



## Abstract View

[Volume 18, Issue 3 \(March 1988\)](#)

### Journal of Physical Oceanography

Article: pp. 469–480 | [Abstract](#) | [PDF \(864K\)](#)

# The Formation of Labrador Sea Water. Part III: The Evolution of Oxygen and Nutrient Concentration

**R. Allyn Clarke and A.R. Coote**

*Physical and Chemical Sciences Branch, Dept. of Fisheries and Oceans, Bedford Institute of Oceanography, Dartmouth, N.S.*

(Manuscript received June 5, 1987, in final form October 13, 1987)

DOI: 10.1175/1520-0485(1988)018<0469:TFOLSW>2.0.CO;2

### ABSTRACT

Oxygen, nutrient, and tritium concentrations observed in the western Labrador Sea in March 1976 during deep convective renewal of Labrador Sea water are analyzed to show how a newly formed water mass obtains its characteristics. Common to other winter observations of deep mixed layers, the oxygen concentrations are some 6% undersaturated, even in the upper 20 m. A gas transfer model coupled to a simple mixed layer model illustrates the difficulty of transferring sufficient oxygen across the air-sea boundary to fully oxygenate the mixed layer when the mixed layer depth exceeds a few hundred meters. The nutrient concentrations of the mixed layers are fairly well mixed as is consistent with the fairly narrow range of nutrient concentrations of the source waters. Only the tritium concentrations exhibit any structure within the mixed layer, and it is argued that this is due to the much larger range of tritium concentrations in the source waters that make up the mixed layer.

#### Options:

- [Create Reference](#)
- [Email this Article](#)
- [Add to MyArchive](#)
- [Search AMS Glossary](#)

#### Search CrossRef for:

- [Articles Citing This Article](#)

#### Search Google Scholar for:

- [R. Allyn Clarke](#)
- [A.R. Coote](#)



DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826  
[amsinfo@ametsoc.org](mailto:amsinfo@ametsoc.org) Phone: 617-227-2425 Fax: 617-742-8718  
[Allen Press, Inc.](#) assists in the online publication of *AMS* journals.