

For the future of our environment

Water Situation Report

Autumn 2024

Scotland has seen drier than normal conditions this autumn which has resulted in low river levels. Winter will now be crucial to replenish water resources.

What is this report?

This report reviews the conditions over the past three months (September, October, November) and summarises how the weather conditions over autumn have impacted water resources across Scotland. Rainfall and snow over autumn and winter are key to water scarcity risk for the year ahead. This is the period when, typically, most rainfall occurs and the water in the ground and lochs is refilled. As we get into the drier months of spring and summer, more water is lost from the system than is added and the risk of water scarcity increases.

Summary of Autumn 2024

Rainfall was below the long-term autumn average across most of Scotland. Based on Met Office rainfall data it was the 5th driest autumn in 100 years. Despite Storm Bert, November was particularly dry. Areas on the river Dee, Aberdeenshire, only recorded around 30% of average rainfall. The Firth of Tay region saw around half of average rainfall for autumn which follows on from a drier summer.

The lower rainfall resulted in below average river flows across the country. It is rare for river flows to be very low at this time of year. The river Dee had the 2nd longest period for November at very low flow in a 50-year record.

Water storage in both lochs and groundwater are generally normal for this time of year, however, the dry autumn has resulted in some locations being low or very low. Winter will be crucial to replenish these stores.

SEPA's next water situation report will be at the end of winter to review the risk of water scarcity into spring next year.

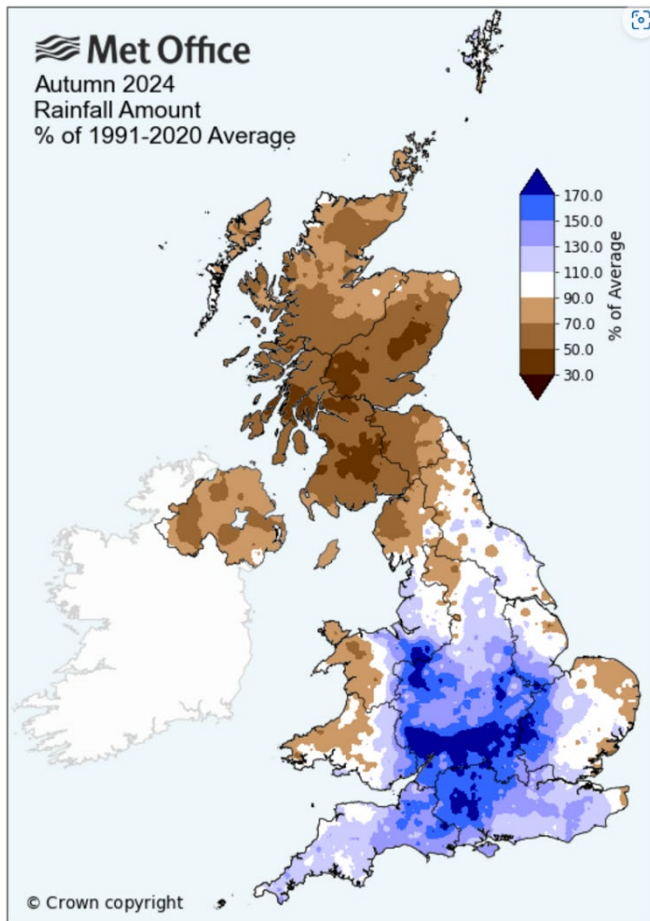


Figure 1: A map produced by the Met Office which shows the 2024 autumn rainfall amount as a percentage of the 1991-2020 average.

Forecast

The rainfall outlook for the December-February period suggests that across the UK there is an increased chance of wetter than normal conditions. The chance of a mild season is higher than normal, with a reduced chance of a cool season.

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Advice for water users

Everyone should plan to increase their resilience to the impacts of prolonged dry conditions. By taking the right steps now, it could help reduce the impact of water scarcity in the future.

[Water scarcity - plan ahead and use water wisely \(sepa.org.uk\)](https://sepa.org.uk).

Supporting information

This section goes into more detail on the data behind the report. SEPA gathers rainfall and river flow data from hundreds of sites across Scotland. We have a dedicated team of staff who do this work. We also monitor groundwater and loch levels and use soil moisture data from the Met Office. We compare the current conditions against the long-term values to see how dry (or wet) it has been.

Rainfall and river flows:

The maps below show SEPA's monitored river flows (left) and rainfall (right) over autumn relative to the long-term average for this time of year.

There has been below average rainfall (quite dry to extremely dry) across much of Scotland which is reflected in low to extremely low river flows across the autumn period. The Moray coast experienced more normal rainfall and flow conditions. Flows are also generally normal to quite low in the far southeast.

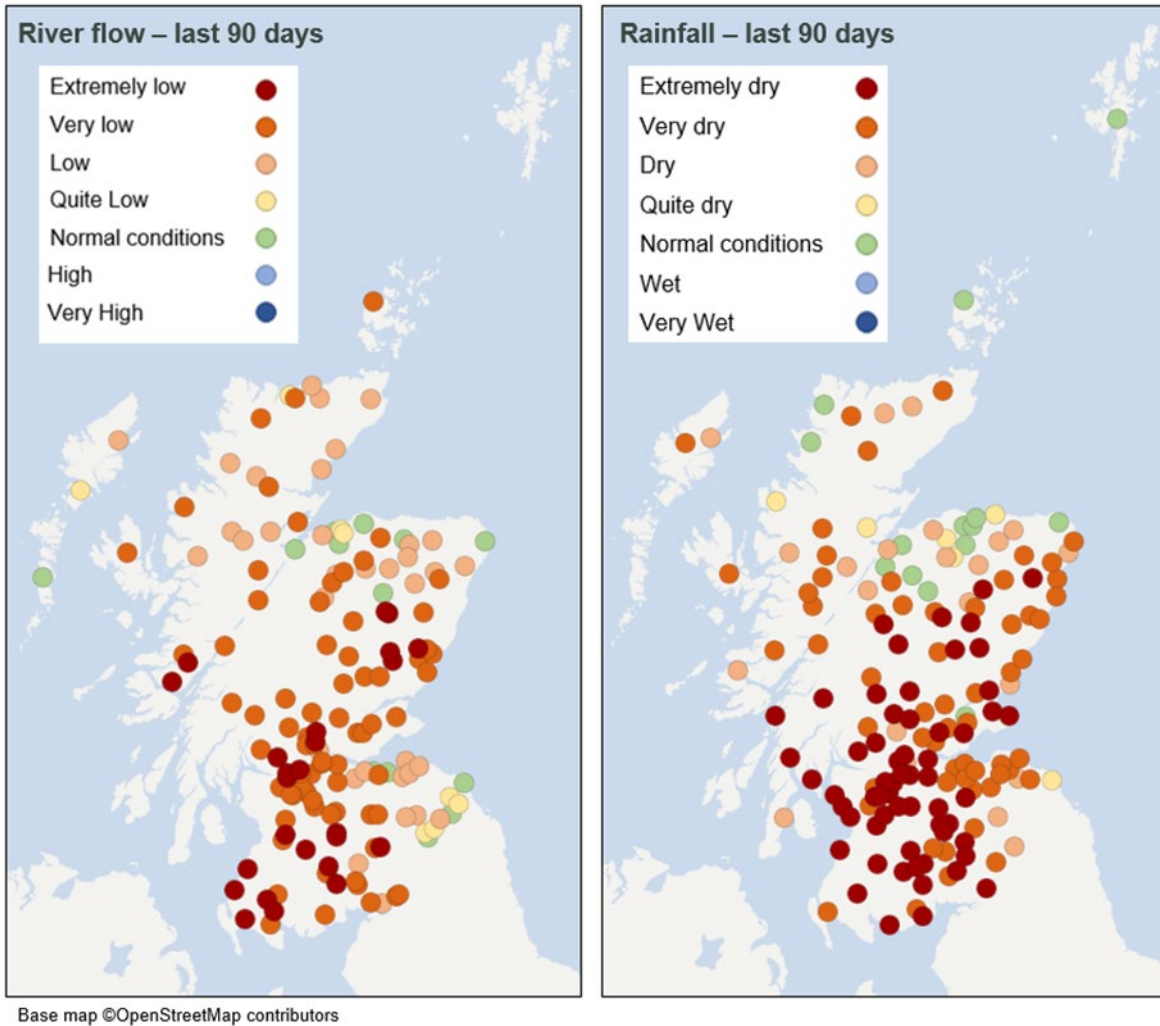


Figure 1: Maps of Scotland showing river flows (left) and rainfall (right) from each monitoring station, relative to the long-term average, for this time of year over 90 days.

Soil moisture:

Soil moisture deficit is obtained from the Met Office Rainfall and Evaporation Calculation System (MORECS). There is currently no soil moisture deficit across the country apart from the Firth of Tay catchment, which has Quite Dry ground conditions, likely due to below average rainfall since June. It is extremely unusual for soil conditions to remain this dry into winter, with only a handful of times noted in the historic record

Natural water storage:

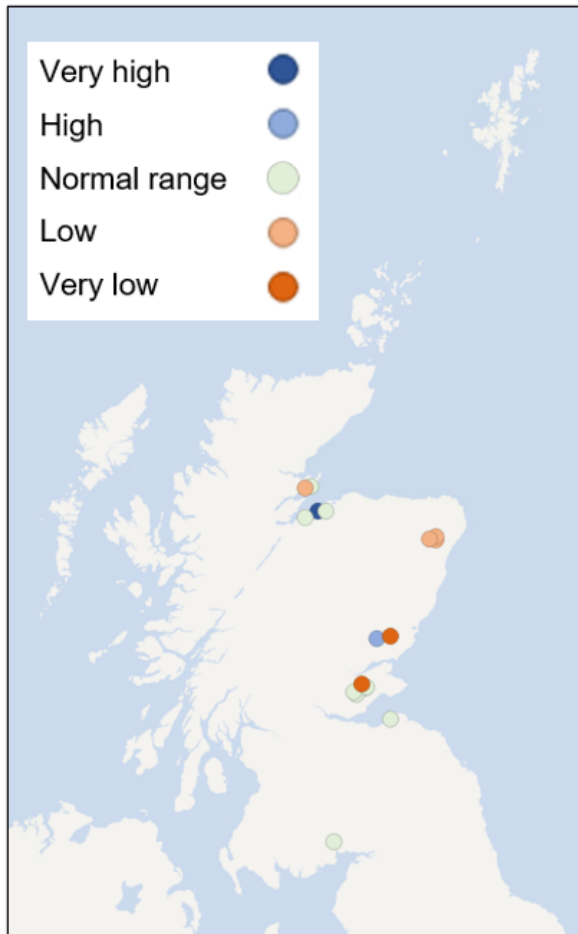
In each river catchment there is some degree of natural water storage, which can maintain river flows even when it is not raining. This natural water storage is mainly held in lochs and groundwater. When storage has been depleted it will take a lot of rainfall for levels to recover.

The maps below show recent groundwater and loch level compared to the long-term record at each individual station. Level is reported as high or low compared to the typical ('normal') level range for the time of year. Level ranges are specific to each station and based on the long-term (minimum 10 years) record of mean monthly level values recorded at individual stations.

Groundwater levels:

Groundwater levels are generally normal. Groundwater levels can be impacted by a number of factors including rainfall, soil/rock type and proximity to a watercourse.

Mean monthly groundwater levels for November



Base map ©OpenStreetMap contributors

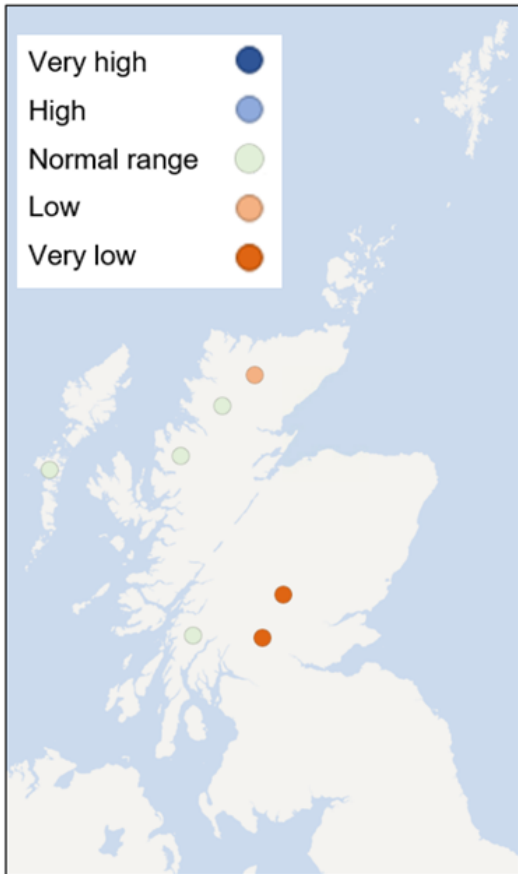
To the south of the country and as far north as Fife levels are mostly normal to low. Levels in Aberdeenshire remain low which is consistent with the lower than average rainfall over Autumn in this region. In the Highlands groundwater levels are mostly normal to high. There is some localised variation in Tain, with slightly lower than average levels recorded in one location. There is also localised variation in Angus.

Figure 3: A map of Scotland showing how the mean monthly groundwater level for November compares to the long-term record at each individual station.

Loch levels:

Loch levels in west of the country are broadly within the typical range for this time of year. A couple of locations in central Scotland are now very low while in the far north, one location is low for the time of year following a relatively dry autumn.

Mean monthly loch levels for November



Base map ©OpenStreetMap contributors

Figure 4: A map of Scotland showing how the mean monthly loch level for November compares to the long-term record at each individual station.

Flow, rainfall and groundwater data are accessed via SEPA’s [time series data service](#) (API). SEPA's live data are subject to ongoing quality control and periodic review.

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