

# Hurricanes and Storm Surge in a Warming Climate

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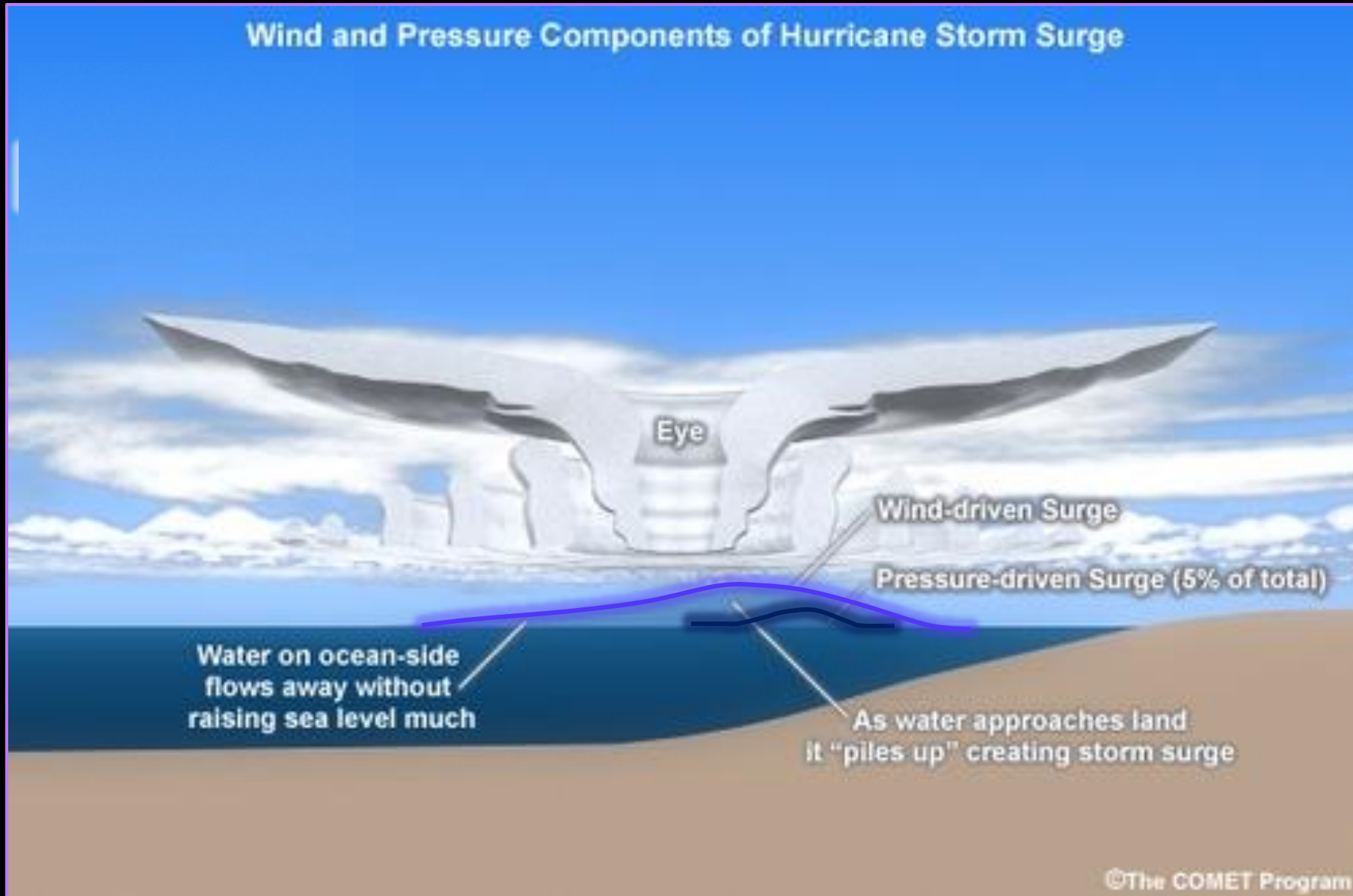


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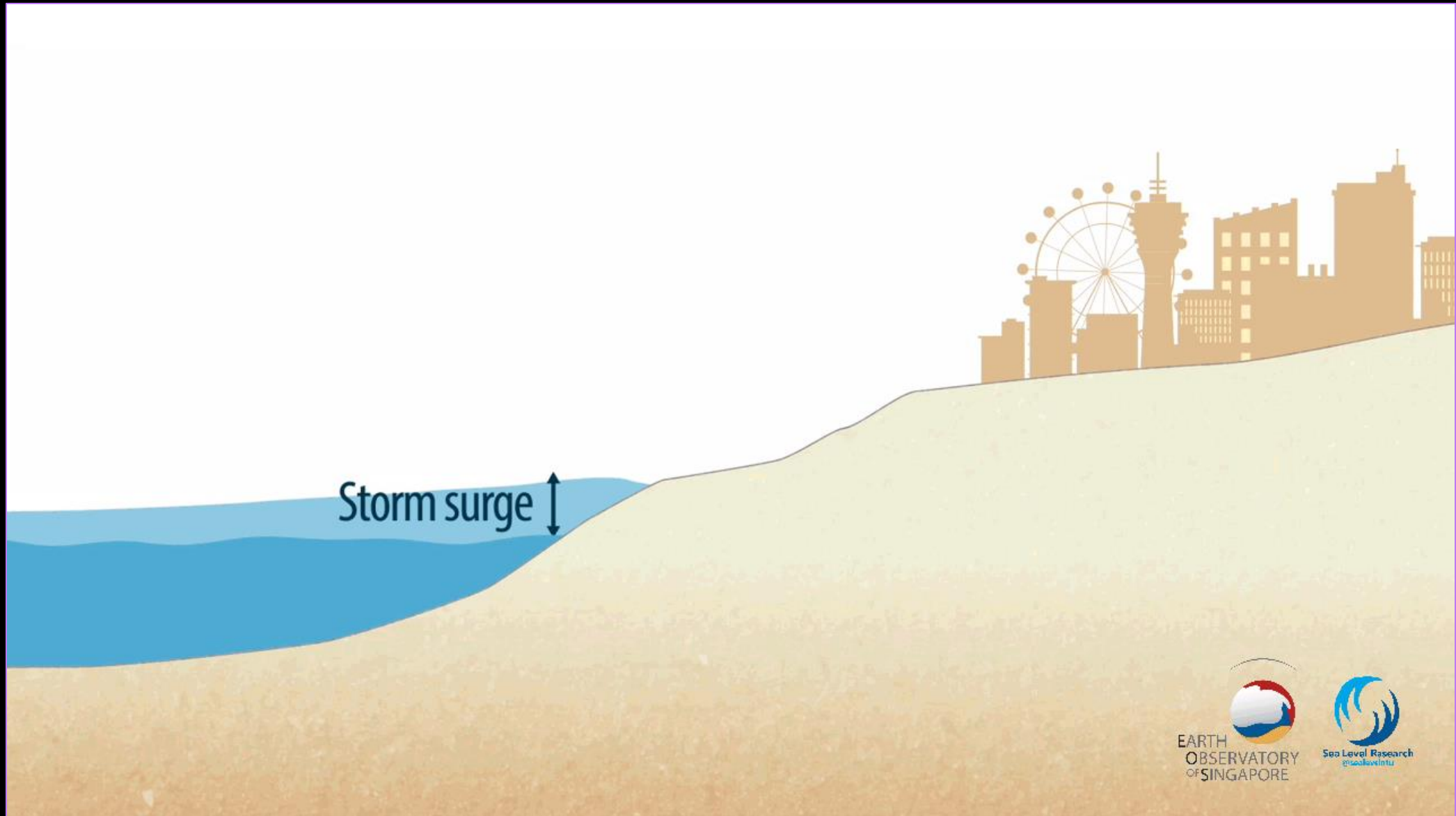


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# Creating a Storm Surge



# Storm Surges and Sea-level Rise

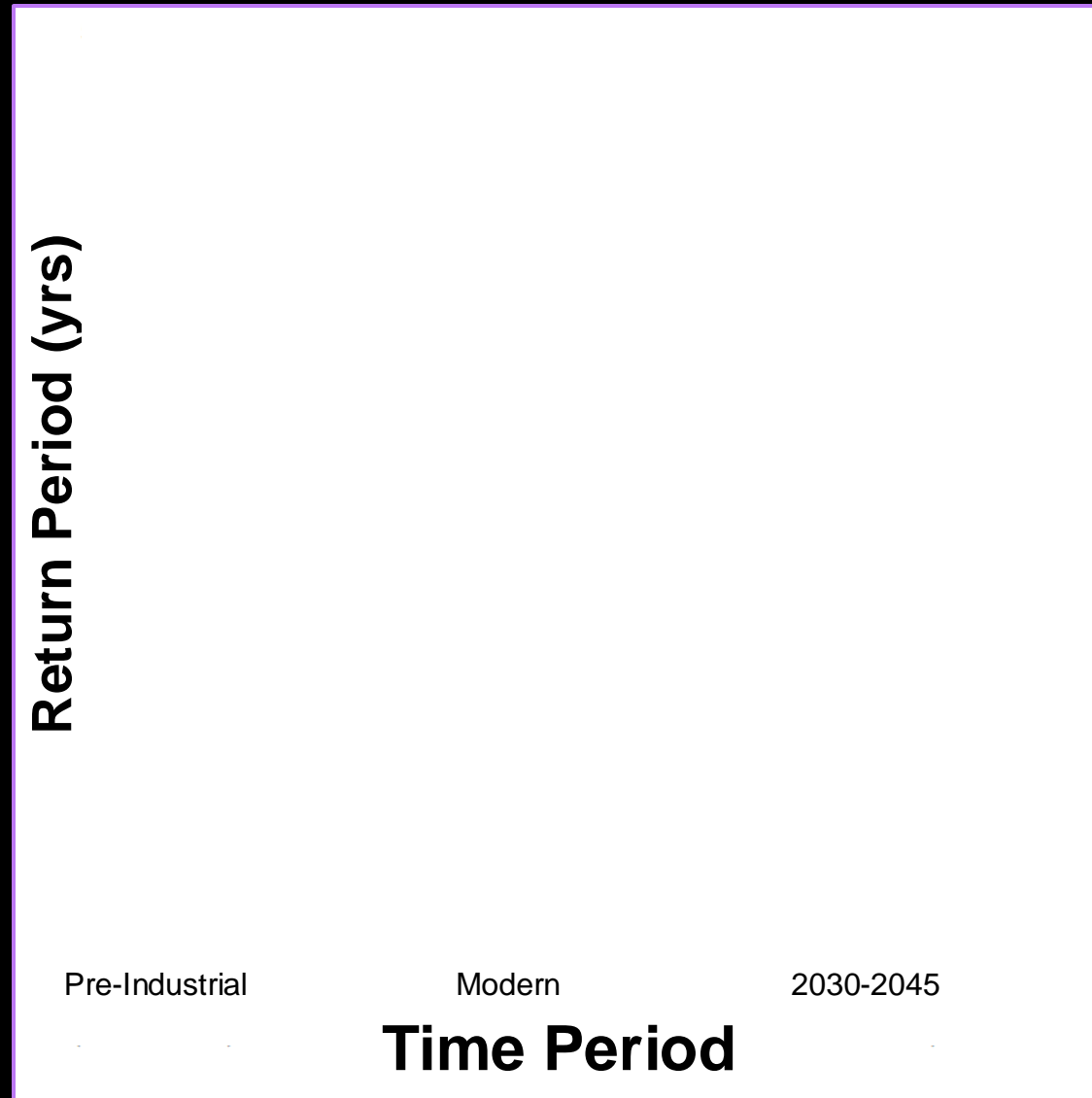


Credits: Nguyen Thi Nam Phuong / Earth Observatory of Singapore

# Long-term Changes to Storm Surges in NYC

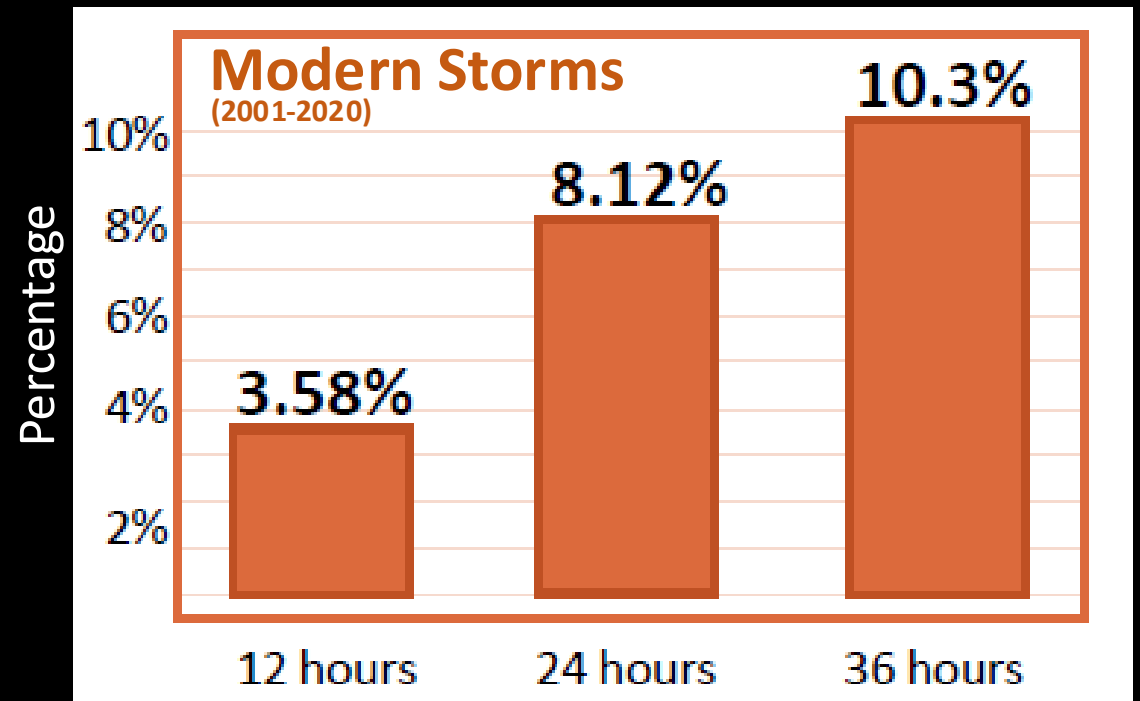
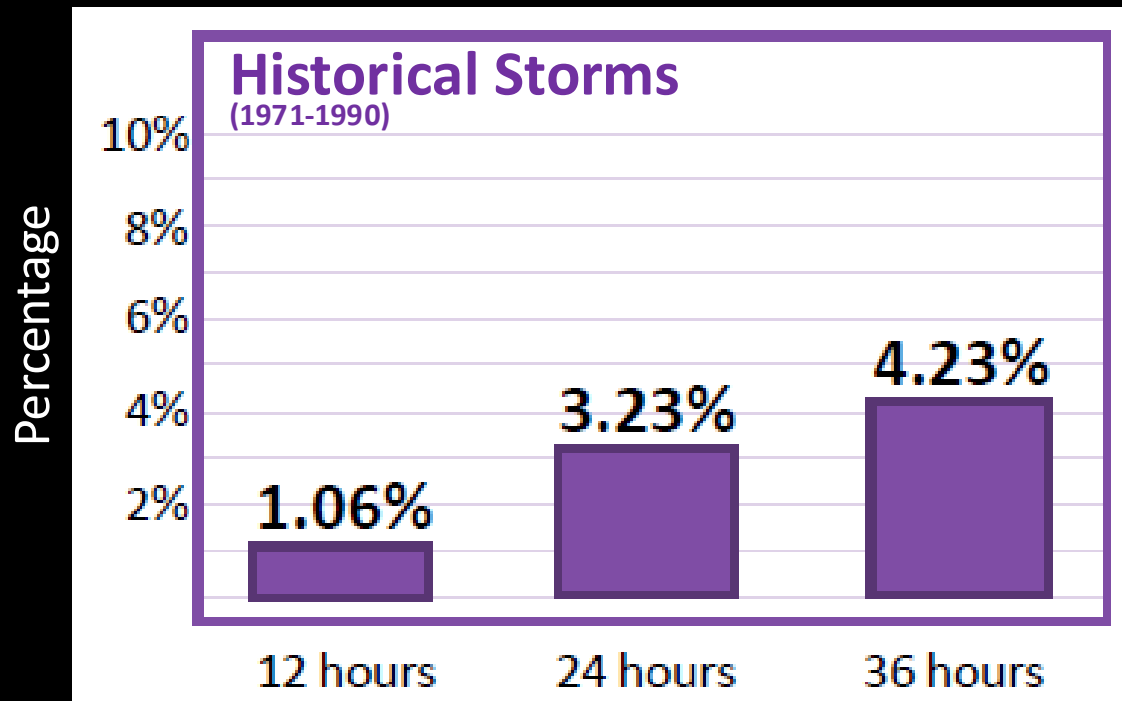
Changing return period of a 2.25  
m (7.4 ft) flood

(Return Period = Average length  
of time between events)



# Other Impacts of Climate Change on Storm Surge

Percentage of Atlantic hurricanes that strengthen from weak storms (Category 1 or less) into a Major Hurricane (Category 3 or higher)



# References

Garner, A. J., M. E. Mann, K. A. Emanuel, R. E. Kopp, N. Lin, R. B. Alley, B. P. Horton, R. DeConto, J. P. Donnelly, and D. Pollard (2017), Impact of climate change on New York City's coastal flood hazard: Increasing flood heights from the preindustrial to 2300 CE, PNAS, [doi:10.1073/pnas.1703568114](https://doi.org/10.1073/pnas.1703568114).

Garner, A. J., (2023), Observed increases in North Atlantic tropical cyclone peak intensification rates. Scientific Reports. [doi: 10.1038/s41598-023-42669-y](https://doi.org/10.1038/s41598-023-42669-y)