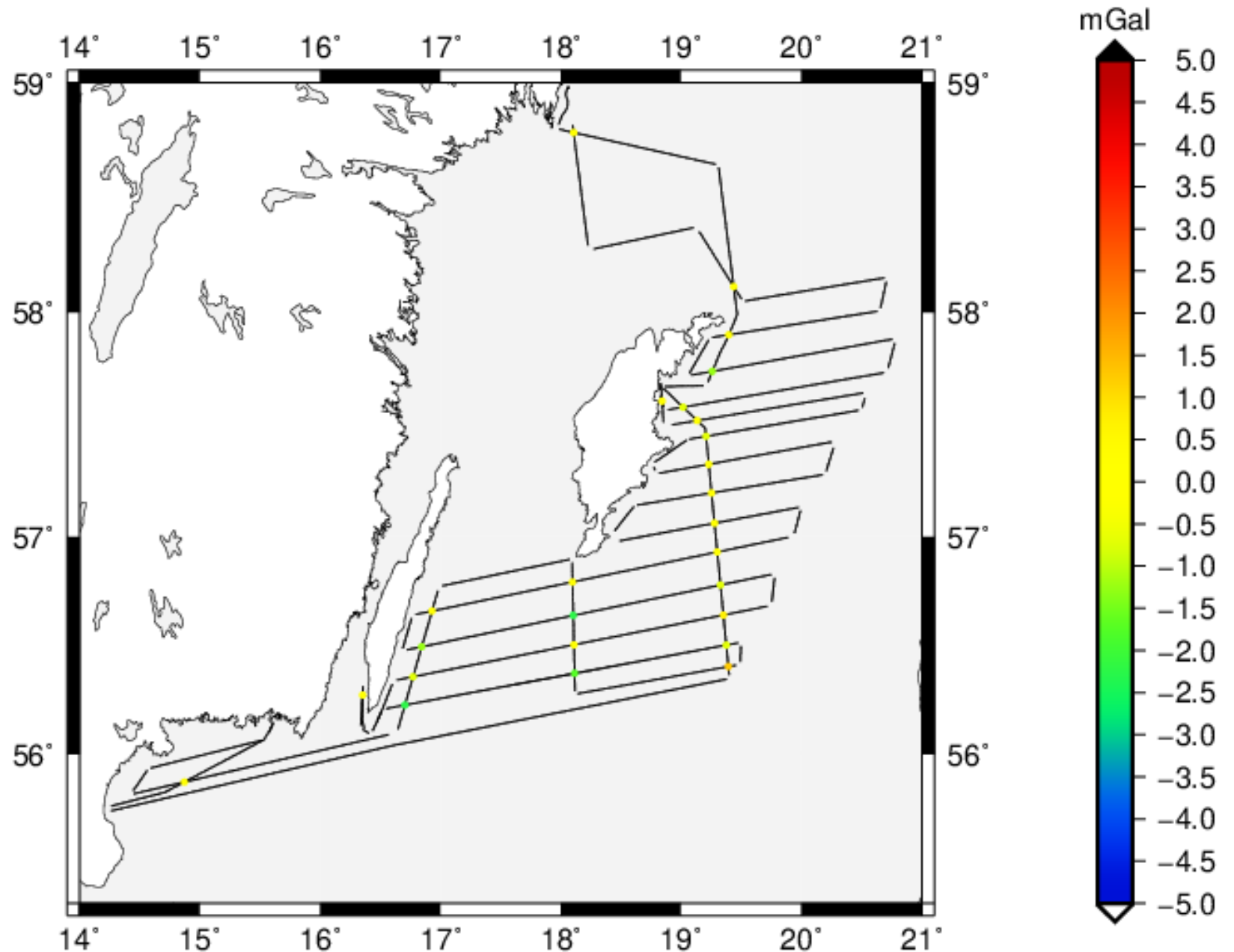
Mean : -0.46

Min : -2.32

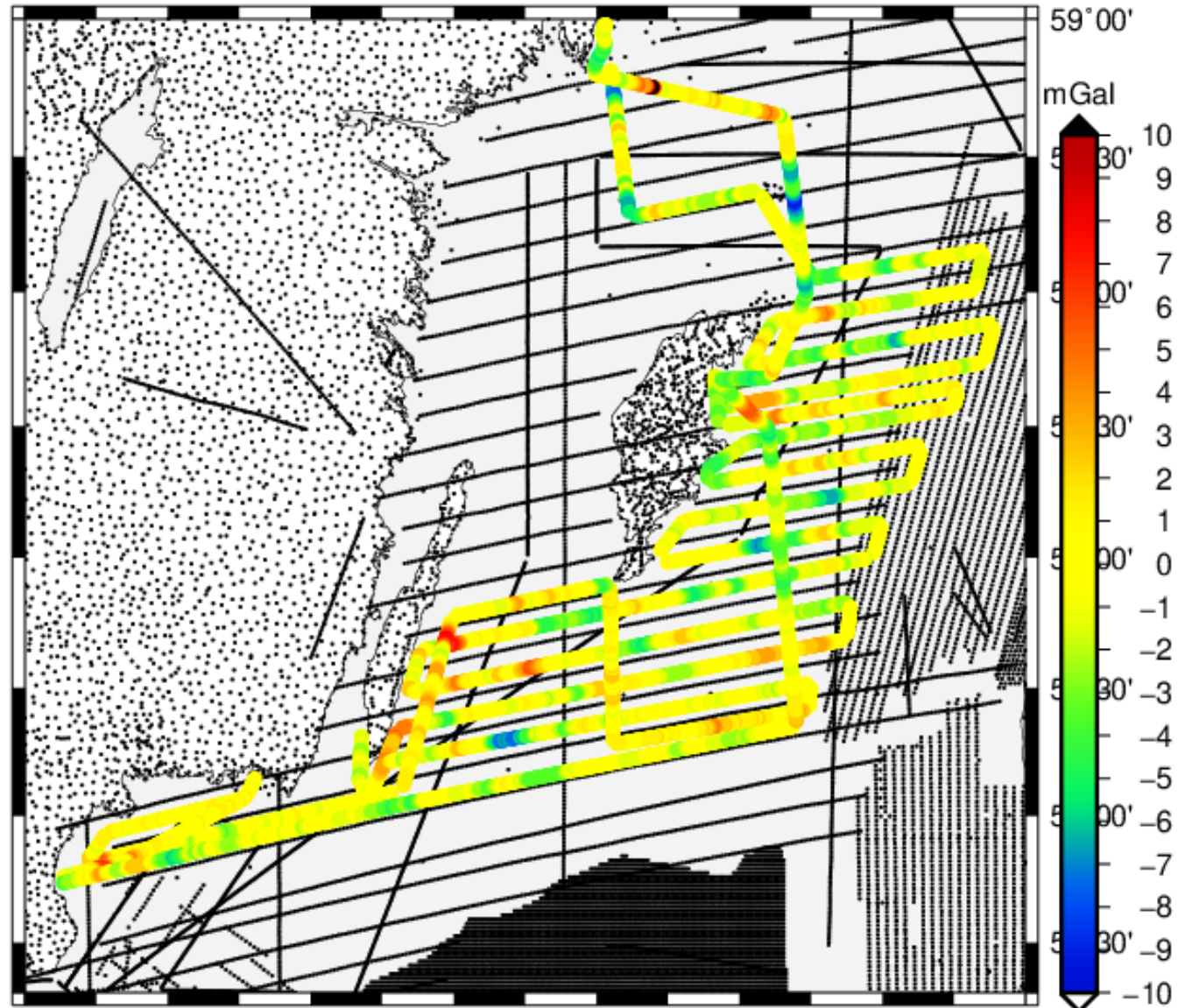
Max : 1.39

Std\_dev : 0.81

RMS : 0.92

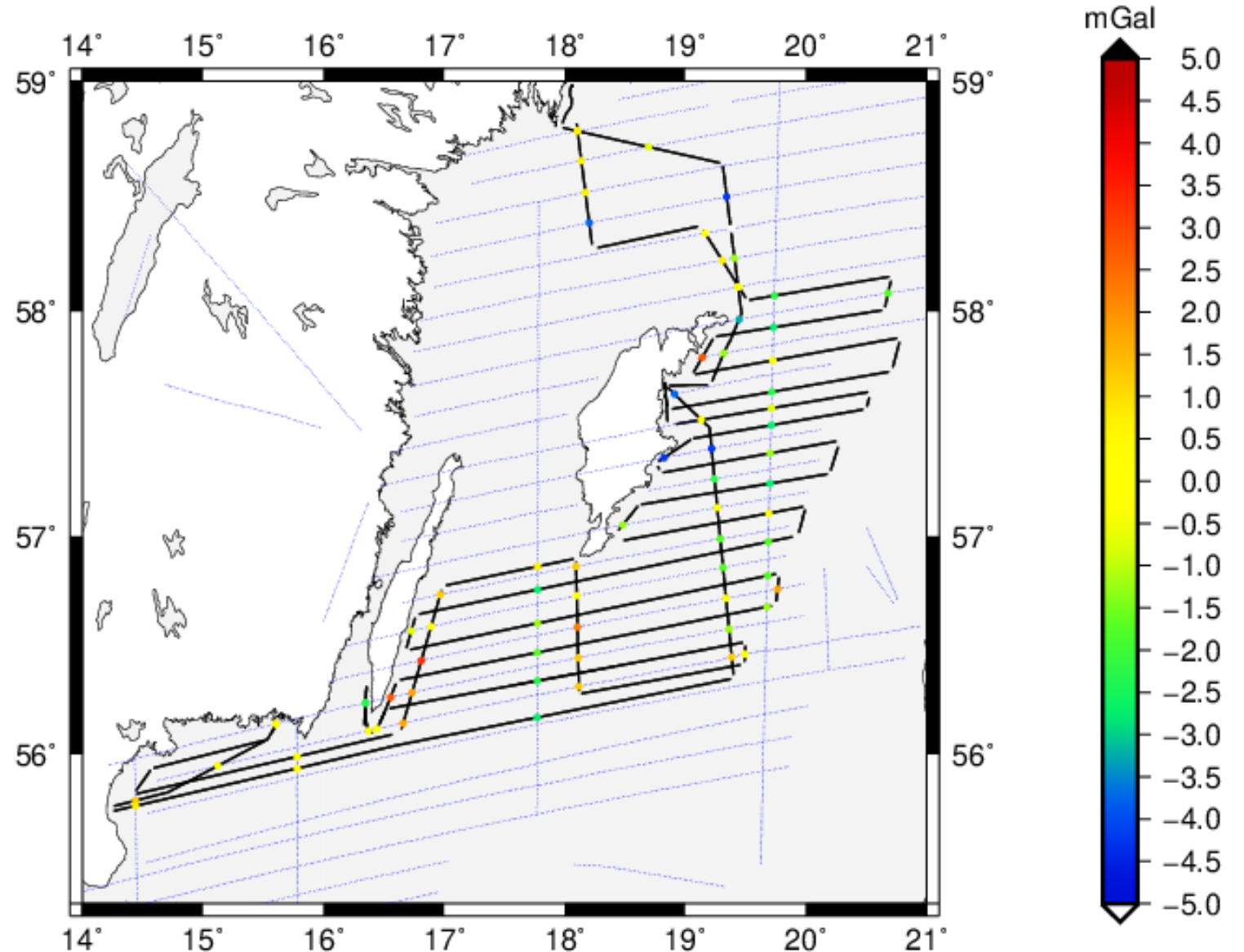


# SOUTH – NKG2015 GRID



# SOUTH – NKG 1999 AIR

External cross-overs  
Number : 72  
Mean : -0.65  
Min : -11.41  
Max : 3.38  
Std\_dev : 2.19  
RMS : 2.27



# WEST

Date: July 04-14

Harbour ties:

- Muskö
- Falkenberg
- Kungshamn
- Falkenberg
- Ystad
- Muskö

Internal cross-overs

Number : 95

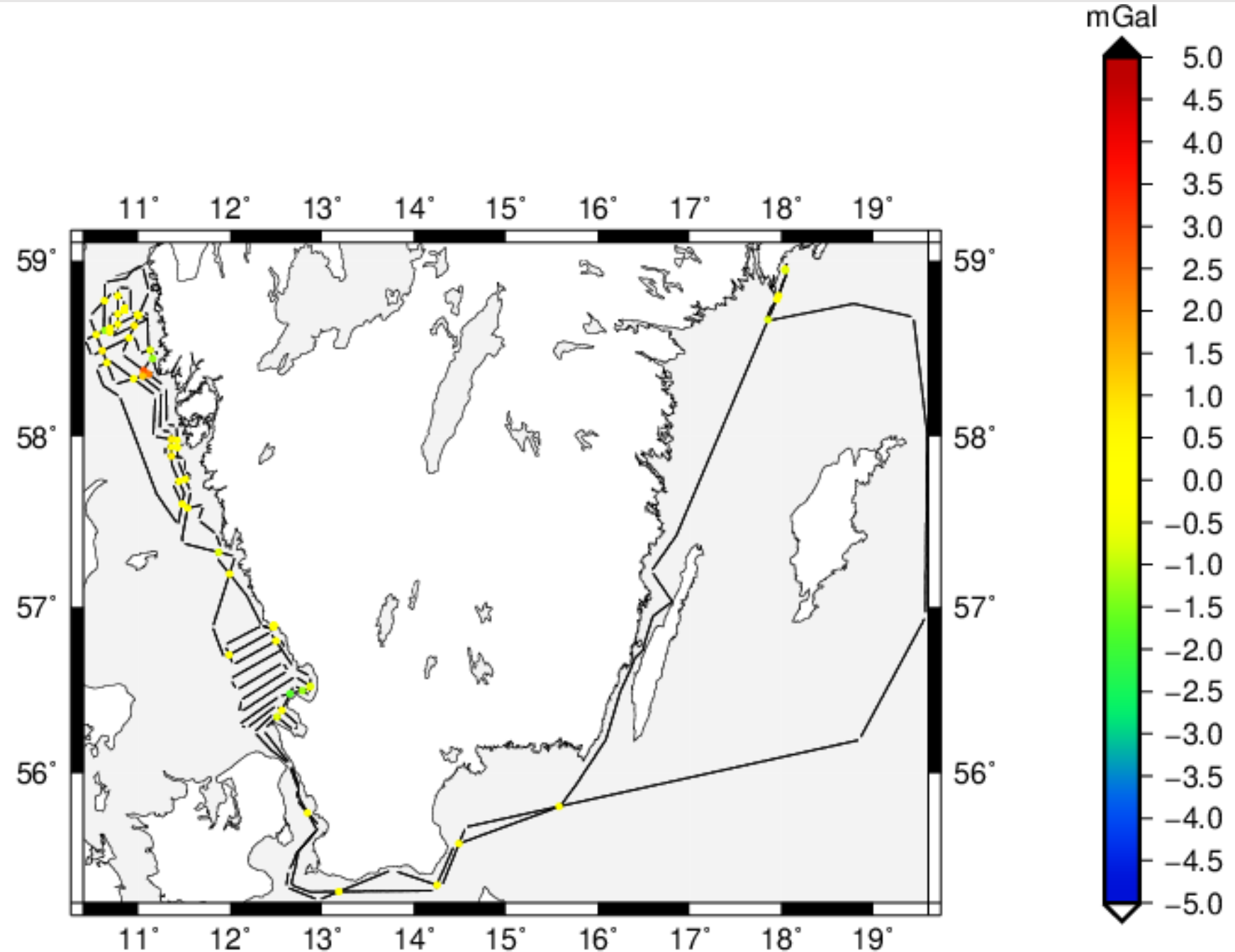
Mean : 0.29

Min : -1.94

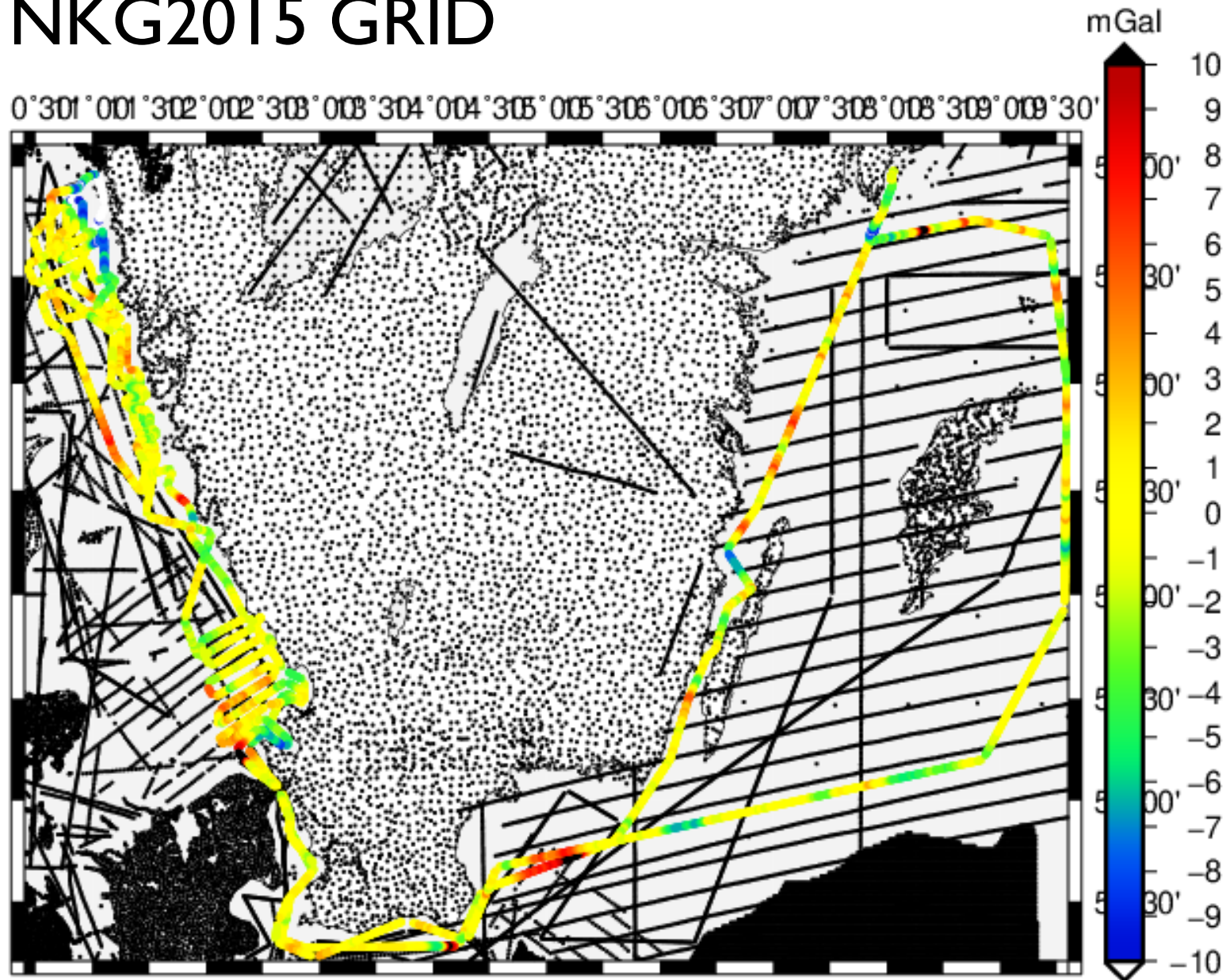
Max : 2.93

Std\_dev : 0.56

RMS : 0.63

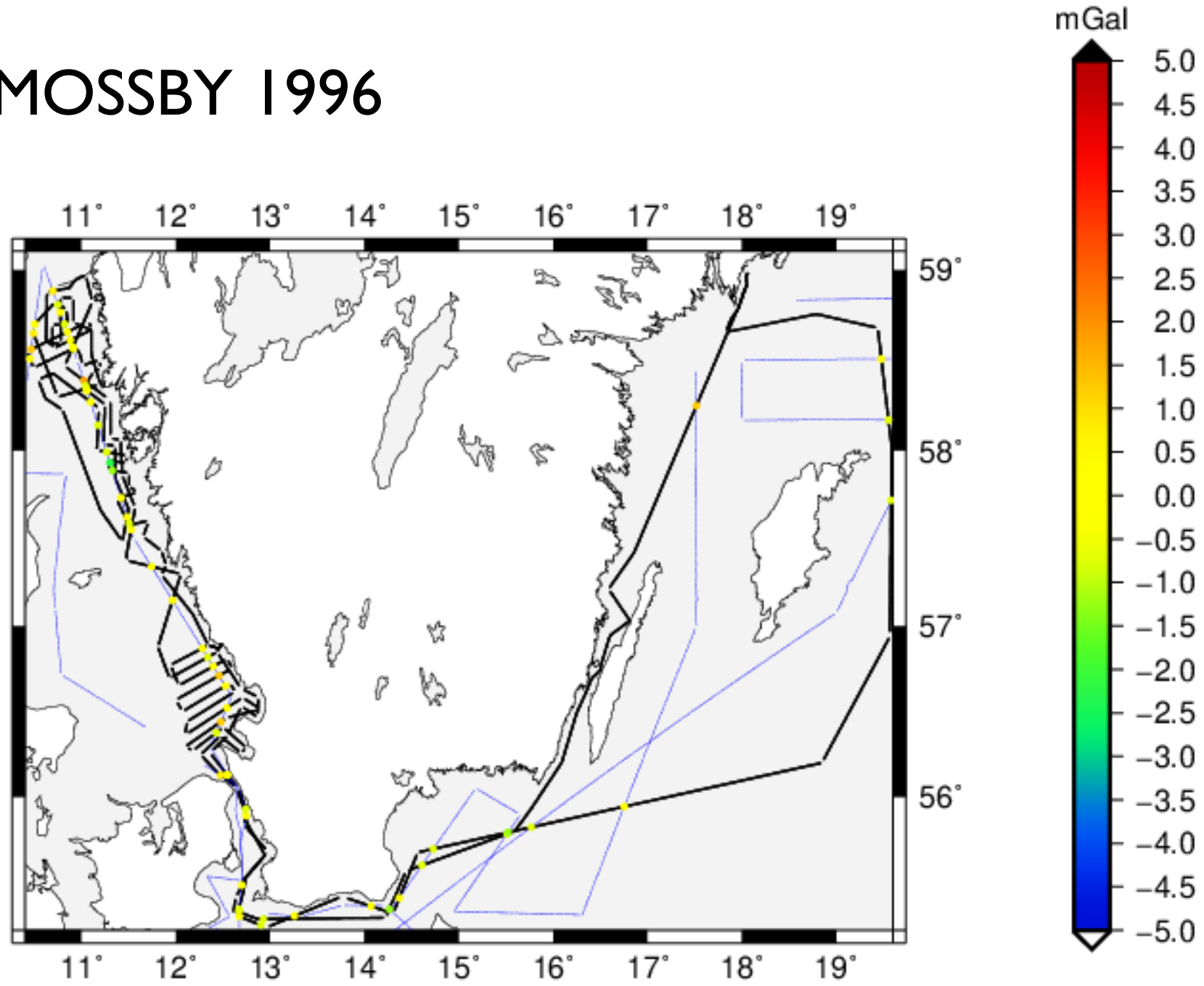


# WEST – NKG2015 GRID



# WEST – HAAKON MOSSBY 1996

External cross-overs  
Number : 60  
Mean : 0.39  
Min : -2.42  
Max : 1.55  
Std\_dev : 0.65  
RMS : 0.75



# MIDDLE

Date: August 01-11

Harbour ties:

- Muskö
- Gävle
- Iggesund
- Sundsvall
- Muskö

Internal cross-overs

Number : 41

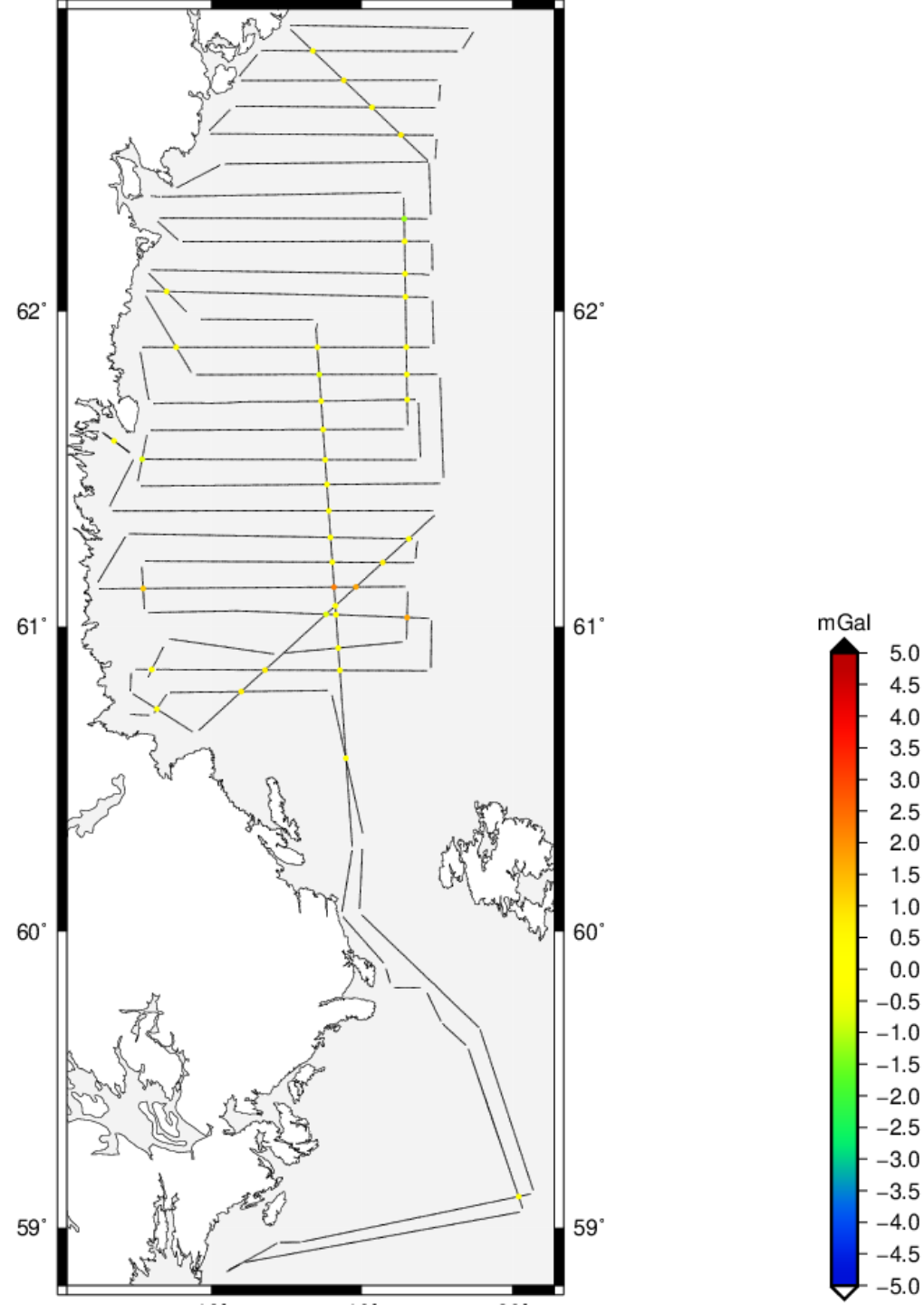
Mean : 0.49

Min : -1.50

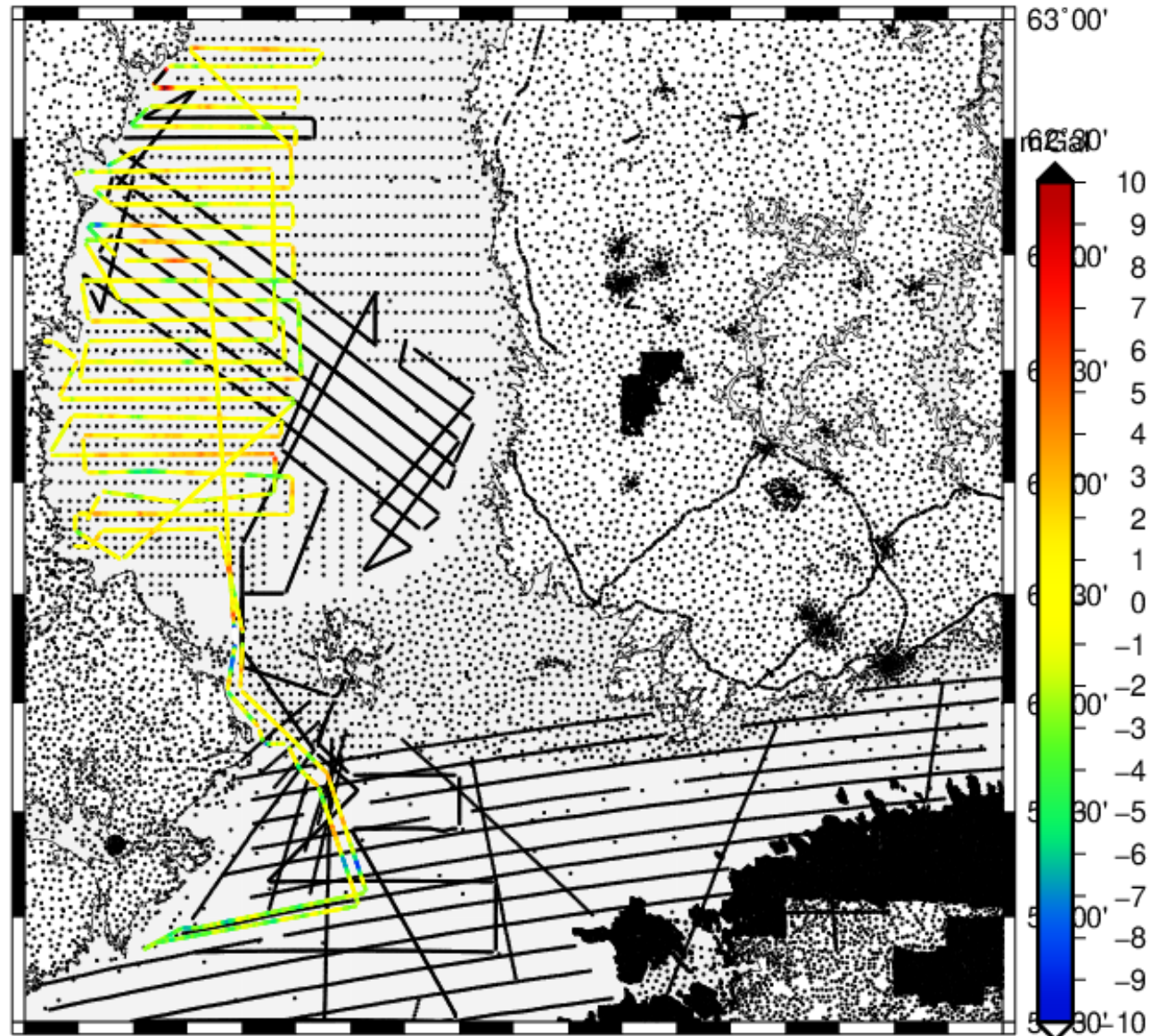
Max : 2.11

Std\_dev : 0.56

RMS : 0.74

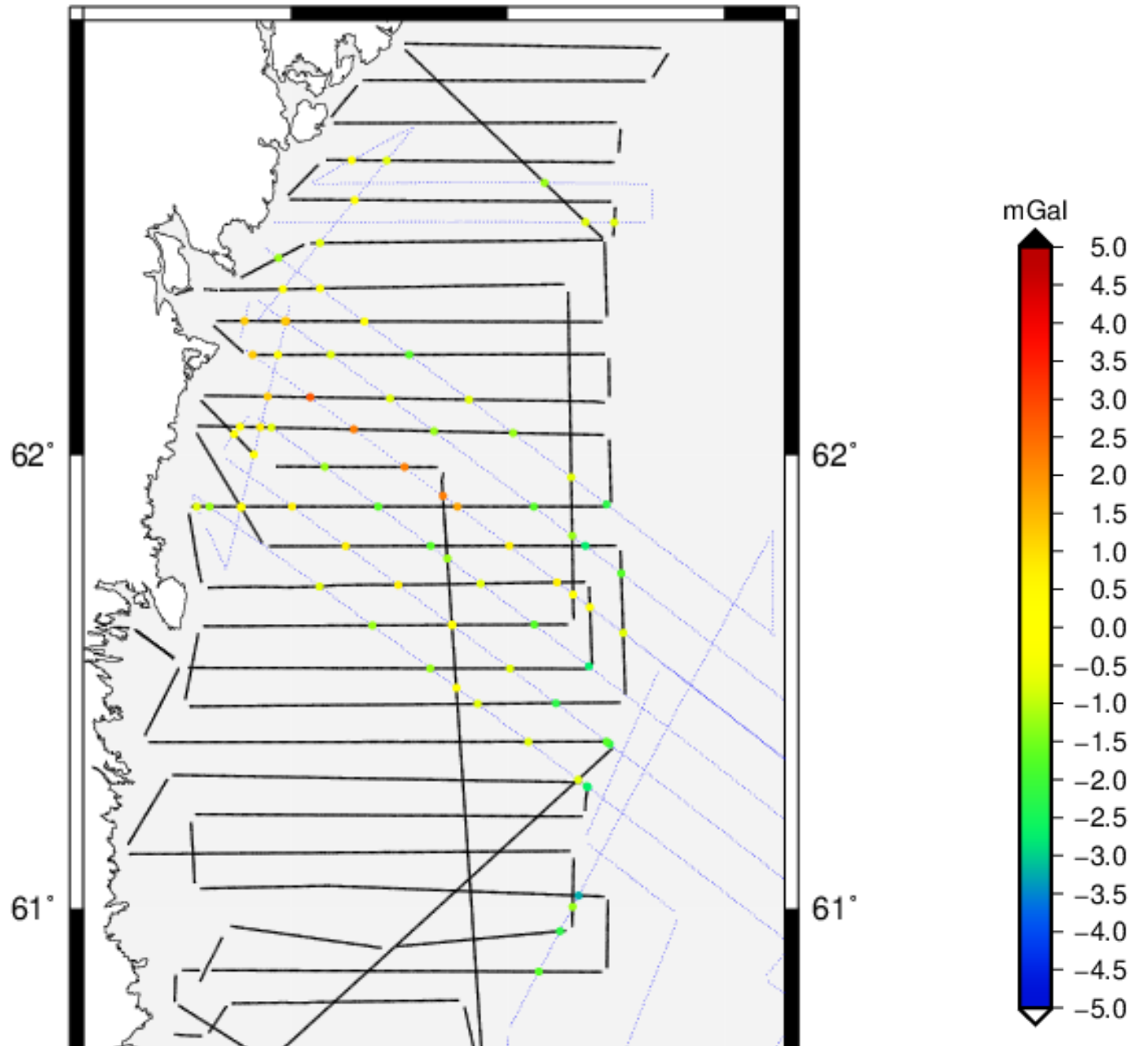


# MIDDLE - NKG2015 GRID



# MIDDLE – HM 1996

External cross-overs  
Number : 84  
Mean : -0.10  
Min : -3.31  
Max : 2.80  
Std\_dev : 1.34  
RMS : 1.33



# MIDDLE - AIRISTO

External cross-overs

Number : 132

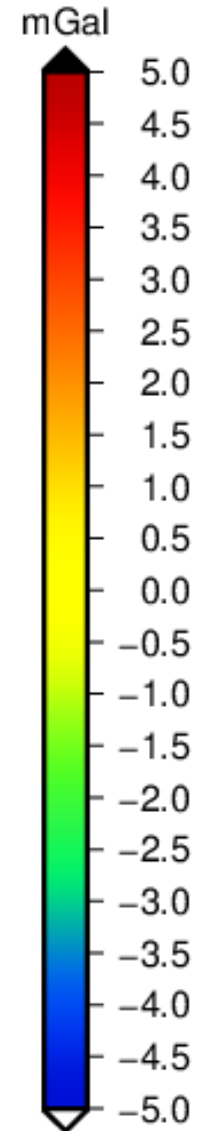
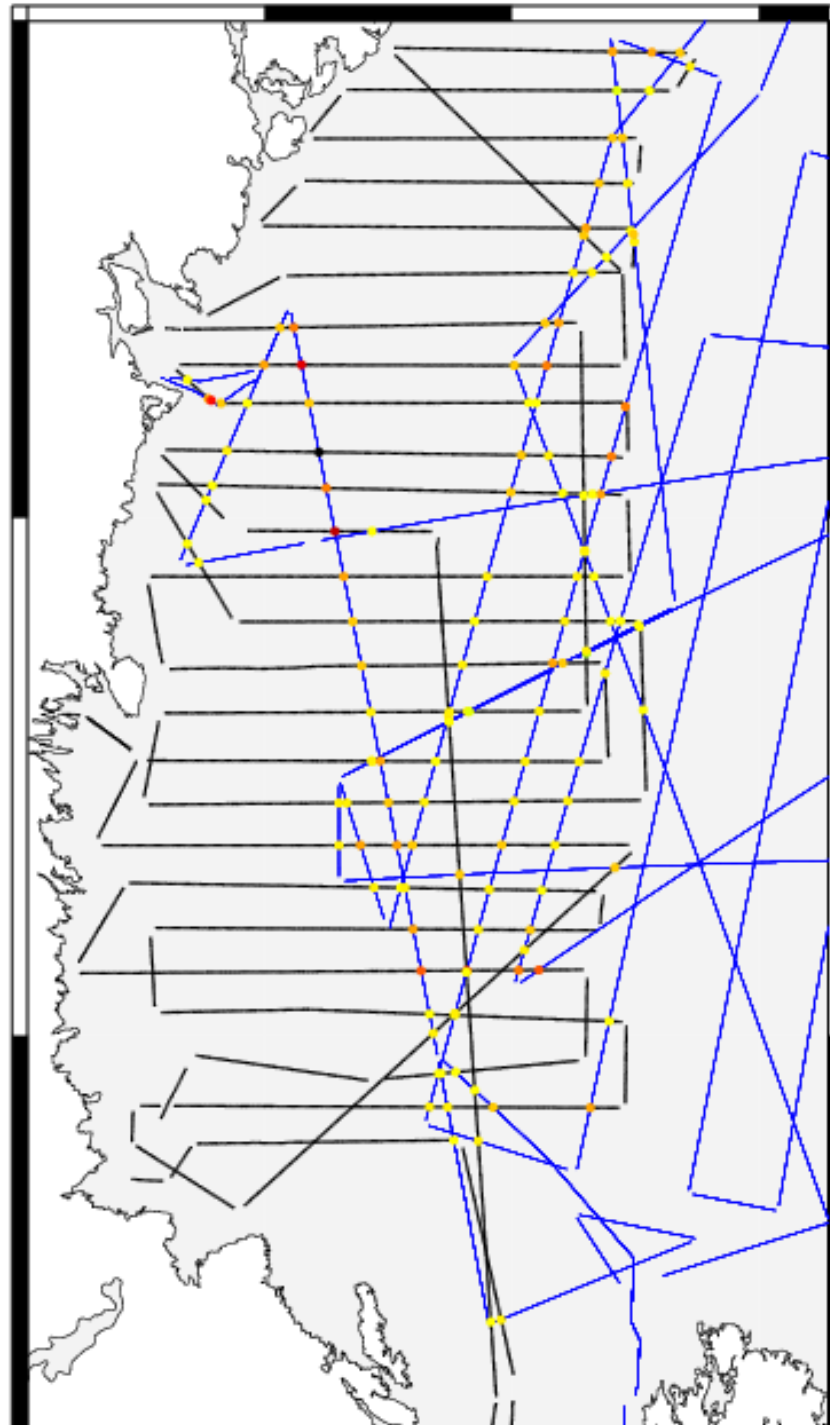
Mean : 1.02

Min : -1.19

Max : 7.39

Std\_dev : 0.99

RMS : 1.42



# NORTH

Date: Aug 29 – Sep 7

Harbour ties:

- Muskö
- Holmsund
- Luleå
- Luleå
- Holmsund
- Muskö

Internal cross-overs

Number : 67

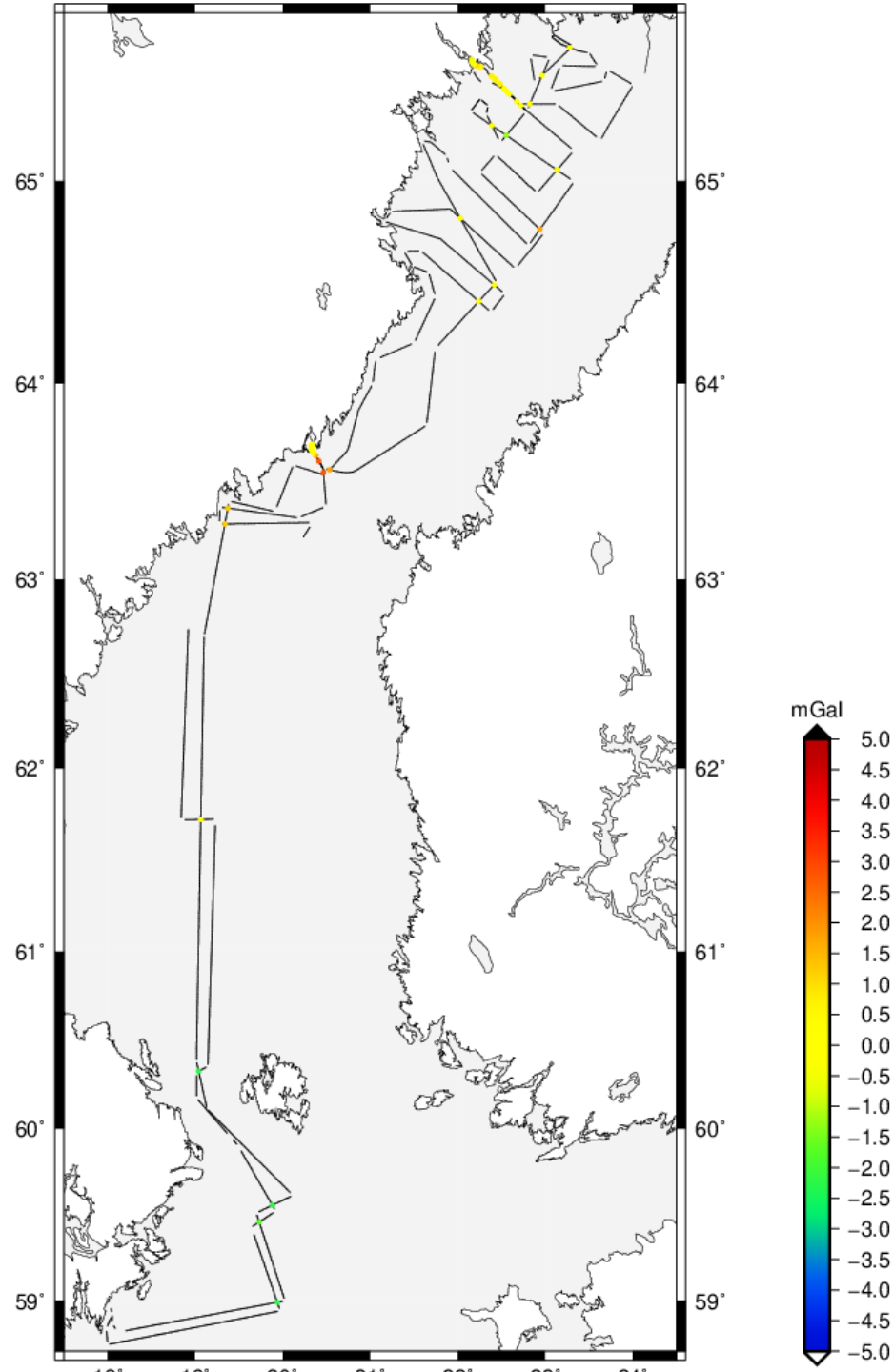
Mean : 0.41

Min : -2.19

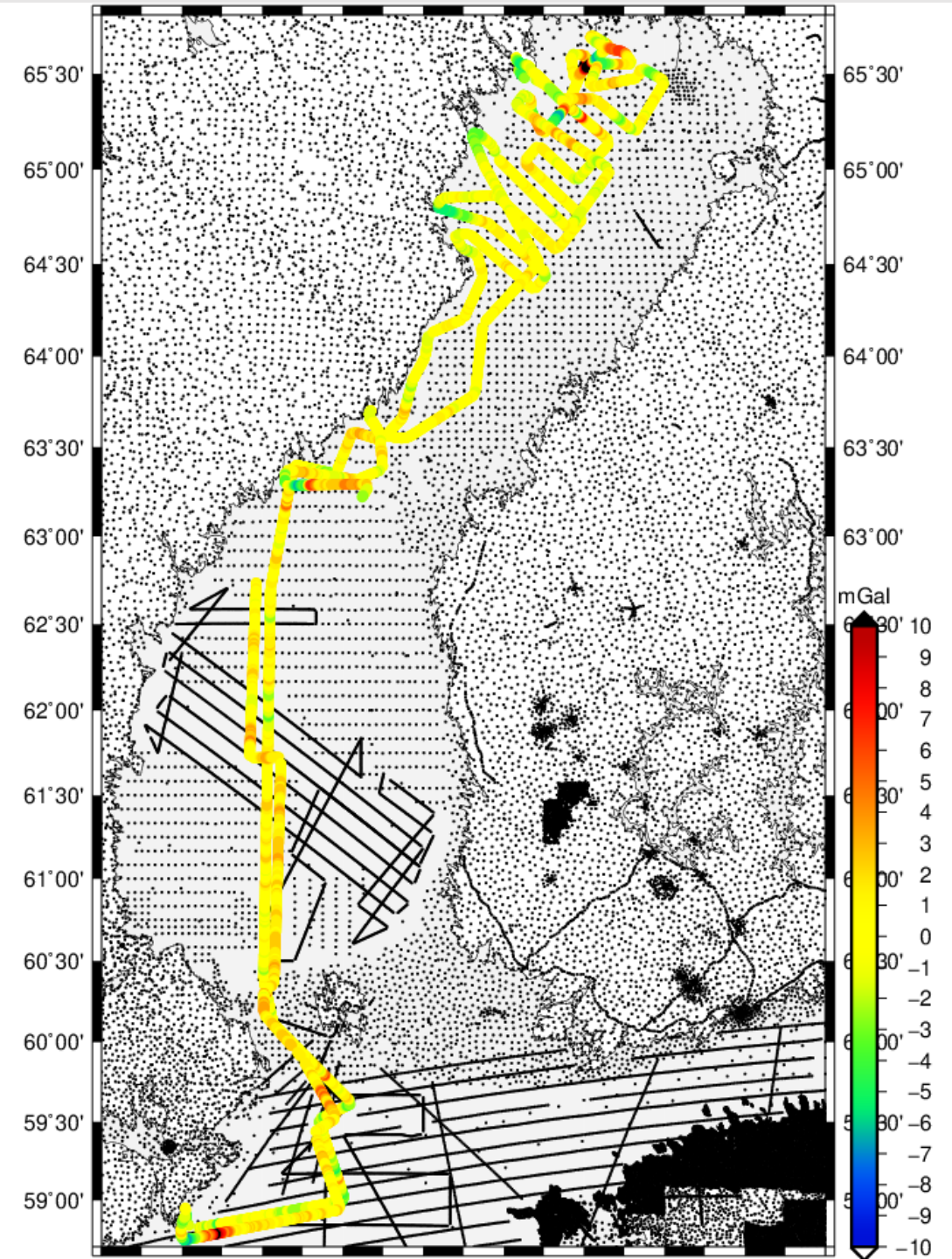
Max : 2.89

Std\_dev : 0.88

RMS : 0.97



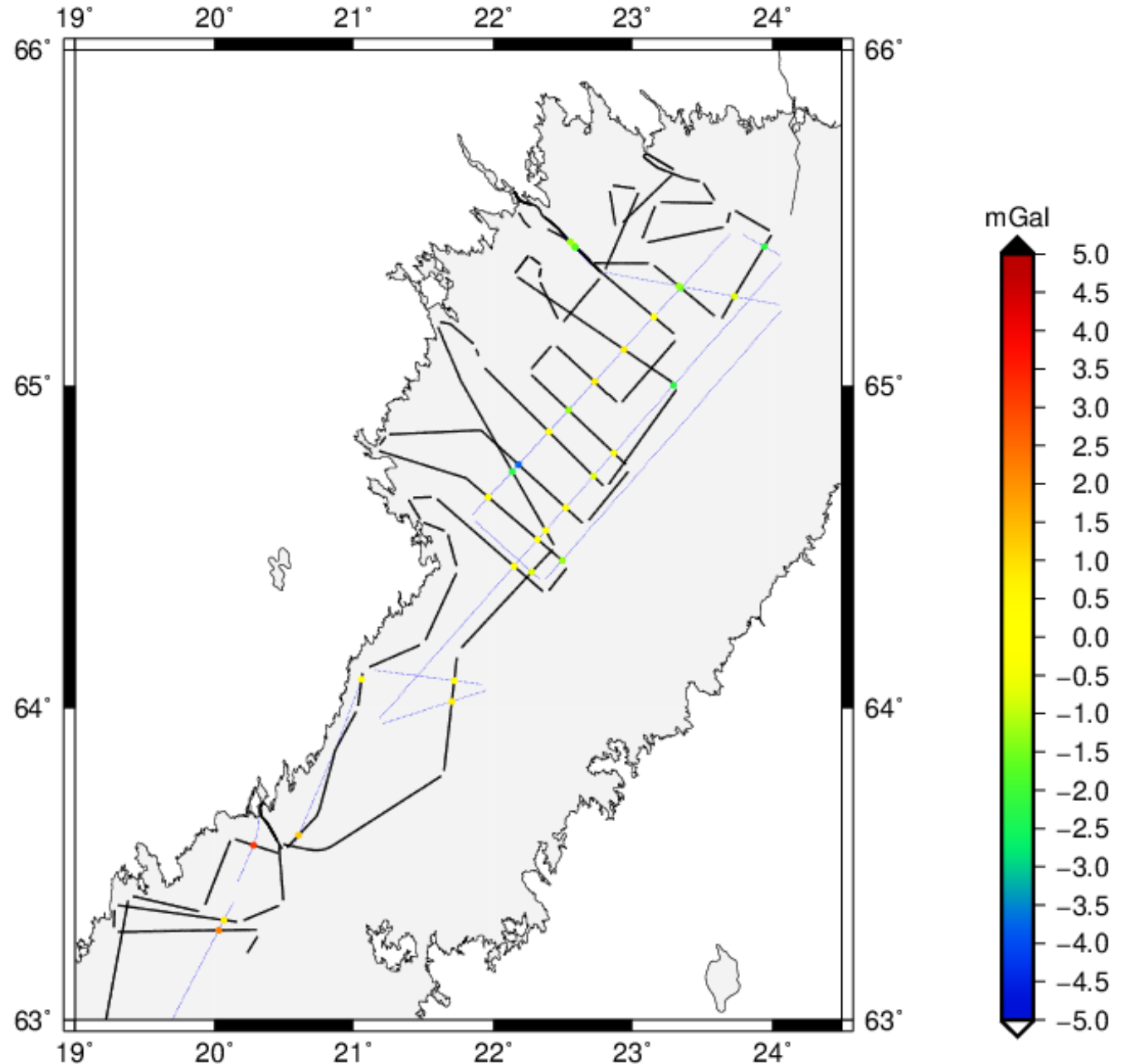
# NORTH – NKG2015 GRID



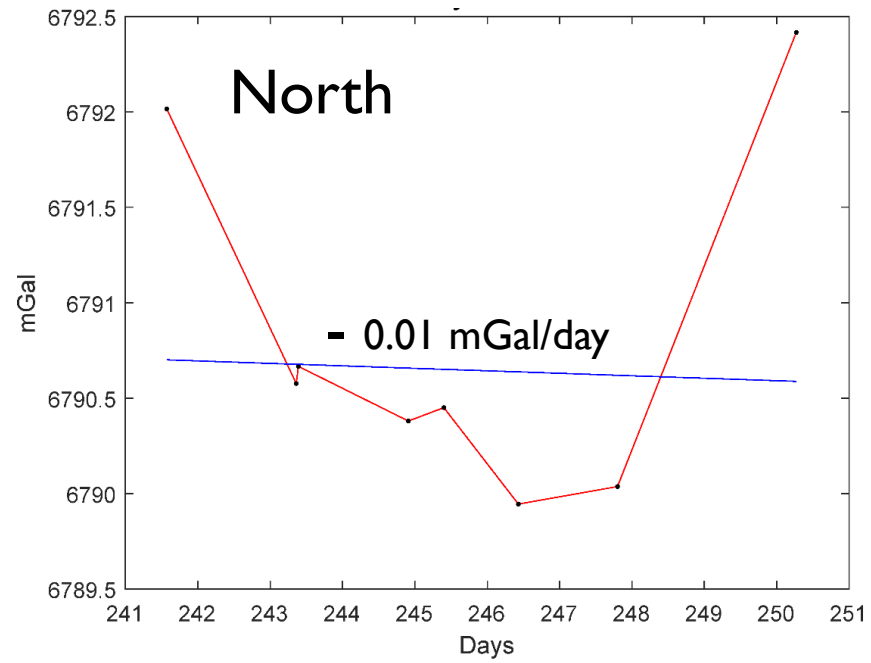
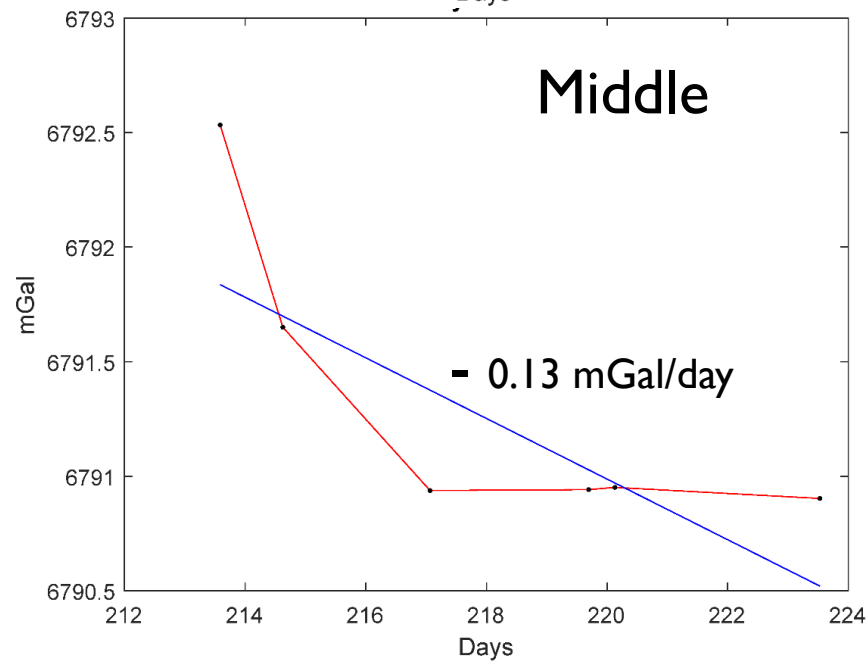
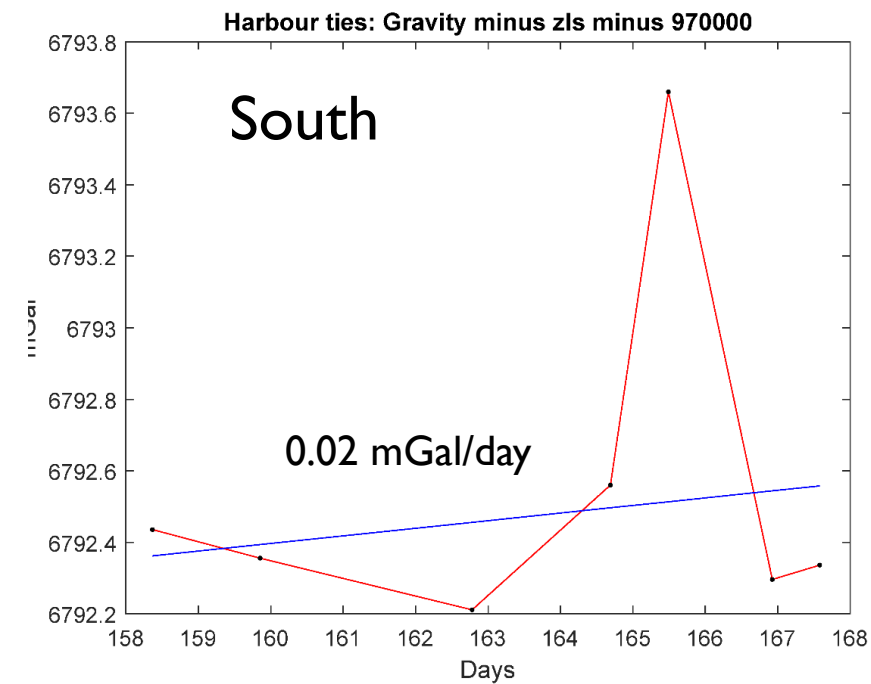
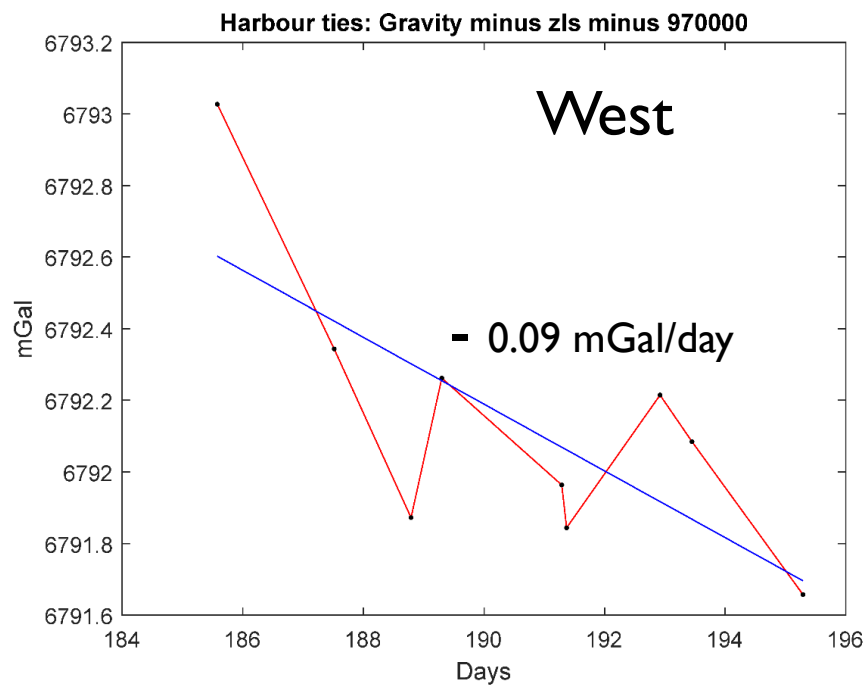
# NORTH – JHG 2016

External cross-overs

Number	: 39
Mean	: -0.17
Min	: -3.99
Max	: 3.31
Std_dev	: 1.59
RMS	: 1.58



# DRIFT



# SUMMARY AND PLANS

- Comprehensive campaigning 2019 with ZLS-D13
  - 4 dedicated 10 days campaigns
- Preliminary (!) results:
  - Internal cross over rms  $< 1$  mGal
  - External cross over rms in general  $< 2$  mGal
  - Filling in gaps  $> 10$  km significantly improve gridded data
  - Drift reduced from  $\sim 1$  mGal/day (before 2019) to  $\sim 0.1$  mGal/day

## Plans

- 3 dedicated 10 days campaigns during 2020
- Lake Vättern?
- Master thesis on uncertainties and combinations of gravity data sets at sea