1918
TALLINNA TEHNIKAÜLIKOOL
TALLINN UNIVERSITY OF TECHNOLOGY

MAA-AMET
Estonian Land Board

Investigations towards the NKG2014 geoid model in Estonia

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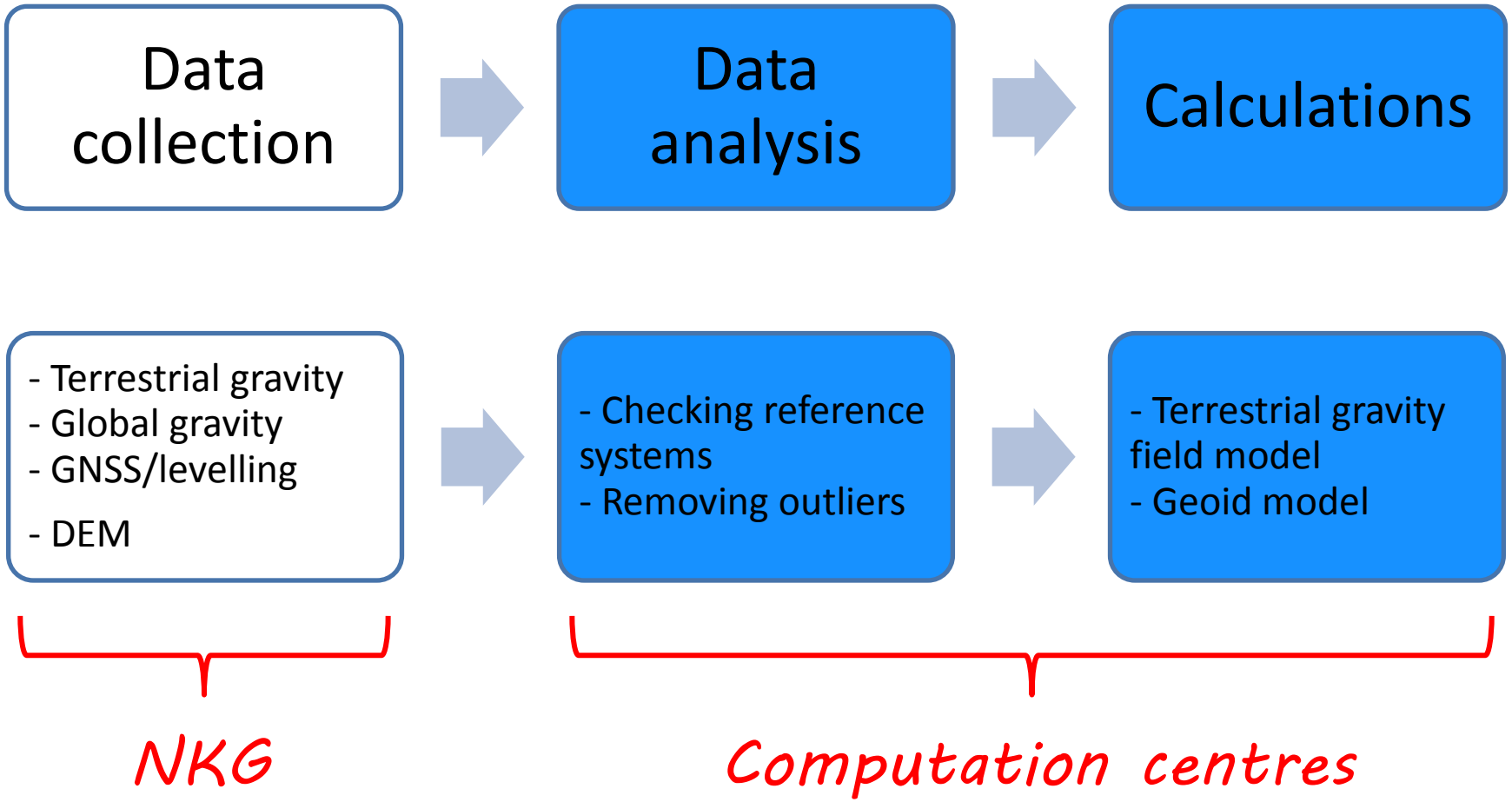
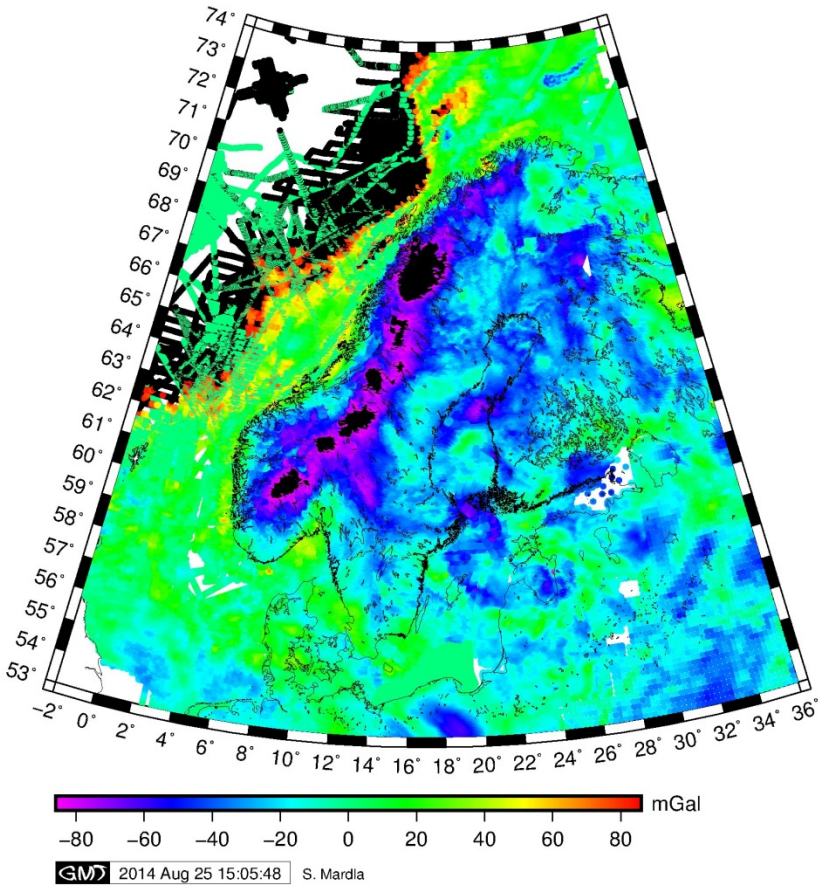
NORDPLUS

Geoid project workflow

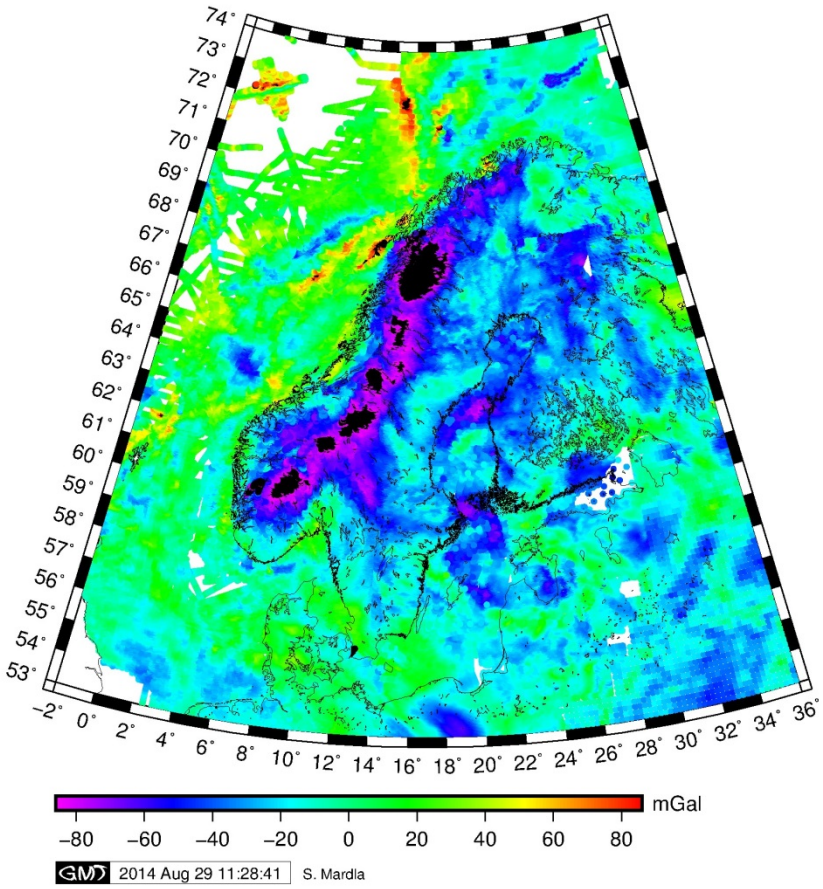


Reference surfaces for gravity data

Understanding the input data



BA from file

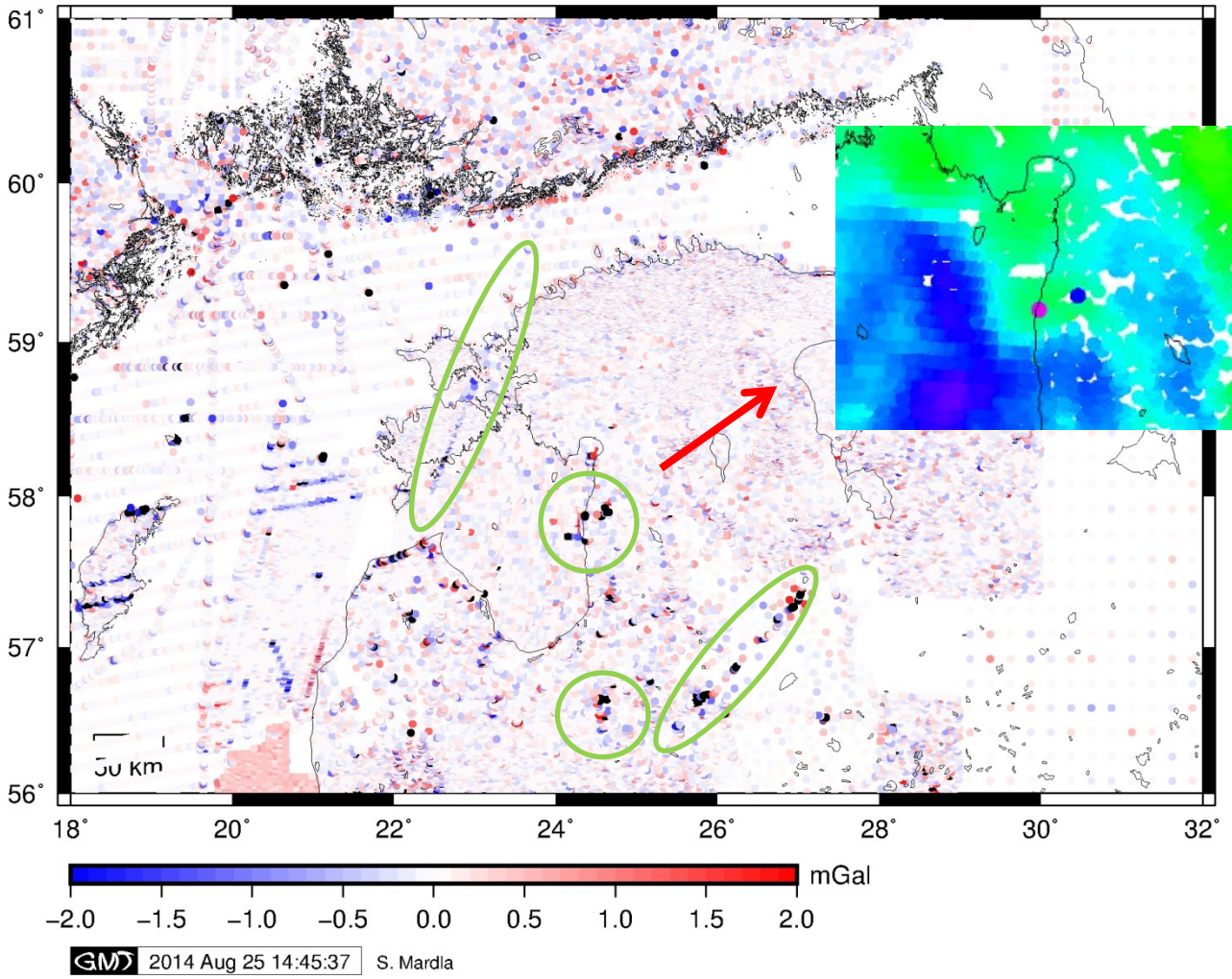


BA=FAA for marine data

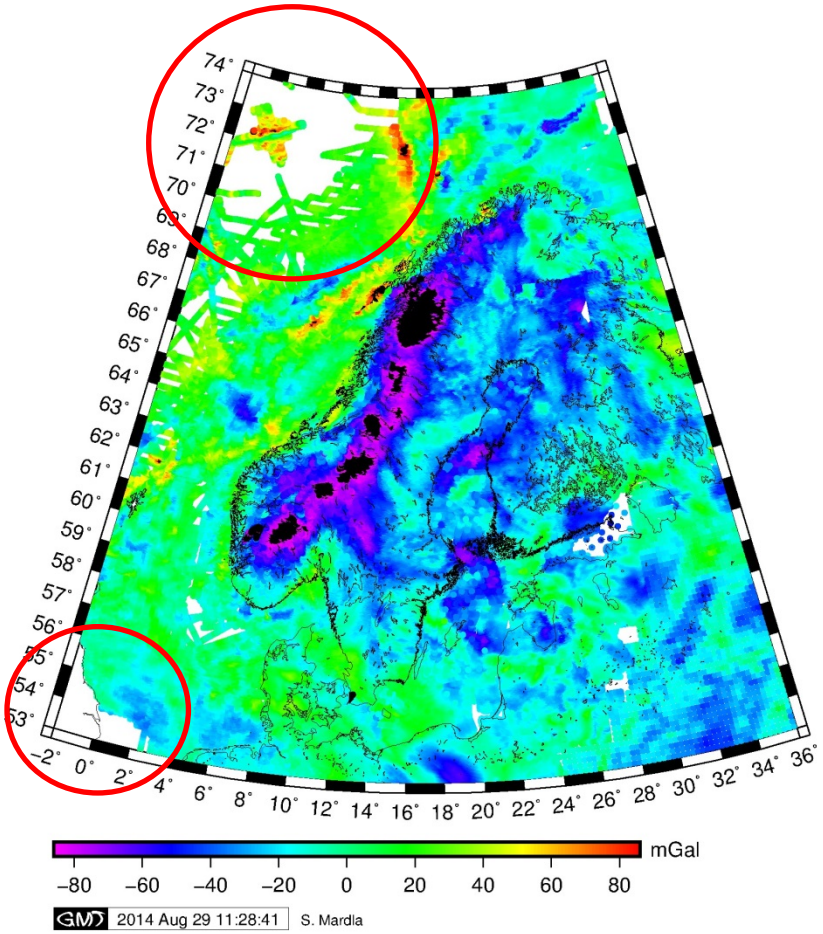
Removing outliers from the terrestial gravity data?

Difference of FAA field from FAA input values

Remove aerogravi over land areas?

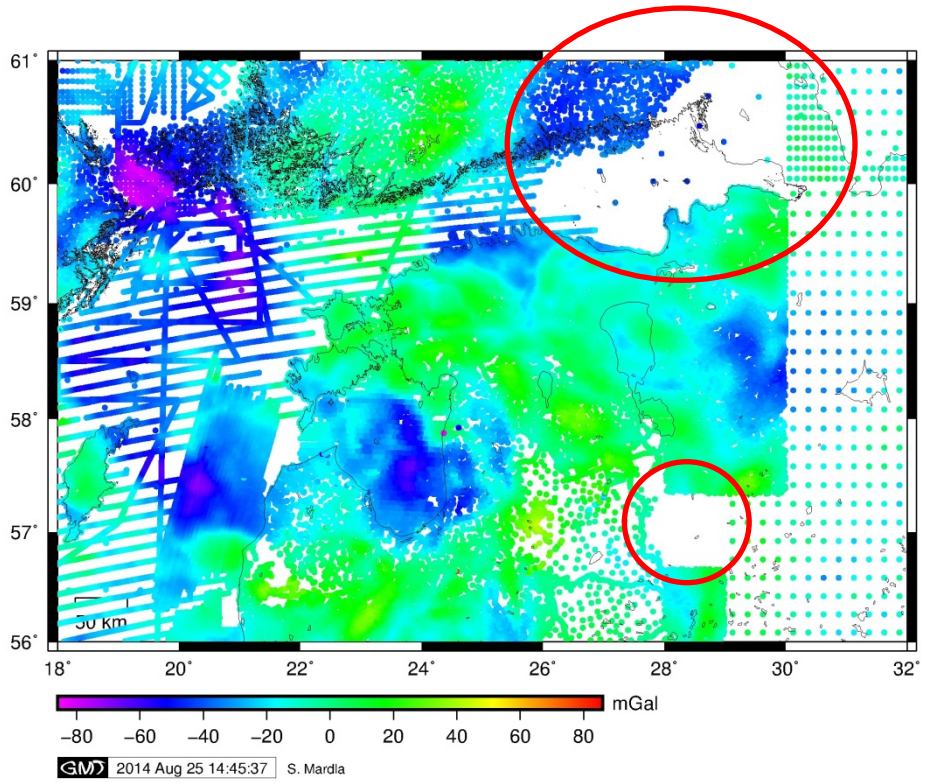


Filling areas of little terrestrial data



- Global satellite-only model
- Global satellite + terrestrial model

Filling areas of little terrestrial data



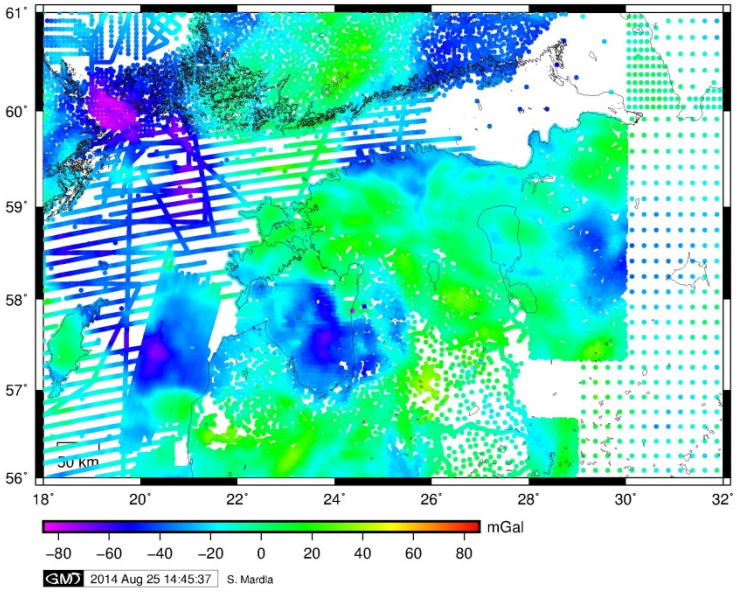
- Global satellite-only model
- Global satellite + terrestrial model
- Older, less accurate gravity data

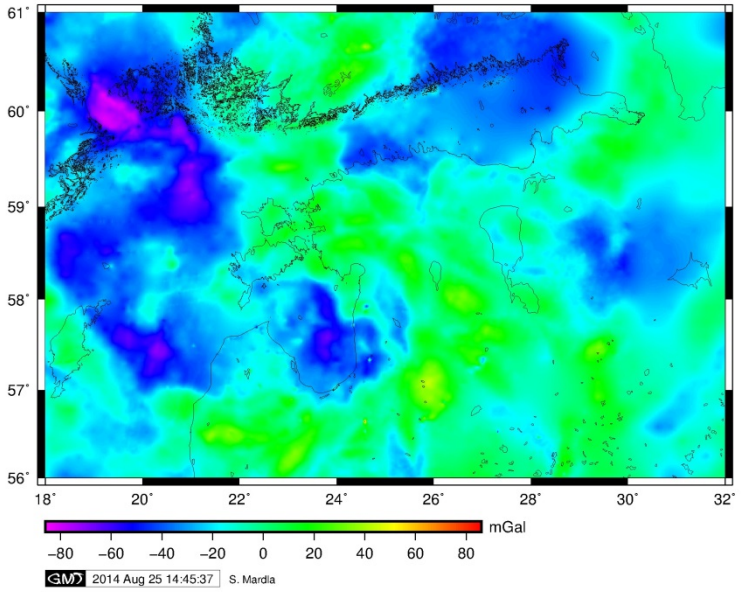
+ Try to use the accuracy information provided?

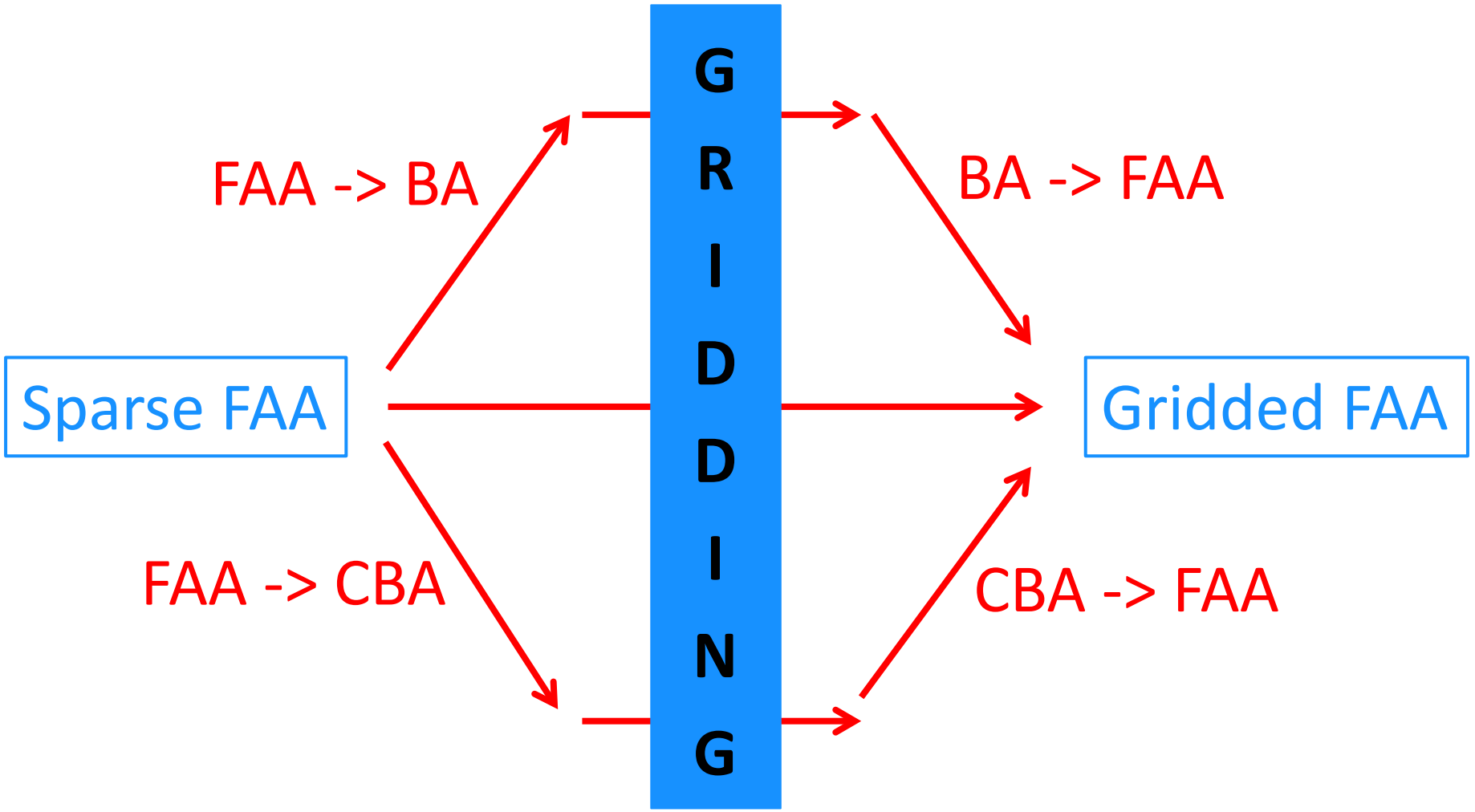
Modelling the gravity field

Input sparse gravity data

Output a regular FAA grid

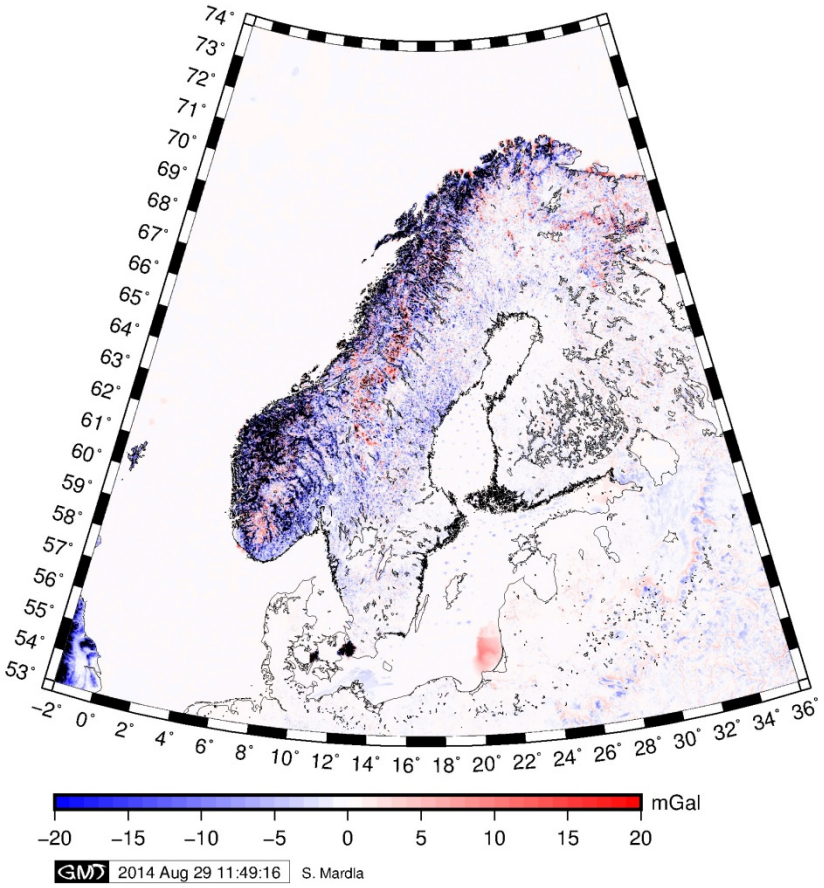




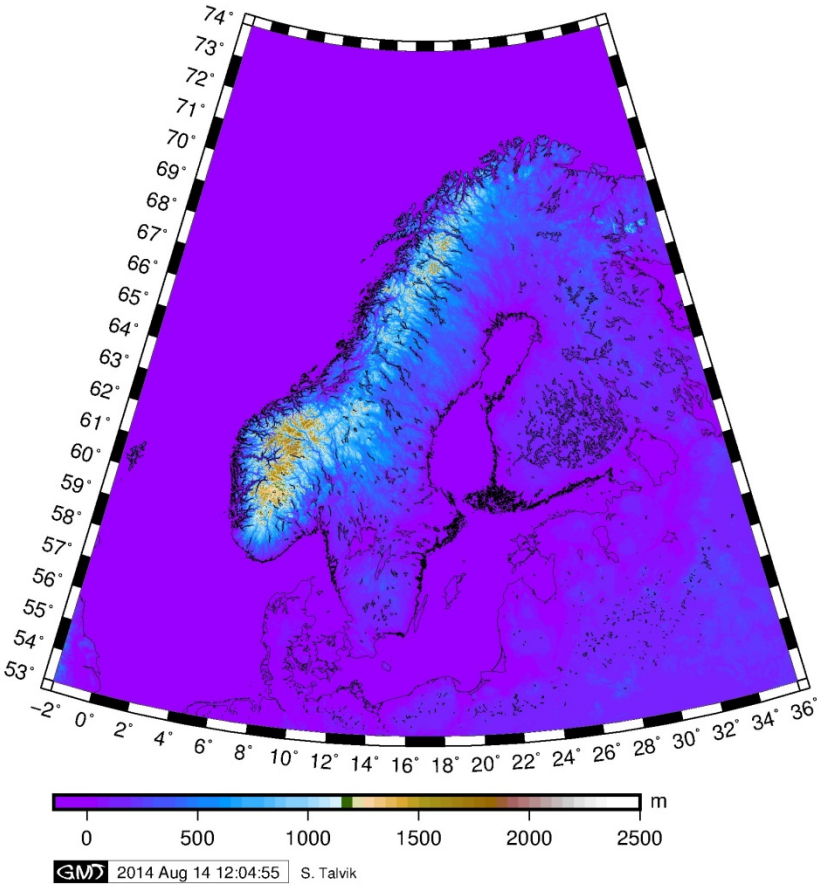

FAA -> BA
BA -> FAA
Sparse FAA
Gridded FAA
FAA -> CBA
CBA -> FAA
GRIDDING

Gridding FAA directly vs. using BA

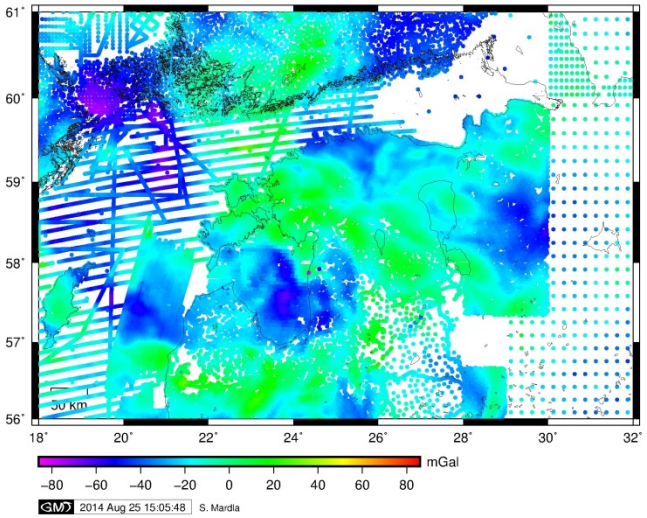
FAA: Directly gridded minus using BA



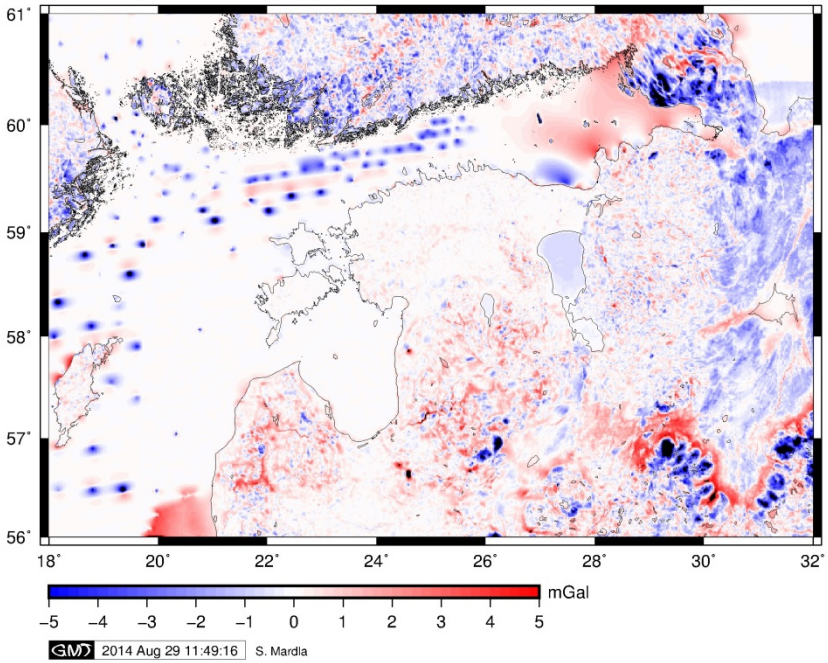
DEM



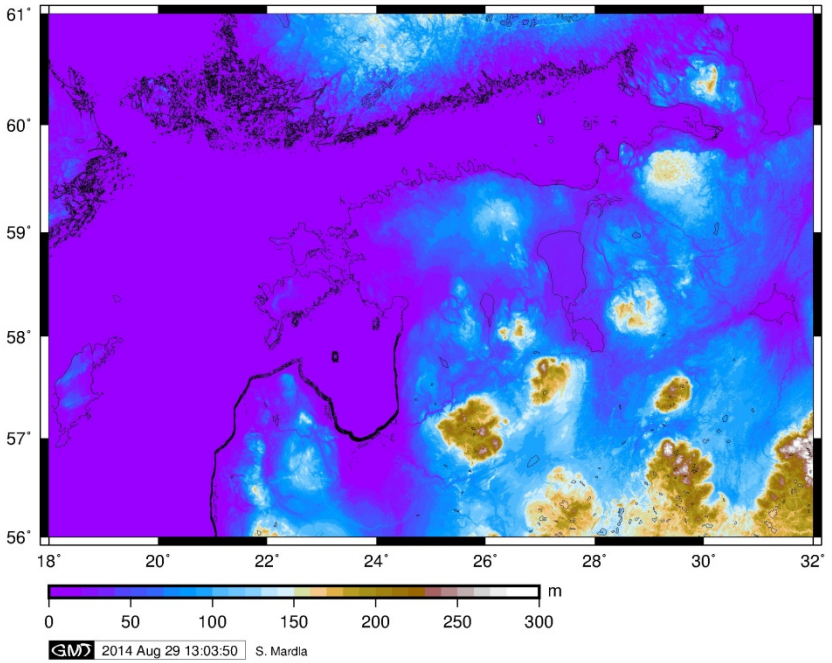
Input gravity data



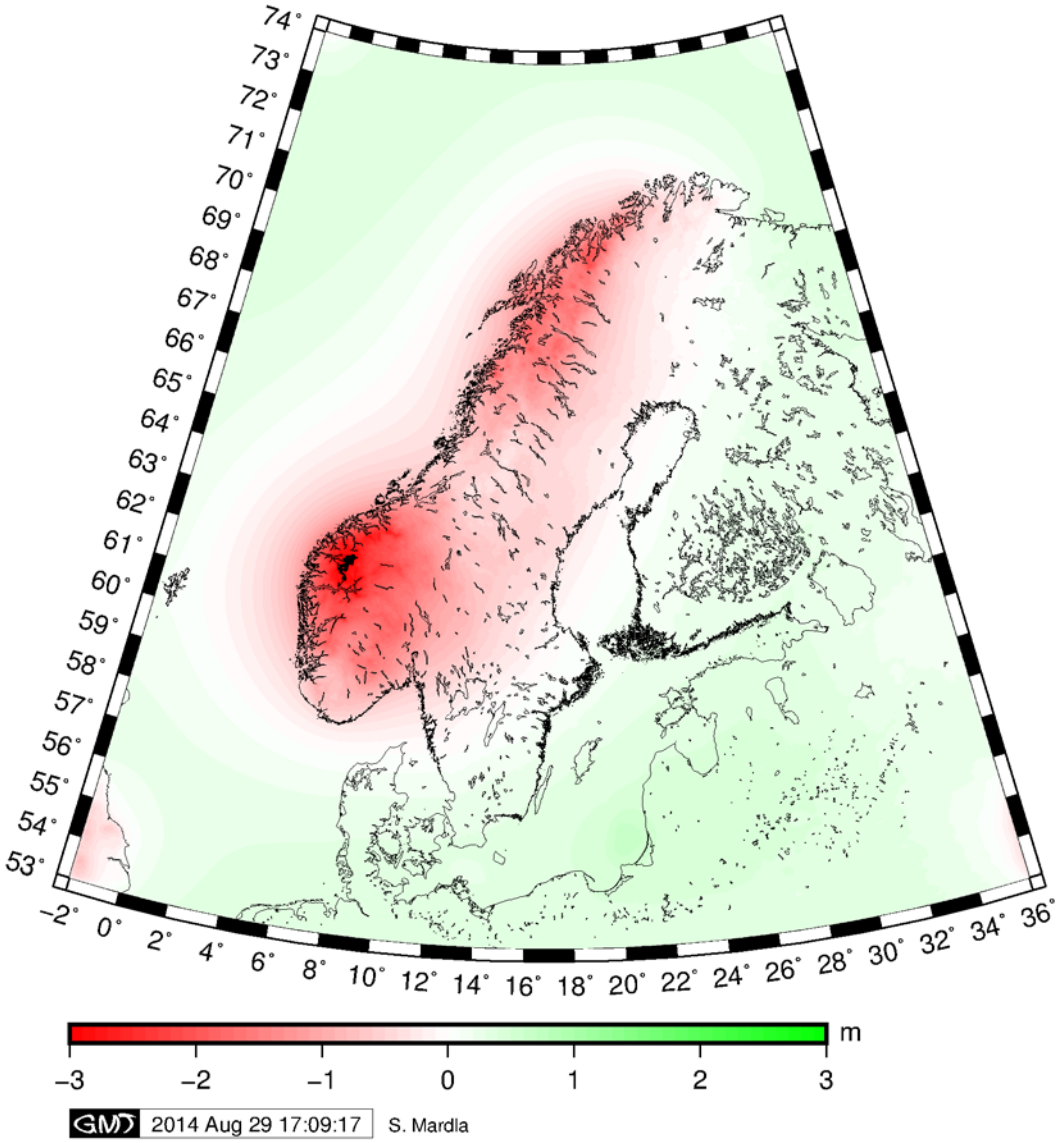
FAA: Directly gridded minus using BA



DEM

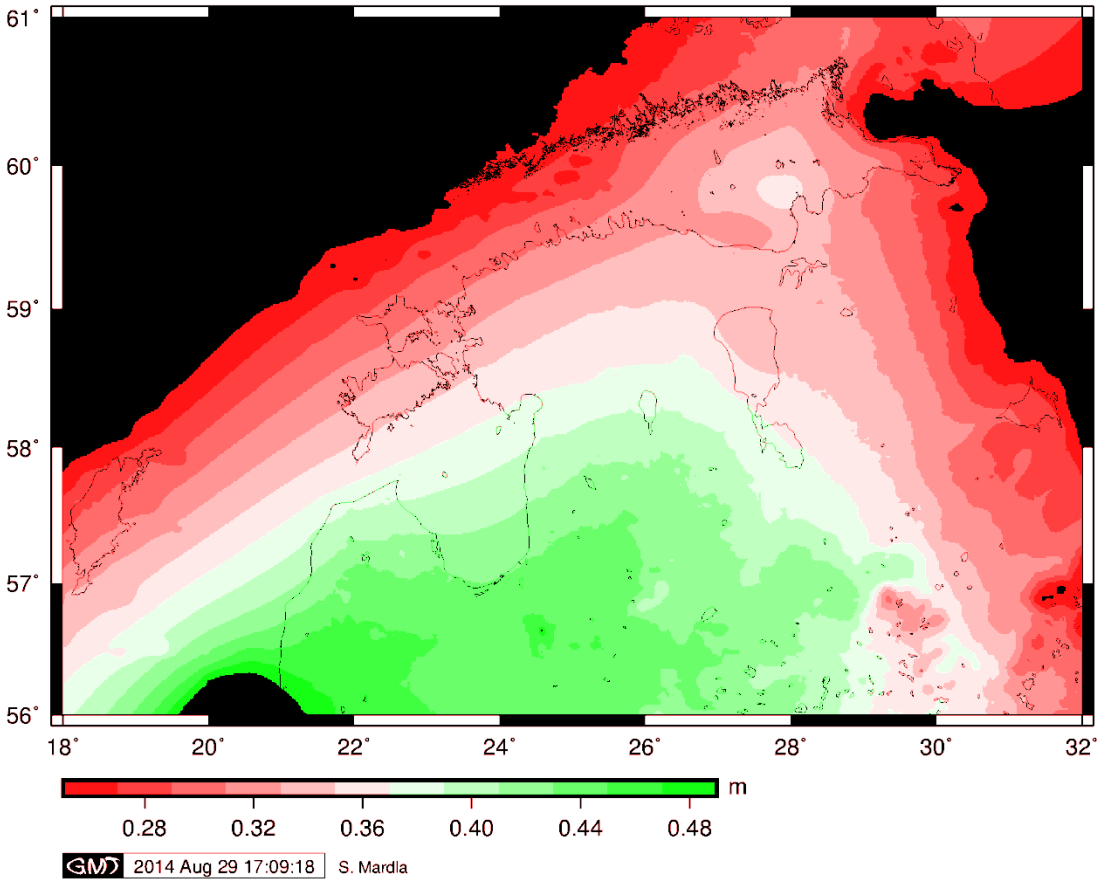


The difference between resulting geoid models: directly gridded minus using BA



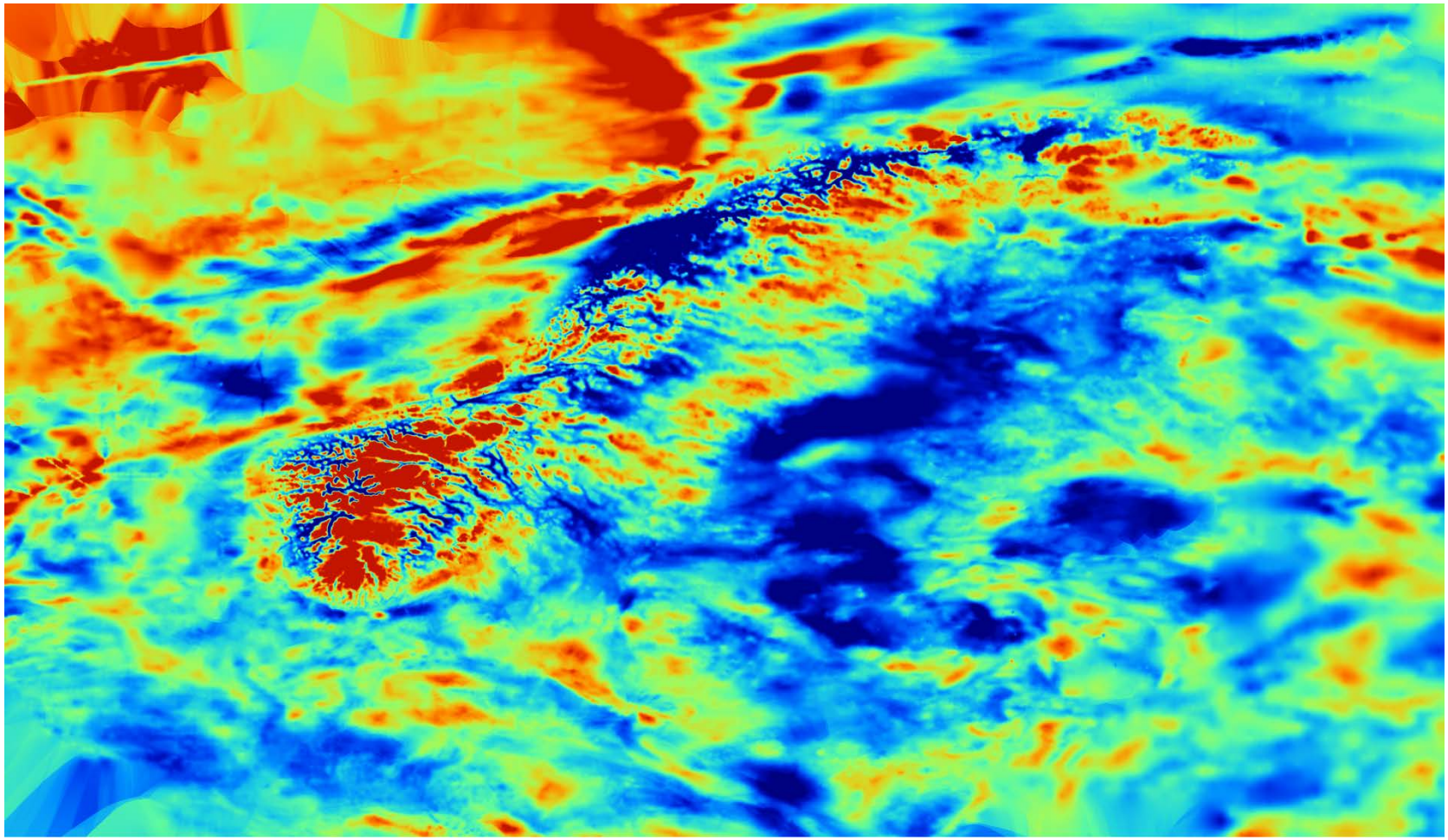
The difference between resulting geoid models: directly gridded minus using BA

7 cm tilt in Estonia!

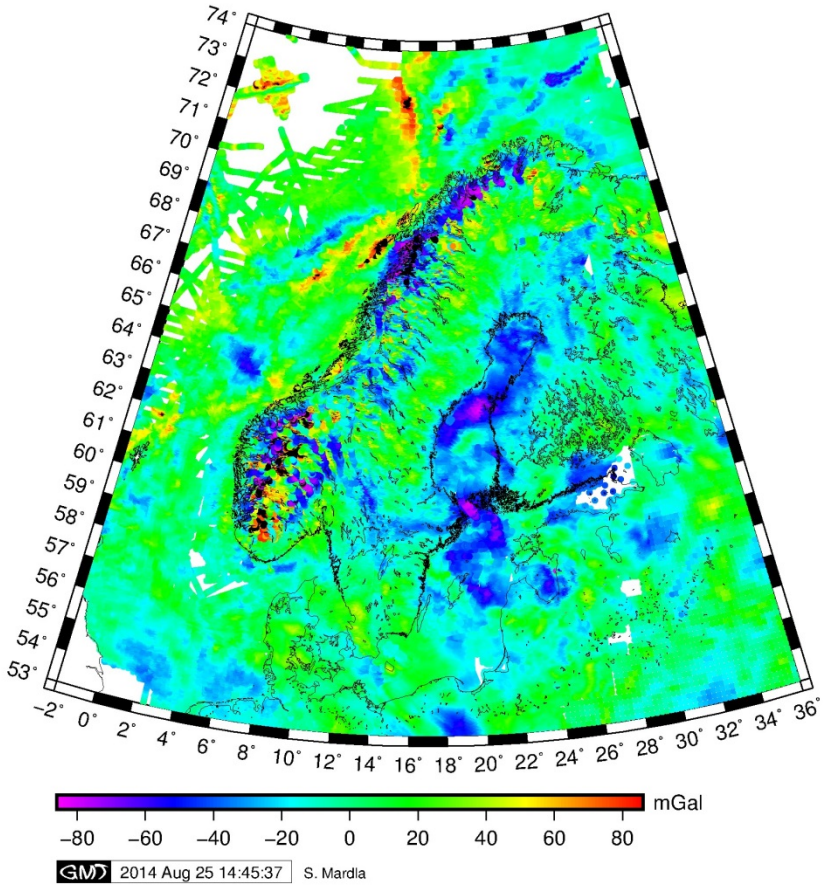


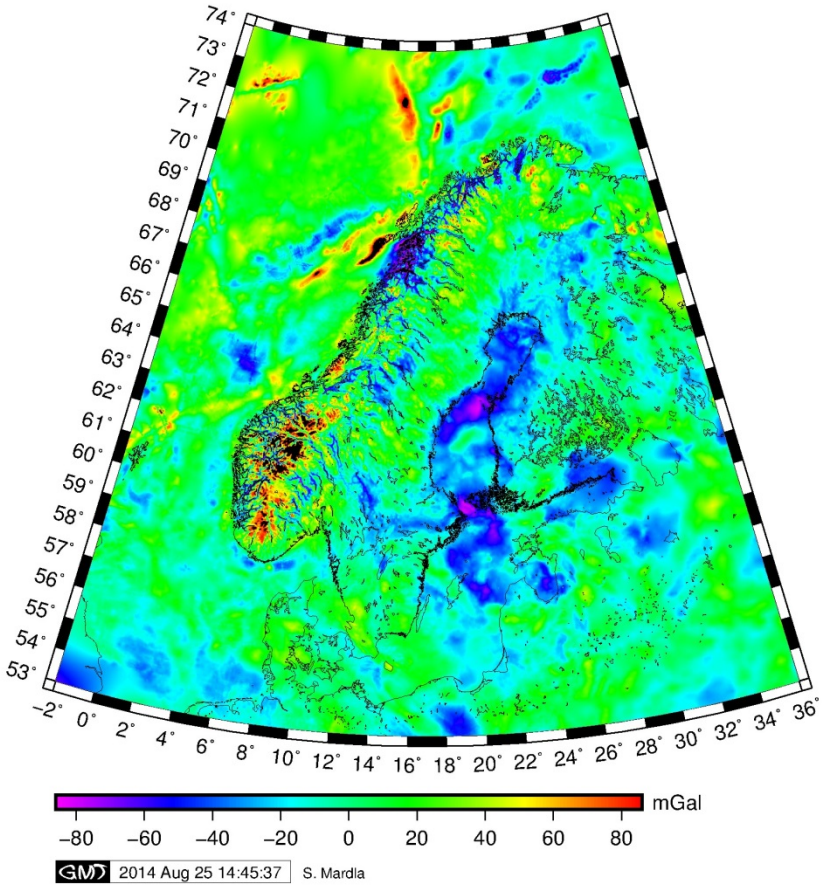
Gridding methods

KRIGING tests



Adjustable tension continuous curvature splines (implemented in GMT surface)





(Quasi-)geoid calculation

Quick tests	**1D FFT (GMT)**	**LSMSA**	*Preliminary model*
Preliminary model?	UNB	Gravity disturbances	*Preliminary model?*

Additional models for parameter determination
(e.g. d/o of global models used, modification param., etc.)

Conclusions

- Input data needs some more work
- Looking forward to having the GNSS/levelling data for decision-making

- The main effort so far has been to achieve a good FAA grid as input for geoid calculation
- Interesting questions coming up when we get to the geoid calculation itself