

# Climate Change in Ireland and the Impact on Soft Fruit Production

**Dr. Sarah O'Reilly**

Teagasc National Soft Fruit Conference, 28 April 2010

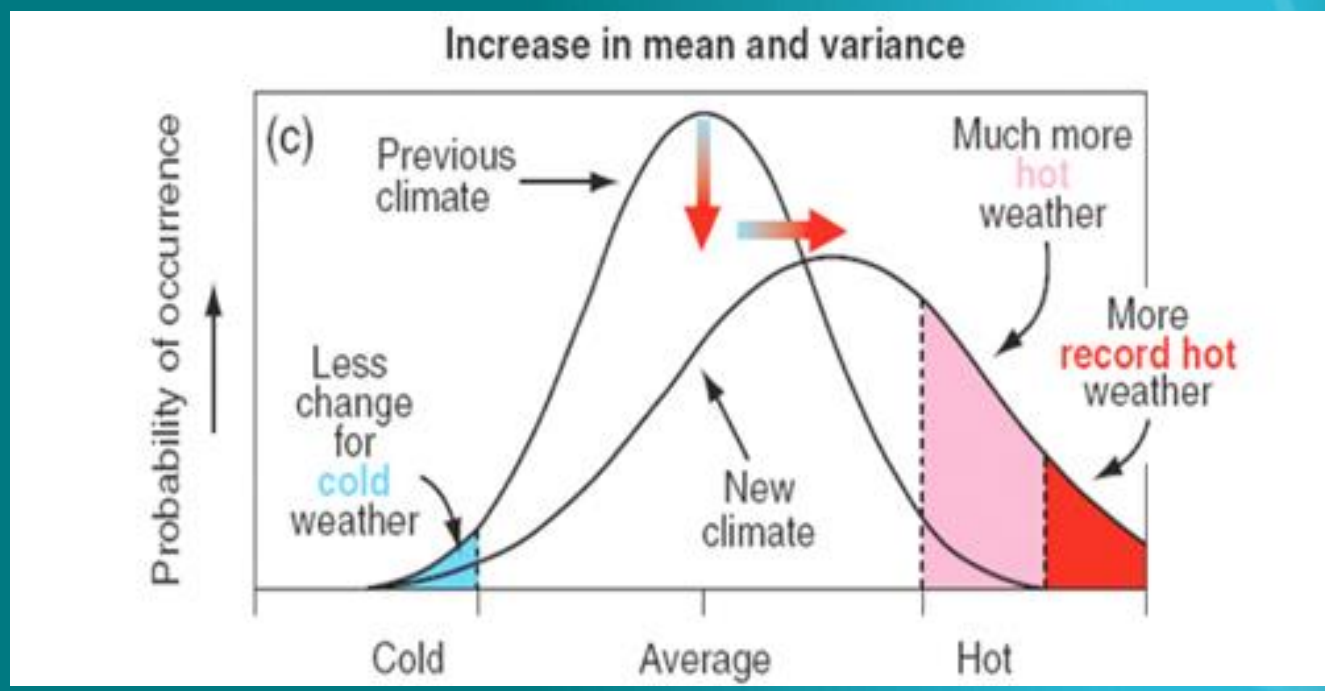
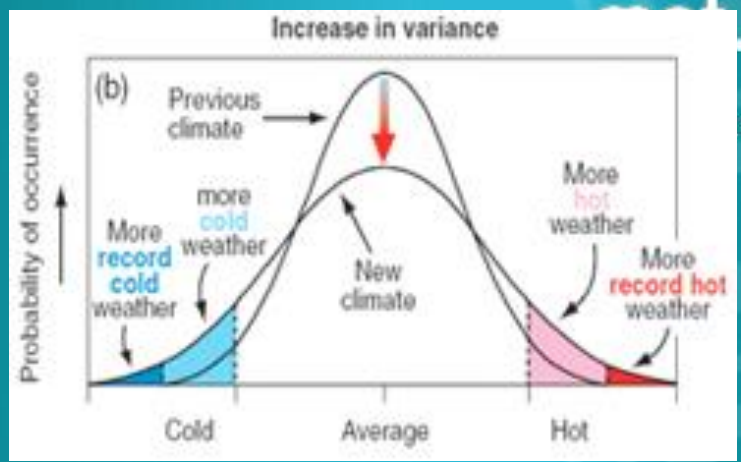
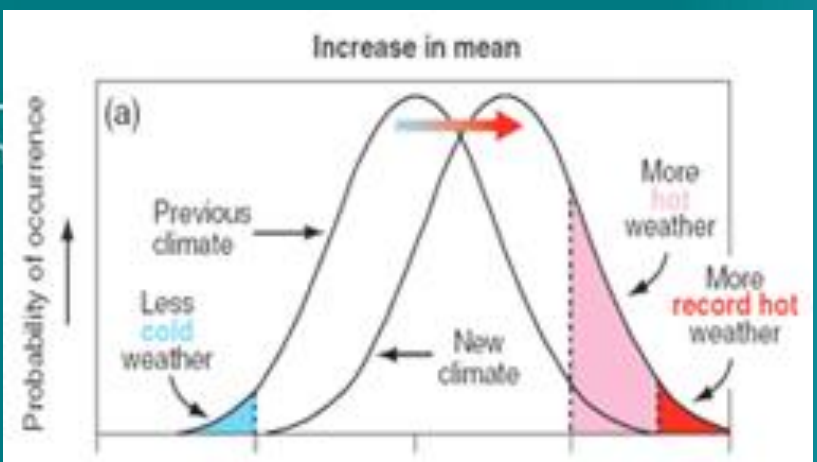
# OVERVIEW

- **What is Climate?**
- **How has Ireland's climate changed**  
→ **Impact on soft fruit**
- **How do we predict future climate?**
- **What will the future bring?**  
→ **Possible impacts on soft fruit**

# What is Climate?

**Weather** - the fluctuating state of the atmosphere around us

**Climate** - the average, variations and extremes of weather in a region over long periods of time (statistics)



# Stations 2009

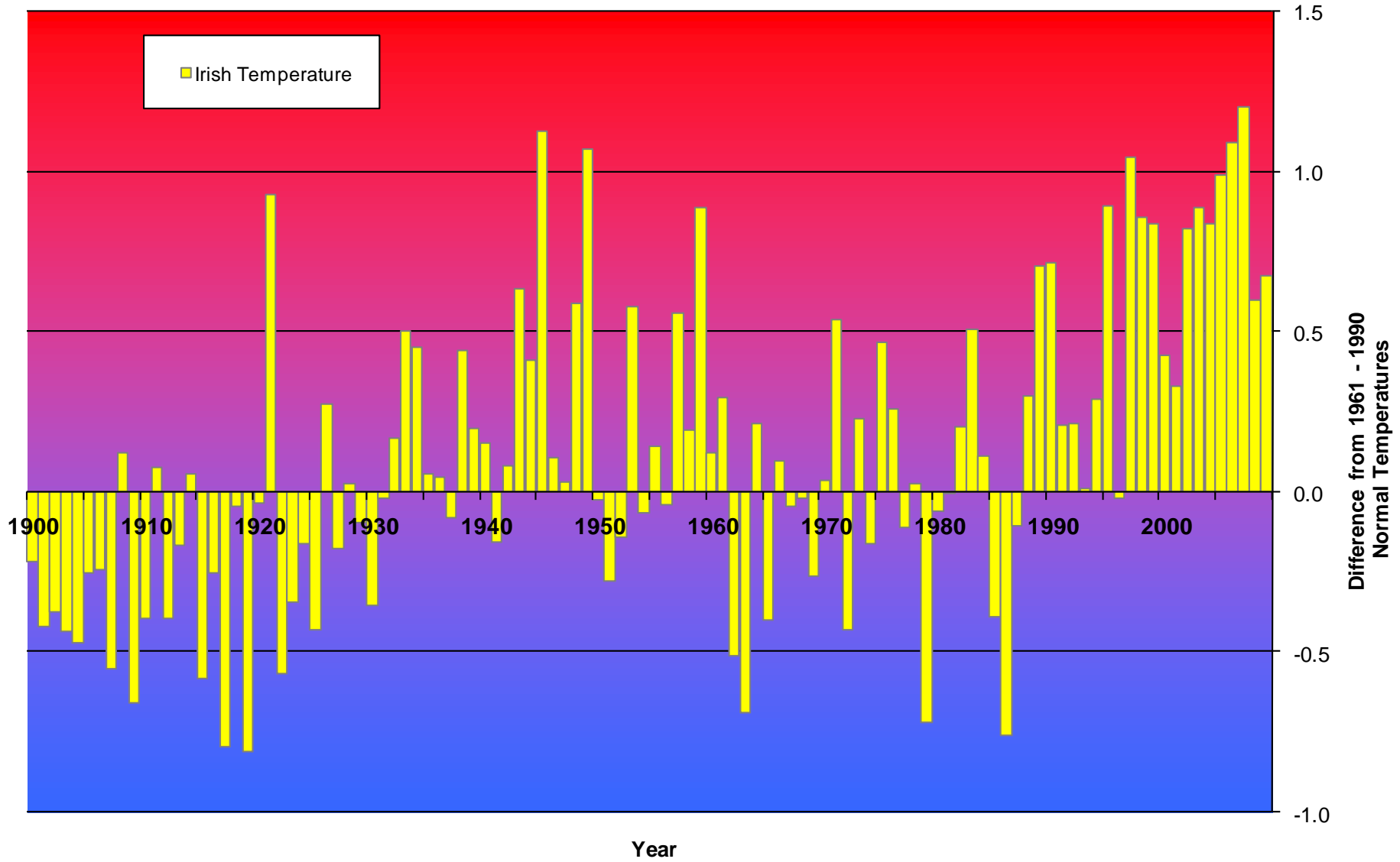


## Legend

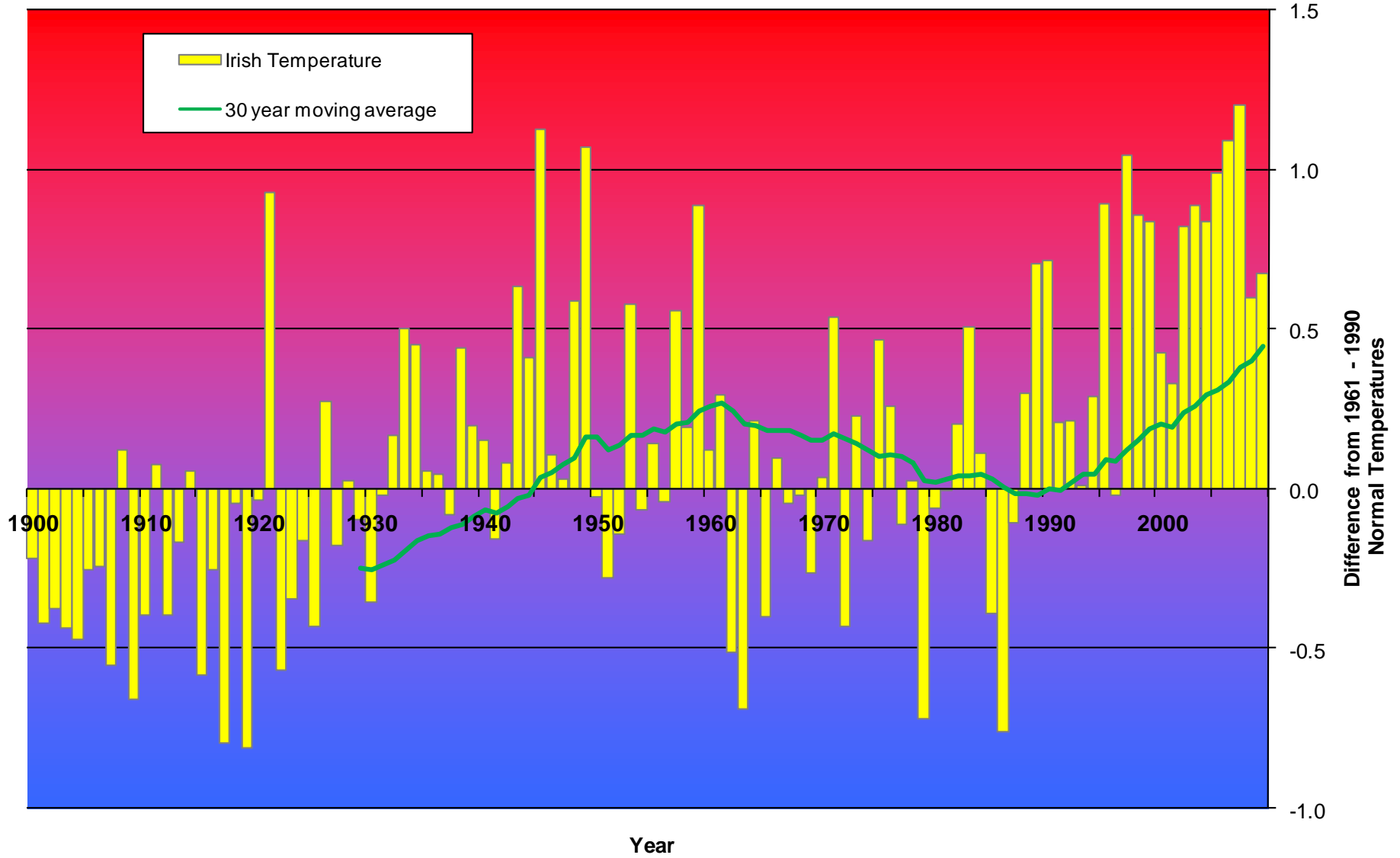
- Closed stations
- Open synoptic stations
- Open Tucson stations



1900-2009 Air Temperature Difference from 1961-1990 Normal Values

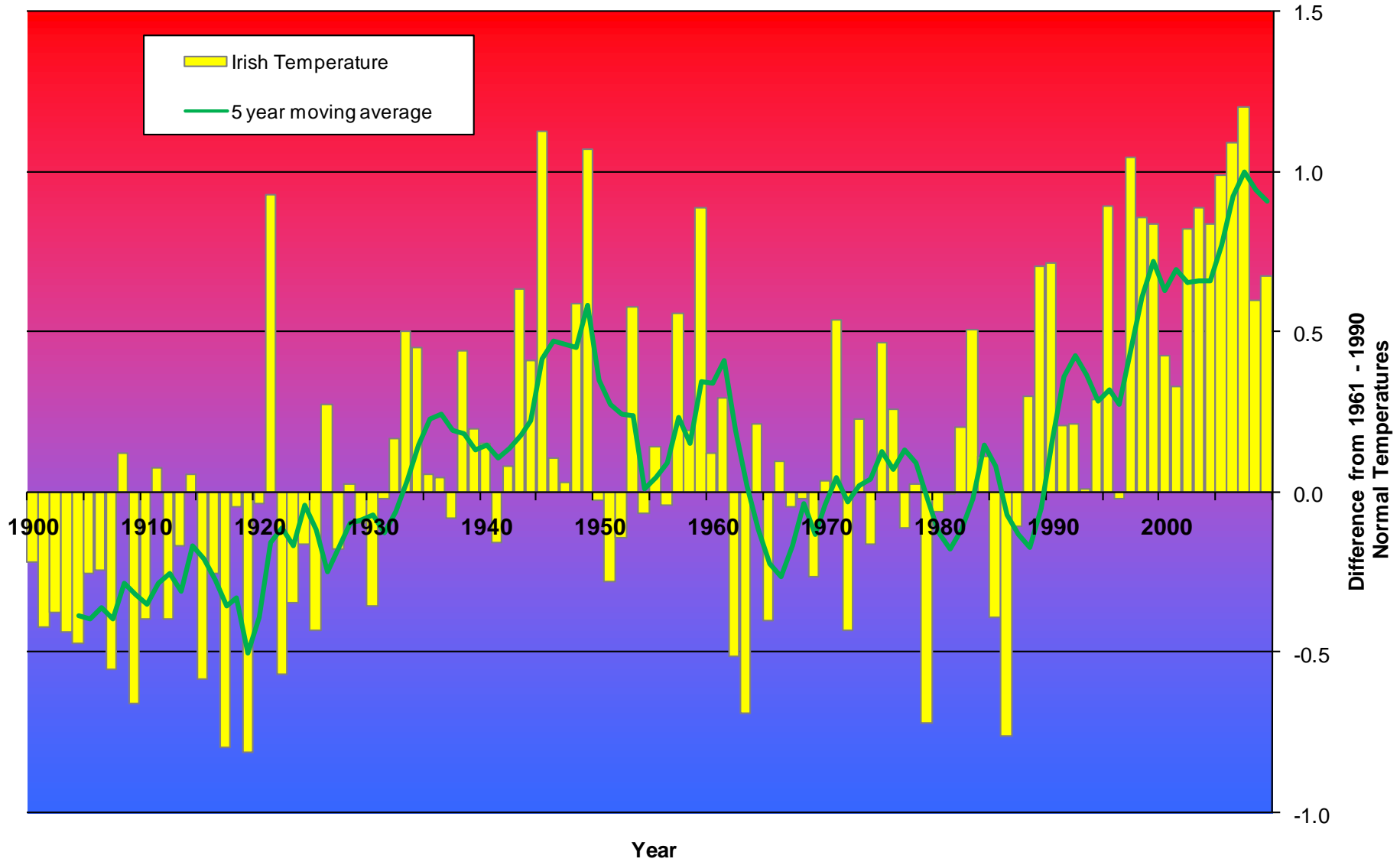


# 1900-2009 Air Temperature Difference from 1961-1990 Normal Values

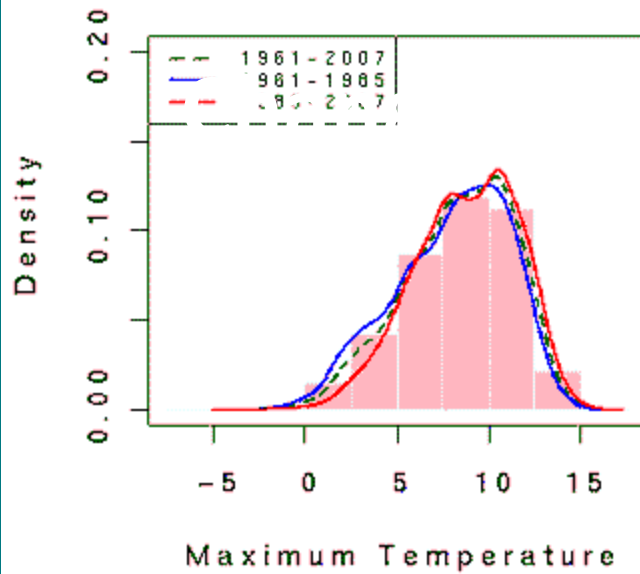




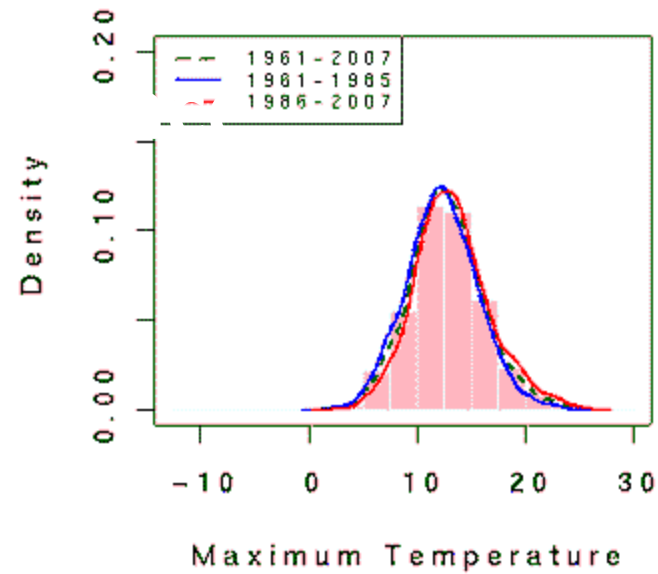
# 1900-2009 Air Temperature Difference from 1961-1990 Normal Values



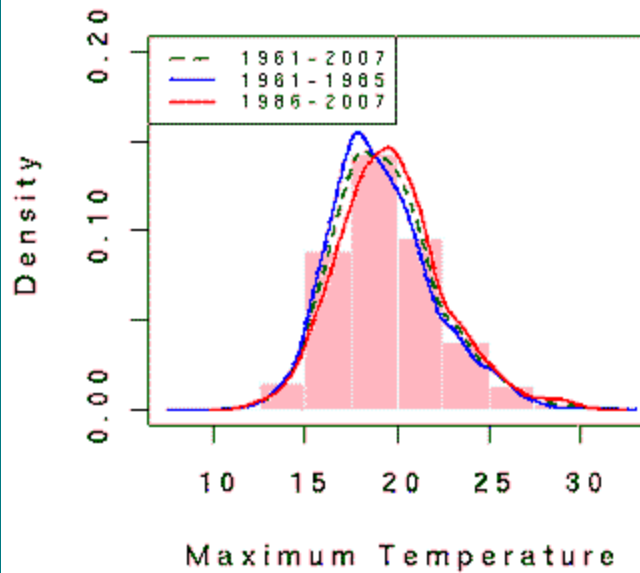
### Kilkenny Winter



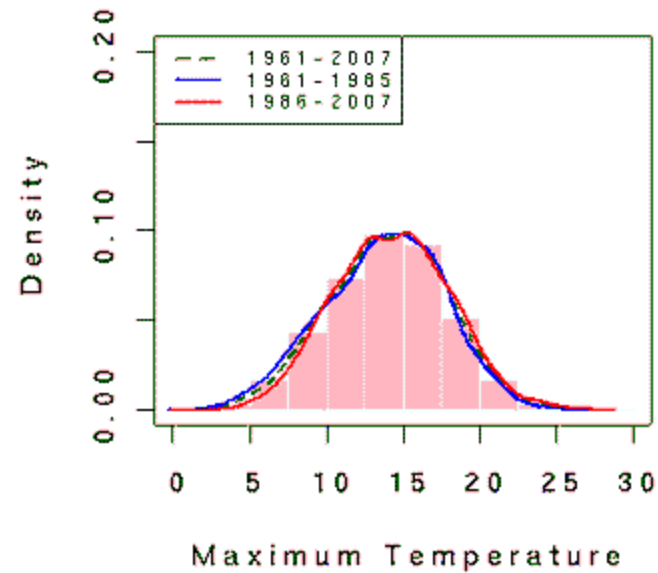
### Kilkenny Spring



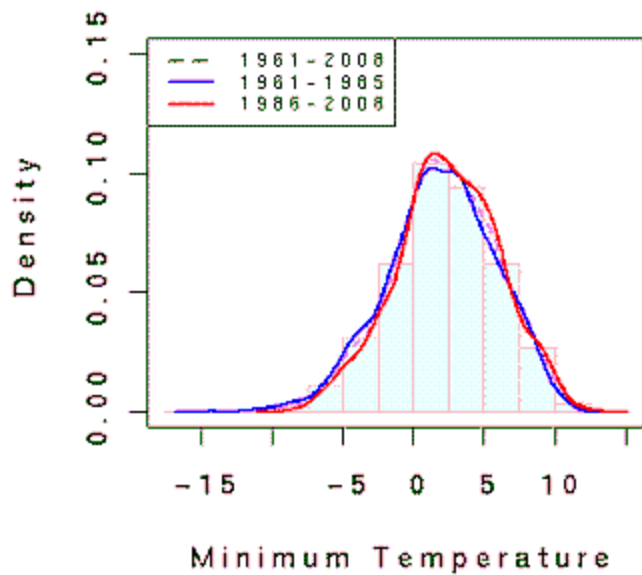
### Kilkenny Summer



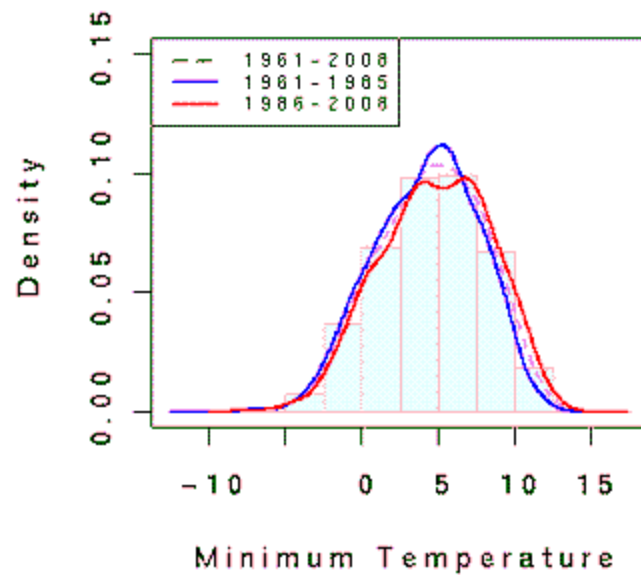
### Kilkenny Autumn



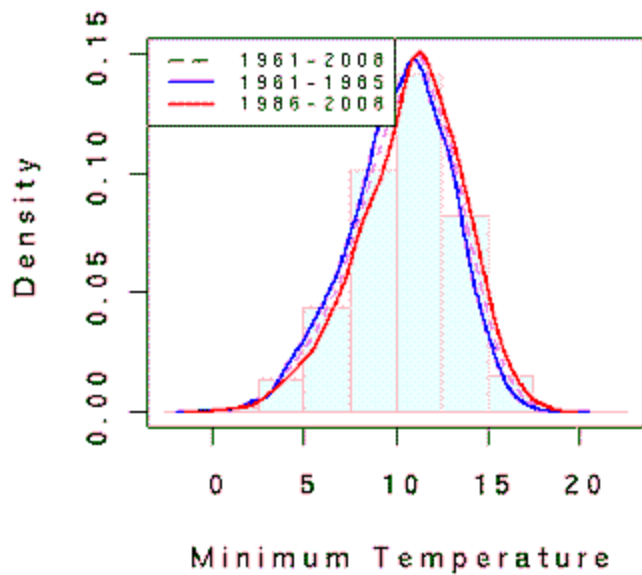
### BirrWinter



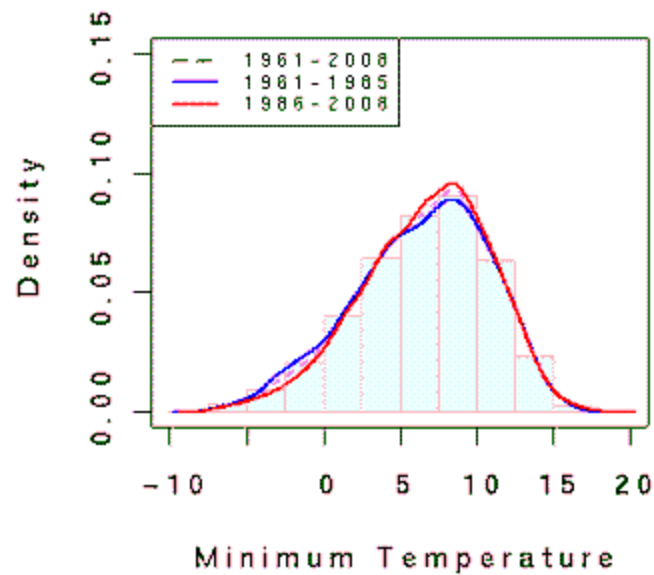
### BirrSpring



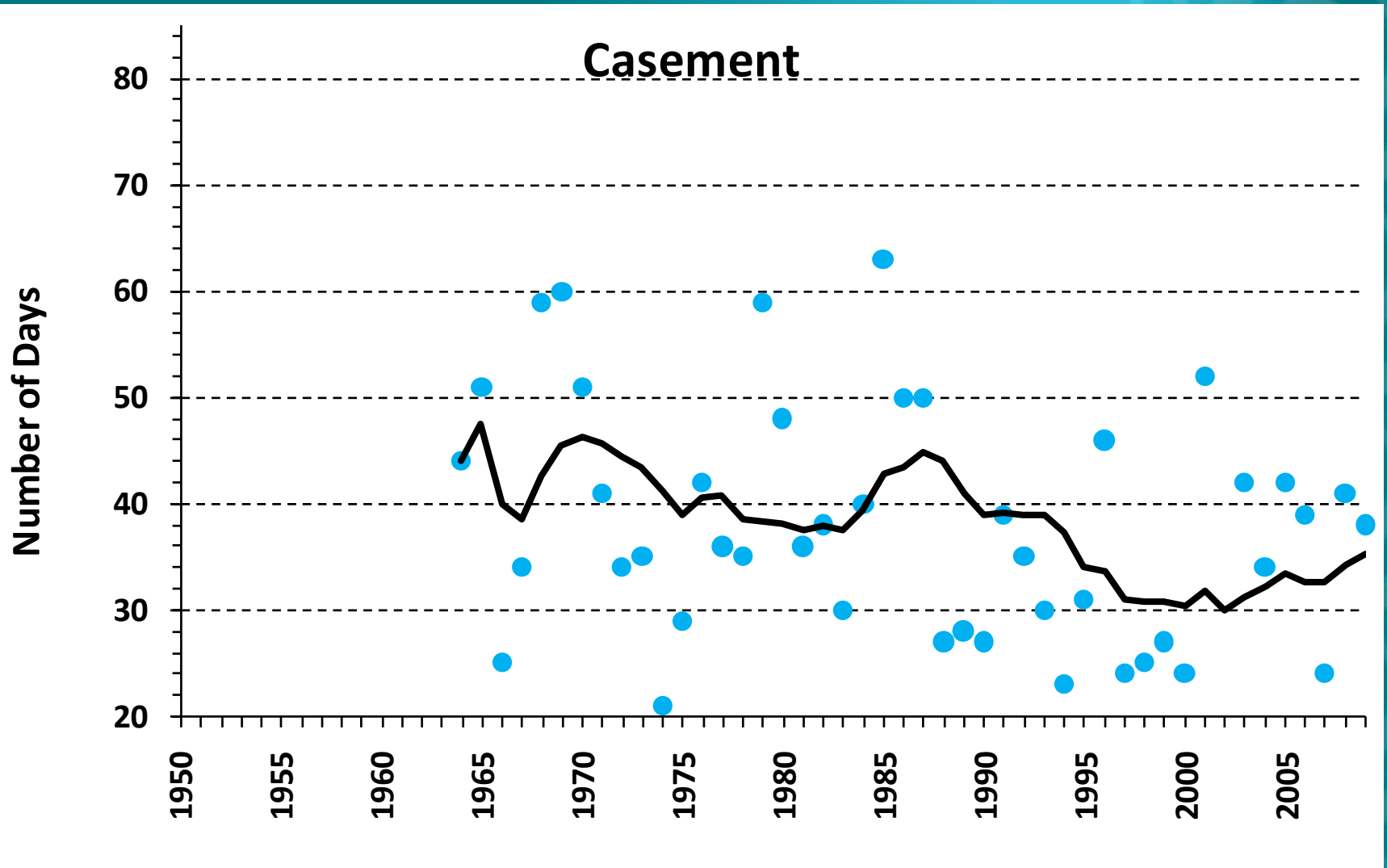
### BirrSummer



### BirrAutumn

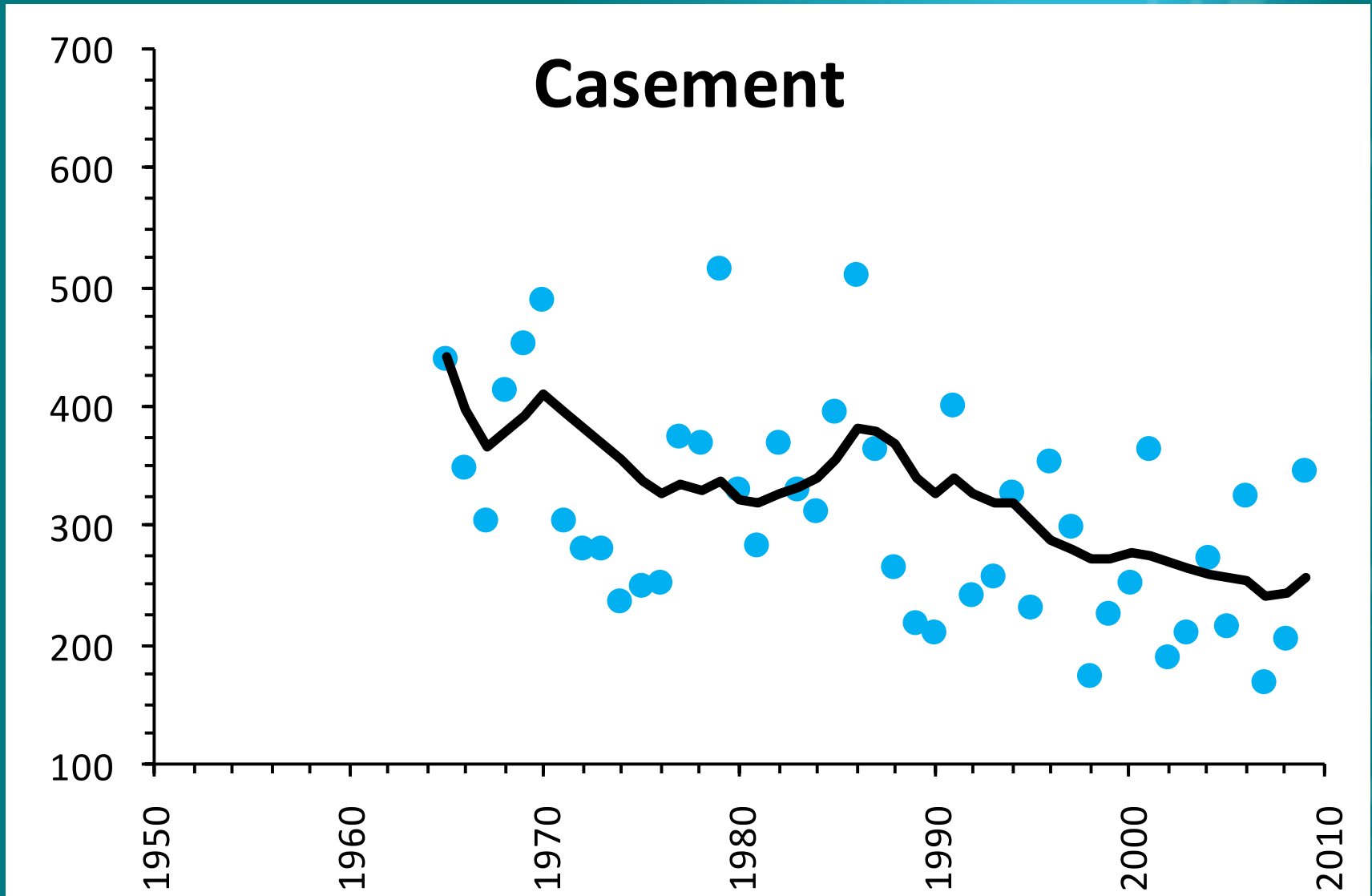


# Frost Occurrence



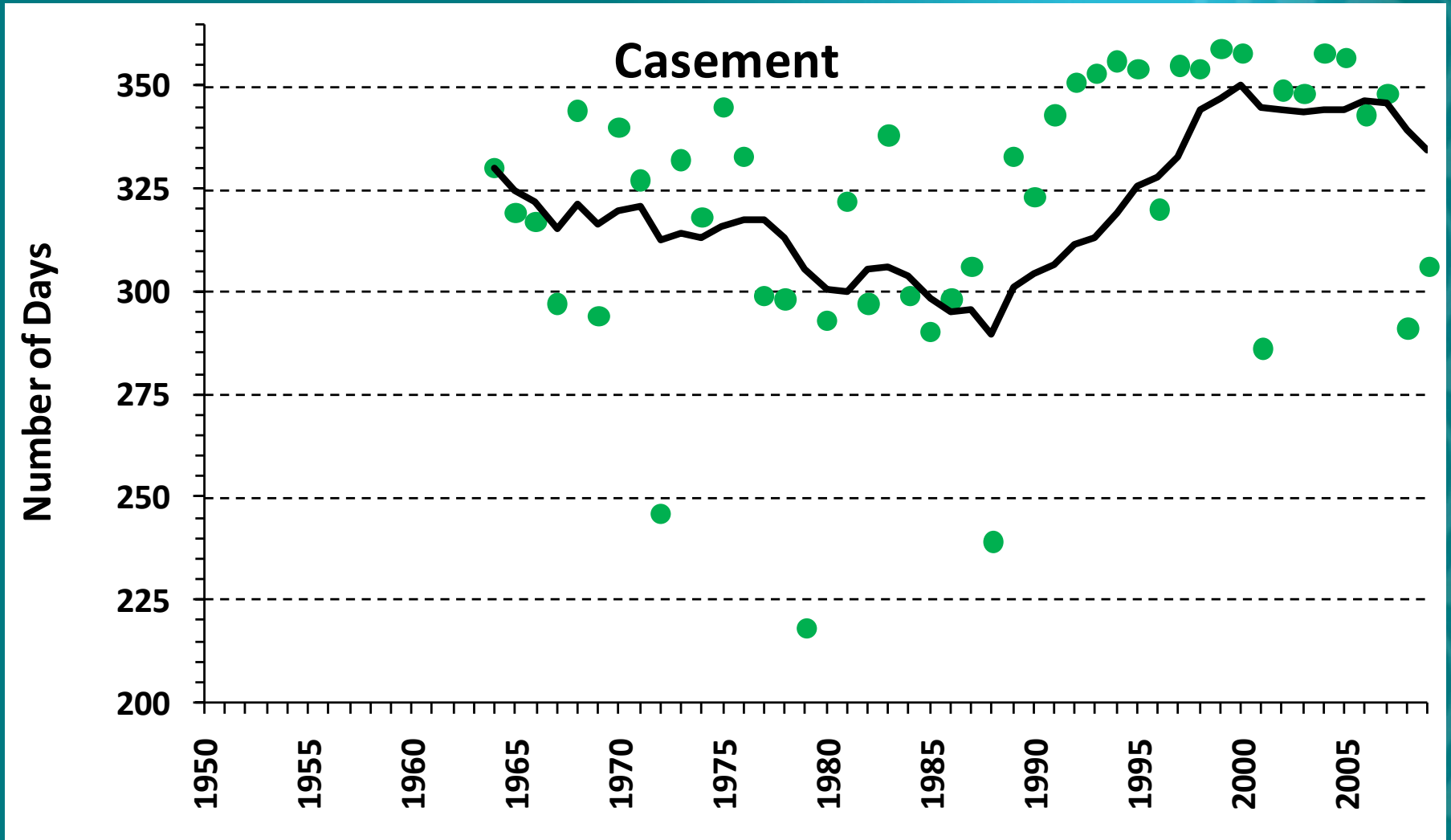
# Cold Units

The Irish Meteorological Service

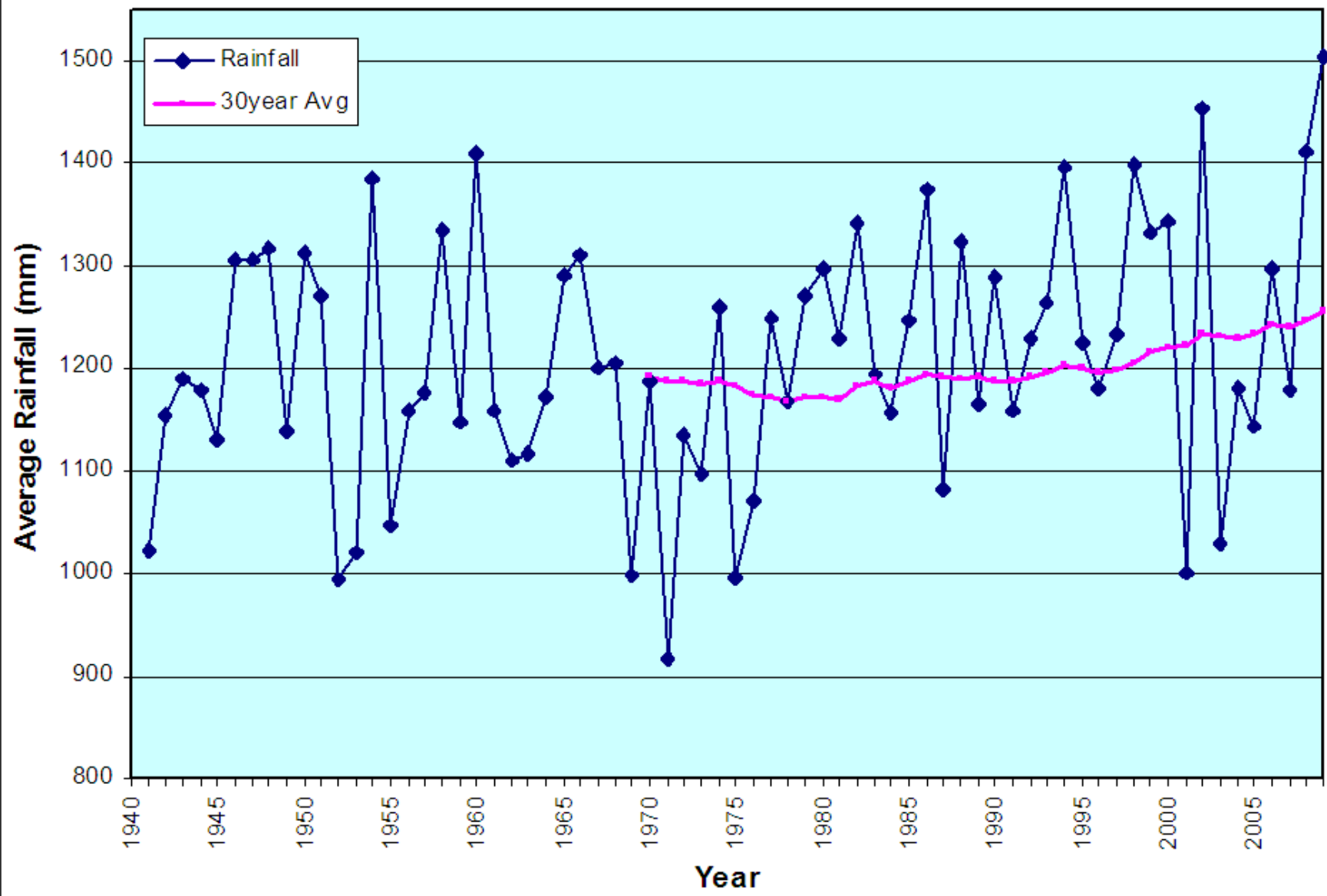


# Growing Season Length

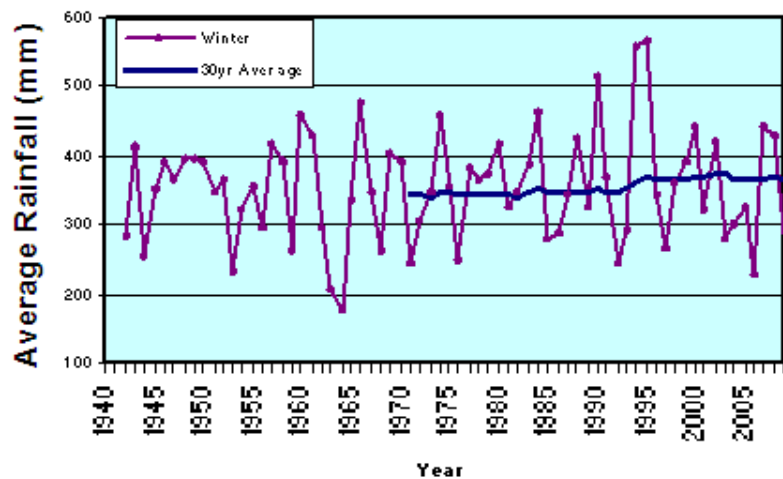
The Irish Meteorological Service



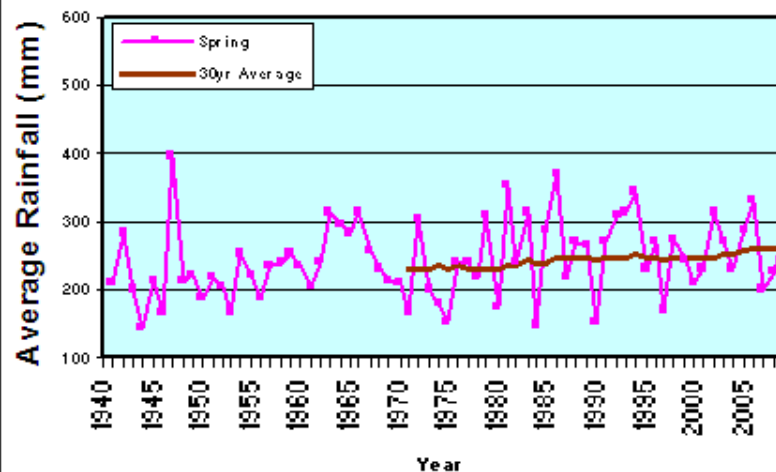
National Average Rainfall 1941-2009  
30 year average



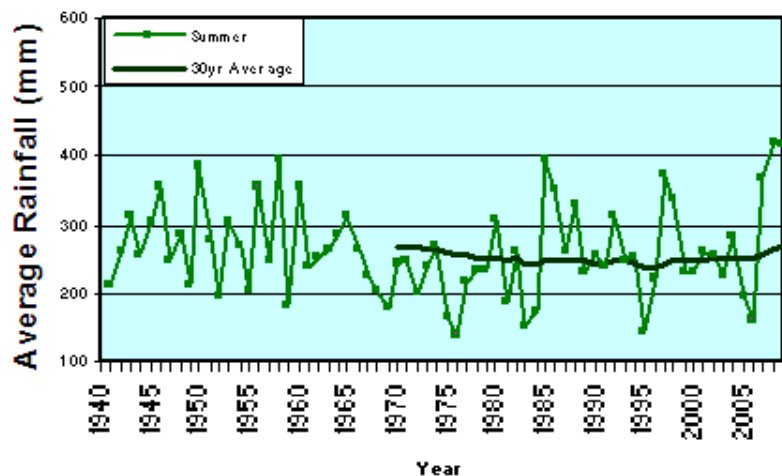
### National Average Rainfall Winter 1941-2009



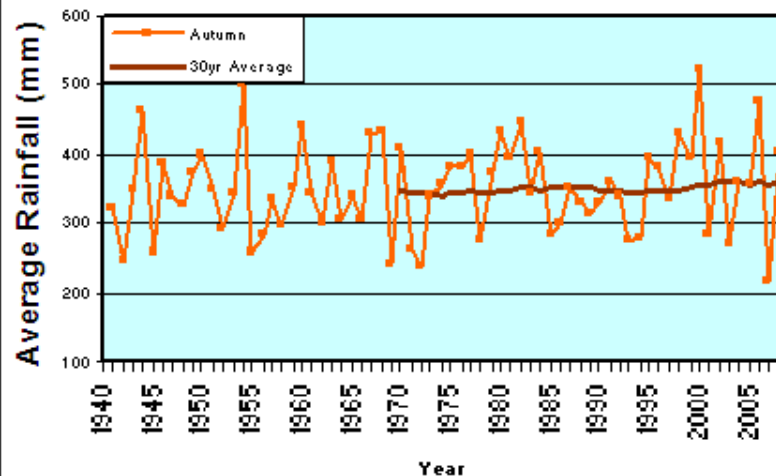
### National Average Spring Rainfall 1941-2009



### National Average Summer Rainfall 1941-2009



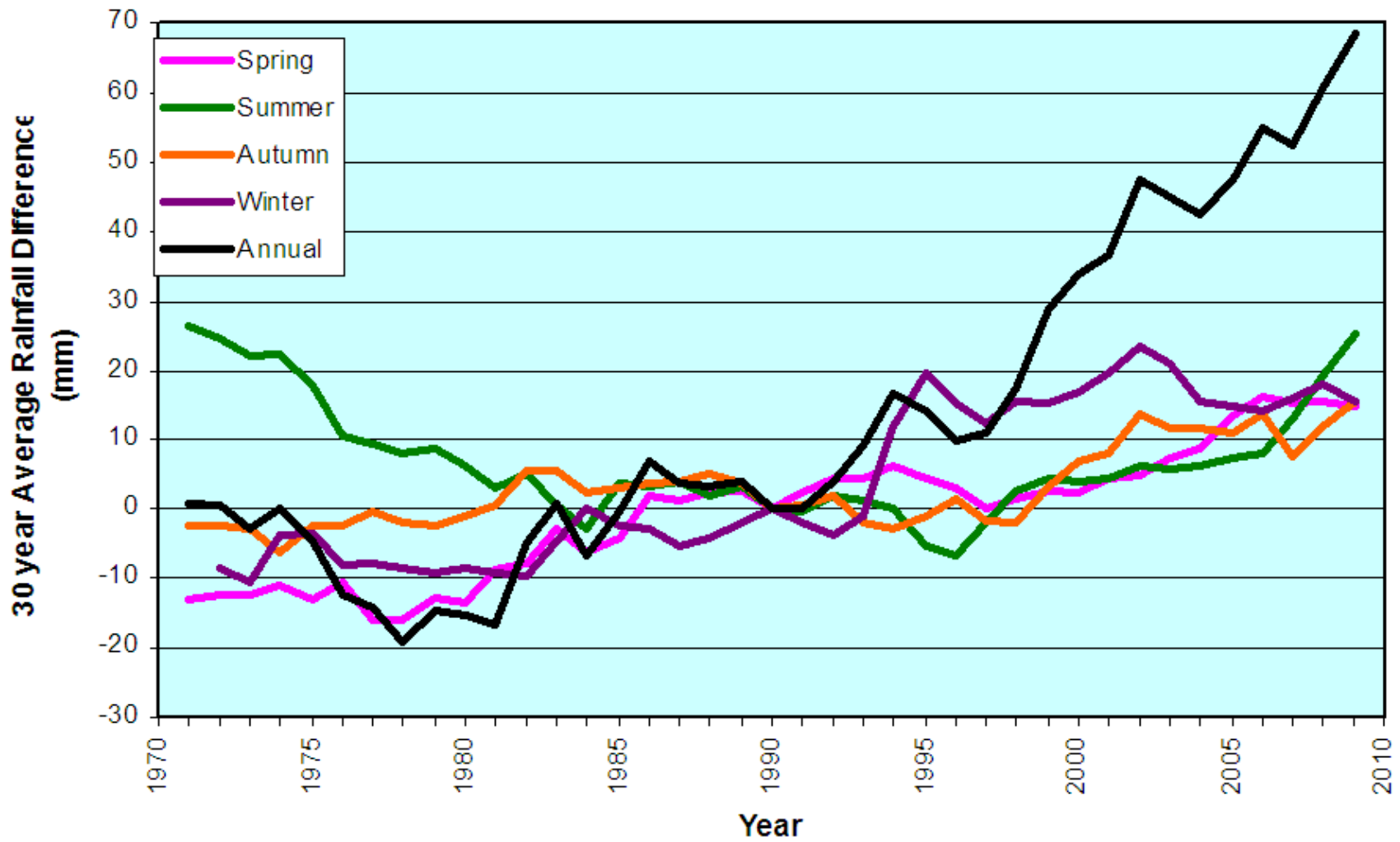
### National Average Autumn Rainfall 1941-2009



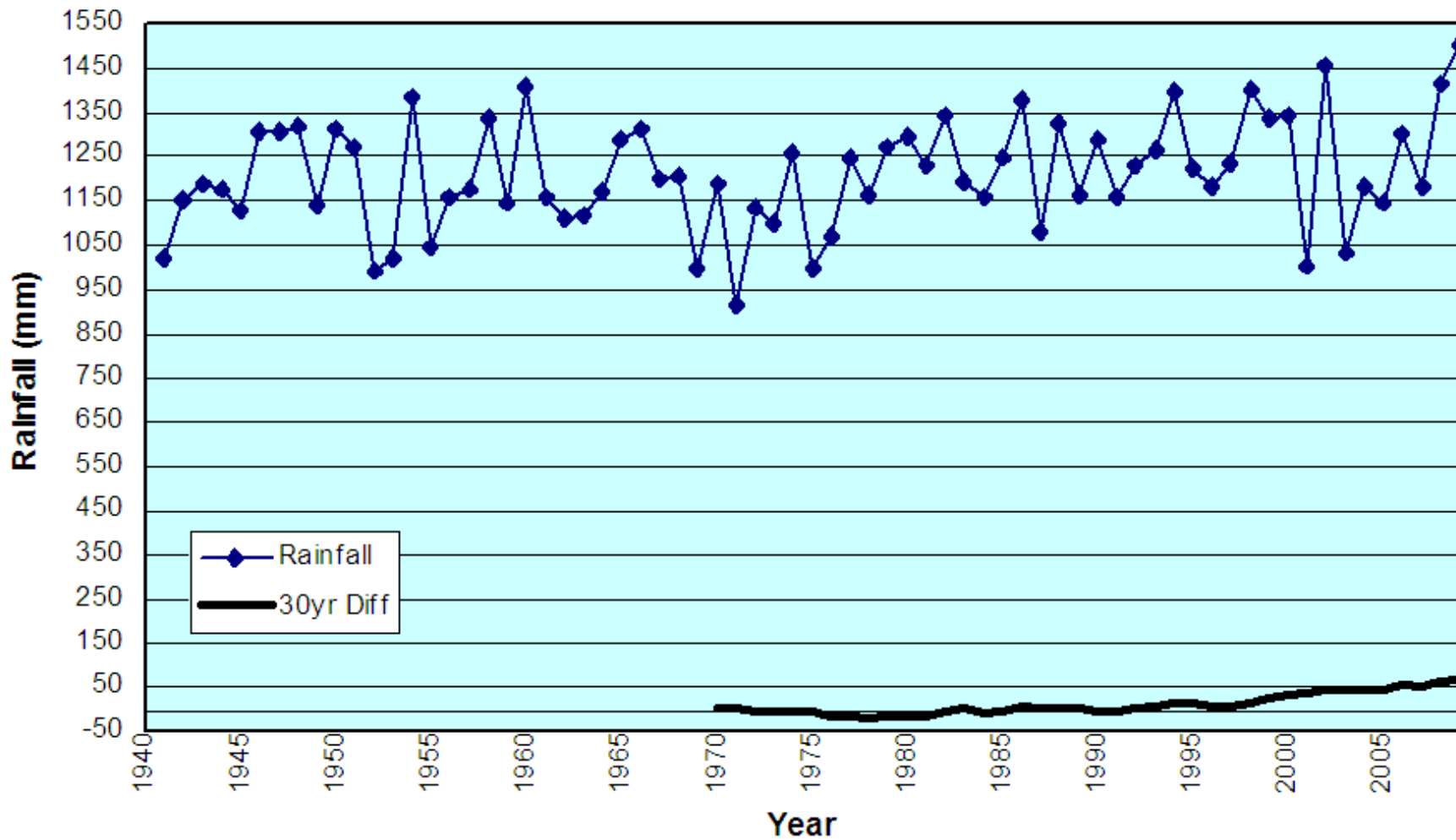




### National Average Rainfall 1941-2009 30 Year moving Averages, Difference from 1961-1990 Normal

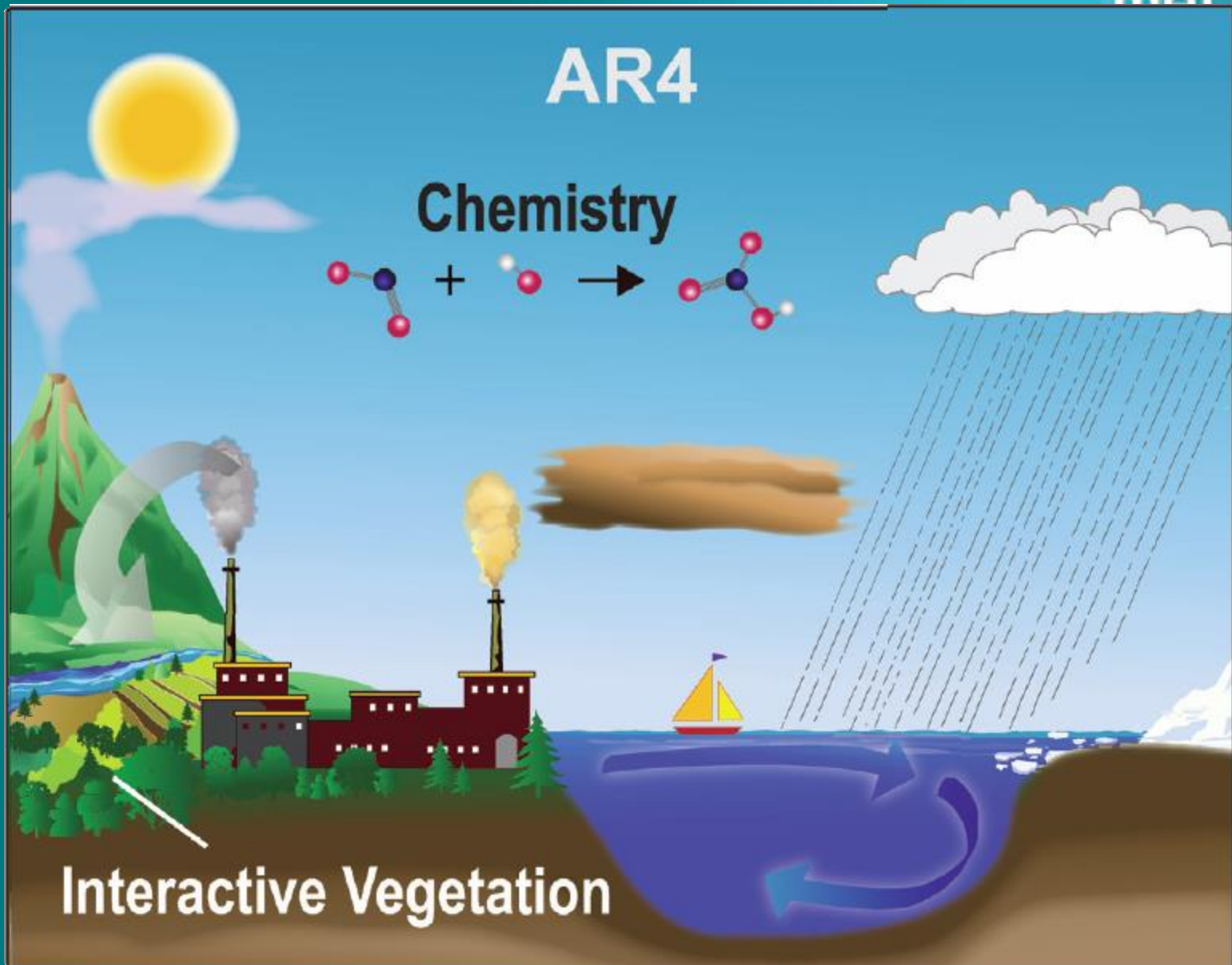


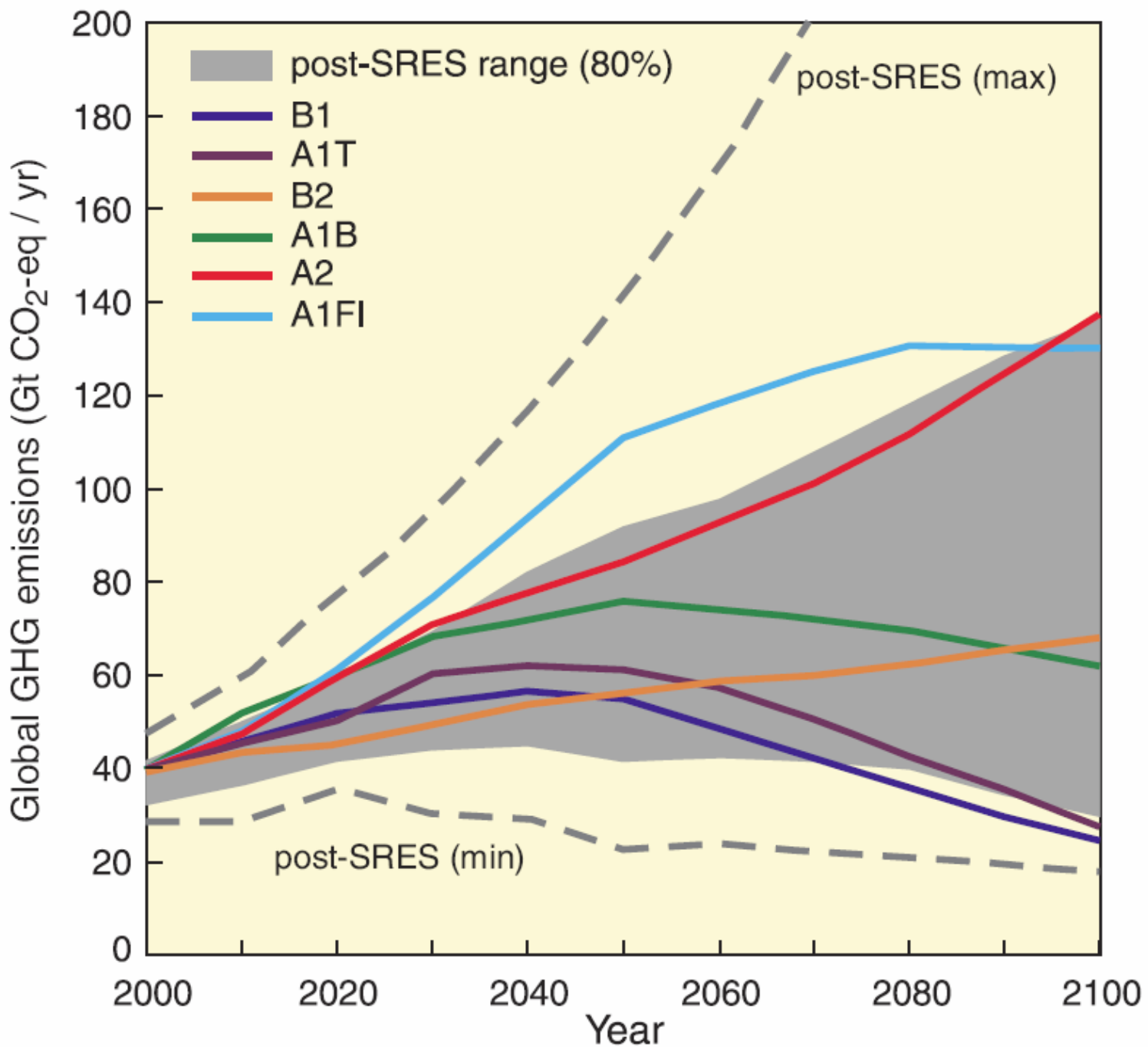
National Average Rainfall 1941-2009

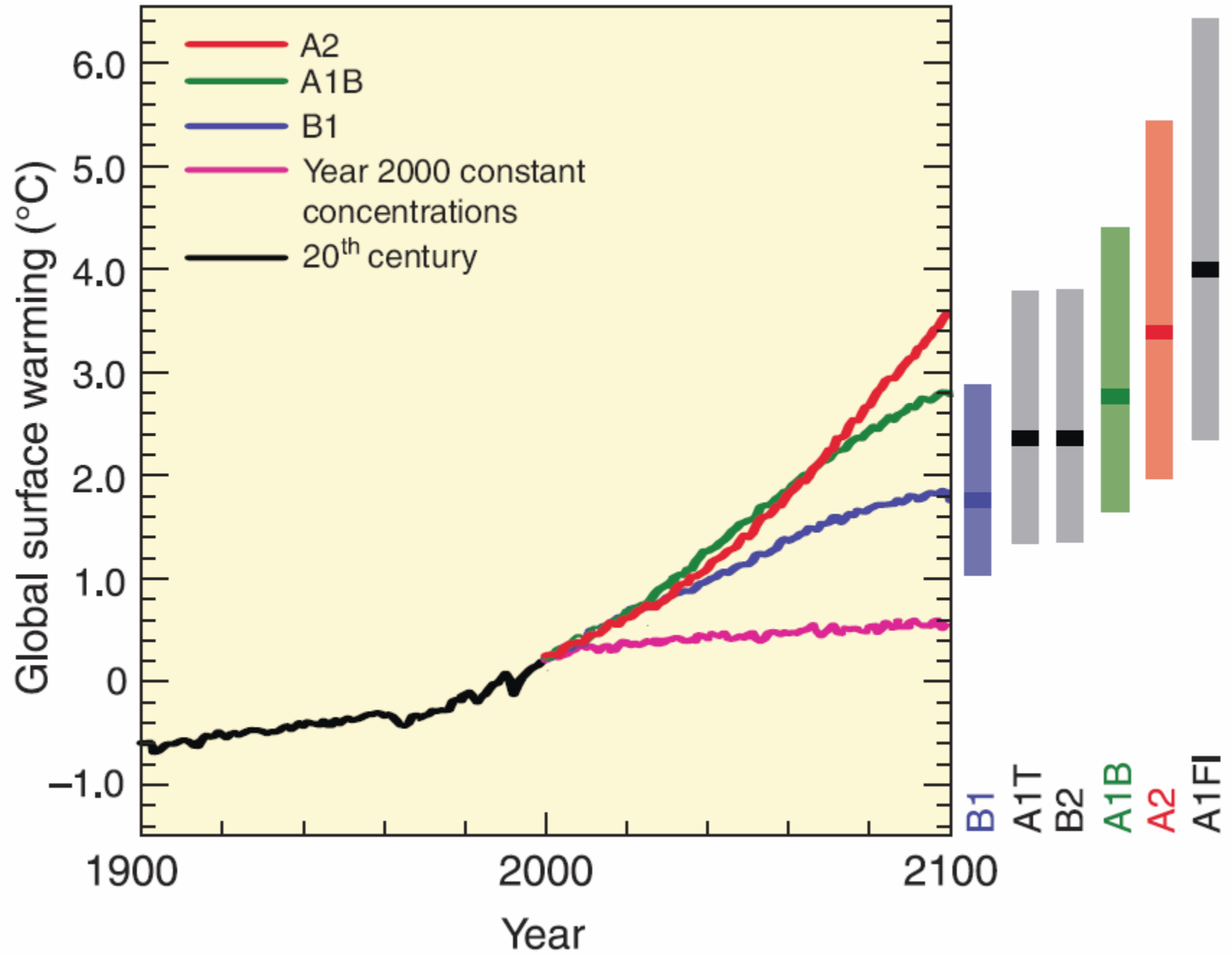


# Future Changes ?

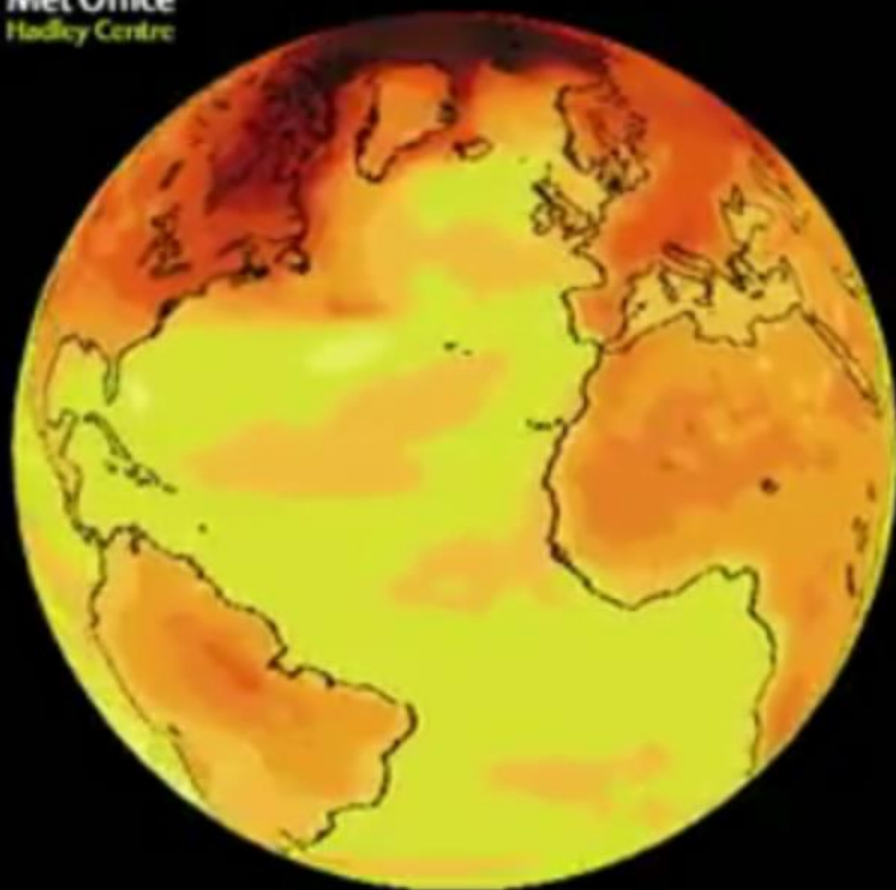
- **Assess factors forcing climate**
- **Model the impact of these factors on climate**





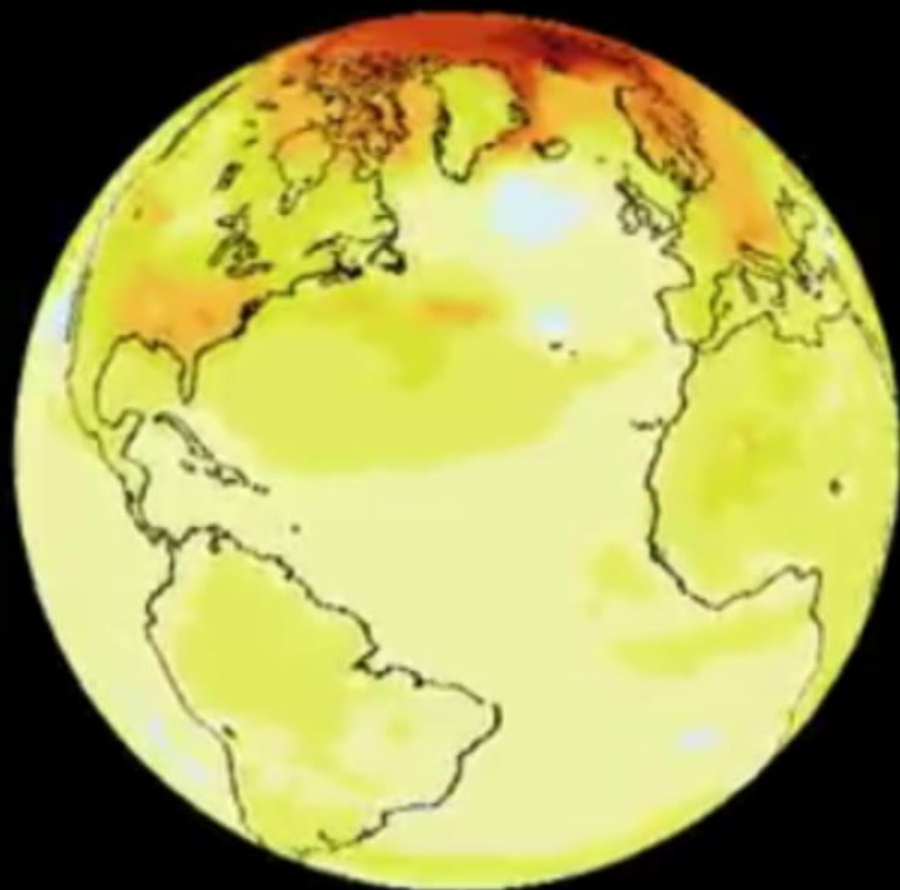


## Temperature rise relative to pre-industrial levels (°C)



4.4°C global average temperature rise

Increasing emissions (A1B)



2.1°C global average temperature rise

Decreasing emissions (E1)

2099



# Projections for Ireland

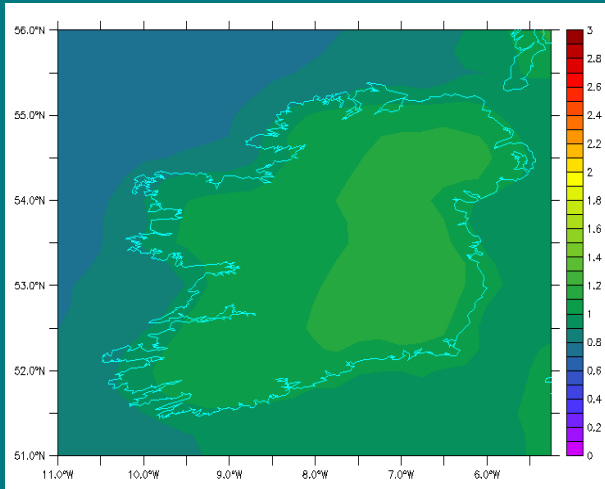
- **Focusing on local detail** - C4I
- **Assessing uncertainty** - Ensembles
- **Reducing uncertainty** - EC-Earth



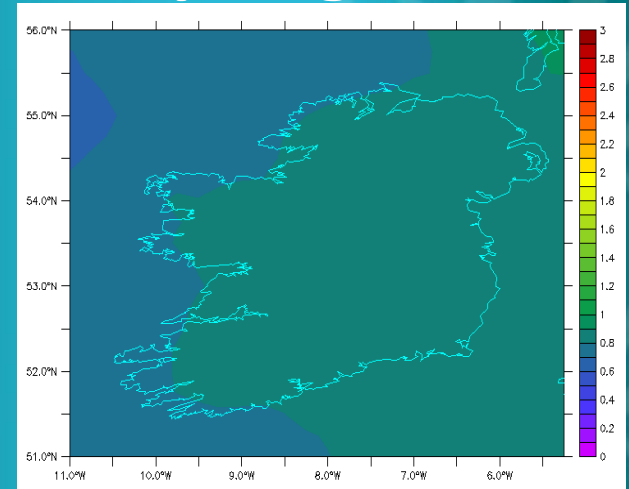
# Temperature Projections

## 2021-2050

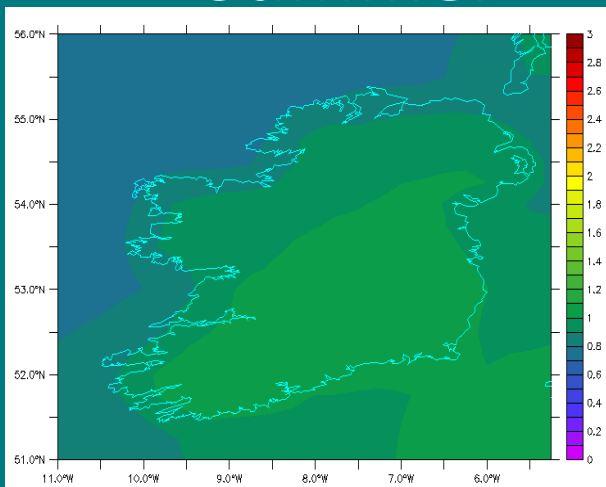
### Winter



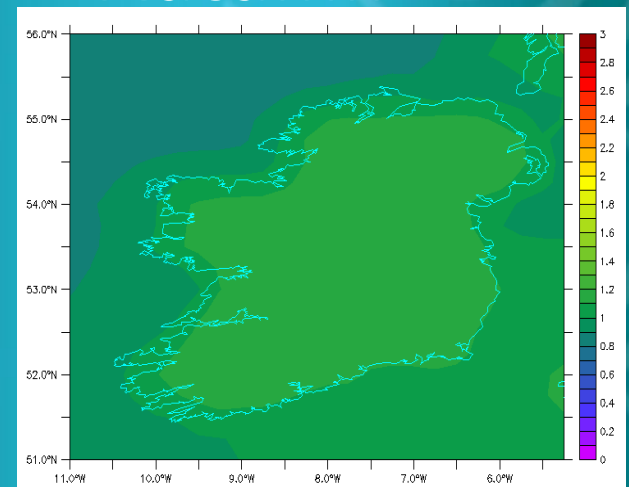
### Spring



### Summer



### Autumn

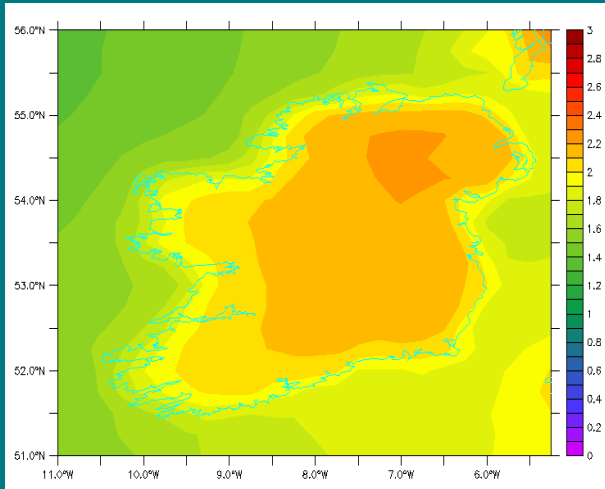


°C difference 1961-1990

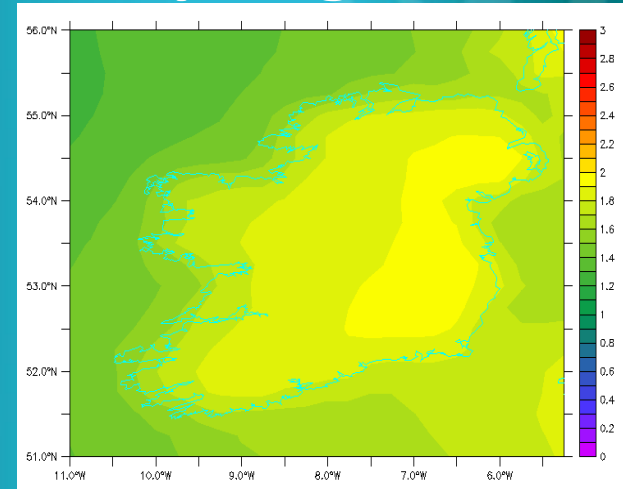
# Temperature Projections

## 2071-2100

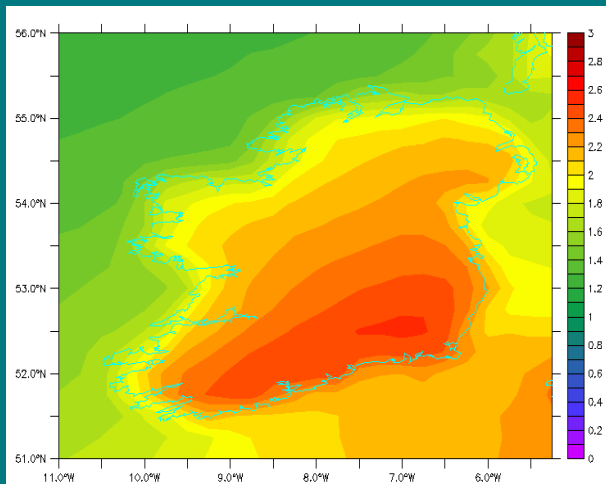
### Winter



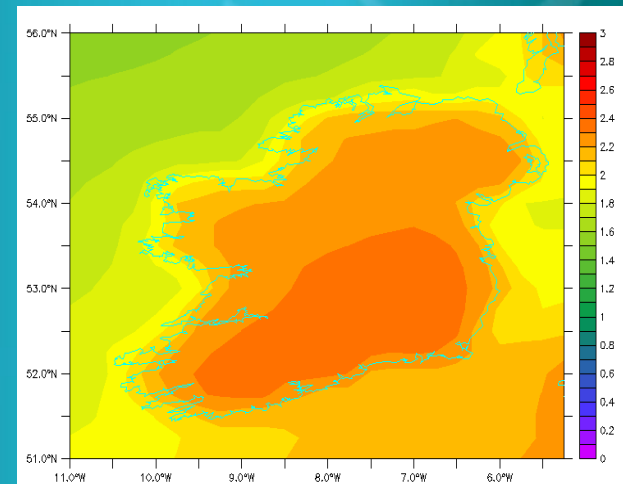
### Spring



### Summer

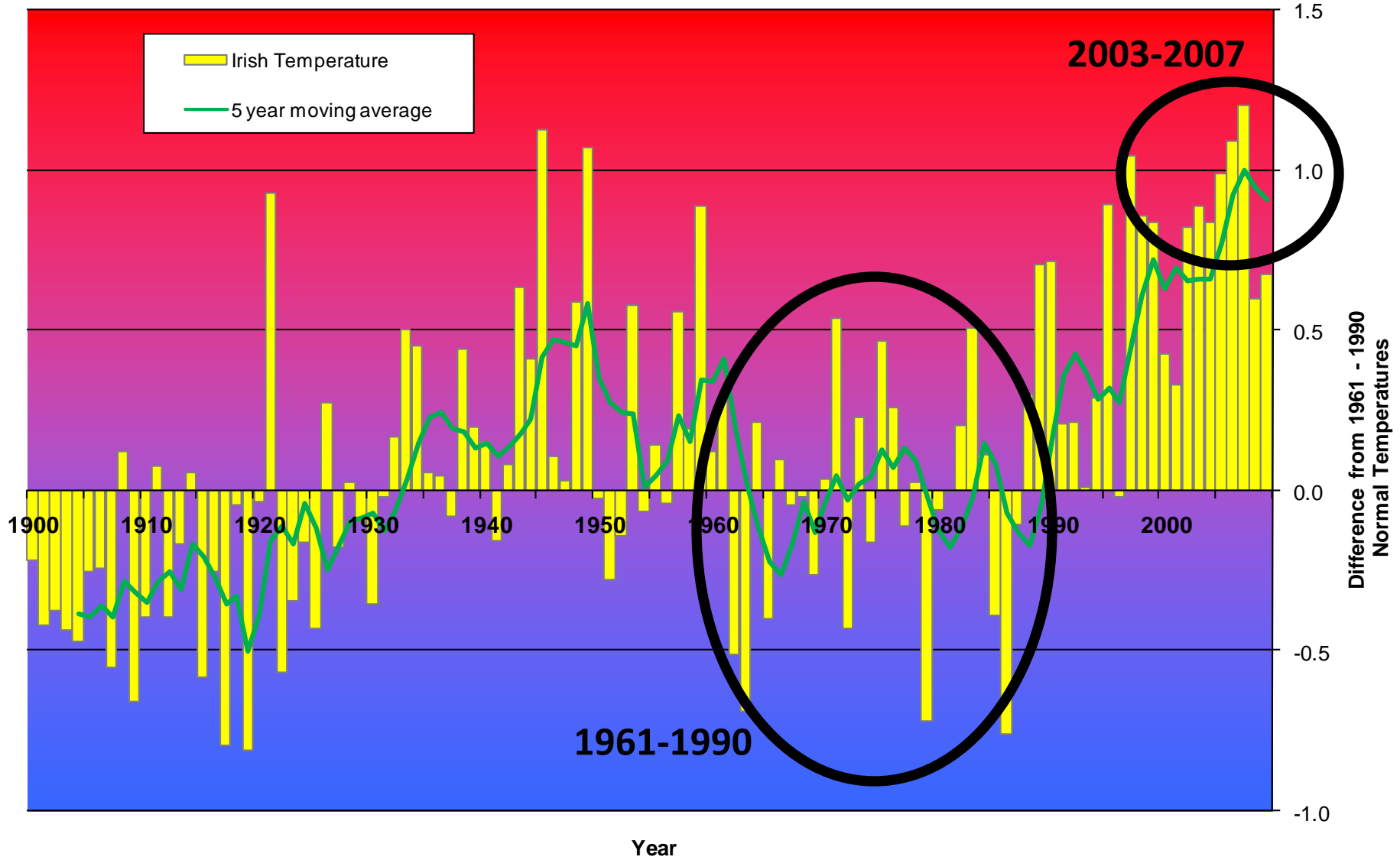


### Autumn



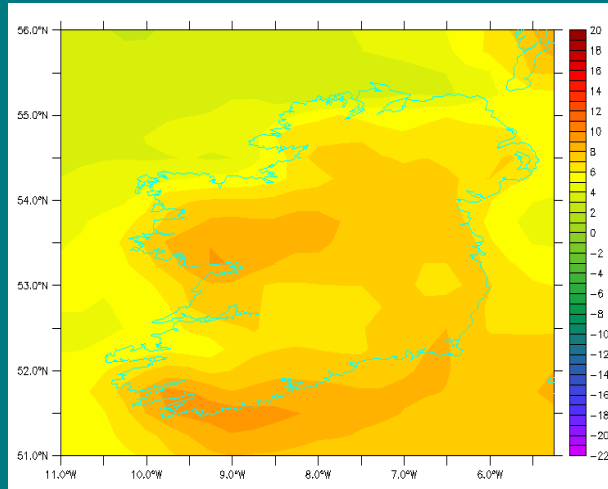
°C difference 1961-1990

# 1900-2009 Air Temperature Difference from 1961-1990 Normal Values

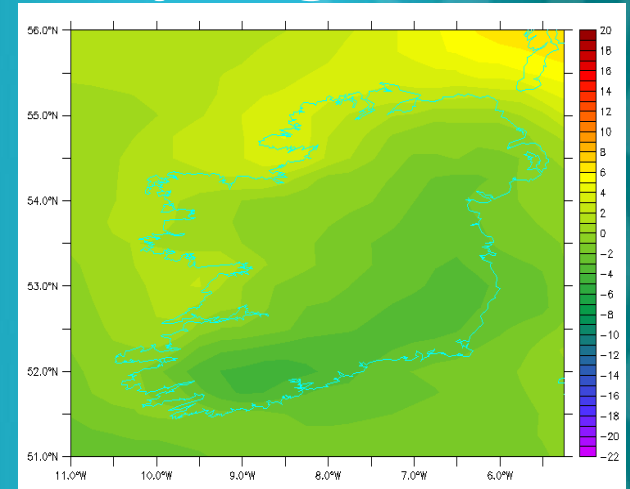


# Rainfall Projections 2021-2050

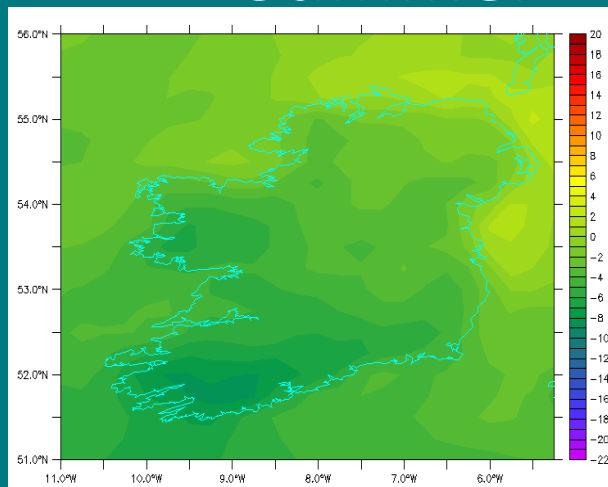
## Winter



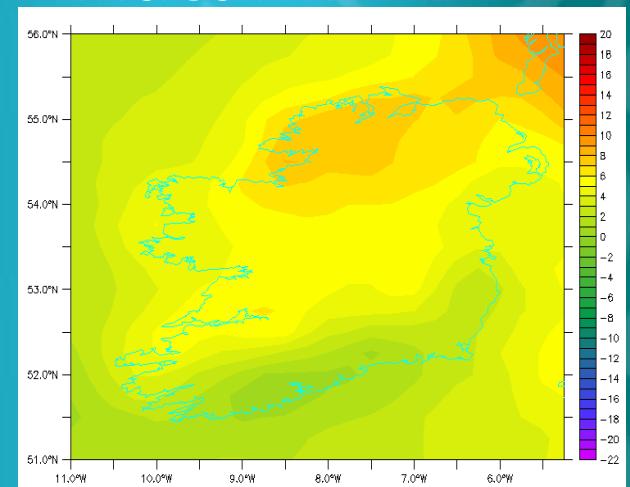
## Spring



## Summer



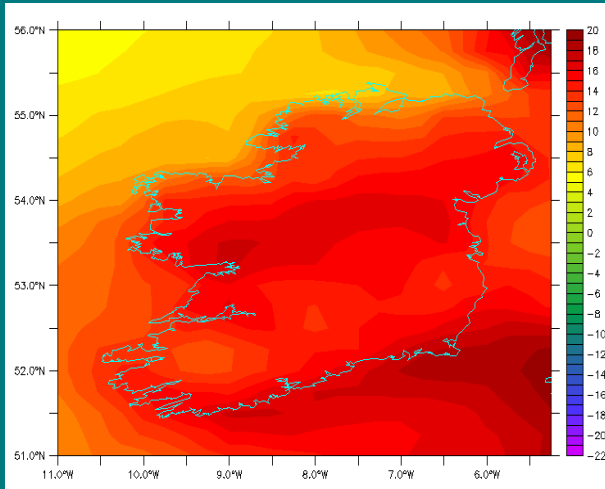
## Autumn



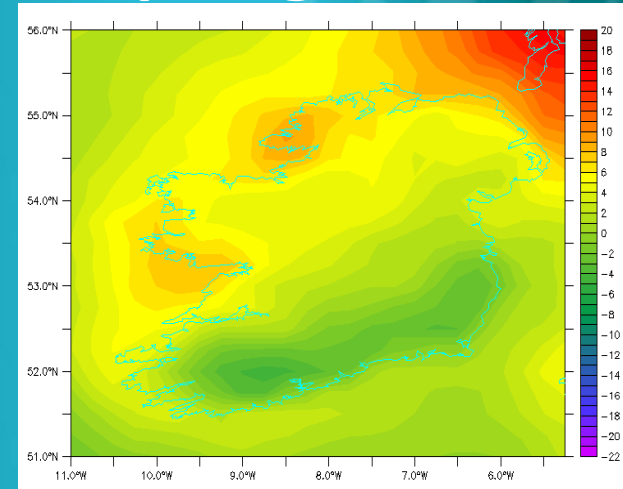
% difference to 1961-1990

# Rainfall Projections 2071-2100

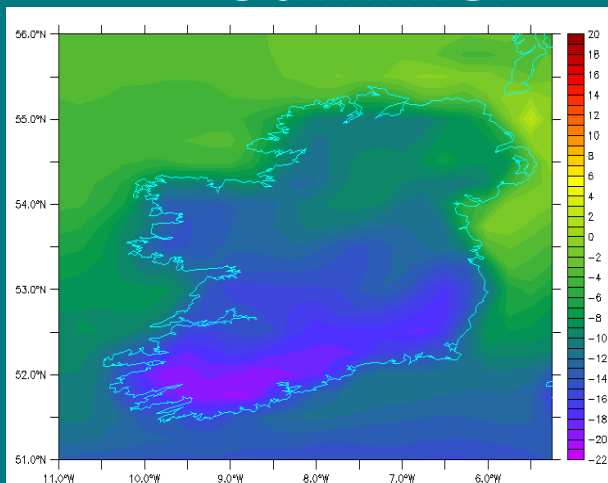
## Winter



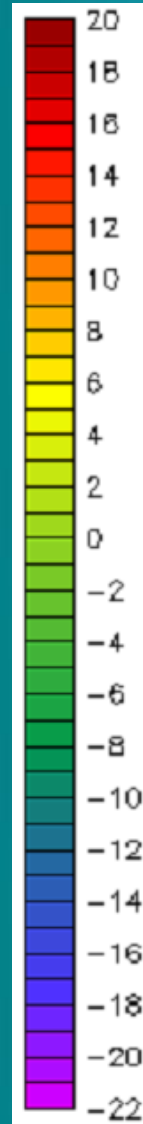
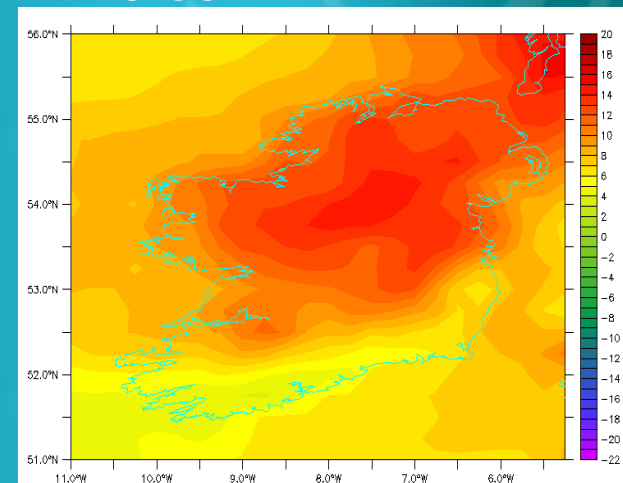
## Spring



## Summer



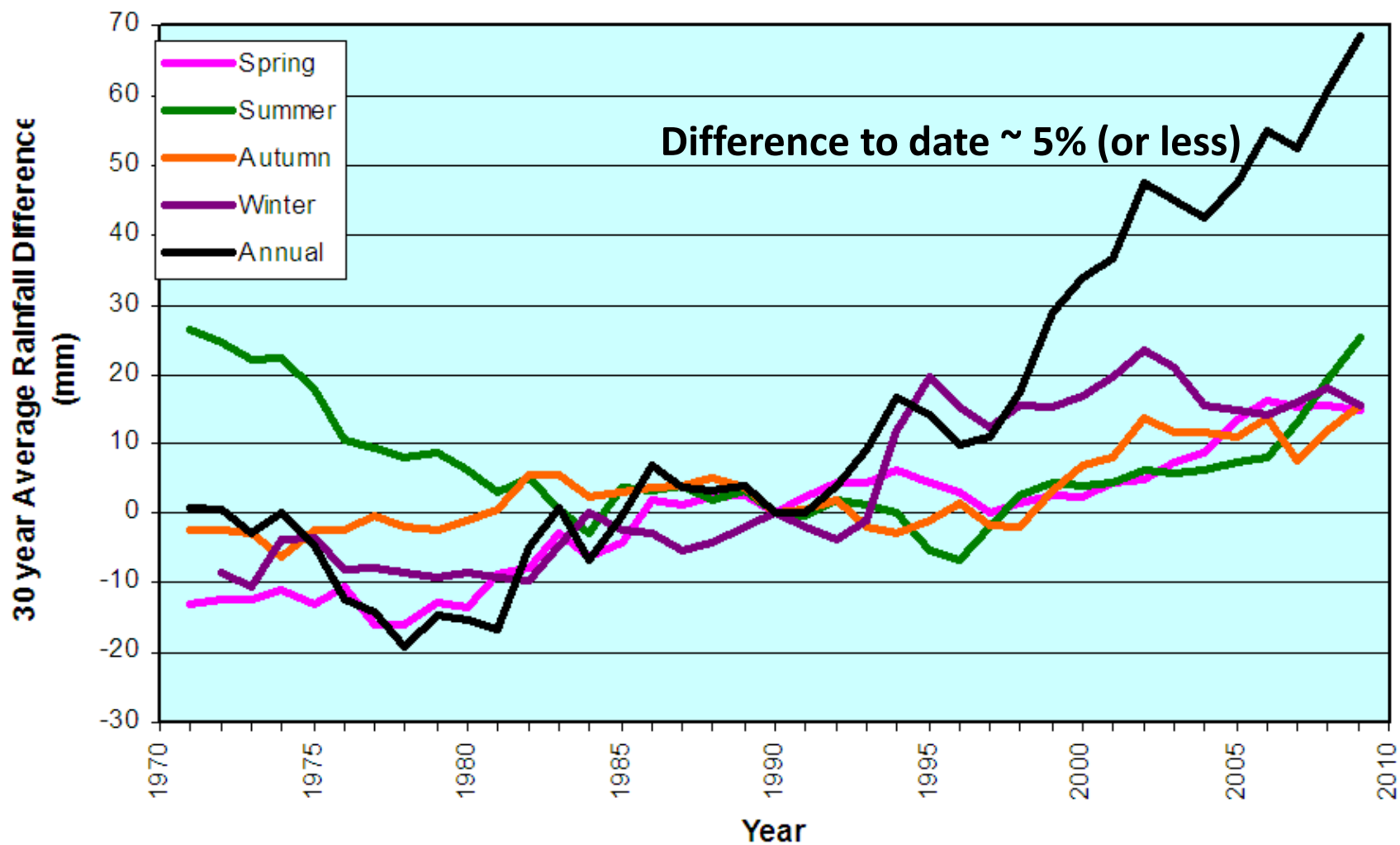
## Autumn



% difference to 1961-1990

# National Average Rainfall 1941-2009

## 30 Year moving Averages, Difference from 1961-1990 Normal



# Summary

- **Ireland's climate has become milder**
- **Weather variability continues to be a feature of our climate**
- **Climate projections**
  - **further warming (high certainty)**
  - **changes in rainfall (lower certainty)**
  - **continued variability**