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Hurricane Heat Potential of the Gulf of Mexico

Dale F. Leipper and Douglas Volgenau, Lcdr U.S. Navy

Dept. of Oceanography, Naval Postgraduate School, Monterey, Calif. 93940

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ABSTRACT

It has been demonstrated that a large input of energy from the ocean is necessary to establish and maintain hurricane force winds over the sea. However, there has been no suitable data which could serve as a basis for calculating this input. Now, observations are available to show that, early in the hurricane season, there are varying initial conditions in the Gulf of Mexico which could lead to significantly different total heat exchanges. The sea can provide some seven days of energy flow into a hurricane at some times and at some locations, but less than one day in others depending upon the amount of heat initially available in the Gulf waters. In the four summers represented by the data, a quantity defined as hurricane heat potential was found to vary from a low of 700 cal cm^{-2} column north of Yucatan to a high of 31,600 in the central east Gulf. Synoptic data on hurricane heat potential, if made regularly available to forecasters, might serve as a basis for improved forecasts of changes in intensity and movement of hurricanes.

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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 Phone: 617-227-2425 Fax: 617-742-8718

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