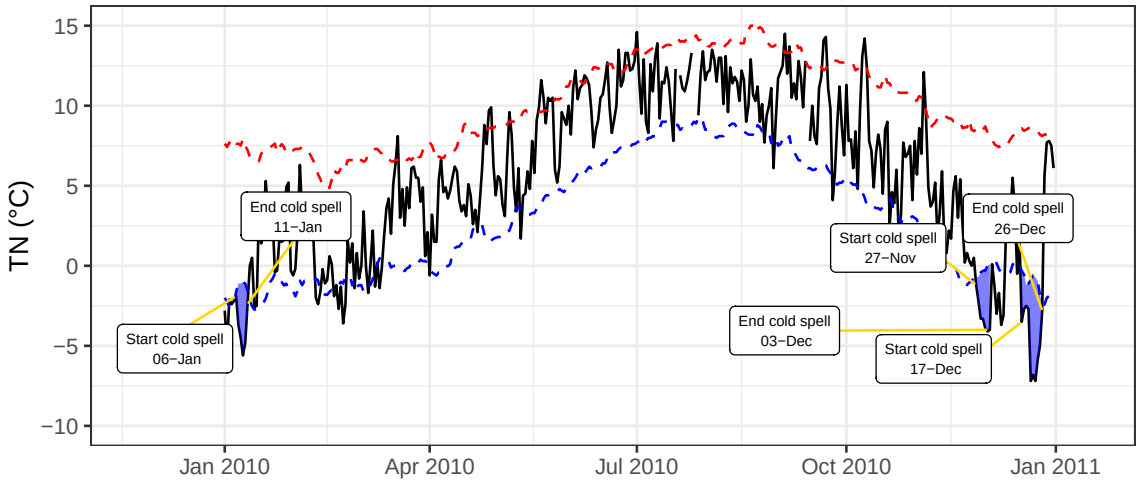
Cold Spell Duration Index (CSDI)

Key Message

- Cold spells (as defined here) are relatively rare in the Irish climate.
- There is a lack of statistically significant trends in the **CSDI** index at Irish weather stations.

Definition

- Daily minimum temperature (**TN**), from 09UTC - 09UTC observations, are used to calculate the index.
- The Cold Spell Duration Index (**CSDI**) represents the annual count of days contributing to "cold spells", when the minimum temperature (TN) remains below its climatological 10th percentile. A spell must consist of at least six consecutive days to qualify as a "cold spell".
- The 10th percentile is based on the 1961-1990 climatology (see **TN10p** index factsheet for more details).
- A graphical example is shown below for the year 2010 at Cork Airport, where the cold spells are represented by the blue shaded areas and sum to give a CSDI value of 23.



Trends

- Prolonged spells of cold weather are relatively rare in the Irish climate.
- There are some indications of a reduction in **CSDI** in the table below, but these trends are generally not found to be statistically significant.
- Global analysis of this index has found a stronger reduction in the **CSDI** index globally, [Dunn et al., 2020].

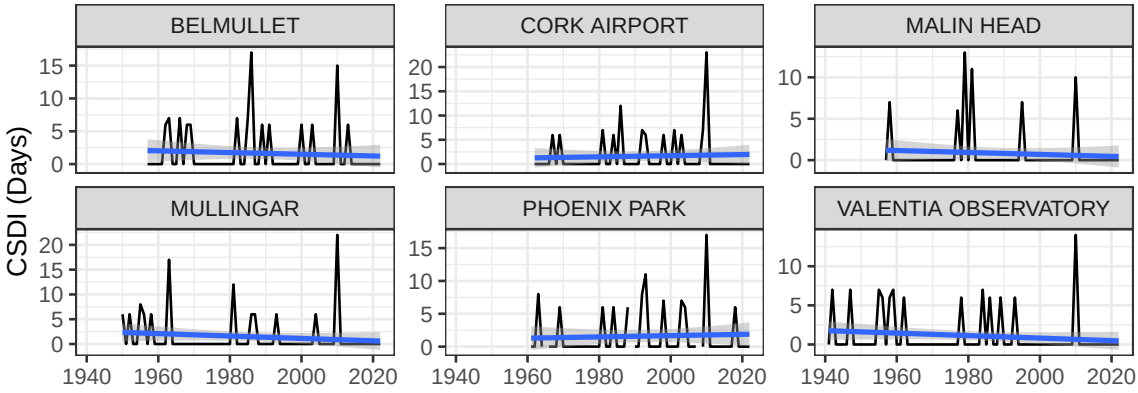


Table 1: Mean annual value of CSDI during thirty year periods at eight different stations

Station	1961-1990	1991-2020
Belmullet	2.3	1.3
Casement	0.5	2.2
Cork Airport	1.3	2.1
Malin Head	1.0	0.6
Mullingar	1.4	1.1
Phoenix Park	1.1	2.1
Valentia Observatory	1.0	0.7

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.