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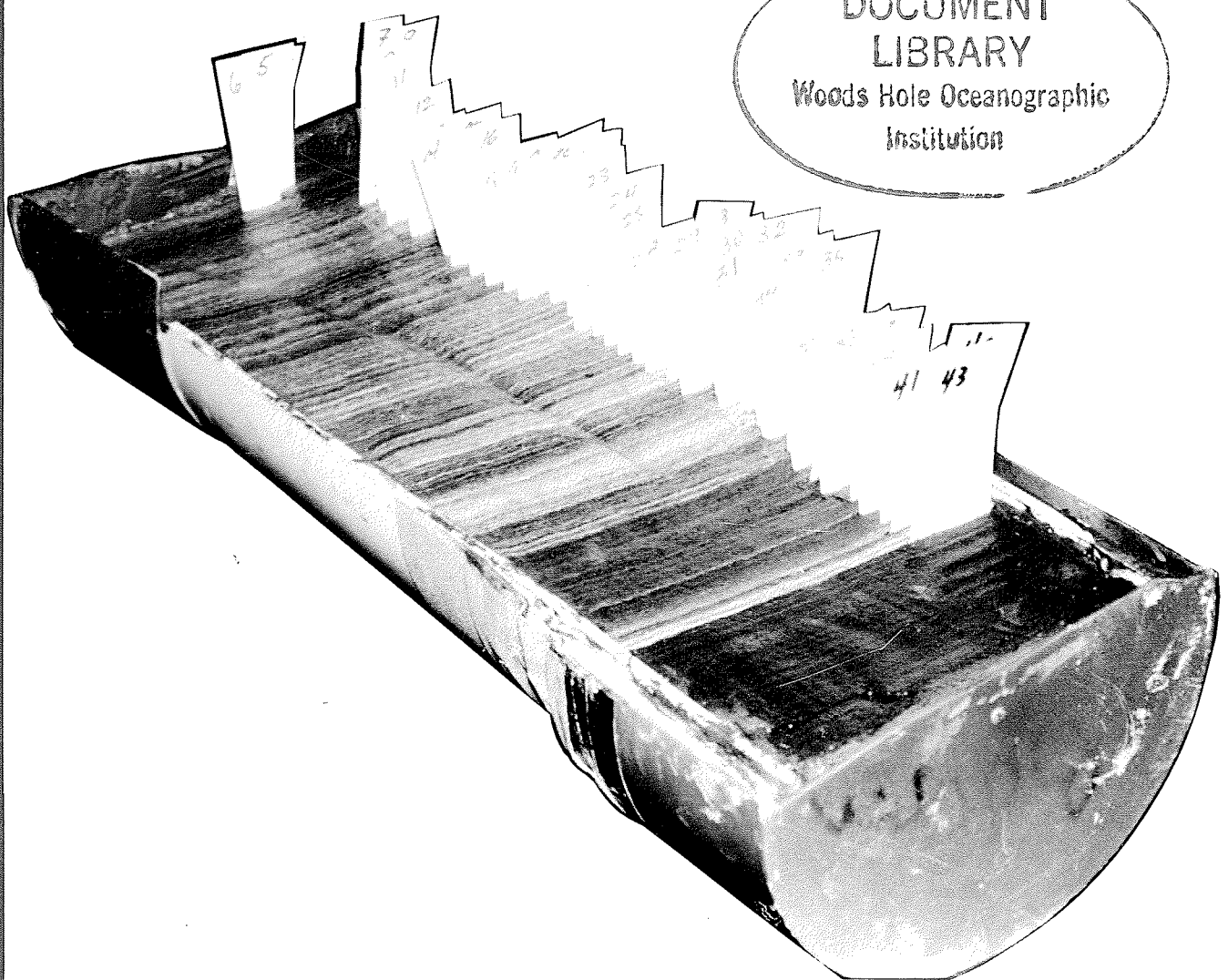
Temporal and Spatial Variability in Sedimentation in the Black Sea:

Cruise Report

R/V *Knorr* 134-8, Black Sea Leg 1
April 16 - May 7, 1988



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Temporal and Spatial Variability in Sedimentation in the Black Sea:

Cruise Report R/V Knorr 134-8, Black Sea Leg 1 April 16 - May 7, 1988

by

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Technical Report

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Geology and Geophysics Department

TEMPORAL AND SPATIAL VARIABILITY IN SEDIMENTATION IN THE BLACK SEA:

CRUISE REPORT
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(complete edition)

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Photo on front page: Well-preserved varves in recent Black Sea sediment collected with a Mark III box corer near station BSK3 (BC 55). This site is located near site 1474 of the R/V *Atlantis* cruise in 1969 (e.g. Degens and Ross, 1974). The surface "fluff" layer of this box core was recovered intact. This subcore is in the process of being prepared for very detailed subsampling. Sample number 43 marks the boundary between the older Unit II (sapropel) and the younger Unit I (coccolith ooze). Notice that the transition from Unit II to Unit I is not abrupt; instead there was a period of roughly 50 years (assuming annual deposition of one varve couplet) of coccolith deposition followed by another period of possibly several hundert years of sapropel deposition before finally coccoliths became the dominant biogenic particles in the sediment. *(Photo by John Porteous)*

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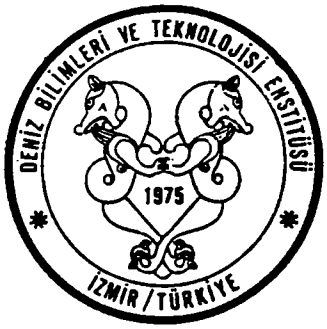

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Editorial Comments

The focus of Leg 1 of the R/V Knorr cruise to the Black Sea was to study the biogeochemical variability in sedimentation in the present and throughout the anoxic history of the Black Sea with high spatial and temporal resolution. This involved research on the particulate matter in the water column as well as research on the particle deposition in the recent past by investigating the laminated bottom sediments by taking high-quality box and gravity cores with ideally well-preserved core tops. This cruise report is organized to reflect this division between water column work (presented in cruise report section IV) and bottom sediment work (presented in cruise report section V). Projects related to these two sampling environments are listed within these two main sections. Most projects were multidisciplinary; this is reflected by the multiple authors of the individual cruise report sections.

Drafts of reports included in this cruise report were written by the cruise participants and submitted to the Chief Scientist prior to disembarking from the vessel in Instanbul. All manuscripts were internally reviewed by Drs. M. Arthur, W. Dean, B. Hay, and S. Honjo. Dr. B. Hay dedicated his time as technical editor, assisted by E. Evans, Woods Hole Oceanographic Institution. In this volume we have included only the reports of projects which generated new data and new observations during the cruise.

All numerical data generated during the cruise will be filed at the National Oceanographic Data Center. Inquiry at NODC regarding R/V Knorr 134-8 data can be referred to George Heimerdinger. The navigational data will be filed in the Digital Data Library, Woods Hole Oceanographic Institution. The following three kinds of data have not been included in this cruise report but copies are available by inquiries to designated personnel:

1. "Box core descriptions, R/V Knorr 134-8" by W. Dean and M. Arthur. Available from these authors or from J. Broda, Core Library, Woods Hole Oceanographic Institution.

2. "Navigation Log and Precision Plots, Voyage 134-8, kept by the bridge, R/V Knorr. 41 pages. Available from the Port Office, Woods Hole Oceanographic Institution.

3. "Satellite Navigation Data." Position fixes and depths (uncorrected) taken at every one minute. Available from M. Realander, School of Oceanography, University of Washington, Seattle, WA 98195.

4. "On-board activities, Black Sea Leg 1." Cruise report on video cassette. Produced and edited by M. Arthur. Available from Dr. M.