of 100, and produce order-of-magnitude increases in $\tau$. Farther downstream (Figure 1a; BP97's sections D and E), large-scale budgets indicate a weakening of the total stress to ~0.5 Pa (BP97), consistent with a reduction in $\epsilon$, $K_m$ and $K_\rho$ as the Med approaches geostrophic equilibrium over the broad continental slope. However, the total entrainment remains substantial during much of the 140 km from Camarinal Sill [*Baringer and Price*, 1997a], indicating continued mixing during the Med's descent to terminal depth. Whether fine-scale topographic effects control the cumulative entrainment farther downstream remains an open question. In any event, numerical prediction of the Med's ultimate composition will likely require resolving or parameterizing the effect of turbulent dynamics over O(1 km) scale topographic features [*Özgökmen and Fischer*, 2008].

[29] There is increasing evidence that the composition of Mediterranean Outflow waters have been changing on decadal timescales [*Millot et al.*, 2006]. It has been suggested that anthropogenic changes may lead to a warmer and less dense Med Outflow [*Thorpe and Bigg*, 2000]. Because mixing is sensitive to subtle changes in flow stability, it is unlikely that numerical models that use "tuned" mixing parameterizations will adequately model bulk entrainment correctly under future scenarios where the outflow interacts differently with topographic complexity. It is thus imperative that the effects of fine-scale topographic roughness be captured or accurately parameterized in GCMs [e.g., *Özgökmen et al.*, 2004] to avoid significant errors in climate predictions [*Legg et al.*, 2009].

[30] **Acknowledgments.** We thank Joaquin Salvador, Maribel Lloret, Ray Kreth and Mike Neeley-Brown for their technical expertise, Jesus Garcìa-Lafuente, Murray Levine, and Ed Dever for sharing mooring instrumentation, Bill Smyth for his instability insights, and the Captain and crew of the R/V Garcìa del Cid for their skillful operations at sea. Thoughtful comments on a previous version of the manuscript were provided by Greg Johnson and an anonymous reviewer. Eulàlia Gràcia of Unitat de Tecnología Marina, Barcelona, kindly provided us with processed multibeam depth data from the Gulf of Cadiz. Assistance by Andreas Thurnherr with LADCP processing is gratefully acknowledged. This work was supported by the U.S. National Science Foundation, grants OCE-0825287, OCE-0825297, and the Spanish Ministerio de Ciencia e Innovación, grants CTM2008-06438-C02-01 and CTM2008-03422-E/MAR.

[31] The Editor thanks two anonymous reviewers for assistance evaluating this paper.

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