Quality status benthic habitats of the Dutch North Sea

Application of Benthic Indicator Species Index (BISI)

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BISI – the methodology

- Combined comparison of occurrence of indicator species relative to defined (realistic) reference
- Indicator species selections area/habitat specific
- Indicator species selected on basis of:
  - being characteristic,
  - being sensitive/indicative for one (or several) of the dominant disturbances
  - sufficient power to detect disturbance related differences (common under natural good quality conditions, only minor fluctuations)
- Reference levels from (recent) historic maximum potential observations, considering natural population fluctuations (derivation using a standardized decision scheme)
- Different monitoring techniques and observation data can be combined in one index (BISI); each with a specific reference level

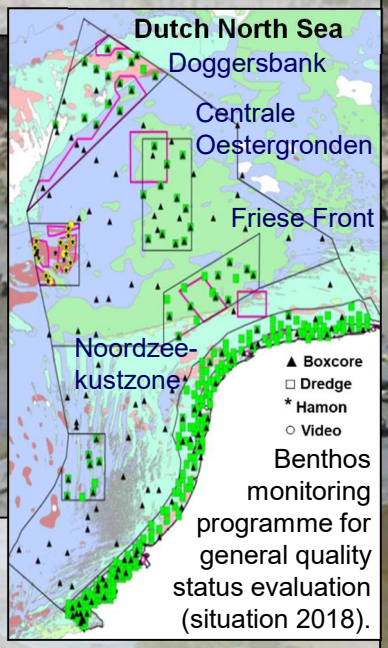
General vs specific BISI's

- General: All indicator species equal
- Specific: Only species with cause or effect related indicator value (different weight in analyses) included

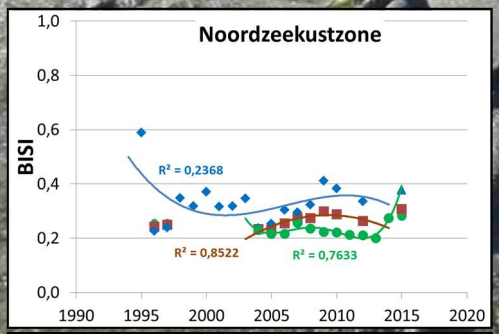
- BISI value close to 0 → very poor quality
- BISI ≈ 1 → similar quality as realistic reference

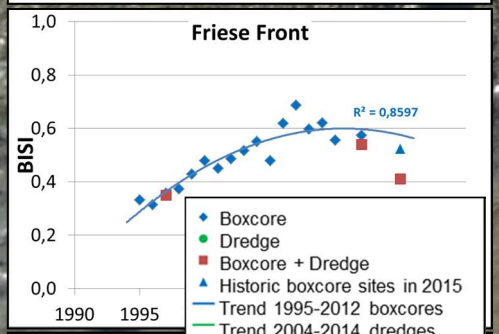
Report and BISI documentation available from website:

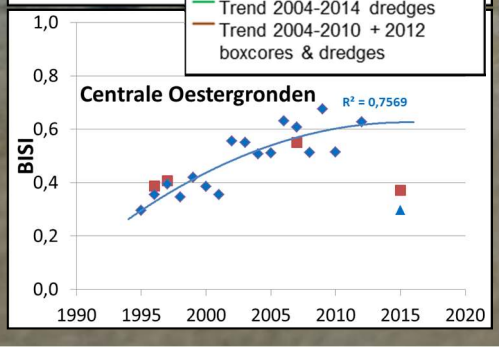
www.ecoauthor.net/?tag=bisi



Benthos monitoring programme for general quality status evaluation (situation 2018).





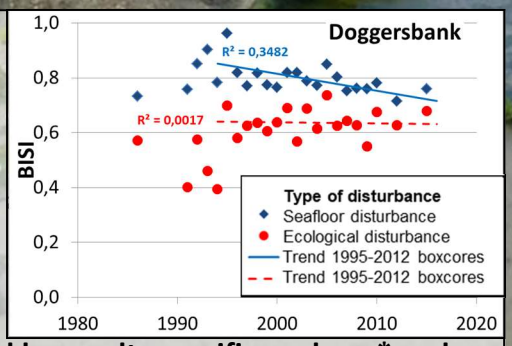


Analyses quality status in 2015

Considered the T0: Various measures of the Dutch Action plan Marine Strategy were just (or still had to be) implemented

- 2015 compared to trends on basis of continues monitoring efforts for separate sampling techniques (partial BISI)
- Results of complete BISI (boxcore & dredge related indicator species) in 2015 on basis of more extensive monitoring

Results & Conclusions



- Stagnation and recent decline benthic habitat quality after years of improvement in offshore
- Might indicate gradual movement of seafloor disturbing fisheries from coastal zone (as suggested by results specific analyses* and possible first improvements in coastal zone)
- Permanent large impact of i.a. nutrients and pollutants (ecological disturbance) especially in coastal zone but also further offshore (e.g. Doggersbank)
- Decreasing quality status at Doggersbank result of increasing seafloor disturbance

(*not shown on poster)