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Supporting Information for

Characterizing Continental US Hurricane Risk: Which Intensity Metric is Best?

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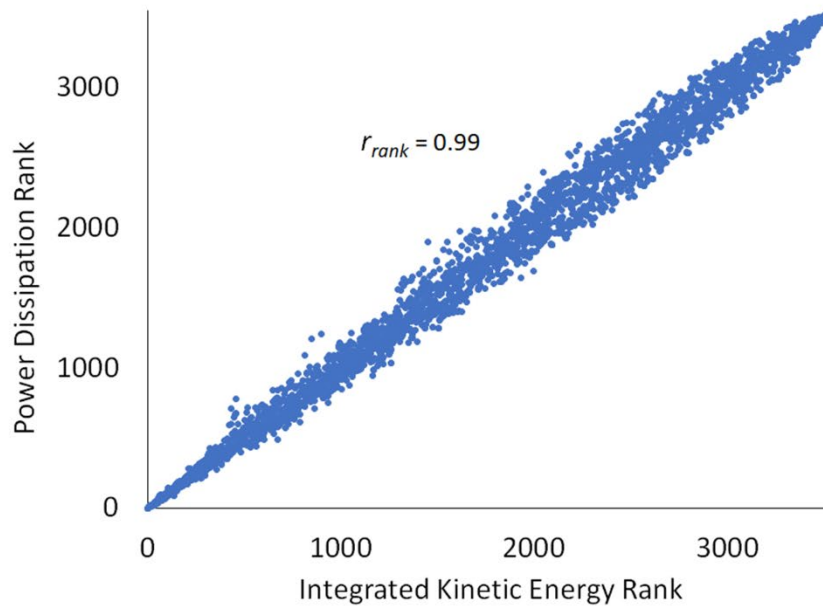
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Introduction

This supporting information includes brief additional text, one additional figure and one additional table. Text S1 discusses the physical reasoning behind the high correlation between IKE and PD. Figure S1 displays the relationship between IKE and PD from 1988–2020 for all Atlantic hurricanes and for southwest Atlantic hurricanes. Table S1 highlights the methodology used to calculate IKE in each quadrant.
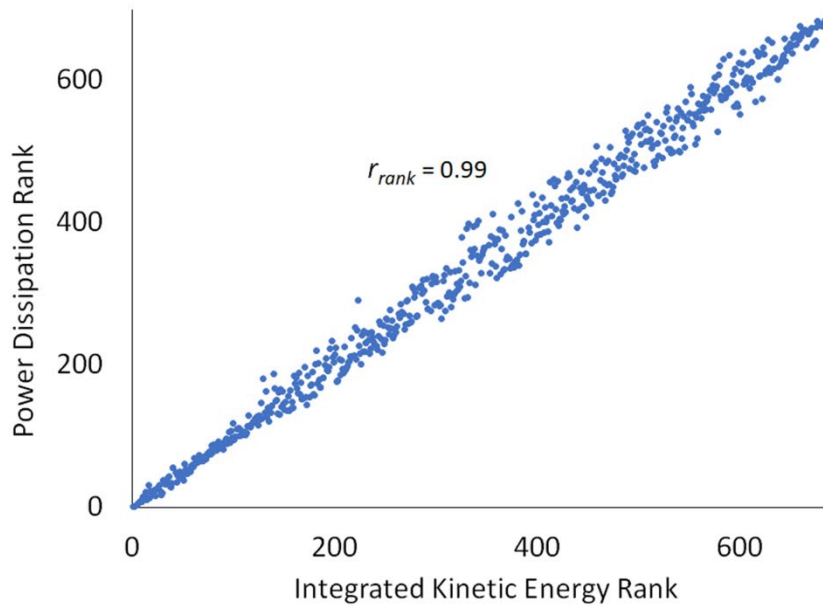
Figure S1. Relationship between PD and IKE. (a) Scatterplot of PD rank and IKE rank for all Atlantic hurricanes from 1988–2020. (b) As in panel a but for southwest Atlantic hurricanes from 2004–2020.

Table S1. Methodology for computing IKE in each quadrant at each 6-hourly timestep for each hurricane in the Extended Best Track database. The table format is identical to Table A1 from Misra et al. (2013). One adjustment is made for IKE_H to use three simple criteria; the criteria referencing "max quadrant" in their original methodology were unclear and unnecessary, and as a result the fourth criterion is no longer needed as it is subsumed in the previous three. All wind speeds are listed in units of ms^{-1}.

Quadrant IKE contribution	Criteria	Mean wind (ms^{-1})	Area (m^2)
IKE_{18-26}	$R_{26} > 0$	20	$0.25\pi(R_{18}^2 - R_{26}^2)$
	No R_{26}, $V_{max} > 26$, $R_{max} < R_{18}$	20	$0.25\pi(R_{18}^2 - (0.75R_{max})^2)$
	No R_{26}, $V_{max} < 26$, $R_{max} < R_{18}$	$0.25V_{max} + 0.75(18)$	$0.25\pi(R_{18}^2 - (0.75R_{max})^2)$
	No R_{26}, $R_{max} = R_{18}$	18	$0.25\pi(R_{18}^2 - (0.5R_{18})^2)$
IKE_{26-33}	$R_{33} > 0$	27.75	$0.25\pi(R_{26}^2 - R_{33}^2)$
	No R_{33}, $V_{max} > 33$, $R_{max} < R_{26}$	27.75	$0.25\pi(R_{26}^2 - (0.75R_{max})^2)$
	No R_{33}, $V_{max} < 33$, $R_{max} < R_{26}$	$0.25V_{max} + 0.75(26)$	$0.25\pi(R_{26}^2 - (0.75R_{max})^2)$
	No R_{33}, $R_{max} \geq R_{26}$	26	$0.25\pi(R_{26}^2 - (0.5R_{33})^2)$
IKE_H	$R_{max} < R_{33}$	$0.25V_{max} + 0.75(33)$	$0.25\pi(R_{33}^2 - (0.75R_{max})^2)$
	$R_{max} = R_{33}$	$0.25V_{max} + 0.75(33)$	$0.25\pi(R_{33}^2 - (0.75R_{33})^2)$
	$R_{max} > R_{33}$	$0.1V_{max} + 0.9(33)$	$0.25\pi(R_{33}^2 - (0.75R_{33})^2)$