SORS: Unveiling a new cascade mechanism? Atmospheric circulation changes potentially triggering record-breaking convective events in the western Mediterranean

Abstract

A derecho is a widespread, long-lived, straight-line windstorm that is associated with a fast-moving group of severe thunderstorms known as a mesoscale convective system.

During 18 August 2022, an extremely anomalous and vigorous convective storm, classified as a derecho, developed over the western Mediterranean Sea affecting Corsica, northern Italy and Austria, with wind gusts up to 62 m/s and giant hail (~11 cm).

There were 12 fatalities and 106 people injured. This convective event can be considered as extreme from the affected locations point of view (in terms of winds) but also is comparable to the most powerful derechos ever recorded in the USA and Europe.

The event received much attention in the media for its extraordinary impact and the rareness over the Mediterranean Sea and It has been demonstrated that a rare thermodynamical environment due to a record-breaking marine heatwave and current anthropogenic forcing have substantially contributed to its development.

In order to deeper explore the entrails of this unique event, here we look for a potential source large-scale atmospheric mechanism that could have led to this special thermodynamical environment, conforming a cascading event.

Short Bio

Juan Jesús González Alemán earned his PhD in Physical Sciences from the Complutense University of Madrid in 2018, where he investigated cyclones with tropical characteristics over the Northeast Atlantic and Mediterranean Sea.

During his career, Juan Jesús has had the opportunity to enjoy three research stays at two of the world leading centers in the field of atmospheric sciences: the Department of Meteorology and Atmospheric Science at Pennsylvania State University in the United States, as well as the Institute for Atmospheric and Climate Science at ETH-Zurich.

In 2019, Juan Jesús obtained a Juan de la Cierva postdoctoral grant and the prestigious Marie Curie postdoctoral fellowship from the European Commission to develop a project at ETH-Zurich. However, securing a permanent position as a Senior Meteorologist at the Spanish State Meteorological Agency in 2021 led him to remain in Spain, where he continues to enjoy his R&D work within AEMet, focusing on sub-kilometric meteorological prediction and extreme convective weather phenomena. In 2022, he was invited to join the World Meteorological Organization's working group on tropical cyclones and climate change. Juan Jesús has worked on 11 national and international projects and he is the author of more than 30 scientific articles

Speakers

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