

AMERICAN METEOROLOGICAL SOCIETY

AMS Journals Online

AMS Home Journals Home

Journal Archive

Subscribe

For Authors

Help

Advanced Search

Search



Abstract View

Volume 18, Issue 4 (April 1988)

Journal of Physical Oceanography

Article: pp. 552–564 | Abstract | PDF (987K)

Ventilating Warm Rings: Structure and Model Evaluation

William K. Dewar

Department of Oceanography and Supercomputer Computations Research Institute, Florida State University, Tallahassee, FL

(Manuscript received May 22, 1987, in final form October 9, 1987)

DOI: 10.1175/1520-0485(1988)018<0552:VWRSAM>2.0.CO;2

ABSTRACT

The theory of the evolution of rings under a Cooling atmosphere is extended in two ways. First effects of stratification are studied analytically through the use of a "two and one-half" layer model. Second, model predictions are compared with observations. Qualitative support of the analytical model is also provided by a brief comparison of the analytical predictions with a numerical model.

Ring evolution is computed using the conservation of angular momentum. Idealizations in the analytical model include zero potential vorticity in the upper layer and an infinitely deep and resting third layer. The results from the analytical model witch is based on a crude representation of fluid thermodynamics and a continuously stratified numerical model with an active mixed layer agree qualitatively. Further, both models yield predictions of main thermocline deepening under warm rings which are consistent with field observations. This agreement supports the idea that the response of warm rings to cooling is governed by Rossby adjustmentlike mechanics.

Options:

- Create Reference
- Email this Article
- Add to MyArchive
- Search AMS Glossary

Search CrossRef for:

• Articles Citing This Article

Search Google Scholar for:

William K. Dewar



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