Introduction.

The fixation of atmospheric carbon by phytoplankton contributes significantly to carbon flux through different trophic pathways, which is dependent on the dominant phytoplankton group or size-class. Over the past decade, a range of remote-sensing algorithms have been developed to detect the phytoplankton size-class biomass and production of micro-, nano- and pico-phytoplankton in the global ocean. Uncertainty remains as to the accuracy of these in shelf and coastal waters. In situ size-fractionated 14C PE, $\alpha_{\text{cy}}$, and Chla data are needed to validate such models in these regions which is the subject of this paper.

Data and Methods.

Samples were collected weekly from the Western Channel Observatory (WCO) at stations L4 and E1 during 2014 & 2015 (Fig. 1), and Celtic Sea cruises during summer (DY028 - August 2014) and spring (DY029 - April 2015; Fig. 1).

Chlorophyll-a (Chla). Triplicate 200ml samples of seawater were sequential through a Satronus 20μm, 2.0μm & 0.2μm polycarbonate filters, then stored at -18°C for 18 hours in 10ml 90% acetone and Chla was analysed using the Welschmeyer (1994) method.

Phytoplankton absorption coefficients ($a_{\text{x}}$). For DY026 & 29, 700-1.5μm of seawater was filtered onto Whatman 0.7, 2.0 μm & 0.2μm filters. Aph was determined spectrophotometrically following Kishino et al. (1985).

Photosynthesis-Irradiance (PE) Parameters. PE curves were measured using 14C uptake following the method of Tilstone et al. (2003) to determine maximum photosynthetic rates (PmB) and light limited slope, which were used with Chla and $a_{\text{cy}}$, to calculate primary production.

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References.


