

### Overview

Most meteorological stations recorded monthly rainfall totals below their long-term average for March. It was driest in the east and south east of the country. In response to lower rainfall compared to the previous month, the average monthly flows were lower at 93% of river stations and at 89% of lake monitoring stations across the country. Over half of both river and lake monitoring stations recorded average flows and levels within the 'normal' range category for this time of year.

Similarly, average groundwater levels and spring flows fell across the country from February to March 2021. Average monthly groundwater levels for March were above normal at 37%, and normal at 32% of monitored groundwater sites across the country.

### Rainfall

The majority of monthly rainfall totals across the country were below their Long-Term Average (LTA). Percentage of monthly rainfall values ranged from 41% (monthly rainfall total of 32.7 mm) at Johnstown Castle, Co Wexford to 138% (monthly rainfall total of 140.3 mm) at Claremorris, Co Mayo. Monthly rainfall totals ranged from 29.6 mm (58% of its LTA) at Casement Aerodrome, Co Dublin to 141.1 mm (100% of its LTA) at Newport, Co Mayo. The highest daily rainfall total was 26.4 mm at Athenry, Co Galway on Sunday 28th. The number of rain days ranged from 11 days at Johnstown Castle, Co Wexford to 25 days at Belmullet, Co Mayo. The number of wet days ranged from 7 days at Dublin Airport to 19 days at Newport, Co Mayo. The number of very wet days ranged from zero days at a few stations to 6 days at Claremorris, Co Mayo. Eight stations had their driest March since 2012, these were Oak Park, Co Carlow, Dublin Airport, Co Dublin, Sherkin Island, Co Cork, Roches Point Co Cork, Dunsany, Co Meath, Johnstown Castle, Co Wexford, Casement Aerodrome, Co Dublin and Cork Airport, Co Cork.

### River Flows

River flows have dropped throughout the country in March and were lower at 93% of monitoring stations compared to flows observed during February. Monthly mean river flows at 170 river monitoring sites were compared to an analysis of historic March average flows; one was classed as particularly high, 41 (24%) as above normal, 111 (65%) were classed as normal, and 17 (10%) were below normal for this time of year.

### Lake Levels

Lake levels also dropped during this month and were lower at 89% of monitored lakes compared to levels observed in February. March lake levels were classified as particularly high at eight (17%)

lakes, above normal at nine (19%), normal at 26 (55%), and below normal at four (9%) lakes for the month of March.

### Groundwater Levels and Spring Flows

Groundwater levels fell from February to March at 87% of monitoring wells analysed. March groundwater levels were classified as particularly high at nine (24%) of monitoring wells, above normal at 14 wells (37%), normal at 12 (32%) and below normal at three (8%) of monitoring wells.

Spring outflows were monitored at nine EPA monitoring sites. The flows from these springs were compared to previously recorded flows for March and two springs were particularly high and seven were normal for this time of year.

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## Rainfall

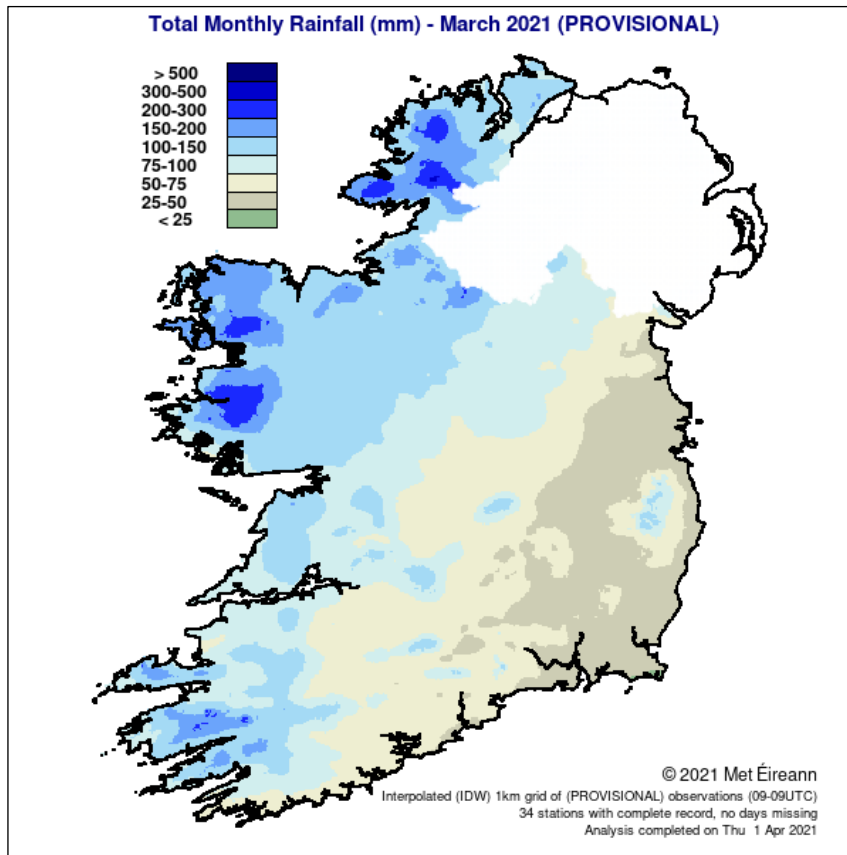


Figure 1: Rainfall map for Ireland March 2021 (Source: Met Eireann.ie)

### March 2021

Based on Data from 1- 31 March 2021 on whole month basis

#### Rainfall (% of average for period 1981-2010) on whole month basis

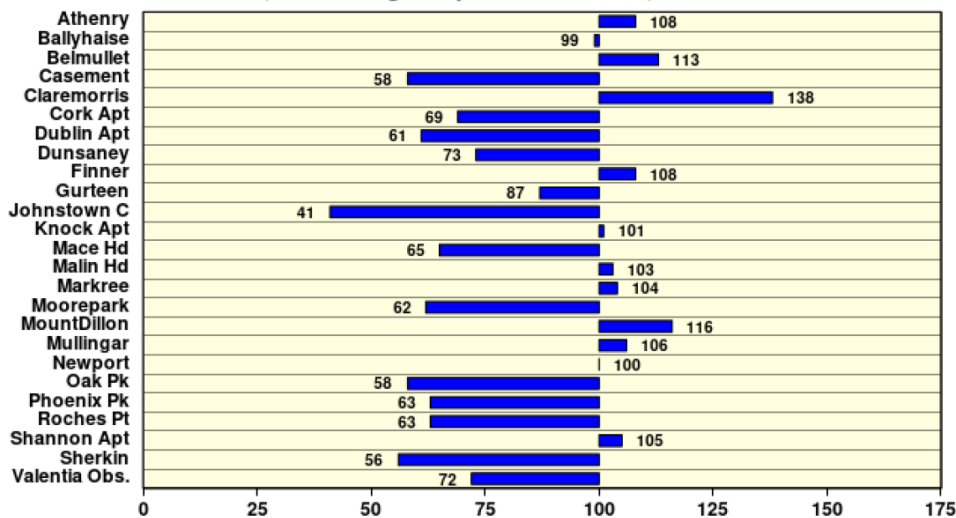


Figure 2: Summary of rainfall at synoptic stations March 2021, figures indicate the percentage difference from the Long-Term Average rainfall for March. (Source: Met Eireann.ie)

## River Flows

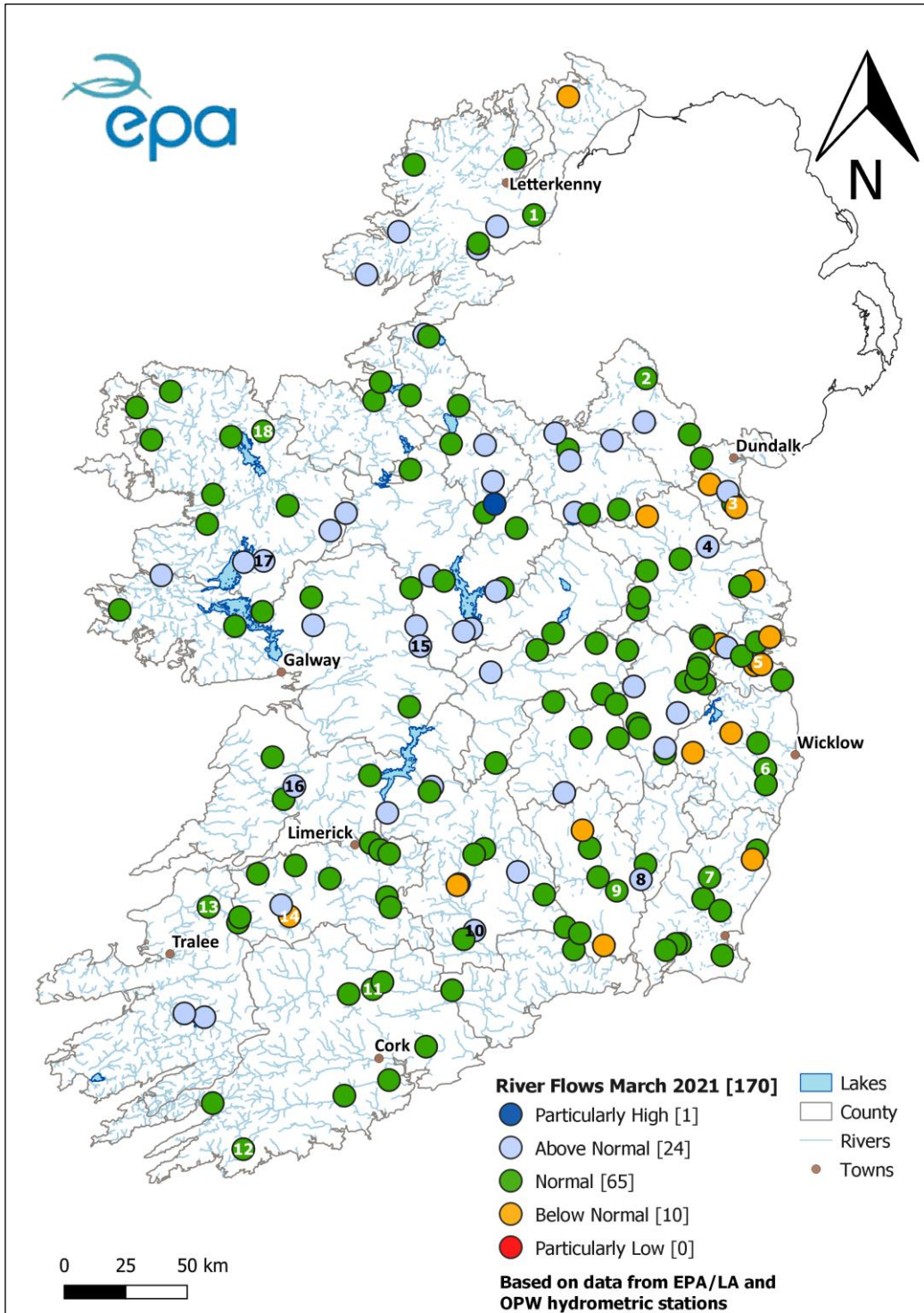


Figure 3: Monthly average river flows for March 2021 relative to historic monthly average flows expressed as percentile of the long-term values of monthly flow. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision. (Source: EPA, OPW).

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Monthly average flow as a percentage of the long-term monthly average flow

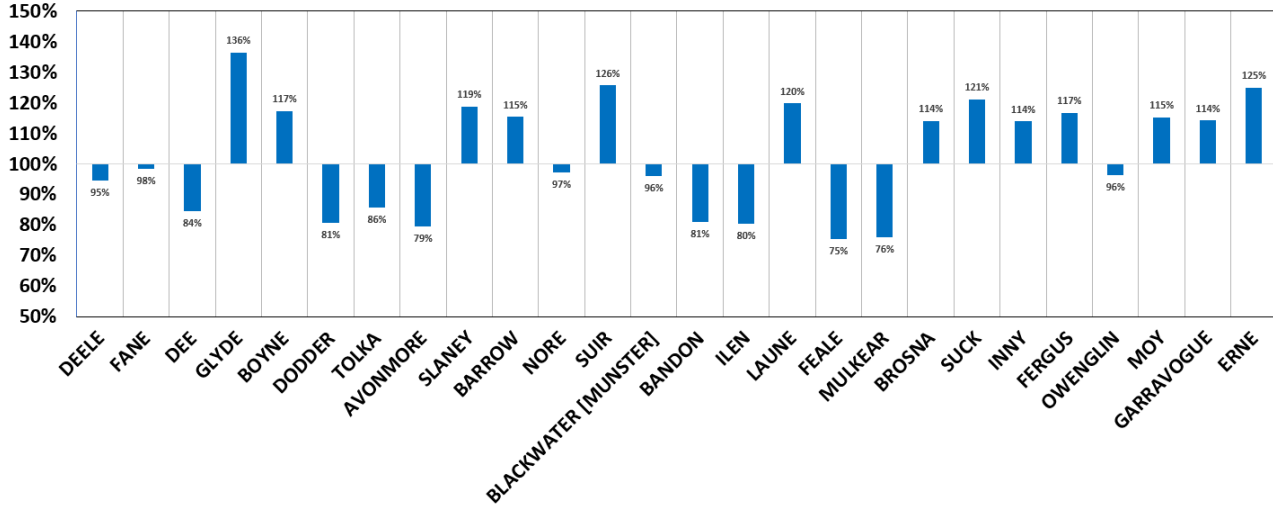
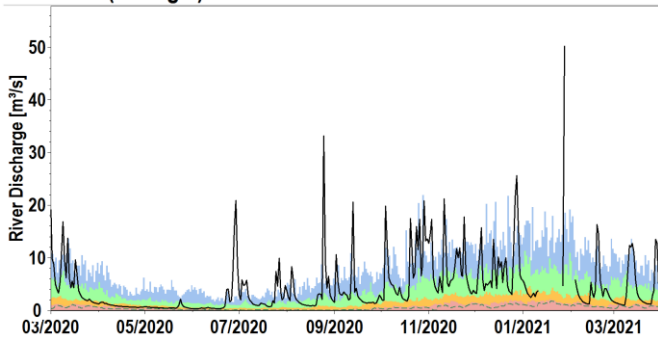


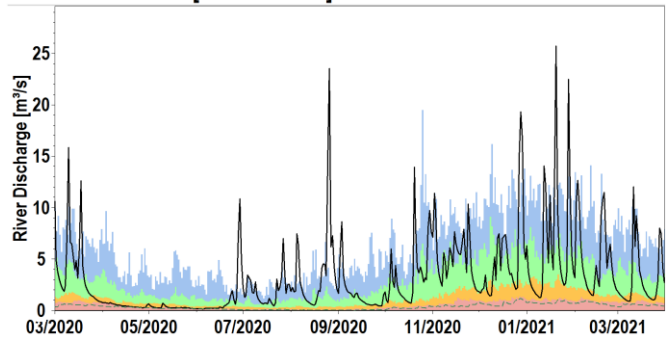
Figure 4: March 2021 average flows as a percentage of the long-term monthly average flow for March at a selected number of stations. All data are provisional and may be subject to revision. (Source: EPA, OPW)

## Flow Hydrographs for selected Rivers

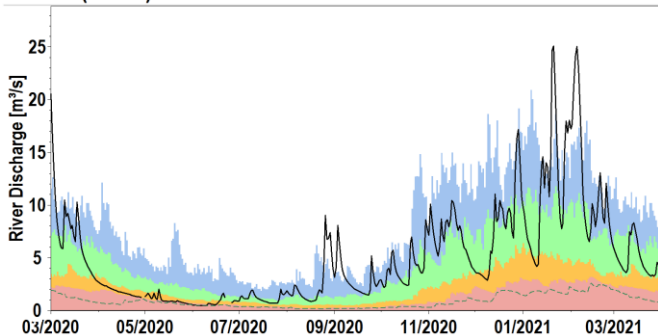
1. DEELE (Donegal)



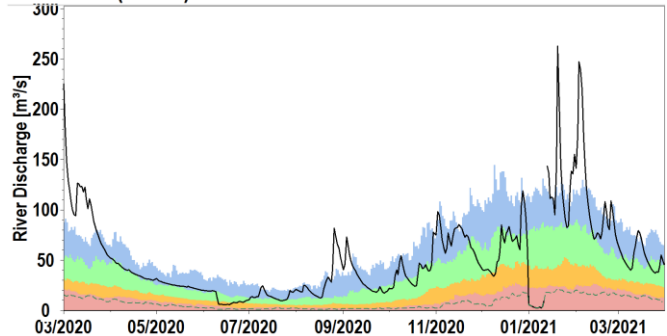
2. BLACKWATER [MONAGHAN]



3. DEE (Louth)

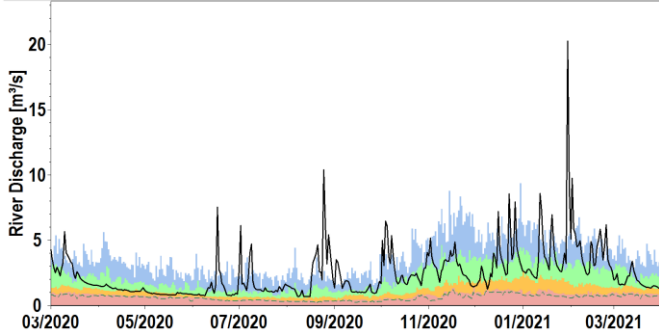


4. BOYNE (Meath)

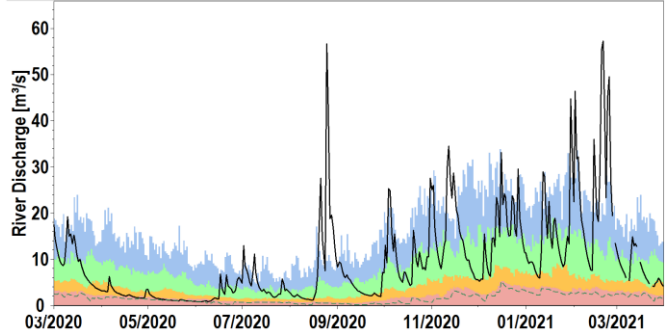


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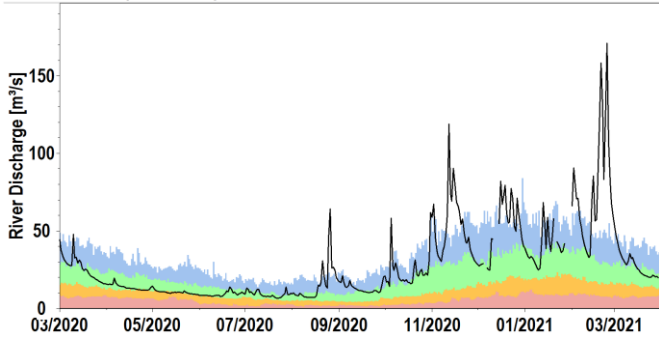
**5. DODDER (Dublin)**



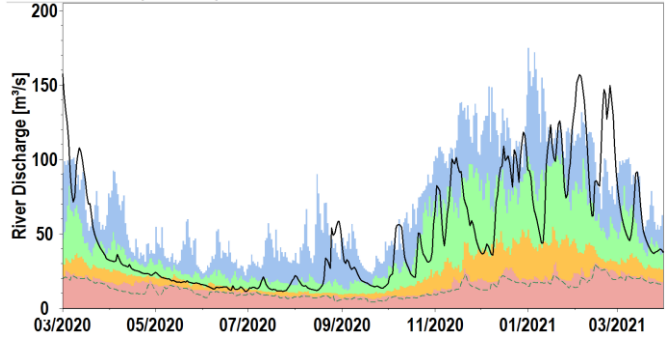
**6. AVONMORE (Wicklow)**



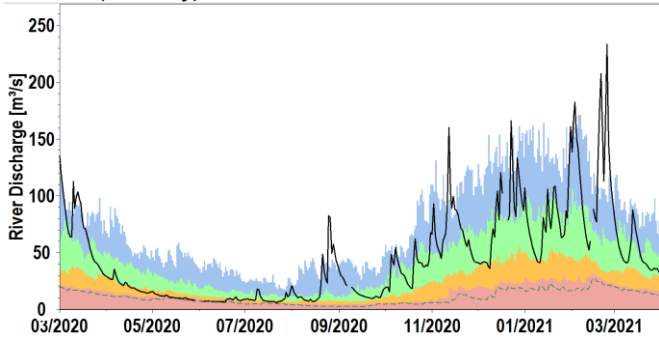
**7. SLANEY (Wexford)**



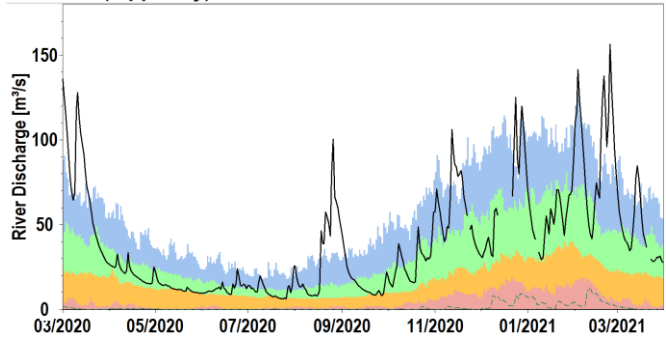
**8. BARROW (Carlow)**



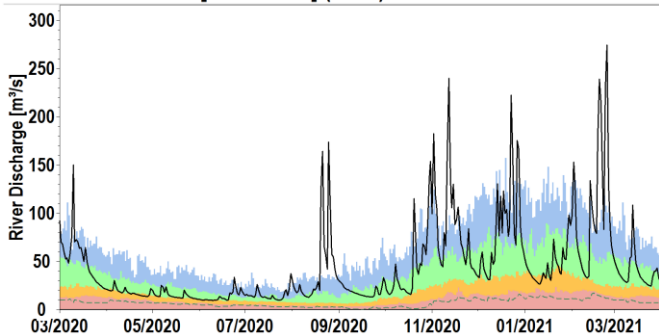
**9. NORE (Kilkenny)**



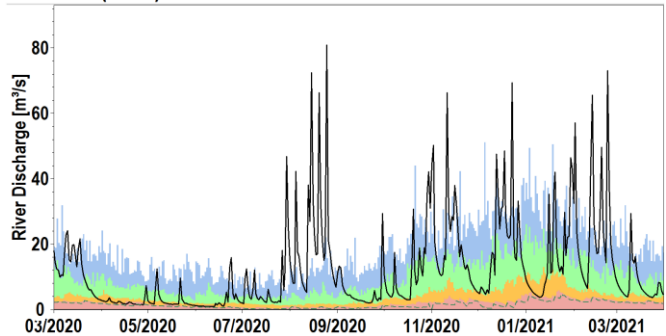
**10. SUIR (Tipperary)**



**11. BLACKWATER [MUNSTER] (Cork)**

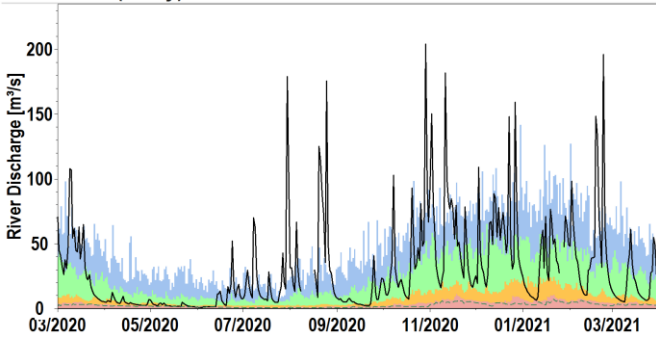


**12. ILEN (Cork)**

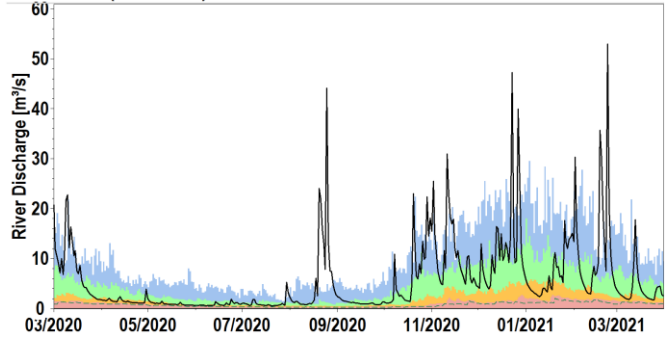


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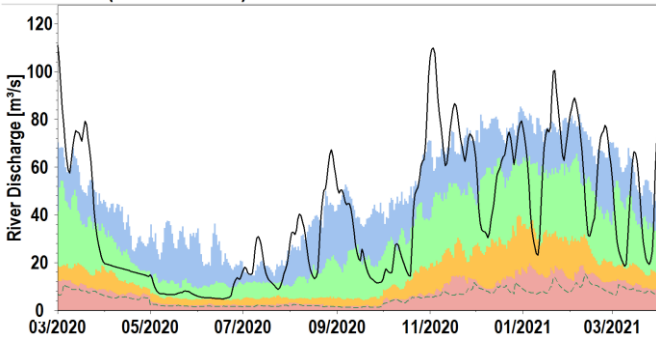
13. FEALE (Kerry)



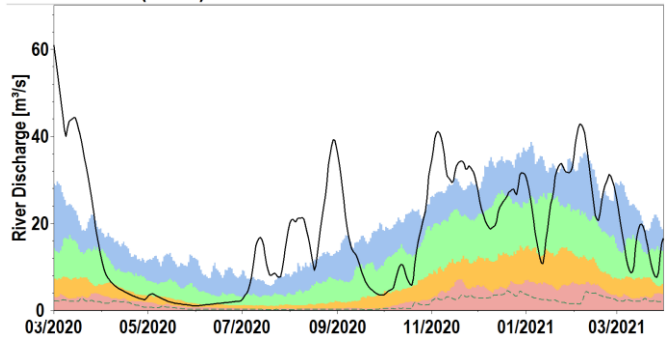
14. DEEL (Limerick)



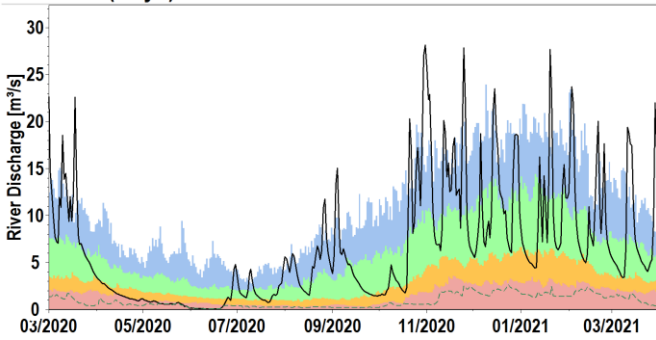
15. SUCK (Roscommon)



16. FERGUS (Clare)



17. ROBE (Mayo)



18. MOY (Mayo)

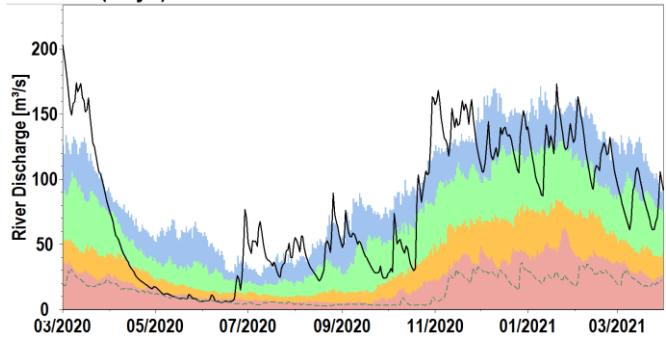




Figure 5: Daily average river flows up to March 2021 relative to historic daily average flows expressed as percentile of the long-term values of each day. All data are provisional and may be subject to revision. (Source: EPA, OPW)

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 Levels

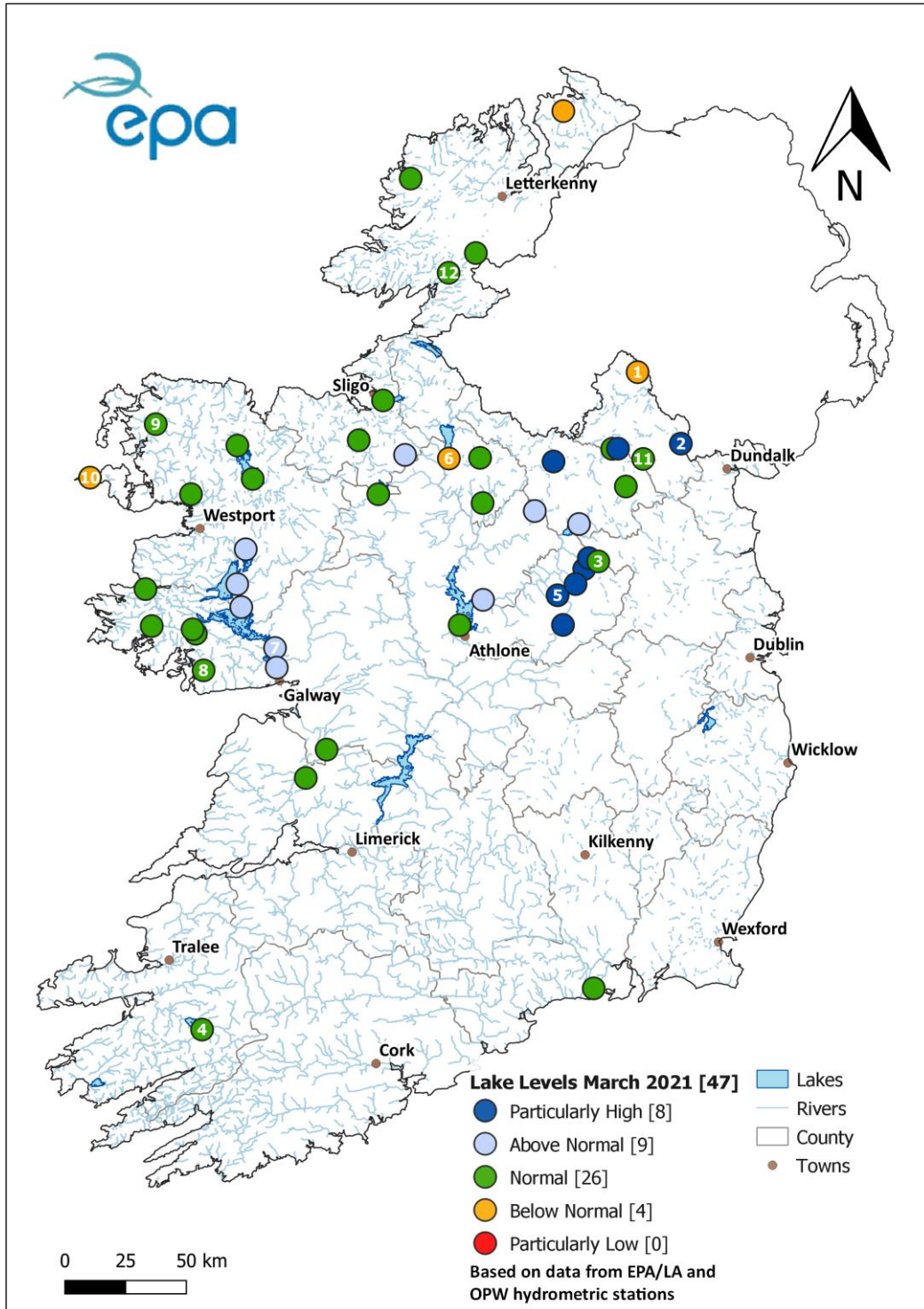
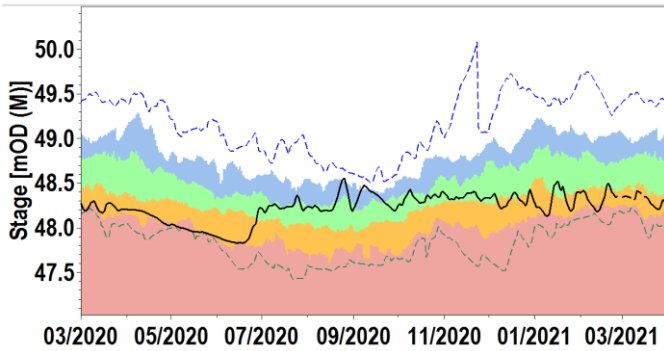


Figure 6: Monthly average lake levels for March 2021 relative to historic monthly average levels expressed as percentile of the long-term values of March. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision. (Source: EPA, OPW)

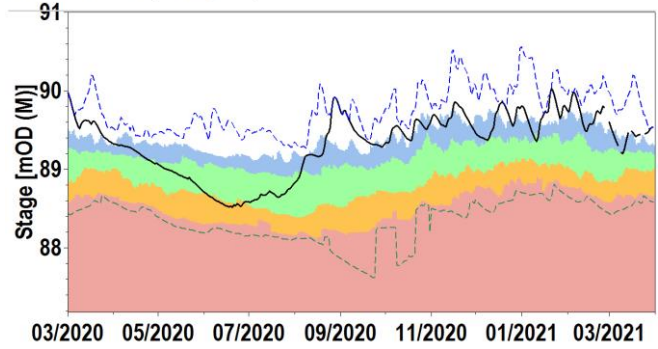


## Water Level Hydrographs for selected Lakes

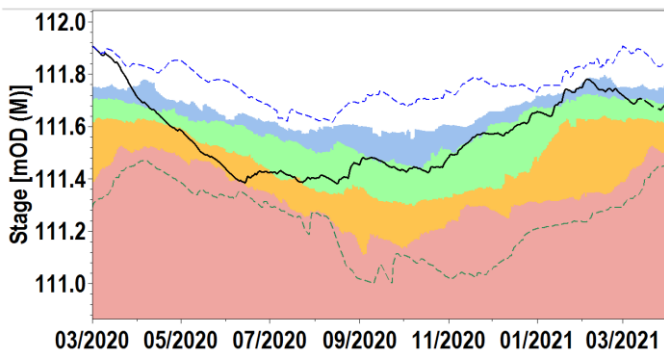
1. EMY LOUGH (Monaghan)



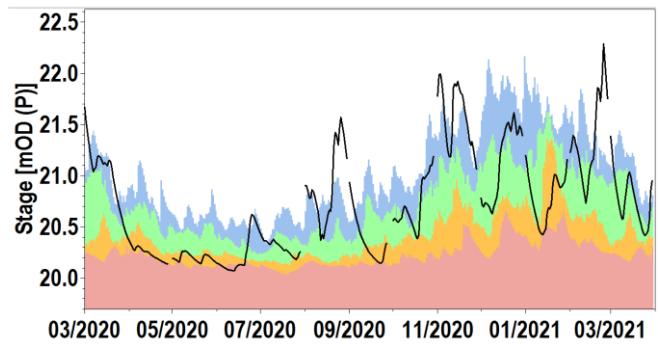
2. L. MUCKNO (Monaghan)



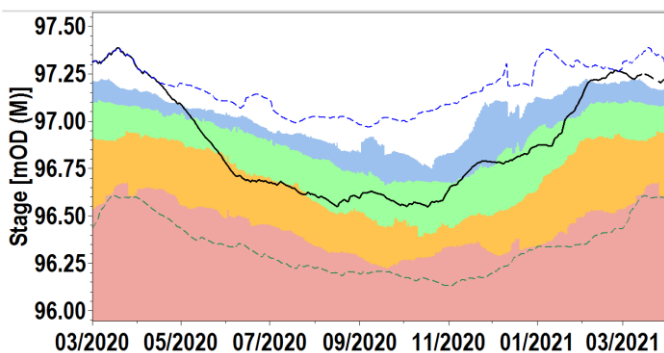
3. L. BANE (Meath)



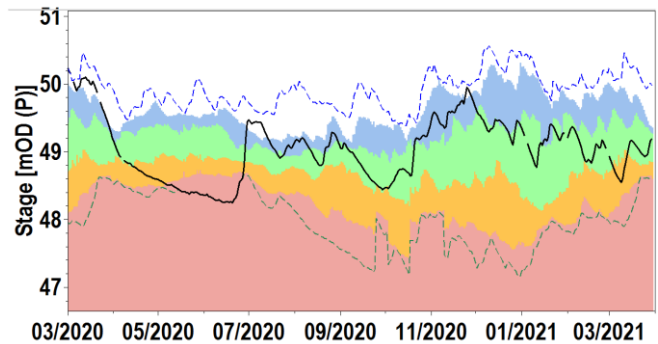
4. L. LEANE (Kerry)



5. L. OWEL (Westmeath)

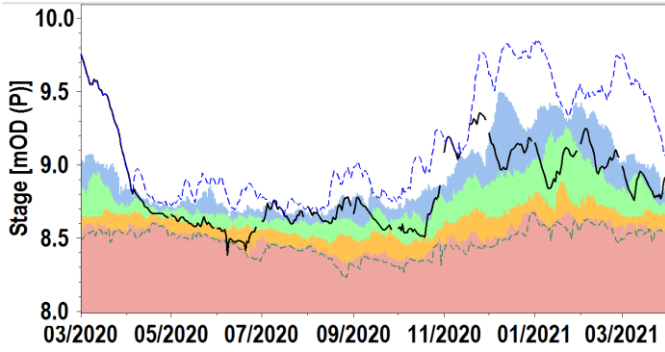


6. L. ALLEN (Leitrim)

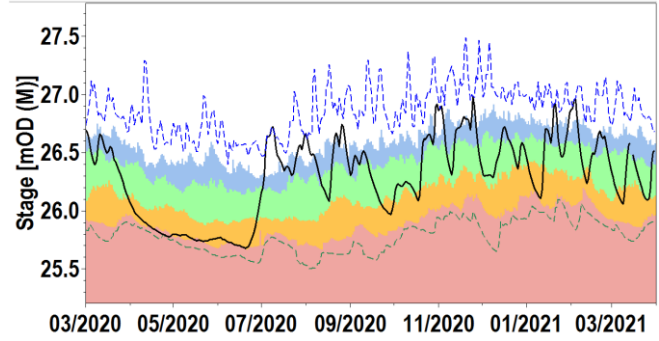


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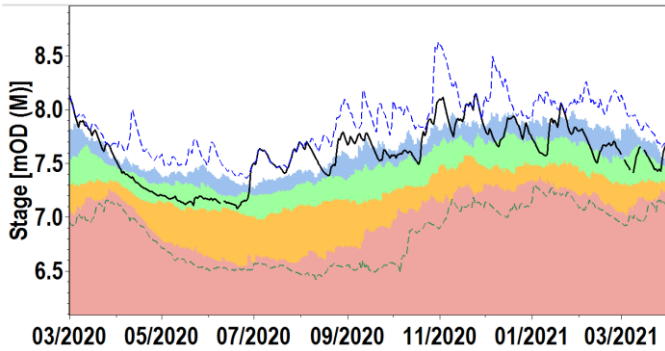
7. L.CORRIB (Galway)



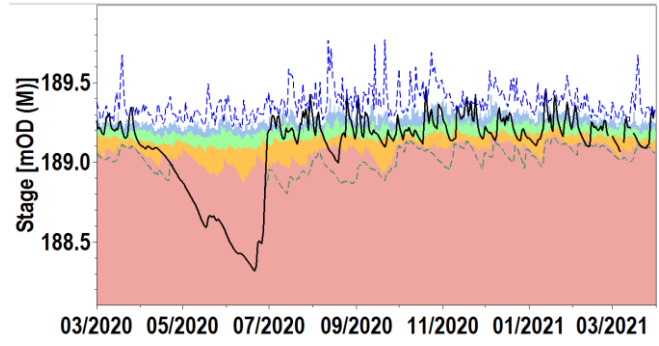
8. GLENICMURRIN LAKE (Galway)



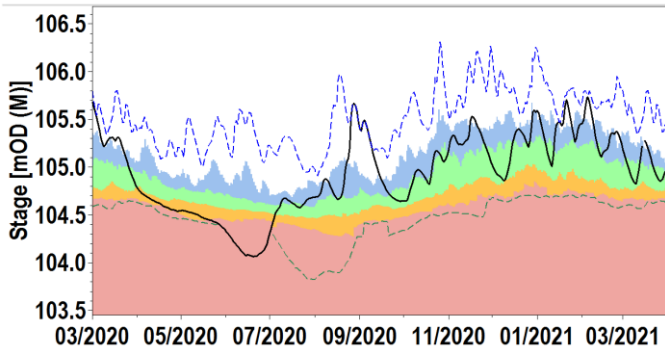
9. CARROWMORE L. (Mayo)



10. L. ACCORMORE (Mayo)



11. L.BAWN (Monaghan)



12. L.ESKE (Donegal)

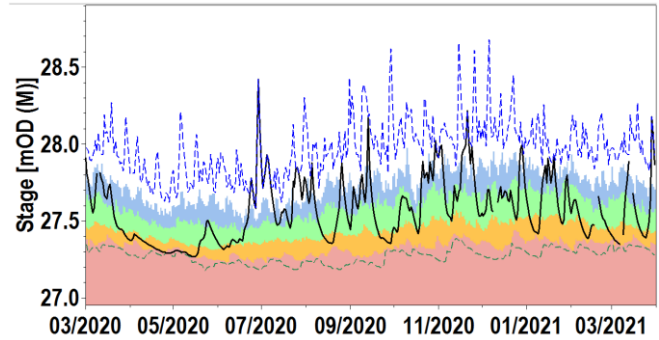





Figure 7: Daily mean lake levels classed relative to historic daily mean levels expressed as percentile of the values of each day with long-term maximum and minimum daily levels. All data are provisional and may be subject to revision. (Source: EPA, OPW)

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

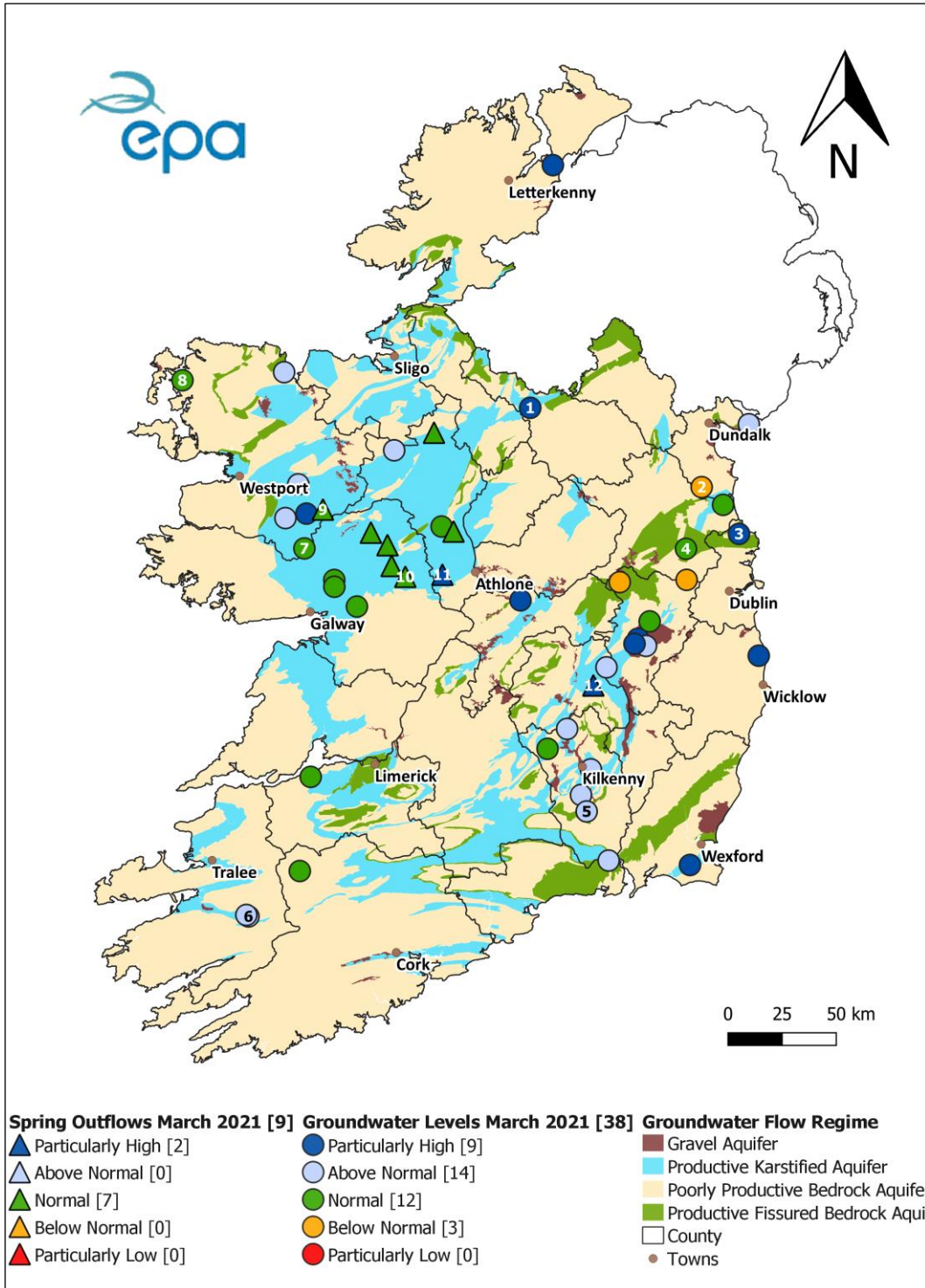
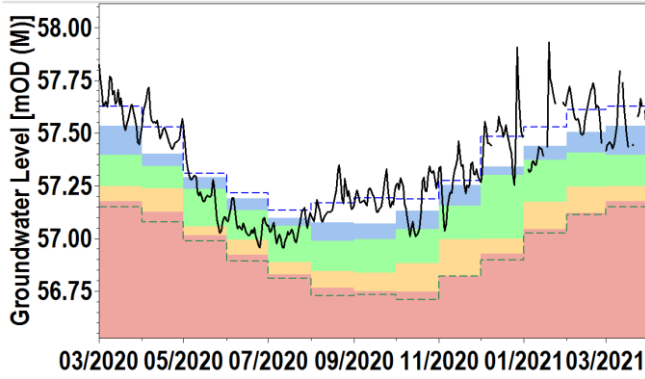


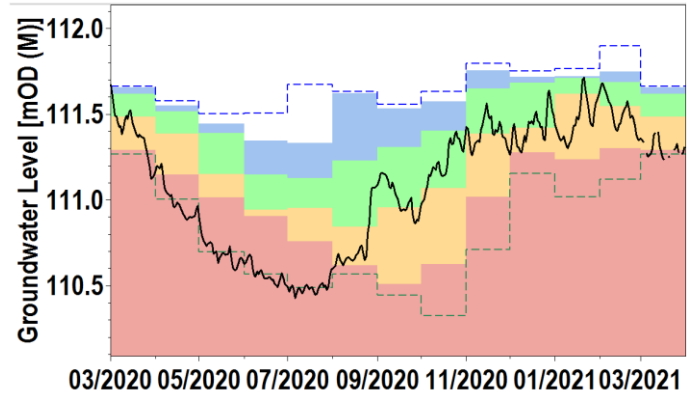
Figure 8: Groundwater level and Spring Flow status March 2021, relative to historic March groundwater levels. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision. (Source: EPA)

## Groundwater and Spring Hydrographs

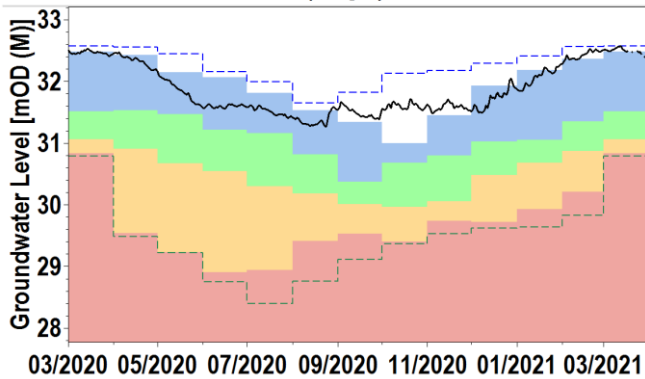
1. CLINTYGRIGNEY MORTONS (Cavan)



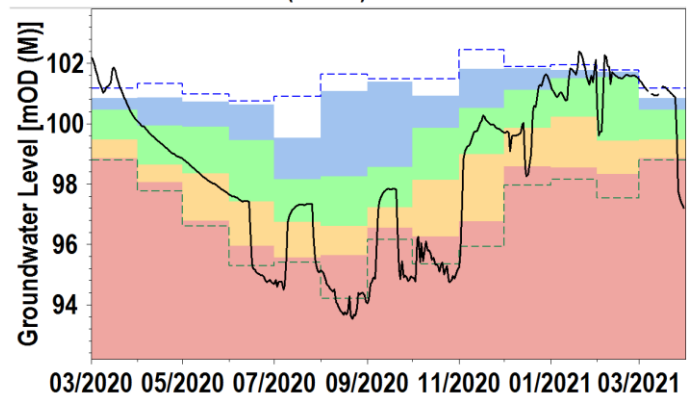
2. Mattock MK1 Deep (Meath)



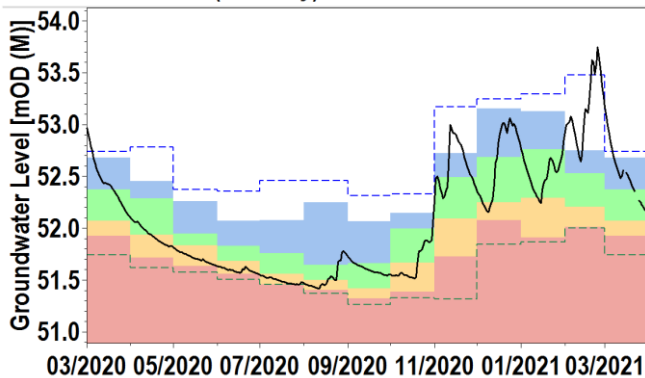
3. BOG OF THE RING OW3D (Fingal)



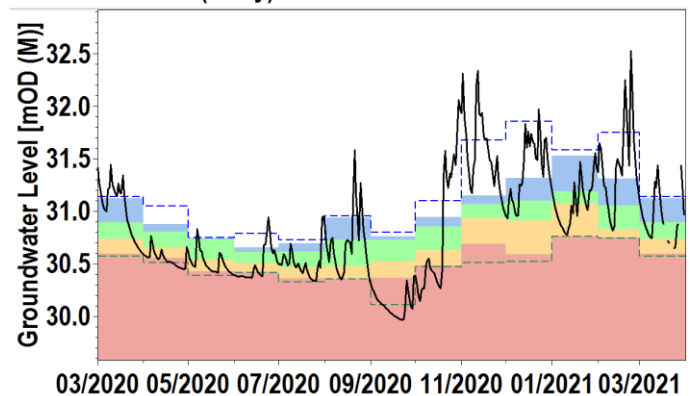
4. DUNSHAUGHLIN PW6 (Meath)



5. KNOCKTOPHER (Kilkenny)

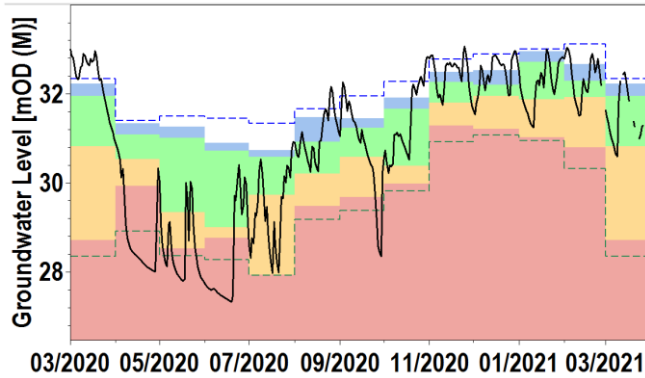


6. FBH1 - FLESK (Kerry)

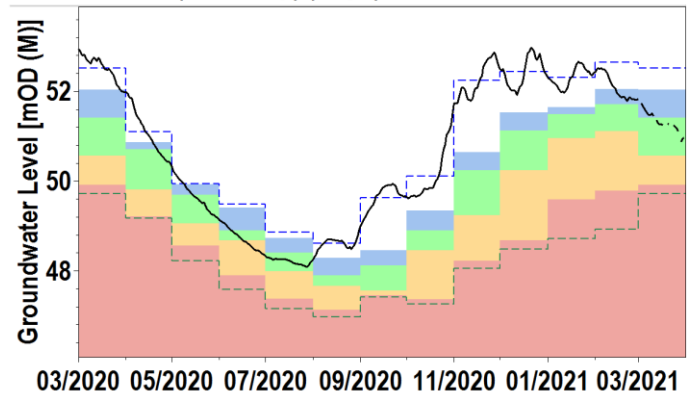


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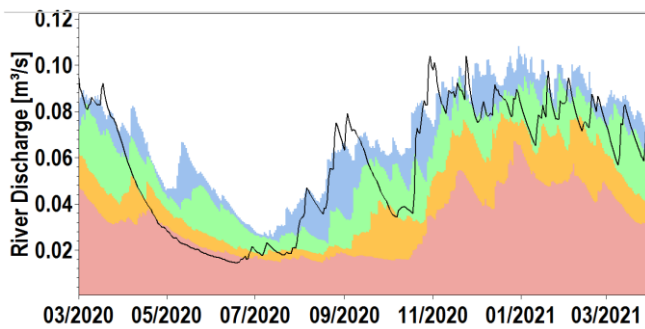
7. SHRULE GWL (Mayo)



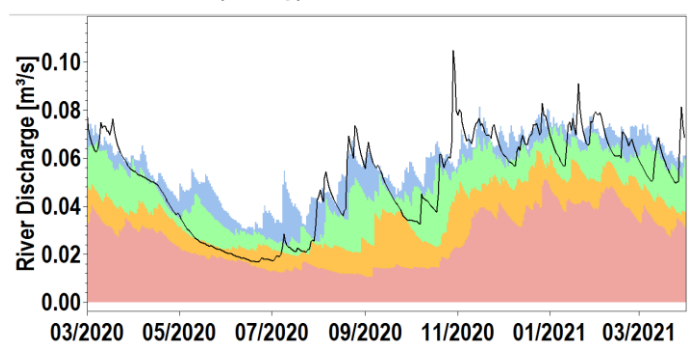
8. Glencastle - (GC1 Deep) (Mayo)



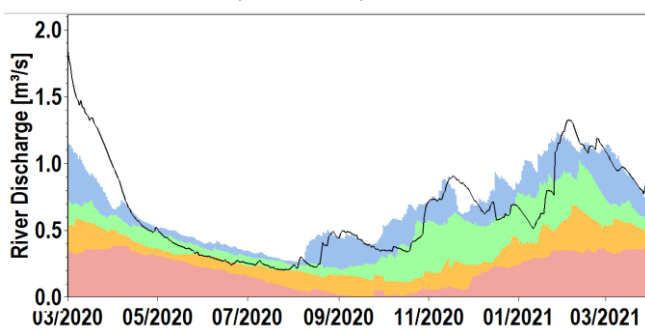
9. BALLINDINE SPRING (Mayo)



10. CALTRA SPRING (Galway)



11. KILLEGLAN SPRING (Roscommon)



12. KYLE SPRING (Laois)

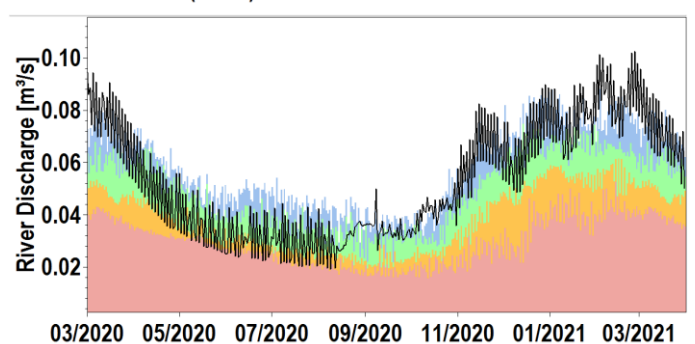
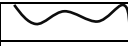




Figure 9: Daily mean groundwater levels (black trace) measured in meters above ordnance datum compared to the 10%tile, 30%tile, 70%tile and 95%tile for each month for the period of record and long-term maximum and minimum levels. All data are provisional and may be subject to revision. (Source: EPA)

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"> <li>➤ Karstic (Rk and Lk) aquifers;</li> <li>➤ Gravel (Rg and Lg) aquifers;</li> <li>➤ Productive fractured bedrock (Rf and Lm) aquifers;</li> <li>➤ Poorly productive bedrock (LI, PI and Pu) aquifers.</li> </ul>
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	Groundwater levels or lake levels above ordnance datum. In most cases this is relative to mean sea level at Malin but in some cases is relative to Poolbeg.
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.

## 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](#).