



Abstract View

[Volume 13, Issue 6 \(June 1983\)](#)

Journal of Physical Oceanography

Article: pp. 972–987 | [Abstract](#) | [PDF \(1.09M\)](#)

Radiating Barotropic Instability

L.D. Talley

School of Oceanography, Oregon State University, Corvallis, 97331

(Manuscript received January 14, 1983, in final form February 22, 1983)

DOI: 10.1175/1520-0485(1983)013<0972:RBI>2.0.CO;2

ABSTRACT

The linear stability of zonal, parallel shear flow on a beta-plane is discussed. While the localized shear region supports unstable waves, the far-field can support Rossby waves because of the ambient potential-vorticity gradient. An infinite zonal flow with a continuous cross-stream velocity gradient is approximated with segments of uniform flow, joined together by segments of uniform potential vorticity. This simplification allows an exact dispersion relation to be found. There are two classes of linearly unstable solutions. One type is trapped to the source of energy and has large growth rates. The second type is weaker instabilities which excite Rossby waves in the far-field: the influence of these weaker instabilities extends far beyond that of the most unstable waves.

Options:

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

Search CrossRef for:

- [Articles Citing This Article](#)

Search Google Scholar for:

- [L.D. Talley](#)

top ▲



© 2008 American Meteorological Society [Privacy Policy and Disclaimer](#)

Headquarters: 45 Beacon Street Boston, MA 02108-3693

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.