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Meridional Ekman Heat Fluxes for the World Ocean and Individual Ocean Basins

Sydney Levitus

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

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ABSTRACT

Monthly climatological estimates of wind stress and sea surface temperature are used to compute meridional Ekman heat fluxes in the world ocean. Qualitatively the annual cycles of the Atlantic and Pacific oceans are quite similar, but quantitatively, the Pacific estimates are up to several times larger than the Atlantic estimates. The Indian Ocean exhibits an annual mean southward flux over nearly all of the 24.5°N–31.5°S latitude belt, which qualitatively supports an annual mean net southward heat flux for this region as determined by surface heat balance requirements. A large southward heat flux in the Indian Ocean centered at about 7.5°N during Northern Hemisphere summer is responsible for a global Ekman heat flux distribution, with an annual cycle in the tropics that qualitatively resembles the results of Oort and Vonder Haar.

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