The following "Note added in proof" was inadvertently omitted from K. Kastens and J. Mascle, 1990, The geological evolution of the Tyrrhenian Sea: an introduction to the scientific results of ODP Leg 107, *Proc. ODP, Sci. Results*, 107, p. 3–26.

DID A GLACIO-EUSTATIC SEA-LEVEL DROP TRIGGER THE MESSINIAN SALINITY CRISIS IN THE MEDITERRANEAN?

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We have modified our opinions concerning the age of the Miocene evaporative and pre-evaporative sediments at Site 654 in the Tyrrhenian Sea. Following Channell et al. (1990), we presented two possible interpretations for the pre-Pliocene magnetostratigraphy of Site 654 (see note [12]). In the interpretation favored in our original manuscript, the pre-evaporitic nannofossil chalk unit (lithologic Unit IV) corresponds to magnetic polarity intervals 6r1 (base), 6n, 6r2, 7n1, 7r, and 7n2 (top) (terminology of Berggren et al., 1985). Most or all of Chron 5 should be missing in an unconformity near the base of lithologic Unit II. This interpretation will be referred to as the "older" stratigraphy, because it implies an earlier date for any given level in the core. In the alternative "younger" stratigraphic interpretation, lithologic Unit IV corresponds to the base of the Gilbert epoch, plus intervals 5n1, 5r, 5n2, 6r, and the top of 6n; no major hiatus is implied. We now prefer the "younger" stratigraphy. The reasons for our change of heart (Kastens, unpubl. manuscript) are as follows:

1. Detailed shore-based paleomagnetic work (J. Channell, pers. comm., 1989) failed to confirm the existence of a normally polarized interval at ~300 mbsf (compare note [19], Kastens and Mascle, 1990, which was based on preliminary paleomagnetic results, against the final paleomagnetic interpretation in Channell et al., 1990). This apparently spurious normal interval had been interpreted as the top of Chron 5. The existence of Chron 5 sediments at this position would have implied the existence of an unconformity near the base of the gypsiferous Messinian, and thus would have favored the "older" stratigraphy.

2. The "younger" stratigraphy places the decrease in $^{13}C/^{12}C$ ratio observed by Glaçon et al. (1990) at 6.2 Ma. This is the same time as a similar "carbon shift" observed in the rest of the world's oceans (Vincent et al., 1980). The "older" stratigraphy would imply that the carbon shift occurred 500,000 yr earlier in the Mediterranean than in the rest of the world's oceans (Glaçon et al., 1990), which strikes us as improbable.

Important implications of this reinterpretation are as follows:

1. The "younger" stratigraphy places the onset of the salinity crisis (defined by the base of lithologic Unit III), at about 5.2 Ma. At this same time Keigwin (1987) identified a $\delta^{18}O$ maximum, which he attributed to Southern Hemisphere glaciation. An increase in global ice volume would have lowered sea level and thus decreased the cross-sectional area of the Atlantic-Mediterranean passageway. The general concept that glacial eustatic lowering of sea level may have decreased the rate of flow into the Mediterranean and thus triggered the salinity crisis is well entrenched in the literature (e.g., Hsü et al., 1973; Adams et al., 1977; Muller and Hsü, 1987). However, to the best of our knowledge, before this research on Site 654, the timing of the onset of the salinity crisis had not been sufficiently well constrained to support or refute this hypothesis.

2. The duration of the salinity crisis (lithologic Units II and III) was about 500,000 yr.

3. The oldest datable sediments in Site 654 are between 6.4 and 6.55 m.y. old (paleomagnetic interval 6n). These sediments record tectonically driven subsidence from shallow water (glauconitic sands) to a more open marine setting (nannofossil chalk).

4. This hypothesis can be tested by radiometric dating of a volcanic ash layer in lithologic Unit III (341 mbsf, McCoy and Cornell, 1990). This research is currently in progress.

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