



The December 2013 flood in Germany: The second highest storm surge in Hamburg, but well defended and no damages

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Rotterdam, 24 September 2014



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Landesbetrieb Straßen,  
Brücken und Gewässer  
Hamburg



## Areas protected by sea dikes in Germany



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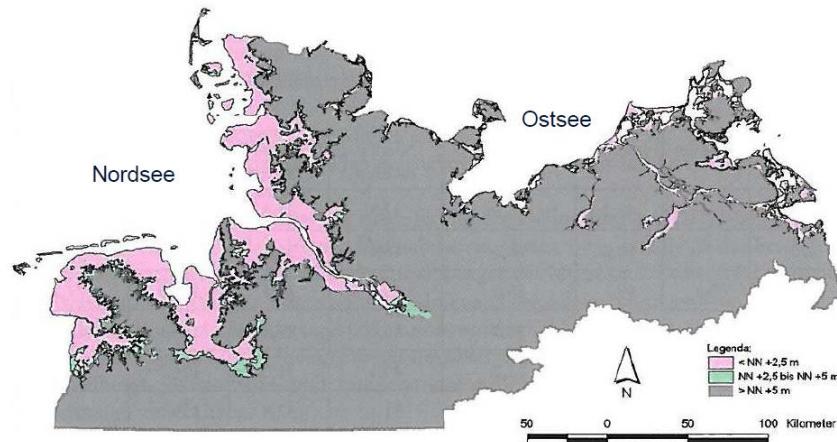


Abb. Hofstede, J. et al: Küstenschutzstrategien – Bericht einer FAK-Arbeitsgruppe. 2009

## Storm surge 1962



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## Flood protection after 1962

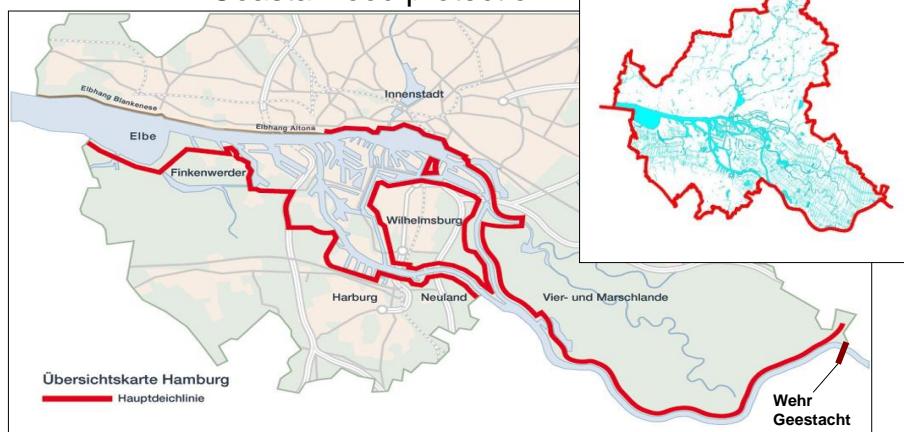


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## Flood protection along the river Elbe in Hamburg

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## Coastal flood protection

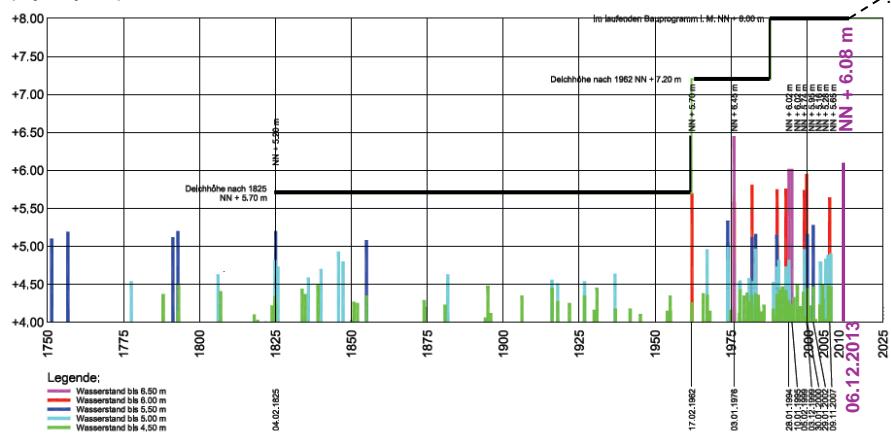


## Highest storm surges since 1750



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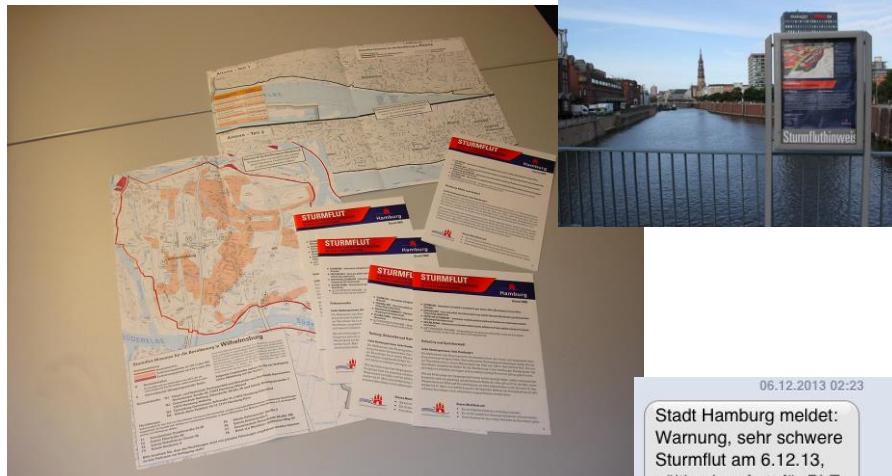
Wasserstand in m ü. NN  
(bezogen auf Pegel St. Pauli)



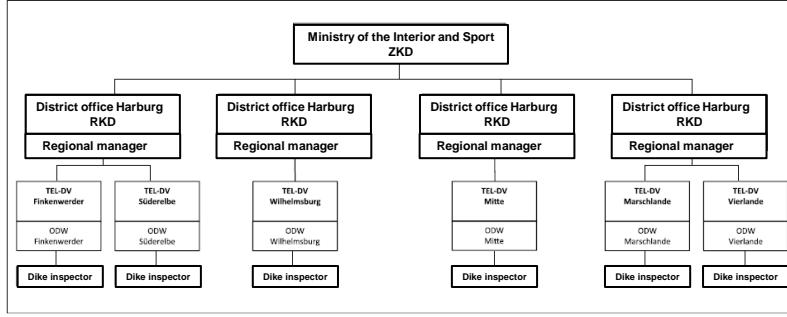
## Risk communication



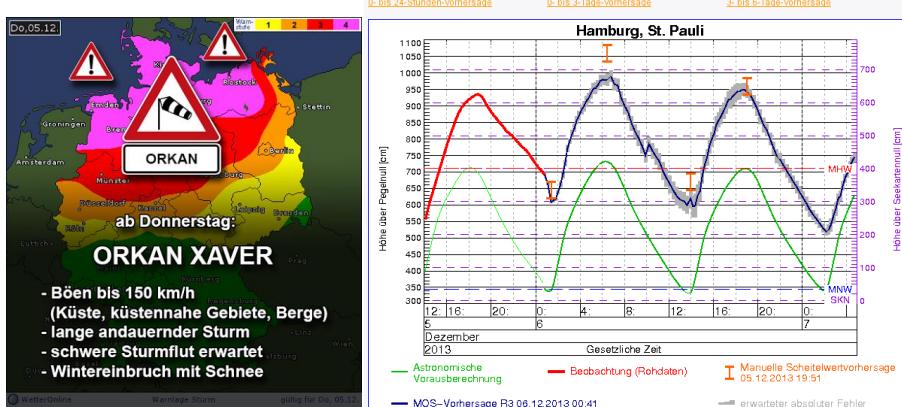
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## Dike defense organisation



## „Early“ warning and forecast



- Storm gusts up to 150 km/h (Coast, coastal areas, mountains)
- Long-lasting storm
- Heavy storm surge expected
- Snow

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## Warnings



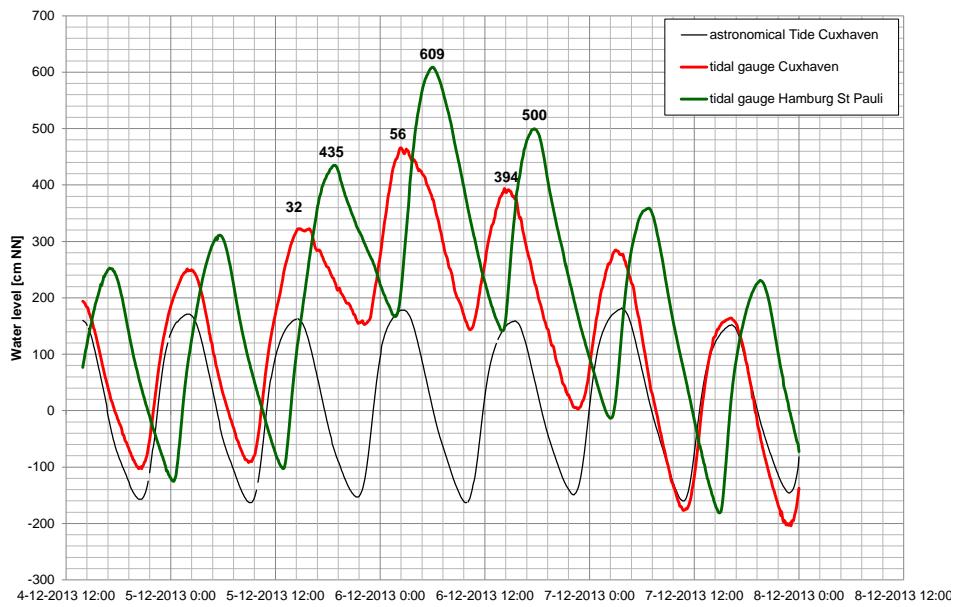
05 Sept 2014

1. NN + 3,50 m gun shots
2. NN + 5,00 m radio warnings
3. NN + 5,50 m sub-titles on TV channels
4. NN + 7,30 m siren signals and local tannoy announcements

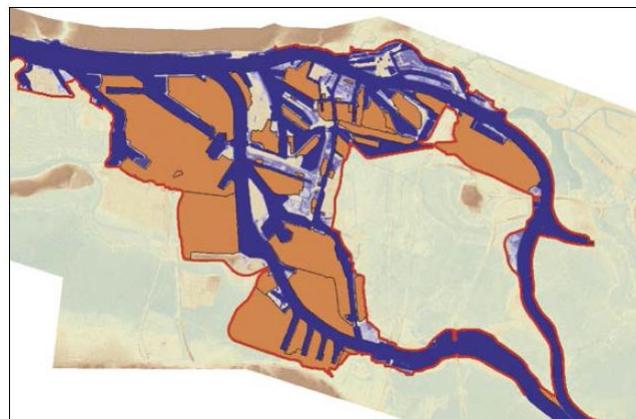
## Sub-titles on TV channels

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## Development in Cuxhaven / Hamburg St. Pauli



## Protected and flooded areas at NN+6,08 m



## Experiences and conclusions



- Dike inspectors were well trained
- The communication between the different parts of the dike defense organization will be improved in future
- Flood protection facilities were in a good state
- Financial damages only by removal of pollution on dikes, flooded areas and streets
- Openings in dikes and sea walls are the weakest points in the system  
→ a second safety is always necessary
- The flood gates will be closed earlier in future

Thank you for your attention!



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