



**The link between extreme weather and climate change.
Does climate change mean football's not coming home?**

The last comprehensive survey of grassroots football (Sports and Recreation Alliance (2014) Alliance Survey referenced in [Rapid Transition Alliance: Playing against the clock \(2020\)](#)) revealed that on average, around a third of grassroots pitches are already losing six weeks to two months of the year from flooding due to severe weather.

A number of Met Office [attribution](#) studies have shown that some heavy rainfall events in the UK in recent years associated with flooding can be attributed to human-caused climate change. Events such as the wettest February on record in 2020 or the record-breaking rainfall seen on 3 October 2020, are expected to become more frequent by 2100 due to climate change.

Future climate change is projected to bring about a change in the intensity and seasonality of extreme weather, with more heavy rainfall occurring in the autumn. A recent study ([Rapid Transition Alliance \(Playing against the clock \(2020\)\)](#)), reported that by 2050, a quarter of UK football grounds will be flooded. This poses the question as to what fans and clubs can do to reduce the exposure and vulnerability of their club to future severe weather.

Impacts of heavy rainfall/flooding on football grounds/pitches

The impact of severe weather at football grounds and pitches is dependent on the level of exposure and vulnerability to heavy rainfall. The changing hazard (rainfall) is fairly uniform across the UK, but vulnerability differs depending on the local factors, including the influence of local topography. Football clubs are likely to have some awareness of why their football pitches flood i.e. whether this is from pluvial flooding (heavy rainfall) or fluvial flooding (from rivers). Urban areas are more vulnerable to pluvial flooding (from heavy rain).

Scientific evidence of an increased risk

Climate trends provide evidence of an increase in wet weather in the UK. Examples from the Met Office's 2020 UK State of the Climate report include:

- Six of the ten wettest years in the UK since 1862 have occurred since 1998.
- 2020 was the UK's fifth wettest year in a series from 1862.
- The most recent decade (2011–2020) has been on average 4% wetter than 1981–2010 and 9% wetter than 1961–1990 for the UK overall.
- February 2020 was the UK's wettest February and fourth wettest calendar month on record in a series from 1862.
- 2020 also included the fifth wettest winter on record in a series from 1862.
- 3 October 2020 was one of the UK's wettest days on record in a daily series from 1891.

A number of studies have shown that some heavy rainfall events, which have led to flooding in the UK in recent years, can be attributed to human-caused climate change. These include:

- Record-breaking rainfall like that seen on 3 October 2020 could be 10 times more likely by 2100 ([Christidis et al, 2021](#)).
- Analysis of the wettest February on record for the UK (February 2020) showed that the extreme rainfall experienced is about three times more likely due to climate change. Such wet events are expected to increase by 2100 ([Davies et al 2021](#)).

The latest UK Climate Projections ([UKCP18](#)) shows an increased chance of warmer, wetter winters and hotter, drier summers along with an increase in the frequency and intensity of extremes. UKCP Local (2.2km) projections indicate that future climate change is projected to bring about a change in the seasonality of extremes, in particular heavy hourly rainfall intensity in the autumn. This will impact on the frequency and severity of surface water flooding (pluvial flooding) particularly in urban areas. Hourly rainfall extremes that are responsible for flash flooding are expected to increase with climate change.

References

- [Davies, P. et al \(2021\)](#) *The wet and stormy UK winter of 2019/2020*
- [Kahraman A. et al \(2021\)](#) *Quasi-Stationary Intense Rainstorms Spread Across Europe Under Climate Change*
- [Kendon E. J. et al \(2018\)](#) *When Will We Detect Changes in Short-Duration Precipitation Extremes?*
- [Kendon E. J. et al \(2021\)](#) *Update to UKCP Local (2.2km) projections*
- [Matthews T. et al \(2018\)](#) *Storm Desmond: a process-based assessment. Environmental Research Letters*