This is a very important publication for specialists in coastal processes and evolution but, being in French and published by a regional institute of social studies, it is not likely to catch the eye of the average library browser. The coast of Tunisia is very favorably placed for observing a continuous coastal transition from the stable northern borders of the African craton (in the south) to the tectonically active Atlas orogenic belt (in the north). This traverse was the site of an important field excursion organized by the Shorelines Commission of INQUA (Mediterranean and Black Sea subcommission) in 1979, and work of the authors has thus been inspected and reviewed by an international group of specialists.

The book is divided into three parts: the northern sector (N of Cape Bon), the central and southern sector, and an overview of the history of sea-level changes through the last 125,000 years. In the opinion of the reviewer this traverse contains the clearest sequences and interrelations of the last interglacial sea levels to be seen anywhere in the world, although they have become better known from the more tectonically disturbed sections in Barbados and New Guinea. The three Tyrrhenian shoreline formations are here chronologically, stratigraphically and paleontologically defined: Douira (125,000 BP), 10-15 m above present MSL; Rejiche (105,000 BP), 8-10 m; and Chebba (85,000 BP). As elsewhere in the more stable low-latitudes there are also mid-Holocene shore formations, up to about 2 m, that can be easily confused with the Chebba unless one is forewarned.

Interrelations are also well established with archeological material, from paleolithic to historic times, with classic sections around Carthage. The marine facies are interbedded with eolian wedges and red paleosols, and locally with salt marsh, lagoon and fluvial members. Most of the marine and eolian sediments include carbonate material so that the formations are mostly well-lithified calcarenites and thus nicely displayed in cliff sections and in numerous building-stone quarries.

From the paleoclimatic point of view, it is interesting that the interglacial climax conditions are not seen until the second stage (105,000 BP), although the elevations confirm the evidence from Barbados and New Guinea. This formation was originally defined as the Monastirian, but unfortunately in an area of remarkable and active neotectonics, and so the name has been dropped.

The work is well-illustrated, with five pages of references and a long English summary.

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The study of ocean eddies, on space scales of 10 to 100 kilometers, and time scales of weeks to months, has grown in scientific importance, from a peripheral interest in physical oceanography, to one which has come to dominate our thinking on the nature of ocean circulation. These quasi-geostrophic eddies are the most energetic scale of motion in the ocean, and as such are one of the most significant mechanisms for the transport and mixing of matter in the ocean.

This volume presents a synthesis of a decade of mainly physical and dynamical studies on the mid-ocean eddy. The reader is given an excellent overview of the subject, which goes to the heart of the problem without burdening the reader with mathematical detail. Robinson's view is that the physics of ocean eddies is too important a subject to be the single preserve of the dynamical oceanographer, and should be communicated to other branches of marine science, including geochemists, engineers and environmental managers. Some of the important applications of this science are the dispersal of toxic substances, including radio-nuclides, the mixing of nutrients and dissolved substances, such as carbon dioxide and tritium, and the transport of heat and salt in the ocean. After reading this overview one begins to be aware that there are few areas, in the world's ocean, which are not affected, directly or indirectly, by eddies.

The overview is followed by a plethora of regional and mainly descriptive studies of eddies, which occupy over half the book. These contributions give a useful insight into the variety of current systems which are included under the generic name of "eddies." These range from the large loops and meanders of intense current systems, such as the Gulf Stream, to small, intense, isolated eddies, such as the "Meddy." These latter eddies are remarkably resilient to mixing and can preserve their identity for up to 3 years. We are told of one Meddy enclos-
ing virtually undiluted Mediterranean water, which was discovered in the Western Atlantic, a distance 4000 km from its source region.

These regional studies are however variable in depth. The most detailed studies came from the Western North Atlantic, where the intensive MODE and POLYMODE observational programs were made. The chapters by Richardson on Gulf Stream rings, Rossby and others on the Lagrangian float program and McWilliams et al. on the local dynamics of eddies, provide the deepest insight into the characteristics and dynamics of quasi-geostrophic eddies. This is perhaps not surprising given the large investment by the United States in these programs. The remaining contributions, though not as complete as the Western Atlantic programs, do give a fascinating glimpse of the wealth of methods which have been used by less well funded oceanographers. The methods include surface drifters, ship drift, XBT campaigns, and remote sensing techniques, which have all provided valuable information for the mapping of ocean eddies. Bennett for instance, gives a good appraisal of the efforts of many Australian oceanographers in attempting to understand the dynamics of the East Australian current. It is shown that this current, which is continuous and intense off the south Queensland coast breaks up into a series of eddies, as it moves southwards, losing all its identity as continuous current. This example makes the point that the Gulf Stream is not necessarily a good model for all western boundary currents.

Dickinson and Emery follow the regional description with global summaries of eddy statistics. Dickinson uses the fluctuation energy determined from current mooring as a measure of eddy activity, whilst Emery uses temperature variance, as estimated by XBT surveys, as his measure. The former measures eddy kinetic energy whilst the latter measures eddy potential energy. Much of Dickinson’s contribution is related to the North Atlantic, but an attempt is made to include less well observed regions such as the Drake Passage. However, in the Weddell Sea, where there is only one data point, one wonders about the representativeness of the statistics.

The observational studies are followed by two concise chapters on the mathematical modeling of eddies, which give important clues to the mechanisms responsible for the generation of eddies. Despite the idealized geometry used, Holland gives convincing evidence for the upgradient fluxes of momentum by eddies which maintain narrow intense current systems, such as the Gulf Stream and its recirculation zone. He also shows how eddy activity above the thermocline can induce intense quasi-permanent circulations in the deep ocean. If we accept the validity of the models, then one is left in no doubt that the eddies, in similarity with the atmosphere, are instrumental in maintaining the general circulation of the oceans.

The remaining contributions are devoted to the effects and applications of eddies, which include coastal interactions, biological studies, and acoustics. It is here where the imperfections in understanding become more apparent. Angel and Fasham have painstakingly assembled some biological studies which are influenced by eddies. Most of the source of this material is from the study of cold Gulf Stream rings. It is clear from the authors comments that improvements in continuous collection techniques are required if biological oceanographers are to adequately resolve the appropriate space and time scales of the eddy field.

The final chapter is devoted to instruments and methods, which have developed considerably during the U.S. mesoscale eddy program in 1970s. However, for the most part, these techniques are not specific to the study of eddies and can be used on all scales. New techniques, such as remote sensing and tomography which are the most likely methods for the real time mapping of eddy fields in the future, are given only the briefest of mentions.

Overall this text is a heavyweight, both in size and its thoroughness of coverage. It gives an excellent synthesis of the results of the major eddy programs in the last decade and as such it is an important milestone in oceanography.

It is perhaps inevitable that the book is already dated, in that at the time of writing, a number of laboratories are making experimental real-time predictions of ocean eddies.

However, the book contains such a wealth of information and ideas that it is likely to be a major reference for the coming decade. It is a book which deserves a place in every library which purports to have an interest in marine science.

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World Fish Farming: Cultivation and Economics(second edition), by E. Evan Brown, 1983, A Publishing Company, Inc., Westpoint, Con-