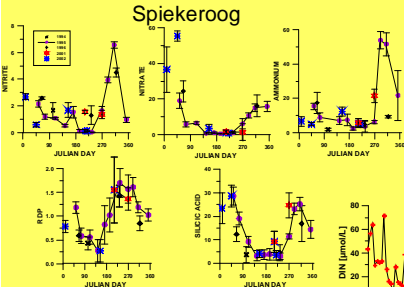
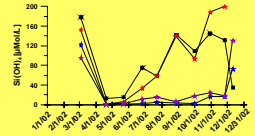
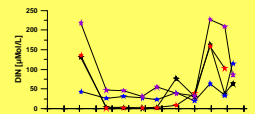
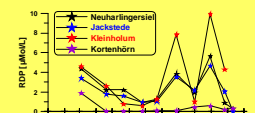
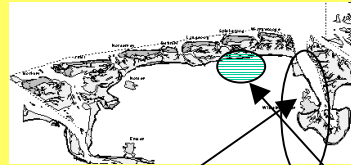


Nutrient Signatures in the Wadden Sea and Adjacent Terrestrial Areas

Gerd Liebezeit

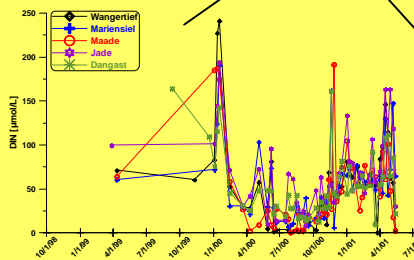
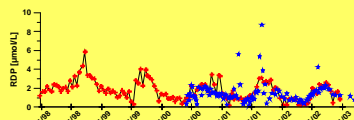
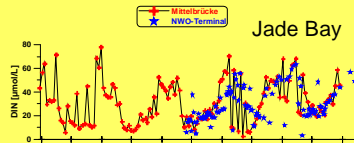


Nutrients in the Wadden Sea and its freshwater sources display distinct annual cycles largely controlled by biological activity.



Early increase in reactive phosphate due to thinning of the oxic sediment layer

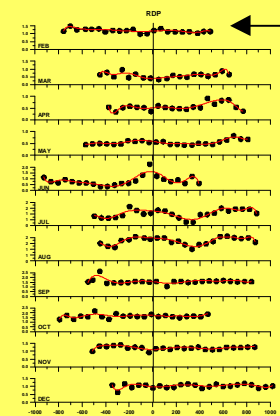
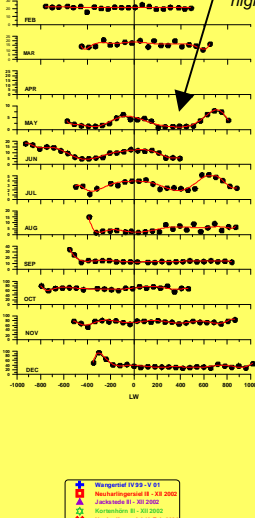
There is no nutrient depletion in summer.



Covariance of nitrogen compounds indicates soil leaching as source (not seen in phosphate which is stronger bound to soil minerals).

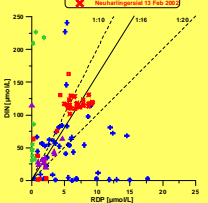
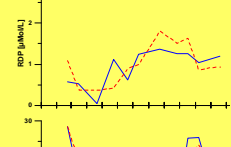
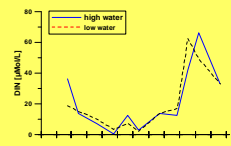
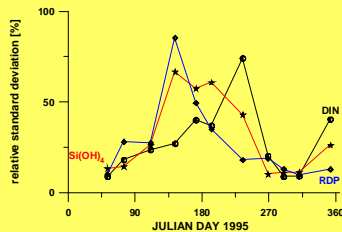
Expected tidal cycle

Low water concentrations high -> export of dissolved nutrients
high water concentrations low -> import of remineralisable organic material

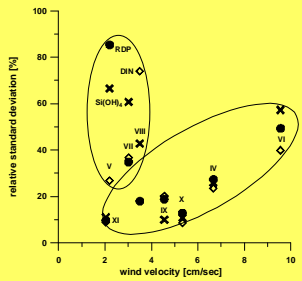
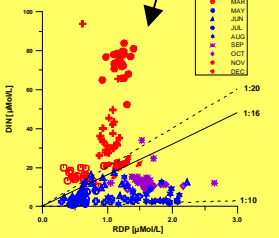


Tidal cyclicity obscured by high energy input (storm) and low biological activity.

Higher standard deviations in summer indicate pronounced high water - low water differences. This suggests a dominant export of nutrients to the coastal North Sea in summer. This holds especially for phosphate and silicate.



Excess nitrogen in winter is apparently not related to land input but to ongoing remineralisation processes.



The positive relation between relative standard deviation and wind velocity in winter suggests stronger physical control.

Controlling Variables

- primary production/remineralisation
- POM import and DIM export
- energy situation
- storm, wave pumping
- terrestrial inputs