Overview

All meteorological stations recorded monthly rainfall totals below their long-term average for April. It was driest in the east and south of the country. In response to less rainfall compared to the previous month, the average monthly flows were lower at all river and lake monitoring stations across the country. Over half of river (52%) and a third of lake monitoring stations (32%) recorded average flows and levels within the 'below normal' range category for this time of year.

Similarly, average groundwater levels and spring flows fell across the country between March and April 2021. Most groundwater levels recorded were 'normal' (36%) and 'below normal' (26%) across the country, with 15% of monitored sites classified as 'particularly low' observed in the eastern half of the country. Over half of spring flows were within the 'normal' range for this time of year.

Rainfall

All monthly rainfall totals across the country were below their Long-Term Average (LTA). Percentage of monthly rainfall values ranged from 17% (monthly rainfall total of 12.3 mm) at Johnstown Castle, Co Wexford to 59% (monthly rainfall total of 42.4 mm) at Belmullet, Co Mayo. Monthly rainfall totals ranged from 10.8 mm (20% of its LTA) at Dublin Airport, Co Dublin to 45.6 mm (47% of its LTA) at Newport, Co Mayo. The highest daily rainfall total was 9.3 mm at Roche's Point, Co Cork on Thursday 29th. The number of rain days ranged from 8 days at Johnstown Castle, Co Wexford to 17 days at both Belmullet, Co Mayo and Knock Airport, Co Mayo. The number of wet days ranged from 4 days at Johnstown Castle, Co Wexford to 16 days at Belmullet, Co Mayo. There were no very wet days reported this month. Four stations had their driest April on record. These were Oak Park, Co Carlow with 14.4 mm (26% of its LTA) (record length 15 years), Sherkin Island, Co Cork with 13.5 mm (18% of its LTA) (record length 48 years), Gurteen, Co Tipperary with 13.4 mm (22% of its LTA) (record length 13 years) and Johnstown Castle, Co Wexford with 12.3 mm (17% of its LTA) (record length 80 years). Three stations had dry spells between the 12th and 28th April. These were Dublin Airport, Co Dublin, Casement Aerodrome, Co Dublin and Johnstown Castle, Co Wexford. Johnstown Castle, Co Wexford also had a partial drought between 28th March and 27th April.

River Flows

River flows dropped throughout the country in April and were lower at all monitoring stations compared to flows observed during March. With the exceptions of the Suck and Moy Rivers, monthly average flows in the main rivers were below the long-term monthly average for April. Analysis of monthly average flows at 166 river monitoring sites identified; one was classed as 'above normal', 46 (28%) were classed as 'normal', 87 (52%) were 'below normal' and 32 (19%) were 'particularly low' for this time of year. The 'particularly low' flows for April were observed predominantly in the southern and eastern half of the country.

Lake Levels

Lake levels were lower at all monitored lakes compared to levels observed in March. Average lake levels at 47 sites were classified as 'particularly high' at six (13%) lakes, 'above normal' at seven (15%), 'normal' at 18 (38%), 'below normal' at 15 (32%) lakes and 'particularly low' at one lake site (Lough Shindilla in Co. Galway) for the month of April.

Groundwater Levels and Spring Flows

Groundwater levels fell between from March to April at all monitoring wells analysed. April groundwater levels were classified as 'particularly high' at three (8%) of monitoring wells, 'above normal' at six (15%), 'normal' at 14 (36%), 'below normal' at ten (26%) and 'particularly low' at six (15% of) monitoring wells.

Spring outflows were monitored at nine EPA monitoring sites. The flows from these springs were compared to previously recorded flows for April and one spring was 'particularly high', one 'above normal', six were 'normal' and one spring was 'below normal' for this time of year.

Rainfall

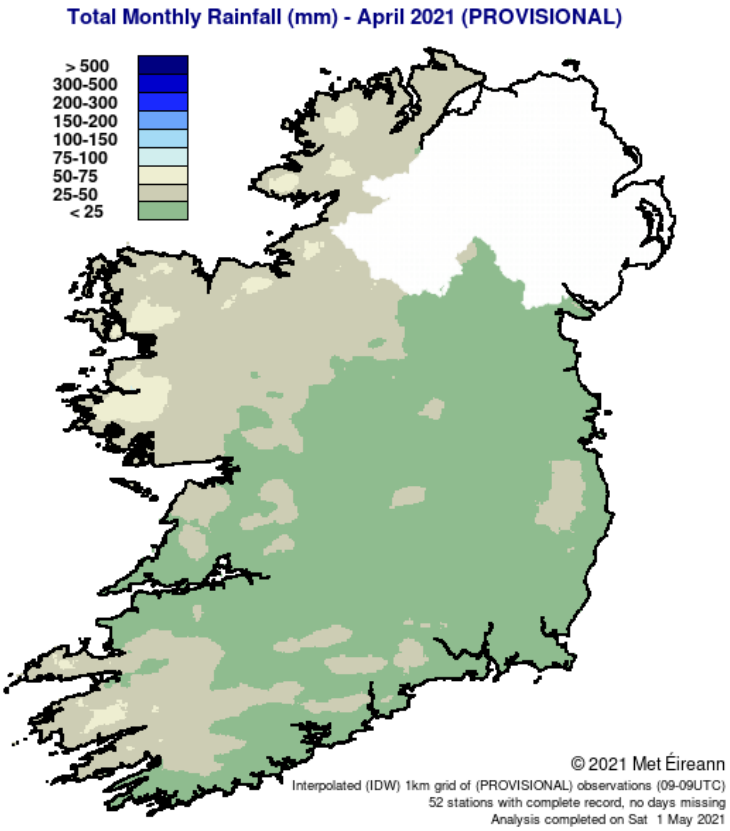


Figure 1:Rainfall map for Ireland April 2021 ***(Source: Met Eireann.ie)***

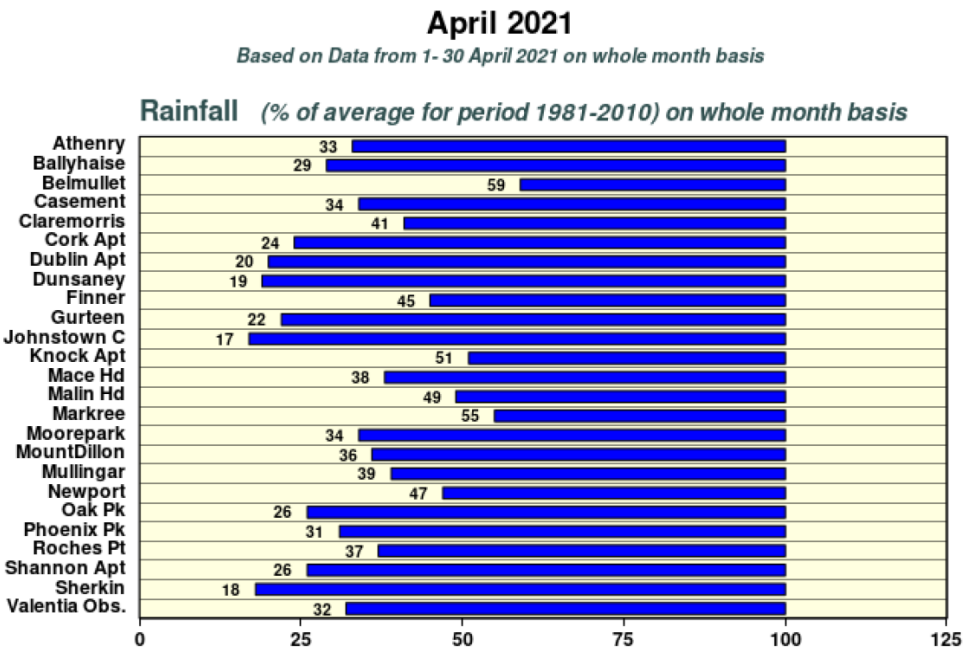


Figure 2: Summary of rainfall at synoptic stations April 2021, figures indicate the percentage difference from the Long-Term Average rainfall for April. ***(Source: Met Eireann.ie)***

River Flows

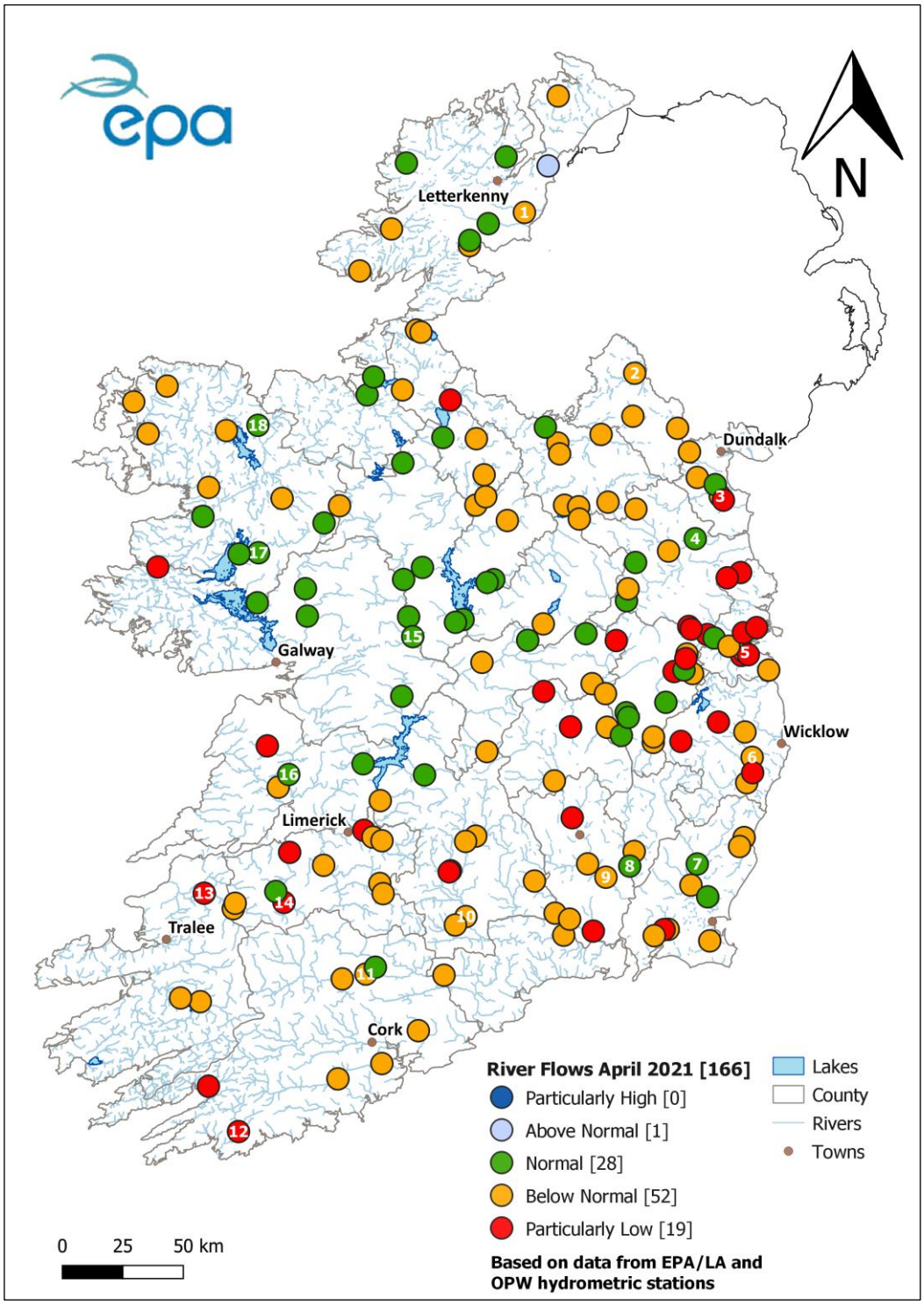


Figure 3: Monthly average river flows for April 2021 relative to historic monthly average flows expressed as percentile of the long-term values of monthly flow. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision. ***(Source: EPA, OPW).***

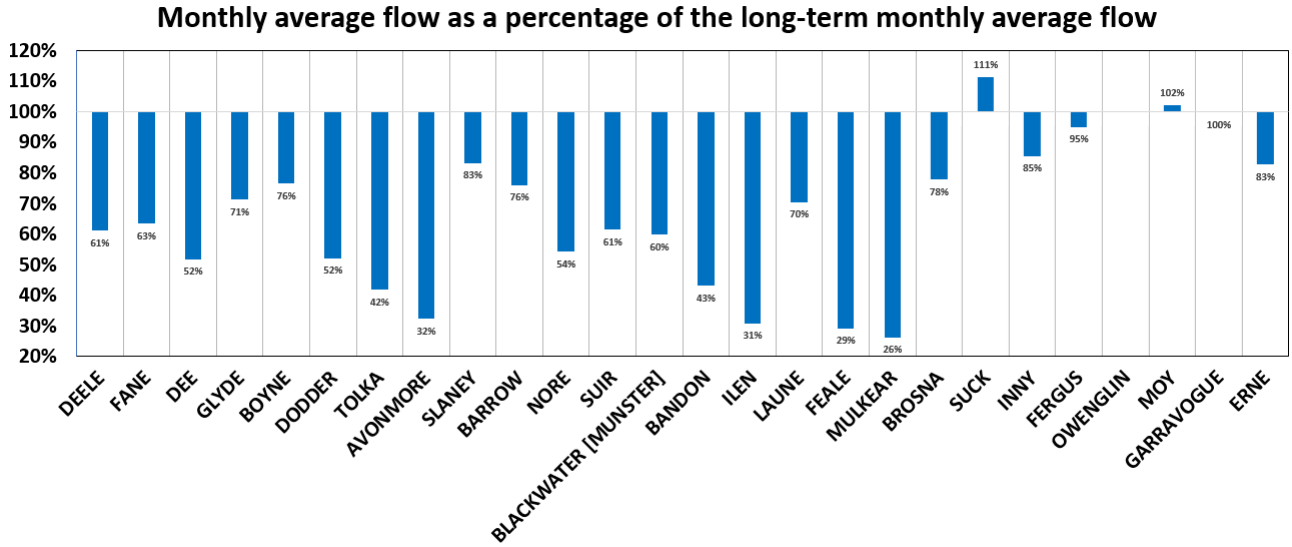
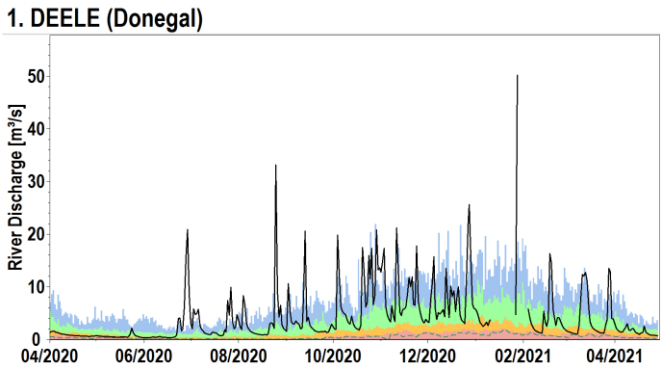
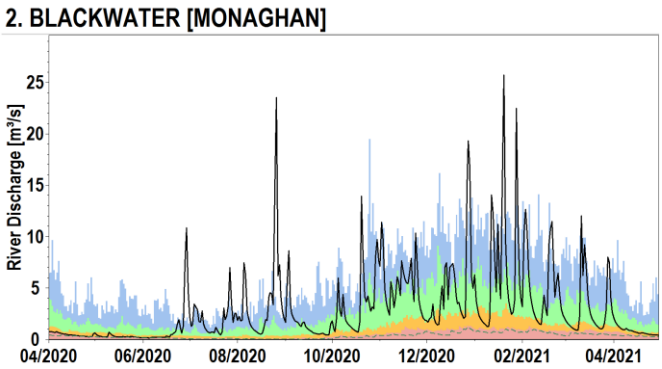
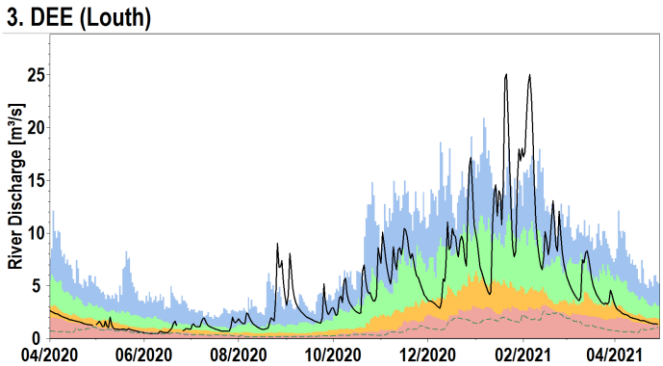


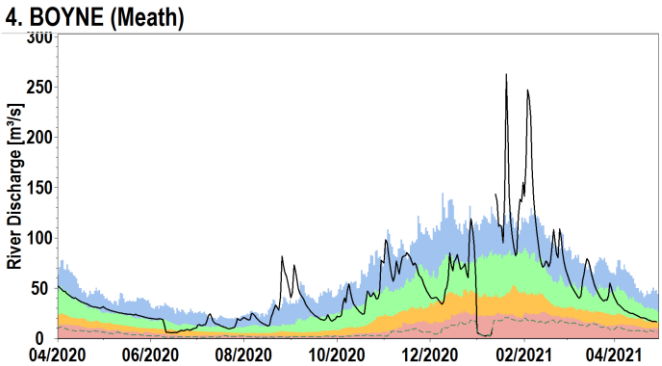
Figure 4: April 2021 average flows as a percentage of the long-term monthly average flow for April at a selected number of stations. All data are provisional and may be subject to revision. ***(Source: EPA, OPW)***

Flow Hydrographs for selected Rivers

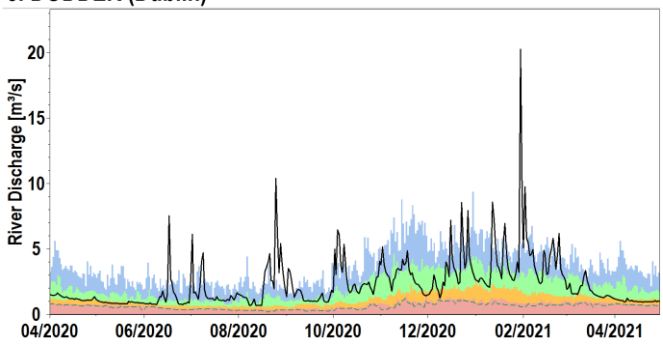




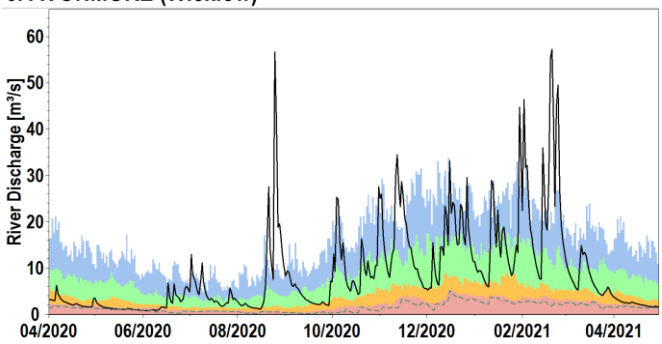




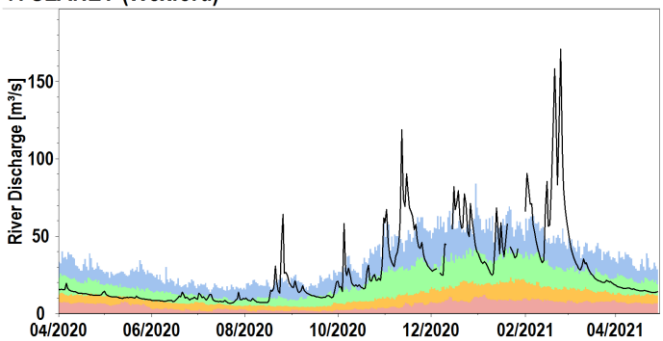
5. DODDER (Dublin)



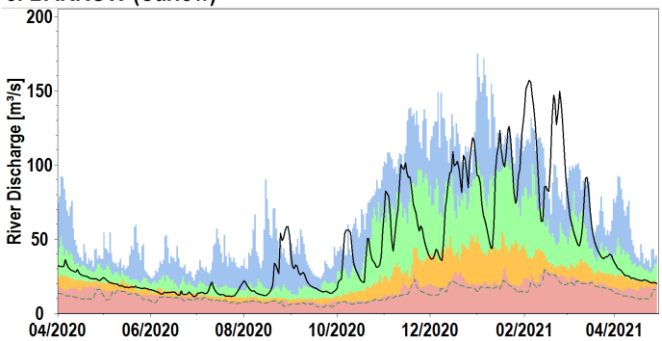
6. AVONMORE (Wicklow)



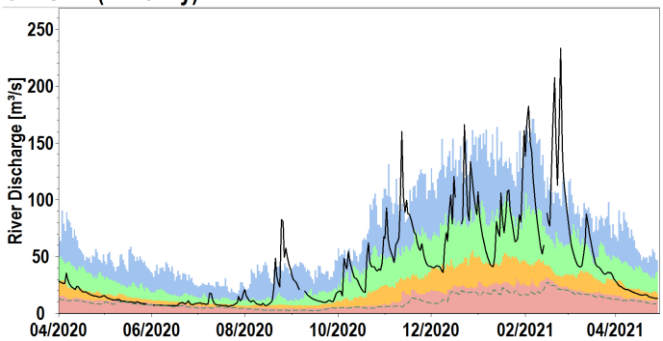
7. SLANEY (Wexford)



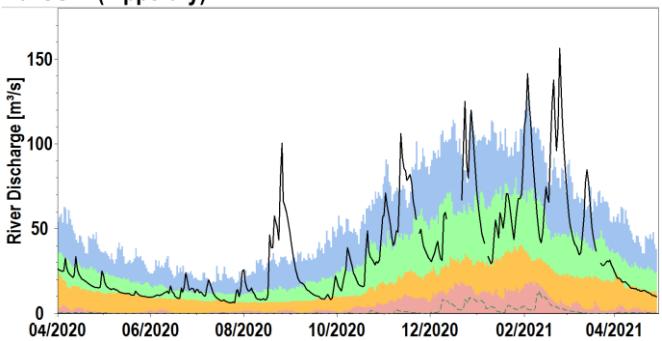
8. BARROW (Carlow)



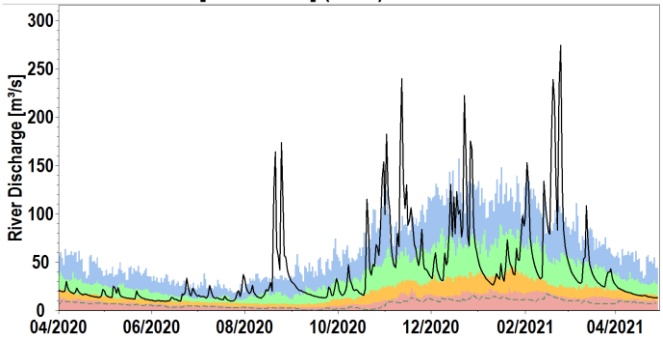
9. NORE (Kilkenny)



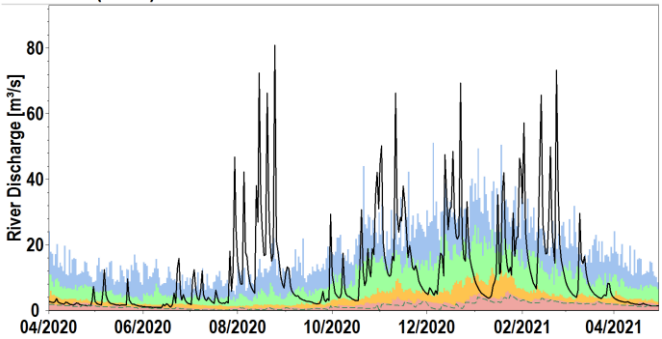
10. SUIR (Tipperary)



11. BLACKWATER [MUNSTER] (Cork)



12. ILEN (Cork)



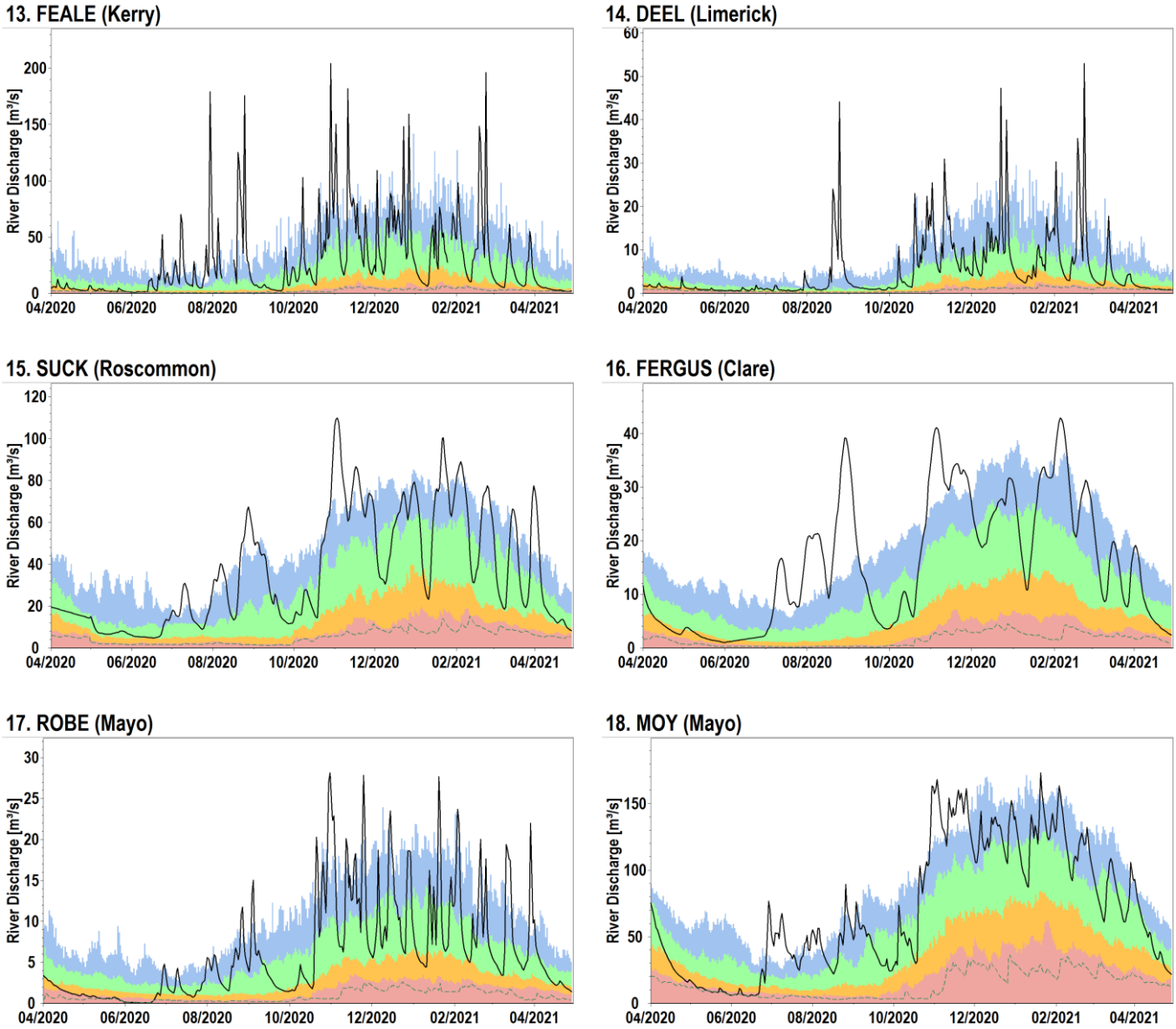


Figure 5: Daily average river flows up to April 2021 relative to historic daily average flows expressed as percentile of the long-term values of each day. All data are provisional and may be subject to revision. ***(Source: EPA, OPW)***

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

Lake Levels

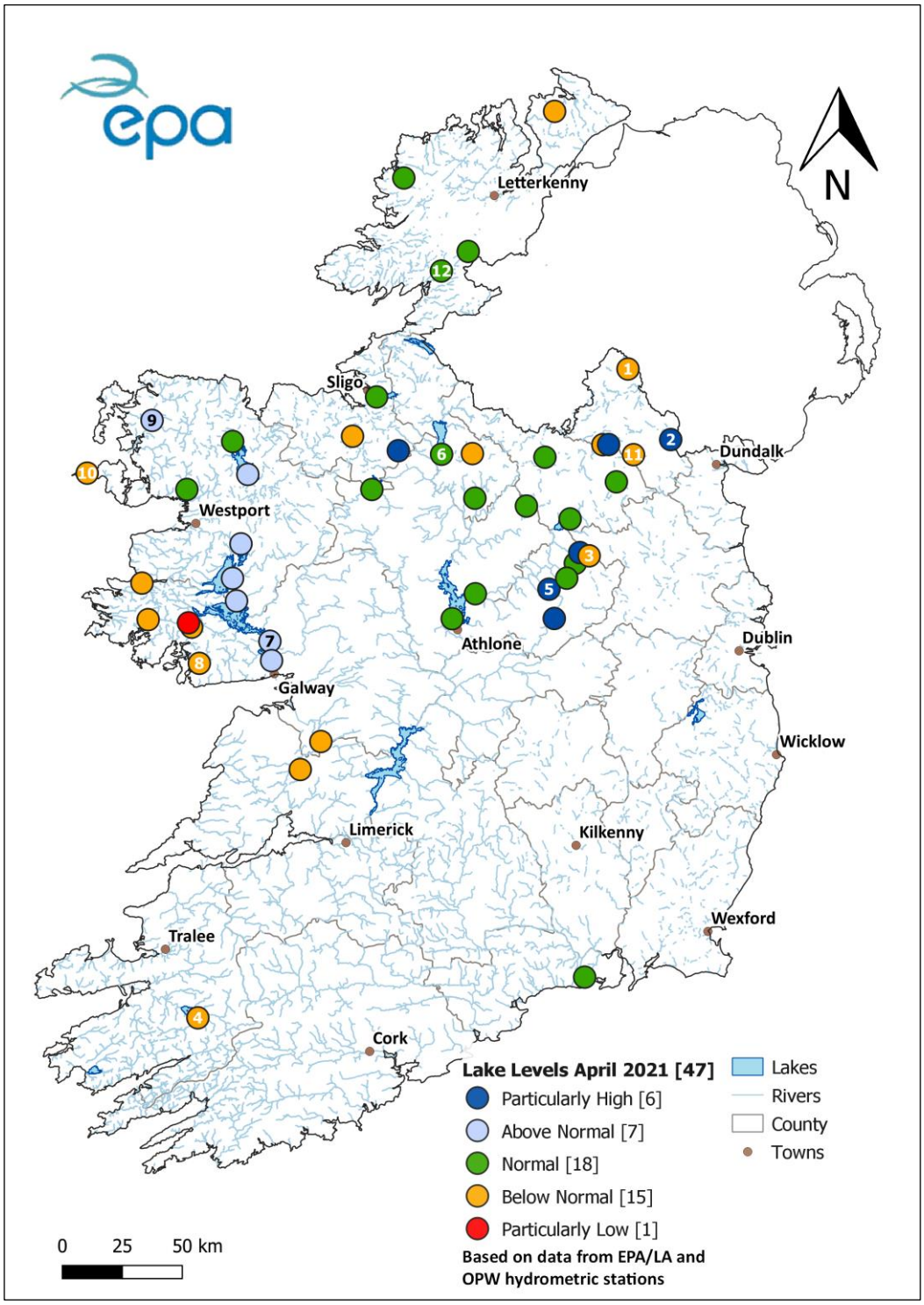
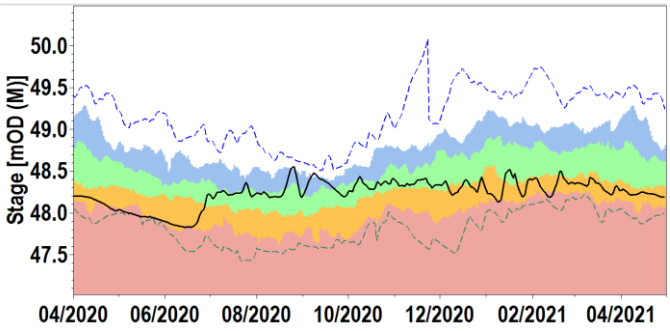


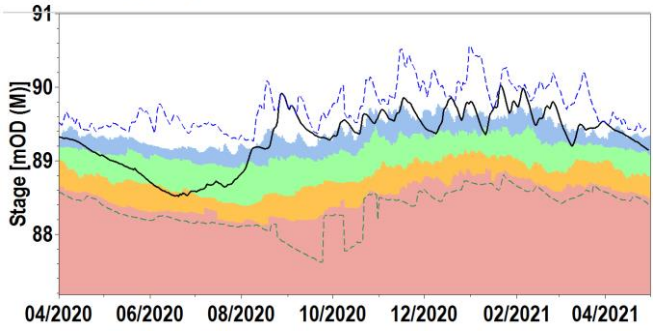
Figure 6: Monthly average lake levels for April 2021 relative to historic monthly average levels expressed as percentile of the long-term values of April. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision. ***(Source: EPA, OPW)***

Water Level Hydrographs for selected Lakes

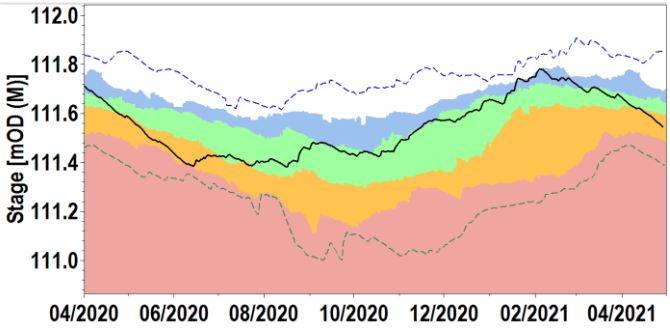
1. EMY LOUGH (Monaghan)



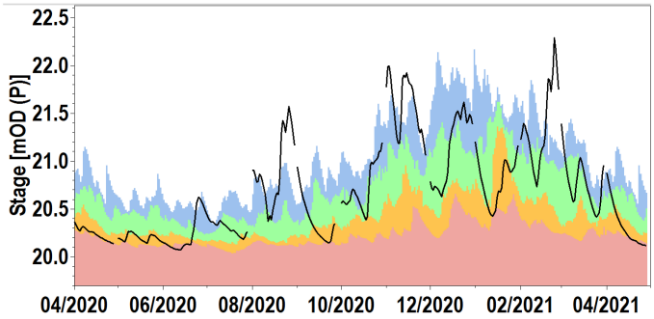
2. L. MUCKNO (Monaghan)



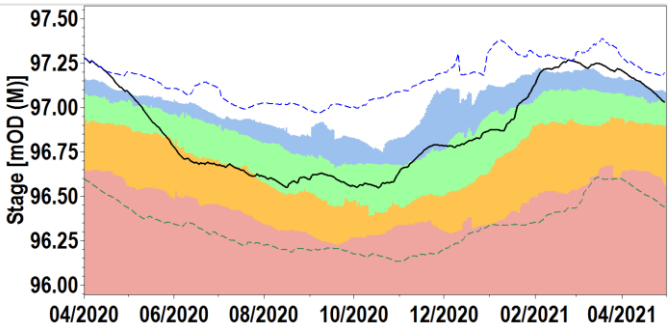
3. L. BANE (Meath)



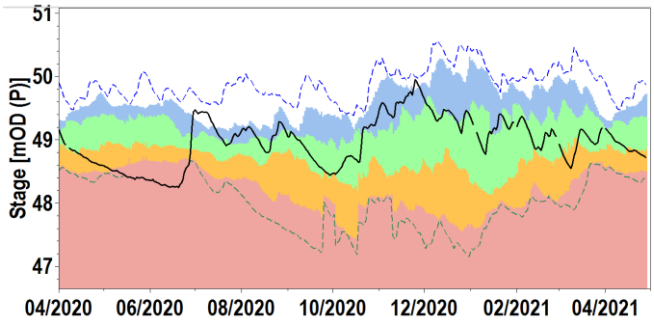
4. L. LEANE (Kerry)



5. L. OWEL (Westmeath)



6. L.ALLEN (Leitrim)



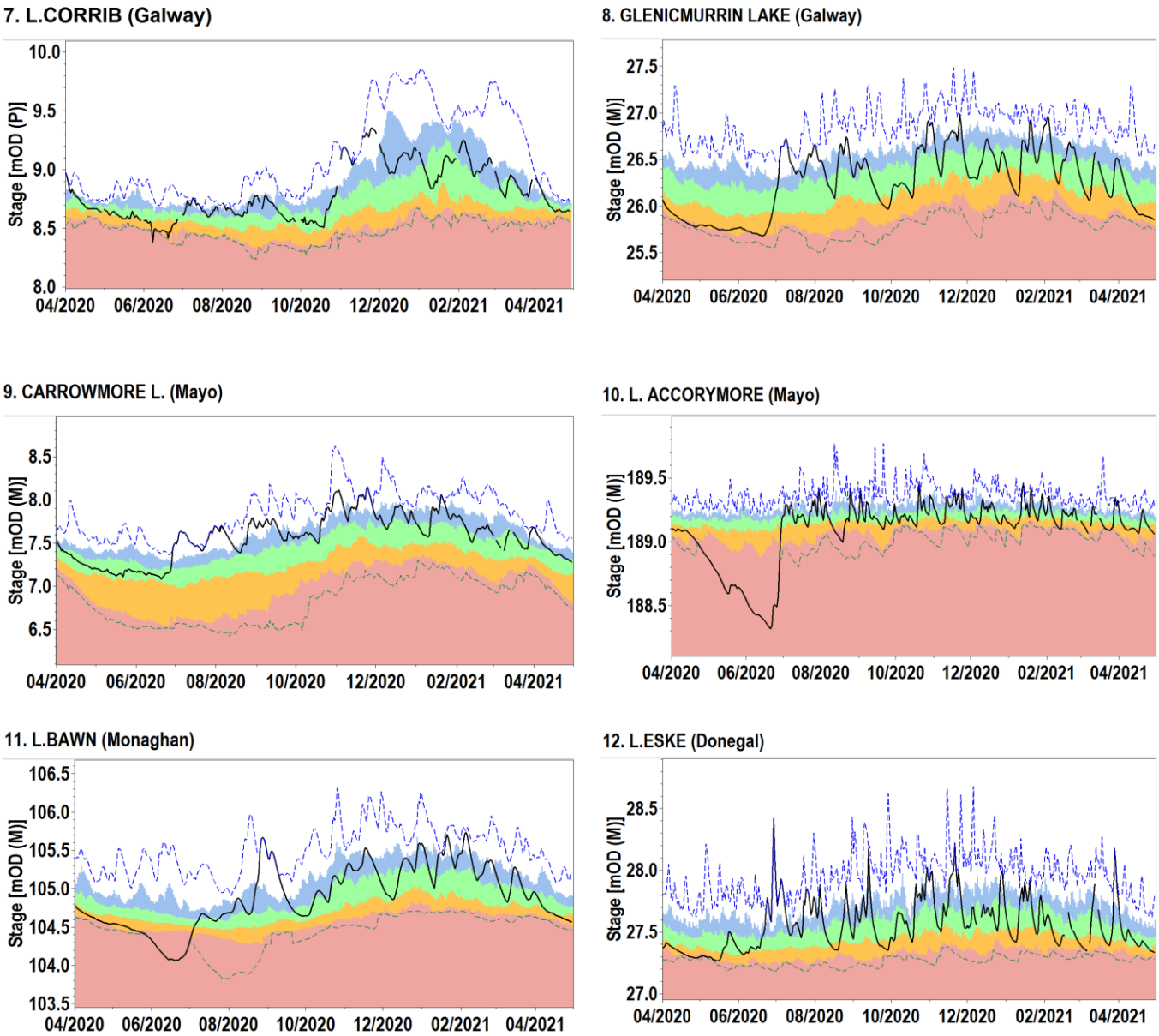


Figure 7: Daily mean lake levels classed relative to historic daily mean levels expressed as percentile of the values of each day with long-term maximum and minimum daily levels. All data are provisional and may be subject to revision. ***(Source: EPA, OPW)***

Explanation - Classes

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

Groundwater Levels and Spring Flows

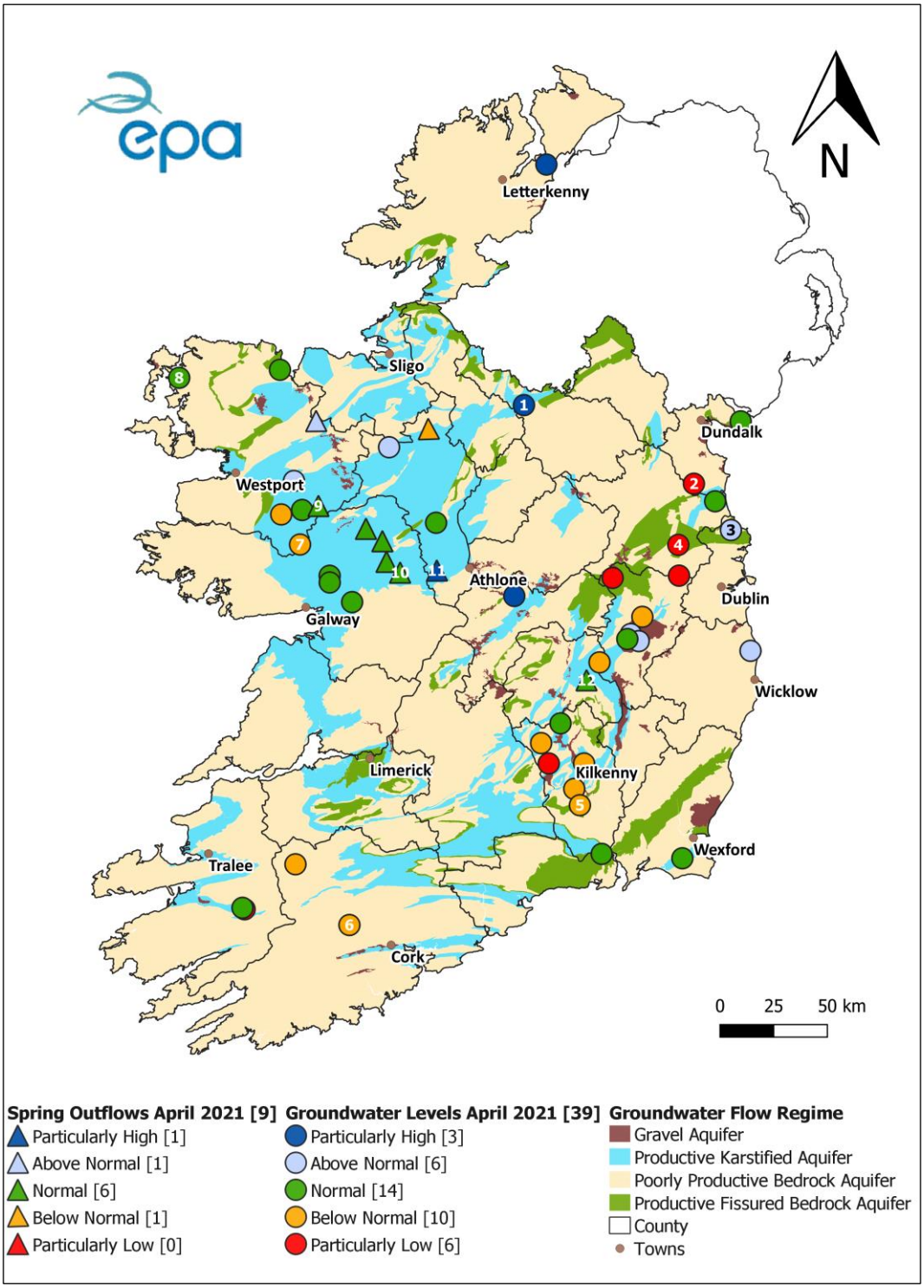
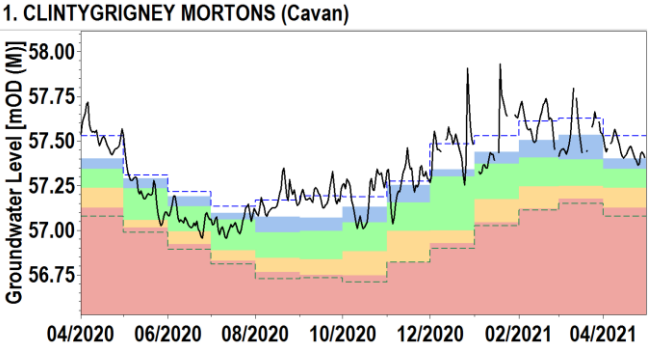


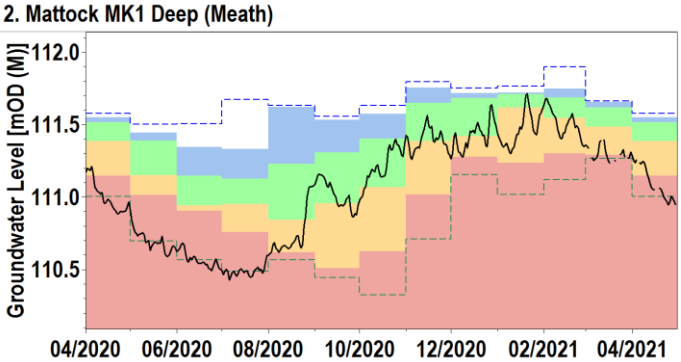
Figure 8: Groundwater level and Spring Flow status April 2021, relative to historic April groundwater levels. Numbered sites are represented in the hydrographs below. All data are provisional and may be subject to revision. ***(Source: EPA)***

Groundwater and Spring Hydrographs

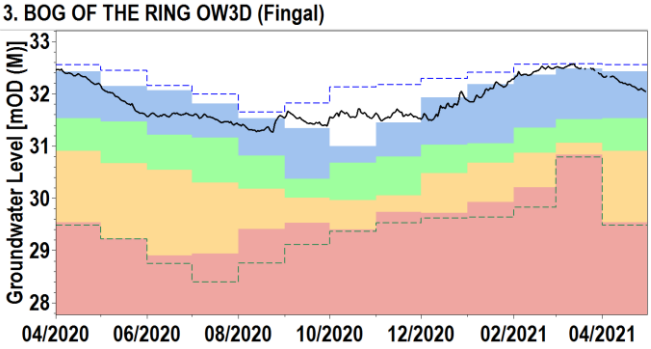
1. CLINTYGRIGNEY MORTONS (Cavan)



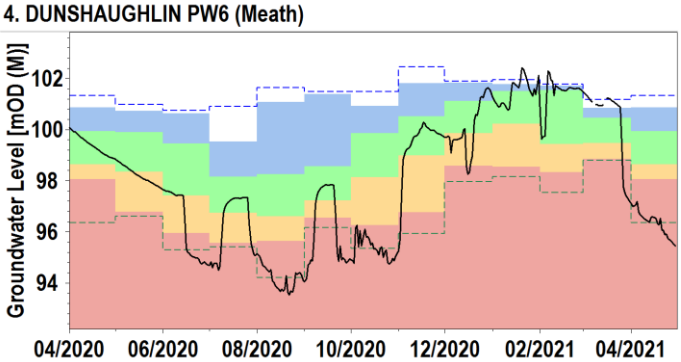
2. Mattock MK1 Deep (Meath)



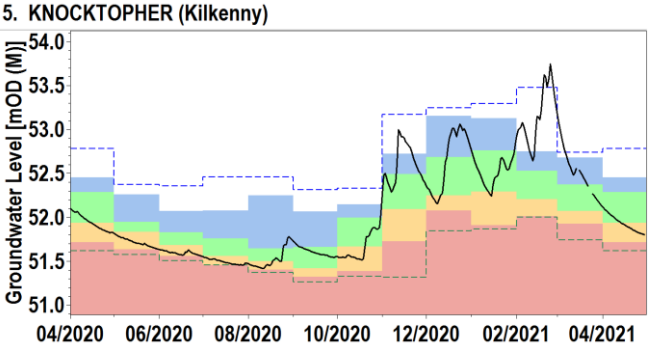
3. BOG OF THE RING OW3D (Fingal)



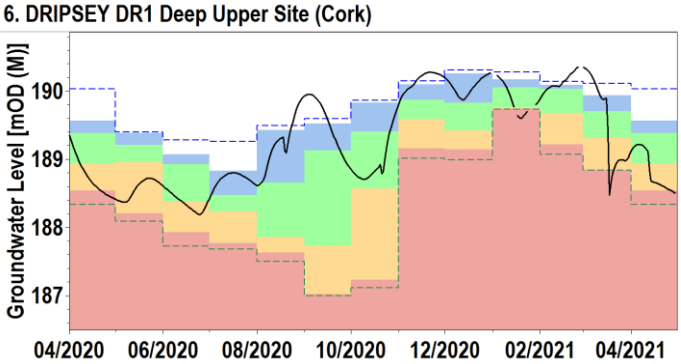
4. DUNSHAUGHLIN PW6 (Meath)



5. KNOCKTOPHER (Kilkenny)



6. DRIPSEY DR1 Deep Upper Site (Cork)



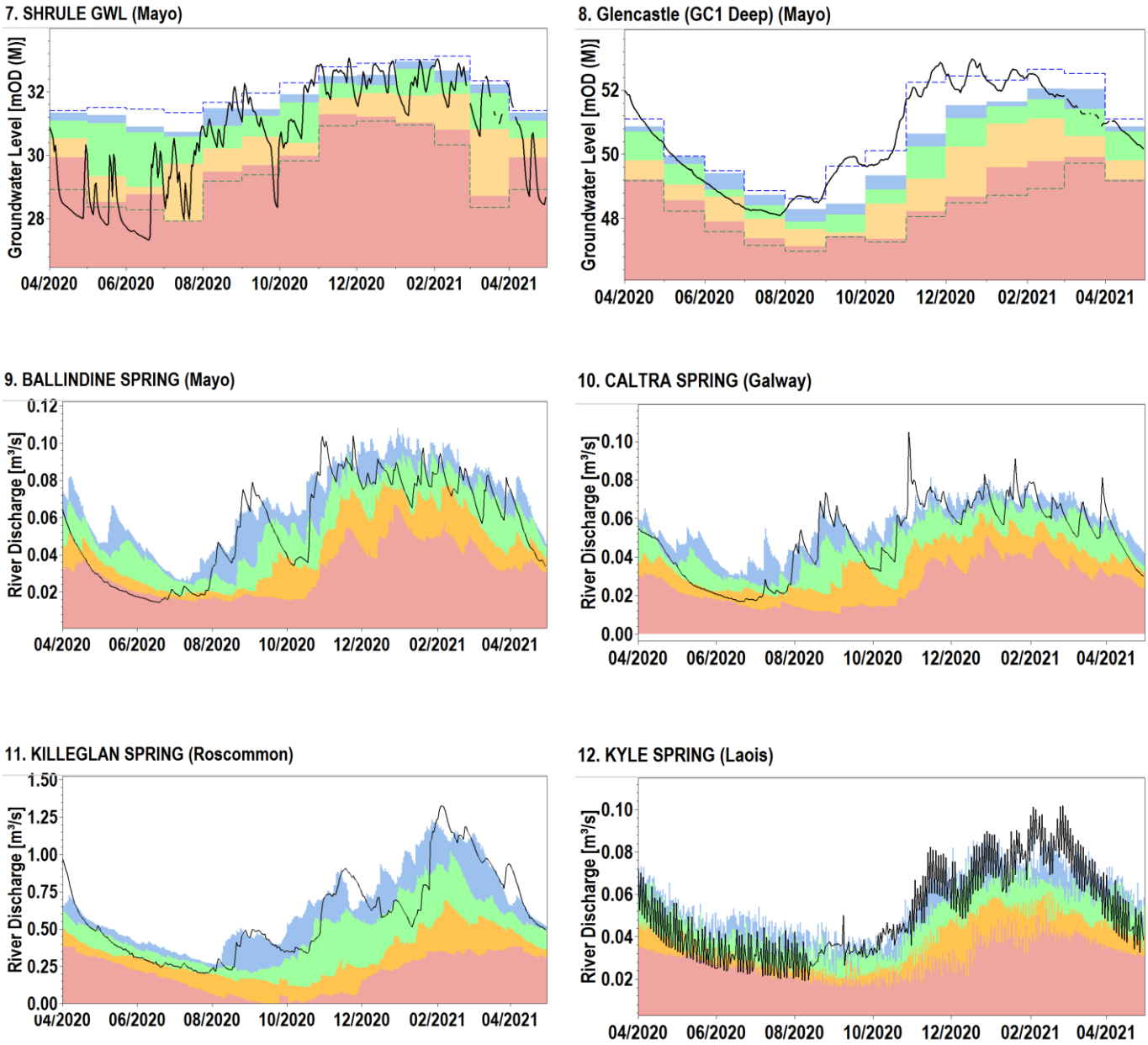


Figure 9: Daily mean groundwater levels (black trace) measured in meters above ordnance datum compared to the 10%tile, 30%tile, 70%tile and 95%tile for each month for the period of record and long-term maximum and minimum levels. All data are provisional and may be subject to revision. ***(Source: EPA)***

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

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: ➢ Karstic (Rk and Lk) aquifers; ➢ Gravel (Rg and Lg) aquifers; ➢ Productive fractured bedrock (Rf and Lm) aquifers; ➢ Poorly productive bedrock (Ll, Pl 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	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.