

## Euphotic zone depth in stratified Arctic waters and its remote sensing

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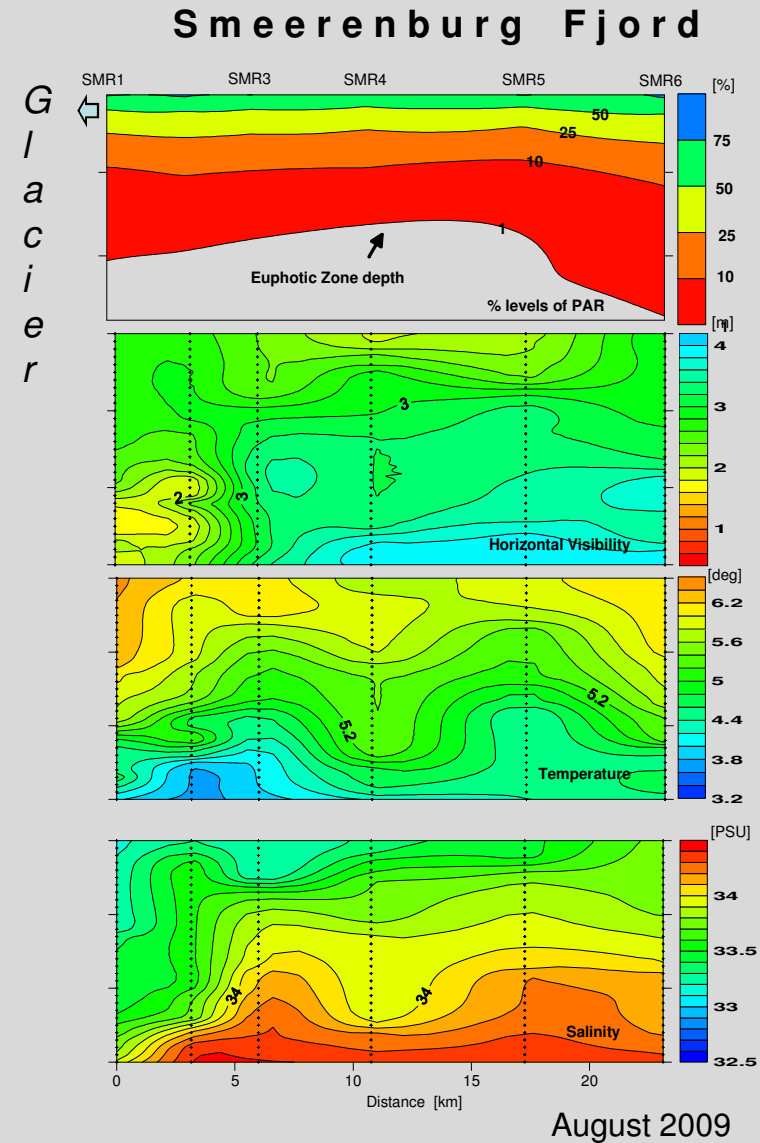
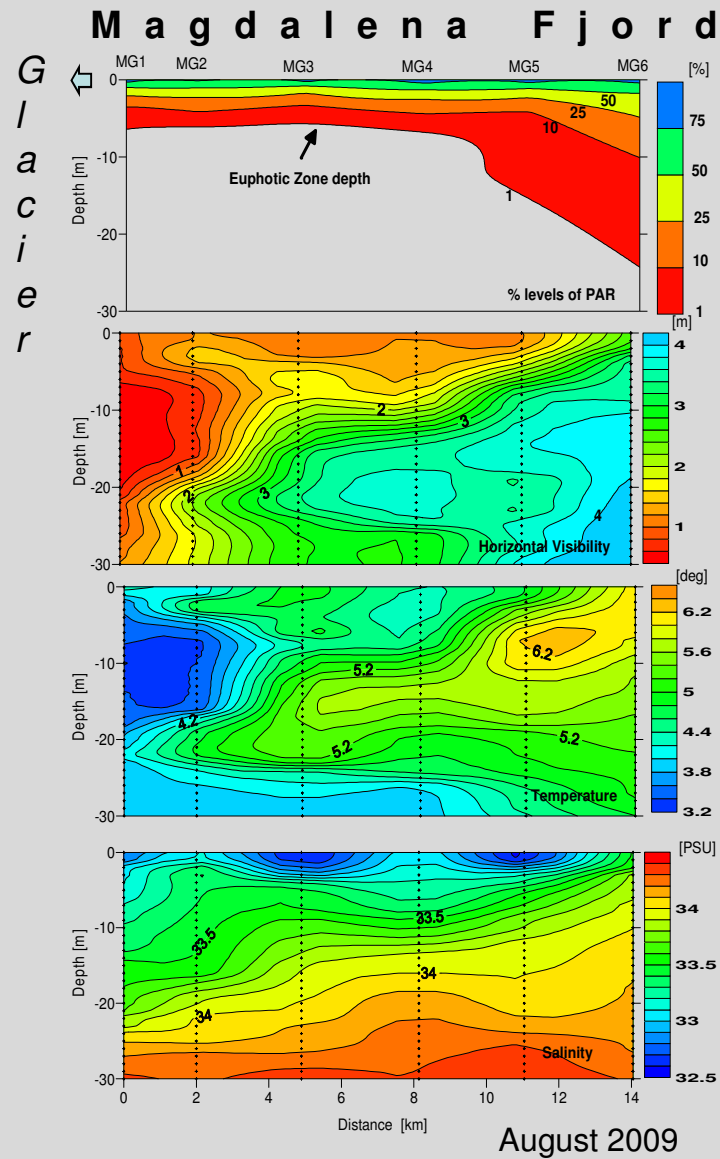
Availability of light is a major factor structuring aquatic ecosystems  
(in particular coastal and estuarine systems)

- light is essential for all primary producers
- also the fish community is affected by light availability, as many fish depend to some extent on visual predation for feeding
- light attenuation also determines the depth limit of macrophytes, (both macroalgae and vascular plants)
- .....



# Euphotic zone depth in stratified Arctic waters ....

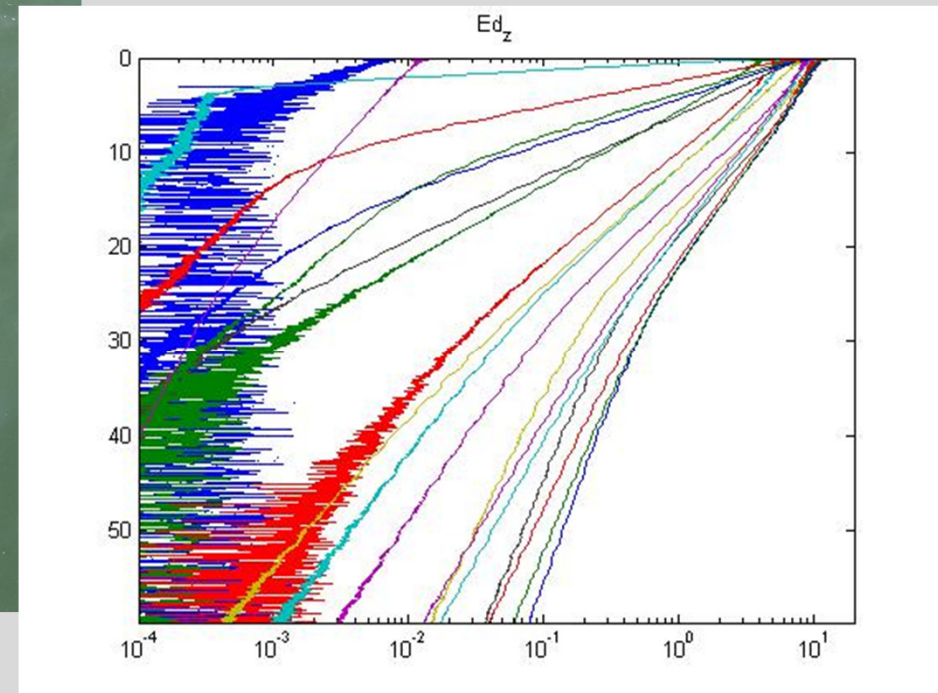
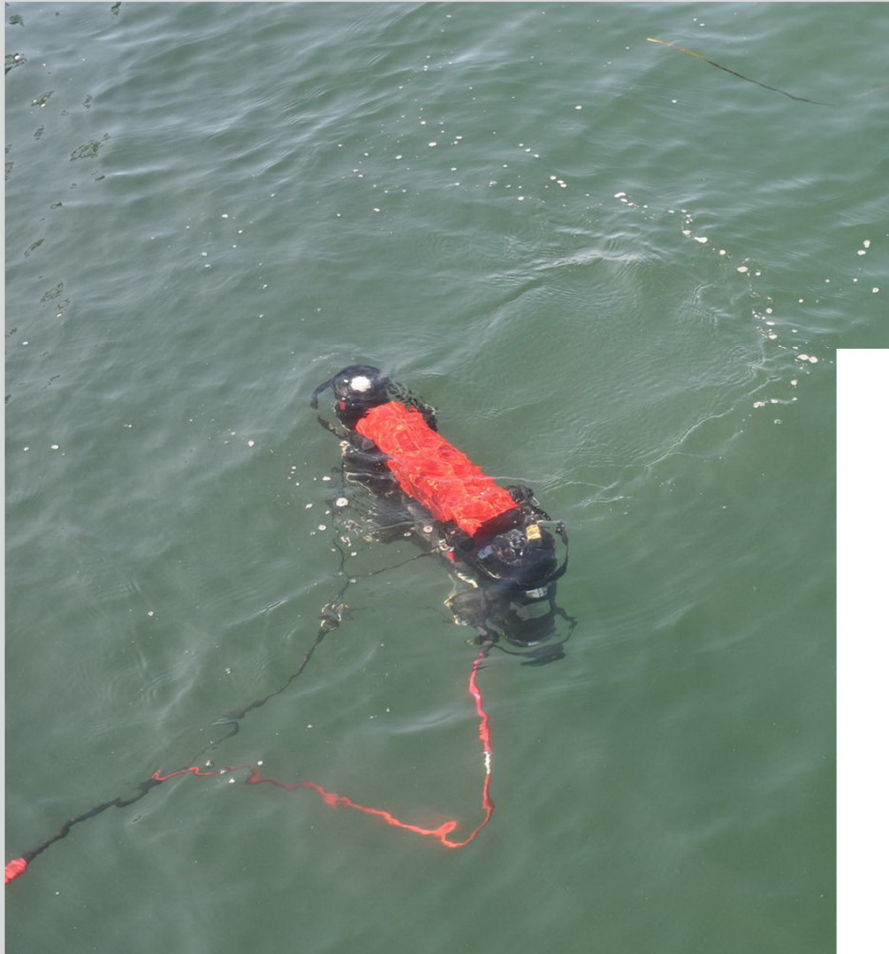
## % PAR, underwater visibility, T, S





## Euphotic zone depth in stratified Arctic waters ....

### Instrumentation: C- OPS (Biospherical Inc)





## Euphotic zone depth in stratified Arctic waters ....

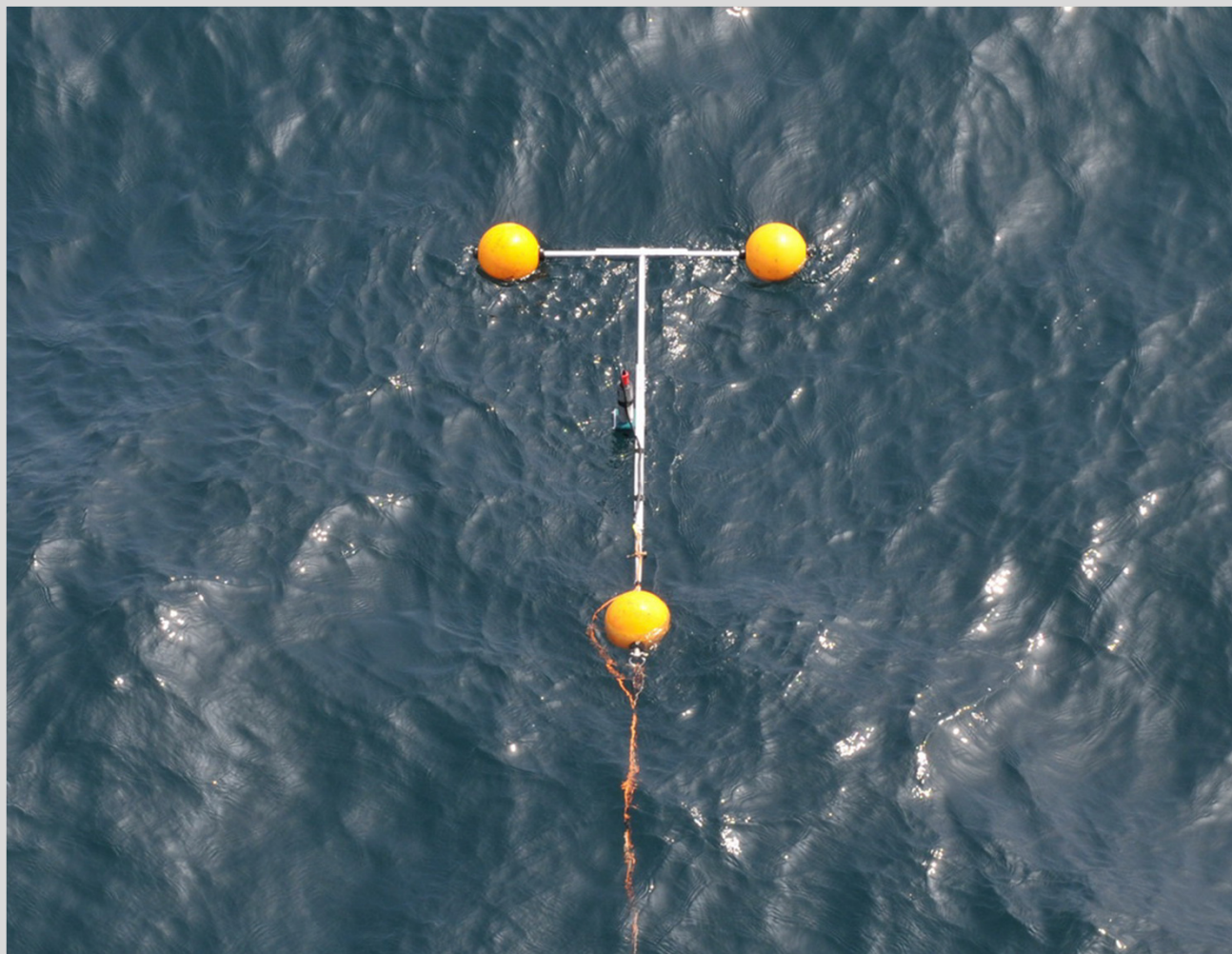
### Instrumentation - hyperspectral radiometer (Trios GmbH)



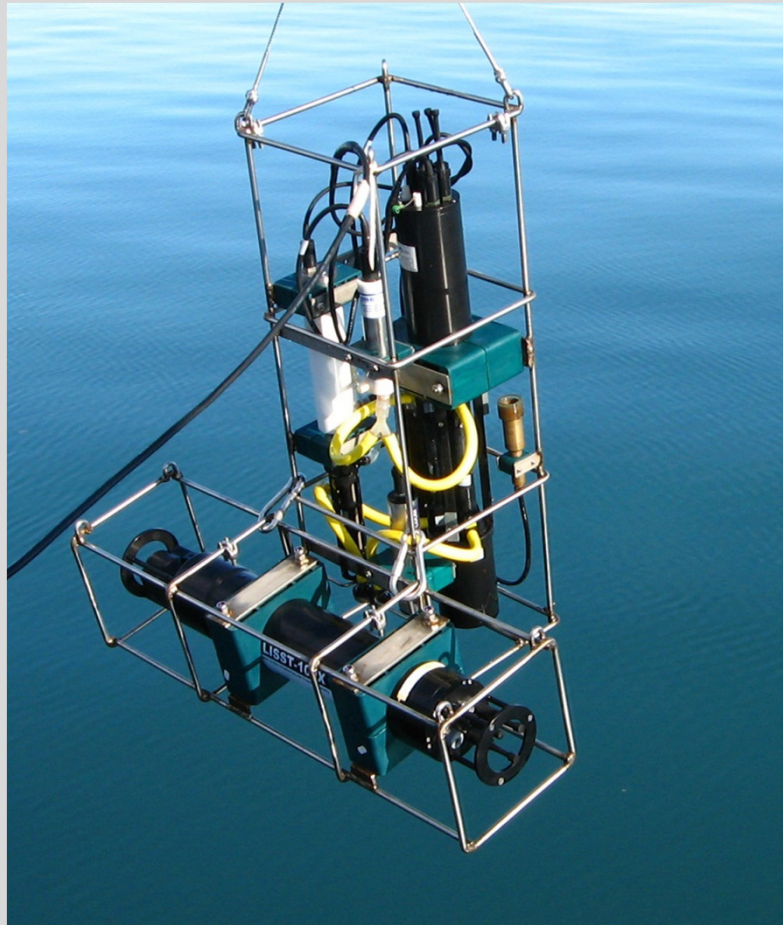




**Instrumentation - hyperspectral radiometer (Trios GmbH)**



## Inherent optical properties



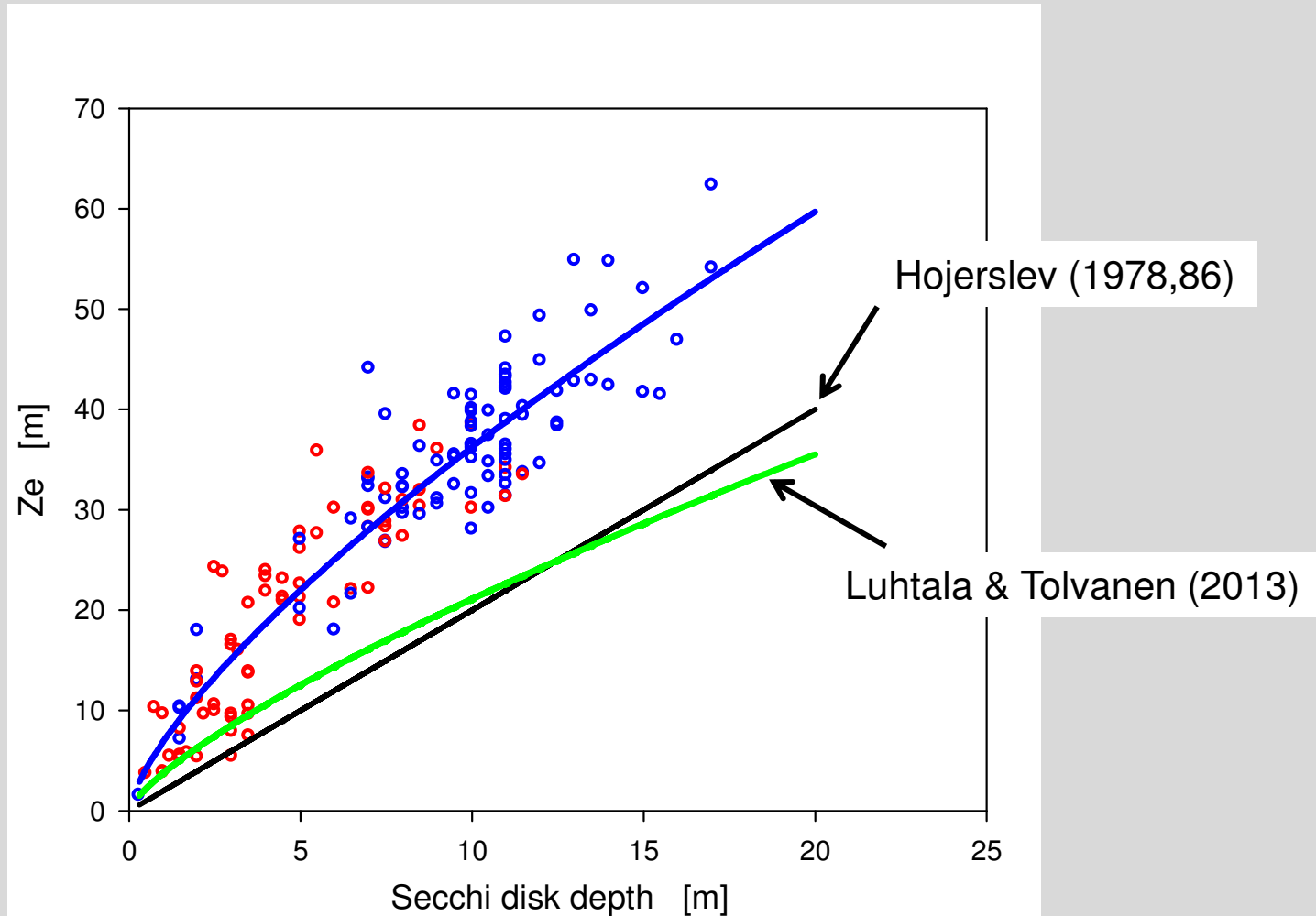
ac-9 (WetLabs);

LISST (Sequoia Sci.)

CTD (SeaBird);



## Relationships with Secchi Disk depth

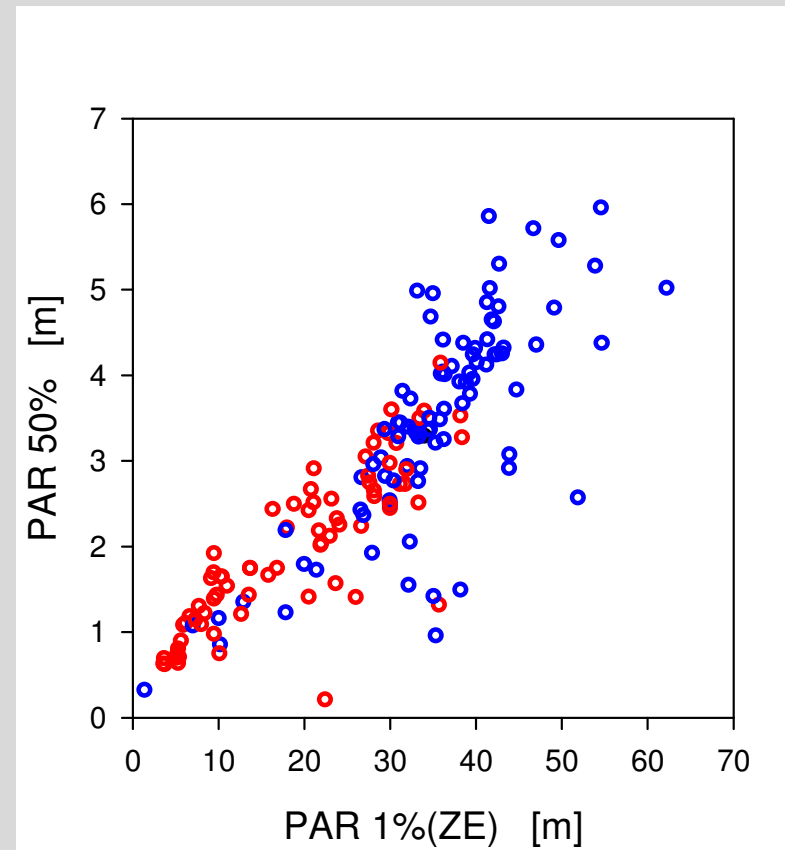
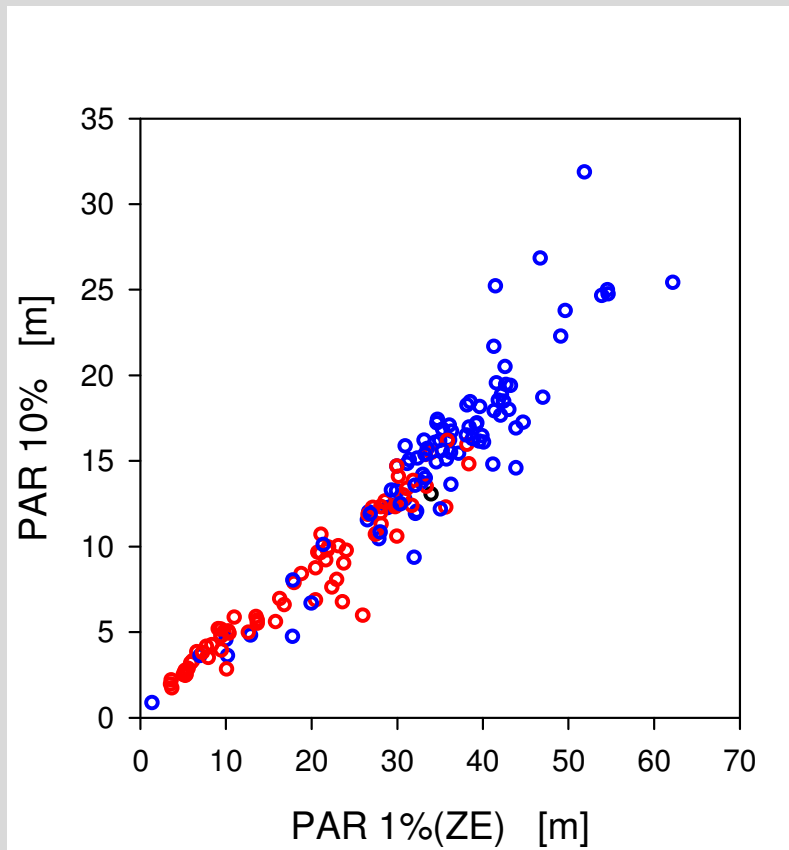


$$Ze = 6.9 \cdot SD^{0.72} \quad R^2 = 0.86$$

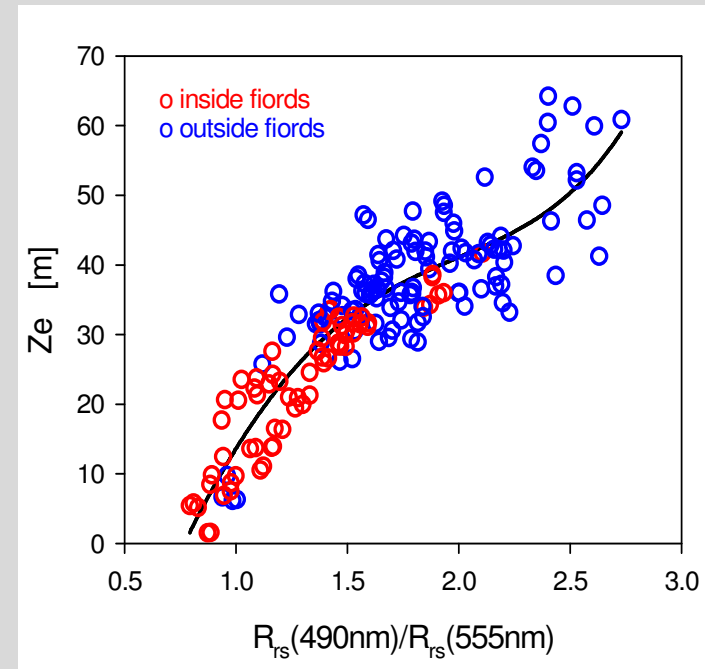
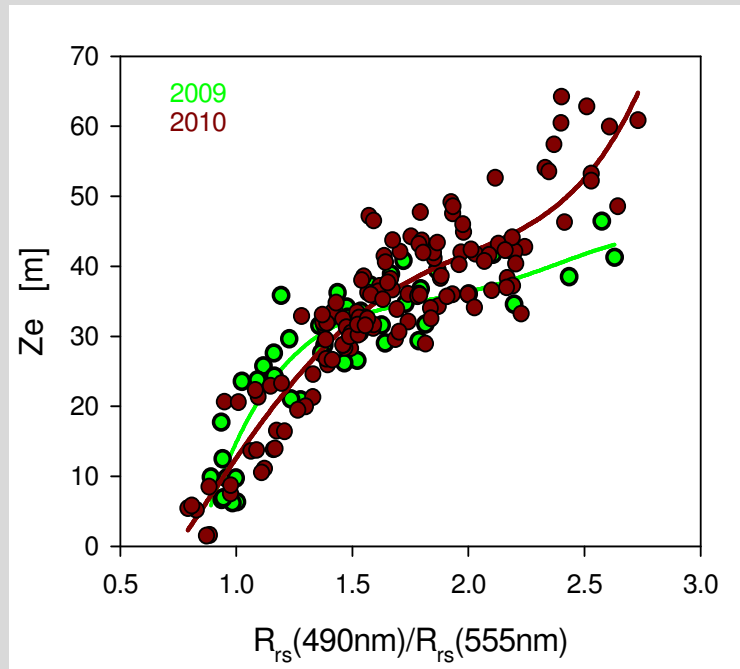




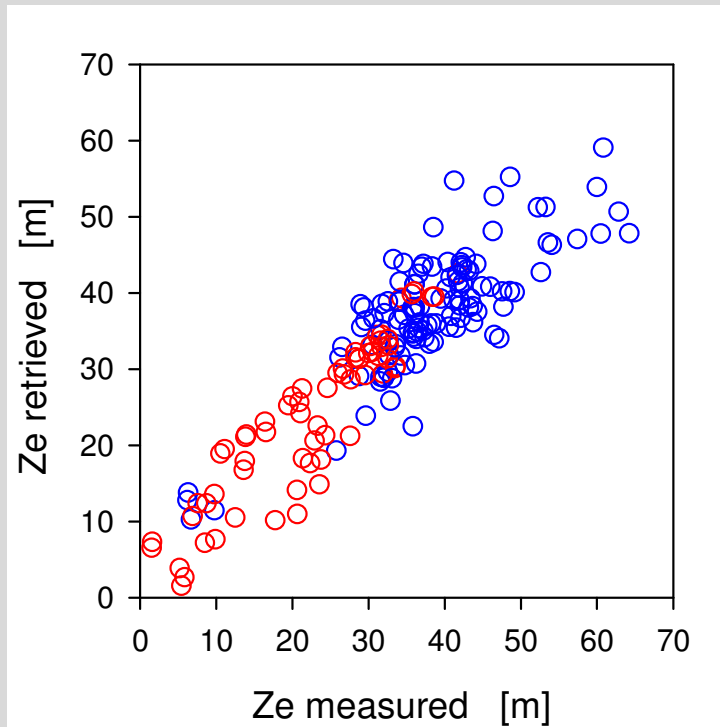
## Variability of optical stratification in Arctic Waters



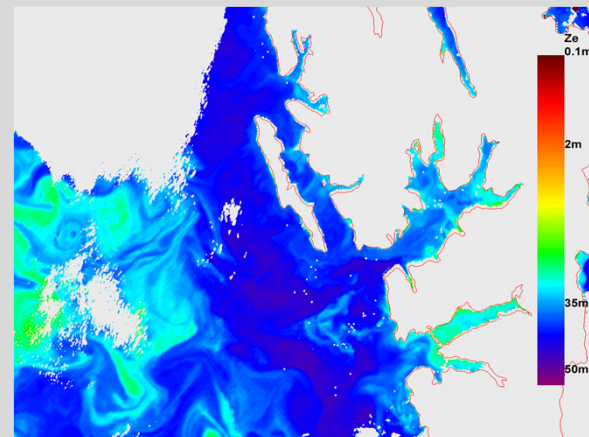
## Algorithm for remote retrieval of $Z_e$ (1% of PAR at the surface)



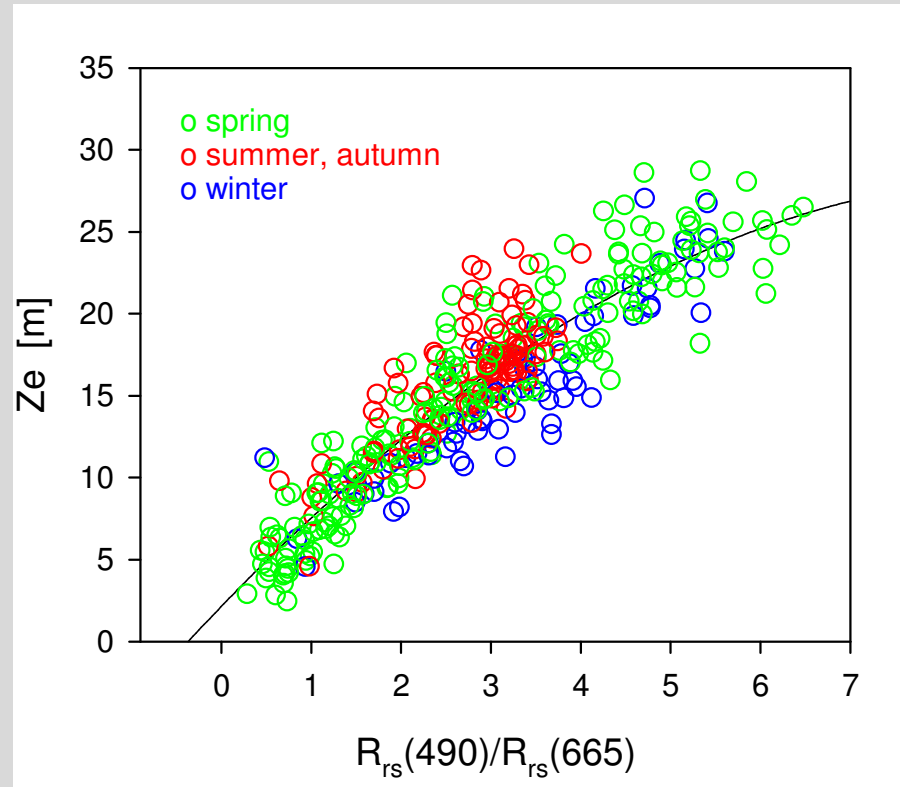
## Algorithm for remote retrieval of $Z_e$ (1% of PAR at the surface)



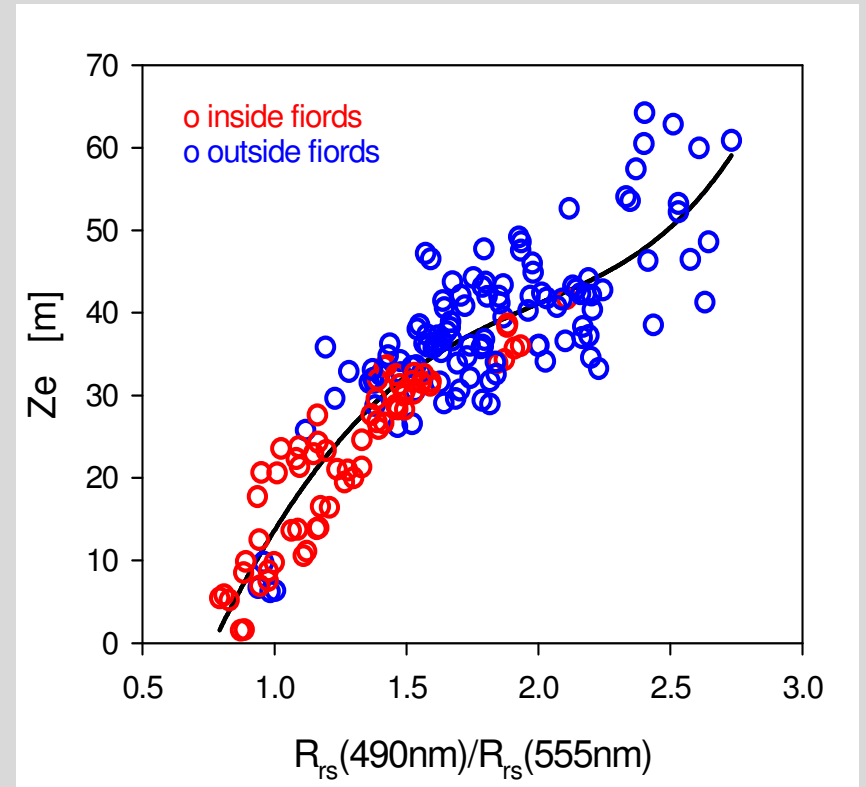
**Errors:**  
**MNB = 7%**  
**RMS=43%**  
**Log\_bias=12%**



### Baltic



### Svalbard







## Euphotic zone depth in stratified Arctic waters ...

*Thank you !*

