

Abstract Submitted  
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**The statistics of wind driven ocean currents** YOSEF YOSEF, GOLAN BEL, Dept. of Solar Energy and Environmental Physics, Ben-Gurion University of the Negev — Ocean currents play an important role in the climate system, yet the properties and origin of their statistics is not fully understood. Using the Ekman layer model we show that the statistical properties of the depth integrated surface currents are associated with the temporal correlations of the wind driving the surface currents—when the temporal correlations of the wind are long the probability distribution of the current magnitude is proportional to that of the wind stress. When the temporal correlations of the wind is short the current approaches zero where each component of the current follows a Gaussian distribution such the current magnitude follows the Rayleigh distribution. Using two idealized cases we show that in between these two limits the second (and higher) moment of the current magnitude reaches a maximal value. The results are validated using an oceanic general circulation model.

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