



Sources And Pathways of Extreme Coastal Floods

- A "during the Event" Perspective of the 1962 Storm Surge in the City of St.Peter-Ording, German Bight Coast –

General Hydrological Aspects on Coastal Hazards

Sources of Risk:

high water level, caused by

- tides (astronomically driven)
- storm surges (driven by wind) and high wave load (driven by wind)

→ overtopping → major risk!

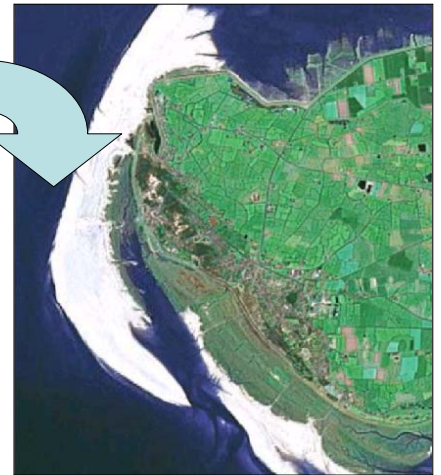
high water level + high wave load



Hydrological Chronology of The 1962 Storm Surge in St.Peter-Ording



Local Characteristics of St.Peter-Ording City Districts



Intensifying Aspects:

Short Term:

- shallow coast-lines
- estuaries
- remote waves
- seiche (oscillating waves)
- surface water inflow

Long Term:

- global sea level rise
- land submergence

Feb 16th:

- morning: "Vincinette", a Scandinavian-type storm surge approaching the coast with wind force 12
- 5.25 p.m.: official storm warning

Feb 17th:

- 20 hours of huge amounts of sea water driven against the coast and the estuaries

Feb 18th:

- water level: 4.58m above sea level
- dike of 4.00m high overflowed in the St.Peter-Bad city district
- behind the dike large areas flooded
- water level of up to 1m with correspondingly high damage
- approx. 100,000 individuals evacuated

• natural topographic depressions of up to 5m below sea level forwarding extensive flooding of lowland

• reoccurring coastal floods throughout the centuries leading to substantial dike building and raising activities in the past → now closed belt toward the sea line + „secondary dike lines“

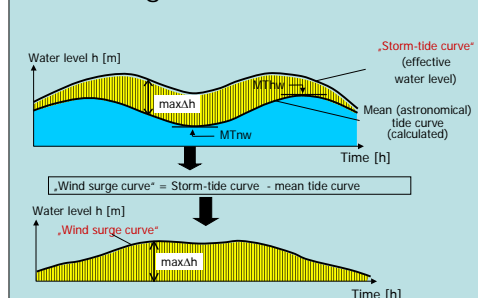
• some, but not all dikes are additionally protected by natural dunes

• today, highest assets of the area spread behind the dike line (tourism)

Conclusion

Coastal dikes can be a lifesaving measure - if they retain the flood; but in case of overtopping or breaching even higher damage has to be expected.

Wind Surge Curve at Tidal Coasts



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FLOODmaster
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