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MeteoMars: A Tool for Exploring Martian Meteorology

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Abstract

MeteoMars is a collaborative project between the Planetarium of Pamplona and the Planetary Science Group of the University of the Basque Country, designed for the dissemination, education, and research of Martian meteorology. The tool uses images captured by the MARCI camera onboard the Mars Reconnaissance Orbiter (MRO) mission, which are publicly available. Through its web platform, accessible at meteomars.pamplonetario.org, users can explore meteorological changes on Mars, such as dust storms and polar clouds, allowing for detailed analysis thanks to its high spatial and temporal resolution.

The system currently provides images from 2019 to 2021, with future updates to include those from 2022 and 2023, along with older images prior to 2019. This database enables coverage of a full Martian year, and improvements are planned to reduce brightness along the edges of image swaths, making it easier to study phenomena in specific regions of the planet. MeteoMars allows the observation of meteorological events over short timescales (consecutive sols), facilitating the near-real-time analysis of Martian dynamics.

The MeteoMars interface is based on the "Map to Globe" tool, customized for Martian analysis and enhanced with a digital elevation model to improve relief visualization across different regions. The system allows for switching between various cartographic projections and adjusting relief shading, thus making it easier to study meteorological events in specific areas.

My poster in zenodo.org can be found here