



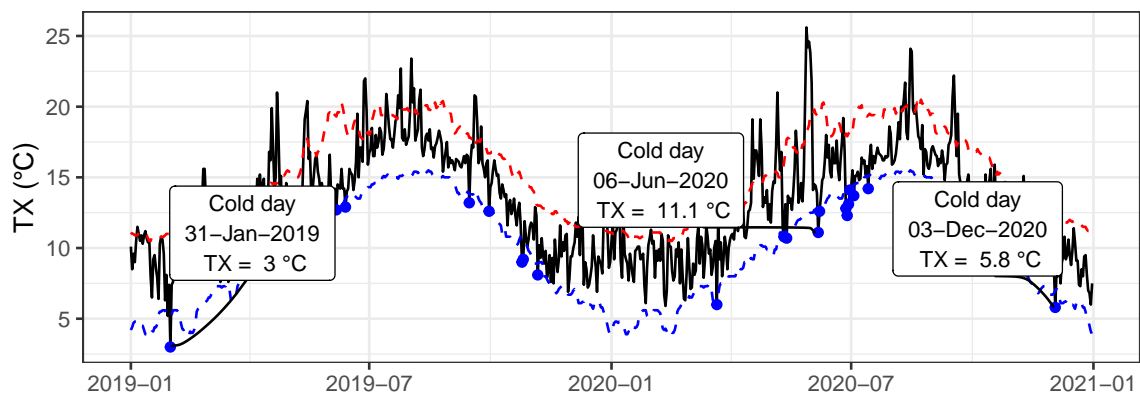
Cold Days (TX10p)

Key Message

- “Cold days”, as defined here, are occurring less frequently than in the past at the majority of weather stations.

Definition

- Daily maximum temperature (**TX**), based on 09UTC-09UTC observations are used to calculate the index.
- The **TX10p** index represents how often a “cold day” occurs, relative to a 1961-1990 climatology.
- The climatological 10th percentiles of **TX** is calculated using a rolling 5-day window for the time period of 1961-1990 (see dashed blue line below).
- The rate at which TX falls outside these percentiles determines the **TX10p** index, expressed as a percentage of days in the year/season/month.
- A bootstrapping method is used to calculate the index within the “base period” (1961-1990) to avoid biases, as outlined in Zhang et al. [2005].

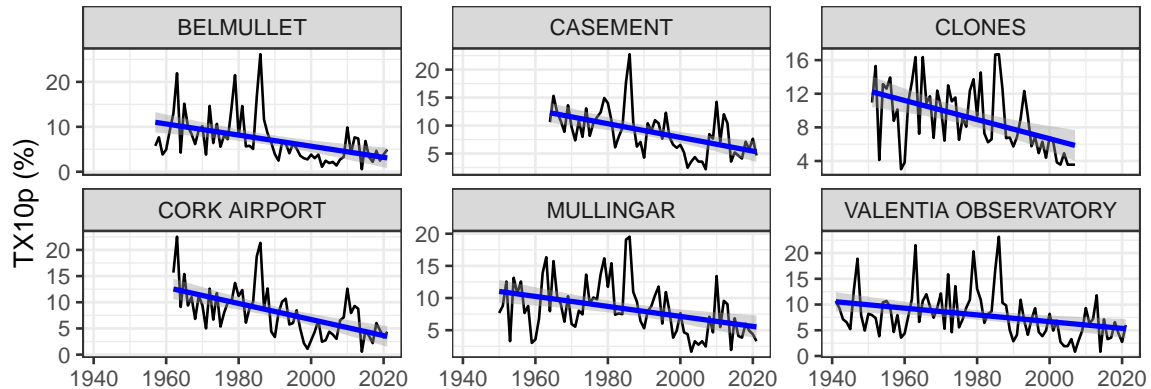


- For example the cold days that occurred at Belmullet during 2019 and 2020 are shown above (marked by blue dots, when the black line falls below the dashed blue line). The annual values of the **TX10p** index were 2.5% and 3.8% respectively.



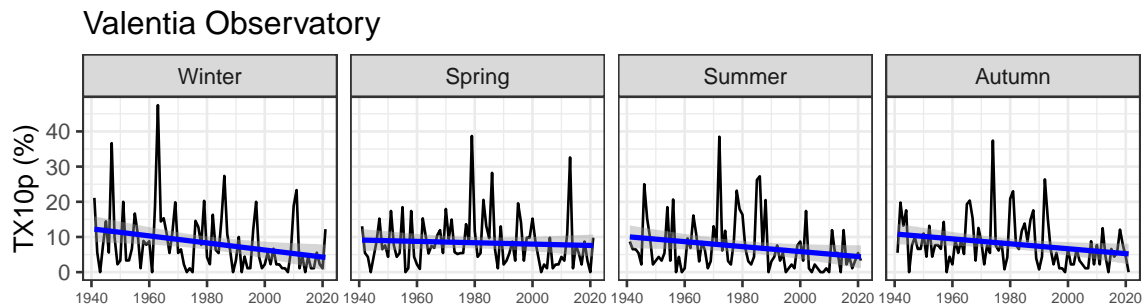
Trends

- “Cold days” are occurring less often than they have in the past, and is consistent at the majority of weather stations in Ireland, as shown in the graphs below.
- This trend has also been found globally, [Dunn et al., 2020].



Seasonality

- The number of cold days are reducing in most seasons, shown below for Valentia Observatory.



Data Access

Data for this index can be downloaded through the web-page below (or the QR code in the header):

- <https://www.met.ie/climate/climate-change-indices-etccdi/>

For further information contact Met Éireann Climate Enquiries: enquiries@met.ie

References

Robert JH Dunn et al. Development of an updated global land in situ-based data set of temperature and precipitation extremes: HadEX3. *Journal of Geophysical Research: Atmospheres*, 125(16):e2019JD032263,



2020. doi: <https://doi.org/10.1029/2019JD032263>.

Xuebin Zhang et al. Avoiding Inhomogeneity in Percentile-Based Indices of Temperature Extremes. *Journal of Climate*, 18(11):1641–1651, 2005. doi: <https://doi.org/10.1175/JCLI3366.1>.