

POSTGLACIAL REBOUND

PER-ANDERS OLSSON, LANTMÄTERIET

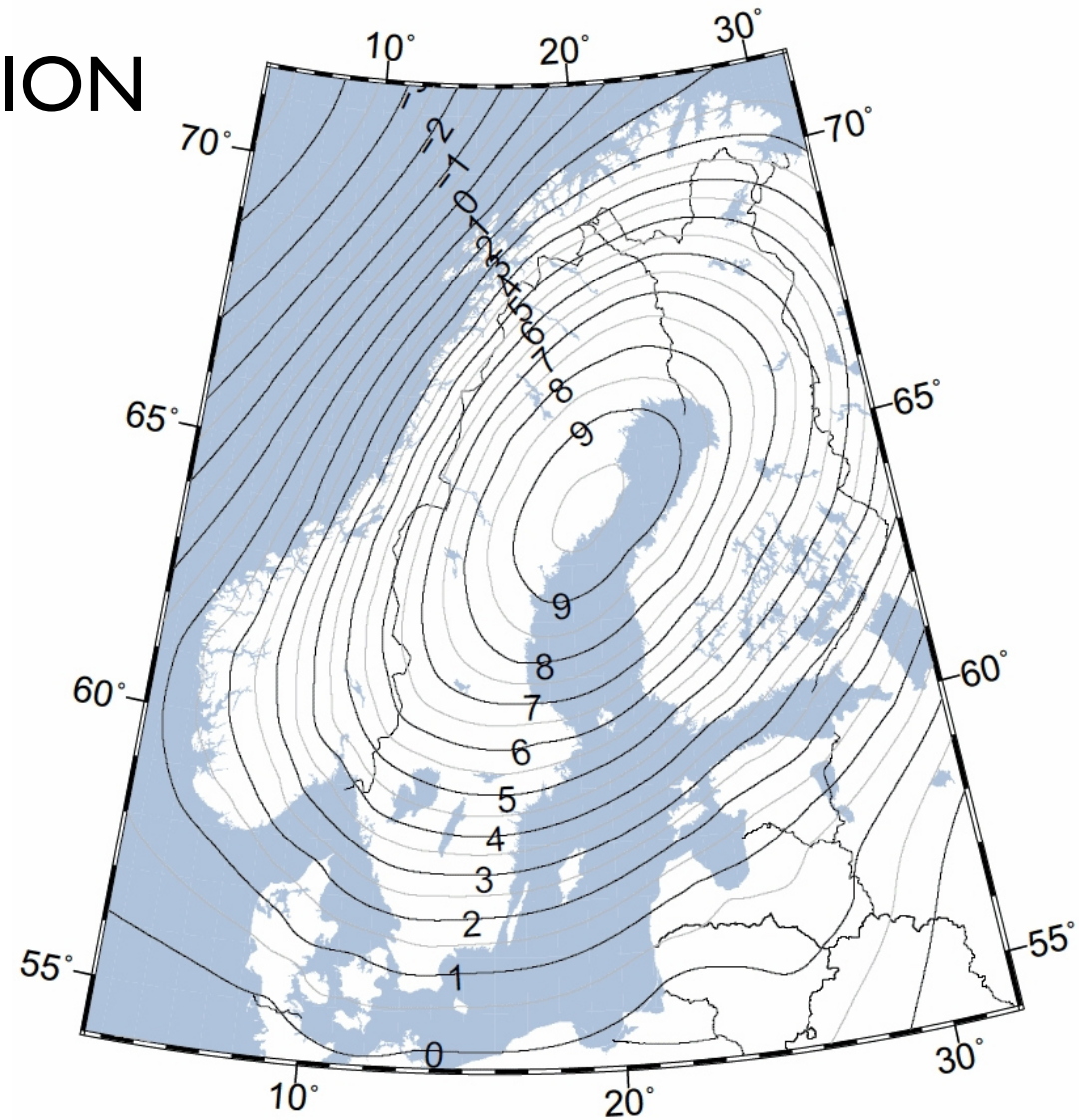
OUTLINE OF THIS PRESENTATION

Why is Lantmäteriet dealing with this?

From the beginning...

What is happening and why?

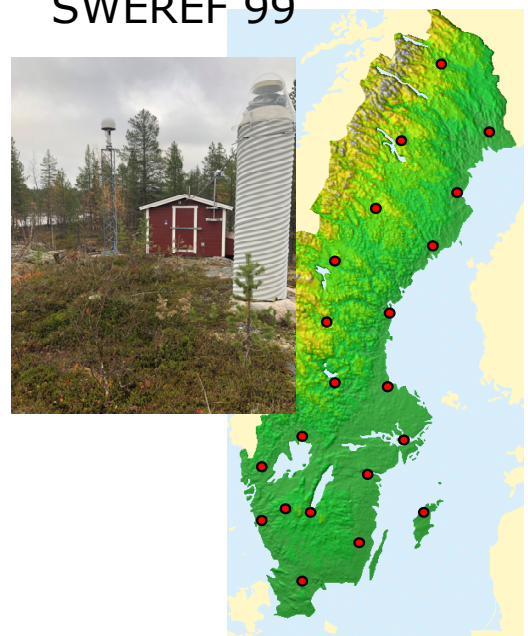
Relevance from a climate change perspective



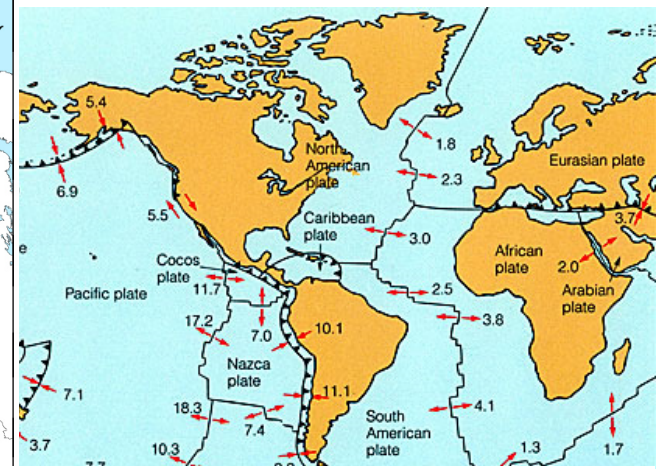
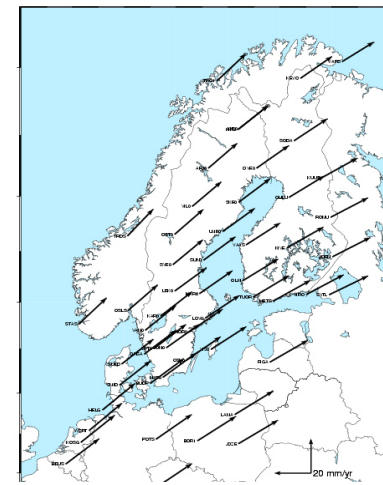
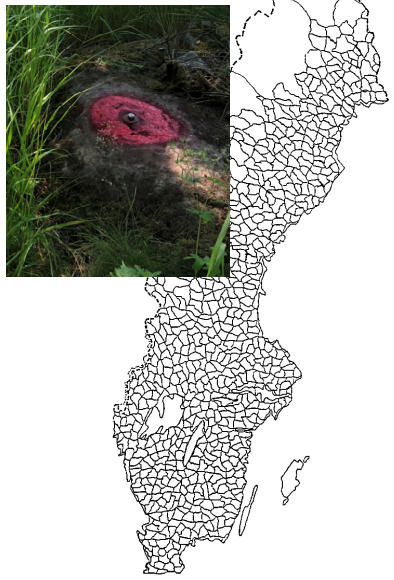
WHY?

It's all about coordinates...

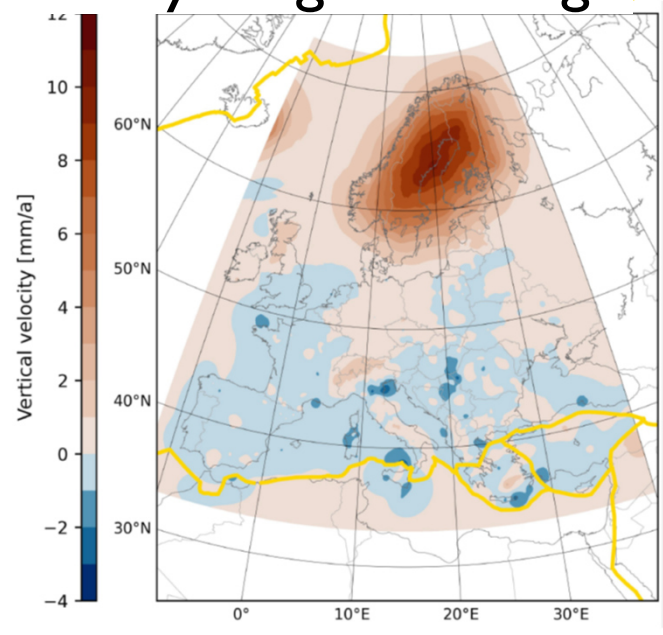
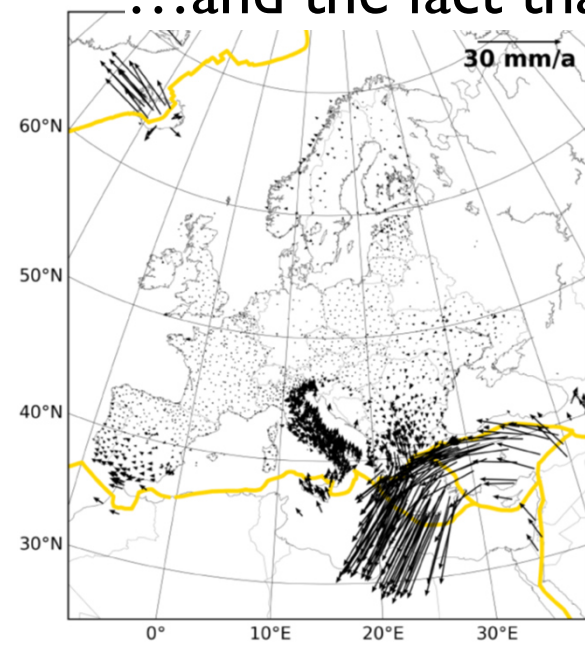
SWEREF 99

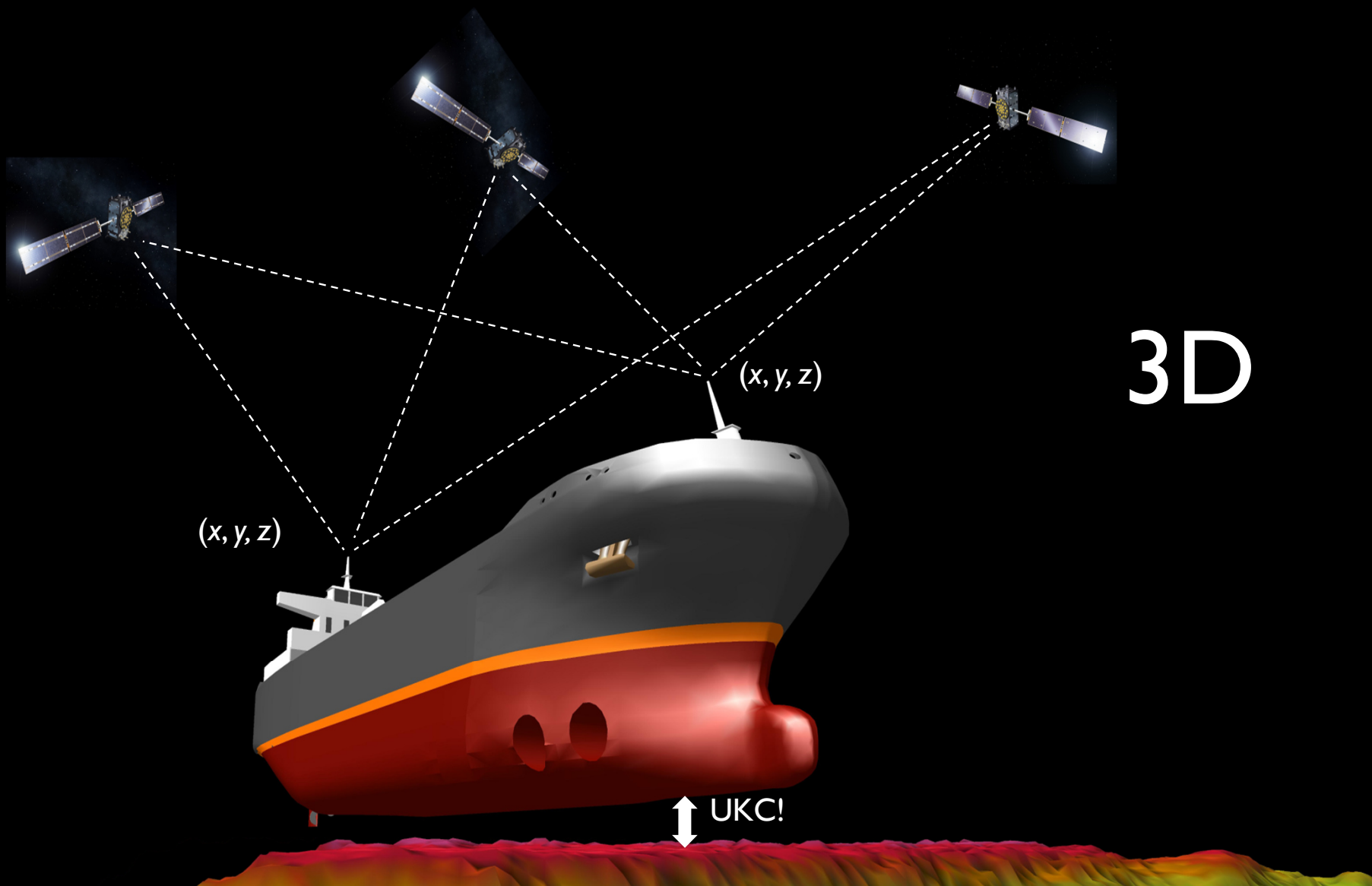


RH 2000



...and the fact that everything is moving!





IS IT THE LAND COMING UP OR THE SEA GOING DOWN?



OBSERVATIONS OF THE POSTGLACIAL REBOUND

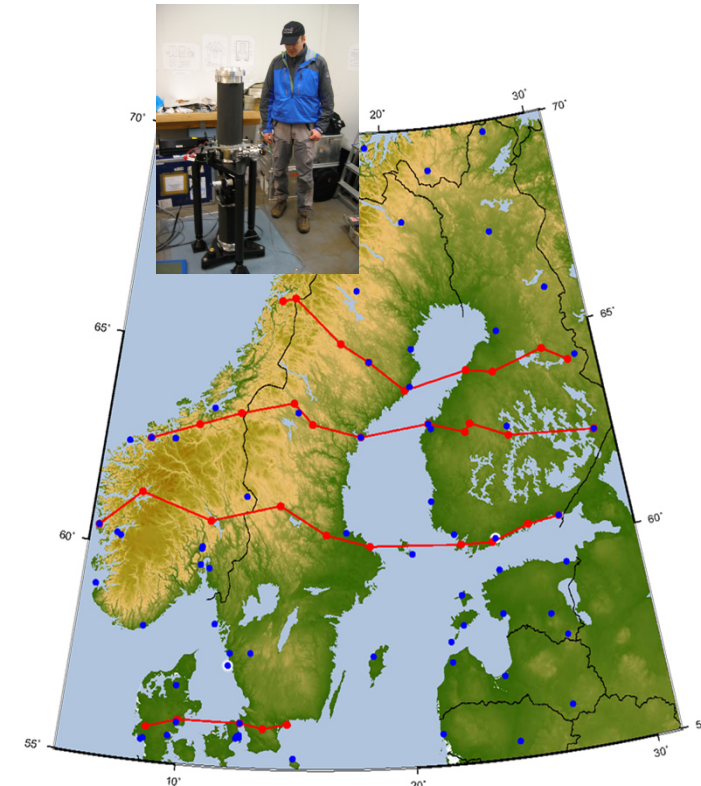


Sea level observations



Deformation of the crust

Lidberg (2010)

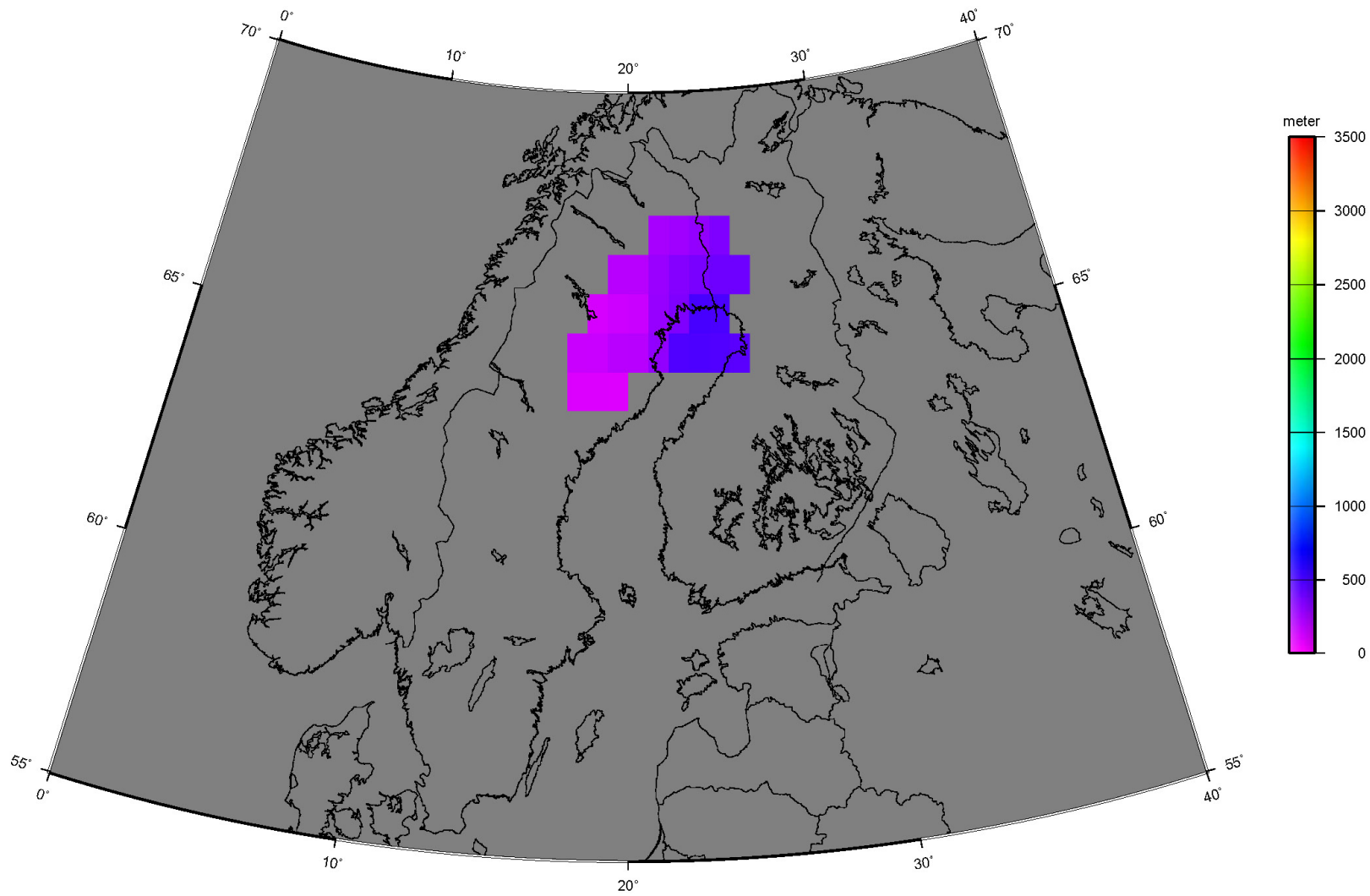


Gravity observations

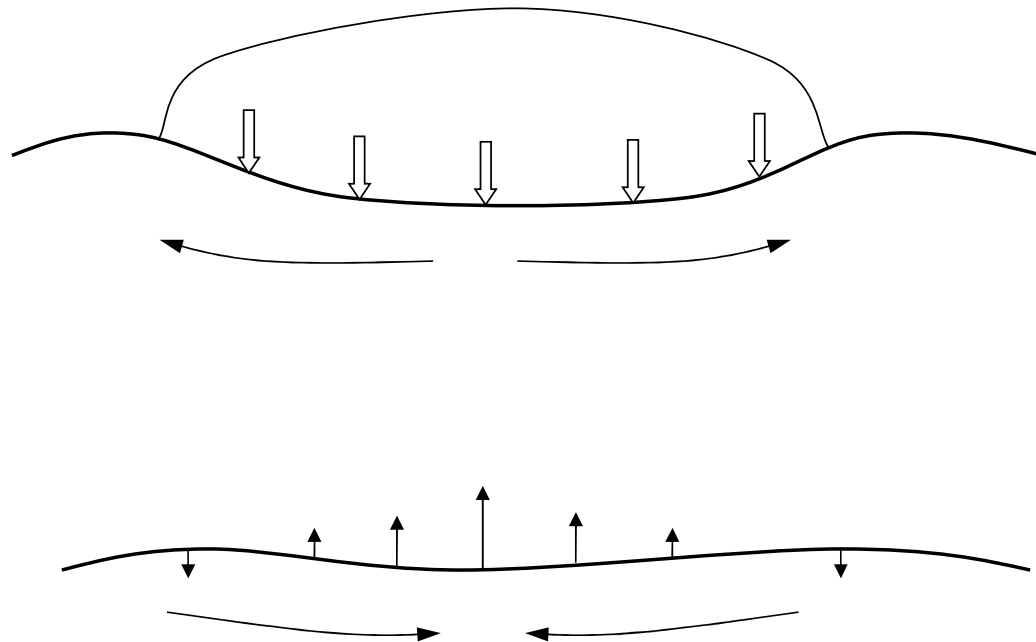
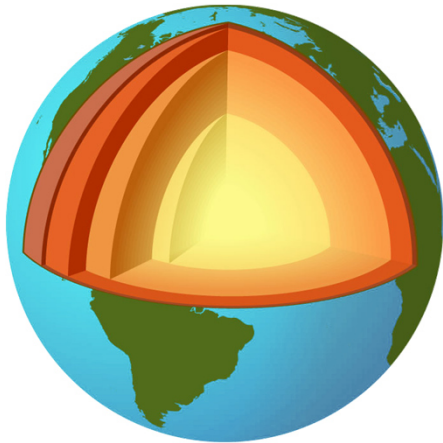
EFFECTS OF THE POSTGLACIAL REBOUND



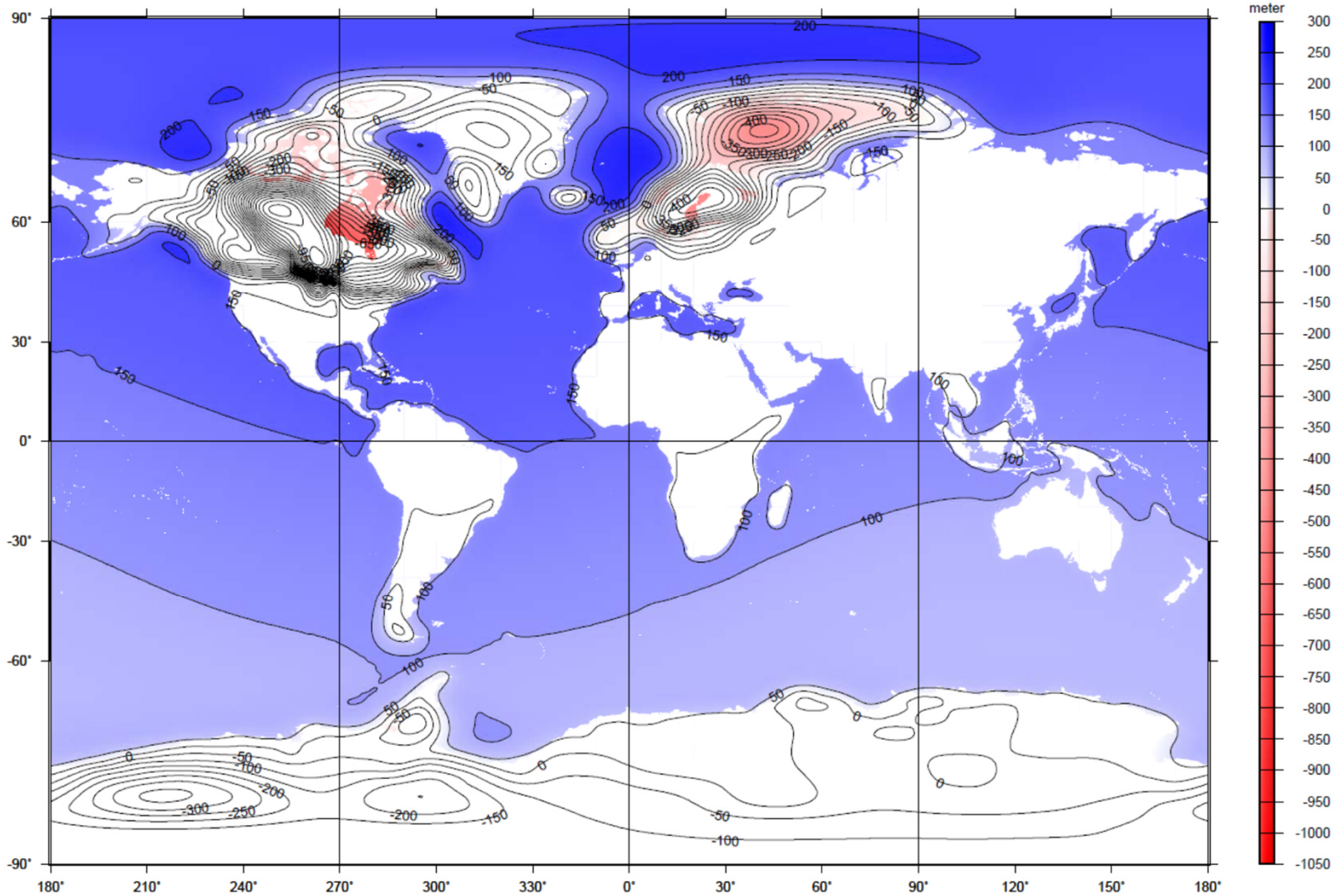
ICE-5G ice thickness 8 kyrs BP



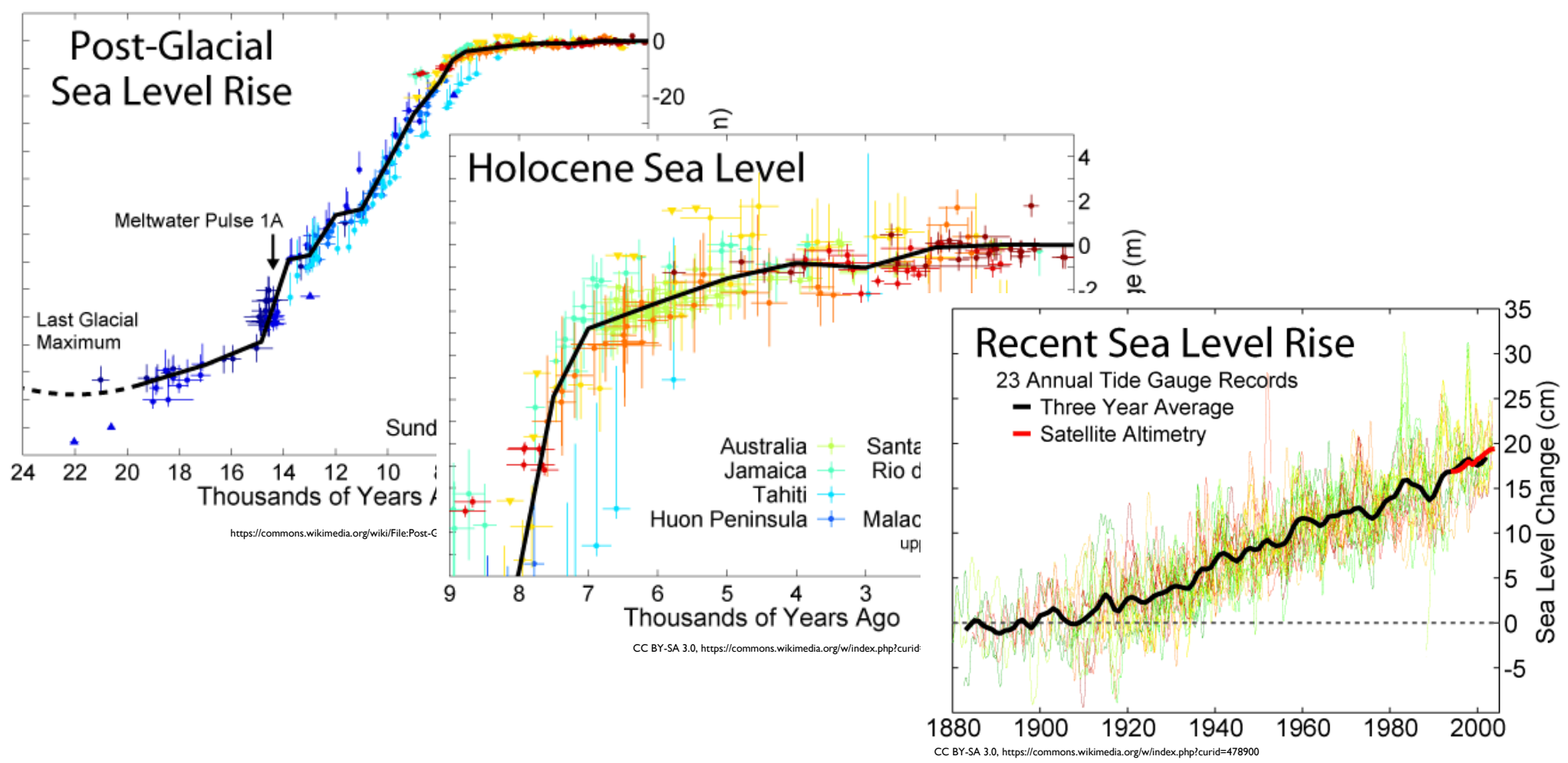
MODELS OF GLACIAL ISOSTATIC ADJUSTMENT (GIA) DESCRIBES THE RESTRIIBUTION OF MASSES ON THE EARTH



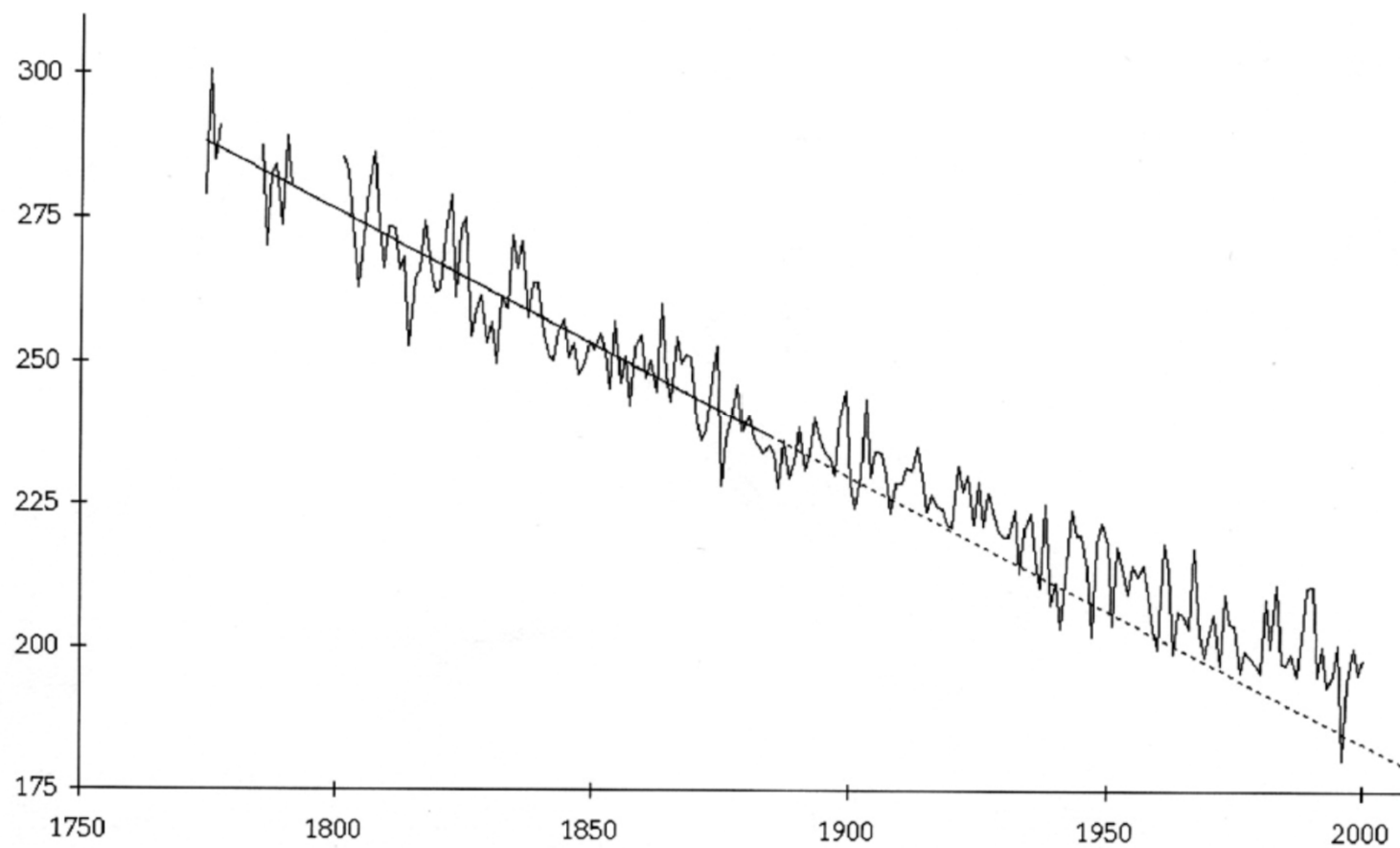
RELATIVE SEA LEVEL CHANGE SINCE 21 000 BP



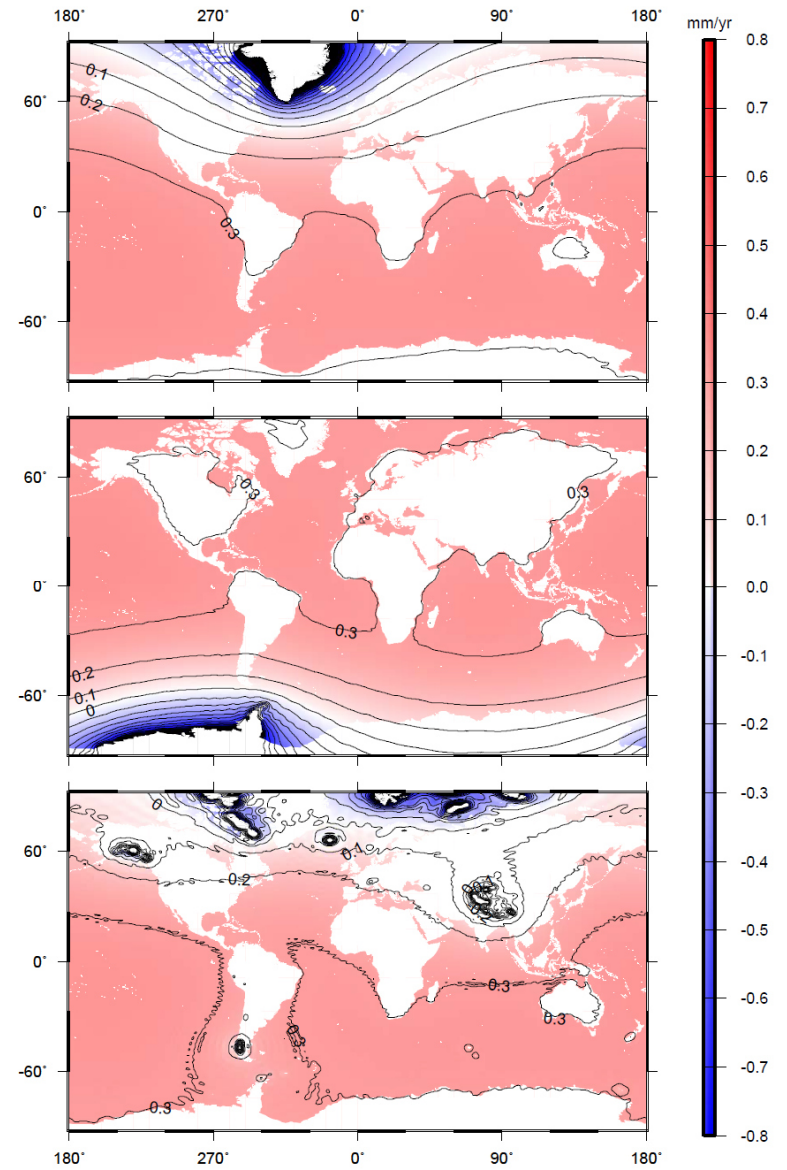
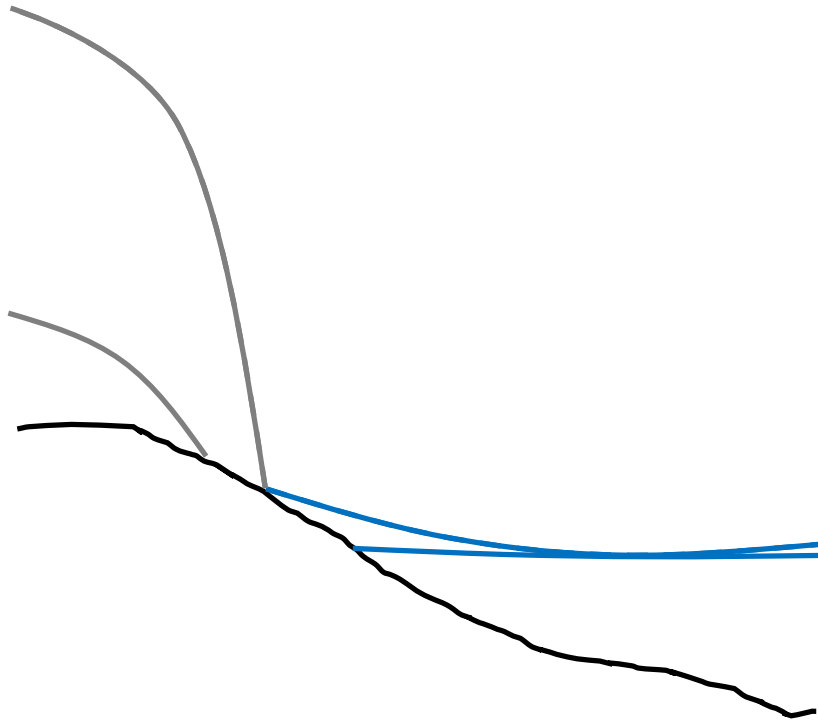
HISTORICAL GLOBAL MEAN SEA LEVEL VARIATIONS



THE STOCKHOLM TIDE GAUGE TIME SERIES

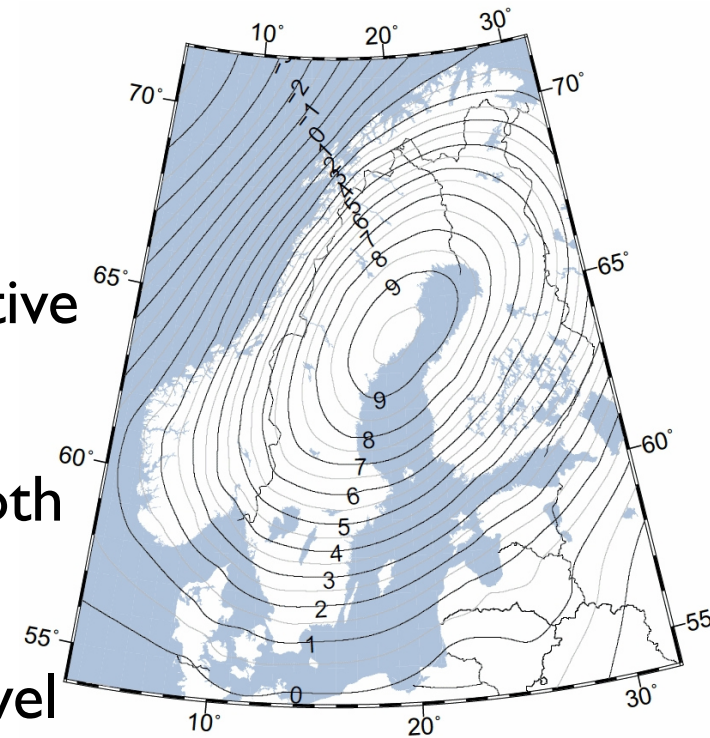


REGIONALA VARIATIONER



SUMMARY AND OUTLOOK

- The postglacial rebound is a still ongoing adjustment of the Earth from the last ice age
- It varies in Fennoscandia between 0 and 1 cm/yr and
- affects e.g. coordinates, the depth in the sea and relative sea level observations
- Areas with present day ice melting are affected by both present and historical effects
- Interpretations and predictions of present day sea level variations is a complex matter where the postglacial rebound plays an important role.



THANK YOU FOR YOUR ATTENTION!

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Reference: Ekman, Martin: The Changing Level of the Baltic Sea during 300 Years: A Clue to Understanding the Earth, <https://www.historicalgeophysics.ax/>

