



SIMPLE DAILY INTENSITY INDEX (SDII)

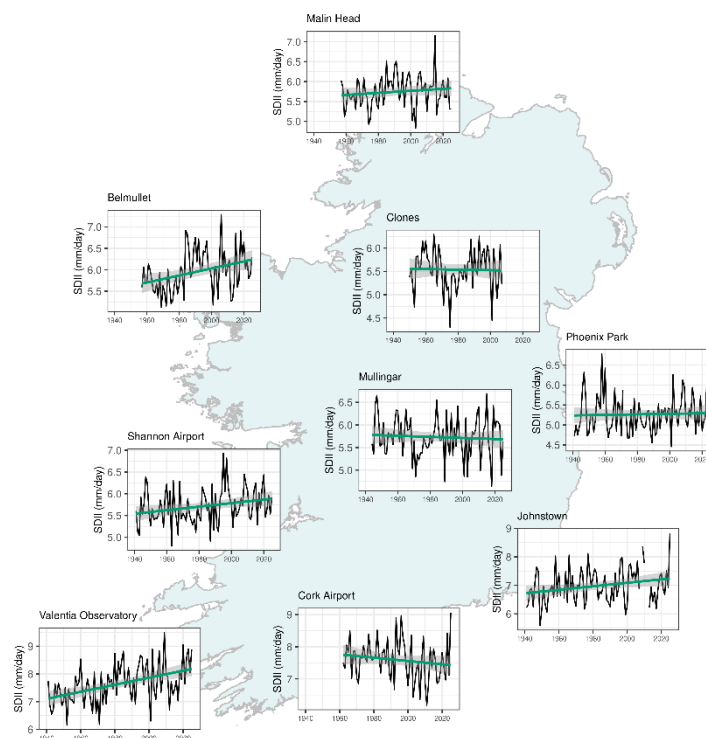
KEY MESSAGE

- Most stations (particularly in the west) are seeing increases in average daily rainfall intensity, but only a small minority of these are found to be statistically significant long-term trends.

DEFINITION

- Daily precipitation (R), based on 09UTC - 09UTC observations, are used to calculate this index.
- The Simple Daily Intensity Index (**SDII**) is the average rainfall rate on “wetdays” ($R \geq 1\text{mm}$), measured in mm/day, during the period of interest (year, season or month).

TRENDS



- There have been increases in **SDII** at certain Met Éireann’s synoptic weather stations along the west coast (similar to those seen for **PRCPTOT** index), see graphs above.
- Meanwhile stations further east and inland do not tend to exhibit clear trends. The trends at the majority of stations across the country are found to not be statistically significant.
- Ongoing research into data rescue and homogenisation indicate that many of these trends remain but can become weaker when time series are extended and homogenised, (Ryan, et al. 2022).

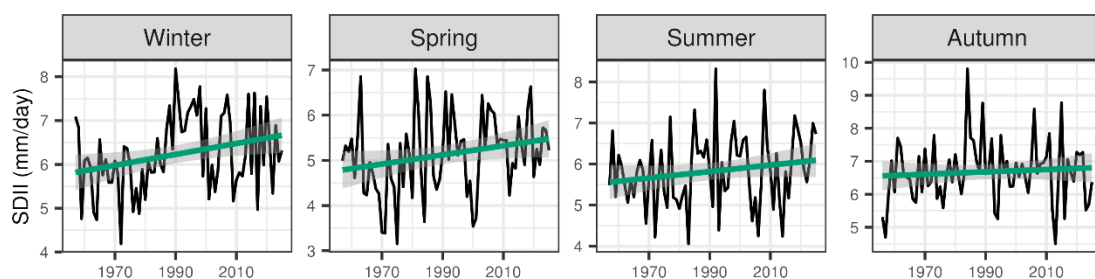


- Also, a collection of stations in the southeast of Ireland were found to have relatively small but statistically significant increases in **SDII**, (Ryan, et al. 2022). These stations were not used here and further research is needed in this area.
- Global analysis of climate indices has found pockets of the globe where **SDII** is significantly increasing, such as eastern Europe or central USA, (Dunn, et al. 2020).

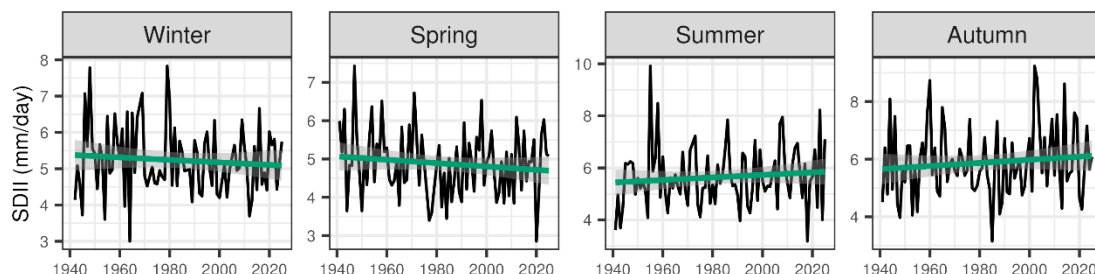
SEASONALITY

- The increase in **SDII** at these western stations is present in most seasons, shown below for Belmullet.
- The lack of a signal in the east is evident for all seasons, shown below at Phoenix Park.

Belmullet



Phoenix Park



DATA ACCESS

Data for this index can be downloaded through the webpage 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

Dunn, Robert JH, Lisa V Alexander, Markus G Donat, Xuebin Zhang, Margot Bador, Nicholas Herold, Tanya and Allan, Rob Lippmann, Enric Aguilar, Abdoul Aziz Barry, and others. 2020. "Development of an updated global land in situ-based data set of temperature and precipitation extremes: HadEX3." *Journal of Geophysical Research: Atmospheres* e2019JD032263. doi:<https://doi.org/10.1029/2019JD032263>.

Ryan, Ciara, Mary Curley, Séamus Walsh, and Conor Murphy. 2022. "Long-term trends in extreme precipitation indices in Ireland." *International Journal of Climatology* (Wiley Online Library) 42 (7): 4040-4061. doi:[10.1002/joc.7475](https://doi.org/10.1002/joc.7475).