

Cruise track data from the underway acquisition system from R/V Aurora Australis, R/V Southern Surveyor, and RVIB Nathaniel B. Palmer cruises in the Southern Ocean from 1997 to 2001 (CAREER project)

Website: <https://www.bco-dmo.org/dataset/3594>

Version: 30 January 2012

Version Date: 2012-01-30

Project

» [CAREER: Nitrate Isotopes and Biogeochemistry; A Plan for coupling](#) (CAREER)

| Contributors | Affiliation | Role |
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Data Files

| File |
|---|
| Cruisetrack.csv (Comma Separated Values (.csv), 85.91 KB) MD5:35dcca460b47dadcfbabec1008a30daa Primary data file for dataset ID 3594 |

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Parameters

| Parameter | Description | Units |
|------------|-----------------------|-----------------|
| cruise_ID | Cruise identifier | dimensionless |
| start_date | start date of dataset | YYYYMMDD |
| end_date | end date of data set | YYYYMMDD |
| date | date of sample | YYYYMMDD |
| lat | latitude | decimal degrees |
| lon | longitude | decimal degrees |
| time | Time of cast | HHMM |

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Deployments

AU9701

| | |
|-------------------|---|
| Website | https://www.bco-dmo.org/deployment/58734 |
| Platform | R/V Aurora Australis |
| Report | http://data.aad.gov.au/aadc/voyages/display_voyage.cfm?voyage_id=81 |
| Start Date | 1997-09-09 |
| End Date | 1997-09-22 |

AU9804

| | |
|-------------------|---|
| Website | https://www.bco-dmo.org/deployment/58745 |
| Platform | R/V Aurora Australis |
| Report | http://data.aad.gov.au/aadc/voyages/display_voyage.cfm?voyage_id=91 |
| Start Date | 1998-10-29 |
| End Date | 1998-12-27 |

AU9901

| | |
|-------------------|---|
| Website | https://www.bco-dmo.org/deployment/58746 |
| Platform | R/V Aurora Australis |
| Report | http://data.aad.gov.au/aadc/voyages/display_voyage.cfm?voyage_id=92 |
| Start Date | 1999-07-13 |
| End Date | 1999-10-07 |

SS9902

| | |
|-------------------|---|
| Website | https://www.bco-dmo.org/deployment/58747 |
| Platform | R/V Southern Surveyor |
| Report | http://www.marine.csiro.au/maru/marlin_admin.survey_details?srv_id=623&src_id=8&rscr=plst |
| Start Date | 1999-02-06 |
| End Date | 1999-02-14 |

NBP0101

| | |
|-------------------|---|
| Website | https://www.bco-dmo.org/deployment/58743 |
| Platform | RVIB Nathaniel B. Palmer |
| Report | http://www.marine-geo.org/tools/search/entry.php?id=NBP0101 |
| Start Date | 2001-01-30 |
| End Date | 2001-03-28 |

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Project Information

CAREER: Nitrate Isotopes and Biogeochemistry; A Plan for coupling (CAREER)

Coverage: Subantarctic waters, Antarctic Zone, and Ross Sea

Nitrate is a ubiquitous form of biologically available nitrogen in the environment. Based on previous method development in the principal investigator's laboratory, CAREER graduate students and undergraduates investigate the nitrogen (N) and oxygen (O) isotopes of nitrate as 'tracers' of the N cycle, focusing on the marine environment. Research centers on two projects: (1) lab culture, in vitro assay, and field incubation studies of the coupled N and O isotope dynamics of nitrate assimilation and denitrification, two of the critical reactions in the N cycle; and (2) incorporation of the N and O isotopes of nitrate into numerical models of ocean circulation and biogeochemistry. These projects, in the context of the oceanic data sets generated in the principal investigator's laboratory, allow for the quantification of biogeochemical processes the signals of which are otherwise complicated by their simultaneous occurrence and by ocean circulation.

Oceanic data used in this project includes Nitrogen and delta 15N of dissolved nitrate relative to atmospheric N₂ (dN15_NO3) collected during five cruises in the Southern Ocean -- in September, 1997, March, 1998, and August, 1998, February, 2001, and November 2006. During the last two cruises, samples of Oxygen isotopic composition (18O/16O) of nitrate (d180_NO3) were also collected.

Related files and references:

DiFiore, P. J., D. M. Sigman, T. W. Trull, M. J. Lourey, K. Karsh, G.Cane, and R. Ho (2006), Nitrogen isotope constraints on subantarctic biogeochemistry, *J. Geophys. Res.*, 111, C08016, doi:10.1029/2005JC003216.

DiFiore, P. J., D. M. Sigman, and R. B. Dunbar (2009), Upper ocean nitrogen fluxes in the Polar Antarctic Zone: Constraints from the nitrogen and oxygen isotopes of nitrate, *Geochem. Geophys. Geosyst.*, 10, Q11016, doi:10.1029/2009GC002468.

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Funding

| Funding Source | Award |
|--|-----------------------------|
| NSF Division of Ocean Sciences (NSF OCE) | OCE-0447570 |
| NSF Division of Ocean Sciences (NSF OCE) | OCE-0081686 |
| NSF Antarctic Sciences (NSF ANT) | ANT-0453680 |

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