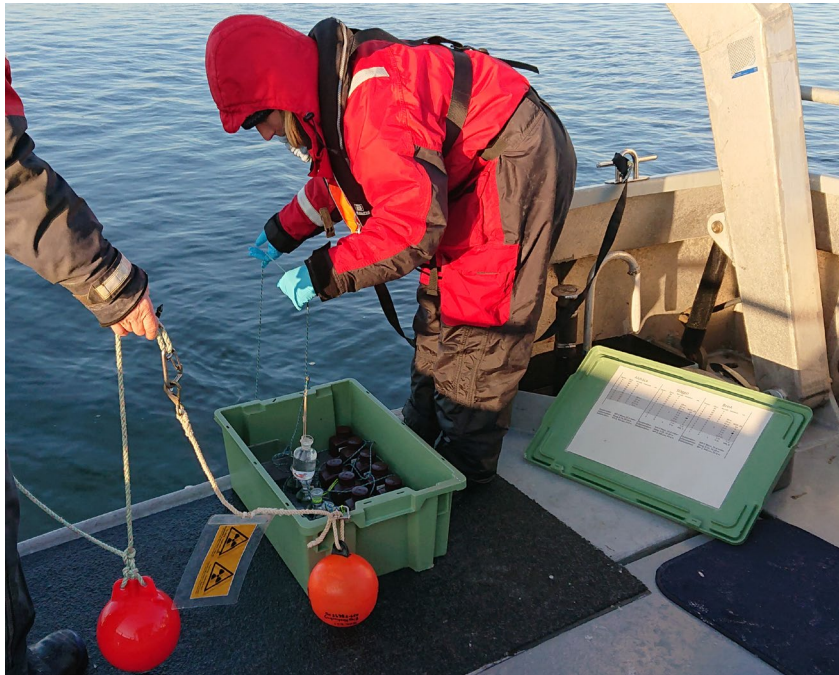


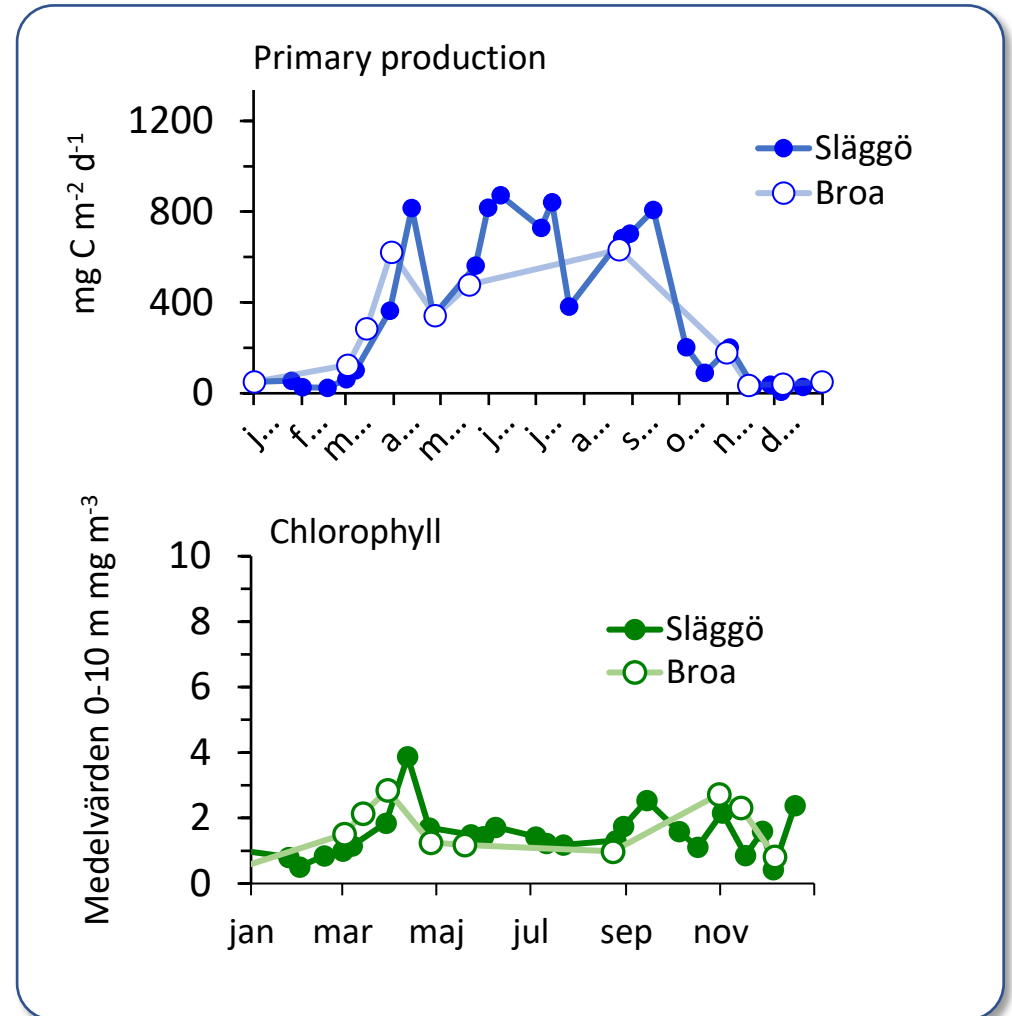
37 years of sampling: Primary production has declined over 50% since 1992

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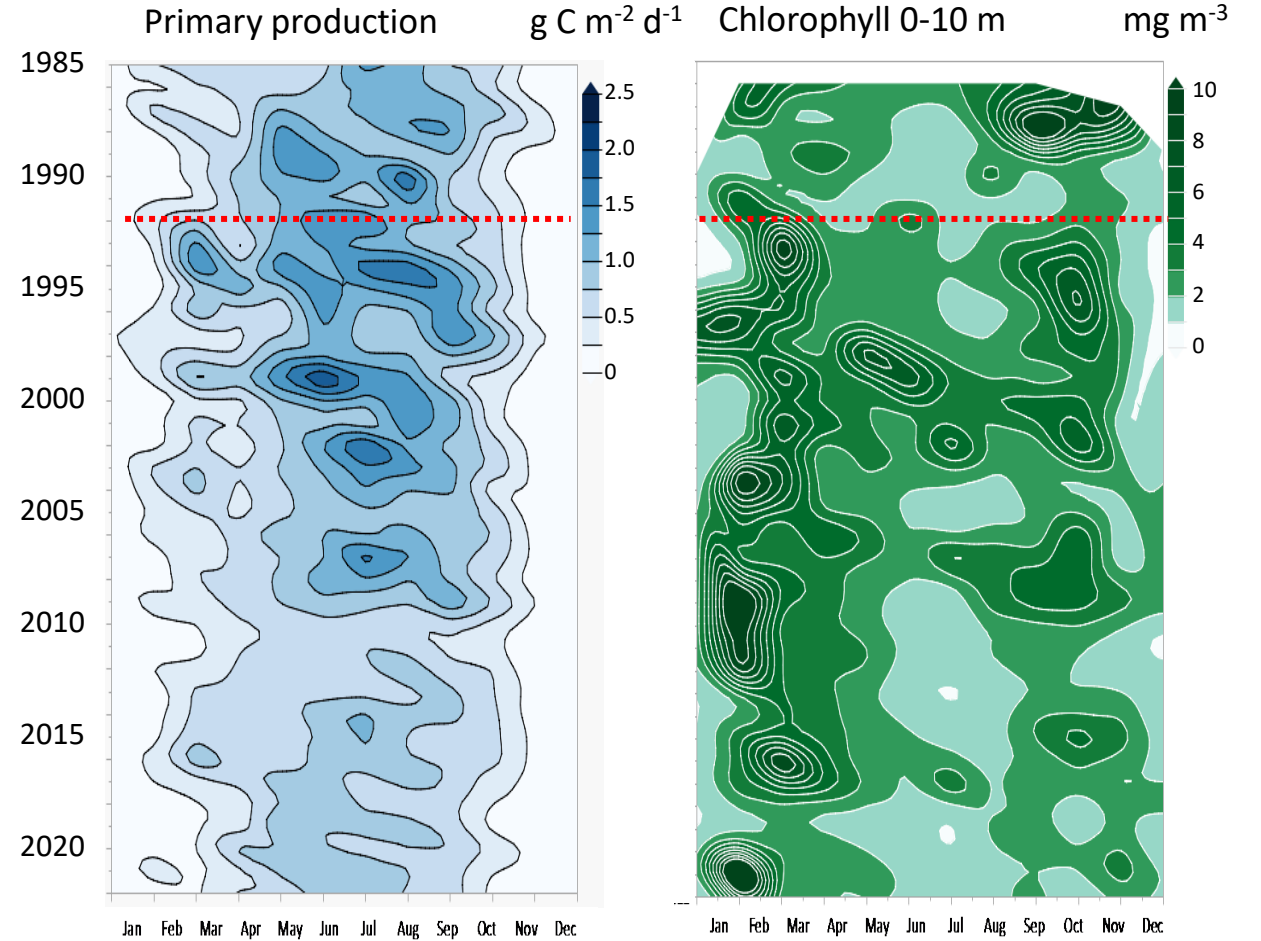
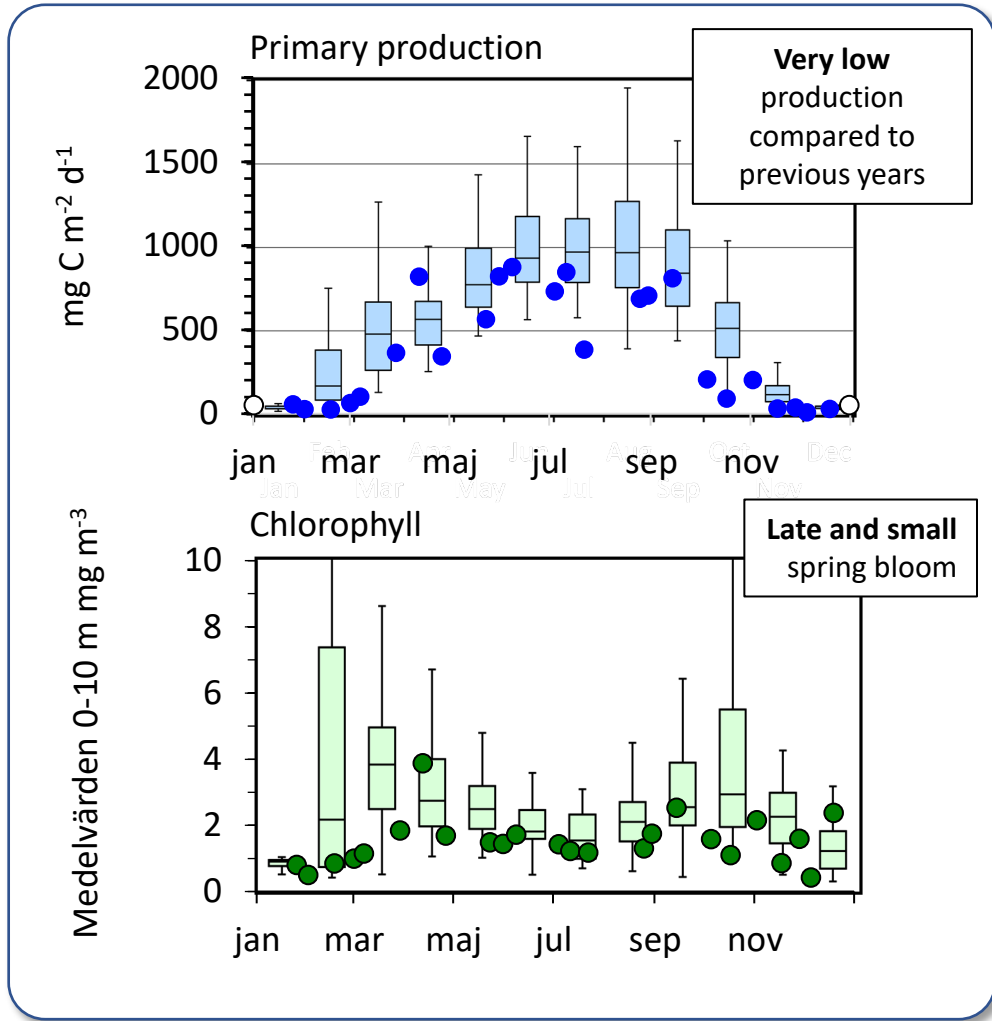


Method: Bottle incubations 4 h in situ, incorporation of ^{14}C -carbonate into phytoplankton cells

Results from
the monitoring
2022:



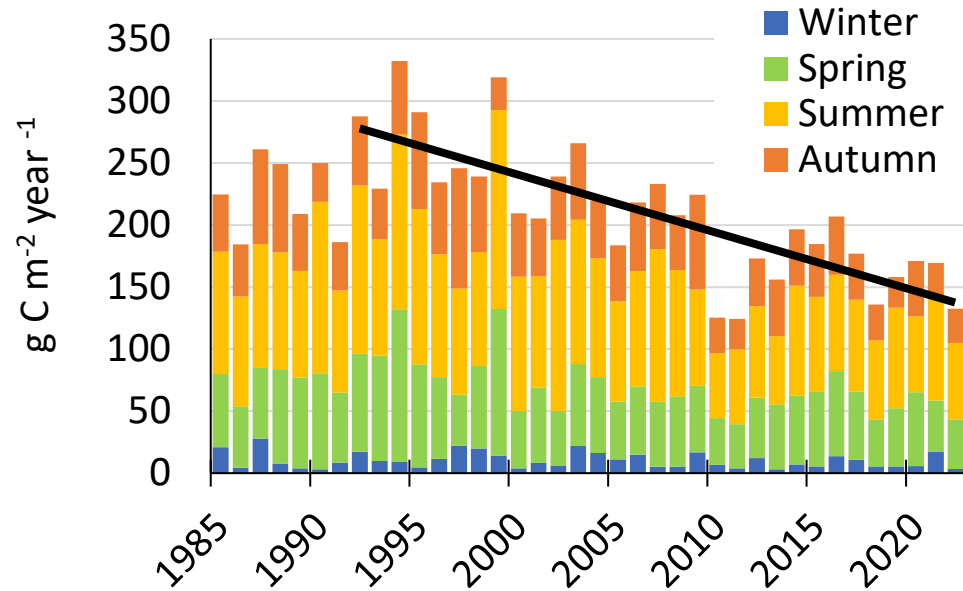
Primary production 2022 was very low; in line with a steady decline since 1992:



Seasonal variation:

1. Highest production in summer
2. Highest biomass in spring and autumn

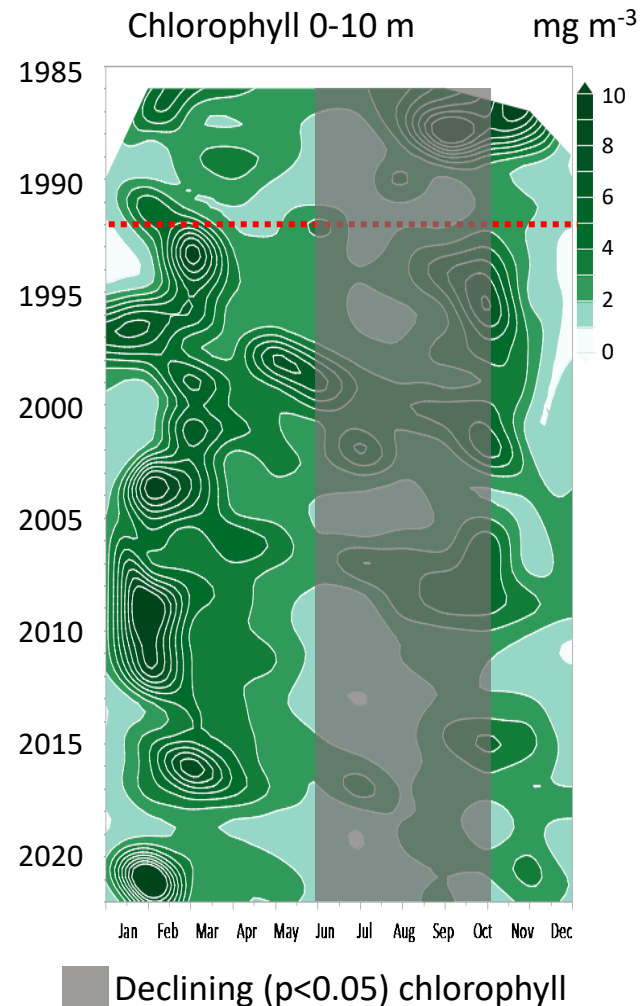
Yearly primary production, stacked bars indicate seasonal production



Primary production has declined by $4.6 \text{ g C m}^{-2} \text{ year}^{-1}$ since 1992 if a linear regression is applied. The slope is significant ($p < 0.001$) and 62% of the variation is explained by the regression.

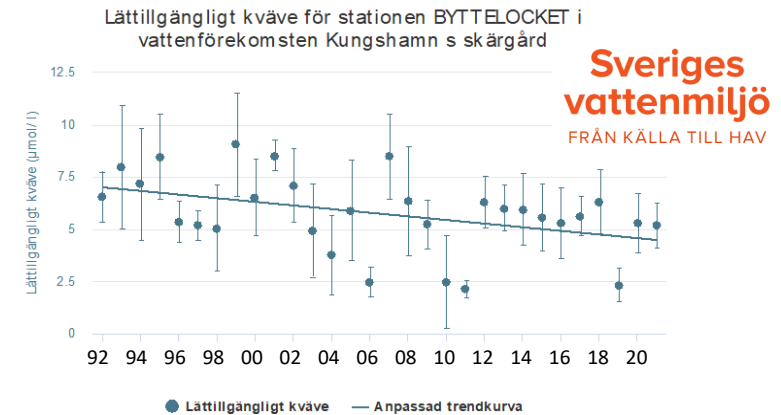
This implies a 50% reduction over the last 30 years.

Chlorophyll has also declined 30-70% in the June to October time span.

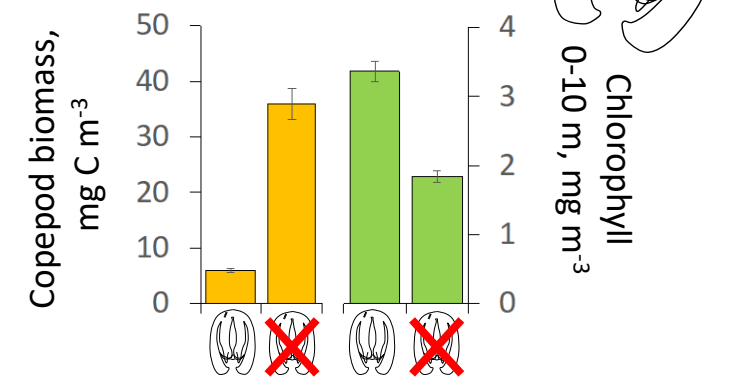


Why do the primary production and chlorophyll decline?

1. Nutrient decline in the area:



2. Food web changes due to the introduced ctenophore *Mnemiopsis leidyi*:



August–Nov, 2007–2014