



# Protecting Nature for Coastal Resilience – insights from METAscales

**Marine Extremes Transforming coAsts pathways for coastal adaptation across scales**

Jannis Kuhlmann, Dorothea Seeger, Julia Strahl



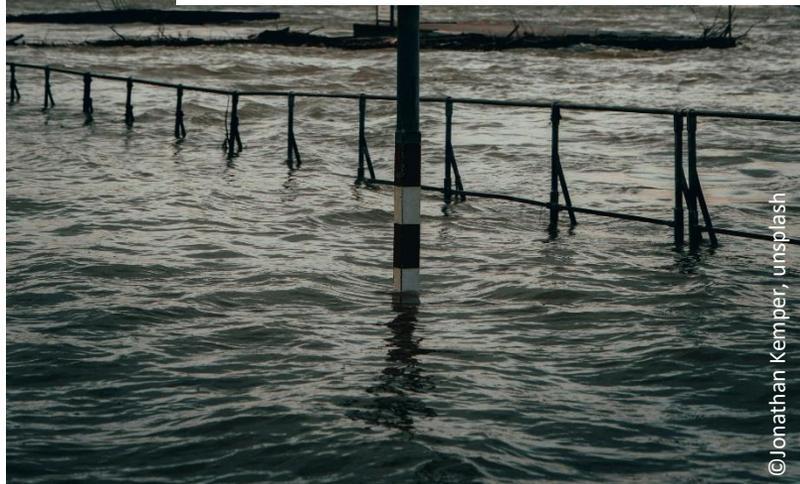
SPONSORED BY THE



# Future extreme events require adjustments to the coastline



Historical centennial extreme events become more intense and more frequent due to sea level rise and other changing weather phenomena



# METAscales – Strengthening the resilience of coastal societies

- **Enhance understanding** of marine extreme events, their cascades, and interactions across various scales, to improve our abilities to generate forecasts and projections
- **Evaluate impacts** of marine extreme events on natural, societal, and technical systems at the North Sea coast
- **Create dynamic adaptation paths** to identify necessary (response) actions and **facilitate recommendations** in decision-making processes



## Hamburg morgen: Neues Vorhersagemodell für Sturmfluten

Sendung: [NDR Fernsehen](#) | [Hamburg Journal](#) | 08.07.2025 | 19:30 Uhr  
3 Min | Verfügbar bis 08.07.2027

Mithilfe der Technik des Klimarechenzentrums, können Forschende der Uni Hamburg präzise Prognosen für einzelne Orte geben.

Geophysical Research Letters\*



Research Letter | [Open Access](#) | [CC](#) [f](#)

## Machine Learning-Driven Skillful Decadal Predictions of German Bight Storm Surges

Daniel Krieger ✉ Ralf Weisse, Johanna Baehr, Leonard F. Borchert

First published: 17 February 2025 | <https://doi.org/10.1029/2024GL111558>

# METAscales – Strengthening the resilience of coastal societies

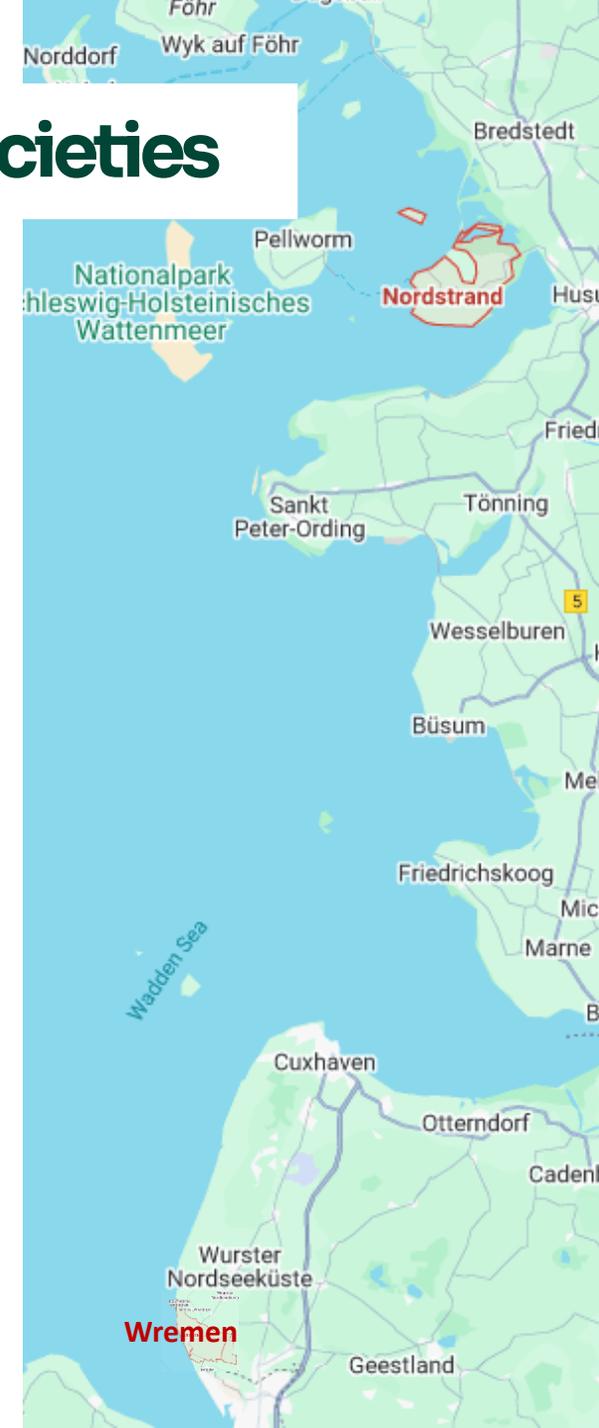
- **Enhance understanding** of marine extreme events, their cascades, and interactions across various scales, to improve our abilities to generate forecasts and projections
- **Evaluate impacts** of marine extreme events on natural, societal, and technical systems at the North Sea coast
- **Create dynamic adaptation paths** to identify necessary (response) actions and **facilitate recommendations** in decision-making processes

## CORE ELEMENT

Co-design to foster transformation: Living Labs in Wremen and Nordstrand



Beate Ratter,  
Anton Knor,  
Stefanie Drautz



# Living Labs in Wremen and Nordstrand

Beate Ratter,  
Anton Knor,  
Stefanie Drautz



## Preparation:

- Bottom-up process to identify suitable locations
- Collaborative selection and involvement of individuals, representatives and multipliers for participation

## Workshops and Experimentation:

- Jointly identify challenges and required action
  - Risk awareness, early warning, self-efficacy, routines in emergency response
- Co-development and experimentation of possible solutions on community-level



Exchange during the workshops



# BUND in METAscales: strengthen the nexus of nature and coastal protection



- **Focusing on nature-based solutions (NBS) for coastal protection, incorporating coastal nature conservation into the project**
- **Communication & Dissemination:** Fact checks, traveling exhibition, policy briefs (Living labs)

# „Best Practice“ report on Nature-based Solutions (NBS) for integrated coastal protection



Finian Wessels, B.Sc. thesis  
Van Hall Larenstein  
University

- **Promoting the provision of information and discourse in coastal regions**
- **Customized communication material, tailored to the respective needs of specific multipliers (National Parks, seminar houses, Wadden Sea guides, etc.)**



© Bundesanstalt für Wasserbau CC BY 4.0

Addressing reservation regarding NBS

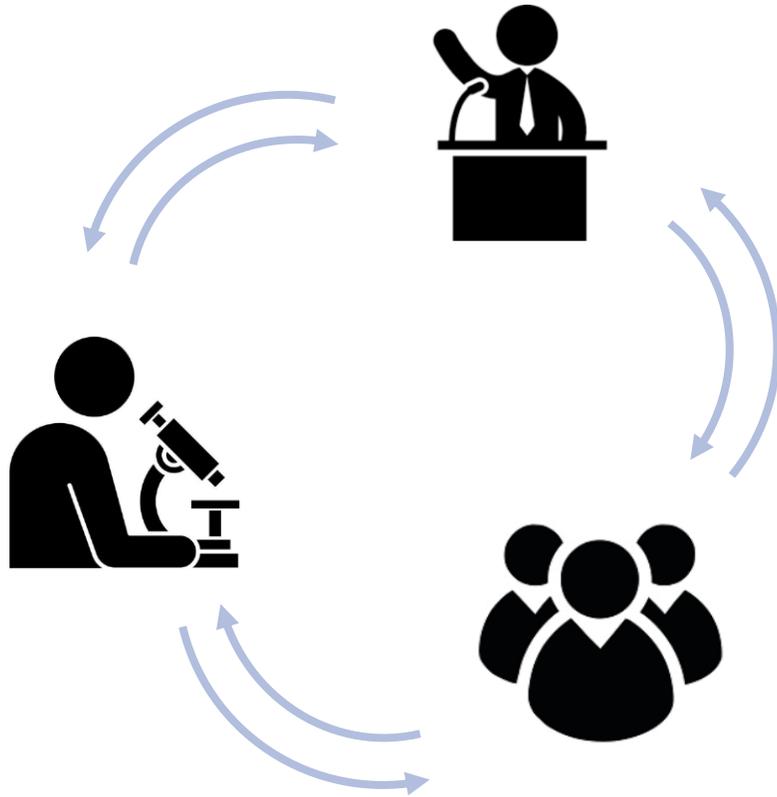
# Langwarder Groden: example of successful nature conservation

**Summer dike of the 140-hectare Langwarder Groden was opened after years of disagreement**

- **Formation of salt marsh that has attracted national attention as a nature reserve**
- **Strengthening of local economy and coastal protection**
- **Shows how nature conservation and coastal protection can go hand in hand**



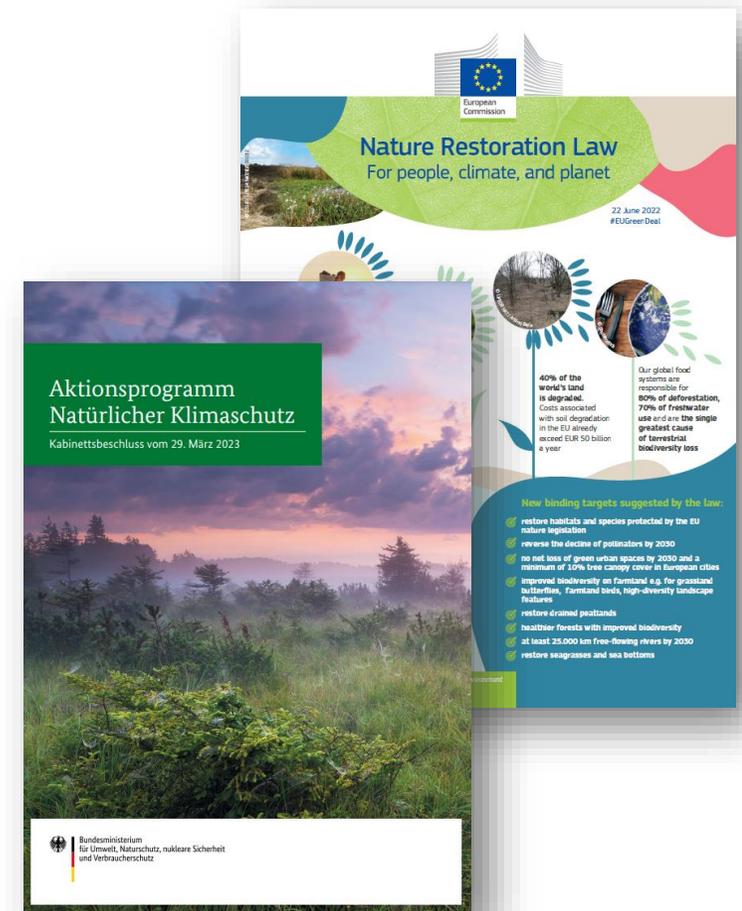
# BUND in METAscales: strengthen the nexus of nature and coastal protection



- **Focusing on nature-based solutions (NBS) for coastal protection, incorporating coastal nature conservation into the project**
- **Communication & Dissemination:** Fact checks, traveling exhibition, policy briefs
- **Placing the research project in a political context**

# Political Transfer and Dialogue

- Place METAscales in **current marine environmental policy setting**
  - Align scientific objectives with political discourse
- **Identify and accompany** relevant policy processes (e.g. EU Nature Restoration Law, Aktionsprogramm Natürlicher Klimaschutz)
  - **Committee work** at national and international level (e.g., SAR, CCB)
  - **Recommendations for action** for political processes (e.g., participation processes)



# Take Home Messages

- METAscales: **strengthening the resilience of coastal societies**
- BUND places the overall project in the **political and social context** of marine and coastal protection
  - **Natural coastal ecosystems must be protected and restored**
  - **Coastal nature conservation must be given equal importance alongside traditional coastal protection**
  - **Coastal nature conservation must be incorporated into climate adaptation strategies**



©Dorothea Seeger

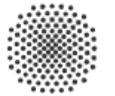
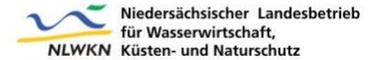




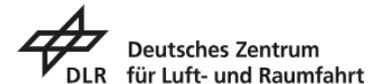
# Thank you for your attention! Questions?

More information on METAscales can be found here:  
<https://www.marextreme.de/metascales>

Contact:  
Julia Strahl  
BUND Marine Protection Office  
[Julia.strahl@bund.net](mailto:Julia.strahl@bund.net)



Universität  
Stuttgart



© Bundesanstalt für Wasserbau CC BY 4.0