Extreme Weather Forecasting

STATE OF THE SCIENCE, UNCERTAINTY AND IMPACTS

Edited by **Marina Astitha and Efthymios Nikolopoulos**

Extreme Weather Forecasting reviews current knowledge about extreme weather events, including key elements and less well-known variables to accurately forecast them. It covers multiple temporal scales as well as components of current weather forecasting systems. It also includes case studies on successful forecasting as well as the impacts of extreme weather predictability. This book is a comprehensive model agnostic review of best practices for atmospheric scientists and others who utilize extreme weather forecasts.

Key features:

- Reviews recent developments in numerical prediction for better forecasting of extreme weather events
- Covers causes and mechanisms of high-impact extreme events and how to account for these variables when forecasting
- Includes numerous case studies on successful forecasting, outlining why they worked

Dr. Marina Astitha is an associate professor and the associate department head at the Department of Civil and Environmental Engineering, University of Connecticut (UConn). Dr. Astitha's expertise lies in the areas of atmospheric numerical modeling (weather and air quality) from regional to global scales. She is leading the Atmospheric Modeling and Air Quality Group since joining UConn in 2013. Her research program focuses on improving the prediction of extreme weather events, wind prediction for wind farm facilities, and integration of multimedia modeling systems with machine learning to solve environmental problems. She is committed in supporting, mentoring, and inspiring the next generation of engineers to innovate, lead, and thrive in solving complex environmental problems and sustain a healthy, diverse, and equitable society in the years to come.

Dr. Efthymios Nikolopoulos is an assistant professor at the Department of Mechanical and Civil Engineering at Florida Institute of Technology. His research focuses on the integration of remote sensing observations with numerical and statistical modeling in order to advance understanding and predictability of water cycle components and weather-related hazards. Dr. Nikolopoulos has authored/coauthored 60 peer-reviewed publications and 8 book chapters in the areas of hydrometeorology, remote sensing of precipitation, flood hydrology, and landslide/debris flow prediction. He is an associate editor for the Journal of Hydrology and the recipient of the NASA Earth System Science Graduate Fellowship and the Marie Curie Postdoctoral fellowship.

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