Monthly Water Situation Report April 2018

Natural Resources Wales

- **The monthly rainfall total for Wales during April was 149% of the Long Term Average (LTA, 1961-90). South East, South West and North Wales received 159%, 154% and 134% of the LTA, respectively.**
- **At the end of April, soil moisture deficit (SMD) values across Wales were from -2.9 to -14.8 mm. Soil in all 23 squares was wetter than the LTA for April.**
- **For river flows in Wales, 3 out of 28 indicator sites (which had flow data available) were classed as *Normal* and 6 were classed as *Above normal*. 15 were *Notably high* and the remaining 4 sites were *Exceptionally high* for April.**
- **The overall cumulative reservoir storage across the indicator sites was greater than 90% at the end of April. All reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total for Wales was 149% of the LTA for April. The percentage of rainfall recorded in catchments compared with the LTA across Wales was between 108% (Gwyrfai/Seiont) and 173% (Valleys and Vale of Glamorgan). The rainfall total for Wales was 39.6mm more than the April LTA. For South East, South West and North Wales the rainfall totals were 159%, 154% and 134% of LTA, respectively.

Rainfall Map	National			
Rainfall Charts	National & Areas	South East Wales	North Wales	South West Wales

* using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright)*

Soil Moisture Deficit/Recharge

The 23 MORECS squares had SMD values from -2.9 to -14.8 mm and they were wetter than the LTA for April.

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows were between *Normal* and *Exceptionally high* for all the indicator sites across Wales. 4 out of 29 indicator sites (which had flow data available) were classed as *Normal* and 6 were classed as *Above normal*. 15 were *Notably high* and the remaining 4 sites were *Exceptionally high* for April.

***South East*:** Flows in the area ranged from 162% (River Ebbw at Rhiwderin) to 227% (River Lugg at Butts Bridge) the April LTA values.

South West: The river flows within this area ranged from 121% (River Ystwyth at Pont Llolwyn) to 198% (River Tywi at Capel Dewi) of the April LTA values.

***North*:** Flows in the area ranged from 122% (River Conwy at Cwmlanerch) to 200% (River Clwyd at Pont y Cambwll) of the April LTA values.

River Flow Map	National
River Flow Table	% of LTA and compare to previous year
River Flow Charts	South East Wales North Wales South West Wales

Groundwater Levels

Groundwater levels for April at indicator sites (10 data available sites) were classed between *Exceptionally low* (Eastwick) to *Notably high (*Fernbank). 1 site was classed as *Below normal* (Llanfair DC) and 6 sites were classed as *Normal* (Greenfield Garage, Pont y Cambwll, Dodleston Obs, Broxton Obs, Hollybush and Handley). The ramining site was *Above normal* (Pant-y-Lladron).

Groundwater Map	National
Groundwater Charts	South East Wales North Wales South West Wales

Reservoir Storage

At the end of April the overall cumulative reservoir storage across the indicator sites were greater than 90% full and all reservoirs were in normal operation.

Reservoir Charts	South East Wales	North Wales	South West Wales

All data on Water Situation Reports are provisional, based on spot readings, and are subject to revision.

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Natural Resources Wales

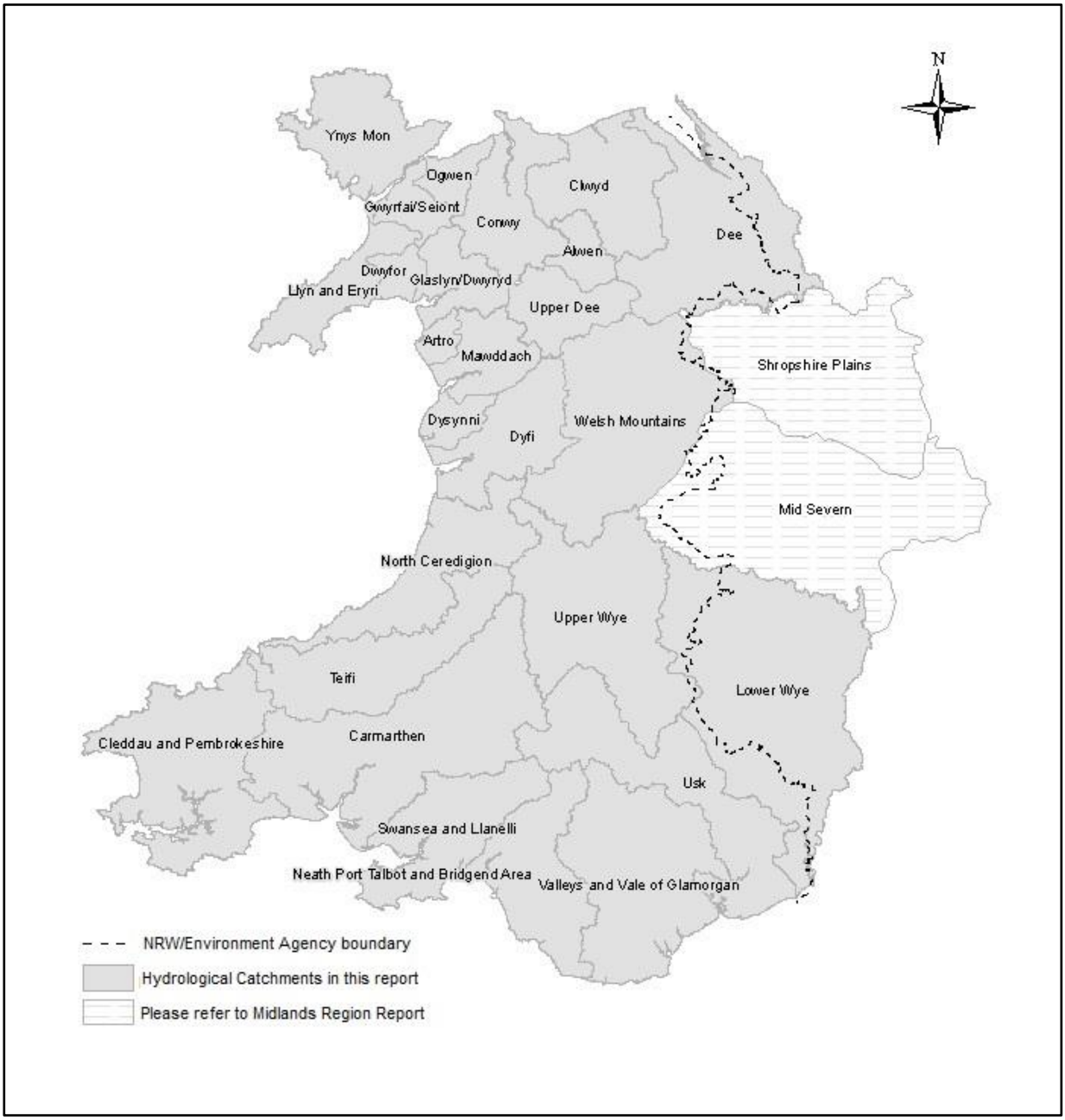

Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

For areas adjoining Natural Resources Wales, please see the reports for Environment Agency Midlands and North West England:

Environment Agency - Midlands, England Water Situation Report
Environment Agency - North West, England Water Situation Report

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Rainfall

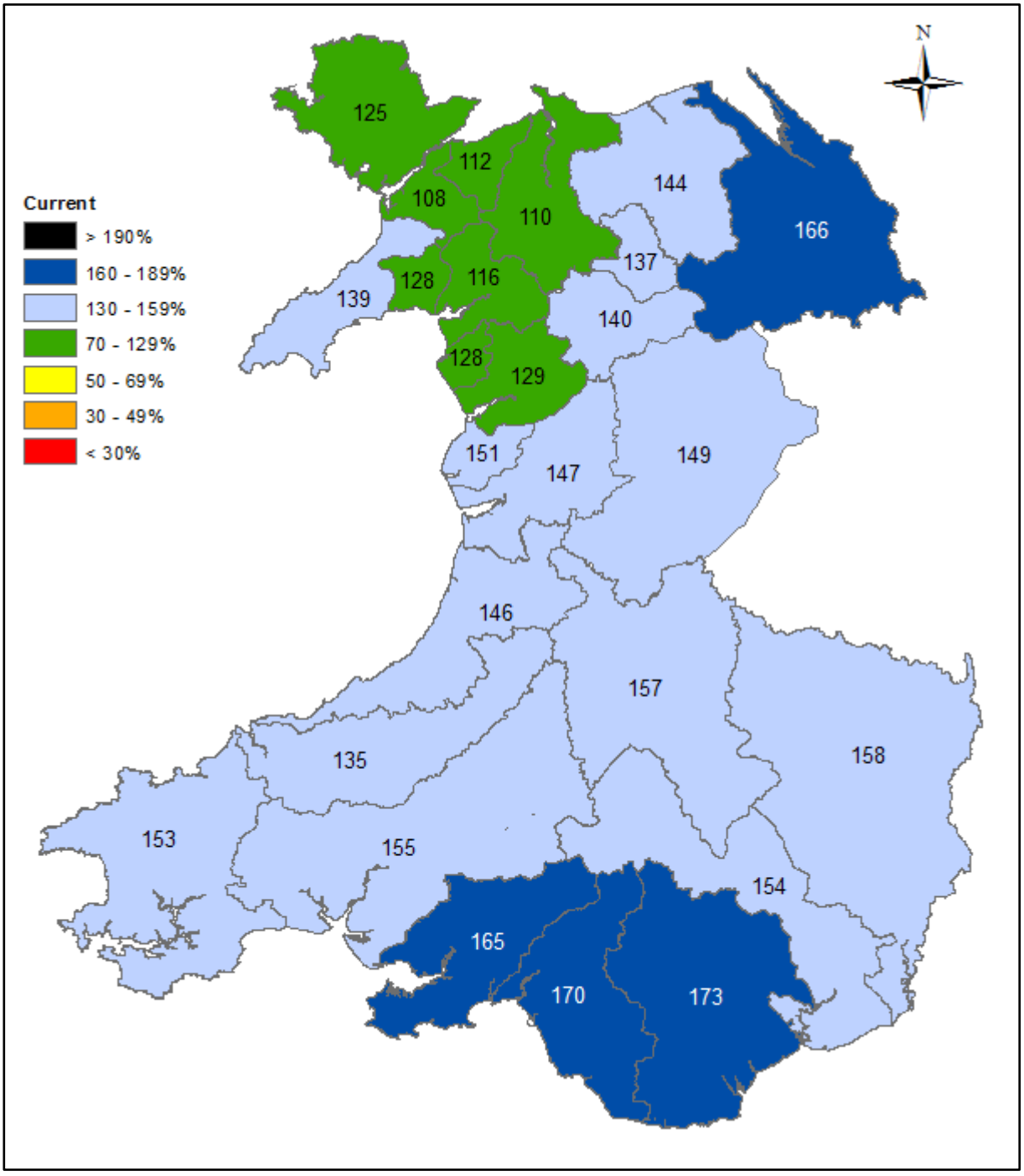

Figure 2: Calculated catchment average April rainfall totals as a percentage of the 1961-90 April long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

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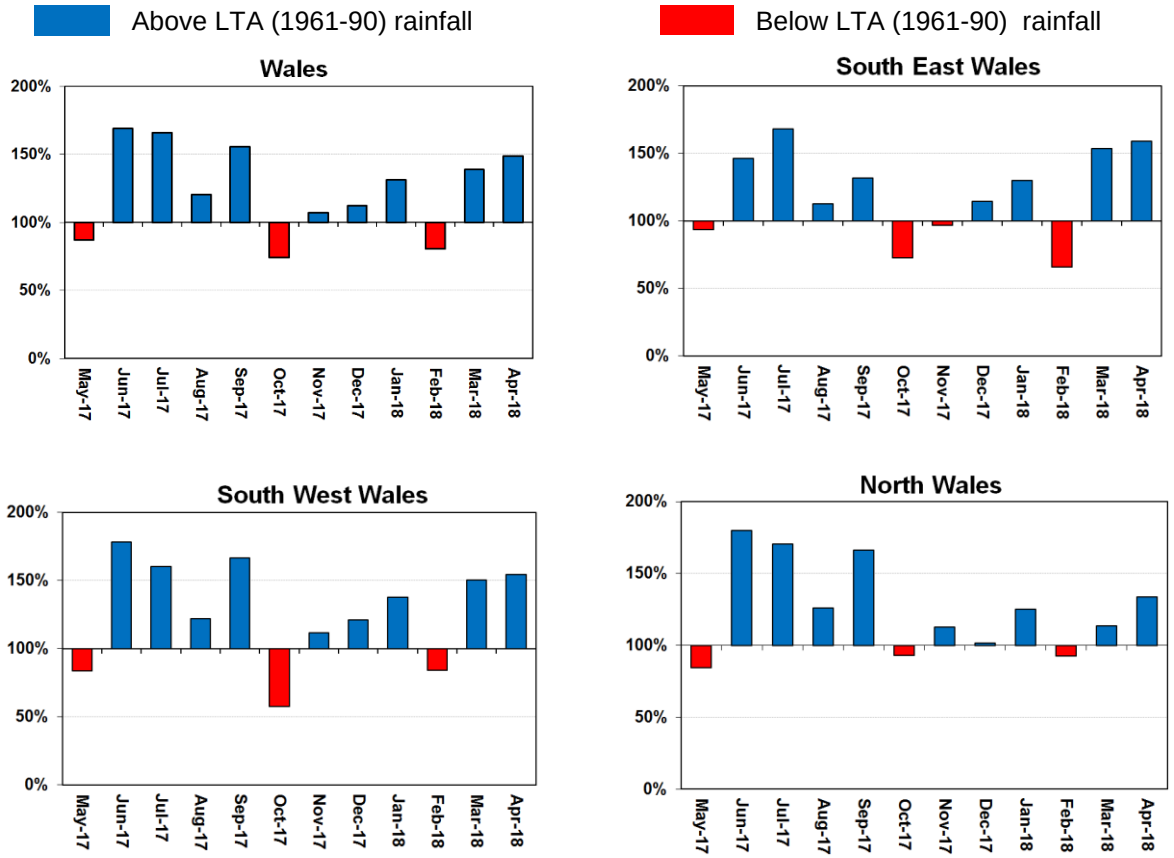
Rainfall Charts

Figure 3: Rainfall Charts: National and Areas



Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for Natural Resources Wales and Areas, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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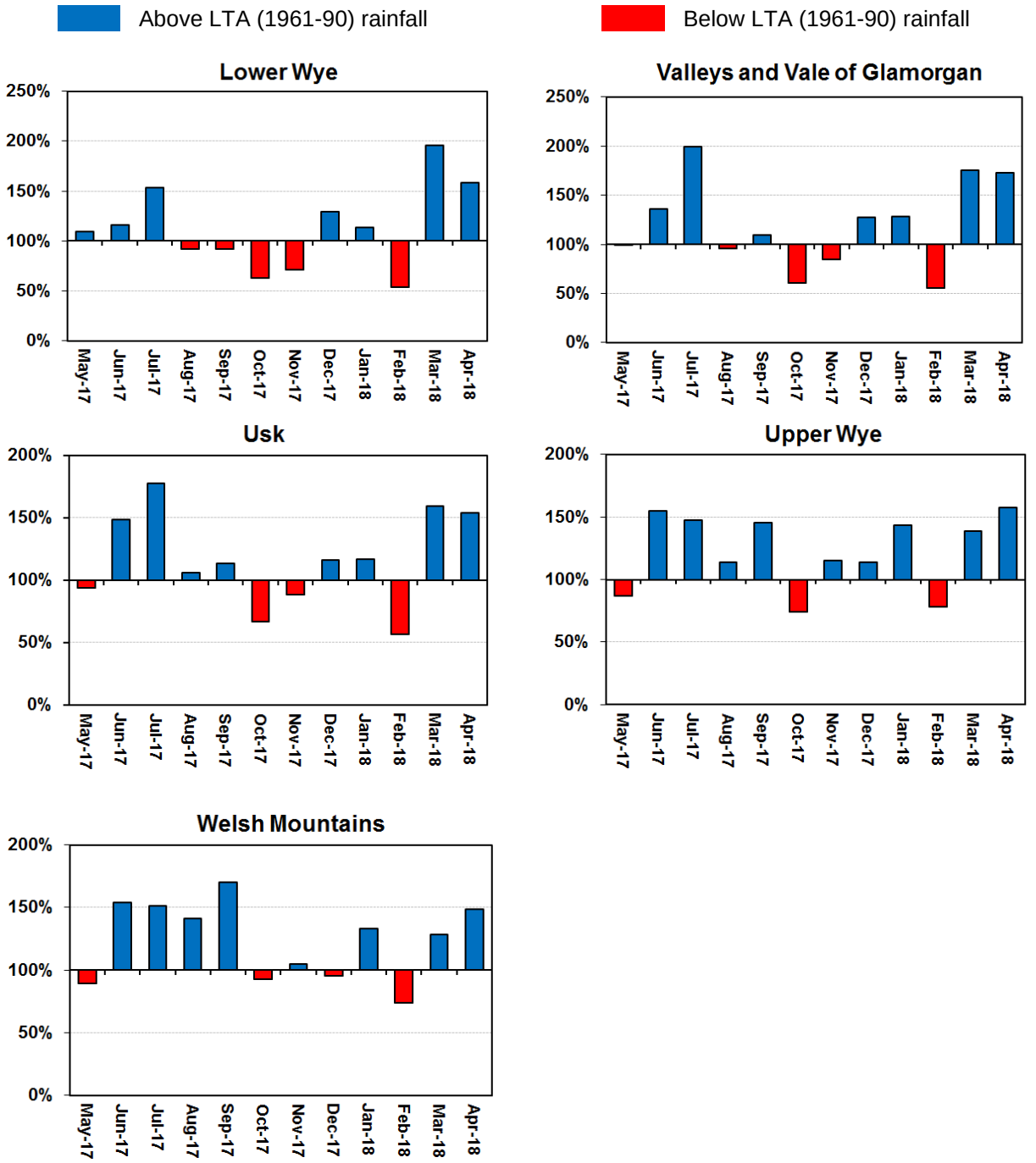
Figure 4: Rainfall Charts: South East Wales



Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for South East Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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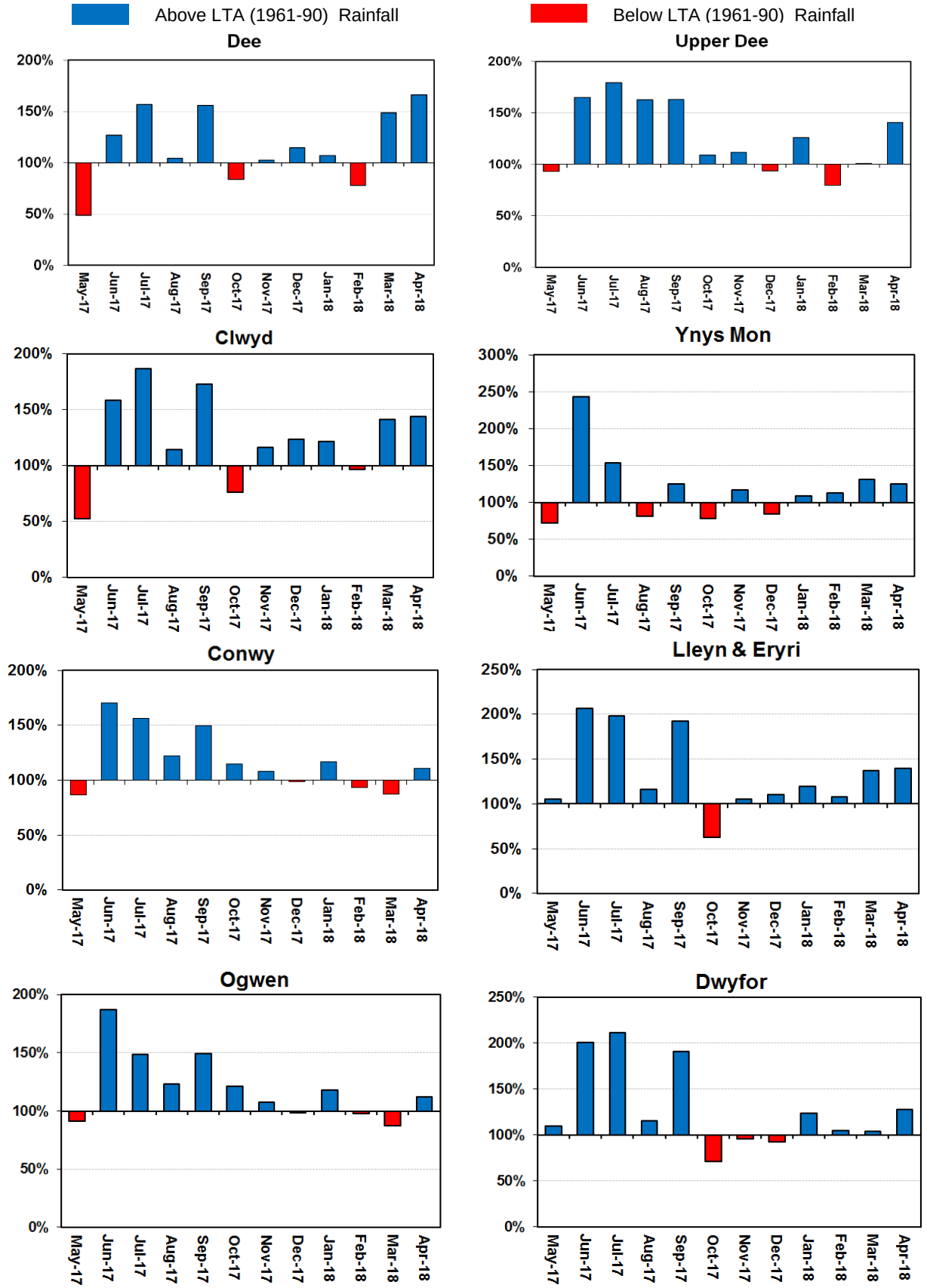
Figure 5: Rainfall Charts: North Wales



Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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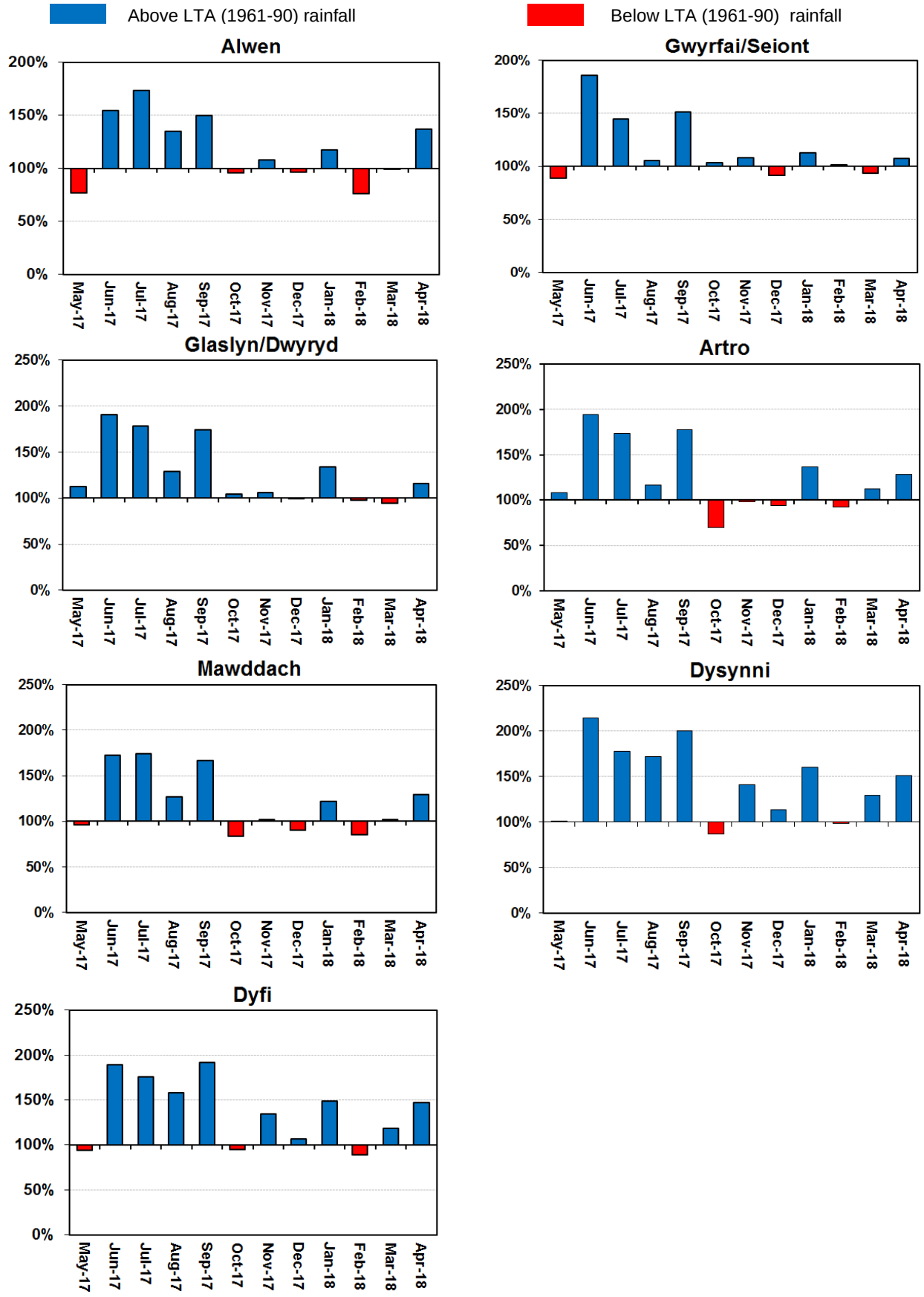

Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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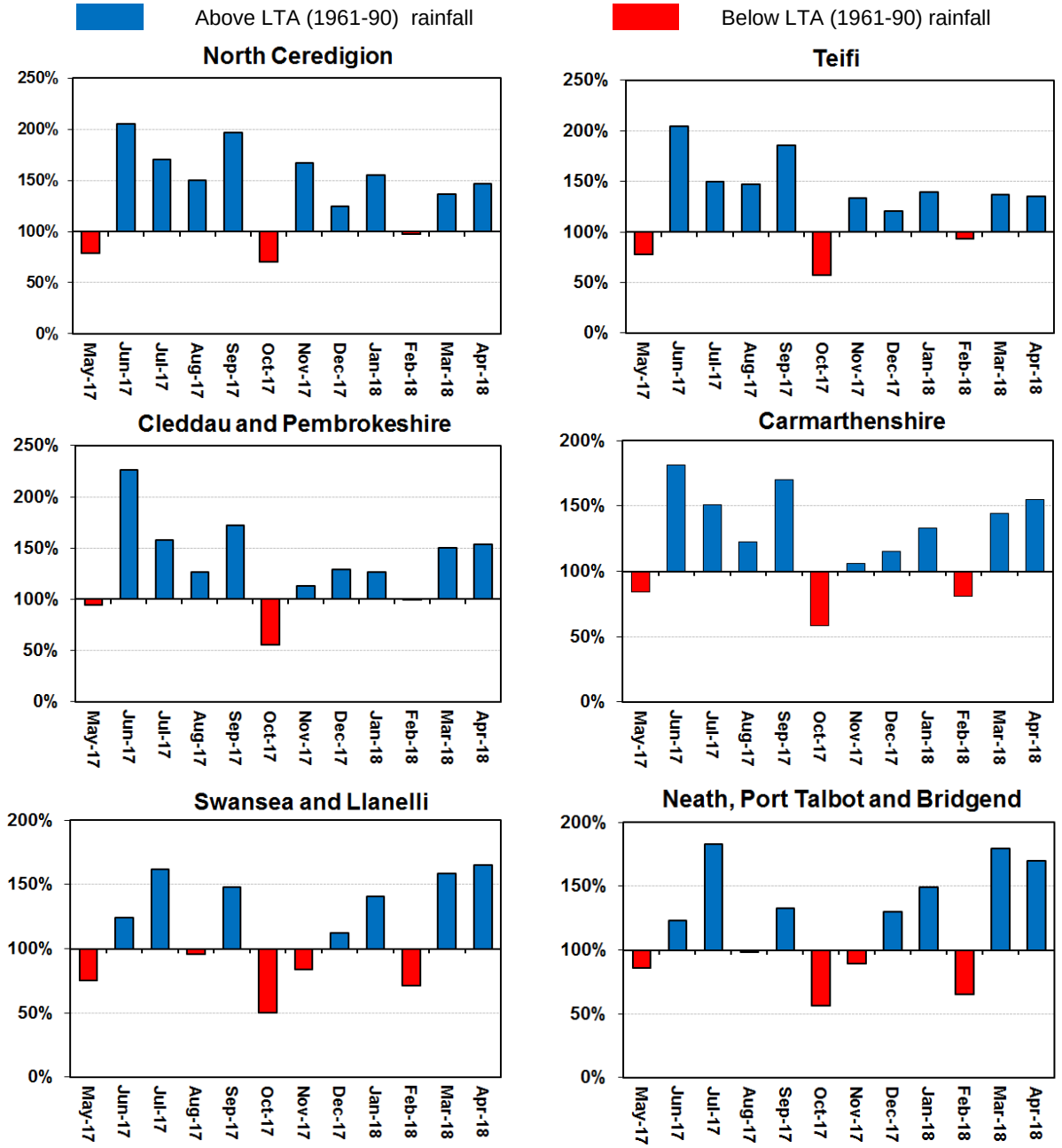
Figure 6: Rainfall Charts: South West Wales



Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for South West Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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Soil Moisture Deficit (SMD)

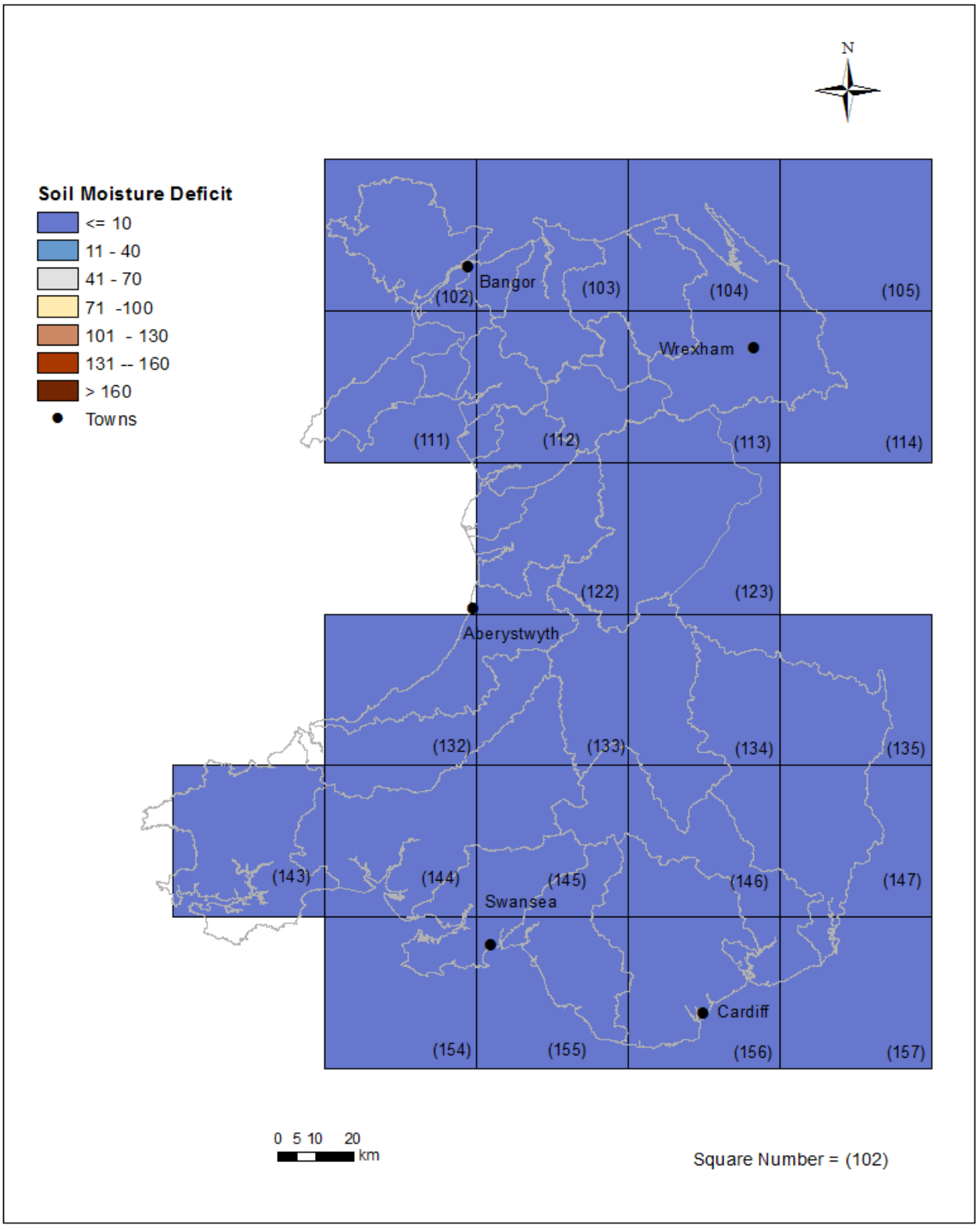

Figure 7: MORECS soil moisture deficits (mm) for April for real land use for Natural Resources Wales ***(Source: Met Office © Crown Copyright).***

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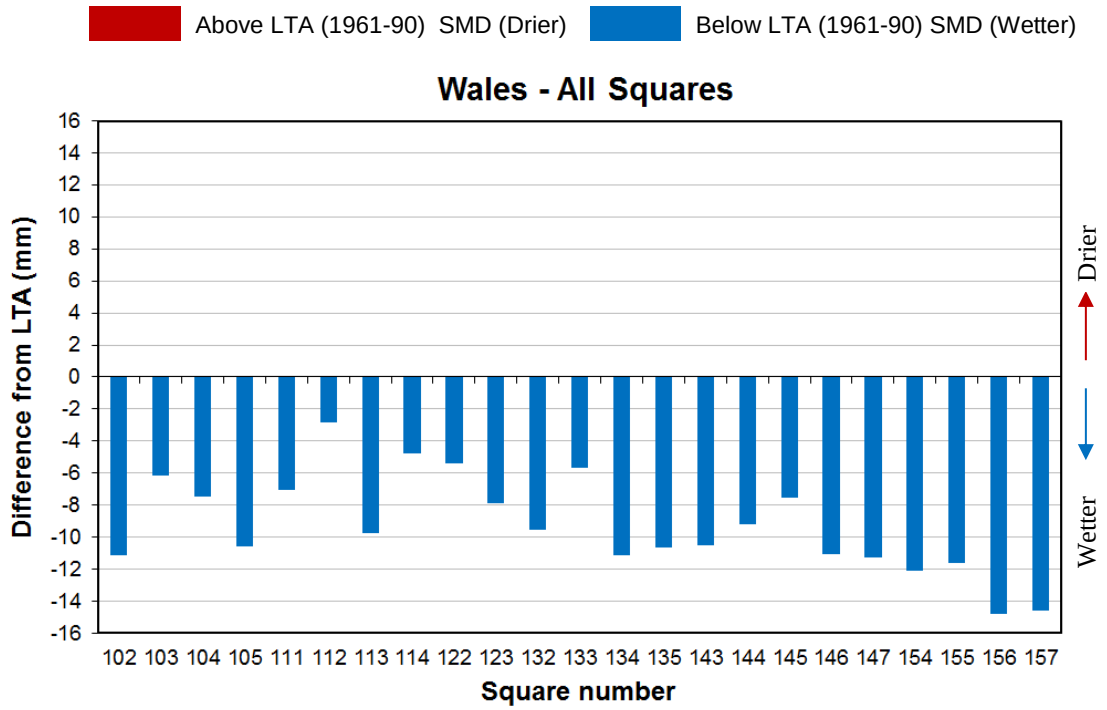

Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for April for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

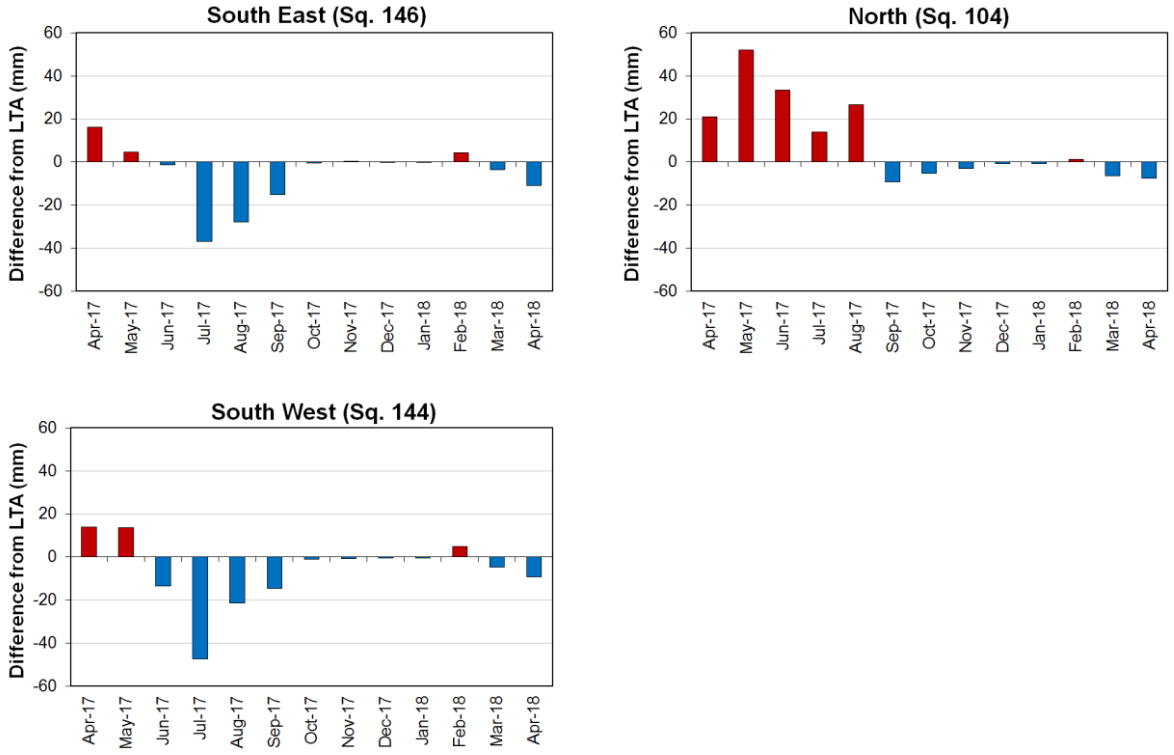

Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales.)

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River Flow

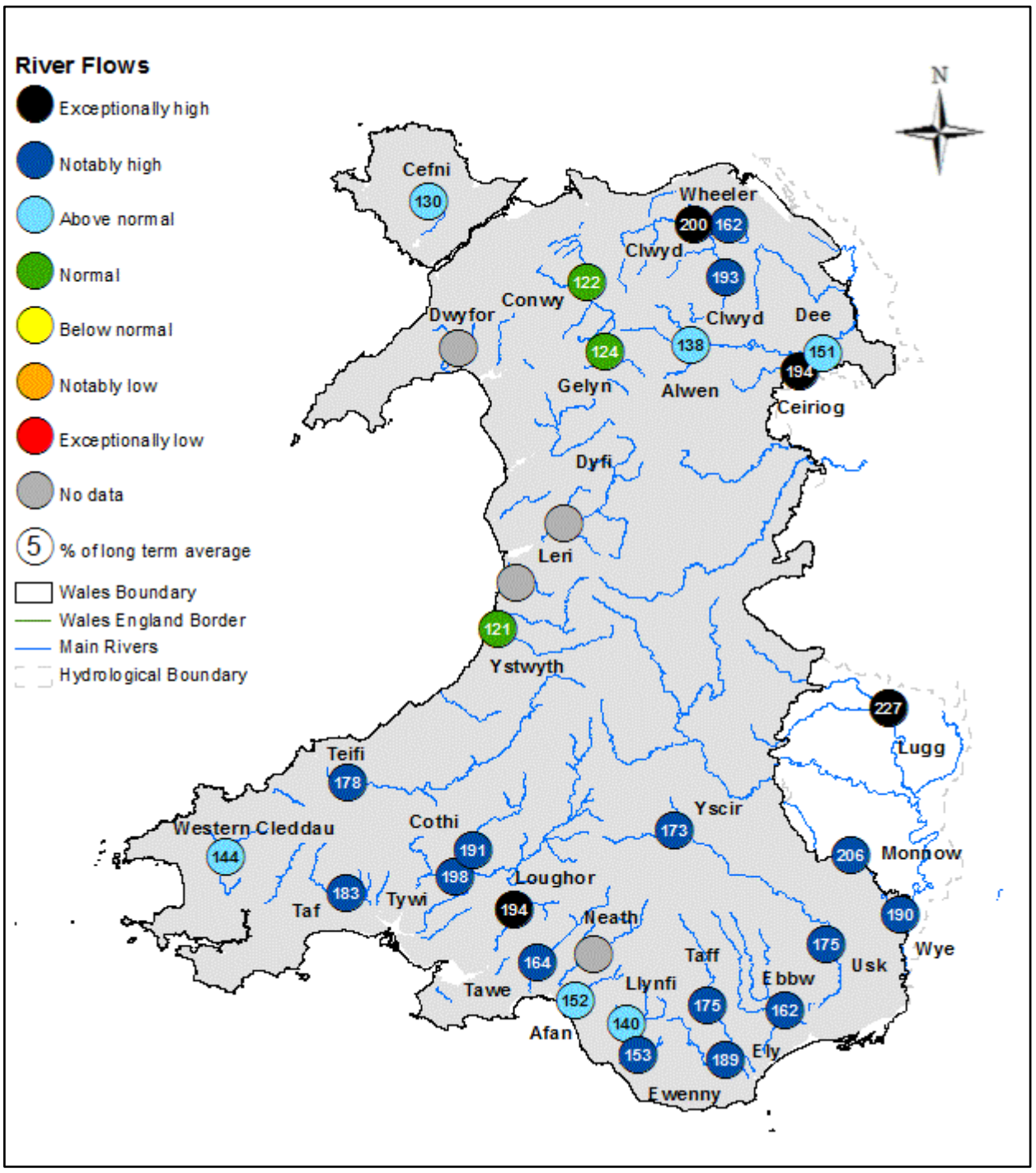

Figure 10: Monthly mean river flow for April, classed relative to analysis of historic April monthly means *(Source: Natural Resources Wales).*

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SITE NAME	RIVER	April 2018			April 2017		April LTA		
		Class	% of LTA	Flow (m3/s)	% of LTA	Flow (m3/s)	LTA	Monthly Min (m3/s)	Monthly Max (m3/s)
River Flow Sites : South East Area									
Butts Bridge	Lugg	Exceptionally high	227%	13.90	57%	3.51	6.12	1.61	12.70
Grosmont	Monnow	Notably high	206%	12.40	70%	4.24	6.02	1.57	17.10
Pont ar Yscir	Yscir	Notably high	173%	2.61	62%	0.93	1.51	0.34	3.98
Pontypridd	Taff	Notably high	175%	25.80	64%	9.49	14.73	5.26	36.00
Redbrook	Wye	Notably high	190%	127.00	65%	43.30	66.73	18.20	152.00
Rhiwderin	Ebbw	Notably high	162%	10.10	64%	4.01	6.22	1.87	12.70
St Fagans	Ely	Notably high	189%	6.54	68%	2.36	3.46	1.13	7.17
Trostrey Weir	Usk	Notably high	175%	33.50	84%	16.00	19.10	7.84	37.32
River Flow Sites : North Area									
Bodfari	Wheeler	Notably high	162%	1.38	76%	0.65	0.85	0.41	1.63
Bodffordd	Cefni	Above normal	130%	0.35	63%	0.17	0.27	0.08	0.98
Brynkinalt Weir	Ceiriog	Exceptionally high	194%	5.64	59%	1.72	2.91	0.69	6.34
Cwmlanerch	Conwy	Normal	122%	16.50	43%	5.79	13.48	1.42	39.20
Cynefail	Gelyn	Normal	124%	0.62	34%	0.17	0.50	0.09	1.47
Dol y Bont	Leri						1.20	0.27	2.53
Druid	Alwen	Above normal	138%	5.62	59%	2.39	4.08	1.00	10.70
Dyfi bridge	Dyfi						16.71	2.63	42.50
Garndolbenmaen	Dwyfor				67%	1.33	1.99	0.43	4.74
Manley Hall	Dee	Above normal	151%	38.90	62%	16.10	25.79	8.59	61.40
Pont y Cambwll	Clwyd	Exceptionally high	200%	11.80	60%	3.55	5.91	1.83	14.70
Ruthin Weir	Clwyd	Notably high	193%	2.53	52%	0.68	1.31	0.37	2.79
River Flow Sites : South West Area									
Capel Dewi	Tywi	Notably high	198%	57.10	79%	22.90	28.81	6.20	64.80
Clog y Fran	Taf	Notably high	183%	10.20	109%	6.08	5.58	1.74	12.10
Coytrahen	Llynfi	Above normal	140%	2.33	65%	1.08	1.66	0.39	3.84
Felin Mynachdy	Cothi	Notably high	191%	16.30	82%	6.97	8.52	1.44	20.40
Glanteifi	Teifi	Notably high	178%	39.10	106%	23.30	21.95	5.82	48.20
Keepers Lodge	Ewenny	Notably high	153%	2.31	72%	1.09	1.51	0.65	3.92
Marcroft	Afan	Above normal	152%	5.51	77%	2.80	3.63	1.02	7.57
Pont Llolwyn	Ystwyth	Normal	121%	5.17	62%	2.64	4.26	0.96	10.10
Treffgarne *	Western Cleddau	Above normal	144%	4.37	105%	3.18	4.48	1.91	8.64
Resolven	Neath				57%	3.86	6.77	2.20	14.60
Tir-y-Dail	Loughor	Exceptionally high	194%	2.98	93%	1.43	1.54	0.54	3.00
Ynystanglws	Tawe	Notably high	164%	14.10	69%	5.94	8.61	2.15	18.20

Figure 11: Monthly mean river flow for April with comparison against previous year expressed as a percentage of the April long term average and classed relative to analysis of historic April monthly means. *(Source: Natural Resources Wales).* (* For Treffgarne station the LTAs were derived using scaled historical flows (1965-2003) from the downstream station at Prendergast Mill. There was no flow data for Resolven and Garndolbenmaen due to the maintainance work at the gauge station.)

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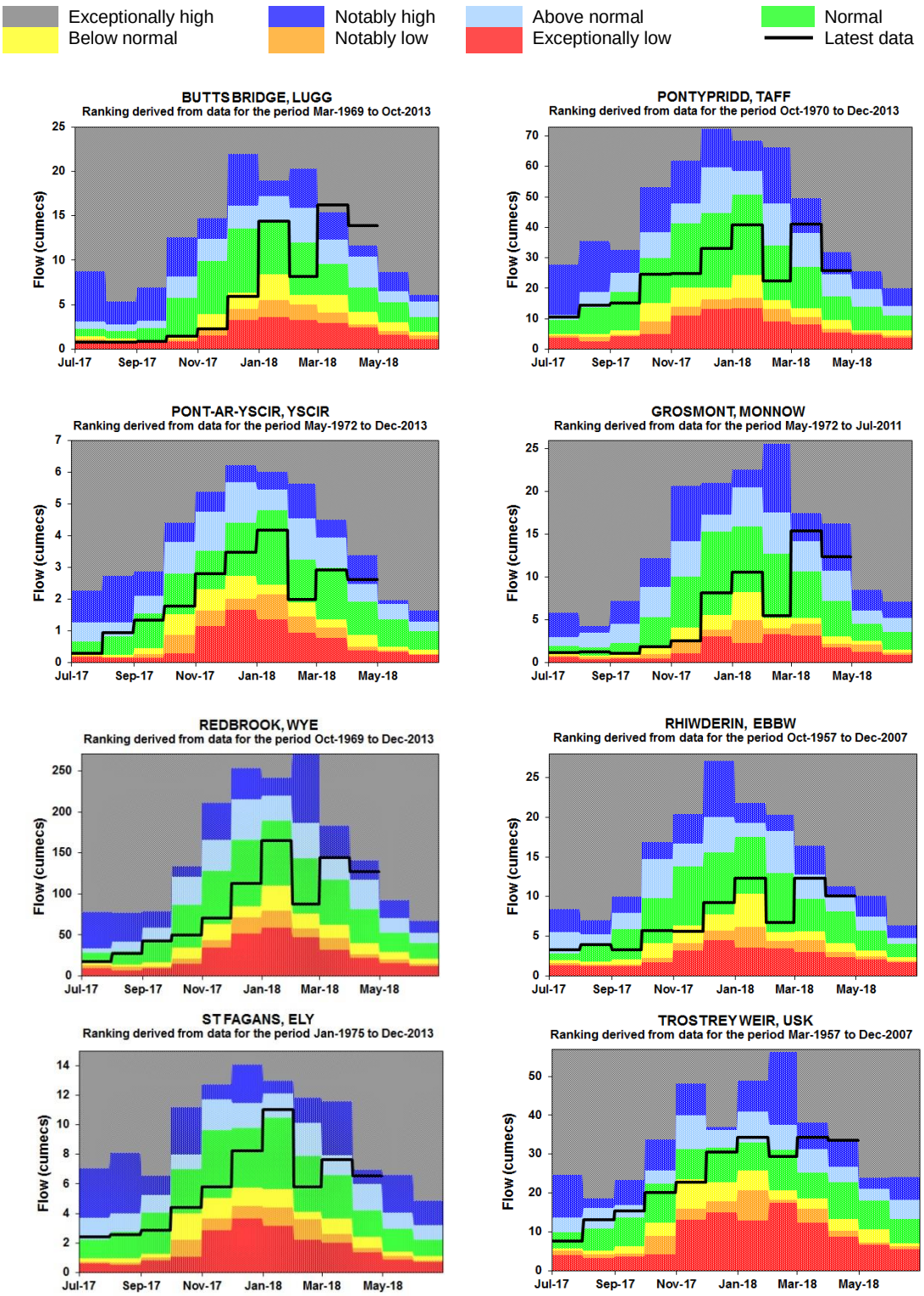
River Flow Charts

Figure 12: River Flow Charts: South East Wales



Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels (*Source: Natural Resources Wales*).

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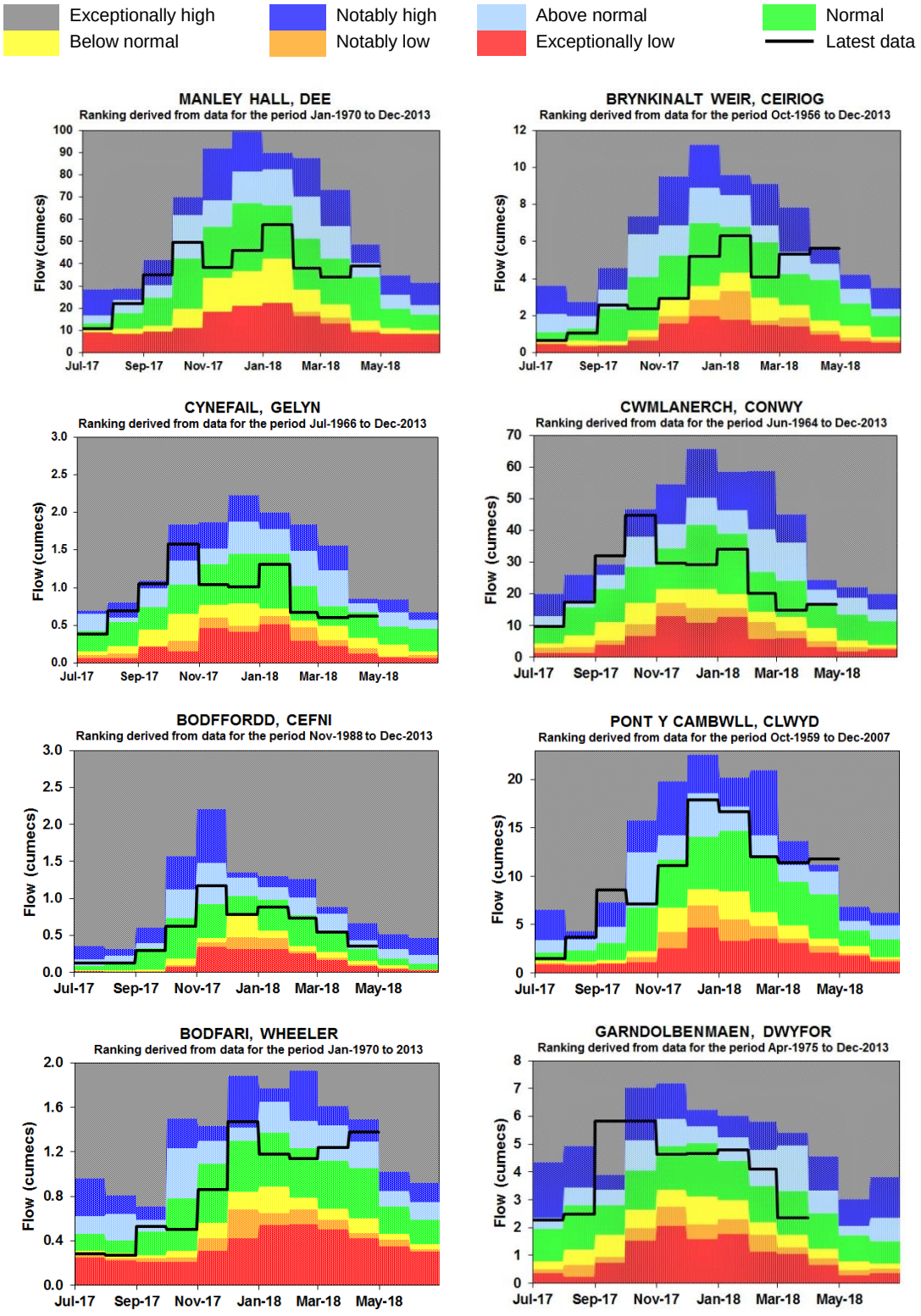
Figure 13: River Flow Charts: North Wales



Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels (*Source: Natural Resources Wales*).
(Please note that there was no data for Garndolbenmaen for April 2018 due to maintenance work)

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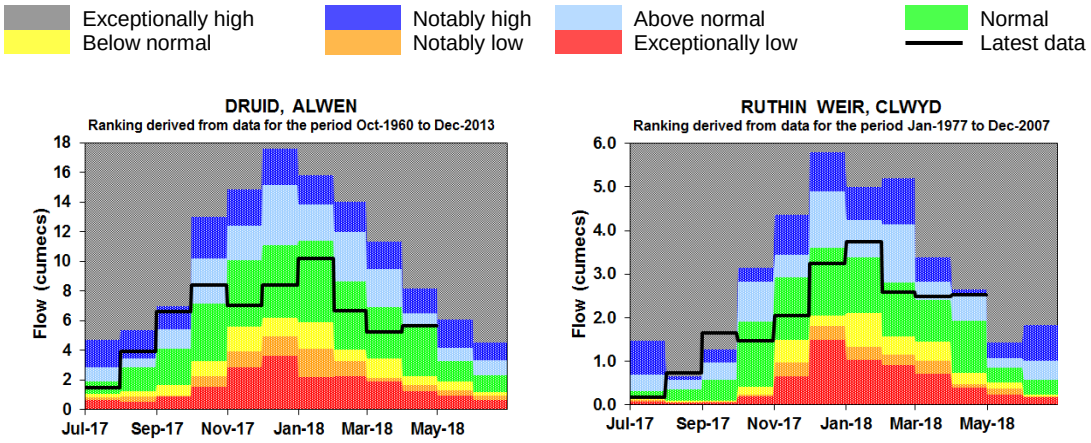
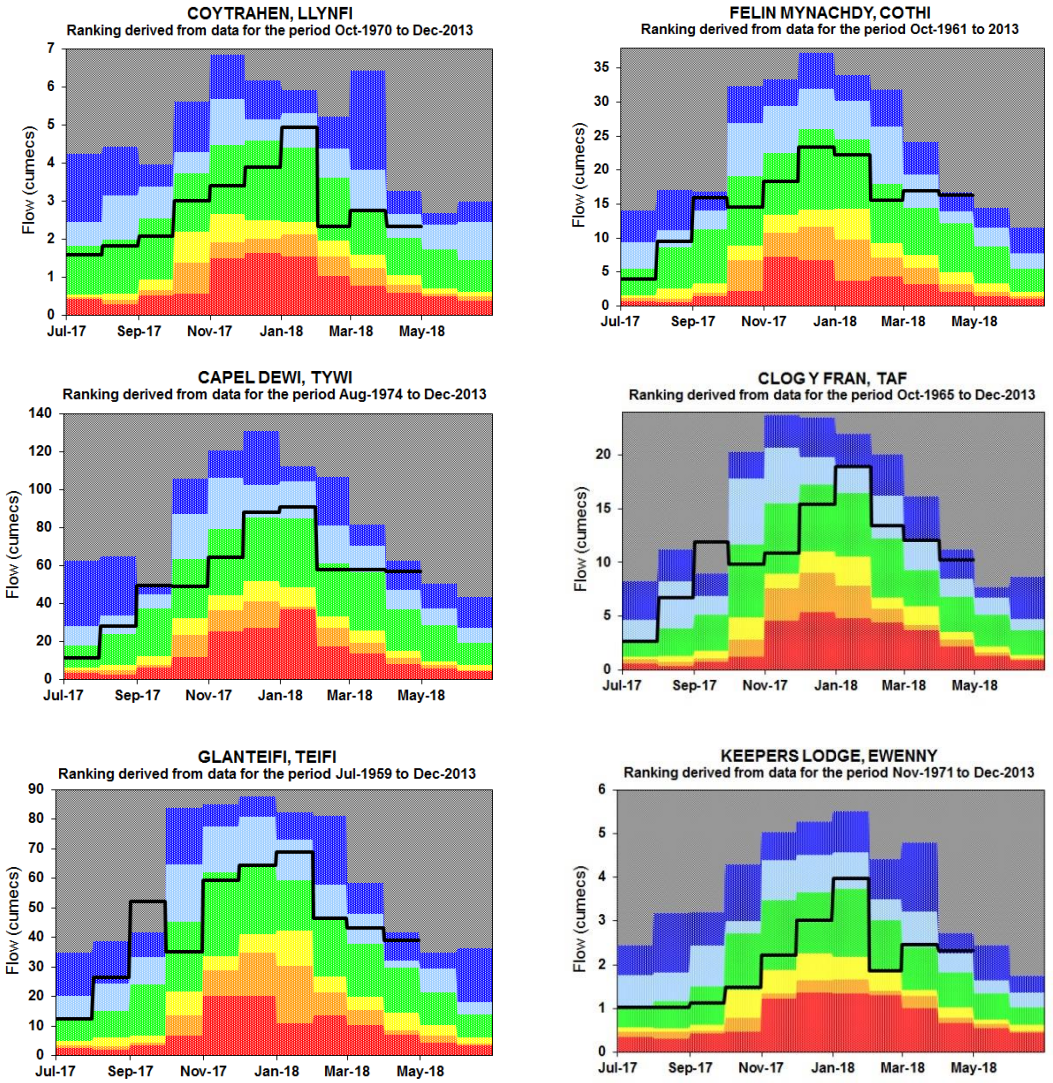


Figure 14: River Flow Charts: South West Wales



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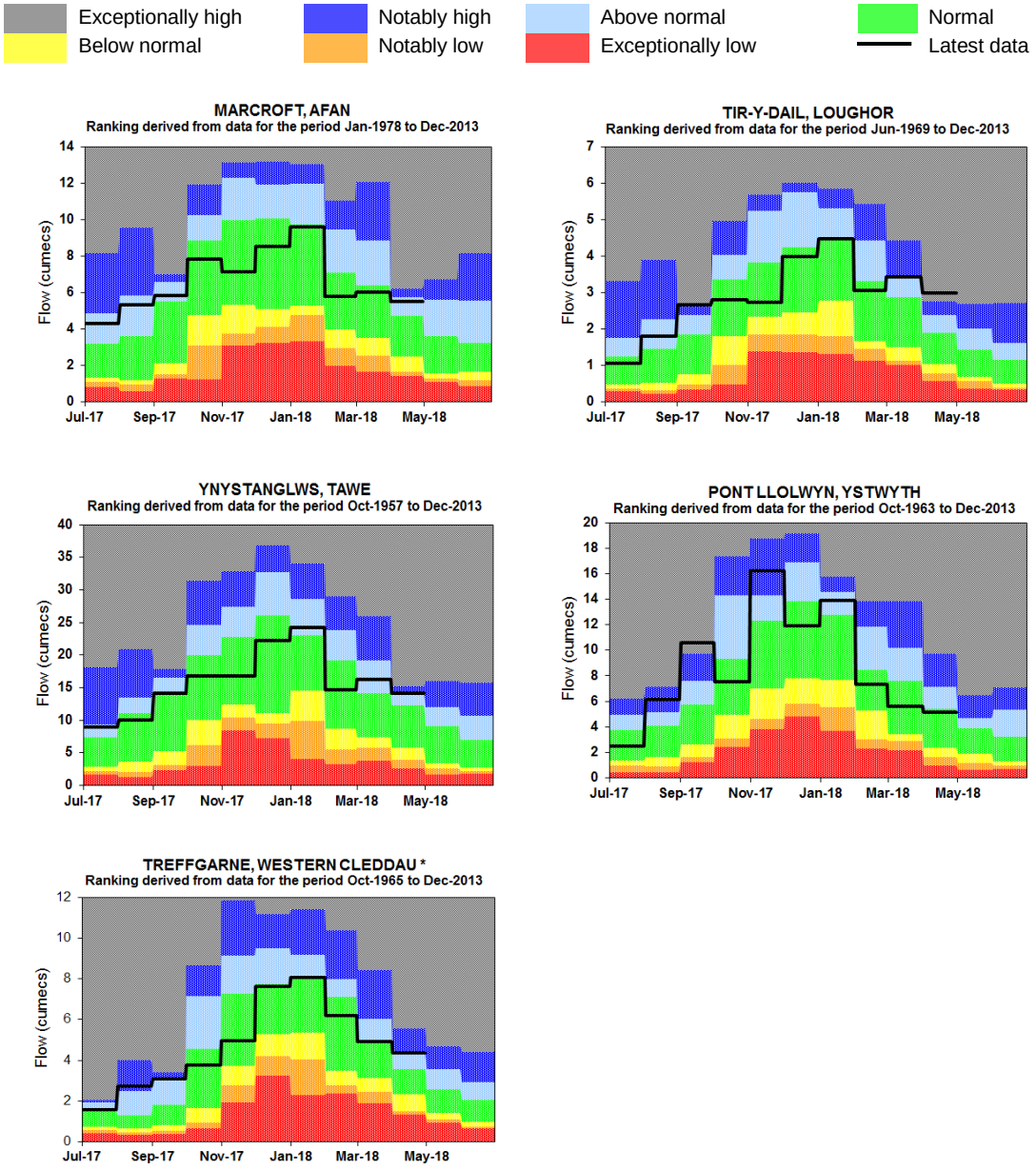

Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).*

(* Please note that for Treffgarne station the ranking bands were derived using scaled historical flows (1965-2003) from the downstream station at Prendergast Mill)

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Groundwater Levels

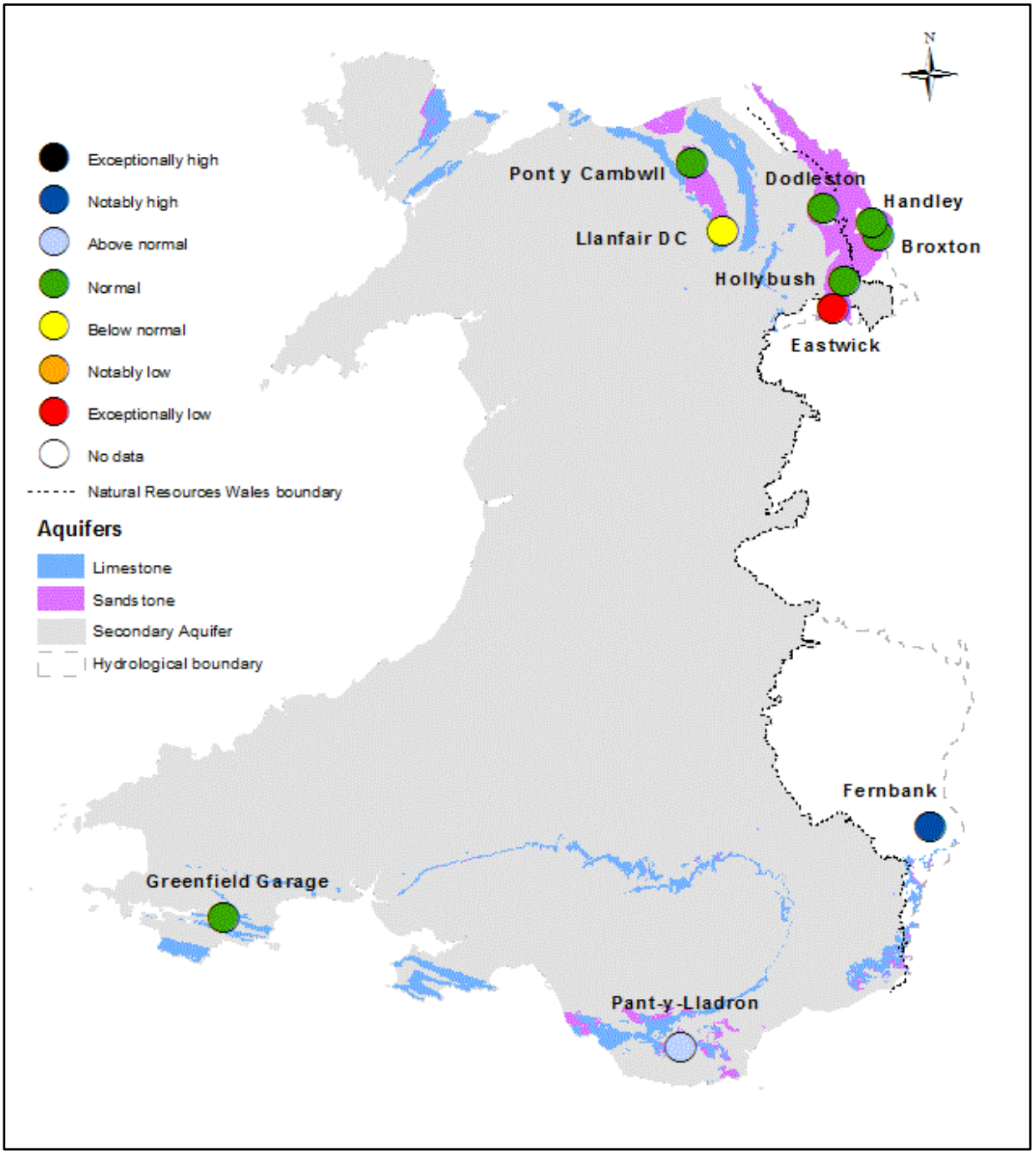

Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic April groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

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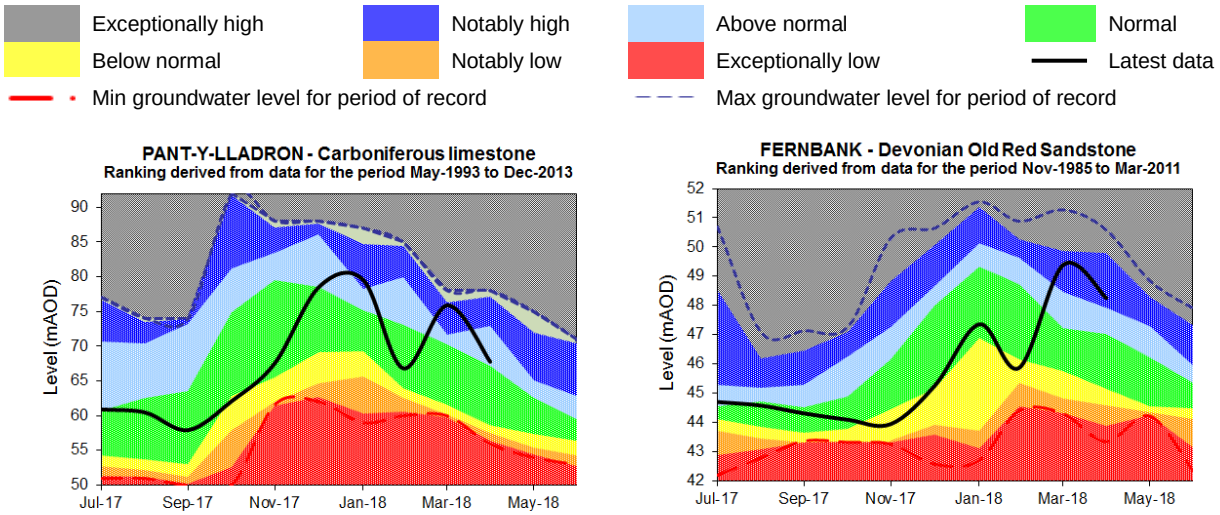
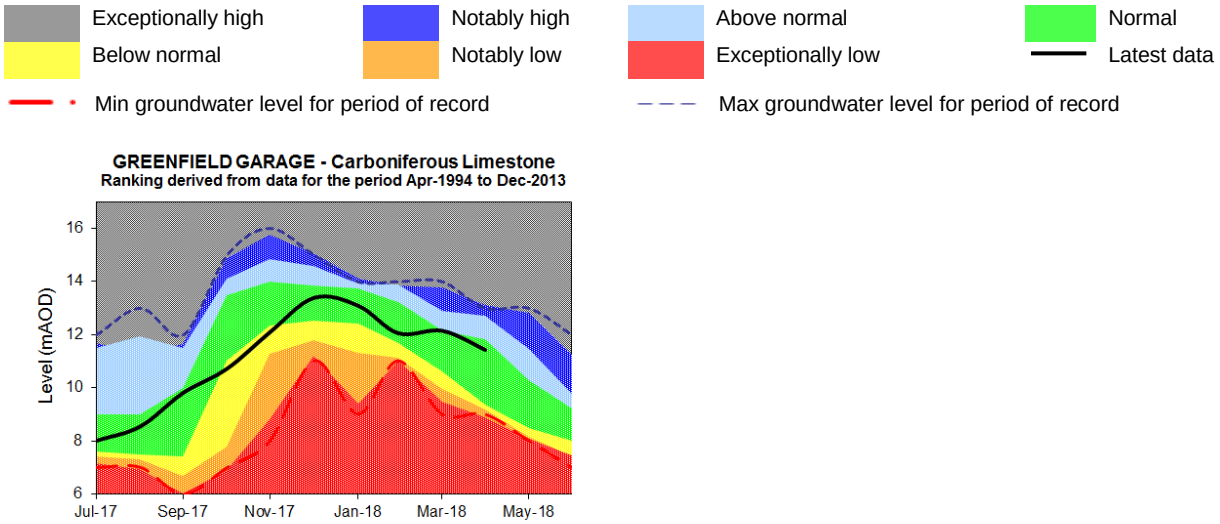
Groundwater charts

Figure 16: Groundwater level charts: South East Wales



End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales).*

Figure 17: Groundwater level charts: South West Wales



End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales).*

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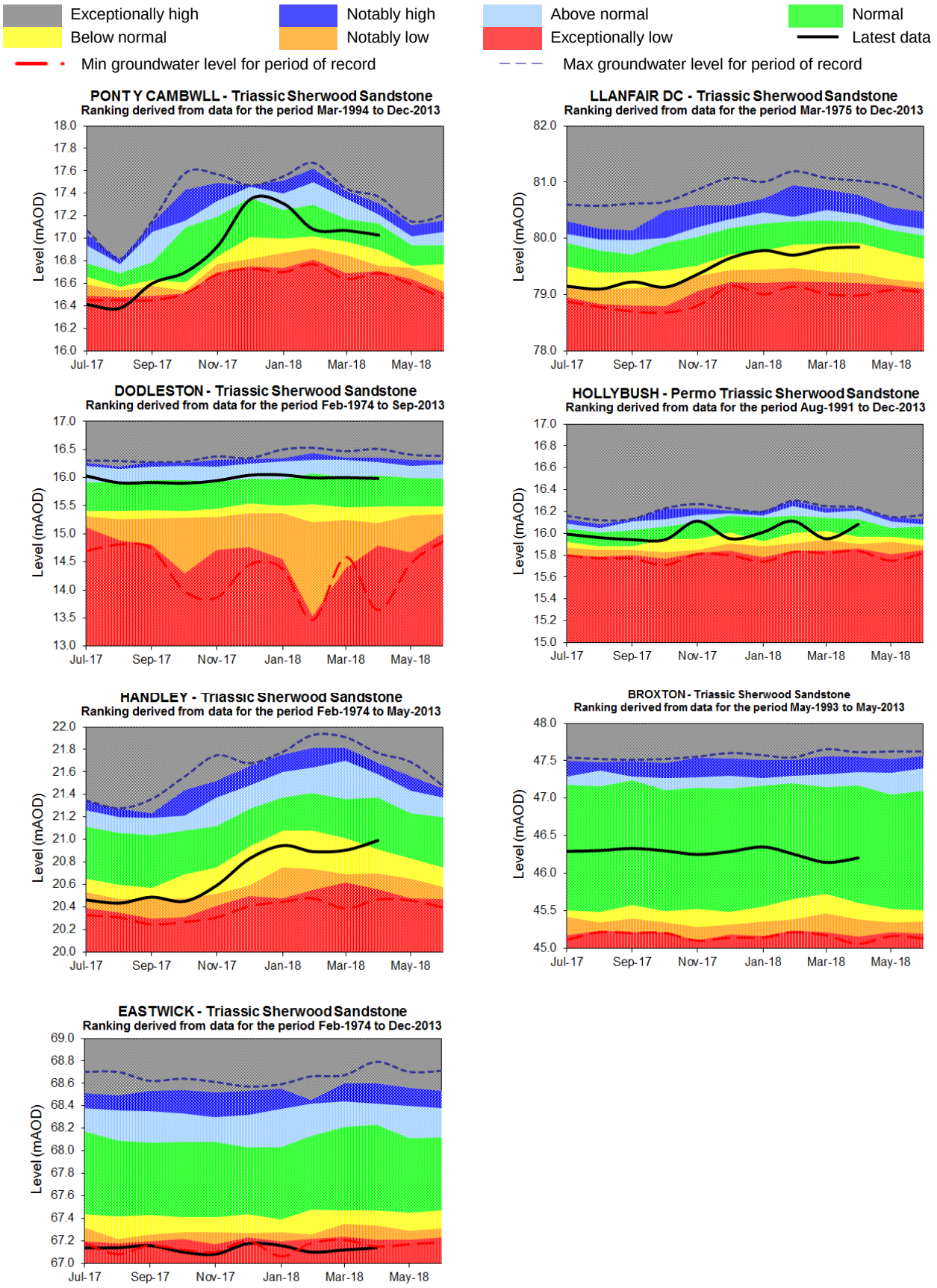
Figure 18: Groundwater level charts: North Wales



End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales and Environment Agency)*.

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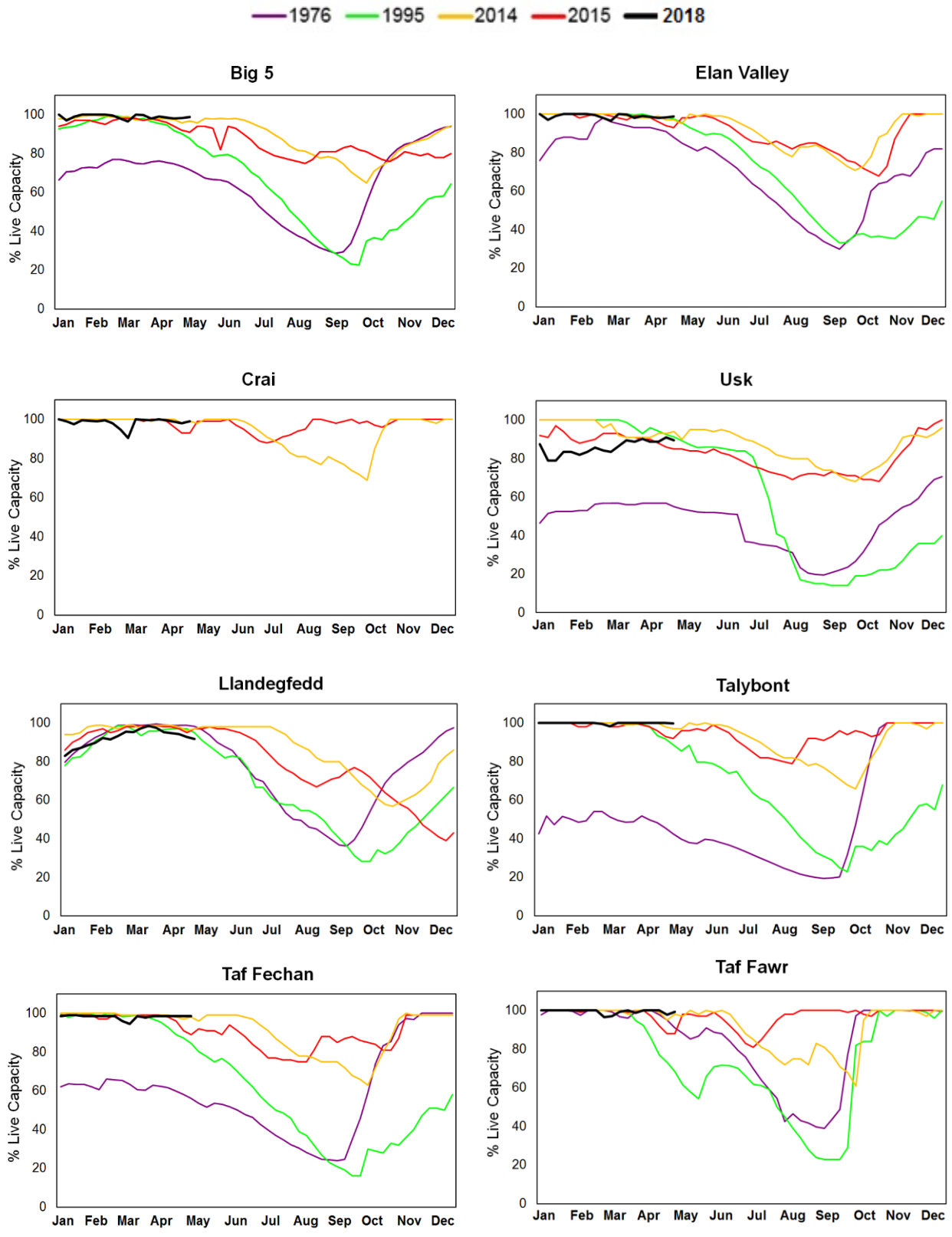
Reservoir Storage

Figure 19: Reservoir charts: South East Wales



Weekly reservoir stocks for Natural Resources Wales index sites *(Source: Welsh Water)*

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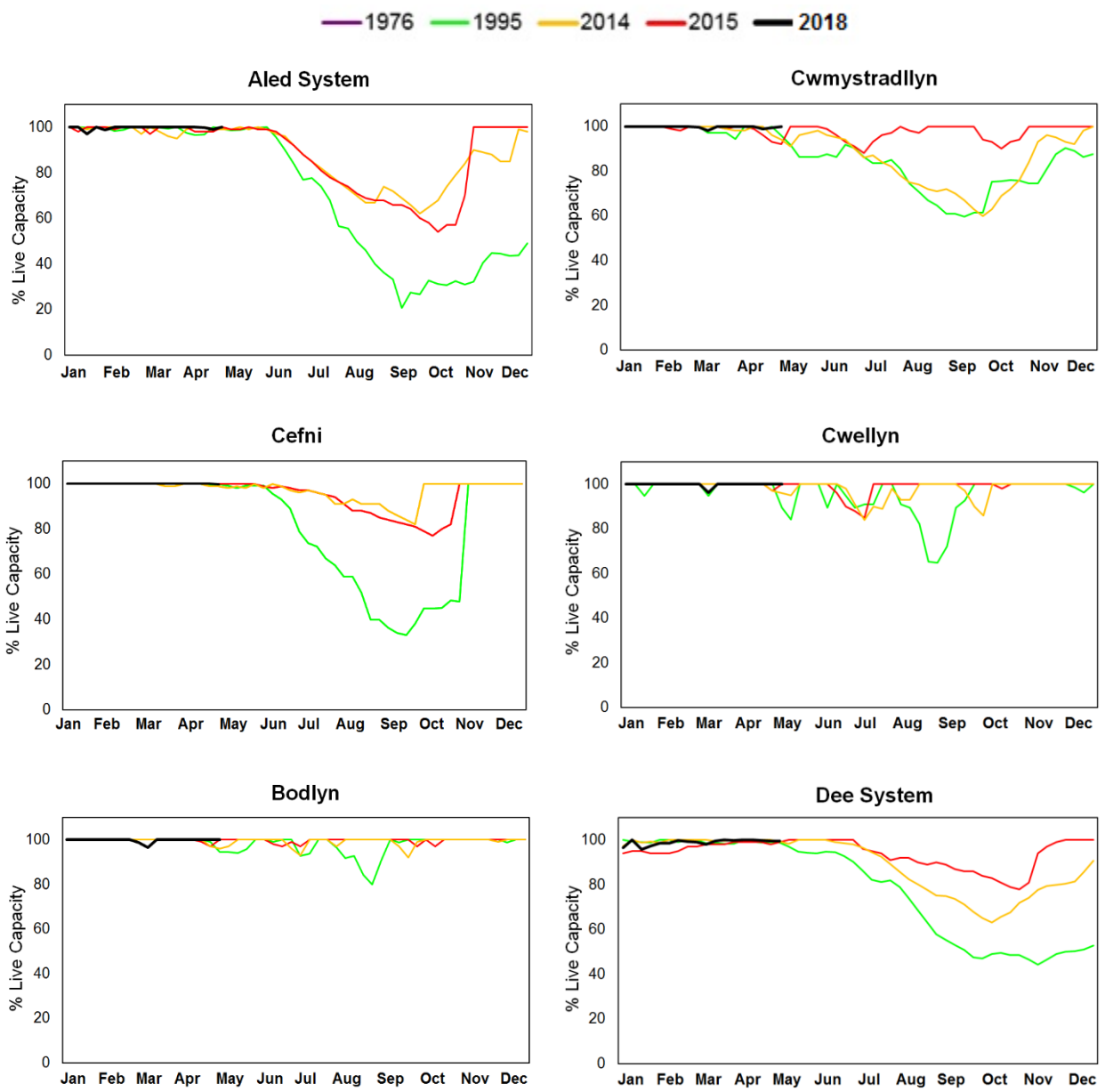
Figure 20: Reservoirs charts: North Wales



Weekly reservoir stocks for Natural Resources Wales index sites *(Source: Welsh Water).*

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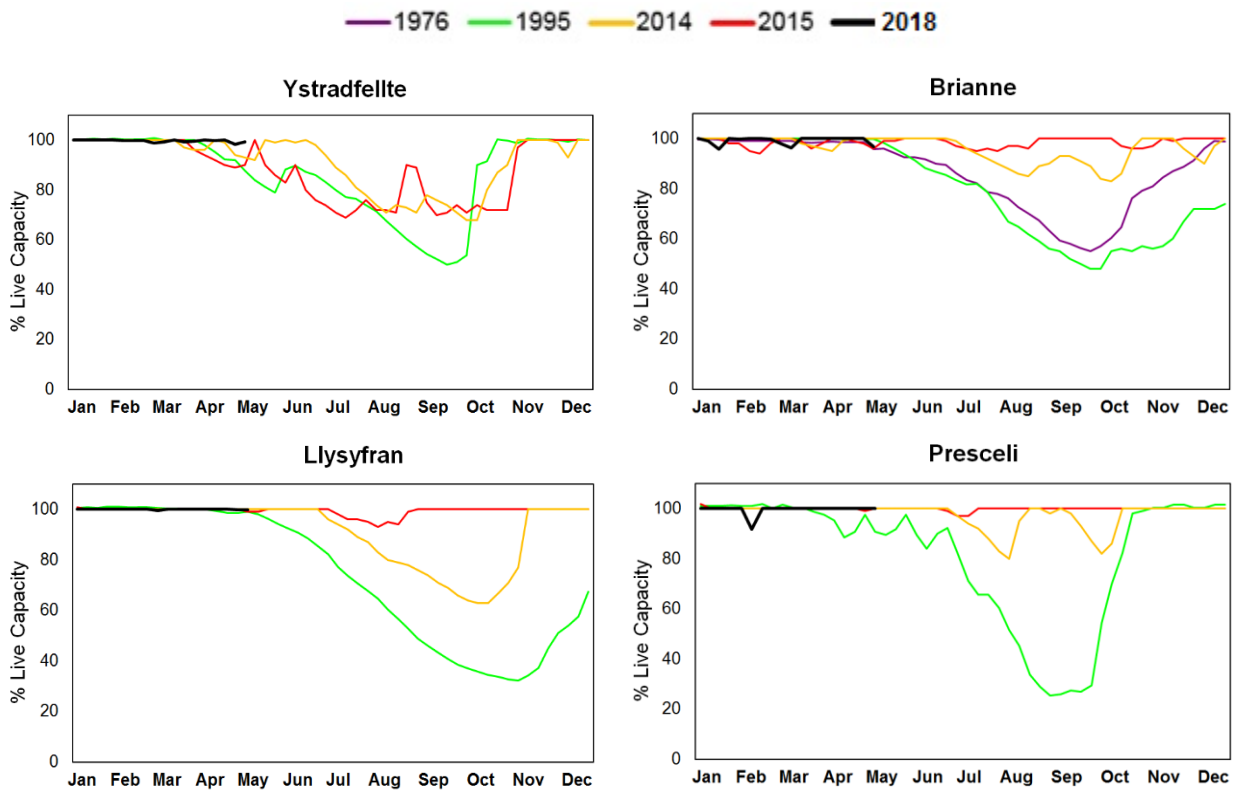
Figure 21: Reservoirs charts: South West Wales



Weekly reservoir stocks for Natural Resources Wales index sites (*Source: Welsh Water*).

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Glossary

Term	Definition
Aquifer	A geological formation able to store and transmit water.
Areal average rainfall	The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).
Effective rainfall	The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).
Groundwater	The water found in an aquifer
Meteorological Office Rainfall and Evaporation Calculating System (MORECS)	The Met Office provides climate data for grid squares measuring 40km by 40km across the UK using MORECS
Recharge	The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).
Reservoir live capacity	The reservoir capacity normally usable for storage to meet established reservoir operating requirements. It is the total capacity less that not available because of operating agreements or physical restrictions. Only under abnormal conditions, such as a severe water shortage might this additional water be extracted.
Soil moisture deficit (SMD)	The difference between the amount of water actually in the soil and the amount of water that the soil can hold. Expressed in depth of water (mm).

Categories

Exceptionally high	Value likely to fall within this band 5% of the time
Notably high	Value likely to fall within this band 8% of the time
Above normal	Value likely to fall within this band 15% of the time
Normal	Value likely to fall within this band 44% of the time
Below normal	Value likely to fall within this band 15% of the time
Notably low	Value likely to fall within this band 8% of the time
Exceptionally low	Value likely to fall within this band 5% of the time

Units

cumecs	Cubic metres per second ($m^3 s^{-1}$)
mAOD	Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).