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ABSTRACT. In a context of global climate change, the scientific community has evidenced a significant decrease in wind speed, a phenomenon known as «stilling». This climate trend has mainly been observed over mid-latitude continental surfaces since the 1980s. On the contrary, other studies have detected an increase in wind speed over ocean surfaces; and there is little conclusive scientific evidence on trends in wind speed across the troposphere. Furthermore, a reversal in global terrestrial stilling has recently been documented in few regional and global studies since the 2010s. The causes associated with the climate variability of wind speed have not yet been resolved and there are many uncertainties behind the «stilling» and «recovery» phenomenon because neither the quantity nor the quality of wind speed observations is adequate. This contribution shows an overview of the IBER-STILLING project (RTI2018-095749-A-I00) funded by the Spanish Ministry of Science and Innovation. This project aims to move forward on the assessment of wind speed and wind gusts variability and underlying causes globally, with emphasis on the Spanish territory and surrounding ocean (Atlantic) and sea (Mediterranean) surfaces. The IBER-STILLING project will collect and generate climate information of wind speed from different data sources; climate data will be subject to a comprehensive protocol for quality control and homogenization. The statistical analysis of these climate databases will allow characterizing trends and climatic cycles of wind speed, allowing a pioneering general analysis of wind speed over continental and ocean surfaces, and across the boundary layer and the entire troposphere. The project will also conduct wind-tunnel experiments to quantify biases introduced by anemometers devices.

OVERVIEW OF THE IBER-STILLING PROJECT (# RTI2018-095749-A-I00) ; 2019-2022

IBER-STILLING

SPANISH PROJECT

PRINCIPAL INVESTIGATOR:

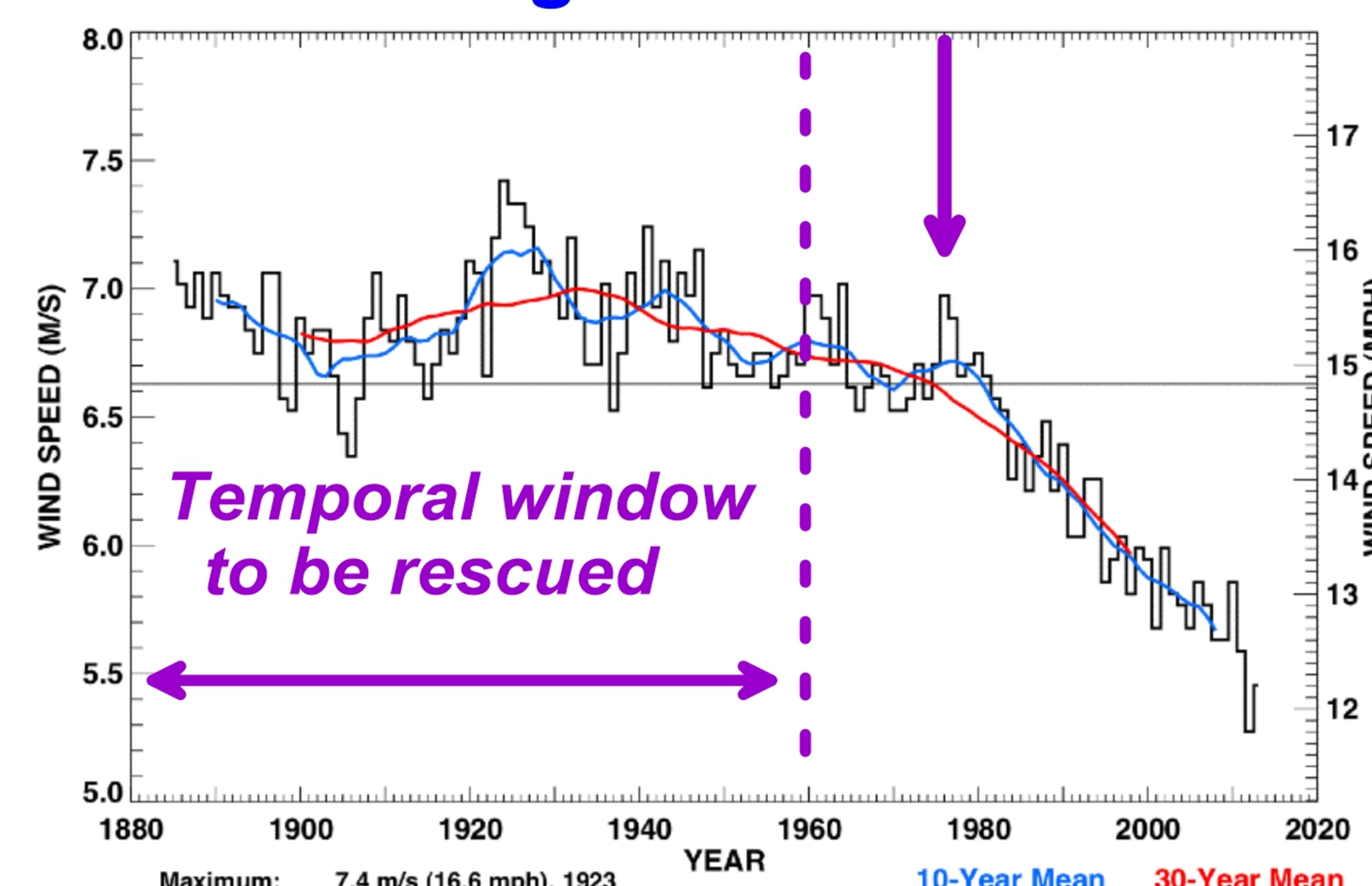
Dr. Cesar Azorin-Molina

RESEARCH TEAM:

Dr. Manola Brunet-India
Dr. Enric Aguilar-Anfrons
Dr. Jose A. Guijarro
& other colleagues



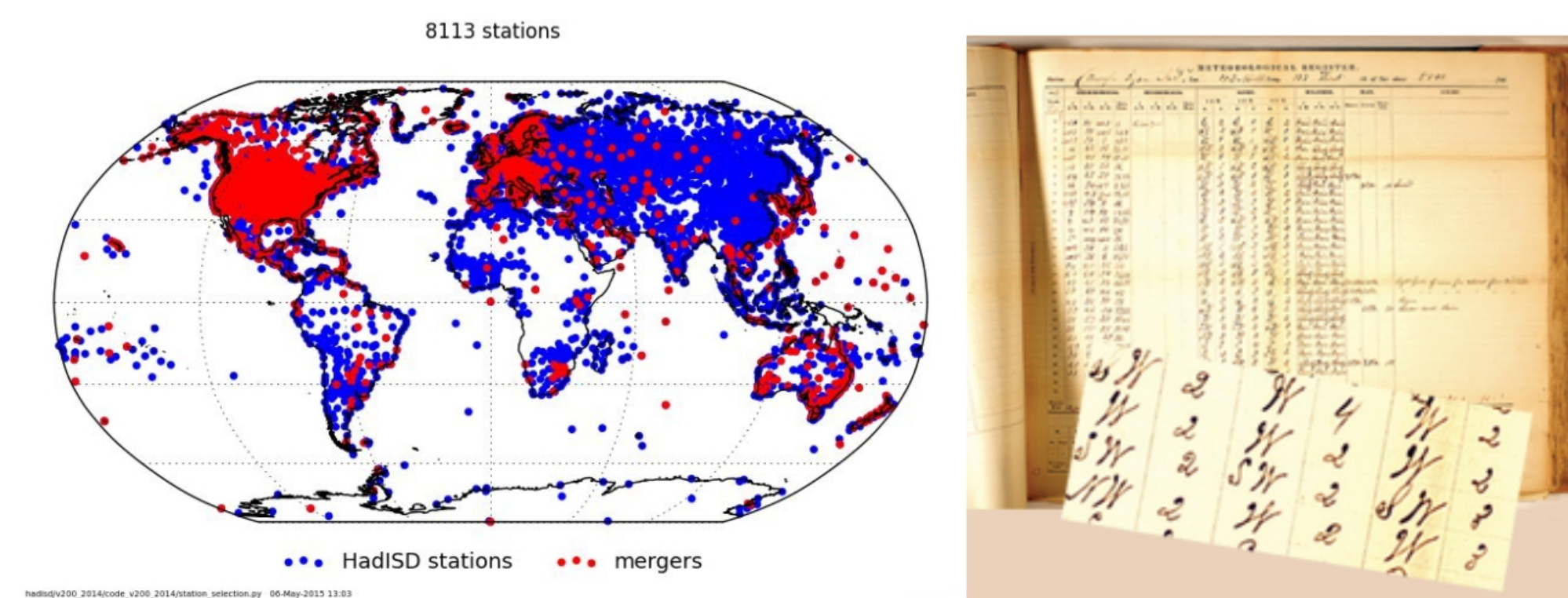
Why wind speed declined and is recovering in the last decade?



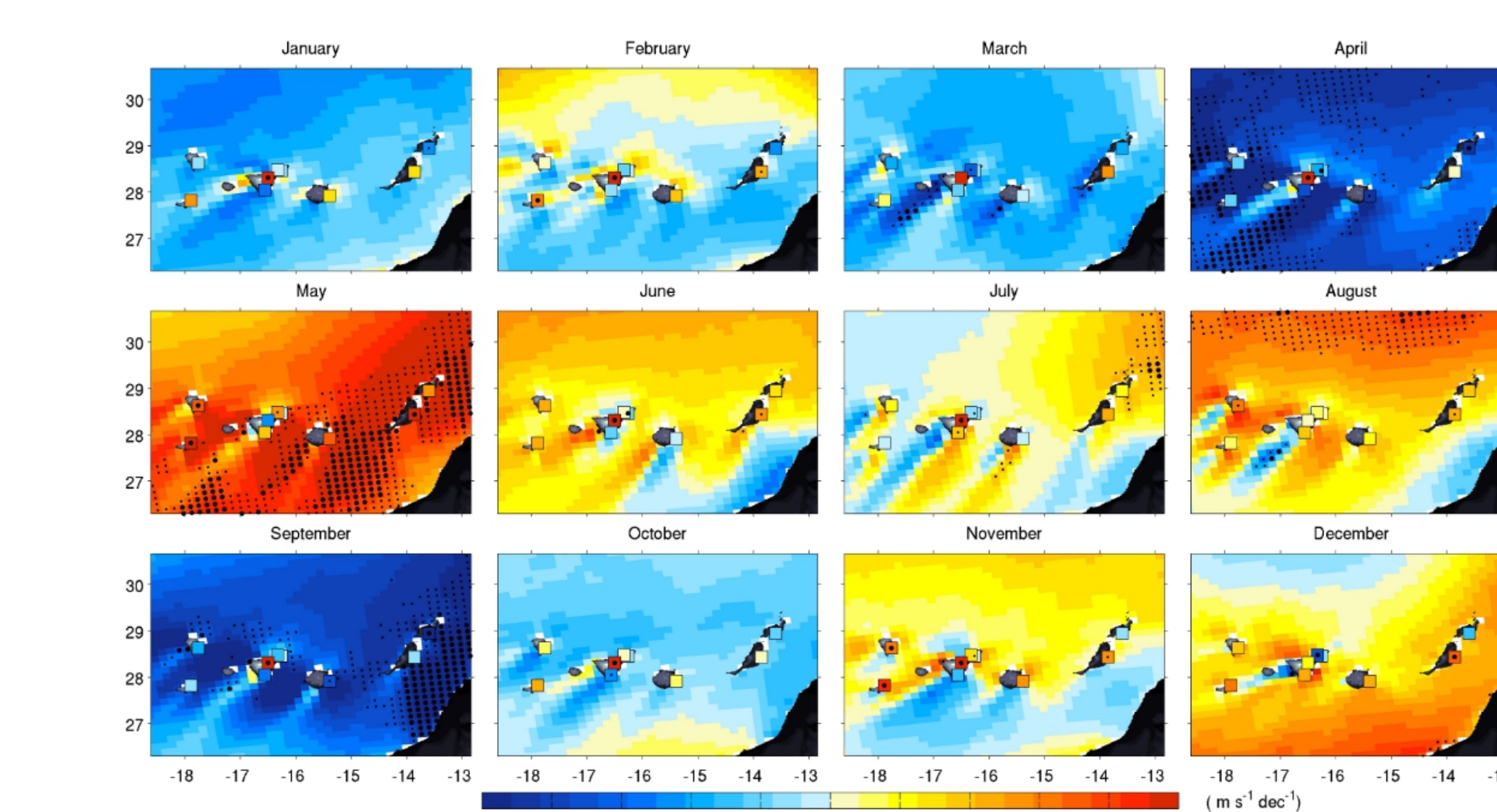
Causes remain uncertain due to the limited quality & quantity of wind records

METHODOLOGY - WORK PACKAGES

WP1 SURFACE WIND OBSERVATIONS



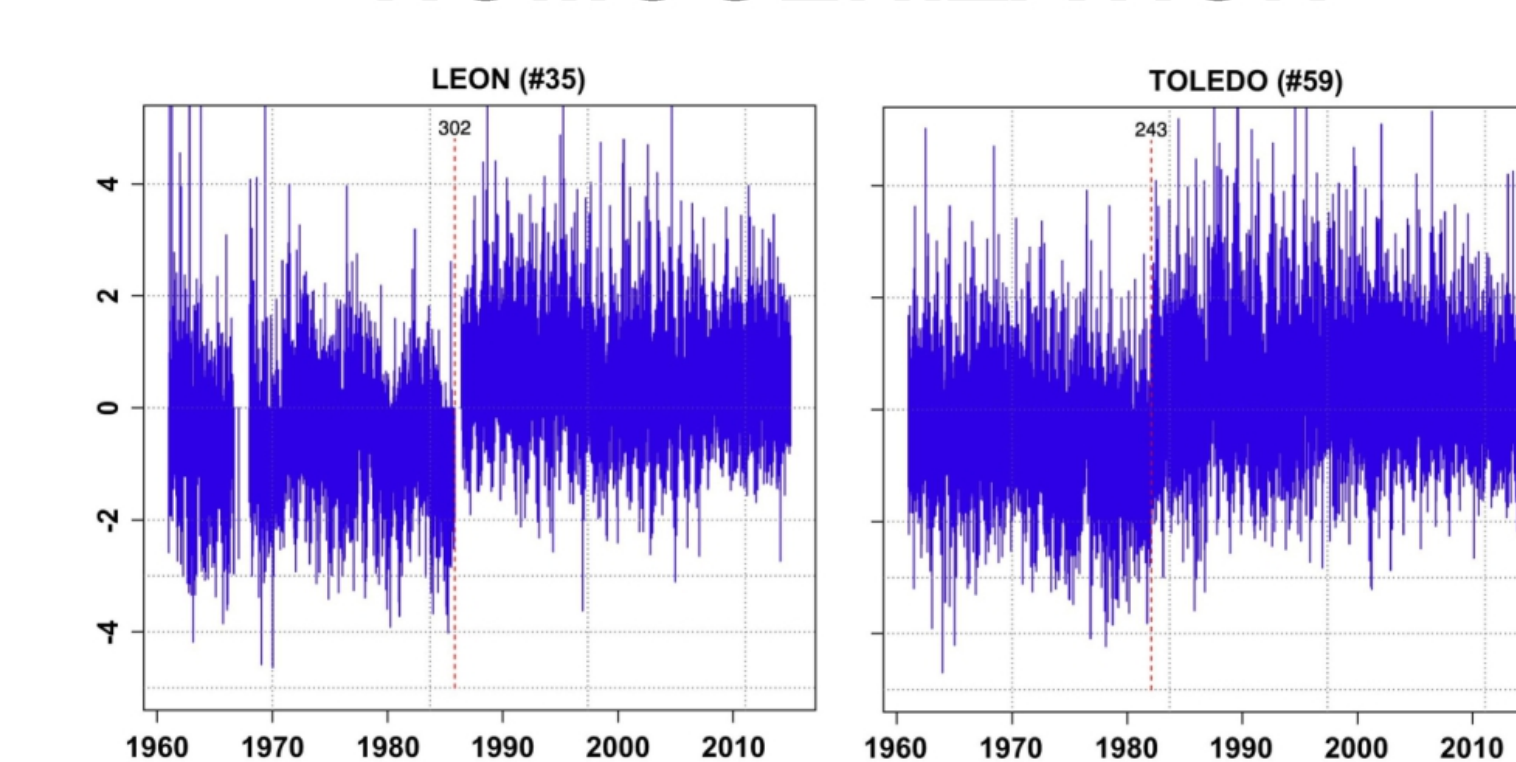
WP2 CLIMATE SIMULATIONS AND REANALYSES



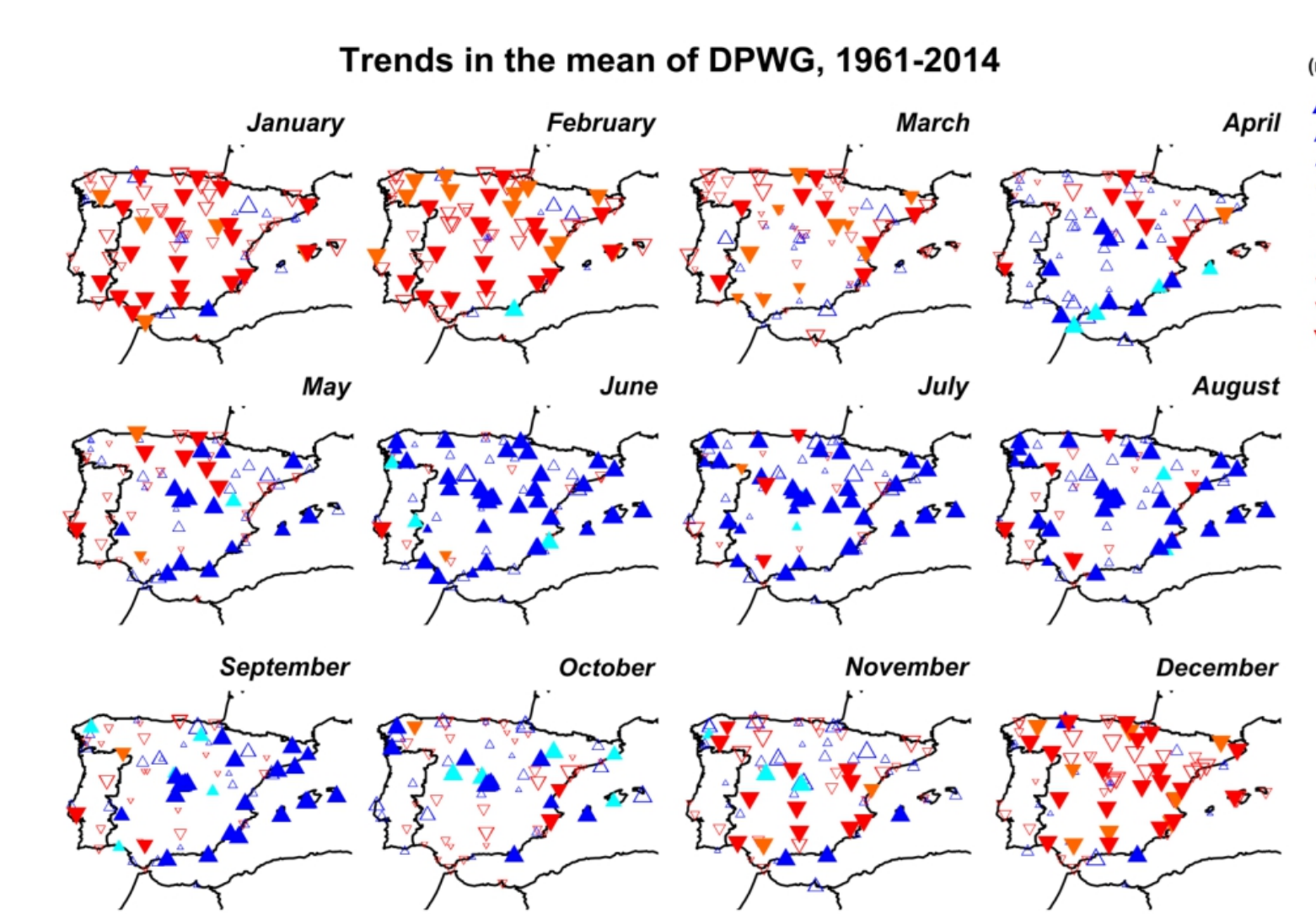
WP3 SOUNDING AND TALL TOWER DATA



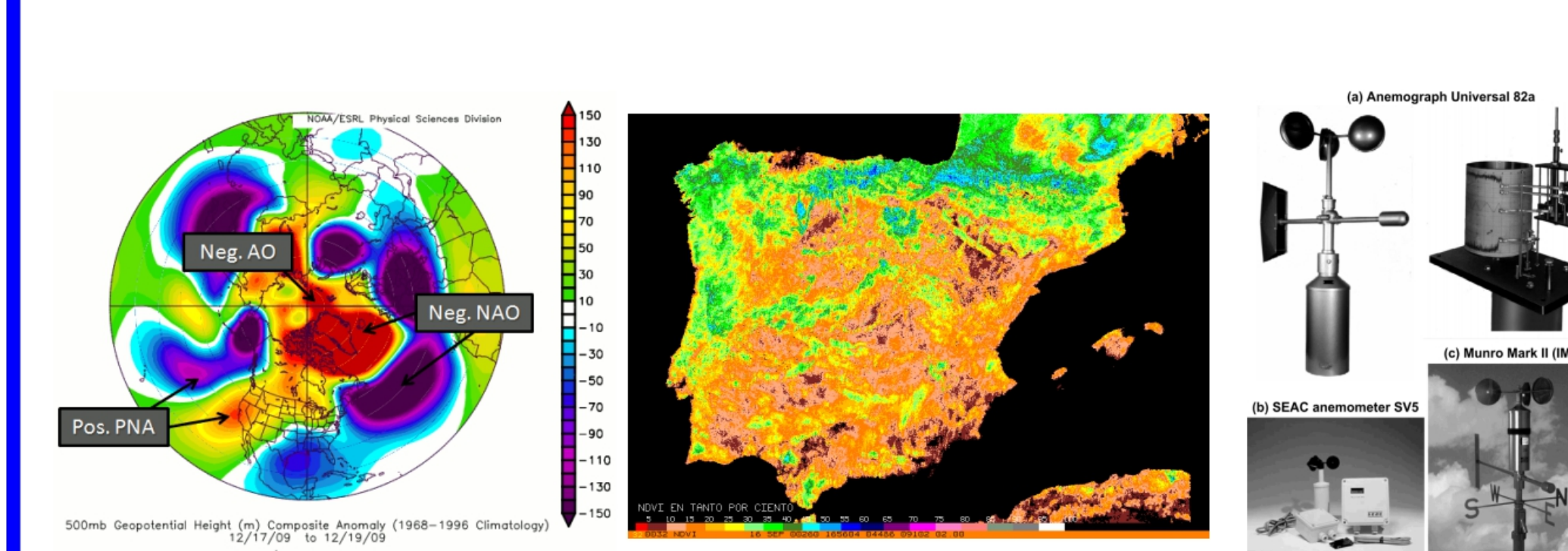
WP4 QUALITY CONTROL & HOMOGENIZATION



WP5 TRENDS AND VARIABILITY OF WINDS



WP6 ATTRIBUTION OF THE CAUSES BEHIND THE WIND CHANGES



IMPACT

SCIENTIFIC

(e.g., "stilling" vs. "recovery")



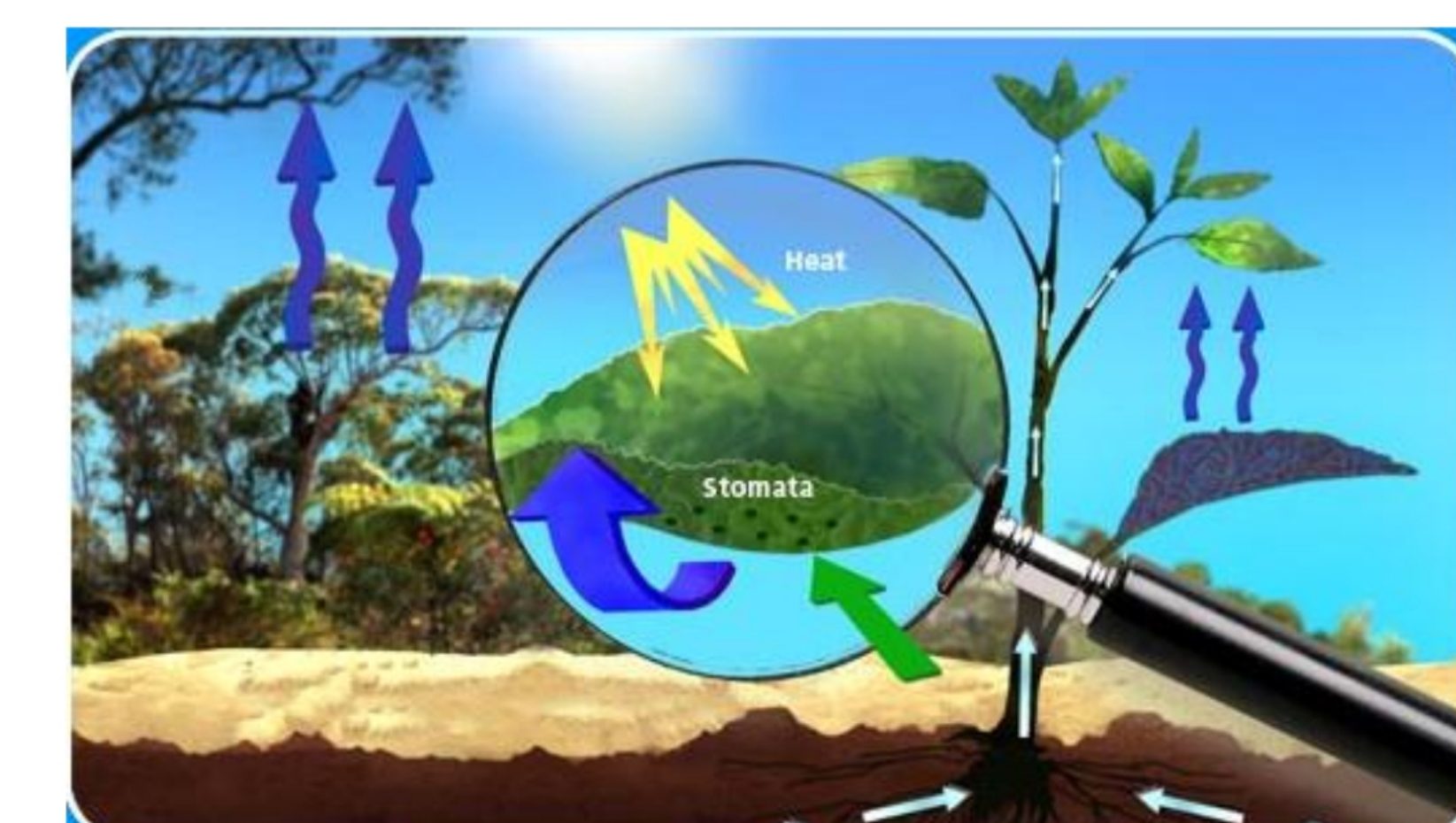
SOCIOECONOMIC

(e.g., wind power generation)



ENVIRONMENTAL

(e.g., evapotranspiration, water resources and droughts)



OVERALL
AIM

TO ASSESS THE TRENDS, VARIABILITY AND
CAUSES OF WIND CHANGES WITH FOCUS IN SPAIN

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RTI 2018-095749-A-I00

