



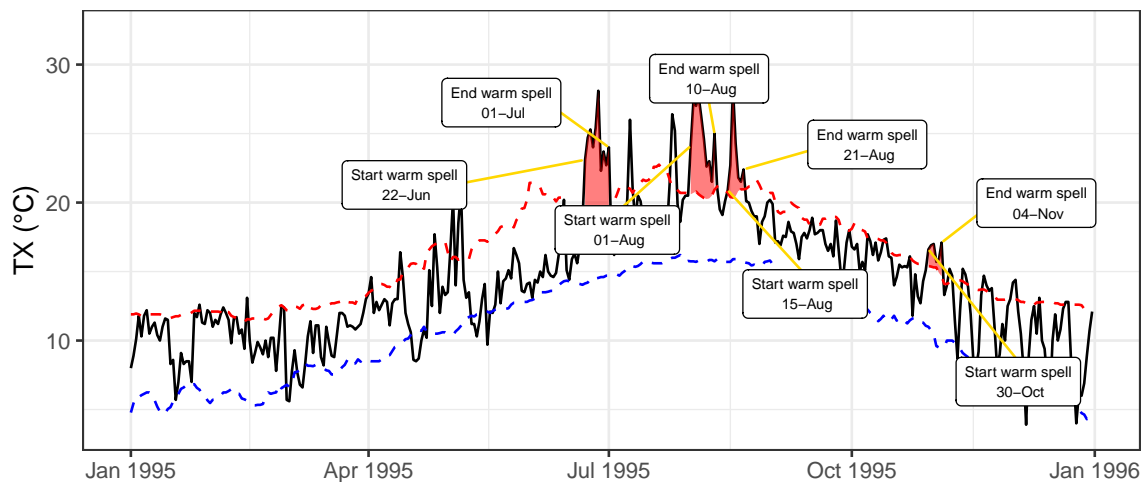
## Warm Spell Duration Index (WSDI)

### Key Message

- The warming Irish climate is leading to an increase in the number of warm spells, relative to the 1961-1990 climatology.

### Definition

- Daily maximum temperature (**TX**), from 09UTC - 09UTC observations, are used to calculate the index.
- The Warm Spell Duration Index (**WSDI**) represents the annual count of days contributing to “warm spells”, when the maximum temperature (TX) remains above its climatological 90th percentile. A spell must consist of at least six consecutive days to qualify as a “warm spell”.
- The 90th percentile is based on the 1961-1990 climatology (see **TX90p** index factsheet for more details)
- A graphical example is shown below for the year 1995 at Valentia Observatory, where the warm spells are represented by the red shaded areas and sum to give a WSDI value of 33.





## Trends

- There are an increasing number of warm spell events at the majority of synoptic weather stations in the Met Éireann observing network, see graphs and table below.
- These are in agreement with global trends for this index, [Dunn et al., 2020].

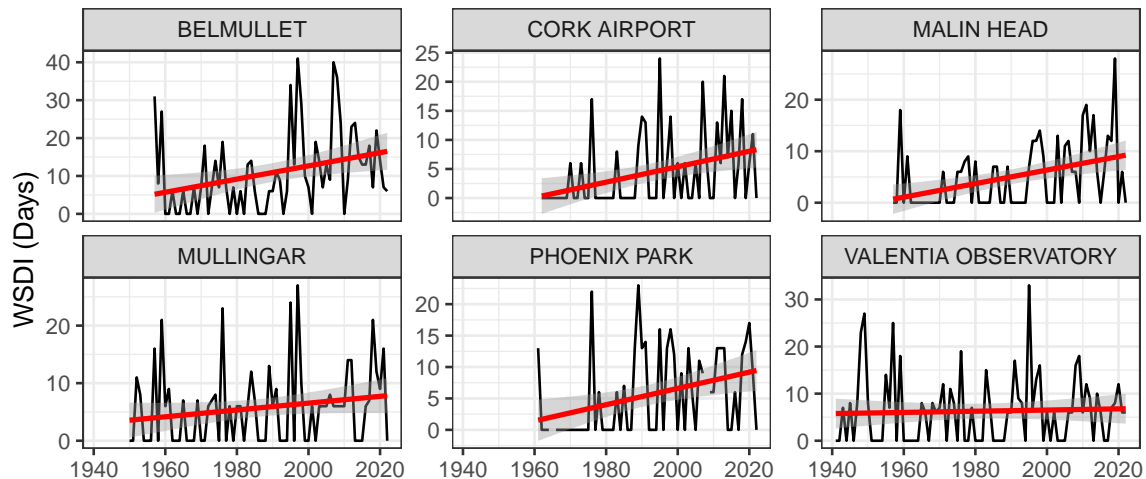


Table 1: Mean annual value of WSDI during thirty year periods at six different stations

| Station              | 1961-1990 | 1991-2020 |
|----------------------|-----------|-----------|
| Belmullet            | 5.2       | 16.0      |
| Casement             | 2.6       | 6.8       |
| Claremorris          | 5.2       | 11.3      |
| Cork Airport         | 2.1       | 6.4       |
| Malin Head           | 2.4       | 7.7       |
| Mullingar            | 4.3       | 7.0       |
| Phoenix Park         | 3.6       | 7.6       |
| Valentia Observatory | 4.2       | 7.7       |

## 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](mailto: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>.