



# POSTGLACIAL REBOUND

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PER-ANDERS OLSSON, LANTMÄTERIET



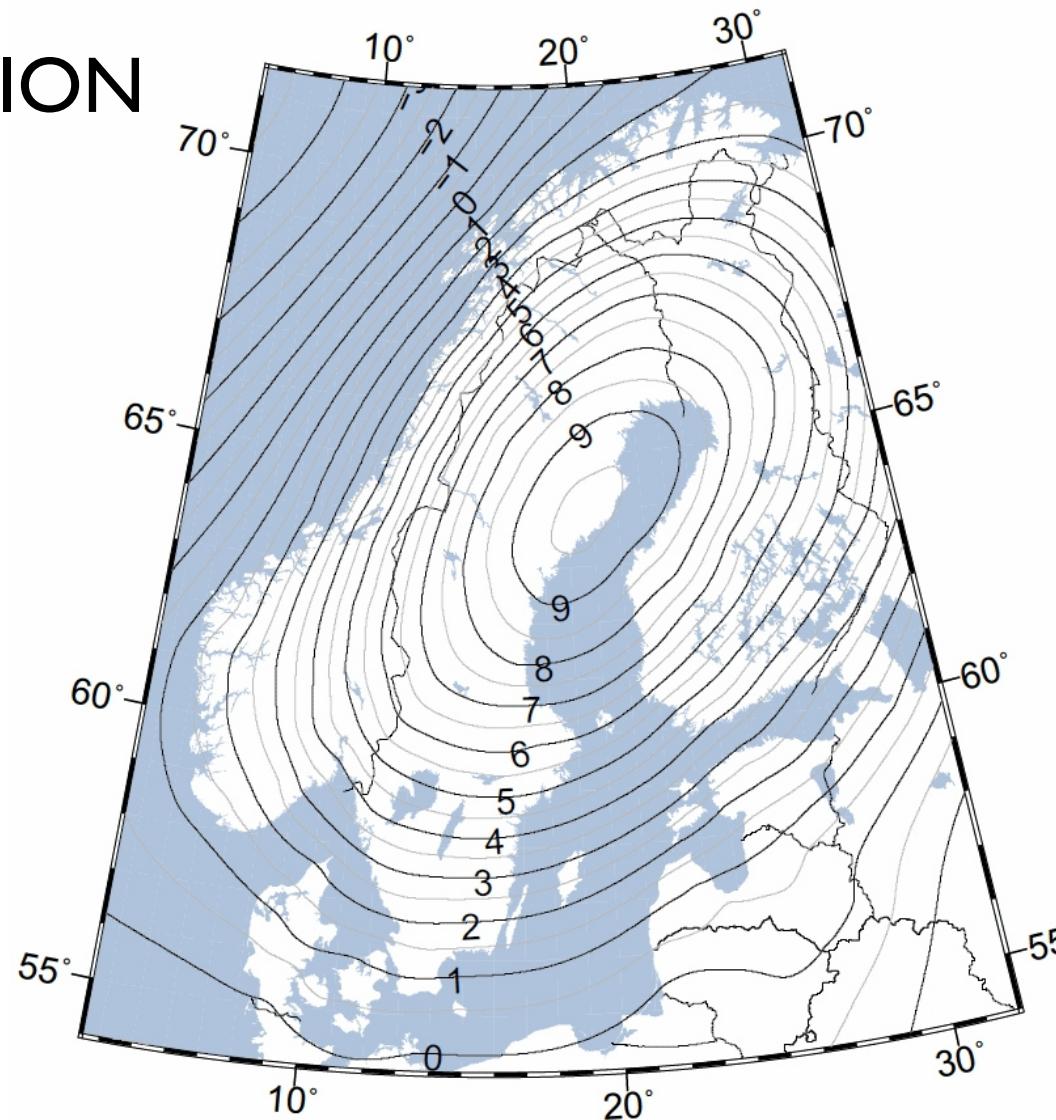
# OUTLINE OF THIS PRESENTATION

Why is Lantmäteriet dealing with this?

From the begining...

What is happening and why?

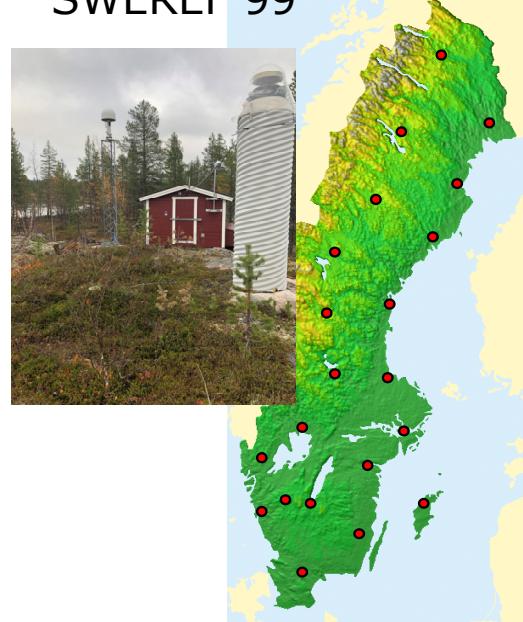
Relevance from a climate change perspective



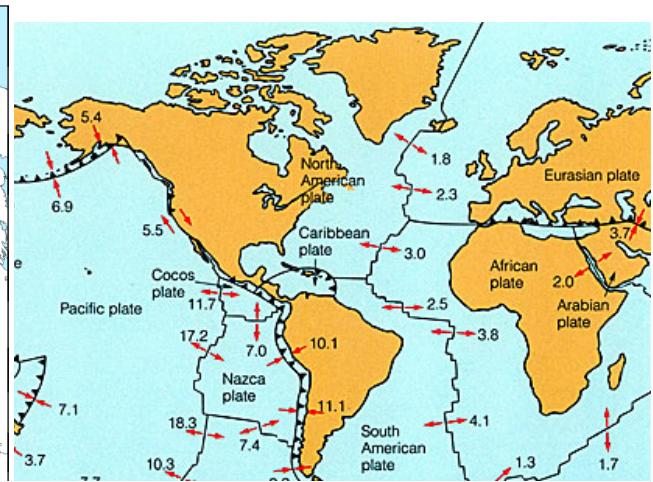
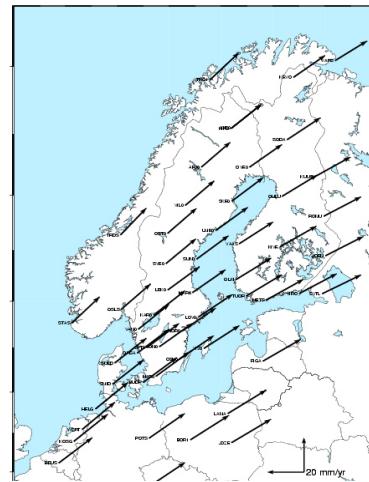
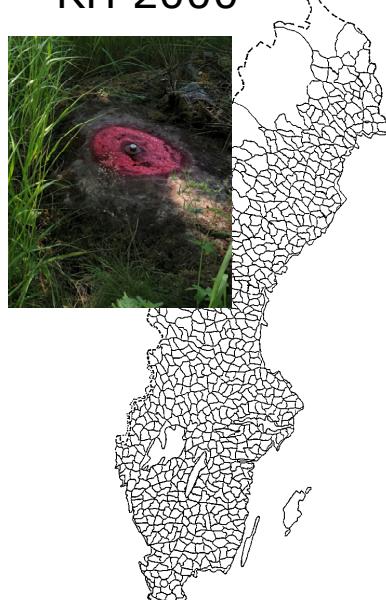
# WHY?

It's all about coordinates...

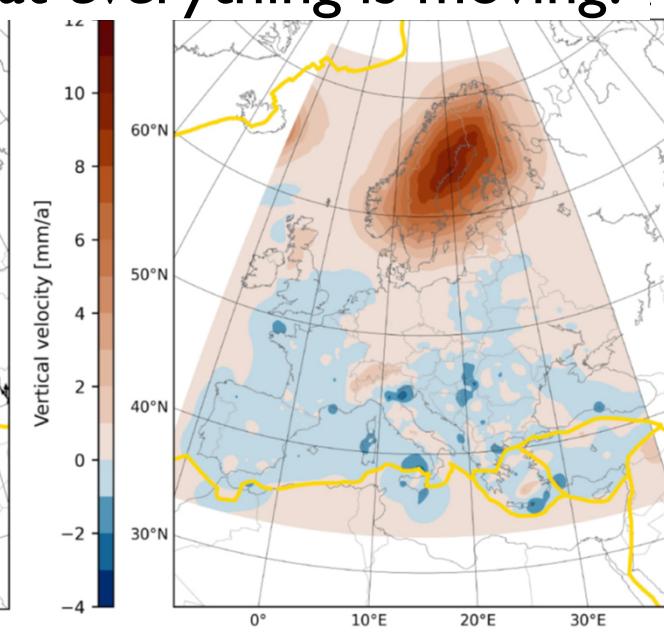
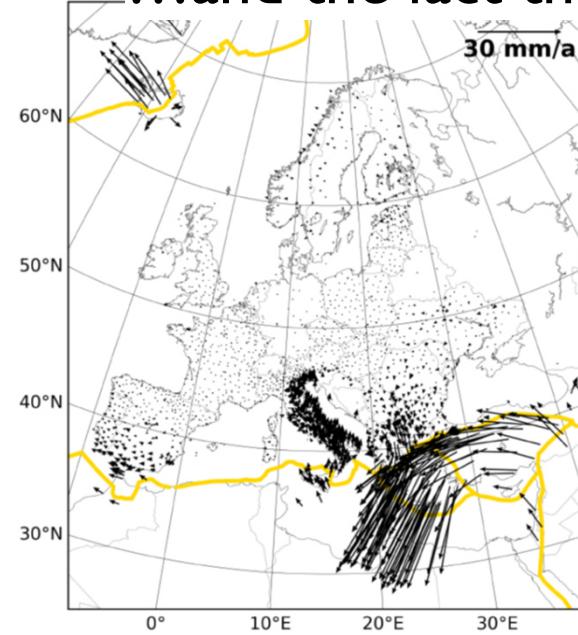
SWEREF 99

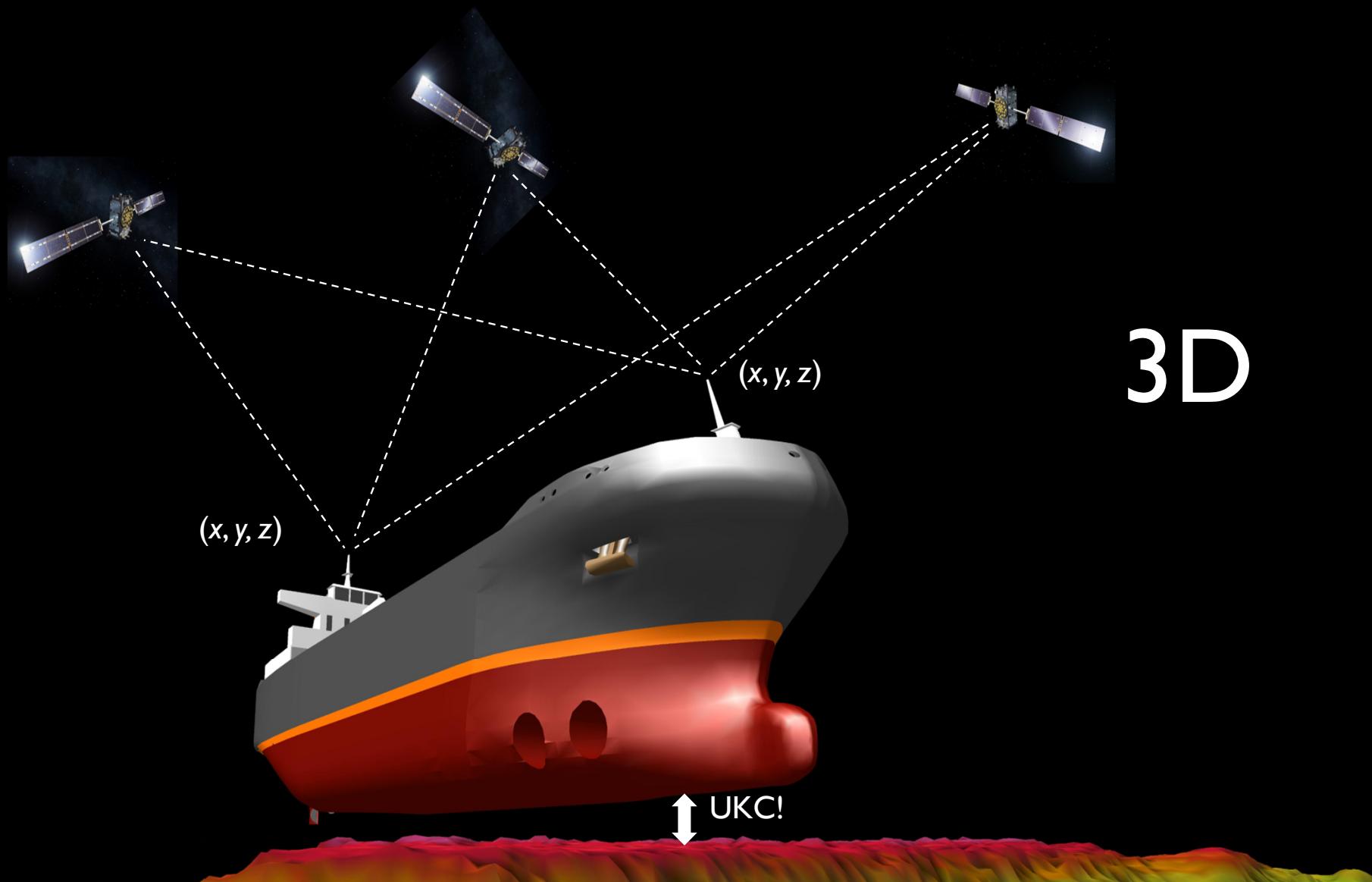


RH 2000



...and the fact that everything is moving!





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



# OBSERVATIONS OF THE POSTGLACIAL REBOUND

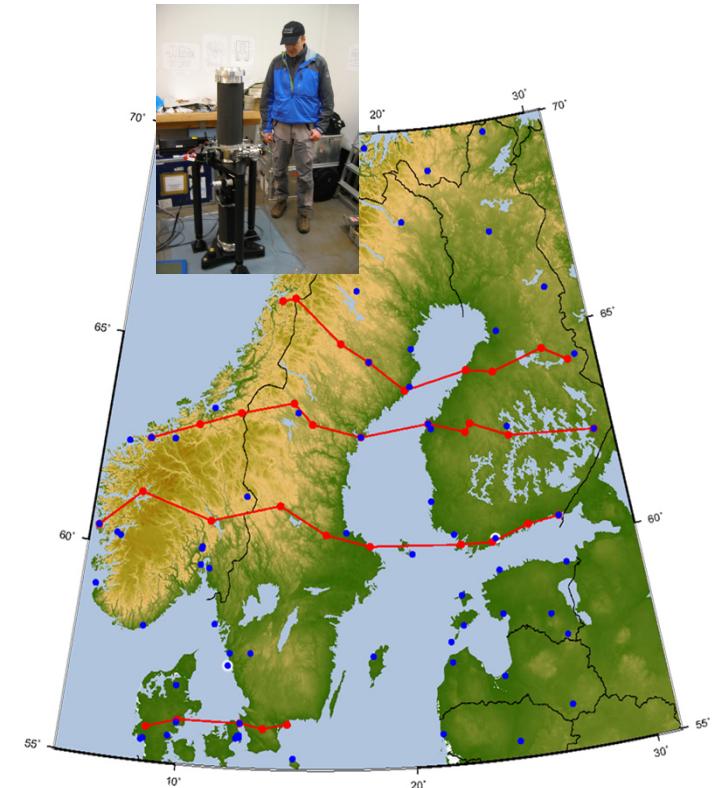


Sea level  
observations



Deformation of  
the crust

*Lidberg (2010)*

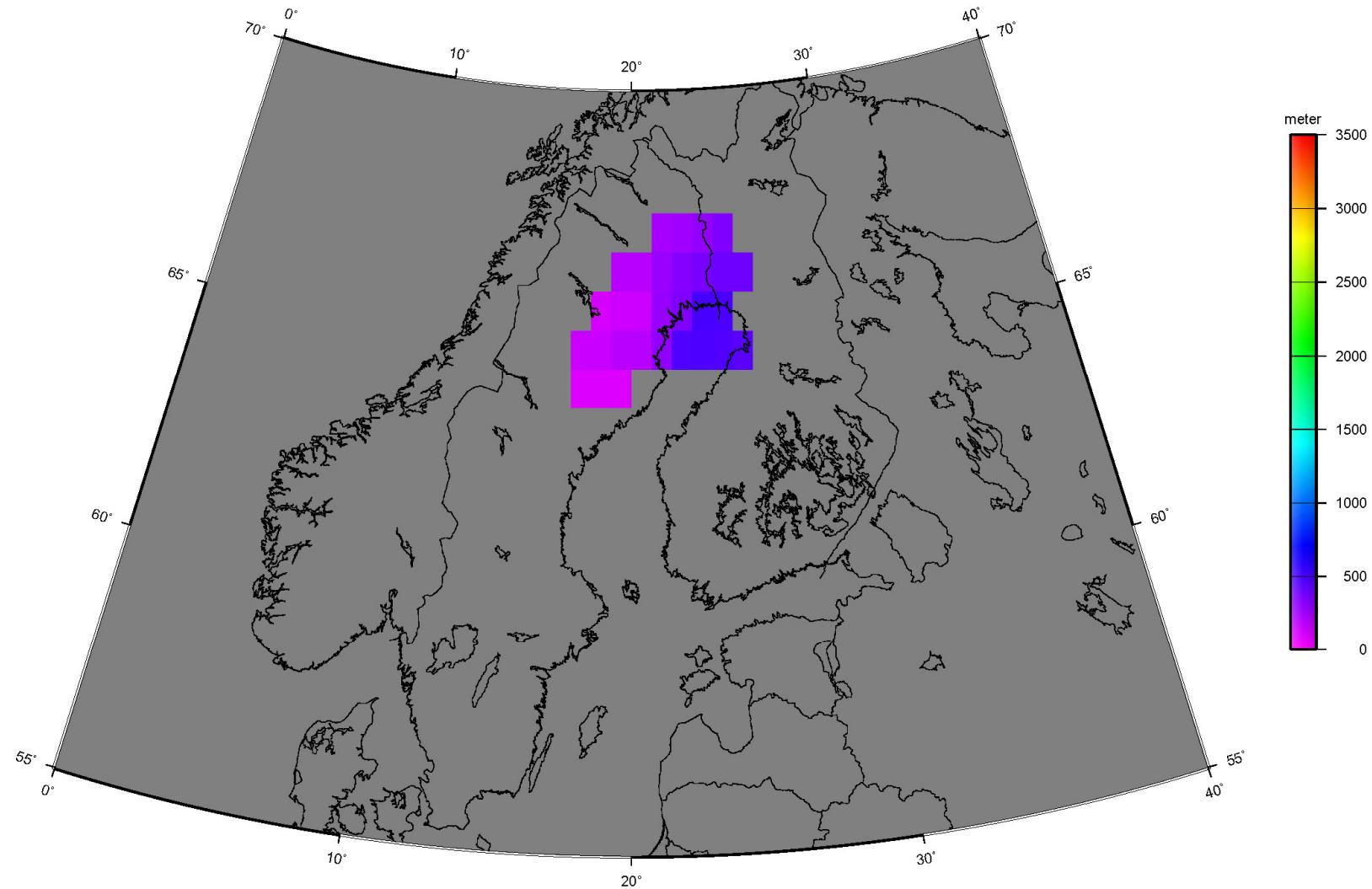


Gravity  
observations

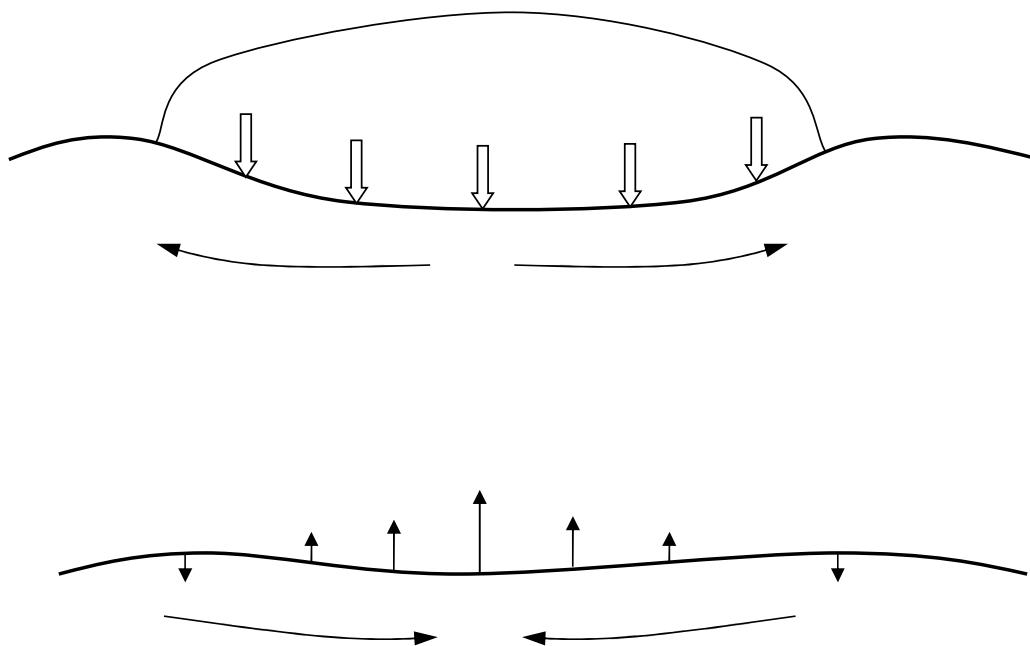
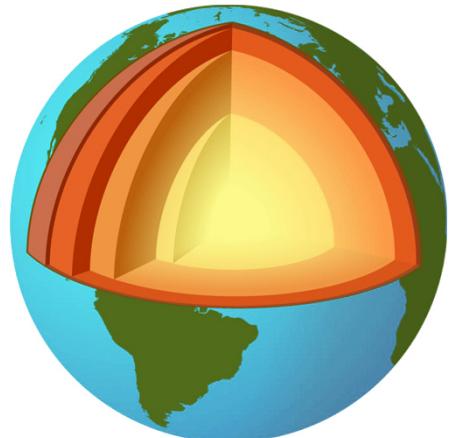
# EFFECTS OF THE POSTGLACIAL REBOUND



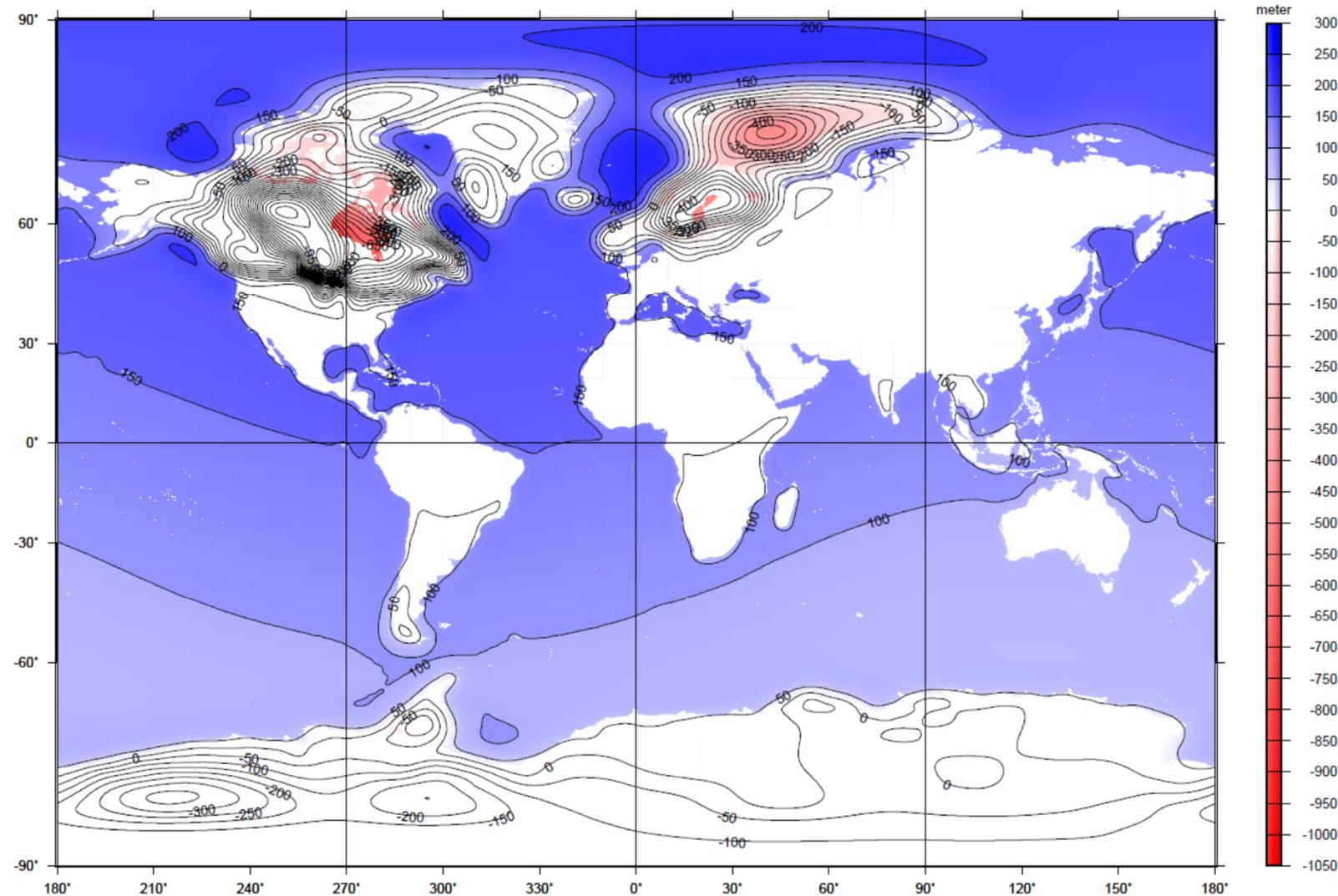
## ICE-5G ice thickness 8 kyr BP



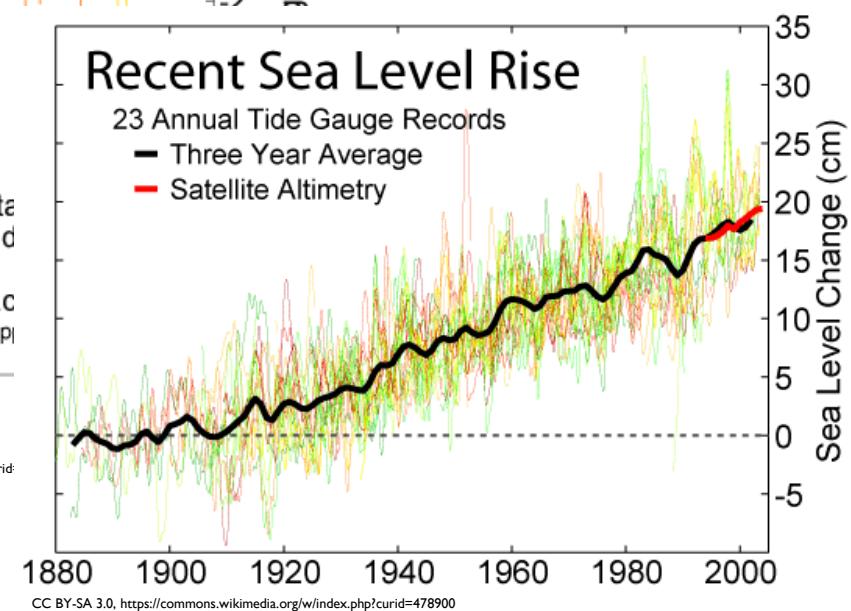
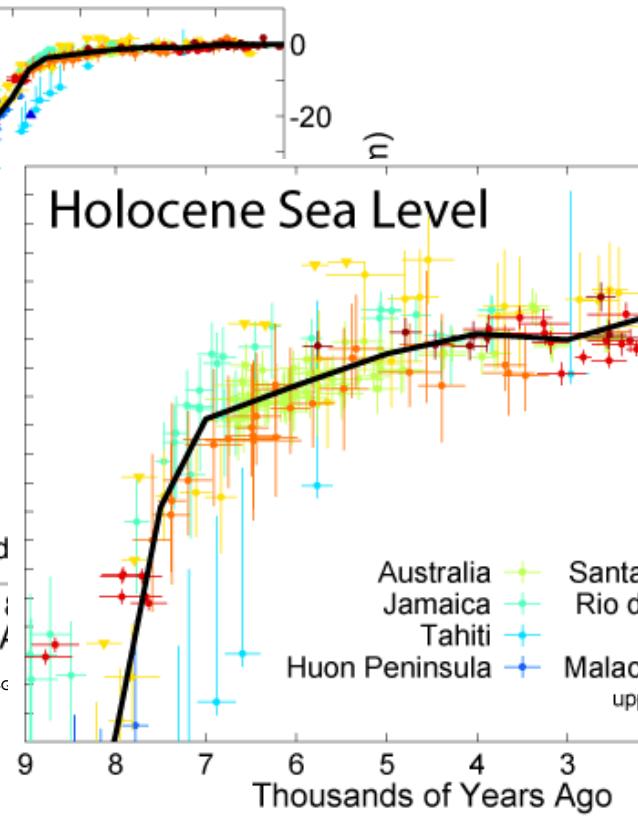
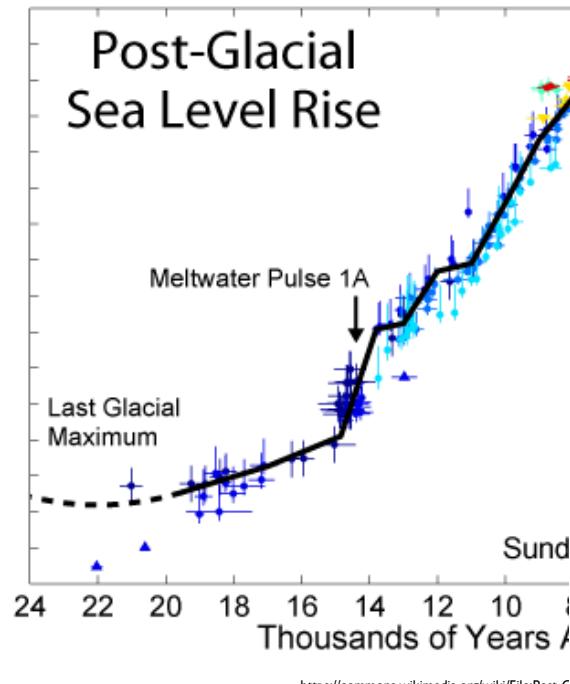
# MODELS OF GLACIAL ISOSTATIC ADJUSTMENT (GIA) DESCRIBES THE RESTRIBUTION OF MASSES ON THE EARTH



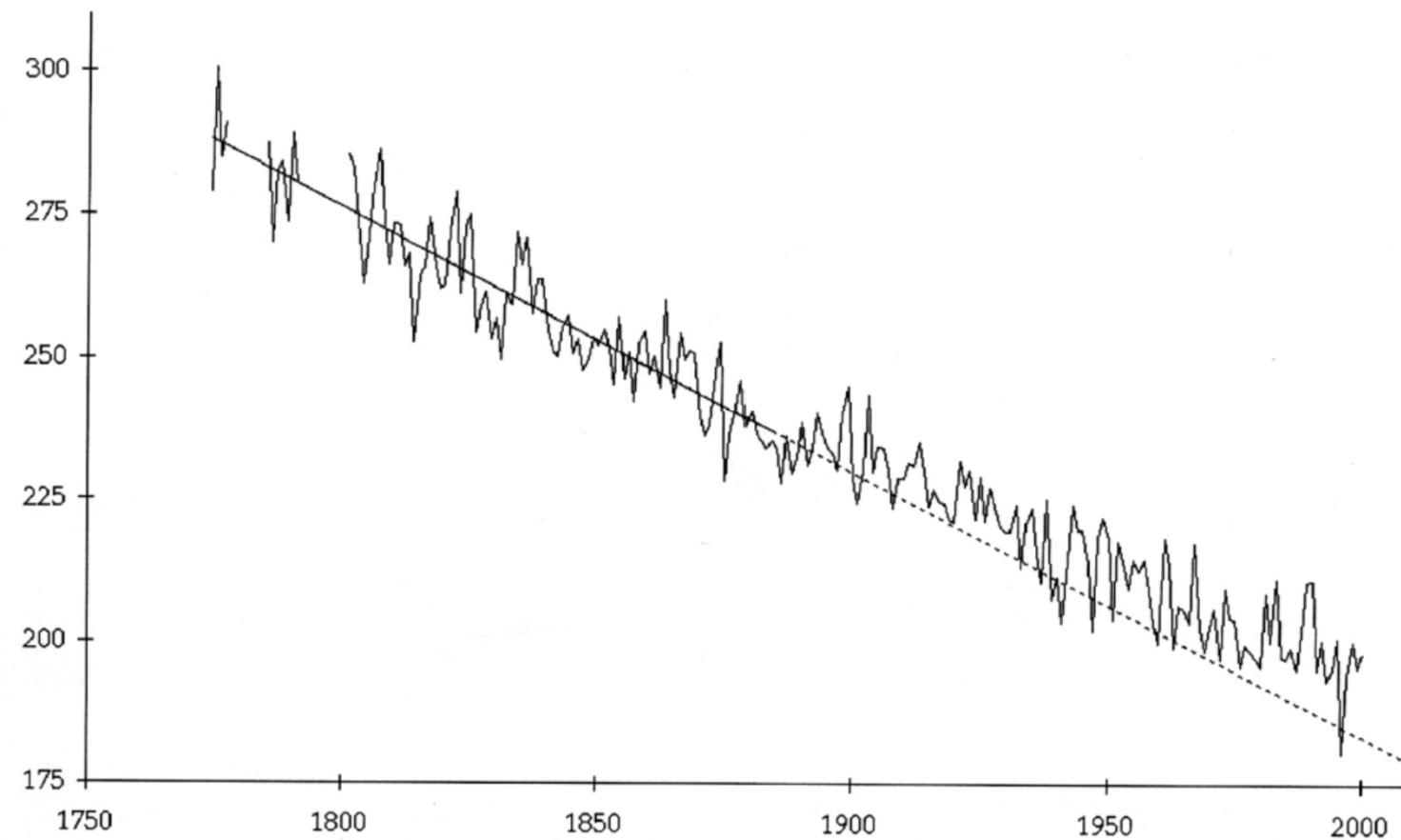
# RELATIVE SEA LEVEL CHANGE SINCE 21 000 BP



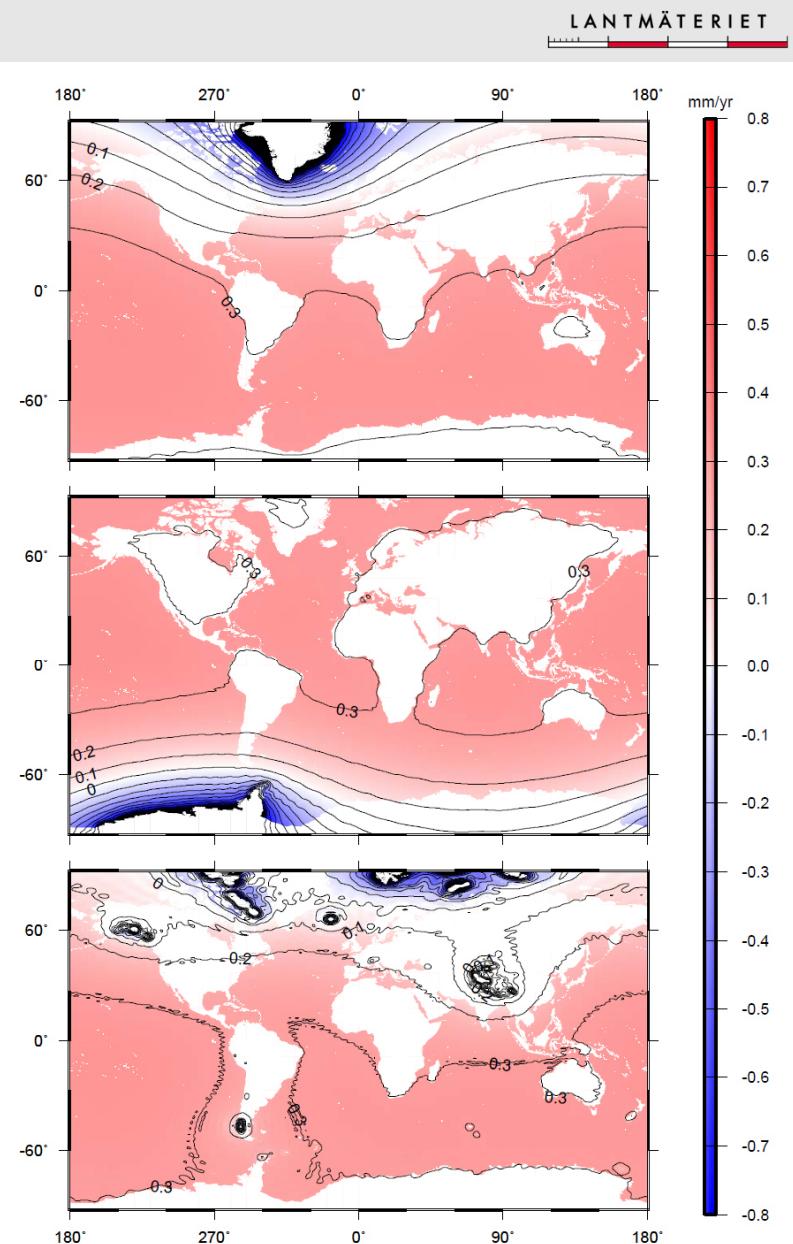
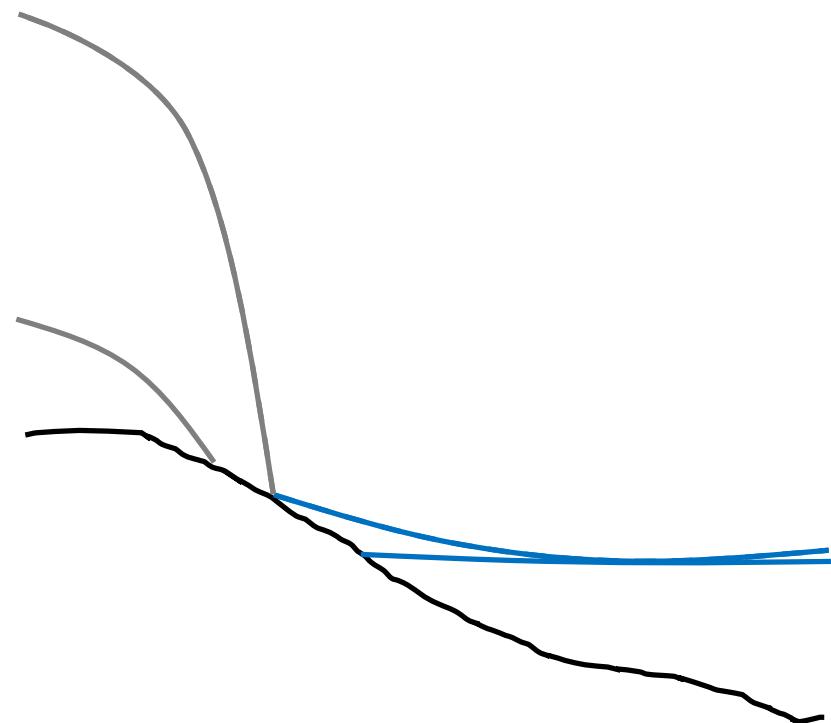
# HISTORICAL GLOBAL MEAN SEA LEVEL VARIATIONS



# THE STOCKHOLM TIDE GAUGE TIME SERIES

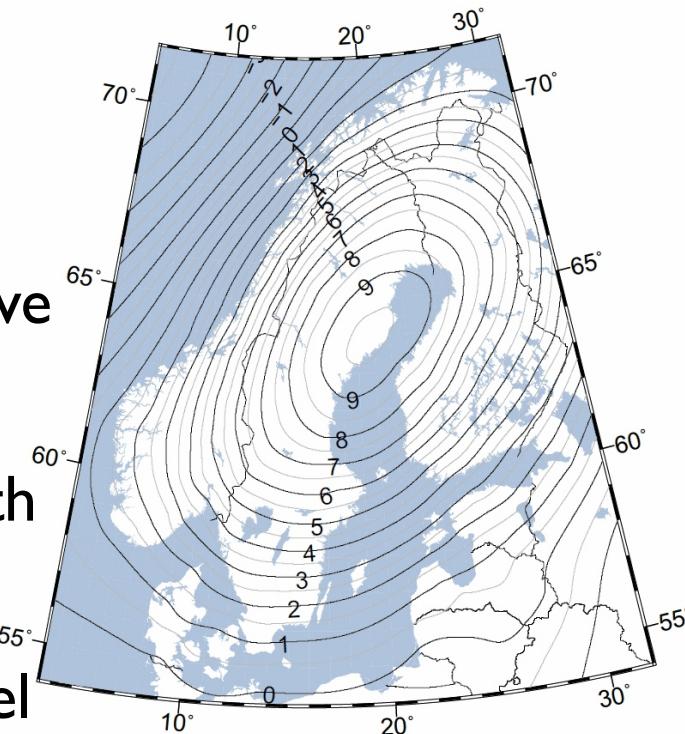


# REGIONALA VARIATIONER



# 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! YOU CAN REACH US AT...

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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/>

