



Due to technical problems, there is a delay in posting the full text version of articles. We hope to have this resolved soon. In the meantime please see the PDF version of articles.

## Abstract View

[Volume 2, Issue 3 \(July 1972\)](#)

### Journal of Physical Oceanography

Article: pp. 263–272 | [Abstract](#) | [PDF \(728K\)](#)

# The Role of Variable Coriolis Parameter in the Propagation of Inertia-Gravity Waves During the Process of Geostrophic Adjustment

**J.E. Geisler**

*Rosenstiel Institute of Marine and Atmospheric Science, University of Miami, Coral Gables, Fla. 33124*

**R.E. Dickinson**

*National Center for Atmospheric Research, Boulder, Colo. 80302*

(Manuscript received February 23, 1972, in final form April 13, 1972)

DOI: 10.1175/1520-0485(1972)002<0263:TROVCP>2.0.CO;2

### ABSTRACT

This analysis treats the transient inertia-gravity wave response of a shallow fluid to an impulsive addition of momentum. The Coriolis parameter varies with latitude, but Rossby waves are not considered. The square of the Coriolis term is approximated by a constant term plus a term linear in the northward coordinate. In this approximation, monochromatic waves, which reach a turning point at the latitude where the wave frequency equals the local Coriolis frequency, are given by Airy functions. A contour integral solution to the initial value problem is expressed as a Fourier integral over wave frequency with an Airy function argument and is evaluated approximately using the stationary phase technique. The solution at a given latitude is first dominated by waves from the source and then waves reflected from turning points poleward of the source. The results are applied to give a qualitative description of the wake of a hurricane moving over a stratified ocean.

#### Options:

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

#### Search CrossRef for:

- [Articles Citing This Article](#)

#### Search Google Scholar for:

- [J.E. Geisler](#)
- [R.E. Dickinson](#)



© 2009 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](mailto:amsinfo@ametsoc.org) Phone: 617-227-2425 Fax: 617-742-8718

[Allen Press, Inc.](#) assists in the online publication of *AMS* journals.