The Distributed Biological Observatory: Biogeochemical Data Overview

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March 9, 2016

Distributed Biological Observatory 3rd Data Workshop Seattle



http://dbo.eol.ucar.edu/ http://arctic.cbl.umces.edu http://www.arctic.noaa.gov/dbo/



[Lee Cooper]



Progression of Increasing Influence of Melted Sea Ice Relative to Runoff (increasingly shallower slopes in δ^{18} O versus salinity relationship). Data Source: RUSALCA cruises, 2004, 2009, 2012 (includes DBO 3 data).

Cooper et al., in press 2016 Deep-sea Research II



Interpretation: No sea ice melt, water mass gradient only between Anadyr and Bering Shelf Water

Salinity

δ¹⁸**Ο [‰ VSMOW]**





Interpretation: Anadyr Water Influence

Salinity δ¹⁸**Ο [‰ VSMOW]** -1.25 0 -1.5 10 31 -1.75 Depth 20 -2 30 Ocean Data View 40 -2.25 50 -2.5 170°W 169.8°W 169.6°W 169.4°W 169.2°W 169°W



Interpretation: No sea ice melt, water mass gradient. Anadyr to Bering Shelf Water to Alaska Coastal Water (left to right) δ¹⁸**Ο [‰ VSMOW]**

-1.25 30 0 -1.5 10 -1.75 Depth 20 • -2 30 • • Ocean Data View 40 -2.25 50 -2.5 168.5°W 167.5°W 168°W 167°W



Interpretation: Sea ice melt present (particularly orange colors at surface), Alaska Coastal Water to the right δ^{18} o [% vsmow]





Interpretation: Sea ice melt present mid transect (greenish colors at surface)

δ¹⁸**Ο [‰ VSMOW]**









Benthic food web study: compound-specific isotopic analyses of amino acids

[Monika Kedra]



Barrow Canyon: Amino acid $\delta^{15}N$ (‰Air) of bivalves and polychaetes



- larger differences between bivalves and polychaetes in trophic amino acids than source amino acids
- 13.8‰ difference for the δ^{15} N value of alanine between the polychaete *Maldane sarsi* and bivalve *Macoma calcarea* and only a 0.05‰ difference for phenylalanine

Prepared by M. Zhang



Danielson, Eisner, Ladd, Mordy, Sousa, Weingartner, Deep Sea Res. II (in press)

HF Radar Surface Currents



Danielson et al. Deep Sea Res. II (in press)

Satellite-tracked drifters



Danielson et al. Deep Sea Res. II (in press)

Arctic Eis (7Aug-24 Sep): surface (10 m) nutrients















Phosphate



Arctic Eis (7Aug-24 Sep): near bottom nutrients



Water Mass Property Comparison Matrix

Layer	Water Mass	Τ	S	NO ₂	NO ₃	NH ₄	Si	PO ₄
Surface	MW							
	BCSW							
	ACW							
Bottom	BSWW							
	CSWW							
	BCSW							
	ACW							

2012 significantly lower than 2013 2013 significantly lower than 2012

Arctic Eis Integrated Chla: total, small (< 10μm) and large (> 10μm) size fraction





70°N

-68°N

-66°N

-64°N

-62°N

60°N

70°N

68°N

66°N

64°N

62°N

