A new climatology of temperature and salinity for the Indian Ocean

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The World Ocean Atlas (WOA) [1], which was a major development in the oceanography of the Indian Ocean, has been updated several times, but even the latest version released in 2005 [2,3] has the drawback of poor data coverage in the Indian Exclusive Economic Zone (EEZ). We present a new climatological atlas for the north Indian Ocean (called NIOA), its chief merit being the addition of data from the Indian EEZ. The climatology is prepared using all the data available in the WOA database and other archives. The procedure followed for quality control and gridding is as in WOA. The major improvements in NIOA over WOA are the following. First, several patches of low or high temperature or salinity evident in WOA are eliminated; this improvement is most significant in the Bay of Bengal. Second, the northern bay is warmer and saltier in NIOA. Third, the post-summer-monsoon equatorward flow of low-salinity water along the Indian east coast and its poleward movement along the Indian west coast during the winter monsoon are captured better in NIOA. Fourth, NIOA shows that the low-salinity water of Bay-of-Bengal origin spreads more westward in winter than poleward along the coast in the southeastern Arabian Sea. Fifth, the problem of bumps in vertical sections (due to the inability to average out internal waves) is considerably reduced in NIOA. Nevertheless, even after the addition of data from the Indian archives, there remain regions that are poorly sampled: eastern Bay of Bengal and the Andaman Sea.

Keywords: Climatology; Hydrography; Levitus atlas.

References

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