TRANSLATE

STANDARDISED DATA FOR DECISION MAKING

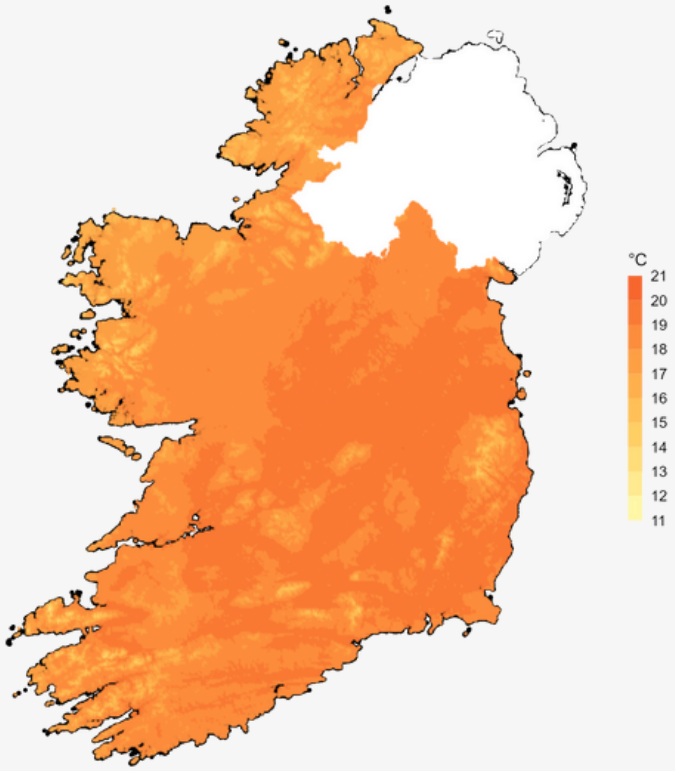
HEAT AND CLIMATE CHANGE IN IRELAND

INTRODUCTION

Ireland's temperatures have been increasing since preindustrial times, in line with global increases. These global and national temperature trends have been attributed to increases in GreenHouse Gas (GHG) emissions on a global level. GHG emissions have steadily increased as a result of fossil fuel energy consumption, land use and land use change, and patterns of production/consumption across the planet.

Temperatures are also getting warmer at a seasonal level, and summer in Ireland is no exception. High temperature extremes (day and night time), and the occurence of heatwaves are projected to rise in Ireland as the century progresses. These events can have a broad range of negative impacts for society, including heat stress (for both humans and animals), crop production and cause issues for infrastructure and the built environment. These are illustrated below for both emission-scenario and temperature-threshold based projections.

MAXIMUM SUMMER TEMPERATURES



The map shows the average maximum Summer temperatures for Ireland for the time period 1991 to 2020.

AVERAGE TEMPERATURES HAVE INCREASED:

1.0°C [1.]

SINCE THE EARLY 1900S

FUTURE INCREASES

EARLY ACTION	LATE ACTION
0.2-1.1°C	2.1-3.8°C

MaREI Energy · Climate · Marine

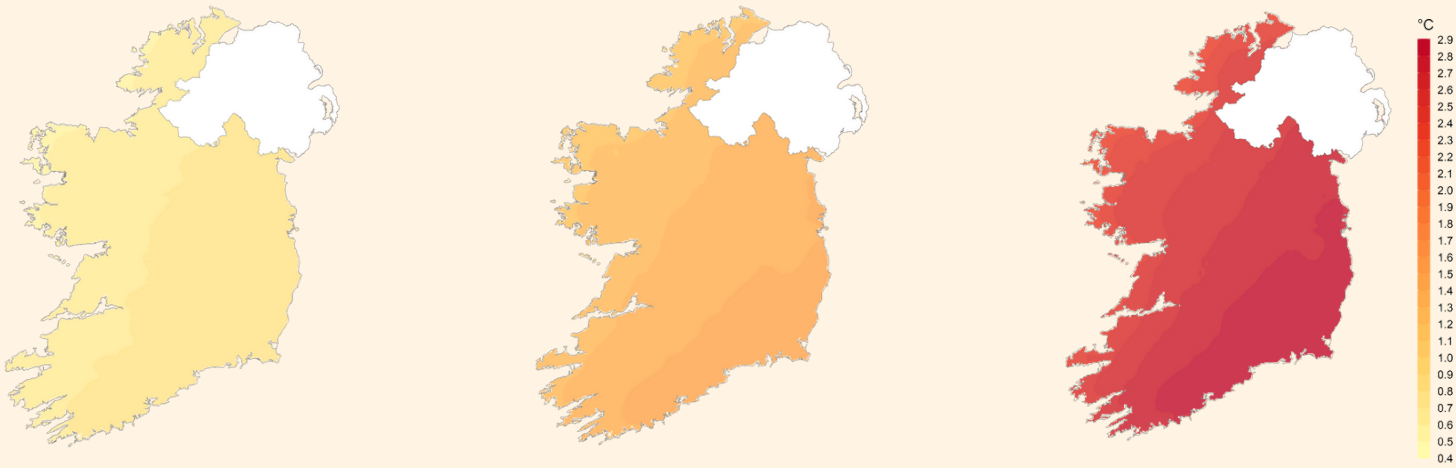
Ollscoil na Gaillimhe University of Galway

UCC University College Cork, Ireland Coláiste na hOllscoile Corcaigh

ICHEC Irish Centre for High-end Computing

MET éireann

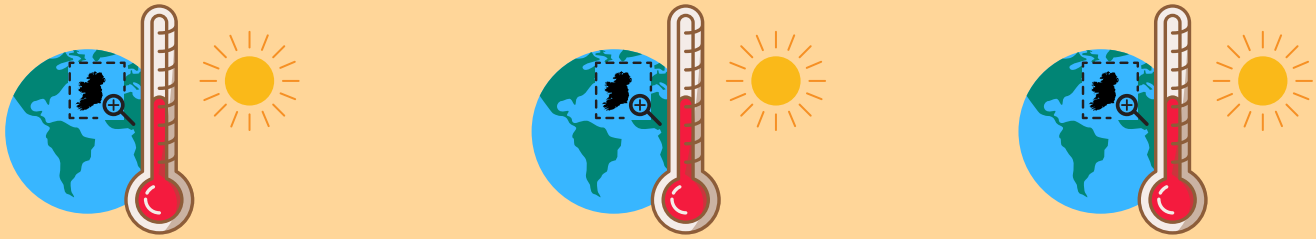
HOW COULD AVERAGE SUMMER TEMPERATURES CHANGE IN THE FUTURE?



EARLY ACTION | MID ACTION | LATE ACTION

All maps display outputs for end of century (2080s)

EXTREME HEAT EVENTS IN THE RECENT PAST [2.]



HIGHEST TEMPERATURE
RECORDED SINCE **1887**

33°C IN 2022

RECORDED IN JULY **2022**
AT THE PHOENIX PARK

FIRST TWO **TROPICAL NIGHTS**
RECORDED IN IRELAND

2021

NIGHT TIME TEMPERATURES STAYED
ABOVE 20˚C VALENTIA IN KERRY

PROVISIONALLY THE
WARMEST YEAR ON RECORD

2022

ALL MEAN TEMPERATURES
WERE ABOVE THE LTA*

LTA = Long Term Average

FUTURE CHANGES IN HEAT (MID ACTION)

Time Period	2030s	2050s	2080s
Average Summer Maximum Temperature	**0.7** (0.2-0.9)	**0.9** (0.5-1.9)	**1.3** (0.9-2.3)
Average Summer Minimum Temperature	**0.8** (0.3-1.1)	**1.0** (0.7-1.8)	**1.4** (1.0-2.4)
Warmest maximum temperature (TXx)	**1.6** (1.5-1.7)	**2.1** (2.0-3.4)	**2.7** (2.1-3.3)
Warmest minimum temperature (TNx)	**1.0** (0.7-1.3)	**1.3** (1.1-2.0)	**1.7** (1.3-2.7)

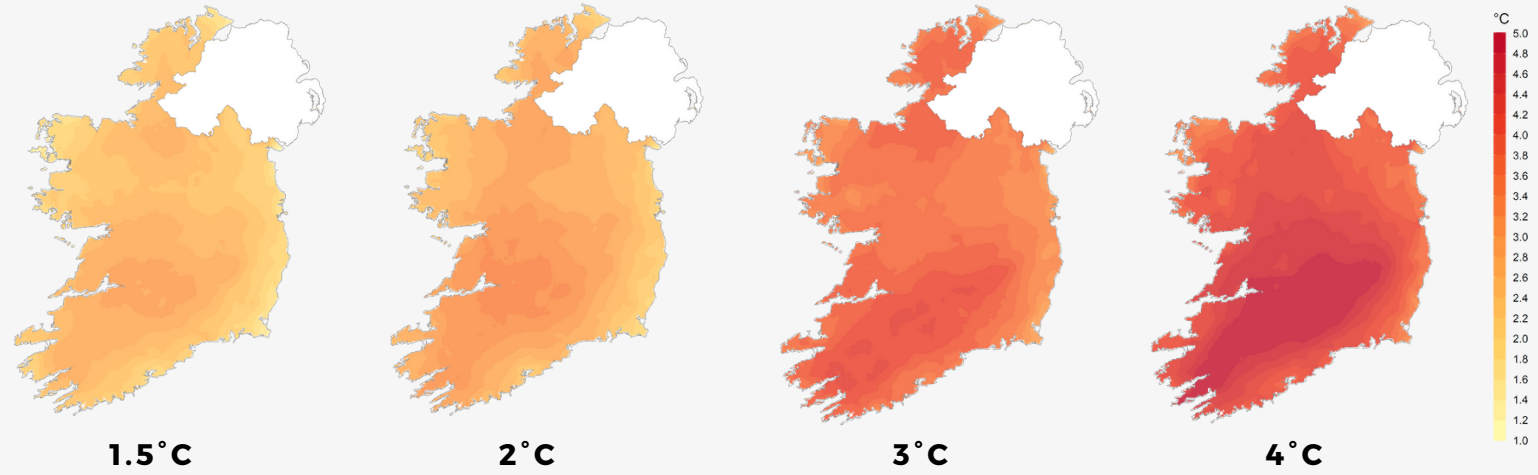
Changes are in˚C. Ranges are displayed in brackets.

FUTURE CHANGES IN IRISH SUMMERS IN A WARMER WORLD

	1.5˚C	2˚C	3˚C	4˚C
Summer Days (Tmax > 25˚C)	3.2	4.5	8.8	10.6
No. of Heatwaves per year	0.07	0.11	0.33	0.37
Nights > 15˚C	5.7	10	20.6	25.3
TXx (Warmest Maximum)	2.4	2.8	3.7	4.4

Table shows mean projected changes for each index from the baseline (1976 - 2005)

PROJECTED CHANGES IN MAXIUM SUMMER TEMPERATURES (TXx)



1.5˚C 2˚C 3˚C 4˚C

THE MAPS ABOVE INDICATE THE CHANGE IN MAXIMUM SUMMER TEMPERATURES UNDER DIFFERENT LEVELS OF GLOBAL WARMING

POTENTIAL IMPACTS OF EXTREME HEAT

Summer Days

On hot days, people need to replace liquids they have lost to avoid dehydration. Drink plenty of water and stay out of the sun between 11am and 3pm.

Days above 25°C

Transport disruption from buckling of railway lines or melting of road surfaces.

Nights above 15°C

Overheating of buildings and increased levels of discomfort for people.

More frequent Heatwaves

Increased demand on water, energy and healthcare services.

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FURTHER INFORMATION

Further Information on the TRANSLATE project can be found here:

References:

1: Met Éireann (2023). Pers.comm.

2. Met Éireann (2022). Past weather statements. [Website] https://www.met.ie/climate/past-weather-statements

Acknowledgements

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