

Analysis of Southern Ocean Planktonic Species Using the Sercon NCS 20-22 IRMS

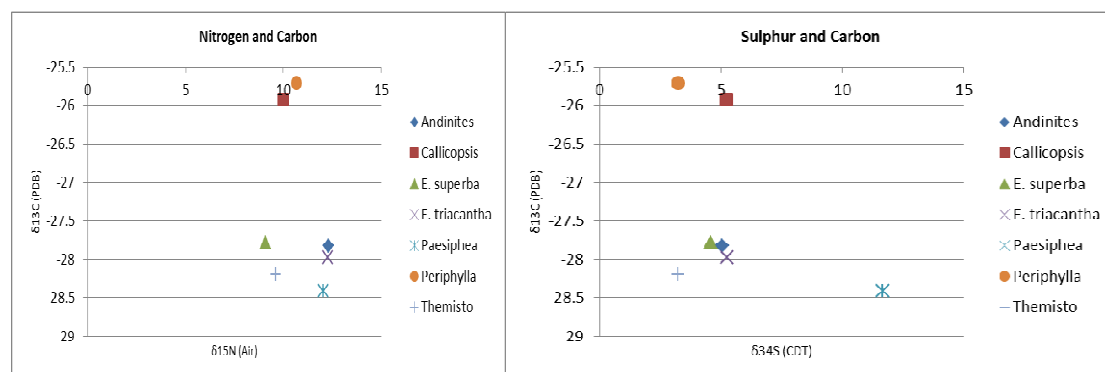
The southern ocean has a dynamic ecosystem with a large planktonic component. Here we present data obtained from samples taken on the British Antarctic Survey research cruise JR11.

Samples were analysed using a Sercon NCS elemental analyser and 20-22 isotope ratio mass spectrometer incorporating the features described in Fry (2007).

Table below shows delta values and precision of the analysis

	$\delta^{15}\text{N}$ (Air)	SD (n=2)	$\delta^{13}\text{C}$ (PDB)	SD (n=2)	$\delta^{34}\text{S}$ (CDT)	SD (n=2)	
Andinites	12.31016	0.09	-27.8326	0.00	5.061069	0.05	Myctophid
Callicopsis	9.970173	0.16	-25.9168	0.08	5.221172	0.07	Calanoid copepod
<i>E. superba</i>	9.090284	0.15	-27.7803	0.03	4.584018	0.52	above 250m all times and surface
<i>E. triacanth</i>	12.27062	0.09	-27.9739	0.02	5.257228	0.14	only above 250m at night
<i>Paesiphea</i>	12.03324	0.09	-28.4097	0.06	11.64917	0.28	Another shrimp! Sub 200m
<i>Periphylla</i>	10.66167	0.15	-25.7036	0.00	3.21719	0.15	Domed jellyfish
<i>Themisto</i>	9.603618	0.00	-28.2058	0.06	3.21719	0.15	Preditory amphipod

Figures below show isotopic species of N or S plotted against C



The analysis has demonstrated itself to be a flexible technique and ideal for ecological studies, such as food web elucidation. Providing both ease of use and the high precision required for this work.

The data does reflect differing foraging behaviour of the euphausiid species, with both *E. superba* and *E. triacantha* being differentiated in nitrogen values, and *Paesiphaea* spp, which remains at depth having similar values to *E. triacantha*, but strikingly dissimilar sulphur values. Also of note is the close coupling of the calanoid copepod *Callicopsis* and *Periphylla*, the domed jellyfish. *Themisto gaudichaudii* shows similar predatory sulphur values to *Periphylla* but carbon and nitrogen values that imply diet dominated by euphausiids and myctophids.

RAPID COMMUNICATIONS IN MASS SPECTROMETRY

Rapid Commun. Mass Spectrom. 2007; 21: 750–756

Published online in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/rcm.2892

RCM

Coupled N, C and S stable isotope measurements using a dual-column gas chromatography system

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Received 2 November 2006; Revised 20 December 2006; Accepted 23 December 2006