

Overview

Rainfall was below average in most locations across the country for January 2024. However, towards the end of the month, an intense North Atlantic jet stream steered two named storms (Isha and Jocelyn) close to the north of the country between the 21st and 24th which brought widespread wet and windy weather.

The monthly average river flows for January decreased compared to the previous month, with 75% of river flows within the long-term normal for January, while 51% of lake and turlough monitoring stations observed levels above the long-term normal range for this month. Average monthly groundwater levels decreased compared to the previous month; however, 44% of monitoring wells recorded levels above the long-term average for January while 50% were in the long-term normal range. Similarly, five out of the six spring flows monitored remained in the 'normal' range.

Rainfall

Rainfall was below average nearly everywhere with almost all rainfall totals below their 1981-2010 Long-Term Average (LTA) for the month. Percentage of monthly rainfall values ranged from 55% (monthly rainfall total of 76.5 mm) at Mace Head, Co Galway to 107% (monthly rainfall total of 110.8 mm) at Johnstown Castle, Co Wexford. Monthly rainfall totals ranged from 58.7 mm (92% of its LTA) at Casement Aerodrome, Co Dublin to 126.9 mm (73% of its LTA) at Valentia Observatory, Co Kerry. The highest daily rainfall total was 36.2 mm at Claremorris, Co Mayo on Sunday 21st during storm Isha (its highest daily fall for January since 1992). The number of rain days ranged from 13 days at Dublin Airport, Co Dublin to 24 days at a few stations. The number of wet days ranged from 7 days at Ballyhaise, Co Cavan to 20 days at Malin Head, Co Donegal. The number of very wet days ranged from 1 day at Phoenix Park, Co Dublin to 6 days at both Newport, Co Mayo and Johnstown Castle, Co Wexford. Nine stations in the Midlands, South and East had dry spells between Wednesday 3rd January and Friday 19th January lasting between 16 and 17 days. There was one absolute drought at Moore Park, Co Cork between Thursday 4th January and Friday 19th January lasting 16 consecutive days.

River Flows

The average river flows for January decreased at 68% of river monitoring stations compared to average flows observed in December 2023. Analysis of the monthly average flows at 139 river monitoring sites, identified 20 (14%) as 'above normal', 104 (75%) as 'normal' and 15 (11%) were 'below normal'. Overall, there was a decrease in 'particularly high' and 'above normal' this month, with a significant increase of sites that classified as 'normal'.

Monthly Hydrology Bulletin: Edition 045: January 2024

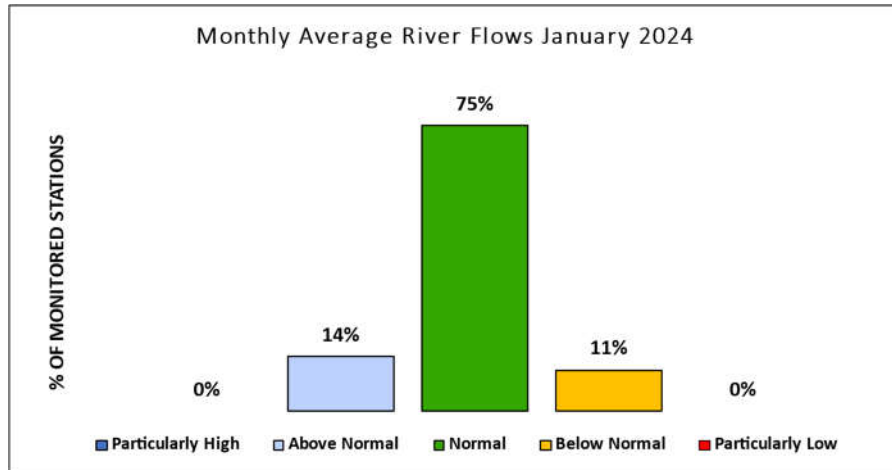


Figure 1: Percentage distribution of river flow monitoring sites within each of the percentile flow categories for January 2024.

Lake and Turlough Levels

Average water levels for January increased at 67% of the monitored lakes and turlough sites compared to average levels for December 2023. Analysis of monthly average levels at 35 lakes and 4 turloughs were classified as being ‘particularly high’ at 11 (28%), ‘above normal’ at 9 (23%), ‘normal’ at 16 (41%), and 3 (8%) were ‘below normal’.

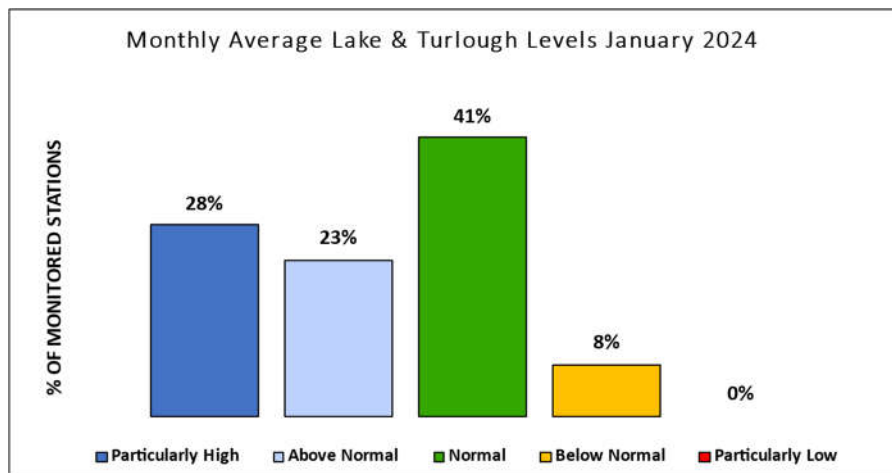


Figure 2: Percentage distribution of lake and turlough level monitoring sites within each of the percentile flow categories for January 2024.

Groundwater Levels and Spring Flows

Average groundwater levels in January were higher at 65% of monitoring wells compared to average levels observed in December 2023. Groundwater levels for January were classified as being ‘particularly high’ at 7 wells (21%), ‘above normal’ at 8 wells (23%), ‘normal’ at 17 wells (50%), and ‘below normal’ at 2 wells (6%).

Monthly Hydrology Bulletin: Edition 045: January 2024

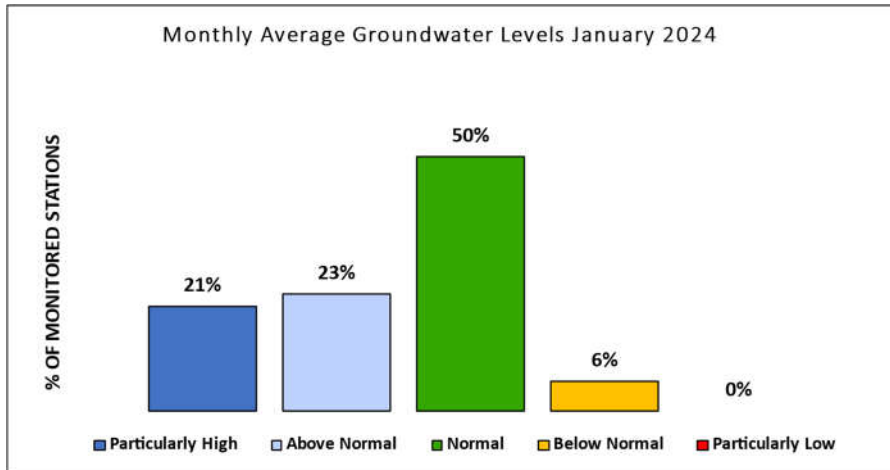


Figure 3: Percentage distribution of groundwater level sites within each of the percentile flow categories for January 2024.

Spring outflows were also monitored at 6 EPA monitoring sites for January. The outflows from these springs were compared to previously recorded January flows and were 'above normal' at 1 location [Killeglan, Co. Roscommon] and 'normal' at 5 locations.

Monthly Hydrology Bulletin: Edition 045: January 2024

Rainfall

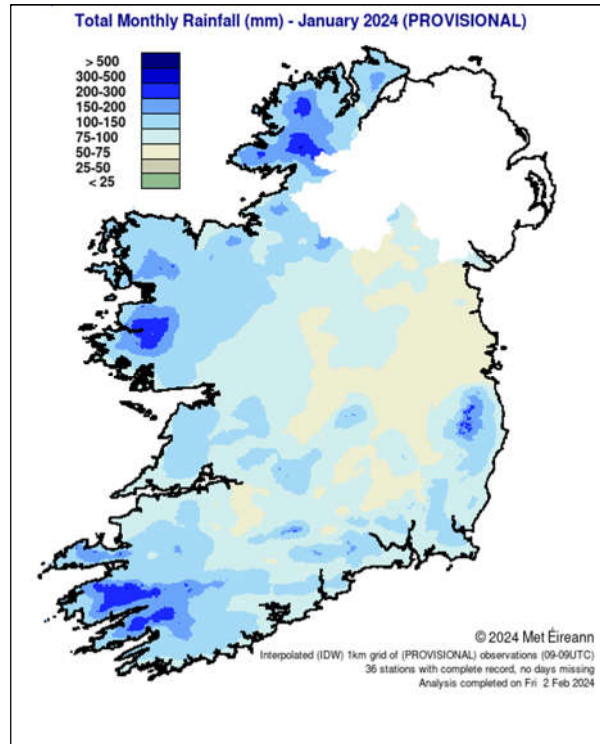


Figure 4: Rainfall map for Ireland January 2024 (Source: Met Éireann.ie).

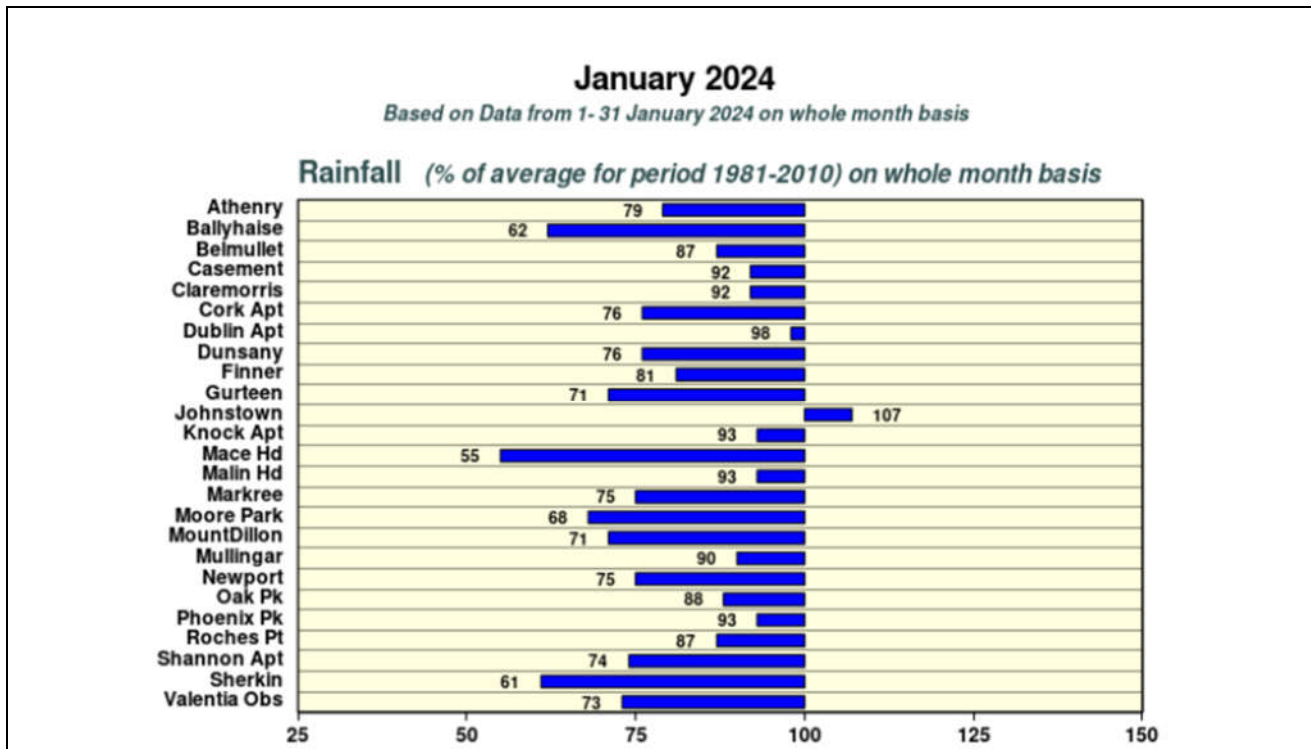


Figure 5: Summary of rainfall at synoptic stations for January 2024, figures indicate the percentage difference from the Long-Term Average rainfall for this month (Source: Met Éireann.ie).

River Flows

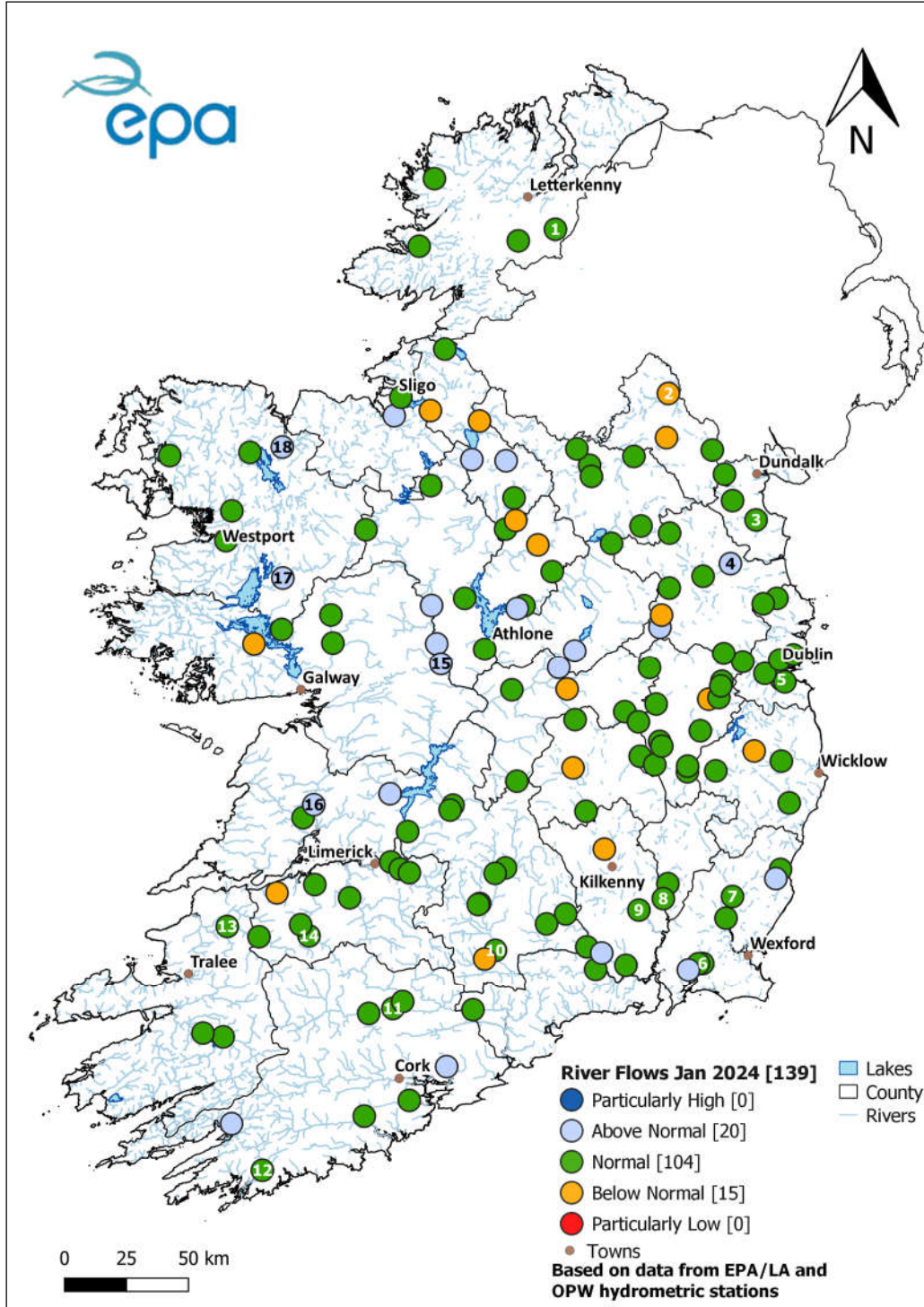


Figure 6: Monthly average river flows for January 2024 relative to historic monthly average flows expressed as percentile of the long-term values of monthly flow. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision (Source: EPA, OPW).

Monthly Hydrology Bulletin: Edition 045: January 2024

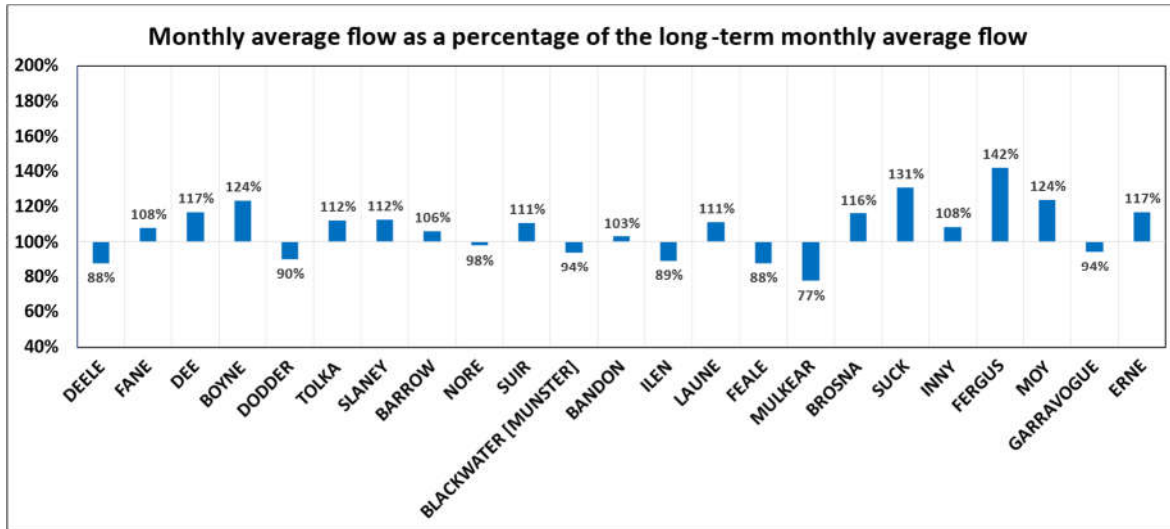
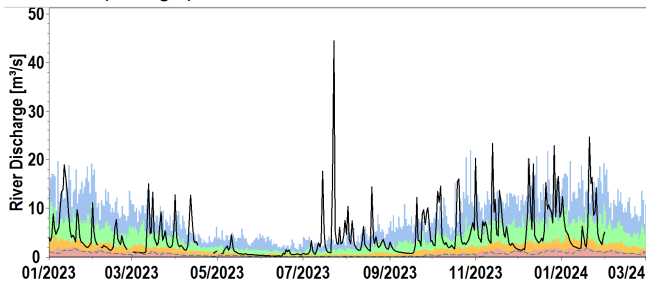


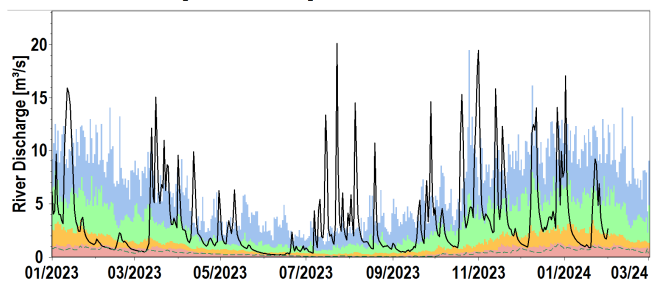
Figure 7: January 2024 average flows as a percentage of the long-term monthly average flow for this month at a selected number of stations. All data are provisional and may be subject to revision (Source: EPA, OPW).

Flow hydrographs for selected rivers

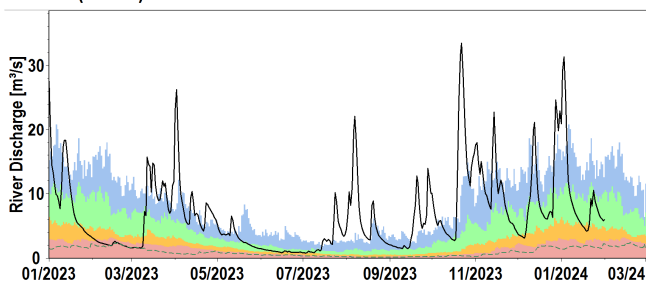
1. DEELE (Donegal)



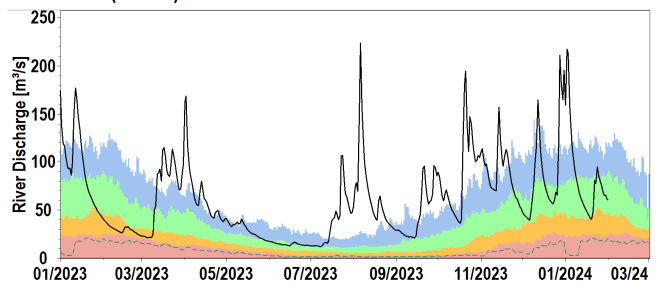
2. BLACKWATER [MONAGHAN]



3. DEE (Louth)

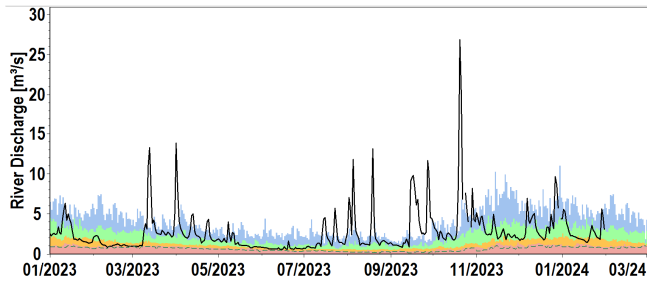


4. BOYNE (Meath)

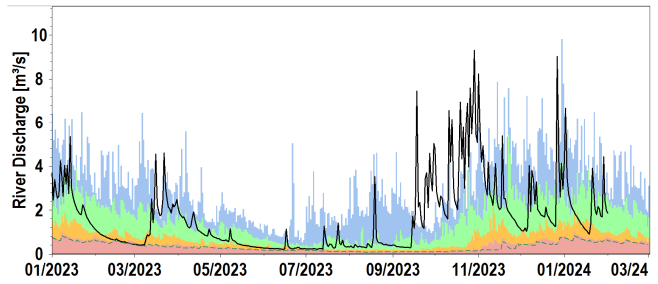


Monthly Hydrology Bulletin: Edition 045: January 2024

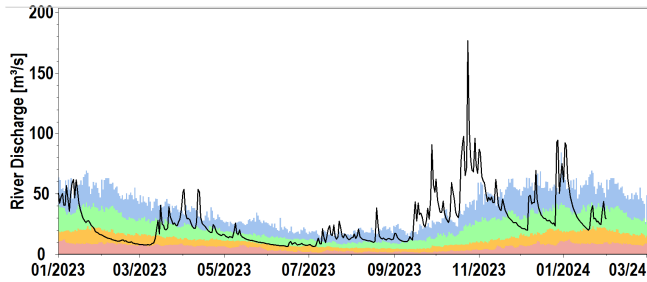
5. DODDER (Dublin)



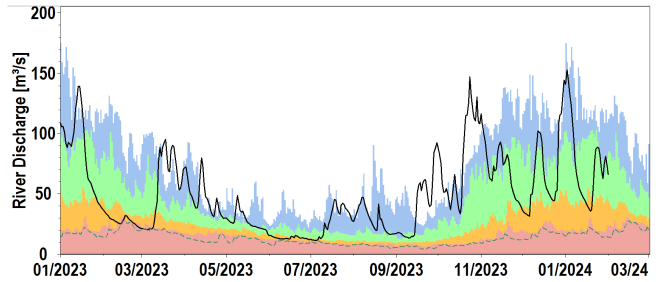
6. MULMONTRY (Wexford)



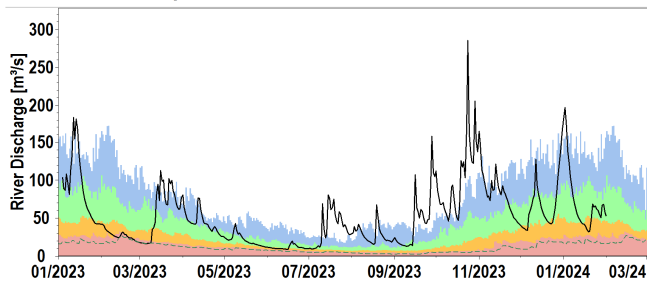
7. SLANEY (Wexford)



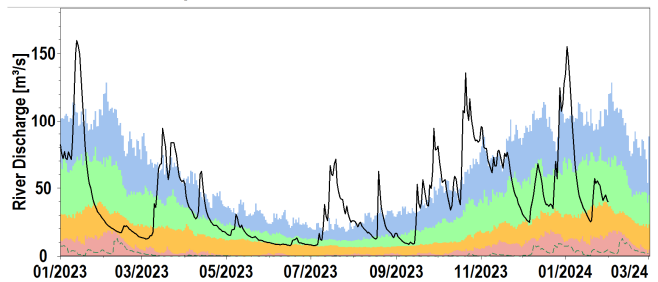
8. BARROW (Carlow)



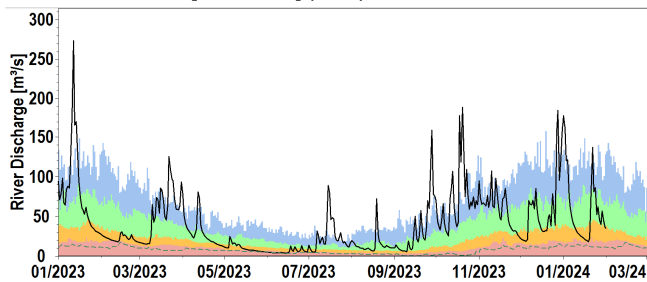
9. NORE (Kilkenny)



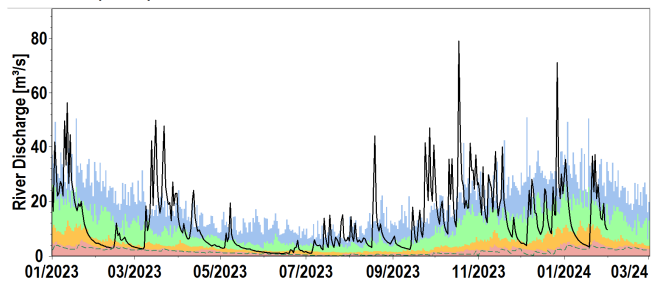
10. SUIR (Tipperary)



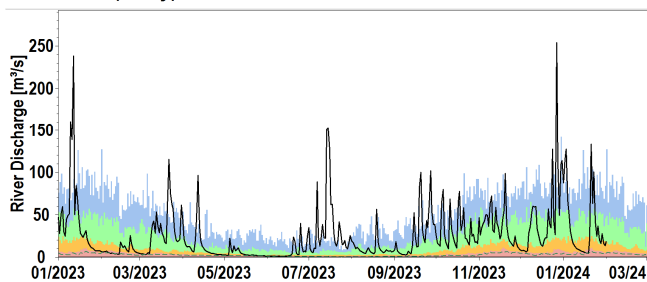
11. BLACKWATER [MUNSTER] (Cork)



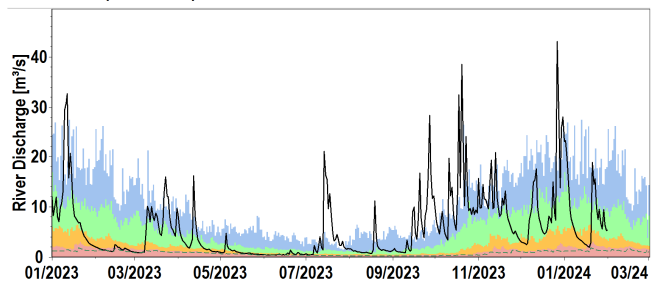
12. ILEN (Cork)



13. FEALE (Kerry)

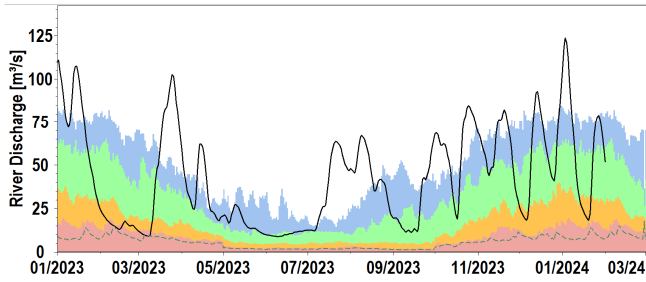


14. DEEL (Limerick)

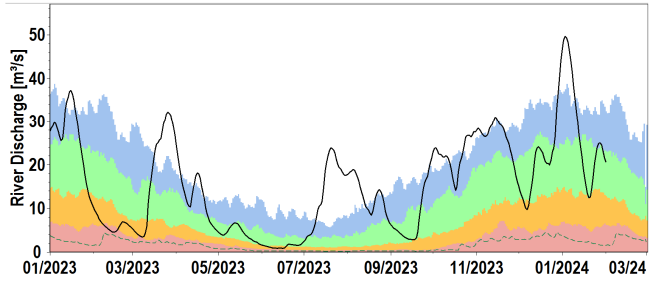


Monthly Hydrology Bulletin: Edition 045: January 2024

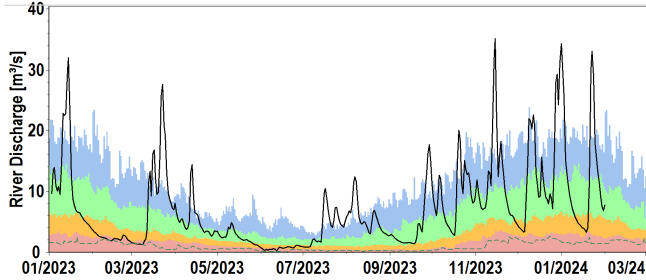
15. SUCK (Roscommon)



16. FERGUS (Clare)



17. ROBE (Mayo)



18. MOY (Mayo)

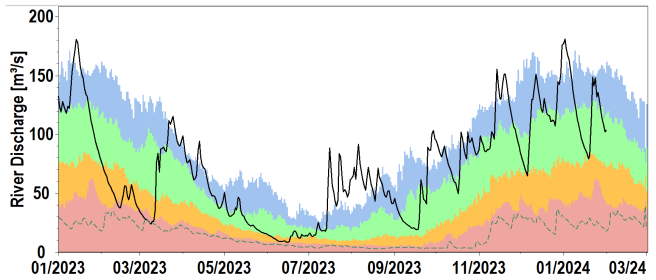
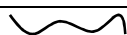



Figure 8: Daily average river flows measured in cubic metres per second relative to historic daily average flows expressed as percentile of the long-term values of each day and long-term minimum flows. All data are provisional and may be subject to revision (Source: EPA, OPW).

Explanation - Classes						
Particularly Low	Below Normal	Normal	Above Normal	Particularly High		
<95%tile daily average flow	>95%tile <70%tile daily average flow	>70 %tile <30%tile daily average flow	>30%tile 10%tile daily average flow	>10%tile daily average flow	Daily Mean Flow	Lowest Daily Mean Flow

Lake and Turlough Levels

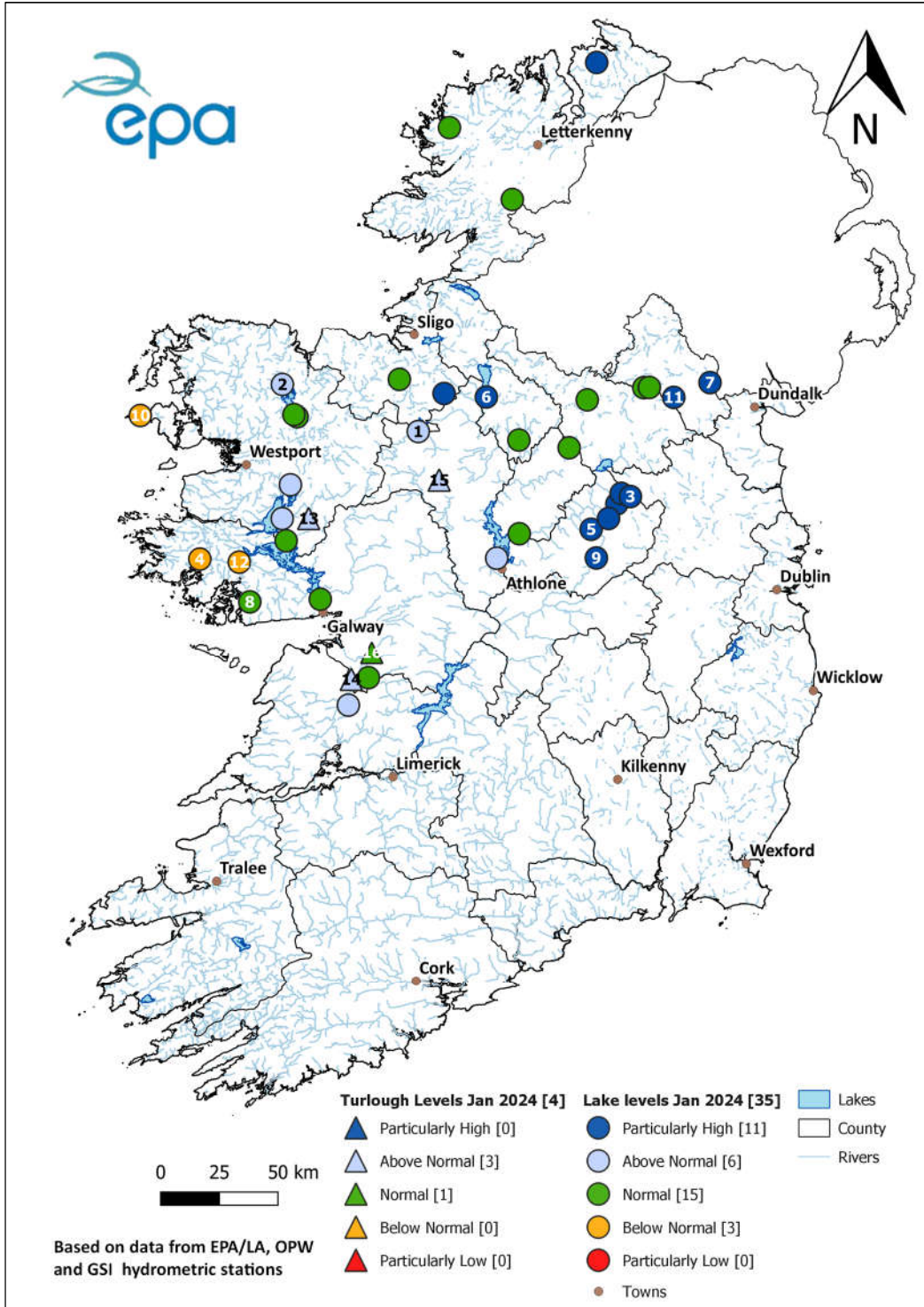
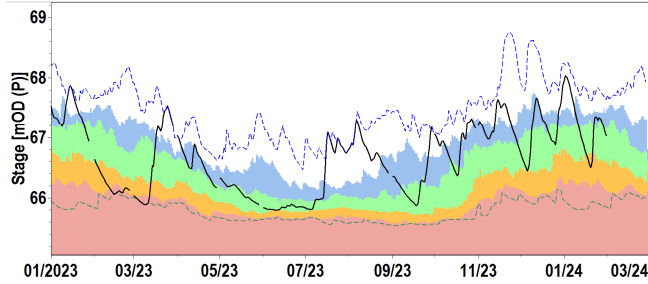


Figure 9: Monthly average lake & turlough levels for January 2024 relative to historic monthly average levels expressed as percentile of the long-term values for this month. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision (Source: EPA, OPW and GSI).

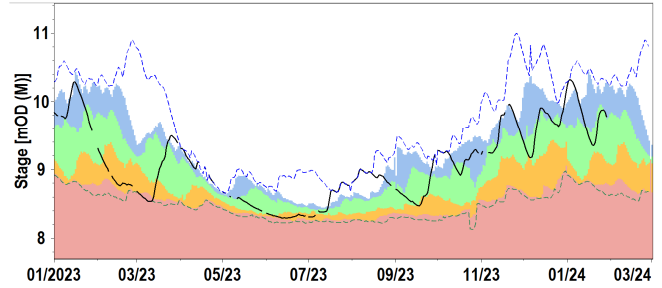
Monthly Hydrology Bulletin: Edition 045: January 2024

Water level hydrographs for selected lakes and turloughs

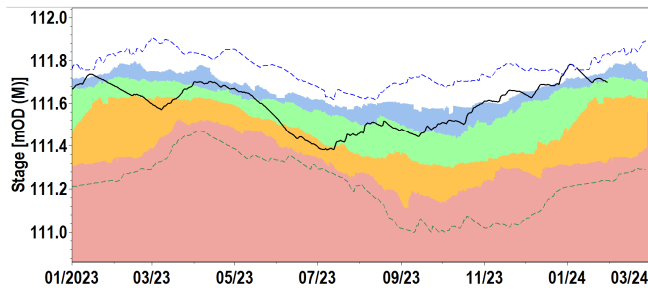
1. L. GARA (Sligo)



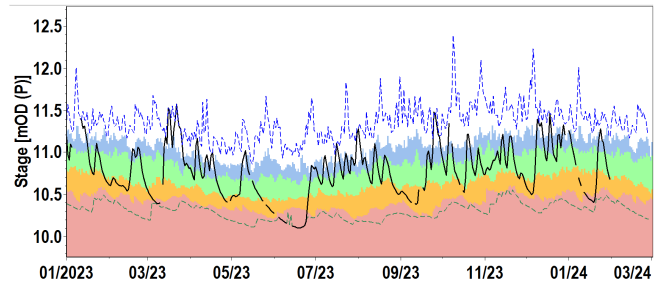
2. L.CONN (Mayo)



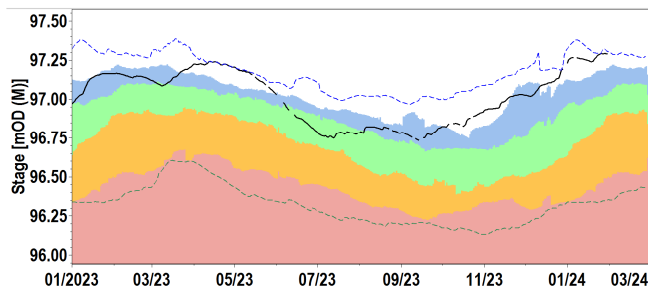
3. L. BANE (Meath)



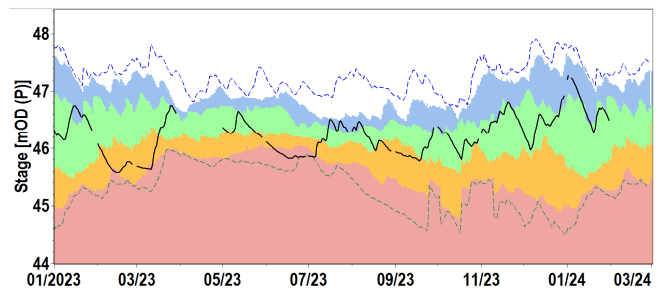
4. DERRYCLARE L. (Galway)



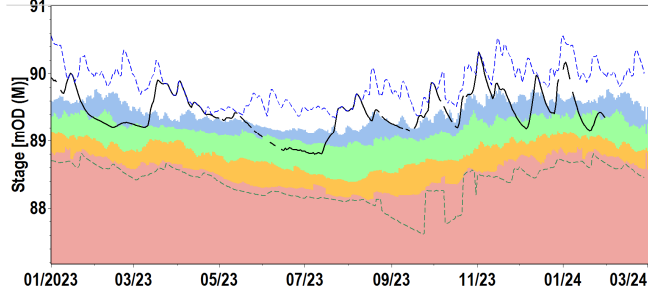
5. L. OWEL (Westmeath)



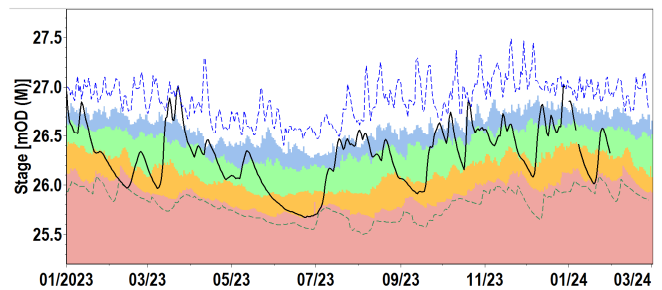
6. L.ALLEN (Leitrim)



2. L. MUCKNO (Monaghan)

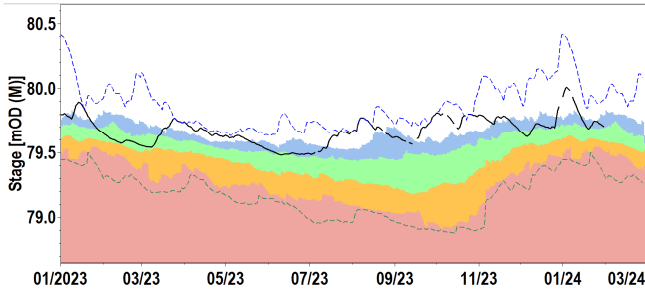


8. GLENICMURRIN LAKE (Galway)

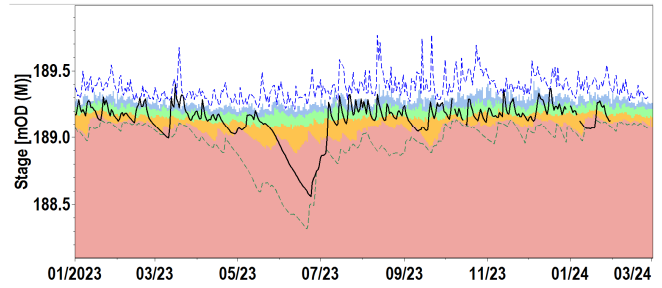


Monthly Hydrology Bulletin: Edition 045: January 2024

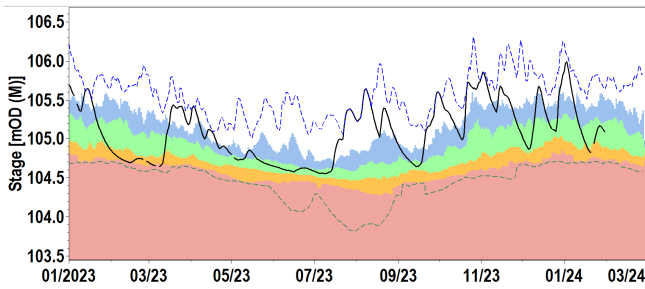
9. L.ENNELL (Leitrim)



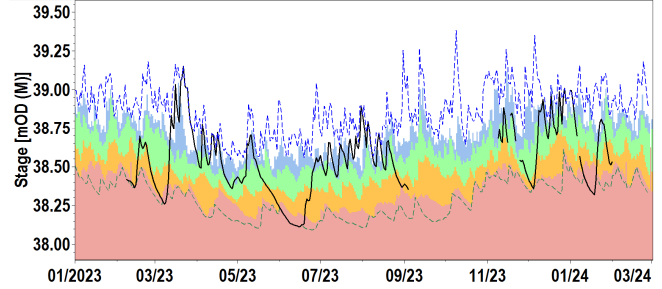
10. L. ACCORMORE (Mayo)



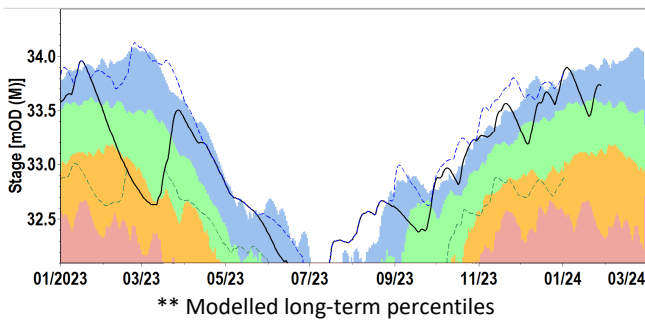
11. L.BAWN (Monaghan)



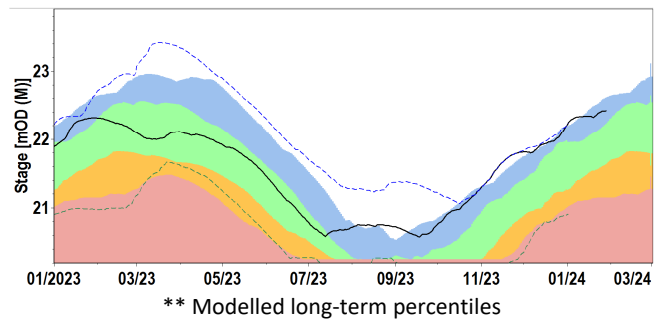
12. LOUGH SHINDILLA (Galway)



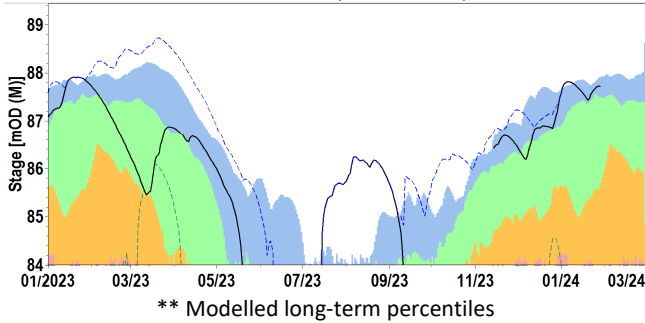
13. SKEALOGHAN TURLOUGH (Mayo)



14. TERMON SOUTH TURLOUGH (Galway)



15. CASTLEPLUNKET TURLOUGH (Roscommon)



16. BLACKROCK TURLOUGH (Galway)

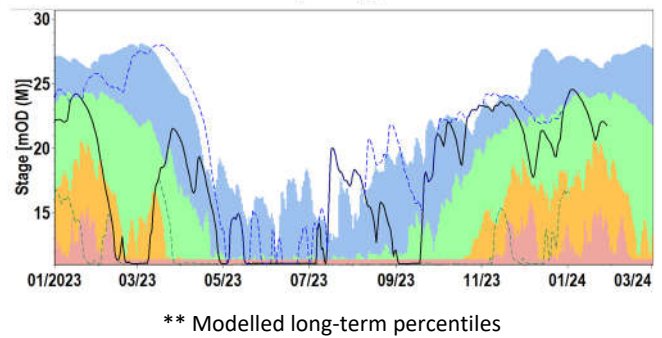
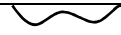




Figure 10: Observed daily mean lake and turlough levels (black trace) measured in meters above ordnance datum compared to the 10%tile, 30%tile, 70%tile and 95%tile for each month for the period of record and observed long-term maximum and minimum levels. Note historic percentiles for turloughs are based on modelled data. All data are provisional and may be subject to revision (Source: EPA, OPW, GSI, TCD, IT Carlow).

Monthly Hydrology Bulletin: Edition 045: January 2024

Explanation - Classes							
							
Particularly Low	Below Normal	Normal	Above Normal	Particularly High	Daily Mean Level mOD	Highest Daily Mean Level mOD	Lowest Daily Mean Level mOD
<95%tile daily average level	>95%tile <70%tile daily average level	>70 %tile <30%tile daily average level	>30%tile <10%tile daily average level	>10%tile daily average level			

Groundwater Levels and Spring Flows

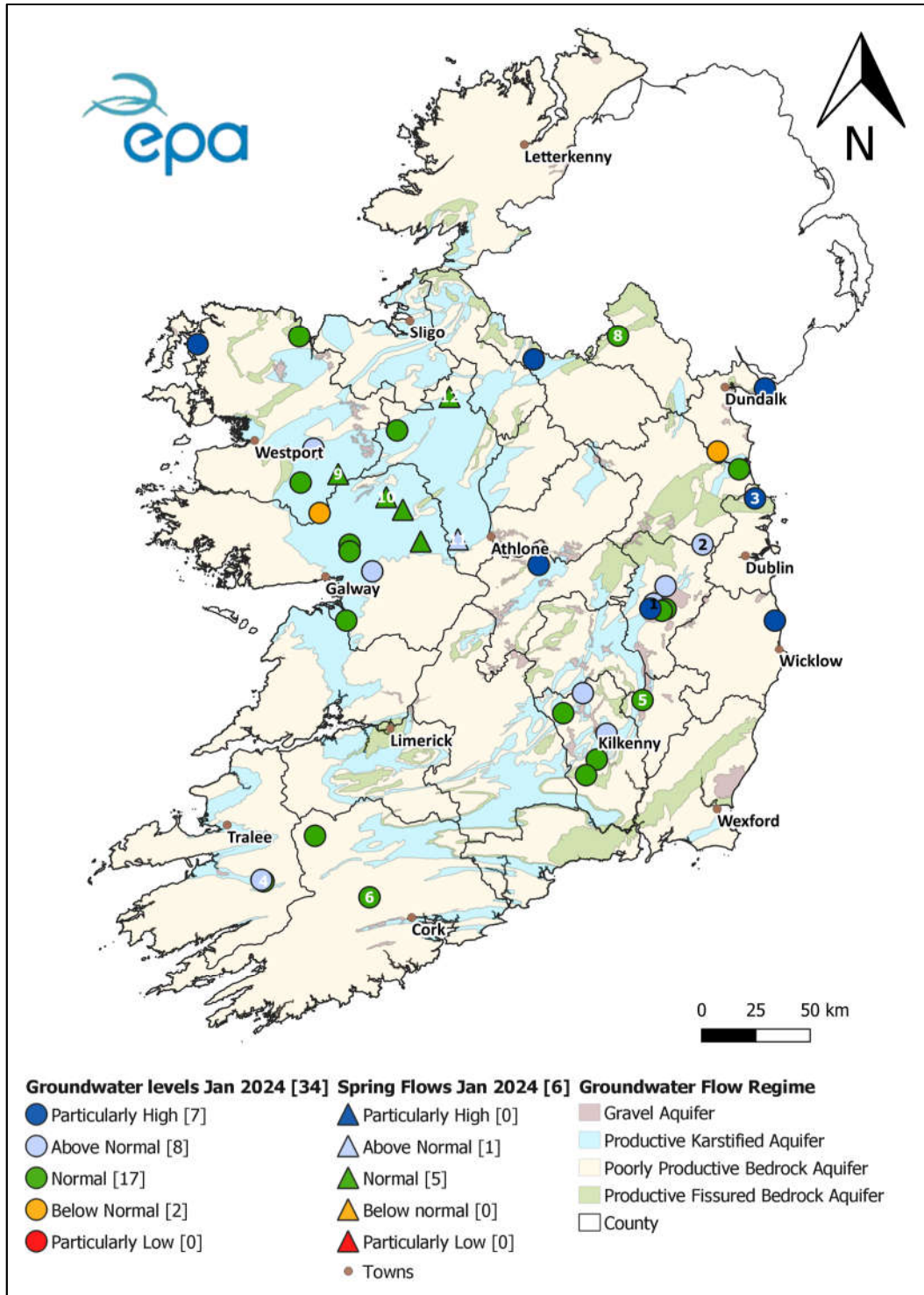
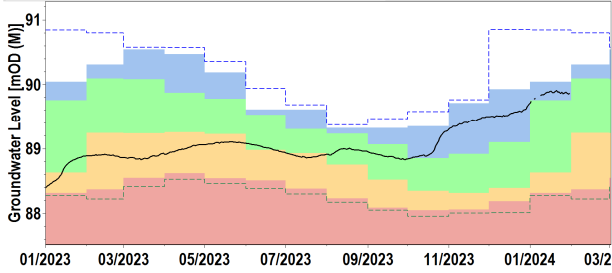


Figure 11: Groundwater level and Spring Flow status for January 2024, relative to historic monthly groundwater levels. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision (Source: EPA).

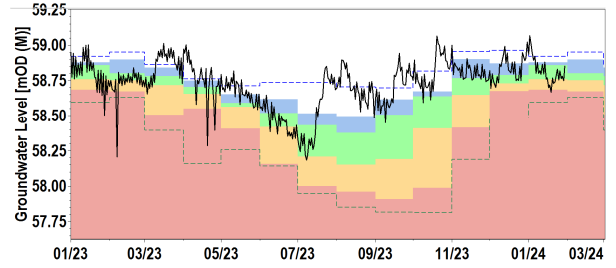
Monthly Hydrology Bulletin: Edition 045: January 2024

Groundwater and spring hydrographs

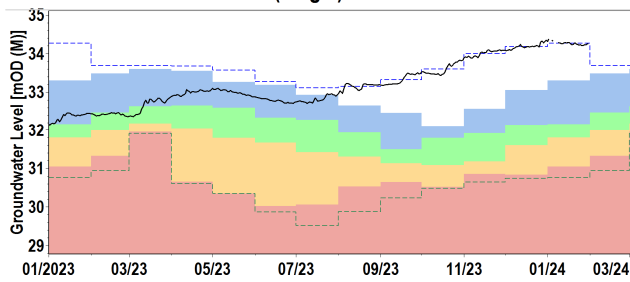
1. POLLARDSTOWN FEN - MB 30 (Kildare)



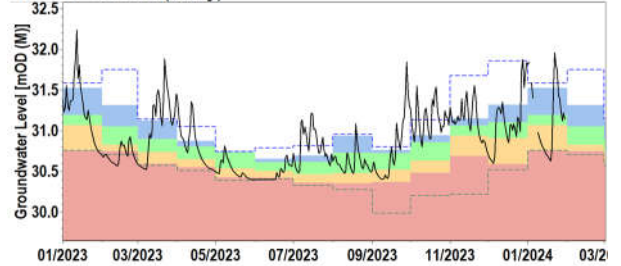
2. RW1 - DEEP (Meath)



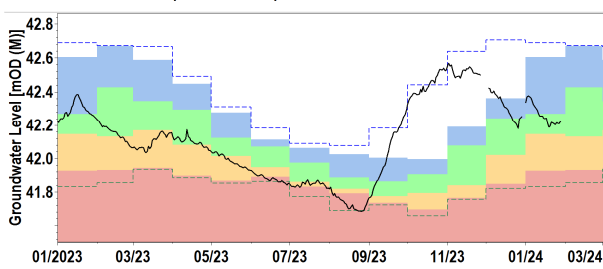
3. BOG OF THE RING OW3D (Fingal)



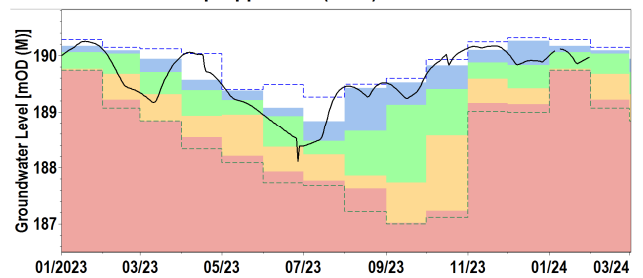
4. FBH1 - FLESK (Kerry)



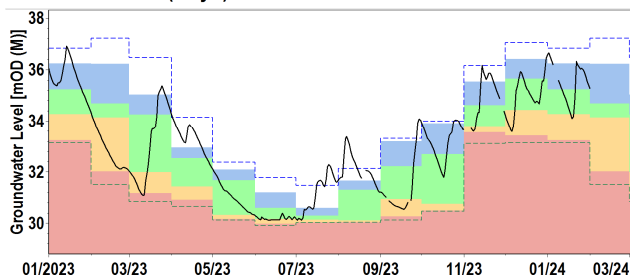
5. LANDFILL SITE (Co. Carlow)



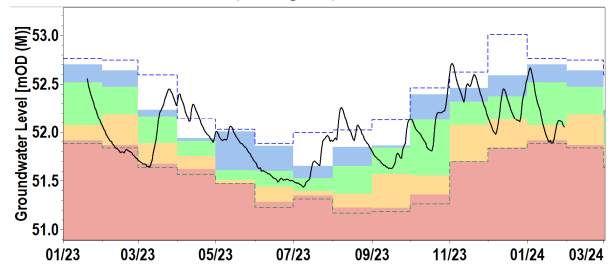
6. DRIPSEY DR1 Deep Upper Site (Cork)



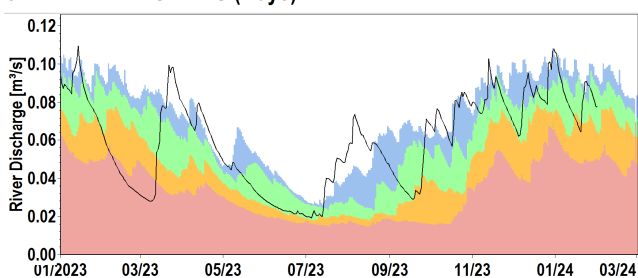
7. MAYO ABBEY (Mayo)



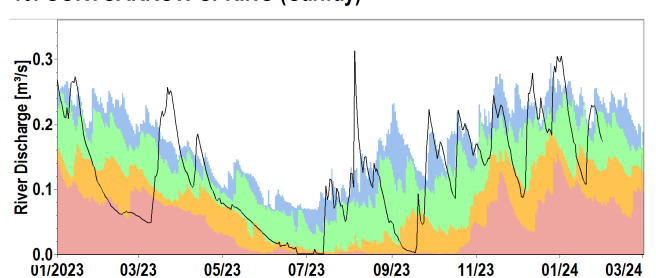
8. MAGHERARNEY GWL (Monaghan)



9. BALLINDINE SPRING (Mayo)

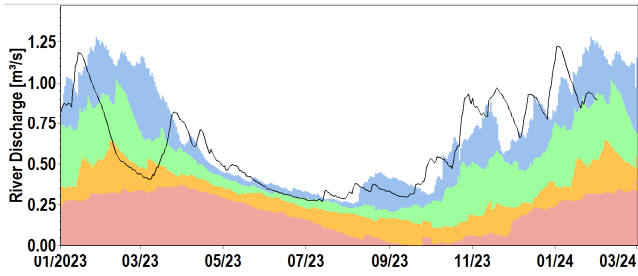


10. GORTGARROW SPRING (Galway)



Monthly Hydrology Bulletin: Edition 045: January 2024

11. KILLEGLAN SPRING (Roscommon)



12. ROCKINGHAM (Roscommon)

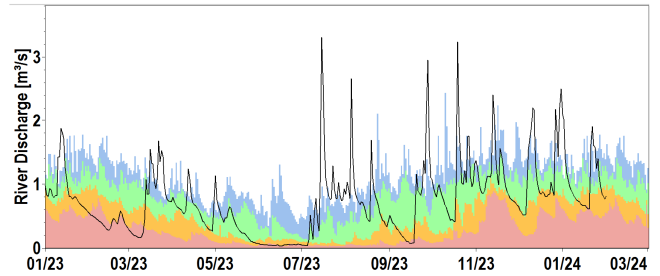
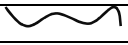




Figure 12: Daily mean groundwater levels (black trace) measured in meters above ordnance datum compared to the 10%tile, 30%tile, 70%tile and 95%tile for each month for the period of record and long-term maximum and minimum levels. All data are provisional and may be subject to revision (Source: EPA).

Explanation - Classes							
Particularly Low	Below Normal	Normal	Above Normal	Particularly High	Daily Mean Level mOD	Highest Month Mean Level mOD	Lowest Month Mean Level mOD
<95%tile monthly average level	>95%tile <70%tile monthly average level	>70 %tile <30%tile monthly average level	>30%tile <10%tile monthly average level	>10%tile monthly average level			

Glossary of terms

Aquifer Type	An aquifer is an underground body of water bearing rock or unconsolidated materials (gravel or sand) from which groundwater can be extracted in useful amounts. For the purposes of this report they have been grouped into four aquifer categories as follows: <ul style="list-style-type: none"> ➤ Karstic (Rk and Lk) aquifers; ➤ Gravel (Rg and Lg) aquifers; ➤ Productive fractured bedrock (Rf and Lm) aquifers; ➤ Poorly productive bedrock (LI, PI and Pu) aquifers.
Dry spell	A dry spell is a period of 15 or more consecutive days to none of which is credited 1.0 mm or more of precipitation (i.e. daily tot < 1.0 mm).
Long term average (LTA)	The arithmetic mean calculated from historic record. For rainfall, the period 1981 to 2010 is used. For other parameters, such as groundwater levels, lake levels and river flow the period may vary according to data availability.
mOD (M or P)	Groundwater levels or lake levels above ordnance datum. In most cases this is relative to mean sea level at Malin (M) but in some cases is relative to Poolbeg (P).
Long-term monthly average	The arithmetic mean calculated from historic record of all monthly averages.
Percentile Level/Flow	Level or flow that is equalled or exceeded the stated percent of the time, e.g. 30%tile is the level or flow that is equalled or exceeded 30 percent of the time.
Very Wet Days	A very wet day is a day with 10.0 mm or more of rainfall.
Wet Days	A wet day is a day with 1.0 mm or more of rainfall.
Dry Spell	A dry spell is a period of 15 or more consecutive days to none of which is credited 1.0mm or more of precipitation (i.e. daily tot < 1.0 mm).
Absolute Drought	An absolute drought is a period of 15 or more consecutive days to none of which is credited 0.2 mm or more of precipitation.
Partial Drought	A partial drought is a period of at least 29 consecutive days, the mean daily rainfall of which does not exceed 0.2 mm

Description of flow and level percentile classifications

Particularly High	>10%tile exceedance	Monthly level or flow that can occur 10% of the time
Above Normal	>30%tile <10%tile exceedance	Monthly level or flow that can occur 20% of the time
Normal	>70%tile <30%tile exceedance	Monthly level or flow that can occur 40% of the time
Below Normal	>95%tile <70%tile exceedance	Monthly level or flow that can occur 20% of the time
Particularly Low	<95%tile exceedance	Monthly level or flow that can occur 5% of the time

Useful links

Access to EPA/LA Hydrometric data on [HydroNet](#)

Access to provisional water level only data from OPW hydrometric stations on [waterLevel.ie](#)

Access to archived water level and flow data from OPW hydrometric stations on [HydroData](#)

Access to turlough and borehole level data from GSI hydrometric stations on [gwlevel.ie](#)

Access to this month's Met Éireann and historic [weather statements](#).