

Abstract Submitted
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Behind the Rapid Intensification of Hurricane Patricia, the Strongest Recorded Hurricane in History¹ K. RYDER FOX², New Mexico Institute of Mining and Technology, FALKO JUDT, National Center for Atmospheric Research — In October of 2015, Hurricane Patricia stormed through the eastern Pacific, becoming the strongest recorded hurricane in history. Within a twenty-four hour period, Patricia’s maximum wind speed increased by 105 kt, while the sea level pressure decreased by 95 hPa. Operational weather prediction models failed to accurately forecast this intensity evolution, provoking questions about the factors behind this unparalleled case of hurricane rapid intensification. In this study, a high resolution numerical weather prediction model (WRF) was employed to simulate Hurricane Patricia. Analysis of the WRF model fields demonstrated that environmental variables such as vertical wind shear, sea surface temperature, and relative humidity were extremely favorable for intensification. Patricia’s environmental conditions were compared with corresponding quantities from a 30+ year climatology of hurricanes in the Eastern Pacific, revealing that sea surface temperature and relative humidity values fell into the 99th percentile. This indicates that the storm environment played a substantial role in Patricia’s intensity. It additionally suggests that potential future cases of extreme rapid intensification can be predicted if models are able to capture the environmental conditions.

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