



**Somerset**  
Wildlife Trust

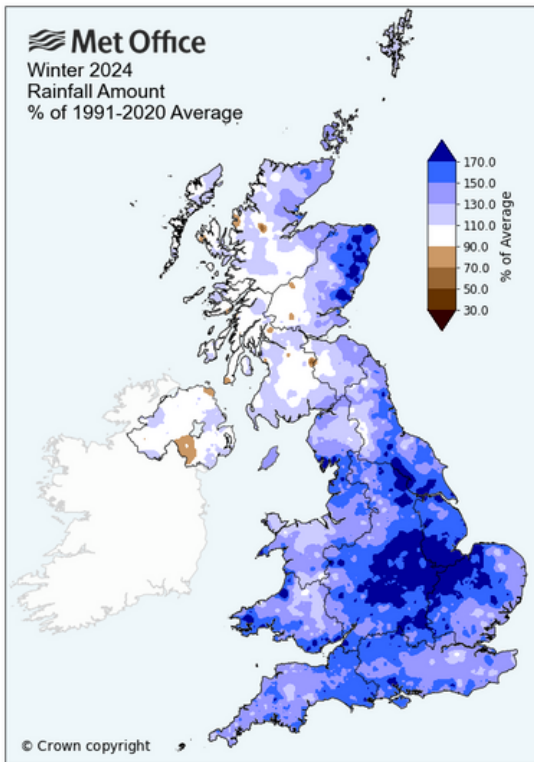
# Flooding on the Somerset Levels Winter 23/24

Somerset Wildlife Trust's Response

## Flooding on the Somerset Levels Winter 23/24: Somerset Wildlife Trust's Response (March 2023)

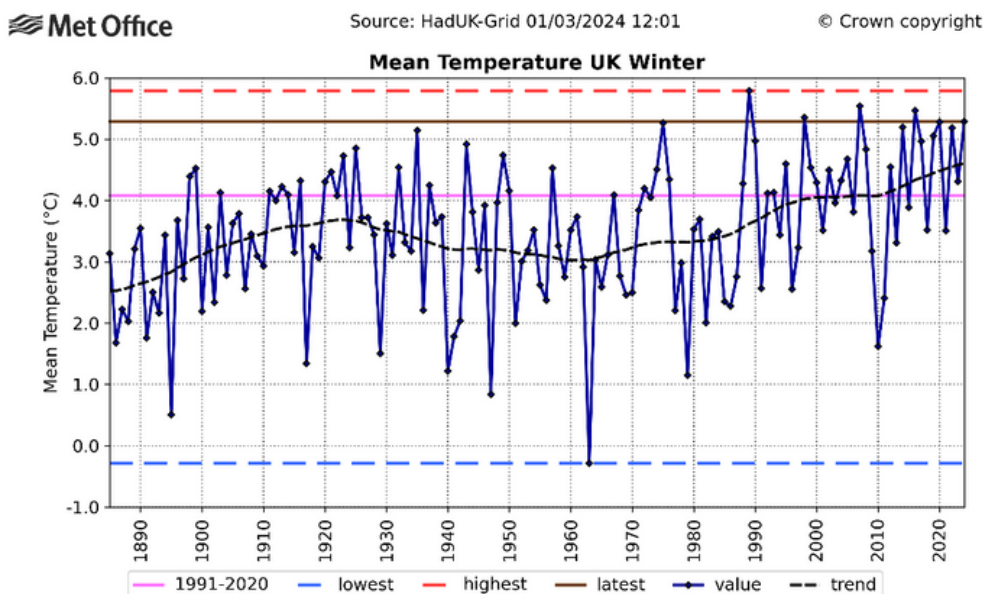
### How wet has it been this winter?

Winter 23/24 is one of the warmest and wettest on record, with 29% more rainfall than the average. According to the Met Office, the month of February 2024 has been the wettest ever recorded in the south west, with over twice the average amount of rainfall.

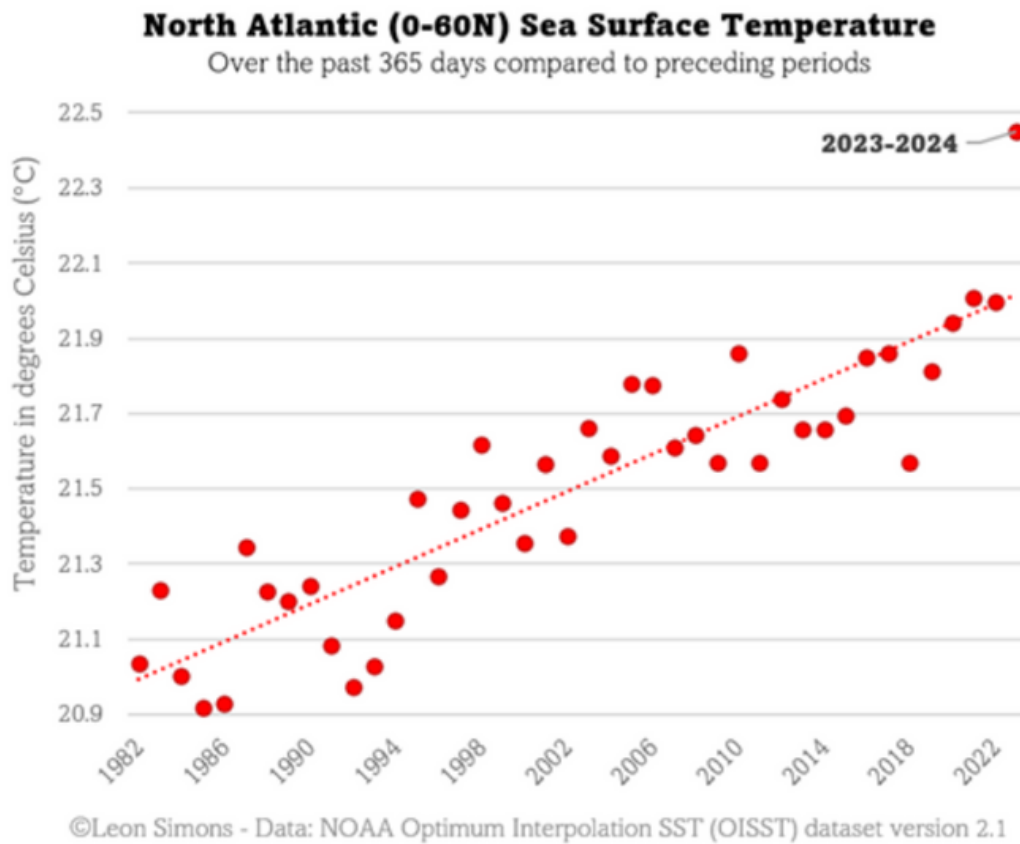


### Why has it been so wet this winter?

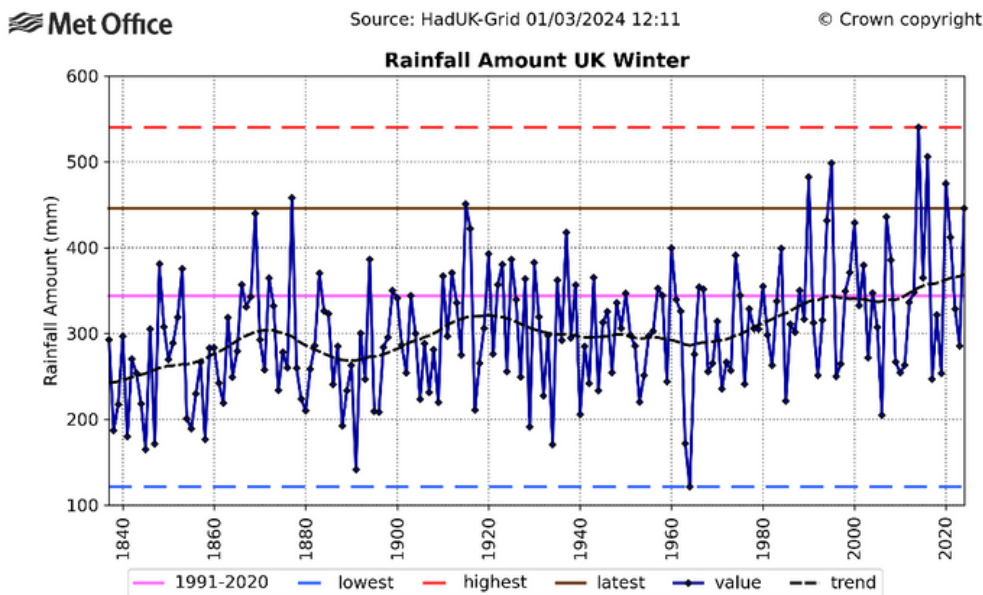
Winter temperatures in the UK are showing a warming trend, which will continue due to human-induced climate change.



Data on **sea surface temperatures** over the past 12 months also indicates large increases which may well contribute to a rise in the number of storm events occurring in the UK.



**Climate projections** show that every 1 degree C of warming results in around **7% more moisture held in the atmosphere**. While there will always be natural variability of rainfall, it's clear that warmer winters will also mean wetter winters.



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## **Why has the flooding been particularly bad on the Somerset Levels?**

The Somerset Levels and Moors are a low-lying bowl, with land levels in some areas around 2m above sea level and reaching as low as 0.2m above sea level in others. This bowl is surrounded by higher ground in the Quantock, Mendip and Polden Hills, Yeovil Scarplands and Vale of Taunton. When it rains, water runs down the hills and accumulates in the natural wetlands of the Somerset Levels.

For many centuries, water has been artificially drained at scale from the Somerset Levels, through a network of human-engineered drainage ditches, rhynes and using canalised rivers. Water is drained to the larger embanked rivers such as the Parrett, Tone, Axe and Brue where it then has to be pumped over the banks into the rivers and then the sea. On the Brue, water is drained via ditches and rhynes into the North and South Drains. The North drain is pumped into the River Brue and the South Drain is pumped into the Huntspill River and then out to sea. Due to the incredibly high tidal range of the Severn Estuary, pumping is restricted to low tide.

## **Why has flooding been so bad on the northern part of the Levels?**

The amount of rainfall in Somerset over the winter period has been extreme and unusual, and the amount of rainfall in the Axe and Brue catchments has been exceptional. Previously, high floods have been associated with the parts of the moors more influenced by the Parrett and Tone catchments - which has a massive catchment to moorland proportion. This winter, due to the exceptional rainfall, the Northern Moors have retained higher levels of water for longer than normal, which has led to a number of communities being affected by localised flooding.

The Somerset Rivers Authority state:

“Our pumping stations are running whenever possible, but they can only operate when there is capacity in the river to receive the floodwater. Levels in the River Brue have been persistently high, both because of high flows and high tides. We are using every opportunity to evacuate water from the moors as river levels allow.”

For more information regarding pumping, rainfall and the Somerset Levels news, see: [www.somersetiversauthority.org.uk/exceptional-rainfall-an-axe-brue-catchment-briefing-march-2024](http://www.somersetiversauthority.org.uk/exceptional-rainfall-an-axe-brue-catchment-briefing-march-2024)

## **Drainage of peat:**

For centuries, the peat soils of the Levels and Moors have been drained for farming, fuel and to keep villages dry. This drainage has caused the decomposition of peat soils, which leads to soil shrinkage and loss, releasing carbon into the atmosphere and lowering the land surface, thus reducing its resilience in the event of extreme rainfall events.

## **Maize:**

Maize crops leave soil exposed during much of the growing season and is often harvested in the late autumn when soils are wet, causing soil compaction and not allowing water to infiltrate through the soil profile. It is then left bare during the winter, so when there is heavy rain, water runs off very quickly from the surface of the compacted and damaged peat soils. This run off can also carry silt, pesticides and nutrient into the waterways, reducing water quality.

The Soil Association has stated that in the winter of 2023/14, every 10-hectare block of land with maize stubble produced the equivalent of 15 Olympic swimming pools (375m+ litres) of additional water runoff.

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### **Reduced surface level:**

Soil shrinkage due to drainage and soil runoff due to lack of crop cover both contribute to lowering land surface levels. Evidence of this can be seen where pylons were installed in the 1960s with the concrete below surface level, but now standing proud by a few feet.

### **Climate change:**

Due to the low-lying nature of the Levels and Moors, and the drainage of an area that, if left, would otherwise be a natural wetland, the landscape is particularly vulnerable to climate change. Human-induced climate change is causing temperatures to rise, resulting in more extreme weather patterns. [The UN Climate Action Report](#) states this will result in increased rainfall and flooding, in the UK winter months followed by increased drought in the summer months.

### **Would healthy peat soils contribute to flood alleviation or make flooding worse?**

- Healthy, hydrated peat soils support specialist mosses which act a bit like sponge, helping to slow the flow of water. By holding on to water for longer, and releasing it more slowly, they can help to reduce 'peak flows' and so help to reduce the risk of flooding.
- Hydrated soils are better at absorbing water than dry, drained soils, which allow water to run straight off. Holding more water for longer in dry periods makes the landscape more resilient to our changing climate, minimising the impact of drought and reducing both wildfire and flood risk.
- Soils/fields that are moist can handle/take more water than compacted mineral soils or heavily drained soils. When entirely saturated, as can be the case when there has been an entirely unanticipated and extreme volume of rainfall on top of seasonal averages, they will be at capacity like the rest of the landscape and not able to absorb further water.

### **Isn't the flooding because of water levels being held too high?**

- Water levels are controlled by the Internal Drainage Boards based on assessments and water management plans made for each Moor.
- Water levels have a summer 'pen' (level) which is generally held high to retain the water on the Levels, as once it is pumped in the Severn Estuary, it can't be brought back - and in the winter, pen levels are held lower to allow for increased rainfall.
- Some areas of the Levels are designated as Raised Water Level Areas (RWLA), these are designated for their value for nature and are areas that have specific designations for nature such as SSSIs
  - [The Internal Drainage Boards have found](#) these RWLAs have minimal impact on flooding on the Levels and Moors.
  - Maintaining healthy peatlands require water levels to be higher than the current pen levels - recommended to be 10cm below surface level.
  - Healthy peatlands can reduce flood risk by slowing the flow of water coming into the Levels (water catchment) and providing storage of the volumes of water reducing risk to properties.

### **Should there be more dredging of waterways to help reduce flooding?**

The Environment Agency (EA) is responsible for managing the flood risk from rivers. The EA states that dredging can play a useful role in flood risk management as part of a much wider range of measures, but are less effective than other measures as well as being costly with potential harm to the environment.

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Read more about the EA's approach here:

[Floods and dredging: explaining the Environment Agency's approach - Creating a better place \(blog.gov.uk\)](#)

### **Is the peat restoration work at Westhay Moor and Shapwick Heath causing the flooding in the surrounding areas?**

- Work at the Westhay Moor and Shapwick Heath nature reserves aims to slow the flow of water within the peat and across it, by using a technique called deep trench cell bunding. In using this technique, water will be held on the reserves for longer, slowing its release into the surrounding landscape and keeps the reserves relatively disconnected from the remaining drained areas. This means these areas will not be adding further pressure on the already swollen Brue and Axe receiving channels. There is lots more information about this work and the technique here: [www.somersetwildlife.org/westhay-moor-peatland-restoration-project-faq](http://www.somersetwildlife.org/westhay-moor-peatland-restoration-project-faq).
- The IDB have not needed to make any alterations to the controlled ditch network as a result of the peatland restoration work.
- From the initial data that has been collected so far, the trench bunded areas on the mire at Westhay are capturing rainwater and water level changes are happening more slowly when compared to unrestored areas. The trench bunding is helping to keep the water in the peat, on the reserve.
- Healthy peatlands are amazing habitats, they can provide many useful benefits for society such as supporting rare and specialist species, storing huge amounts of carbon, helping to reduce both flood risk and wildfire risk and, in the uplands, naturally filtering drinking water supplies. Helping our peatlands begin to work more naturally will begin to restore some of these benefits and help to make the landscape locally more resilient to climate change.



### **Why should I care about the environment when my home keeps being flooded?**

The Somerset Levels and Moors is a highly managed landscape, but in the face of rising sea levels and more extreme weather events the infrastructure managed by the Environment Agency and Internal Drainage Boards can only do so much.

Other measures are needed to adapt the landscape to climate change. As a country the UK is turning more towards nature-based solutions to help tackle climate change challenges like longer, more heavy periods of rainfall. Helping our peatlands to begin to work more naturally is considered to be a big step towards this.

Somerset Wildlife Trust works closely with the Somerset Rivers Authority and the Internal Drainage Boards to ensure that the management regimes for its sites are sympathetic to local communities. If a specific need is identified by the authorities to adjust the hydrology of an area for the benefit and safety of its neighbours it will of course do so, wherever possible.

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## What can be done to help reduce the impacts of flooding in future years?

- Taking a whole catchment approach
- Restoring peatlands
- More natural flood management
- Climate adaptation plans

### Catchment management: an example

The 'roughening' of catchment areas above the Somerset Levels can slow the flow of water and enable the rivers to drain and floodplains to function more naturally. This involves introducing well-placed natural habitat features across the whole of the catchment landscape such as leaky woody dams, leaky ponds and strategic hedge/tree planting. Introducing these features is a cost-effective way to ensure natural habitats and rivers and streams are more effectively connected to their flood plains and are more windy and natural. The FWAG "Hills to Levels" programme has received funding to work with farmers higher in the catchment to slow the flow of water through using better soil management and natural habitats that slow the water flow: [www.fwagsw.org.uk/hills-to-levels](http://www.fwagsw.org.uk/hills-to-levels)

### What can I do to protect my home/land?

- Information and data is vital for future management plans to be created. If you have been affected by flooding, use the Flood Reporting Tool here <https://swim.geowessex.com/somerset> to because it helps with planning – and, crucially, getting funding for – flood risk reduction measures.
- Somerset Council is taking applications from residents who were flooded between 2-12 January 2024, and a further grant for adaptations to properties will also be available soon: [www.somerset.gov.uk/beaches-ports-and-flooding/grants-for-flood-recovery-from-storm-henk/](http://www.somerset.gov.uk/beaches-ports-and-flooding/grants-for-flood-recovery-from-storm-henk/) (deadline 29th March).
- If you are a community that wants to take action now, then please get in touch with our Act To Adapt project: [www.somersetwildlife.org/act-to-adapt](http://www.somersetwildlife.org/act-to-adapt)
- There are some really useful resources on how to increase flood resilience on a community level here: [www.adaptingthelevels.com/communityaction](http://www.adaptingthelevels.com/communityaction)
- More advice here on using nature based solutions (and related funding sources) to prepare for flooding: <https://www.gov.uk/guidance/use-nature-based-solutions-to-reduce-flooding-in-your-area>
- Sign up for Flood Warnings: [www.gov.uk/sign-up-for-flood-warnings](http://www.gov.uk/sign-up-for-flood-warnings)

