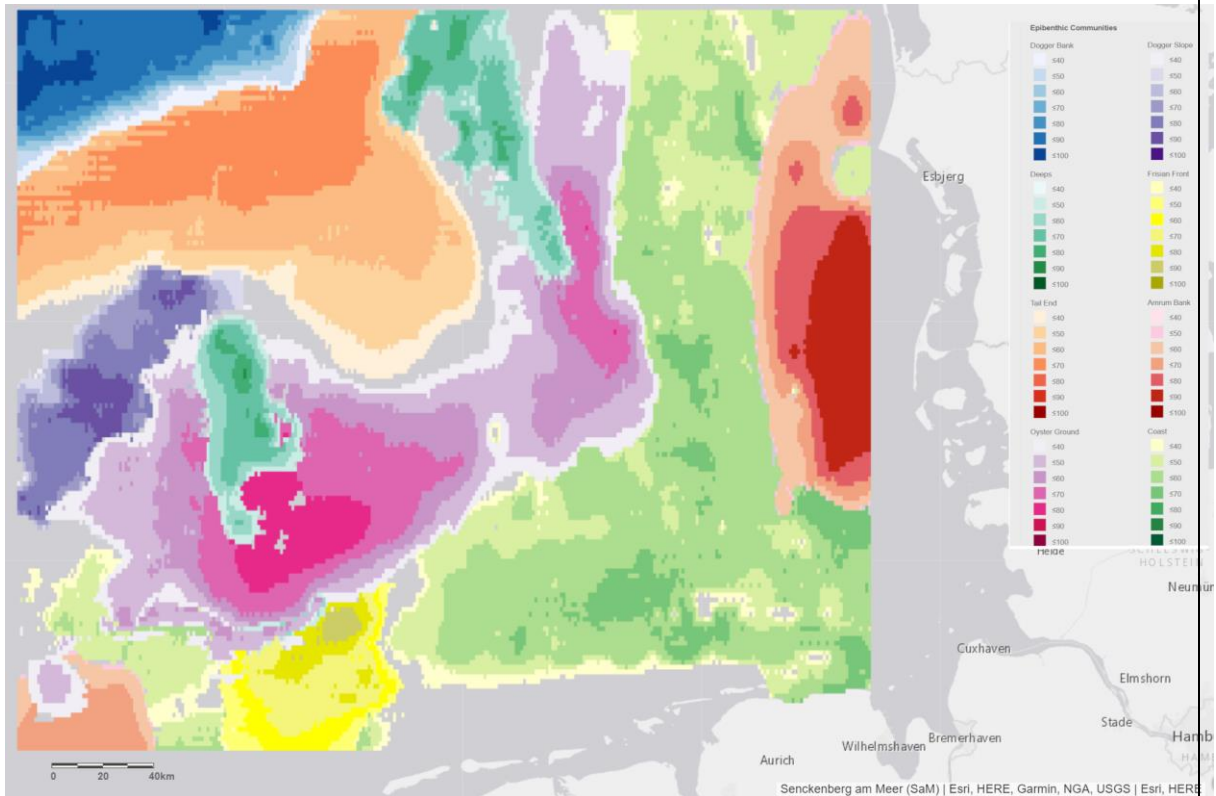


Epibenthic Communities

GENERAL OVERVIEW	
Dataset name: <i>Epibenthic communities in the south-eastern North Sea</i>	
Project: <i>International Bottom Trawl Survey (IBTS)</i> <i>North Sea – Observation and Assessment of Habitats (NOAH)</i>	
Co-Principal Investigator: Dr. Hermann Neumann, Ulrike Kleeberg (Web Services) [HZG]	
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DATASET SPECIFICATIONS	
Dataset Parameter(s) and supplied Unit(s): <i>Occurrence probability [%]</i>	
Date(s) available: <i>Averaged from 2000 to 2015 (except 2001 and 2002)</i>	
Validated: <i>Yes</i>	Version Date: <i>23.08.2018</i>
Current State: <i>final</i>	
Format: <i>ESRI shape- /layer file</i>	
Citation: <i>Neumann, H., Diekmann, R., Emeis, K. C., Kleeberg, U., Moll, A., & Kröncke, I. (2017). Full-coverage spatial distribution of epibenthic communities in the south-eastern North Sea in relation to habitat characteristics and fishing effort. Marine environmental research, 130, 1-11.</i>	
DATASET DETAILS	
Abstract <i>Data from nearly 400 stations were compiled for the study. Eight distinct epibenthic communities were found in the south-eastern North Sea by using multivariate analysis. Distribution modelling with eight environmental variables (bottom temperature and salinity, temperature differences between summer and winter, mud content of sediments, maximum bottom shear stress, stratification, water depth and annual primary production) and one human pressure (fishing effort) was used to extrapolate probable spatial distributions and to identify associated habitat characteristics of the communities in the south-eastern North Sea. Three large epibenthic communities “Coast”, “Oyster-ground” and “Tail End” reflect a gradual habitat change from the coast towards offshore regions, expressed in gradients of bottom salinity, seasonal temperature differences and stratification as the dominant environmental factors. Five smaller communities (“Amrum Bank”, “Frisian Front”, “Deeps”, “Dogger Bank” and “Dogger Slope”) outline specific</i>	

habitats in the south-eastern North Sea. The “Dogger Slope” community has not been recognized before, but has a predicted spatial extent of 7118 km².



Acquisition and Processing Description:

Epibenthic invertebrates were sampled at 398 stations in the south-eastern North Sea. Sampling took place from 2000 to 2015 (except 2001 and 2002) with a standardized 2 m beam trawl fitted with a 20 mm net and a cod end of 4 mm mesh size. In total, 119 species/taxa were used for epibenthic community analysis. Hierarchical cluster analysis (group-average linking) and non-metric multidimensional scaling (nmMDS) were applied on square-root-transformed abundance data to separate groups of stations with similar community structure. For modelling a maximum entropy approach (MAXENT) was used based on eight environmental variables: bottom temperature and salinity, temperature differences between summer and winter, mud content of sediments, maximum bottom shear stress, stratification, depth and annual primary production. In addition, fishing activities by bottom-contacting gears were quantified, representing the most important human pressure on benthic species in the southern North Sea. Fifteen replicate runs were performed for every community and averaged afterwards. The logistic output of the model is a distribution map, which shows the probability of occurrence of epibenthic communities in the south-eastern North Sea ranging from 0 to 100%. The MAXENT analyses provide the “10 percentile training presence logistic threshold”, which was used to define areas where the occurrence of the communities was most likely (the minimum probability of suitable habitat). See publication for more information.

Notes and Limitations:

The definition of community boundaries in the map is based on expert knowledge and the “10 percentile training presence logistic threshold” provided by the MAXENT analyses. Occurrence probability for each community within the coloured area is always higher than 50%. In nature, the transition between communities is rather gradual and lacks conspicuous boundaries. See publication for more information.



NOAH

North Sea Observation and
Assessment of Habitats