Methane emissions from abandoned offshore wells? – First data from a 2019 research cruise to the Dogger Bank, German North Sea (Poster EGU2020-6792)

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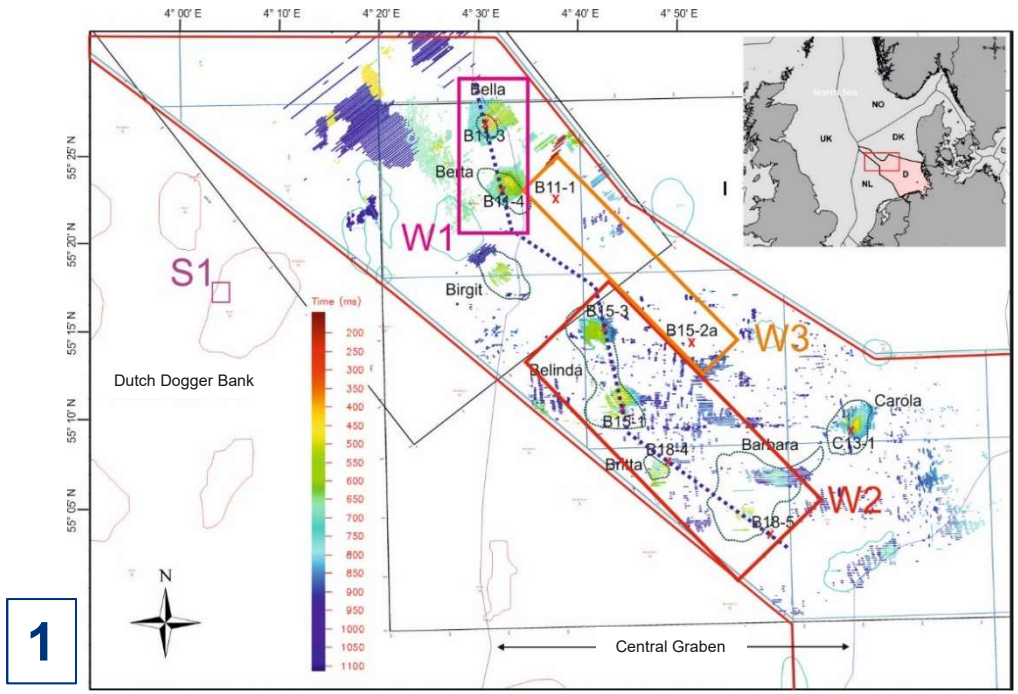

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Working area: Central North Sea "Entenschnabel" Dogger Bank area (German EEZ). Color-codes: "bright spots" showing "shallow gas", well locations, survey areas [(boxes W1, W2, and W3), reference sites R1 and R2, and the seep area S1 in the Dutch Dogger Bank].

Research targets: Detection of potential seepage and flares in the vicinity of abandoned well sites and known salt diapirs

Methods: CTD/water sampler, "mini-MUC", METS, hydroacoustics (water-column imaging, multibeam bathymetry and backscatter, sub-bottom profiling), deep-towed electromagnetics (i.e. sediment resistivity) deployed with RV HEINCKE.

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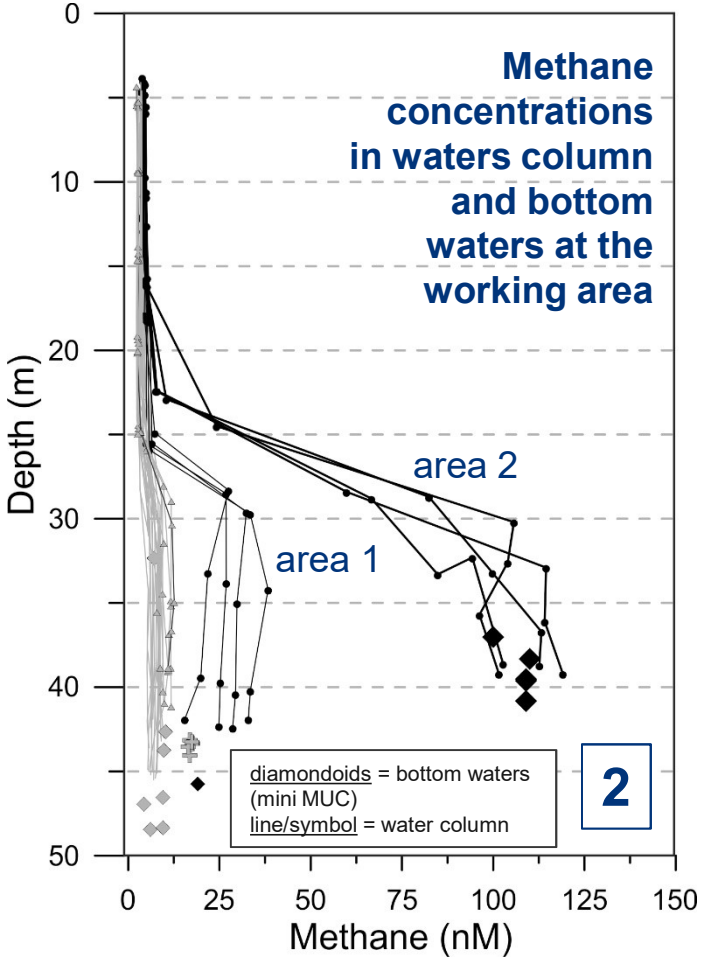
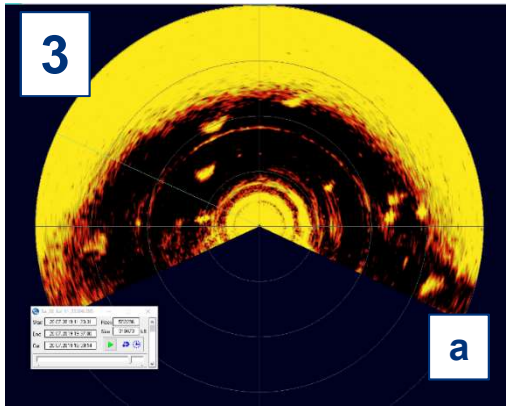
Main working area: „Entenschnabel“ (Central North Sea)



Dutch Dogger Bank (seep site close to German EEZ*)



- Proof of gas bubbles [sonar (a) and camera (b)]
- Dissolved methane in MUC-bottom waters up to ~11.000 nM

*Schroot et al. (2005); Römer et al., (2017)

Methane concentrations in “Entenschnabel”

- Methane background in waters below pycnocline ~ 10 nM. One area exceeding background by factor 2 (area 1) and one by 10 (area 2)
  - ~100 x lower than at Dutch Dogger seep site

Other observations

- Echo-sounding (e.g., background) revealed numerous gas flares in area 2

Preliminary conclusion

- None of the 9 studied abandoned wells were found to release gas flares (fluctuating or low diffusive release cannot be excluded by our approach)
  - Elevated CH_4 and flares seem to be related to the presence of shallow gas alongside the salt diapirs [Römer *et al.* (subm.)]

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