Sign in

AMERICAN METEOROLOGICAL SOCIETY
AMS Journals Online

AMS Home | Journals Home | Journal Archive | Subscribe | For Authors | Help | Advanced Search | Search | Go

Abstract View

Volume 17, Issue 11 (November 1987)

Journal of Physical Oceanography
Article: pp. 1860–1876 | Abstract | PDF (1.54M)

The Intraseasonal Oscillation in Eastern Pacific Sea Levels: How Is It Forced?

David B. Enfield

College of Oceanography, Oregon State University, Corvallis, OR 97331

(Manuscript received October 24, 1986, in final form February 11, 1987)

DOI: 10.1175/1520-0485(1987)017<1860:TIOIEP>2.0.CO;2

ABSTRACT

Daily sea level and surface winds at eastern Pacific shore locations and equatorial islands, together with gridded five-day averages of 850 mb winds, have been analyzed for the 1979–84 period to determine how the 40–60 day intraseasonal oscillation of eastern Pacific sea levels is forced, as described by Spillane et al. for 1971–75. The oscillation was also present in 1980–84 from Callao, Peru, to San Francisco, with maximum energy near 52–57 days and band limits of 43 and 65 days. During 1980–84 there was no evidence for forcing of the large-scale oscillation in the eastern Pacific, although a local contribution of forcing was superimposed on the remote signal at the California stations. Interannual fluctuations in amplitude were evident in the sea level time series, consistent with those of the corresponding wind oscillation in the western equatorial Pacific. The oscillation was best developed in both variables in 1980–82 and became weak or nonexistent during the recovery phase of the 1982–83 El Niñ, similar to a weakening that occurred following the 1972–73 episode, noted by Spillane et al. The sea level oscillations have the characteristics of lowest baroclinic mode Kelvin waves that are primarily forced by a similar, energetic oscillation in the winds in the western equatorial Pacific. During the 1980–82 period a significant component of the wind signal extended into the central Pacific and was associated with sea level propagation speeds of about 5 m s^{-1}, suggesting a more extensive forcing along the equatorial waveguide at that time. In 1982–84, when the oscillation was weak, the sea level propagation was about 3 m s^{-1}, consistent with the free propagation of lowest baroclinic mode Kelvin waves in the central Pacific.

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

Search CrossRef for:
- Articles Citing This Article

Search Google Scholar for:
- David B. Enfield

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.