

The impact of coastal upwellings on the air-sea exchange of climatically important gases (ICON)

Phytoplankton community structure, diversity and production
Objectives 1, 2 & 3

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- Plankton play an important pathway in the production and consumption of trace gases e.g. taxa such as coccolithophores and dinoflagellates are rich in DMSP and responsible for DMS/P production
- Dominant phytoplankton groups and phytoplankton production will change in time with the evolution of the filament – large cells dominate production in nutrient-rich waters, small phytoplankton dominate in nutrient-depleted waters

How

1. Microscopy &/or Flowcam – paired lugol's preserved samples for phyto (Claire) and μ zoo analysis at PML (Elaine Fileman) & live net samples for dominant phytoplankton groups (?)
2. hplc pigments – 0.2 μ m filtered samples (***NB: £ for 200 samples***)
3. ^{14}C experiments – 24 h & 6 h incubations

When

- SF_6 -labelled patches & transect across the filaments
1. Pre-dawn - ^{14}C 24 hour incubations (& short-term?); hplc pigments, Lugol's samples (Glen to collect)
 2. Level 1 CTD's - e.g. 08:00 & 12:00 ^{14}C short-term incubations, pigments & Lugol's
 3. Plankton net haul (plankton $>20\mu\text{m}$) - sometime around midday?

Requirements

Water

- Pre-dawn cast – 3 litres from 8 depths
 - ^{14}C incubations
 - Hplc pigments
 - phytoplankton samples (Glen)
- Level 1 CTD's during the patch and transect surveys – 3 litres from 2-8 depths

Lab space

- Water bottle annex - 1.2m for hplc filtration unit
- Radioisotope container – ^{14}C experiments (shared with Jo)
- Walk in fridge (deck lab) - for Lugol's samples (lots of boxes!)
- CT lab - 1.5m for inverted microscope
- On-deck incubators – shared with Jo