

EGU2020-6715

<https://doi.org/10.5194/egusphere-egu2020-6715>

EGU General Assembly 2020

© Author(s) 2020. This work is distributed under the Creative Commons Attribution 4.0 License.



## MOTEDAS Century Database. Thermal amplitude trends in Spanish mainland (1916-2015).

**Jose Carlos Gonzalez-Hidalgo**<sup>1</sup>, Leire Sandonís-Pozo<sup>1</sup>, Dhais Peña-Angulo<sup>2</sup>, Michele Brunetti<sup>3</sup>, and Santiago Beguería<sup>4</sup>

<sup>1</sup>University Zaragoza, Geography, Zaragoza, Spain (leiresandonis@unizar.es; jcgh@unizar.es)

<sup>2</sup>Instituto Pirenaico de Ecología IPE-CSIC, Spain (dpang@gmail.com)

<sup>3</sup>ISAC-CNR, Bologna, Italy (m.brunetti@isac-cnr.it)

<sup>4</sup>Estación Experimental Aula Dei, CSIC, Zaragoza, Spain (sbegueria@eead.csic.es)

There exists a debate in the scientific research about the evolution of daily thermal amplitude (DTR) along the 20th century, I do not know: if the trend in minimum temperatures (night time) has been more pronounced than that of maximum temperatures (daily time). Generally speaking it has been accepted that until the 1980's the trend of the DTR has been negative and then changes to positive ones. Notwithstanding, regional and sub-regional datasets developed during the last decades have shown that DTR behaviour is highly variable. It has been suggested that the Iberian Peninsula, because of its geographical location (latitude and position between two contrasted water masses), is one of the places in which climate research could find results that anticipate future global climate conditions.

The new dataset MOTEDAS\_Century (Monthly Temperature Dataset of Spain) combines data from the Spanish national meteorological office (AEMET) archives with data rescued from annual books spanning the first decades of the 20<sup>th</sup> Century. This dataset allowed us to produce a high resolution (10x10 km) grid of minimum and maximum temperatures spanning over the last century (1916-2015). In the present research we will show a spatial analysis of the DTR (Tmax-Tmin) evolution by using moving windows from the total period (1916-2015) to a minimum time span of twenty years (1996-2015). Trends were calculated at monthly scale at each pixel series by means of a pre-whitened Mann-Kendall test in order to determine the sign and significance of trends.

The main results of the analysis are: i) trends were more pronounced for minimum temperature than maximum temperatures during warm months (July, August and September) in the southern and Mediterranean coastland; ii) the significant increasing trend of DTR disappears since the middle of the 1980's; iii) at present, we only detect significant trends of DTR in December.