Coastal management case study:

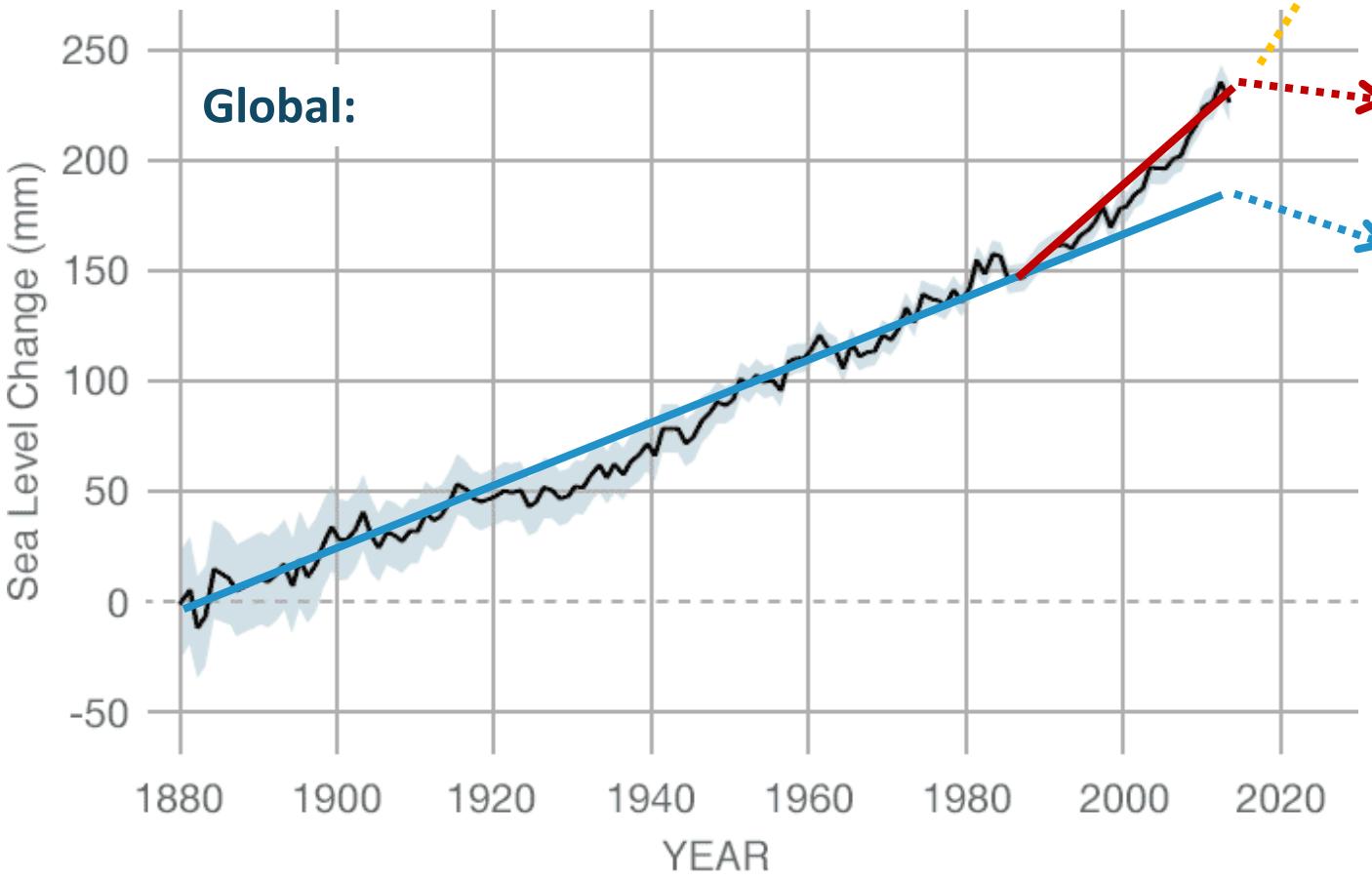
Coastal realignment and moor restoration - Hütelmoor

Gerald Schernewski

Leibniz-Institute for Baltic Sea Research, Warnemünde, Germany

Klaipeda University, Lithuania

Sea level rise



https://earthscience.stackexchange.com/

Baltic Sea:

Sea level rise projections 2100:
Up to 10 mm per year

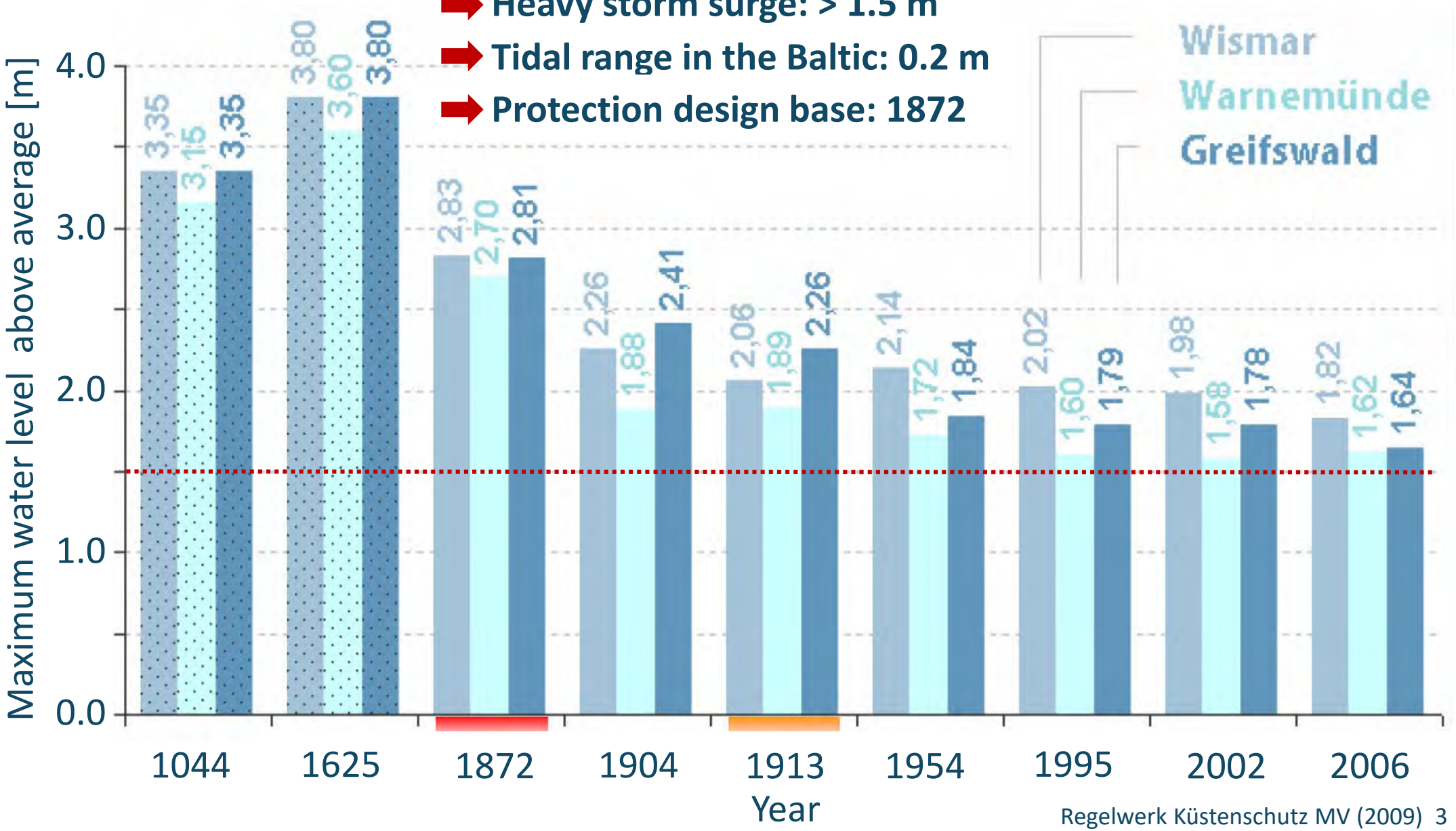
Present sea level rise :
3-4 mm per year

Historic sea level rise :
1-2 mm per year

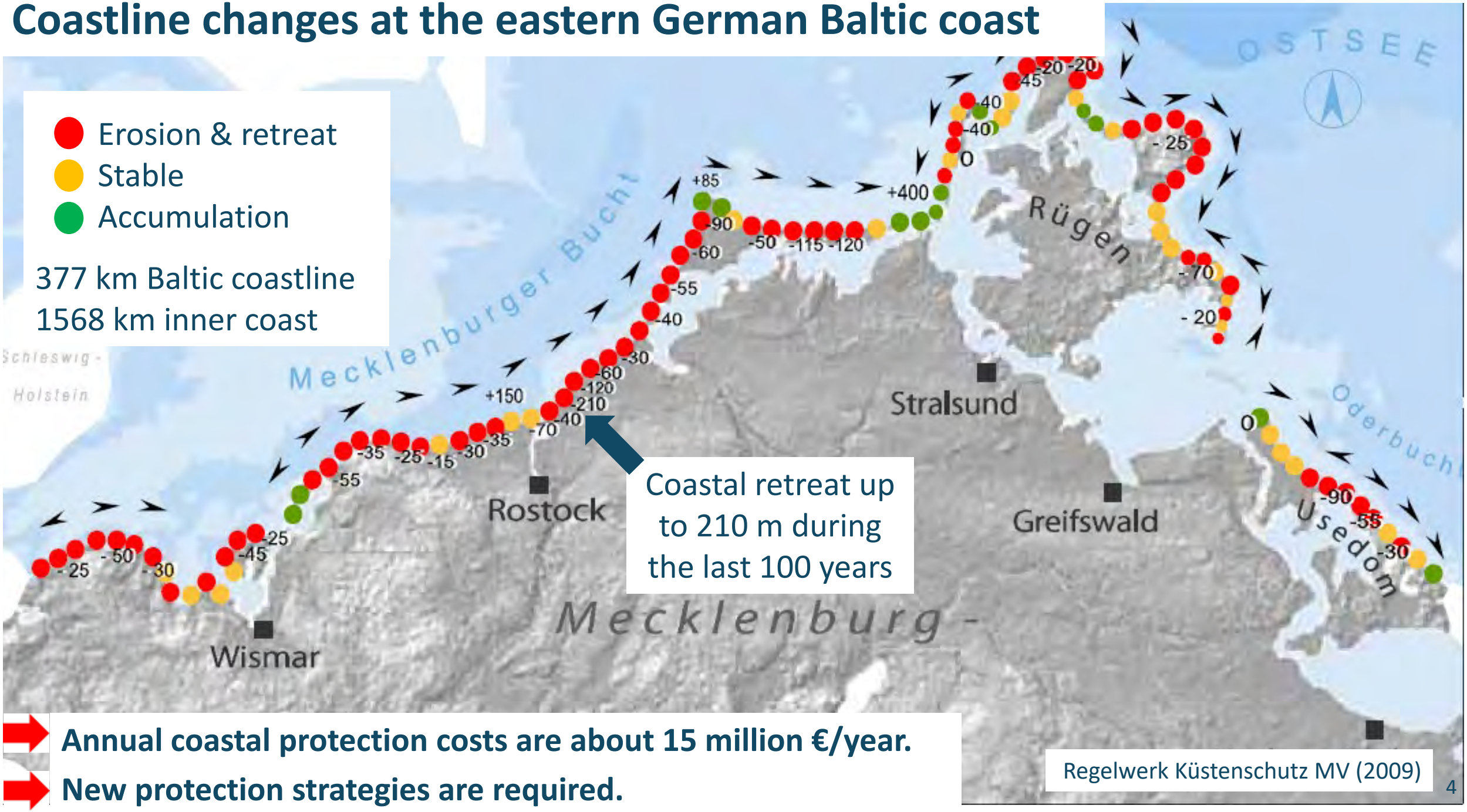
BACC II – Report (2015)

Heavy storm surges at the eastern German Baltic coast

- Heavy storm surge: > 1.5 m
- Tidal range in the Baltic: 0.2 m
- Protection design base: 1872



Coastline changes at the eastern German Baltic coast



Annual coastal protection costs are about 15 million €/year.

New protection strategies are required.

Regelwerk Küstenschutz MV (2009)

Markgrafenheide & Hütelmoor

Costs:

Groynes (2002, 2005): 2.1 million €

Beach nourishment: 5.2 million €

(1991-2003, volume 1,126,000 m³)

Dyke (2005-2006): 2.6 million €

(lenght: 2500m)

Hütelmoor: 540 ha

Markgrafenheide:

600 inhabitants

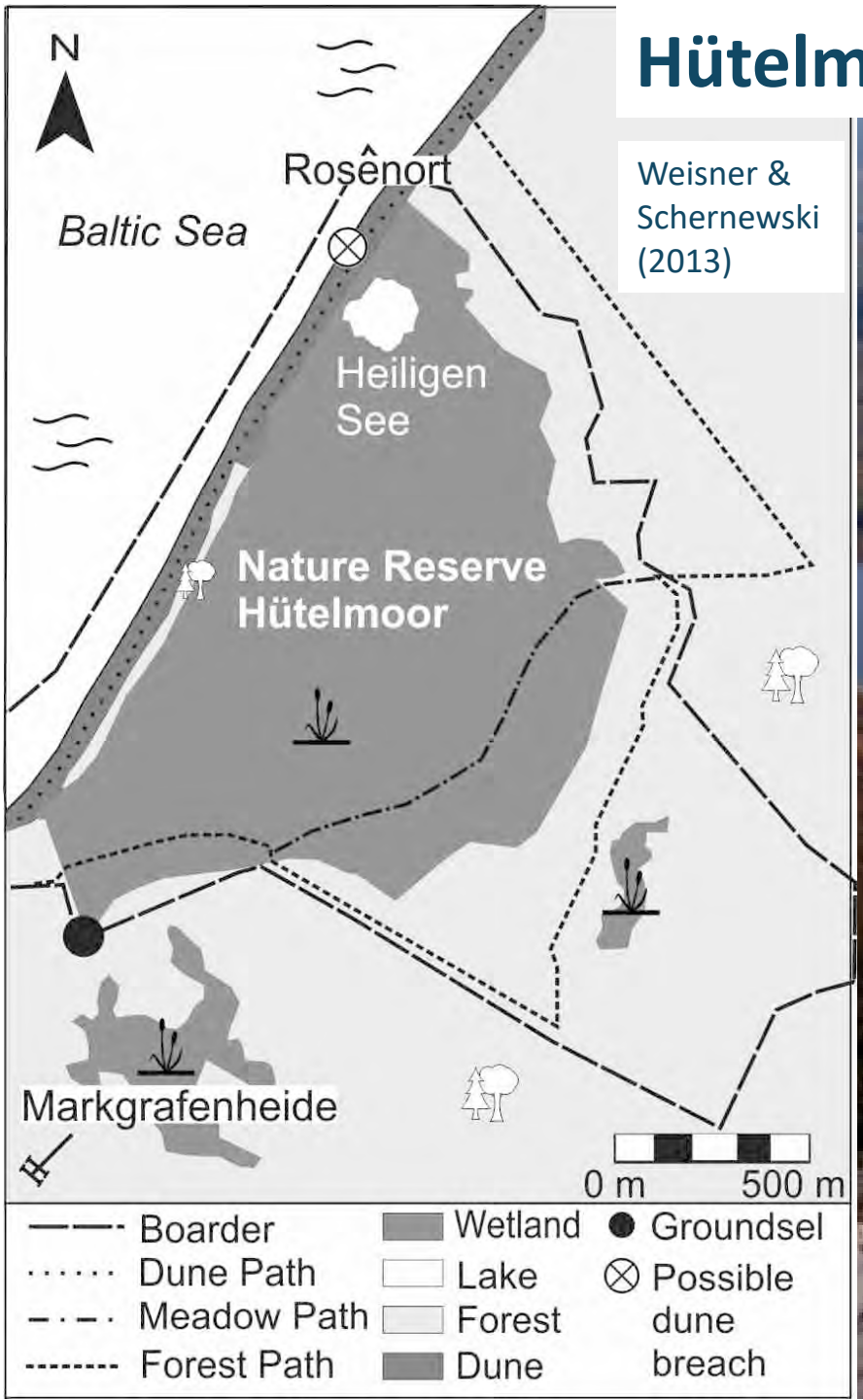
100,000 tourist overnight stays per year

The coastal protection scheme

- Coastal protection scheme completed in 2006
- Interventions required compensation measures

Tiepold StALU MM

Hütelmoor (coastal lowland moor)

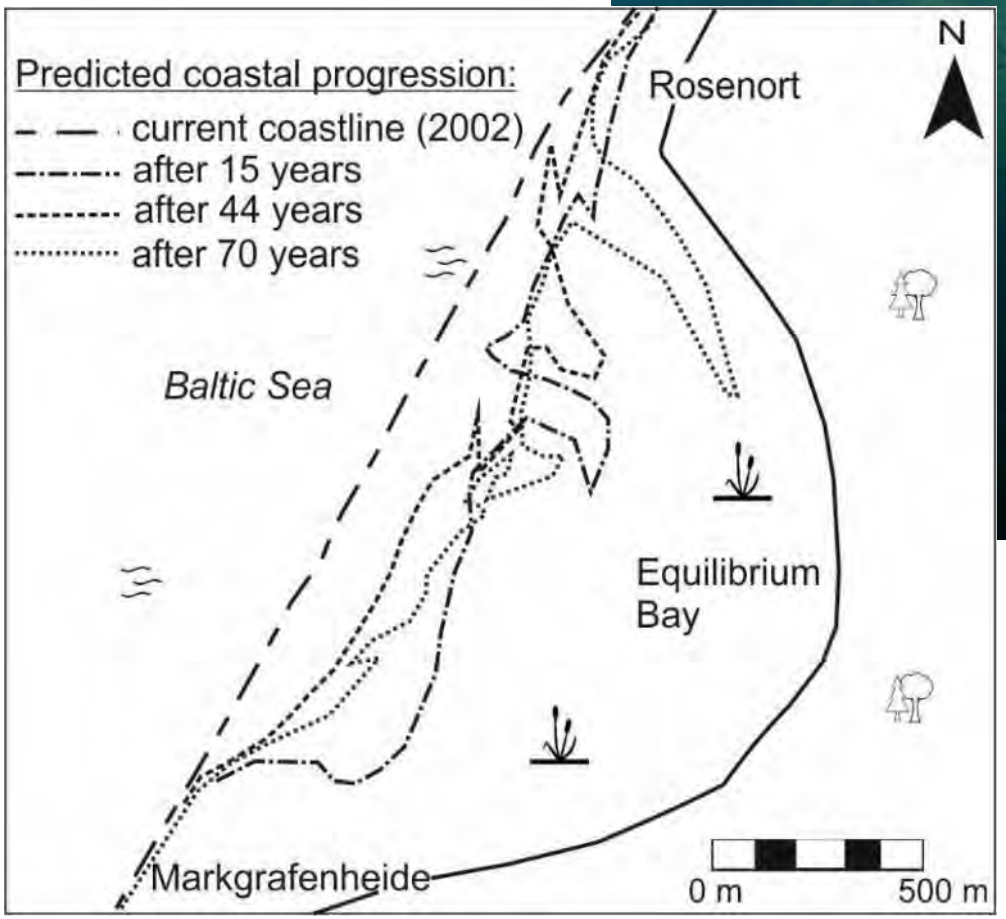


Weisner & Schernewski (2013)

- 1961 Designation as nature conservation
- 1970 De-watering and agricultural use
- 1990 De-watering and agriculture stopped

Hütelmoor - coastal realignment and renaturation

(Zanke, 2002)



- 2002 coastal protection terminated
- 2008 renaturation and increase of water level by 0.5 m
- 2011 unexpected flooding (precipitation of ~ 550 mm in July/August compared to a monthly average of about 60 mm according to DWD)

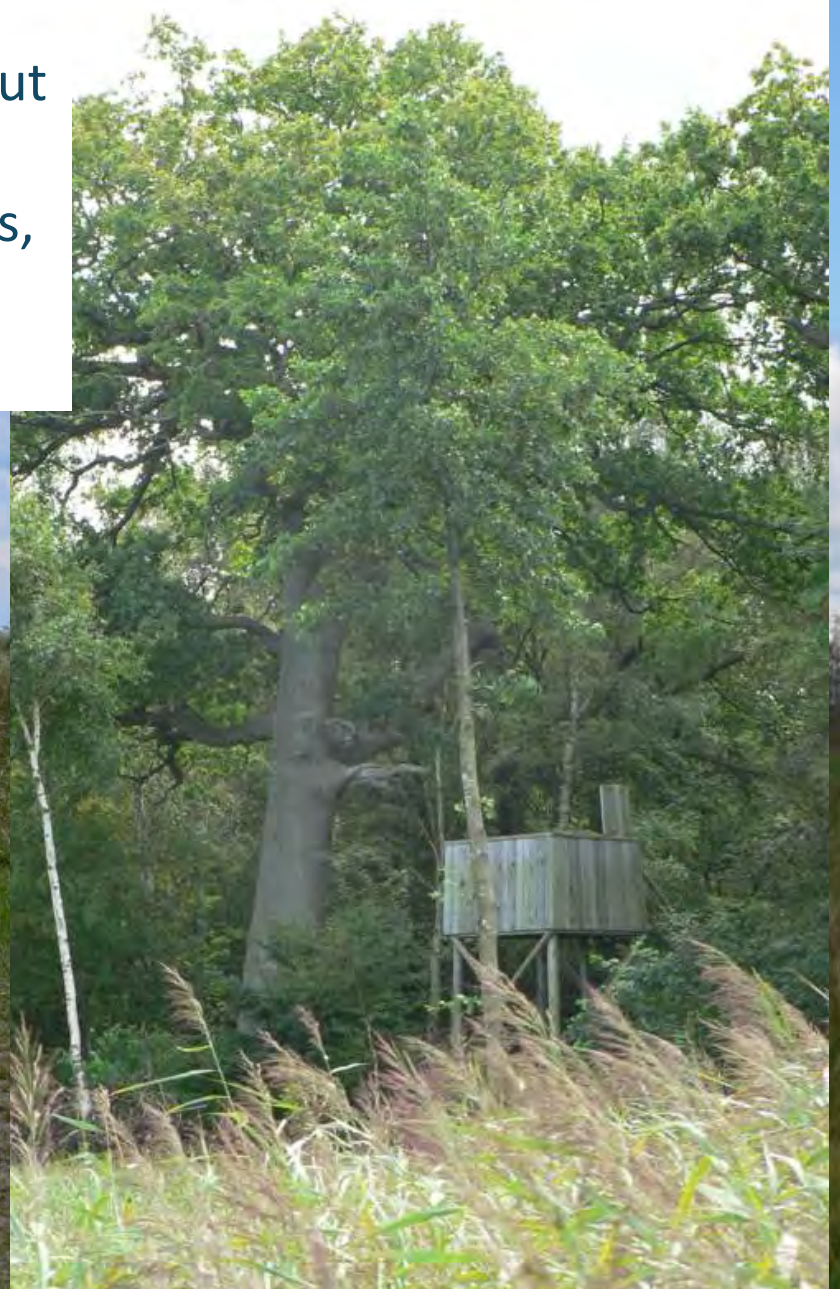
A story of success (after the flood 2011)?

- Flood increased local protests again and led to adjustments (slightly reduced water level and a partly elevated cycling path.

Hütelmoor after the flood 2011

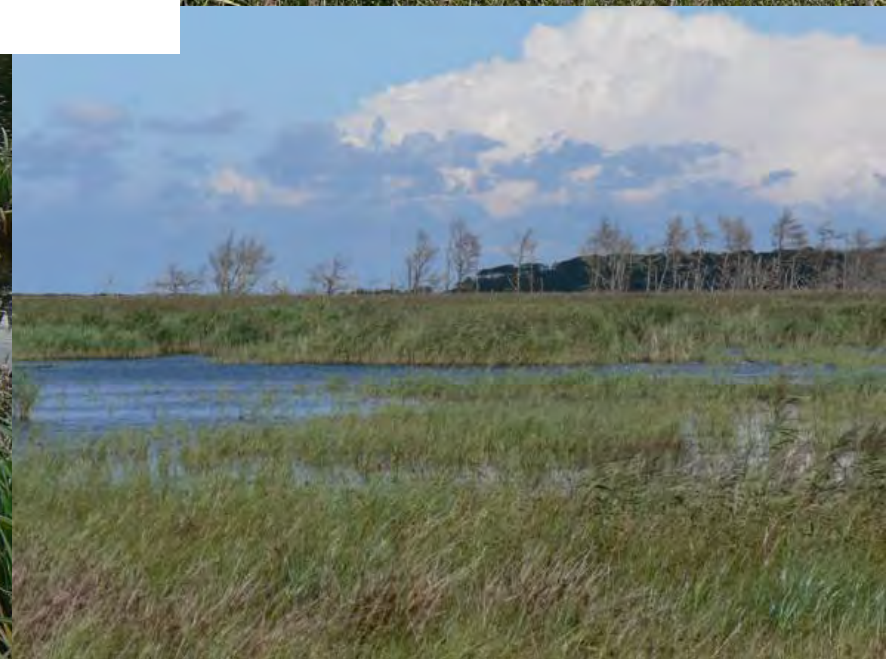
A story of success?

- Limited public access but new infrastructure (cycling path, sign-posts, information panels, observation towers)



A story of success (Hütelmoor today)?

- Renaturation objectives were largely reached, (e.g. natural state, stability against saltwater intrusions, peat conservation) but reduced diversity and release of CH_4....



A story of success (the coast today)

- So far no breakthrough, no larger flooding during surges
- Positive regional effects (sand provision for neighboring resorts)
- Cost-effective, innovative coastal protection and realignement scheme

Evaluation - some lessons learnt

- Uncertainties linked to climate change, sea level rise and model projections as well as complexity reduced the public acceptance.
- A low acceptance of coastal protection schemes exist in the German Baltic.
- Changing political frameworks and local contacts during a decade of implementation hampered planning and implementation.
- Temporal decoupling of coastal protection and realignment scheme includes is a risk for nature protection implementation.
- A disintegration between local and regional interests became obvious.
- An aged local population and the cultural/historic background may have reduced constructive discussions.
- A few activists took the leadership and pushed a negative minority opinion and tourism was abused for pushing own local interests.
- Media (local advertisement newspapers) played a problematic role.

Is public participation beneficial in a complex, large-scale, long-term scheme?

Thank you for your attention!

Universität Rostock

Leibniz Institute for Baltic Sea Research Warnemünde

Klaipeda University
Marine Research Institute

Prof. Dr. Gerald Schernewski
gerald.schernewski@io-warnemunde.de
Leibniz-Institute for Baltic Sea Research, Warnemünde, Germany; Klaipeda University, Lithuania

References

Regelwerk Küstenschutz Mecklenburg-Vorpommern (2009): https://www.stalu-mv.de/

Schernewski, G., Schumacher, J., Weisner, E., Donges, L. (2018): A combined coastal protection, realignment and wetland restoration scheme in the southern Baltic: Planning process, public information and participation. J Coast Conserv, 22,3: 533-547.

Weisner, E. & G. Schernewski (2013): Adaptation to climate change: A combined coastal protection and re-alignment scheme in a southern Baltic tourism region. Journal of Coastal Research, SI 65: 1963-1968.