Ocean Science Discussions, 1, S40–S41, 2004
www.ocean-science.net/osd/1/S40/
European Geosciences Union

Ocean Science Discussions

Interactive comment on "Fast thermistor string observations at the slope of Great Meteor Seamount" *by* H. van Haren et al.

Anonymous Referee #2

Received and published: 20 January 2005

General Comments

Overall this is a very good paper which makes a new contribution to internal wave research. The paper introduces the use of a high sampling rate thermistor string for measuring internal waves, instabilities, and other high frequency events. The first detailed measurements of deep water instabilities are presented. I believe the instrument will be extremely useful for understanding internal wave dynamics. The paper is well written. The paper should be published but only after consideration of the following:

Specific Comments

p 37. I question the use of the word 'Fast' in the title and text, when referring to the thermistor string. To me, 'fast' means : 'moves very quickly'. Alternatives include 'high sampling rate' or 'high frequency'. p. 38. The authors suggest that few previous measurements have measured rapid temperature fluctuations. However, there have been

several previous measurements with thermistor strings at reasonably high sampling rate. See e.g. Brandt et al. 1999 and Small et. al. 1999. p. 41. A diagram showing the thermistor string configuration is needed. p. 42. Were there any pressure sensors located on the thermistor string ? It is very important to know whether the thermistor string is vertical or tilted. Can the authors be certain that the string was vertical and hence measuring true vertical profiles, rather than tilted profiles ? Sudden tilting due to current shear can give very erroneous timeseries. p. 43. A plot of salinity vs. depth would be useful. I cannot see the stratification near the bottom in the red curve of Fig. 2b. p. 45. Bottom paragraph. What kind of interpolation (temporal or spatial: linear or otherwise) is used to calibrate the string over long periods ? p. 46. I do not understand Fig. 5. Does the white box in b) really contain the close up in c) ? If so, why don't the colors (marking temperature) agree ? Also, it would be helpful in the time axis was in minutes and seconds rather than fraction of day. p. 49. Is the billow shown in Fig. 8 breaking against or with the flow ? Does it agree with predictions for Kelvin-Helmholtz instability ? The author believes the measurements of K-H instability are the first at great depth. This may be true, but note that very detailed measurements of billows have been presented in shallow water by e.g. Moum et al 2003 and Orr and Mignerey 2003 using acoustic backscatter. I do not follow the short numerical calculation re intrinsic frequency. Please check whether K really is ˜ 1/150 cpm and lambda ˜ 20 m.

Technical Corrections

P 39. should be 'instability remaining for periods of Ě' p. 40. should be 'achieved inclusive of data transport Ě' p. 47. Explain : s/n = 'signal to noise'

References for review

Brandt et al., 1999. J. Phys. Oceanogr., 29, 1071-1080. Moum et al., 2003. J. Phys. Oceanogr., 33, 2093-2112. Orr and Mignerey 2003. J. Geophys. Res., 108, 3064. Small et al 1999. Cont. Shelf. Res., 19, 1389-1436.

Interactive comment on Ocean Science Discussions, 1, 37, 2004.