

# Current and future Exposure of Critical Infrastructure to Coastal Flooding in Rostock, Germany

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EGU Conference 2022, Vienna

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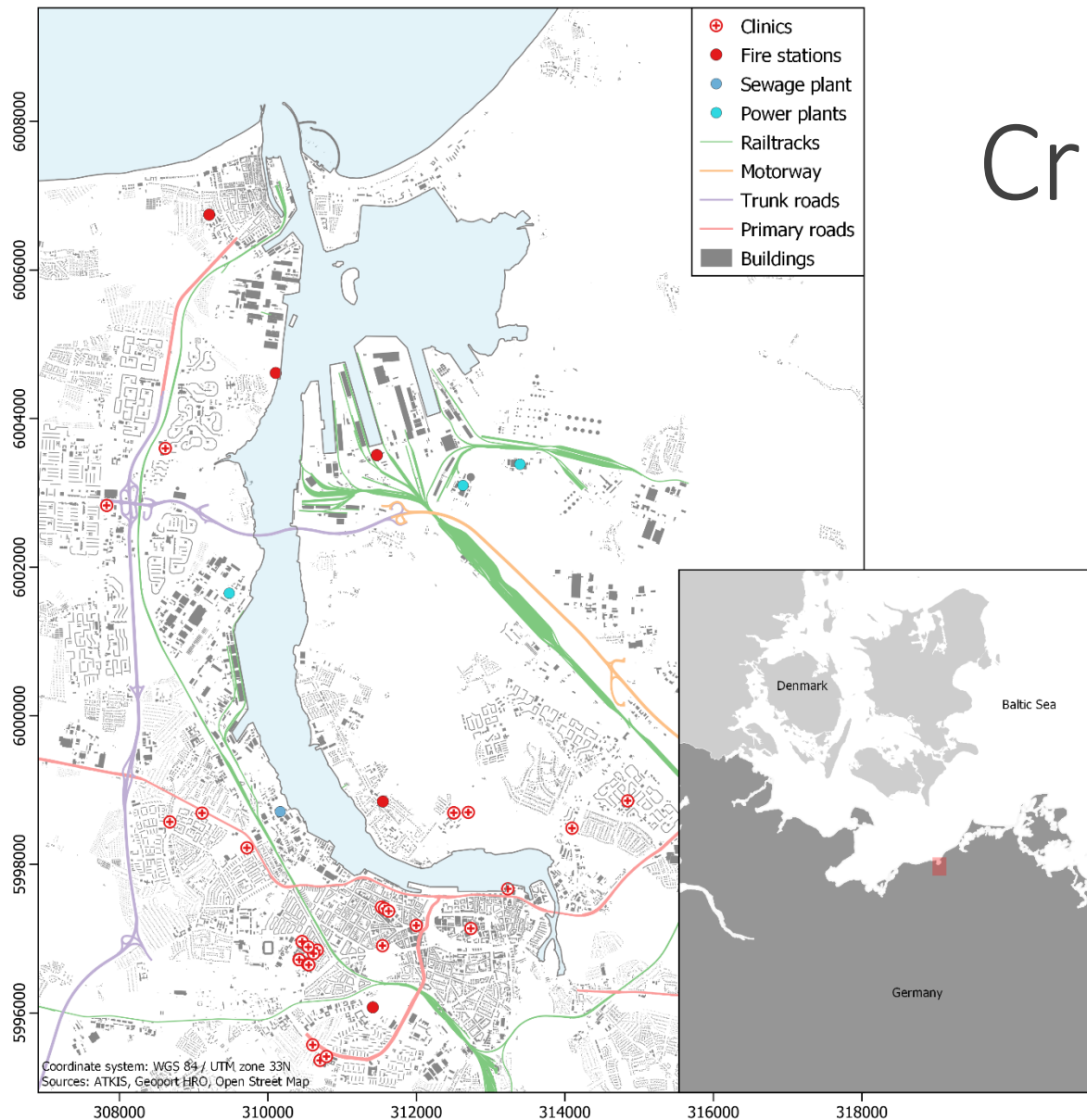
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# Research Question

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To what extent is Critical Infrastructure in Rostock exposed to storm surges and rising sea levels?

# Critical Infrastructure



- Clinics and hospitals
- Fire stations
- Sewage plants
- Power plants
- Rail tracks
- Main roads: Motorways, trunk roads, primary roads

based on Marín Herrera et al. 2015

Fig. 1: Critical Infrastructure in Rostock.



# Modelling

- Model: Delft3D-FLOW
- 2017 storm surge (18-year RP) with SLR of 30, 50, 80 & 100 cm

Tab. 1: Input data and data sources.

| Data        | Resolution | Source   |
|-------------|------------|--|
| Bathymetry  | 50 x 50 m  | EMODnet  |
| DEM         | 1 x 1 m    | ATKIS  |
| Landuse     | -          | Corine Land Cover                                    |
| Water level | 1-minute   | German Federal Waterways and Shipping Administration |
| Wind        | Hourly     | German Weather Service                               |

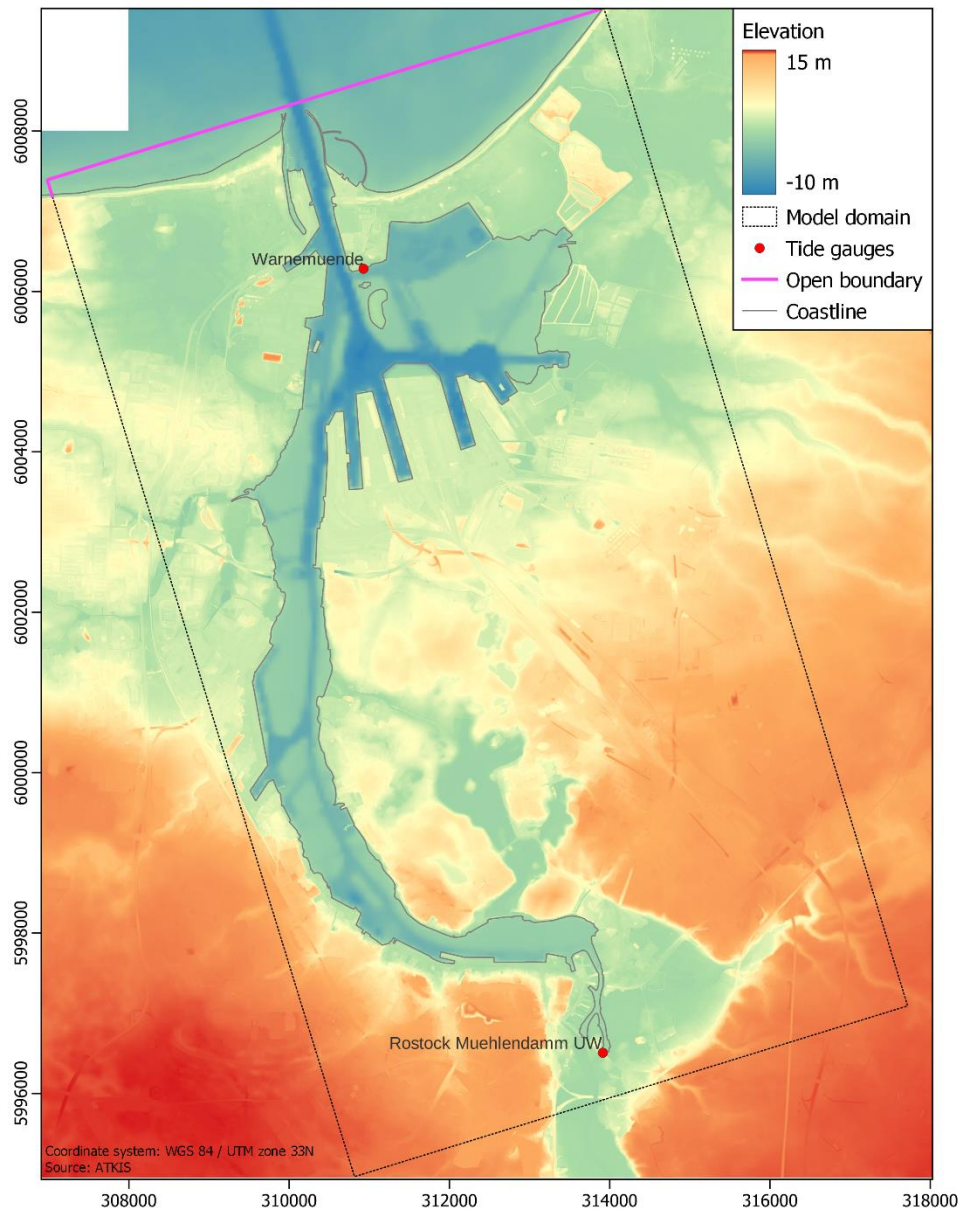
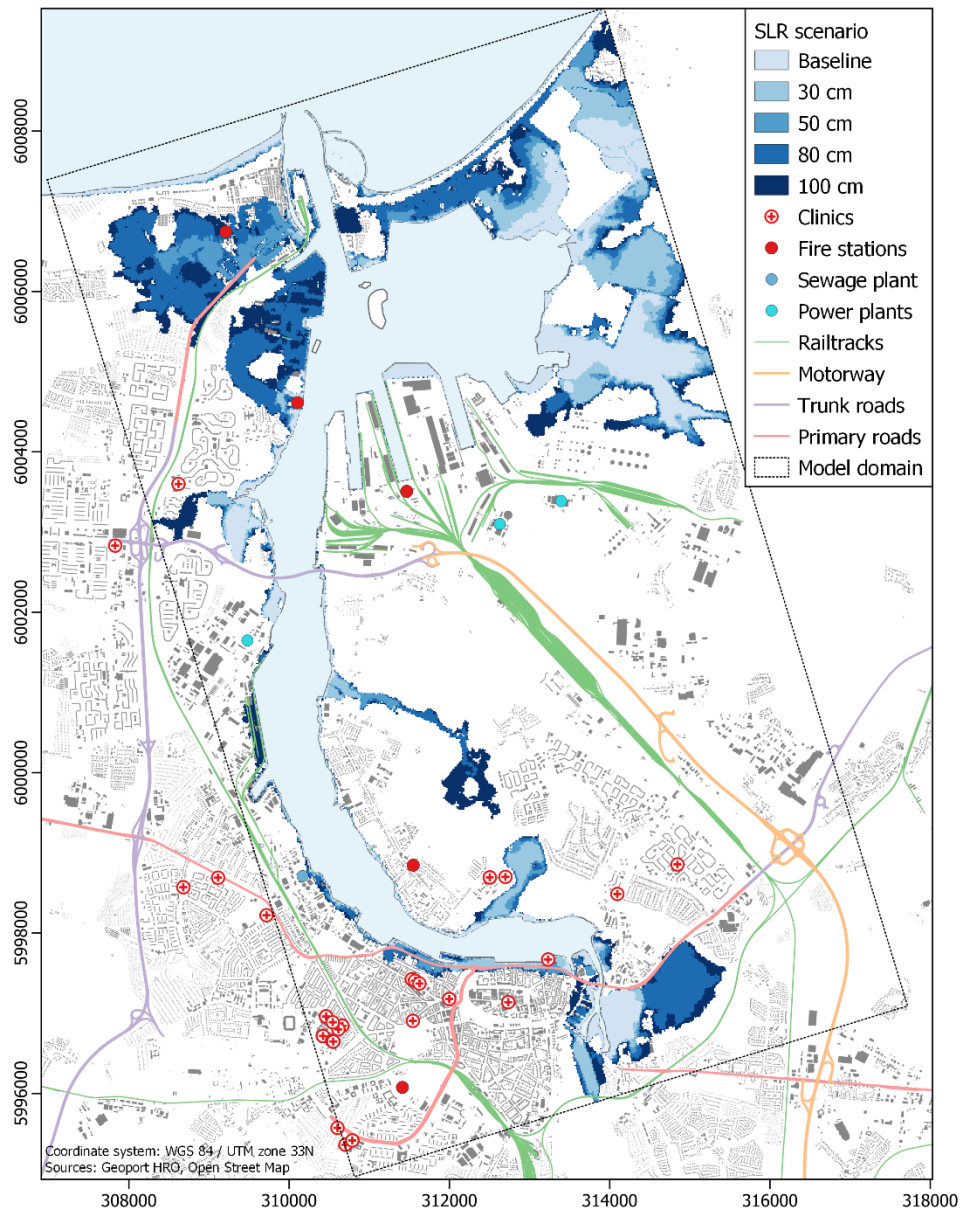


Fig. 2: Model setup.

# Results & Discussion



| Scenario | Primary roads | Rail tracks | Clinics | Fire stations |
|----------|---------------|-------------|---------|---------------|
| Baseline | -             | -           | -       | -             |
| + 30 cm  | 1472 m        | 7923 m      | -       | -             |
| + 50 cm  | 2937 m        | 7923 m      | -       | -             |
| + 80 cm  | 4932 m        | 8526 m      | 1       | 1             |
| + 100 cm | 8451 m        | 19028 m     | 1       | 1             |

Fig. 3: Critical Infrastructure potentially affected by an 18-yr storm surge with sea-level rise in Rostock.

# Key messages

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- Flooding of commercial areas occurs during the storm surge with 30 cm of SLR
- Critical Infrastructure affected includes two fire stations, a clinic, railtracks and primary roads: Possible cascading effects.
- Hotspot: Stadthafen

# Thank you!

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