WP1: M4 “The grazers”

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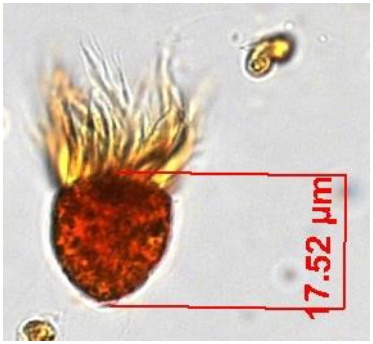

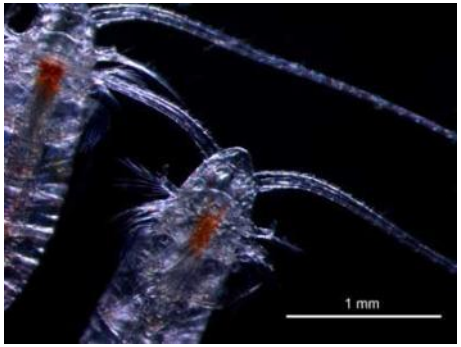

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Introduction

Micro- (20-200µm) and meso- (200-2000µm) zooplankton remove 65% and 23% of global marine primary production respectively.

Many mesozooplankton display a diel vertical migration, resulting in potentially different impacts on pelagic biogeochemistry above and below the thermocline.

Consequently, zooplankton are important for:

1. Nutrient recycling;
2. Microplankton community dynamics;
3. Secondary production
4. Carbon export

Summary of planned work

Hypotheses

1. Quantity and quality of ingested resources influence the fate of C, N & P.
2. Grazing affects the structure of the phytoplankton community, providing feedback on the C:N:P of POM.
3. Zooplankton activity results in high C:N regeneration ratios below the thermocline due to the production and sinking of faecal pellets and the subsequent respiration of organic carbon.
4. Zooplankton growth & production are controlled by food quantity & quality (C:N:P) & temperature.

Prey cells

Respiration

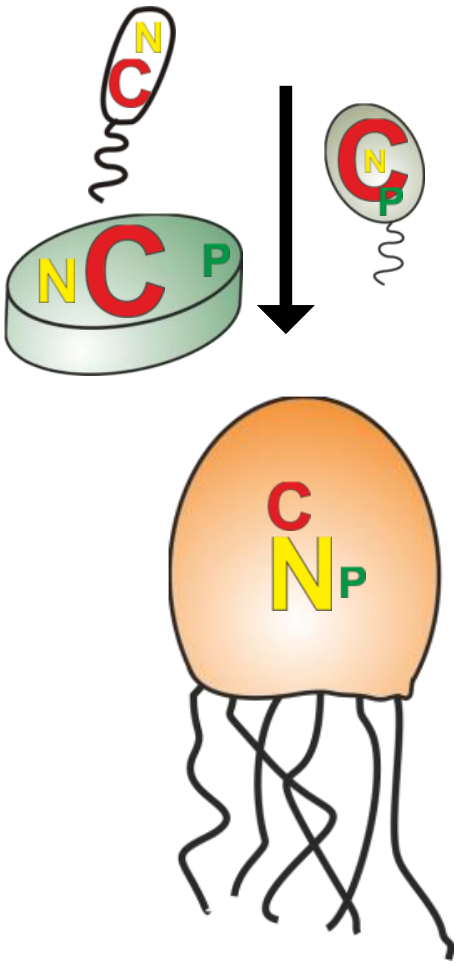
Excretion

Eggs

Faecal pellets

Carbon
Nitrogen
Phosphorus

Prey cells



(microzooplankton work focuses on grazing & growth owing to methodological constraints)

Key objectives/measurements

(complementary process cruises and monthly sampling at E1 in the Western Channel)

Broadly, we aim to quantify (**above and below the thermocline**):

1) Micro + meso zooplankton community composition and biomass;
2) Micro + meso zooplankton community grazing and production (growth);
3) Mesozooplankton respiration and stoichiometry (C,N [& P where possible]) of biomass, eggs, excreta and egesta.

Process cruises and E1 will both include core measurements (autotrophs & grazers) across to ensure compatibility/data integration.

Ship-based work will focus on how mesozooplankton affect the fate of elements above and below the thermocline.

Work at E1 will focus on micro- and meso zooplankton grazing.

Updates

1. Closing nets (63 and 200µm) and a plankton wheel for ship-based work have been ordered;

2. Dr Sari Giering started work as the named PDRA for the ship-based component of the zooplankton work last week (06/01/2014);

3. Dr Elena Garcia Martin started work as the PDRA on the respiration work last week (06/01/2014);

4. Sampling and experiments at E1 will commence in February 2014.

Some points/questions...

We can't make all of these measurements on the same day – which should be taken concurrently with other samples e.g. phytoplankton samples?

Stoichiometry of ingested material is very difficult to define.

Does the modelling community have a specific gap(s) that needs to be addressed as a priority?