



## Abstract View

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# Rate of Change of Heat Storage of the World Ocean

**Sydney Levitus**

*Geophysical Fluid Dynamics Laboratory/NOAA, Princeton University, Princeton, NJ 08542*

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### ABSTRACT

Results of a Fourier analysis of climatological fields of the monthly rate of change of heat storage for the world ocean are presented. The amplitude and Phase of the first harmonic are shown, as well as the percent variance of the annual cycle accounted for by this harmonic. These distributions are presented to describe the global geographical characteristics of the annual cycle of the rate of change of heat storage of the world ocean integrated through a depth of 275 m. We have used the results of our Fourier analysis at each gridpoint to synthesize monthly mean estimates of the rate of change of heat storage based on the annual mean and first two harmonics of the annual cycle. We have zonally averaged these time-smoothed monthly estimates over the world ocean and individual ocean basins and present time-latitude plots of these zonal averages.

The climatological monthly temperature fields used to estimate heat storage are one-degree objectively analyzed fields which are based on the approximately 1.5 million temperature soundings on file at the National Oceanographic Data Center, Washington, DC, as of 1978.

The amplitude of the first harmonic shows maxima exceeding  $300 \text{ W m}^{-2}$  along  $40^\circ\text{N}$  in the Pacific and Atlantic Oceans and in midlatitudes of the Southern Hemisphere. Values exceeding  $200 \text{ W m}^{-2}$  are found in the tropics. The results show large propagation of phase in the tropical Pacific and Atlantic.

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Headquarters: 45 Beacon Street Boston, MA 02108-3693

DC Office: 1120 G Street, NW, Suite 800 Washington DC, 20005-3826

[amsinfo@ametsoc.org](mailto:amsinfo@ametsoc.org) Phone: 617-227-2425 Fax: 617-742-8718

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