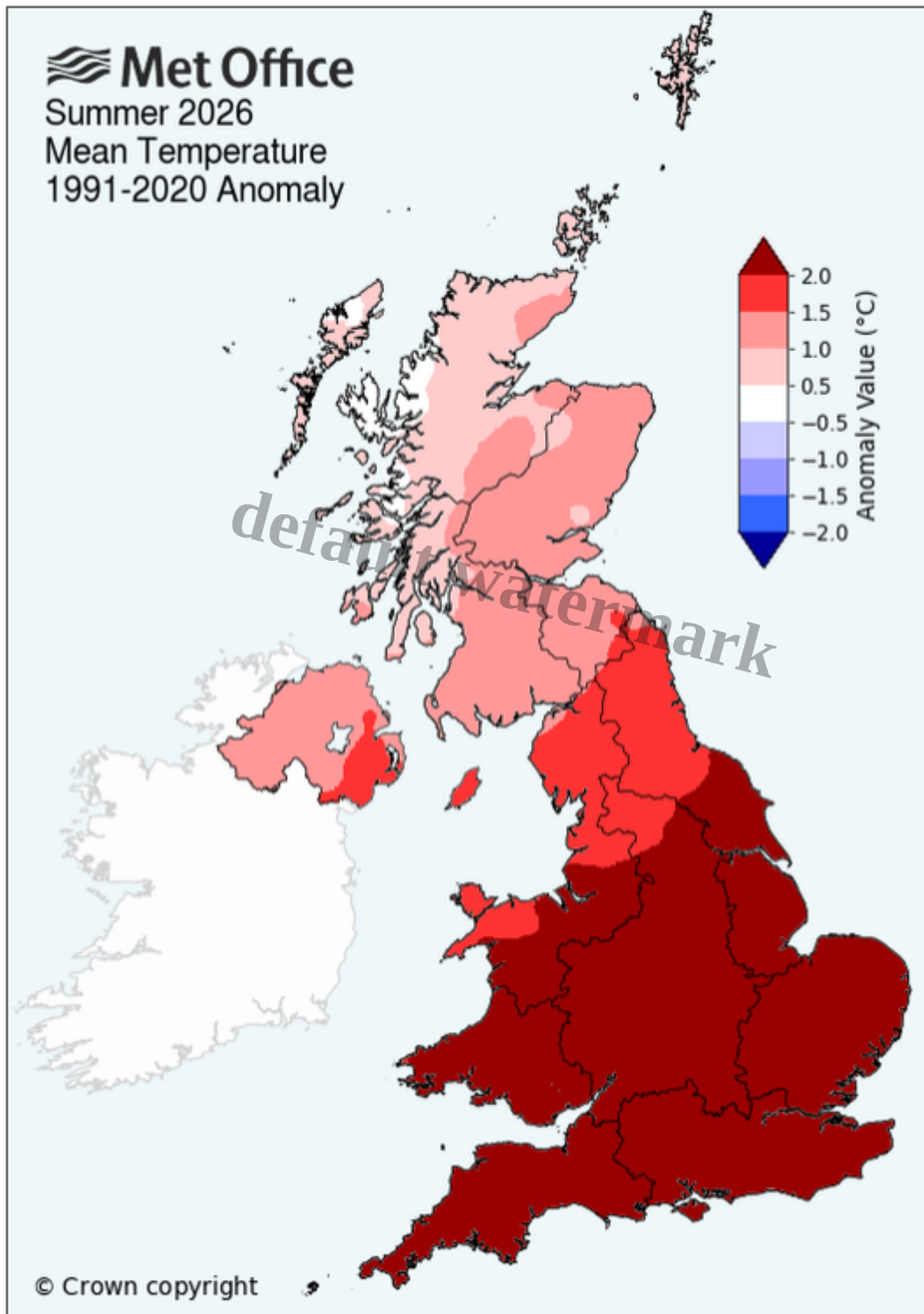


Dubious claims about the impact of climate change on Scotland's rainfall:
saving rainforest & preventing wildfire

Description

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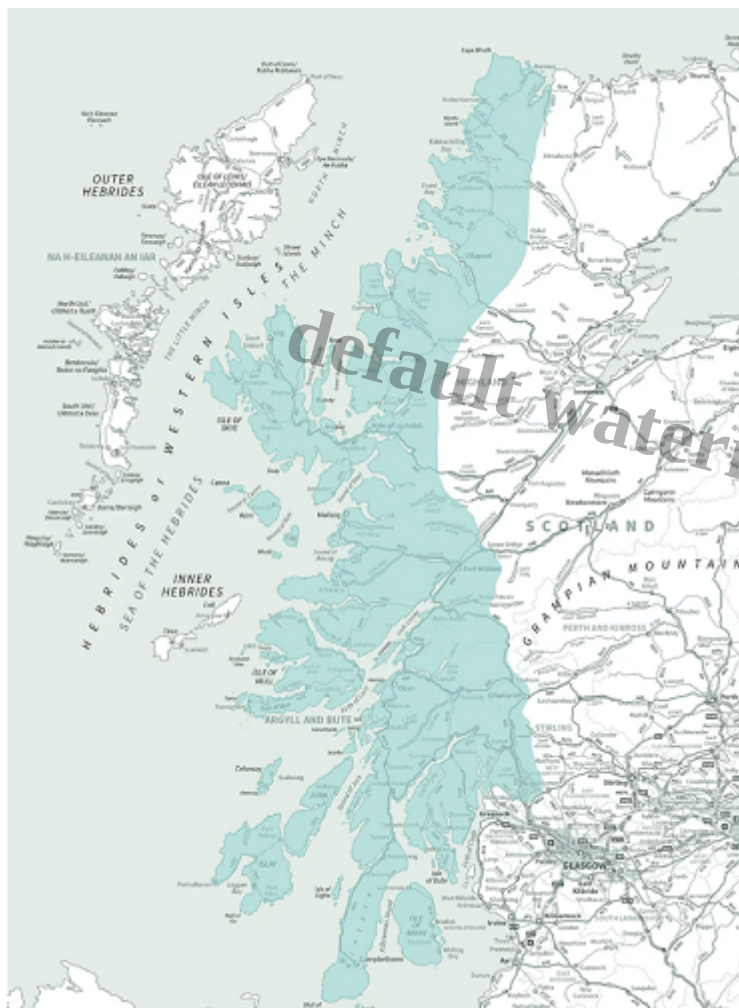


Map credit Met Office

Global warming caused by the release of CO₂ into the atmosphere from burning fossil fuels is all too real and with that climate change. However, climate change is not affecting all parts of the world in the same way, as was demonstrated this summer by the differences in temperature and weather experienced in Scotland compared to much of England and most of continental Europe. Those differences have significant implications for the likely impacts of climate change in Scotland and how we

might mitigate them. This post considers two examples of where those differences have been ignored and claims made about the impact of climate change which are not supported either by the facts or the predictions of climate scientists.

The impact of climate change on Scotland's rainforests



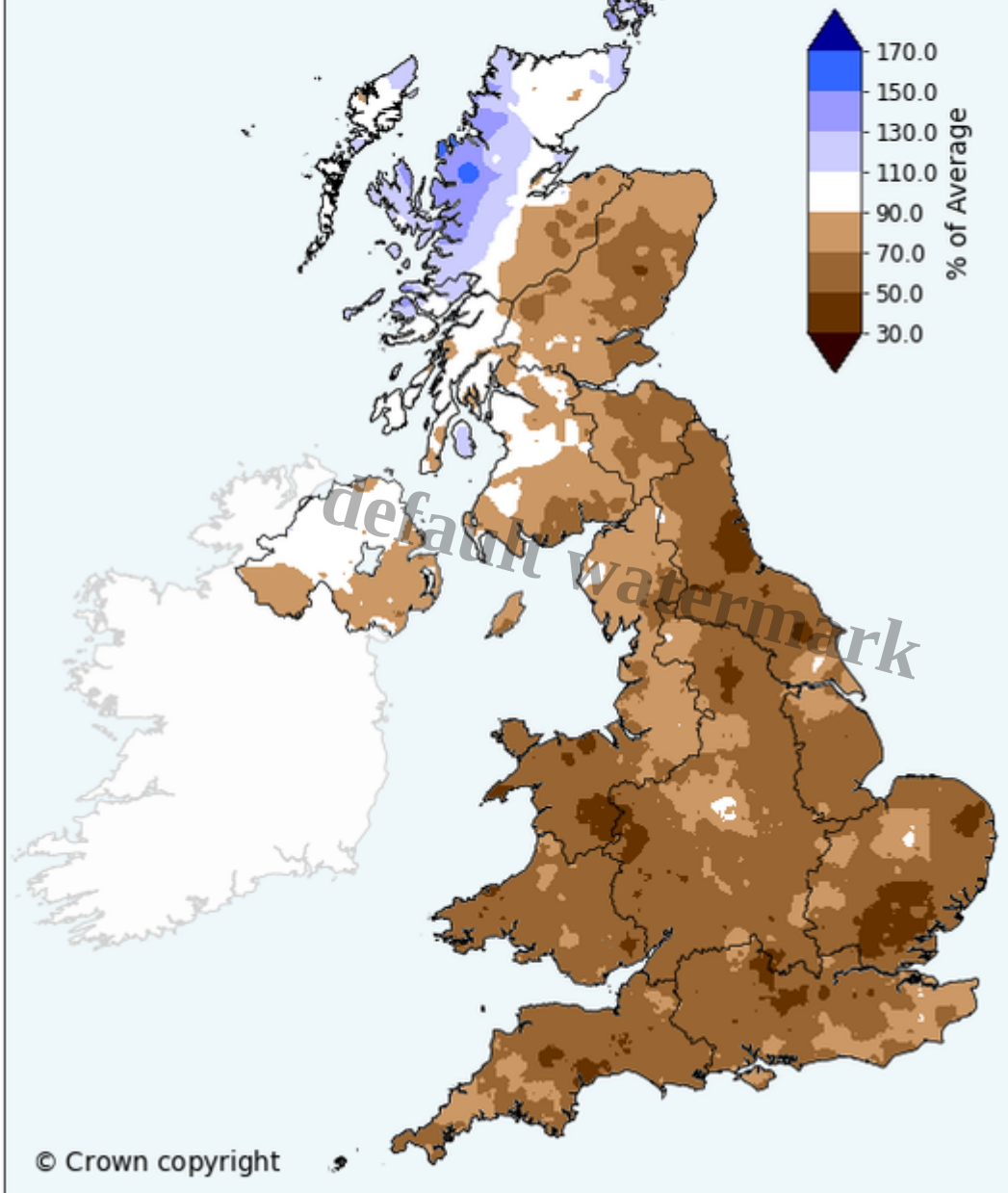
Scotland's rainforest zone • Map
Credit Alliance for Scotland's rainforests

On Monday the Alliance for Scotland's Rainforests was reported in the Herald ([see here](#)) and the National as stating:

One of the projections for future climate change on the UK is, for example, that our summers will get warmer and they will get drier. Something like that represents a threat to the existence of the rainforest and the species that occupy the rainforest. They're unlikely to cope with these periods of drought, these warmer and drier conditions we're likely to experience in our future summers.

Anyone who has visited or lives on the west coast will know that this claim is not substantiated by the weather that has been experienced in most of Scotland's rainforest zone this summer. Its

Met Office which show
age amounts of rainfall



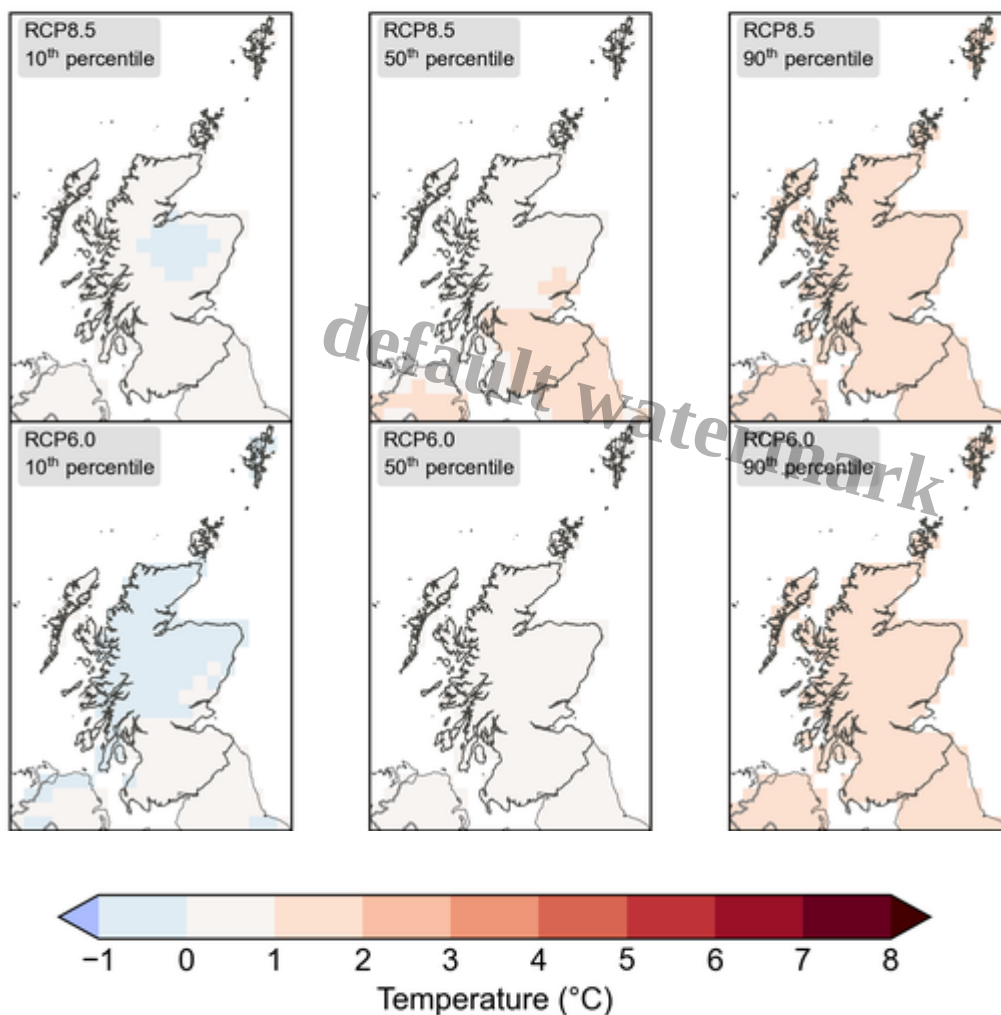
Of course, what matters

in trying to plan for the consequences of climate change is not what happens in any one year but the longer terms trends. Nonetheless, it is worth noting that the Alliance for Scotland's Rainforest made no attempt to explain the disconnect between this year's weather and their claims about the

likelihood of warmer and drier conditions, including drought, in future. In my view that risks undermining their credibility and playing into the hands of those who deny or minimise the impact of climate change.



Summer mean temperature anomaly in Scotland for 2020-2039 minus 1981-2000



RCP = Representation Concentration Paths. The two maps shows predictions based on RCP levels of 8.5 and 6, that could cause worldwide temperature increases of c4.3C and 2.8C respectively. RCP 8.5 and 6 are the two “worst case” scenarios showing what could happen if we fail to limit greenhouse gas emissions.

The Met Office’s predictions (for the UK, the home nations and regional areas within them [see here](#)) are based on the amount of greenhouse gases in the upper atmosphere (for an explanation of RCPs [see here](#)) and on probability, using models based on scientific observations and climate systems to predict climate in future. There are many uncertainties affecting Scotland including whether the Atlantic Meridional Overturning Circulation (AMOC) could overturn, removing the warming effect of the

gulf stream, and causing much colder conditions for a time ([see here](#)) The left hand maps above show that even if global temperatures were to increase by 4.3C, there is a 10% chance significant parts of Scotland could get colder. That could be as much a risk to Scotland's temperate rainforests as drier conditions.

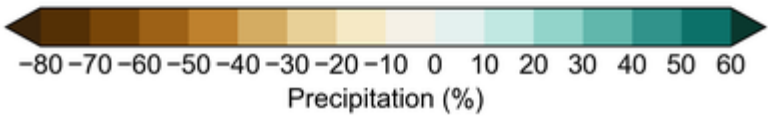
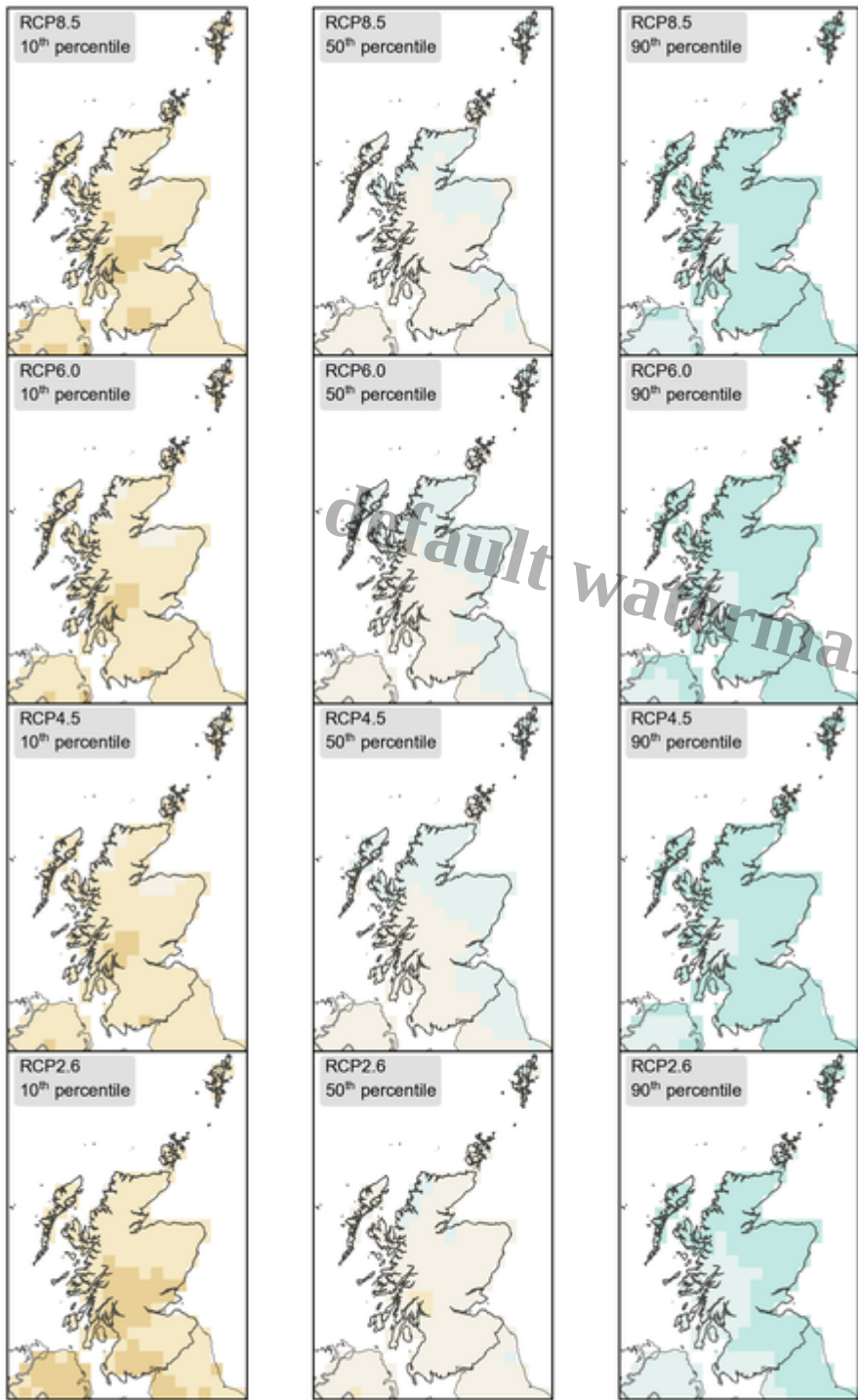
Although the right hand maps above predict there is a 90% probability that mean temperatures in Scotland will increase, in all scenarios this is predicted to be significantly less than the global mean. In that respect it is interest that this year the Met Office reports that temperatures in Scotland did not break records unlike the rest of the UK:

“England, Wales and Northern Ireland also broke their respective mean temperature records for summer, while Scotland reported its joint-sixth warmest summer on record.” (Met Office)

Changes in precipitation In Scotland are even more difficult to predict because they depend on the position of the Gulf stream and the warm wet air this brings across the Atlantic. While for several years there were predictions of warmer, drier summers, as Scotland's Rainforest Alliance claims, that now appears far less certain with Met Office projections predicting further likely increases in summer rainfall:

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Summer precipitation anomaly in Scotland
for 2020-2039 minus 1981-2000



Whatever the accuracy of these predictions, they come on top of a 9% increase in annual rainfall in the last decade, compared to the 1961-90 average ([see here](#)), and more than that in the uplands, *with rainfall in June-August increasing from an annual average of 237mm of rain during the period from 1993 to 1997 to an average of 363mm during the period from 2016 to 2021*• ([see here](#)).

What matters for the future of Scotland's rainforests, however, is how they might respond to changes in rainfall. In that respect, increased rainfall could pose a greater threat than drier spells. Historically we know that while the warmer wetter climate of the last millenium helped temperate rainforest to develop, it also enable bog to expand at the expense of woodland. There is now evidence that the increased rainfall of the last few decades is having an adverse impact on the ability of the more western Caledonian pinewoods, which are now included under the umbrella of Scotland's rainforests, to regenerate ([see here](#)). There appears to be much less evidence about the potential impact of drought on Scotland's rainforests.

Despite the major uncertainties about the future impact of climate change in Scotland, Scotland's Rainforest Alliance used it to repeat the claim that £500m is needed to restore Scotland's rainforest because of climate change. While they are probably right that doubling the extent of this woodland would increase its resilience to climate change, whatever impact this has on the rainforest zone, the biggest factors constraining the expansion of Scotland's rainforest (apart from bog) are overgrazing by deer and the spread of rhododendron ponticum. So why did they not simply say that £500m is needed to cull deer and remove rhododendron rather than making dubious claims about the impact of climate change?

Climate change and wildfire in Scotland

There have also been various people and organisations making claims about how climate change in Scotland is increasing the risk of wildfires. For example, John Swinney while visiting those fighting the Abernethy/Glenmore wildfire was quoted as saying ([see here](#)):

*We're clearly facing significant changes in our climate and the prevalence of **wildfires** in Scotland on a now, unfortunately, frequent basis is an indication that climate change is happening,*•

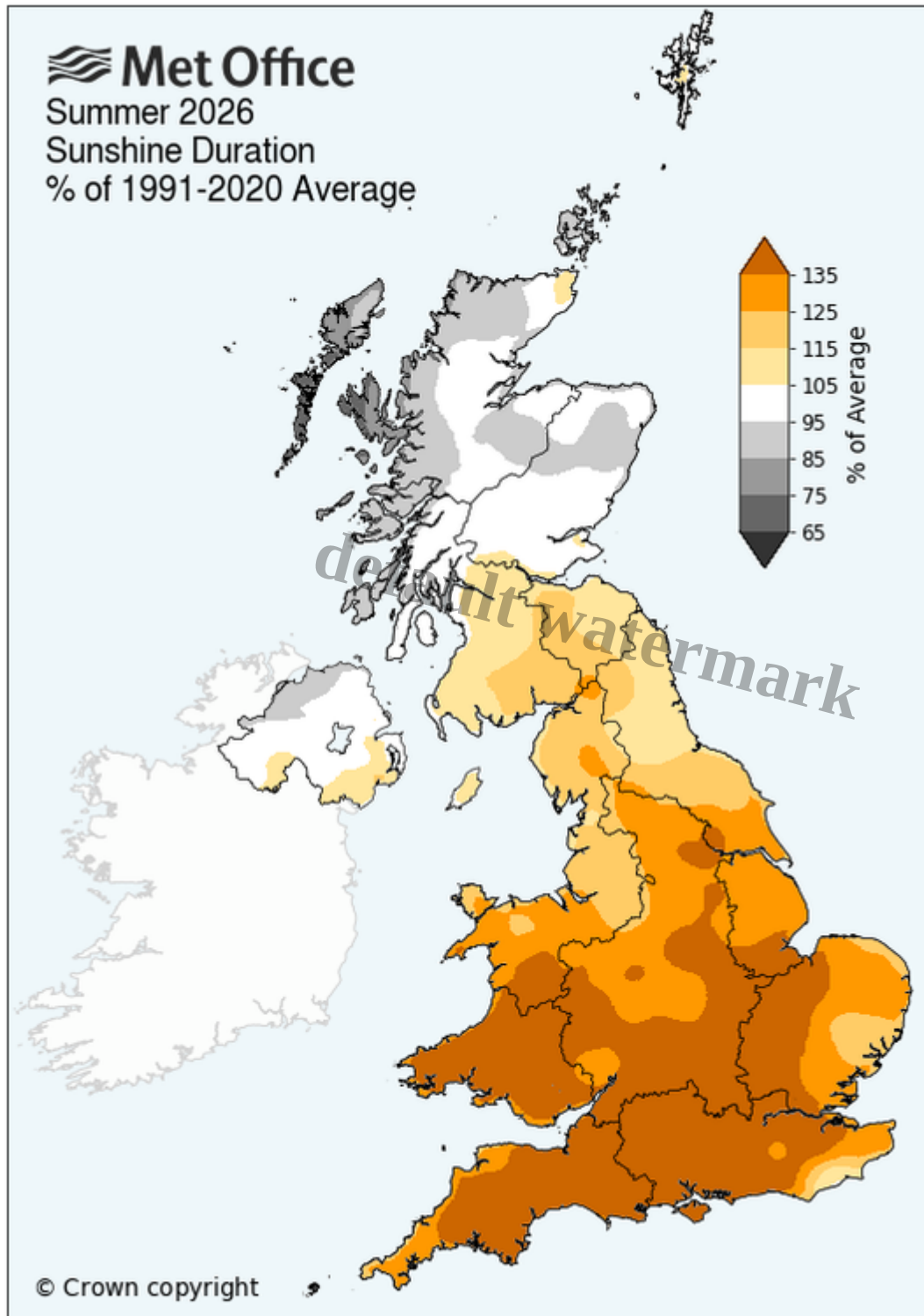
Mr Swinney appeared unaware that the west of Scotland had been experiencing a wetter summer than normal or that the number of wildfires recorded in Scotland was negligible compared to England:



Fires detected by NASA in the 31 days up to 15th August, ie covering the period of the Glenmore/Abernethy wildfire

Most fires are started by people, most often accidentally, but it appears the reason why so many fires got out of control and were large enough to be detected by satellite this summer in England is that the weather was significantly hotter and drier than in Scotland. The risk of wildfire therefore was very high in England whereas on the west of Scotland they were negligible due to the wet conditions.

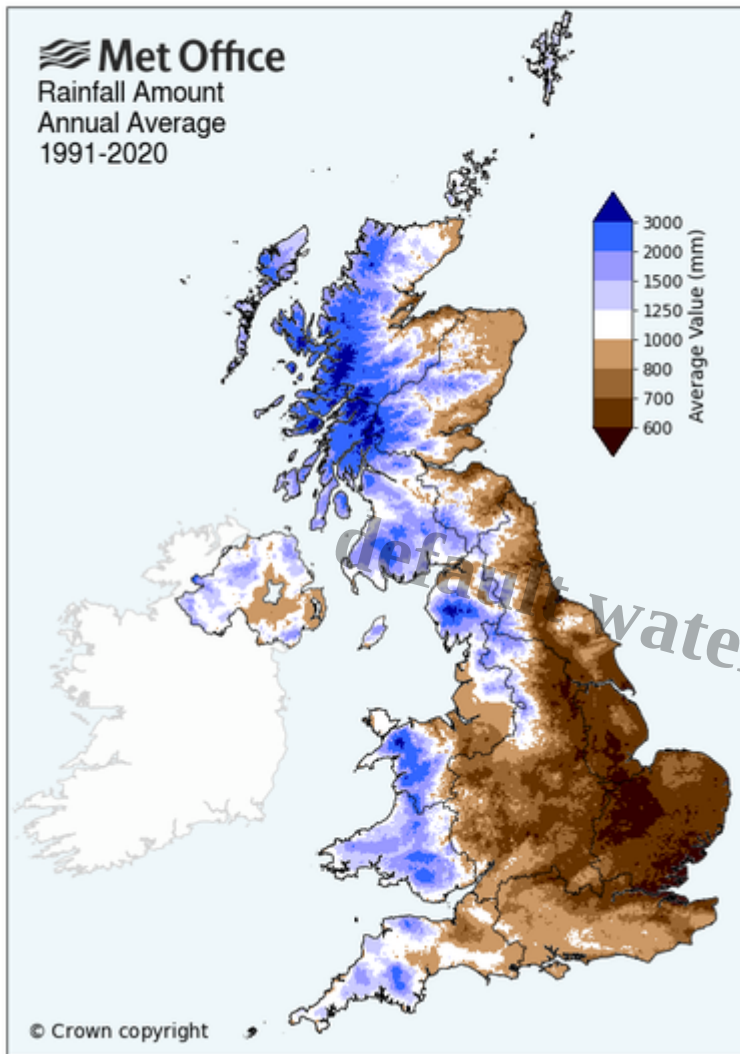
From a wider European perspective the risk of wildfires from increasing temperatures in Scotland appears relatively very low. Most European countries would be laughing if their maximum summer temperatures were peaking at under 30C and they received as much rain as the drier parts of Scotland.



Other natural factors reducing the likelihood of wildfires over in Scotland over the summer compared to England and much of Europe include cloud cover (which reduces the chances of the sun's rays igniting fires through broken glass etc) and the lower frequency of thunderstorms and lightning strikes ([see here](#)).

Unfortunately, the Scottish Fire and Rescue Service (SFRS) do not include in their statistics ([see here](#)) any information that would support Mr Swinney's claim that wildfires are becoming more prevalent in

Rainfall
Annual Average 1991-2020



*I where wildfires can happen is extending from
gland which has just published provisional
J-2026 ([see here](#)). (Incidentally these suggest
d that the number of wildfires and area burned*

What has mattered in the past in relation to

wildfire risk is not mean temperatures or average rainfall (except for some places along the east coast) but the occurrence of dry spells and periods of drought. It is those dry spells and the nature of the vegetation that explain why muirburn and wildfires (the two are often associated ([see here](#))) take place in the generally very wet west.

The Scottish Environment Protection Agency (SEPA) issues warning about water scarcity but although these have now been brought into one data set for the period 1991-2025 with the help of Strathclyde University ([see here](#)) this does not appear to have been used to produce reports on the length and frequency of dry periods over the last 35 years. As for the future, NatureScot published a research report in 2021 ([see here](#)) predicting periods of extreme drought would increase in the period up to 2040, from one every 20 to one every three years, with the biggest increases in the Autumn, based on the

Standardised Precipitation-Evapotranspiration Index (SPEI) ([see here](#)).

In my view it is probably safer to follow SEPA whose water scarcity reports warn there is considerable uncertainty about the future and ClimateExchange, whose research tool on predicting extreme weather in Scotland ([see here](#)) noted:

at present we will be unable to produce robust predictions for changes to weather related fire as there is no suitable model for predicting wildfire risk in Scotland due to its particular distribution of plant matter and topography (Naszarkowski et al., 2024). Instead, we advise users to consider that an increased probability of wild fire ignition is likely to co-occur with drought extremes

Once the link between dry spells and fire is appreciated, whatever the challenges of predicting dry spells in future, it should be easy to take preventive action to reduce the risk of wildfire whenever there is a period of water scarcity or drought. The SFRS are actually very good at issuing warnings about periods of high fire risk and what areas within Scotland are affected. Instead, however, of taking appropriate action to reduce risks in these periods, the Scottish Government appears on the one hand to be blaming climate change more generally and on the other to treat outdoor recreation as the main cause of wildfire. Hence its approval of the Cairngorms National park Authority's fire management byelaws which ban campfires and barbecues anywhere in the great outdoors from 1st April till 30th September, whatever the fire risk, while continuing to allow residents of the National park to have barbecues in their own gardens and land managers to light other fires during periods of high fire risk.

Even worse, the new Muirburn Code allows the holders of muirburn licenses, which allow muirburn over the winter months (1st October to 31st March) to carry out muirburn during an Extreme Wildfire Danger Assessment period if they have undertaken a detailed risk assessment and put in place mitigations to prevent the risk of wildfire from undertaking muirburn. There are no measures in the new licensing scheme which would effectively ban muirburn during any period of high, as opposed to extreme, fire risk.

Andy Burnham's ban on the sale of disposable barbecues this summer ([see here](#)) was important because it showed that central government does have powers it could use to reduce the risk of wildfires during drying spells. What the Scottish Government could and should do is ban ALL outdoor fires, wherever and whenever the SFRS predicts there is high fire risk. This should include campfires, barbecues (whether in the great outdoors or in ones garden), garden fires, muirburn, stubble burning etc. A rule that applied to everyone would be much fairer and far more likely to be respected.

Conclusion

A large part of the problem with claims that people are making about the impact of climate change in Scotland are that they appear based on comparisons with the rest of the world which are not valid. This is not to deny global warming is affecting Scotland's climate, it clearly is, or that we need to be taking actions in Scotland to reduce our carbon emissions, we clearly do. However, our rising temperatures, which are well documented, are not as extreme as those documented for other parts of the world and their impact on rainfall appears to be far less predictable because of our oceanic climate. We therefore appear to be in a period of considerable uncertainty when it comes to predicting future dry

spells and how these might affect Scotland's rainforests or risks of wildfire.

It appears that appealing to climate change has become a good way to raise money (or justifying development) while blaming climate change has become a good excuse to do nothing. The danger is that in ignoring facts, such as the very wet summer on the west coast, those making these claims lose all credibility and feed those denying climate change.

In this post I have tried to show that those doing so would be better focussing their attention on what they can change, in the case of Scotland's rainforest overgrazing by red deer, and in the case of wildfire, banning all the most likely sources of ignition during periods of high fire risk

Category

1. Cairngorms
2. Other parts Scotland

Tags

1. climate change
2. CNPA
3. conservation
4. Scottish Government
5. wildfire

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