



Uncovering the intrinsic intensity-size relationship of tropical cyclones

Tropical cyclone (TC) intensity and size are the two most important parameters for assessing TC severity and potential damages but challenging to be predicted. The central theme of this study is to address if and how hurricane intensity is related to its size. Inspired by a pronounced positive correlation between the inward loss of planetary and relative angular momentum in observed TCs, we put forward a new physical concept that combines the absolute angular momentum and its loss due to surface drags as a radial invariant quantity, referred to as “effective absolute angular momentum” (eAAM). The complex intensity-size relationship of observed hurricanes can be faithfully reproduced under the constraint of this invariant. Our work further shows that the complex intensity-size relationship can be reduced to a quasi-linear one after factoring out the impacts of both the loss of absolute angular momentum and the radius of maximum winds.



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Time: 3:00 PM, Friday, Oct. 22, 2021

Location: EOA 1050 (in-person portion)

Zoom Link: <https://fsu.zoom.us/j/96580718667?pwd=YXp2d21sM1ozbGJtdjVzTGNGaTFXZz09>

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