



Rainfall on Extremely Wet Days (R99pTOT)

Key Message

- There are very few robust trends apparent in the amount of rain falling from “extremely wet days” at this collection of Irish weather stations.
- The majority of stations indicate an increasing trend, but very few of these are found to be statistically significant.

Definition

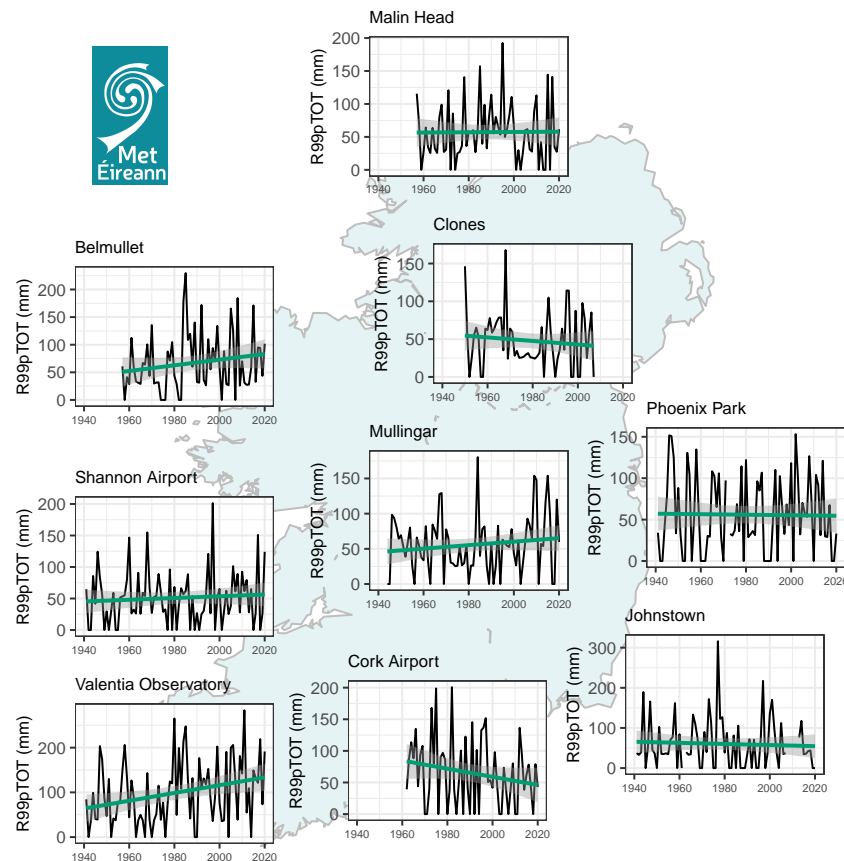
- Daily precipitation (**R**), 09UTC - 09UTC observations, are used to calculate this index.
- The **R99pTOT** index is calculated by summing the accumulated rainfall (in mm) on “extremely wet days”.
- Where an extremely wet day is defined as being greater than the 99th percentile of “wet days” ($\geq 1\text{mm}$) during the 1961-1990 reference period. Some of the thresholds are shown in Table 1.

Thresholds

- The thresholds for percentile-based precipitation indices at the stations shown in the map below are listed in the following table.

Table 1: Thresholds for percentile based rainfall indices at nine stations.

Station	R95pTOT (mm)	R99pTOT (mm)
Belmullet	16.1	25.9
Clones	14.7	23.7
Cork Airport	23.5	38.0
Johnstown	20.0	32.8
Malin Head	15.6	24.8
Mullingar	15.9	25.3
Phoenix Park	15.6	28.2
Shannon Airport	15.4	24.9
Valentia Observatory	22.2	35.2



Trends

- There are some increases in **R99pTOT**, namely at Belmullet and Valentia, but there is less of a signal for this index compared to **R95pTOT** (see factsheet).
- Ongoing research into data rescue and homogenisation has found a collection of stations in the south east of Ireland where a statistically significant increases in **R99pTOT** has been found, [Ryan et al., 2021]. Some of these stations were not used here, more research is needed to examine this further.
- Analysis of percentile-based rainfall indices identified that **R99pTOT** is increasing globally, particularly in areas such as eastern Europe or central USA, [Dunn et al., 2020] (referred to as R99p in the paper).

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>.

Ciara Ryan et al. Long-term trends in extreme precipitation indices in Ireland. *International Journal of Climatology*, 2021. doi: <https://doi.org/10.1002/joc.7475>.