Monthly Water Situation Report May 2018

Natural Resources Wales

- **The monthly rainfall total for Wales during May was 78% of the Long Term Average (LTA, 1961-90). South East, South West and North Wales received 84%, 69% and 81% of the LTA, respectively.**
- **At the end of May, the differences between soil moisture deficit (SMD) values and the LTA across Wales were from -15.6 (wetter) to 20.2 mm (drier). Soil in most of the squares (17 out of 23 squares) was drier than the LTA for May.**
- **For river flows in Wales, 26 out of 29 indicator sites (which had flow data available) were classed as *Normal* and the remaining 3 sites were classed as *Below normal*.**
- **The overall cumulative reservoir storage across the indicator sites was greater than 90% at the end of May. All reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total for Wales was 78% of the LTA for May. The percentage of rainfall recorded in catchments compared with the LTA across Wales was between 62% (North Ceredigion) and 121% (Upper Dee). The rainfall total for Wales was 18.3mm less than the May LTA. For South East, South West and North Wales the rainfall totals were 84%, 69% and 81% 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 differences between the soil moisture deficits and the LTA for the 23 MORECS squares were from -15.6 to 20.2 mm and soil in most of the square (17 out of 23 squares) was drier than the LTA for May.

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows were between *Normal* and *Below normal* for all the indicator sites across Wales. 26 out of 29 indicator sites (which had flow data available) were classed as *Normal* and the remaining 3 sites were classed as *Below normal* for May.

***South East*:** Flows in the area ranged from 67% (River Lugg at Butts Bridge) to 103% (River Ely at St Fagans) of the May LTA values.

South West: The river flows within this area ranged from 62% (River Ystwyth at Pont Llolwyn) to 122% (River Llynfi at Coytrahen) of the May LTA values.

***North*:** Flows in the area ranged from 56% (River Gelyn at Cynefail) to 103% (River Wheeler at Bodfari) of the May 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 May at indicator sites (8 data available sites) were classed between *Exceptionally low* (Eastwick) to *Above normal (*Fernbank). 2 sites were classed as *Below normal* (Llanfair DC and Handley) and 4 sites were classed as *Normal* (Greenfield Garage, Pont y Cambwll, Dodleston Obs and Broxton Obs.

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

Reservoir Storage

At the end of May 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

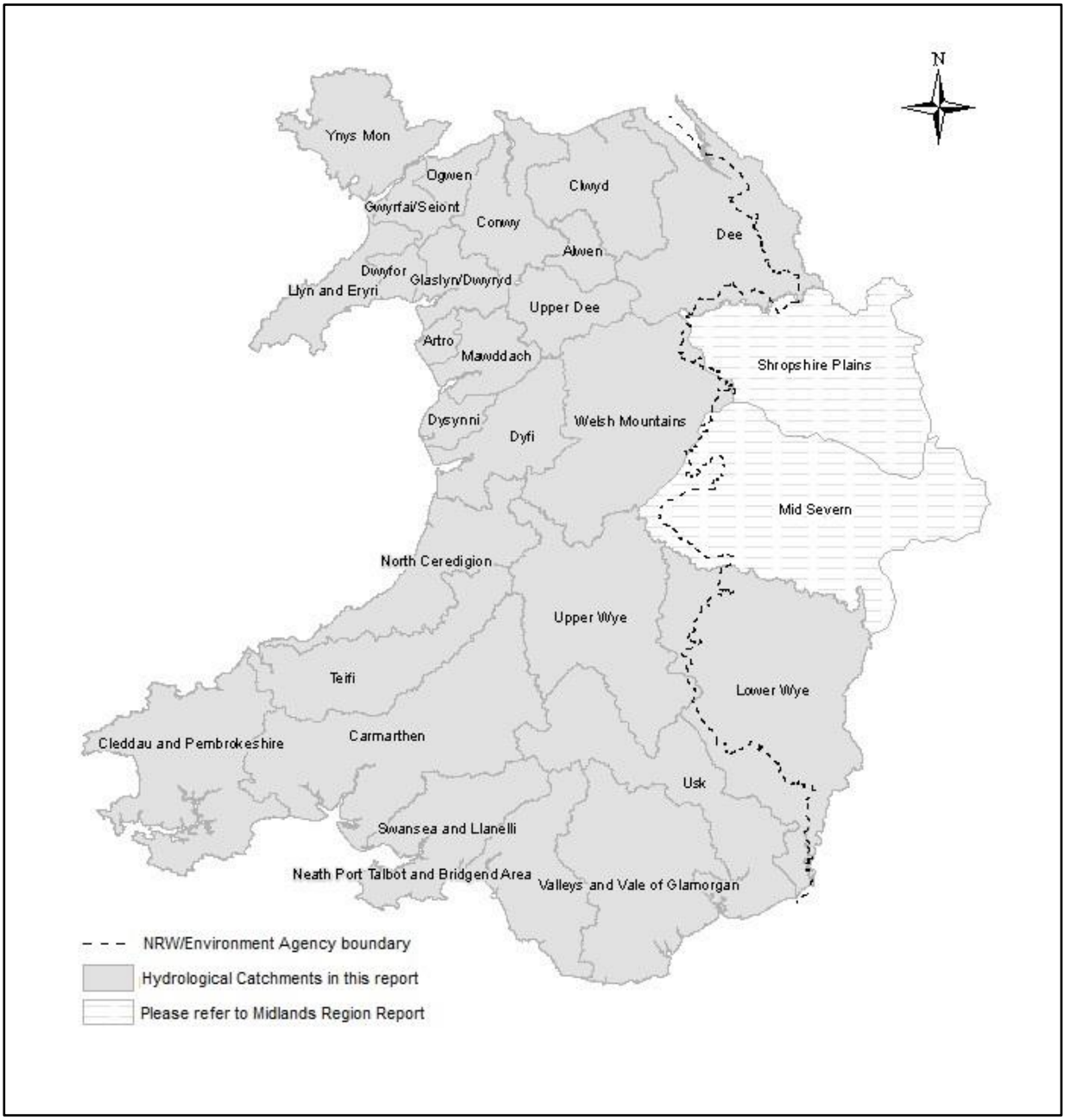

Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

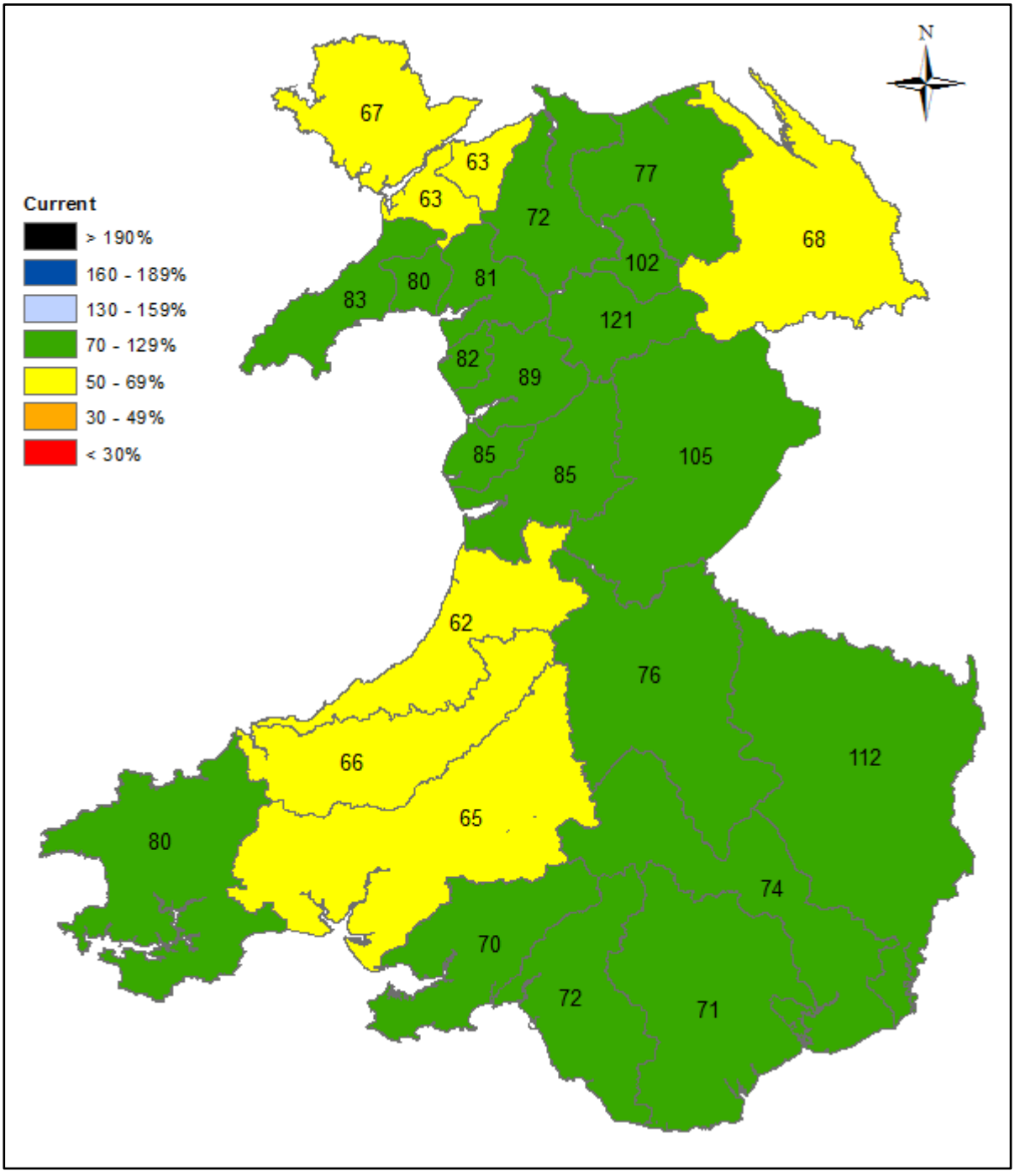

Figure 2: Calculated catchment average May rainfall totals as a percentage of the 1961-90 May long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

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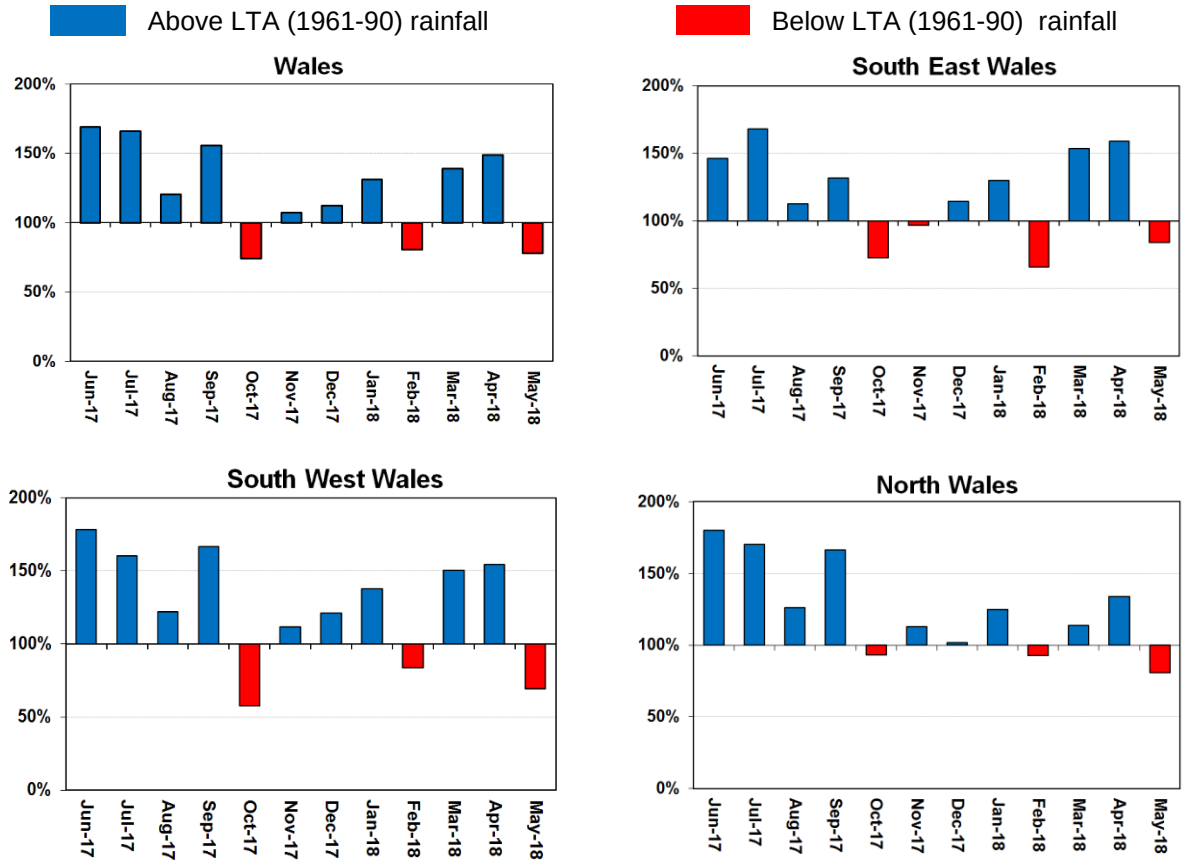
Rainfall Charts

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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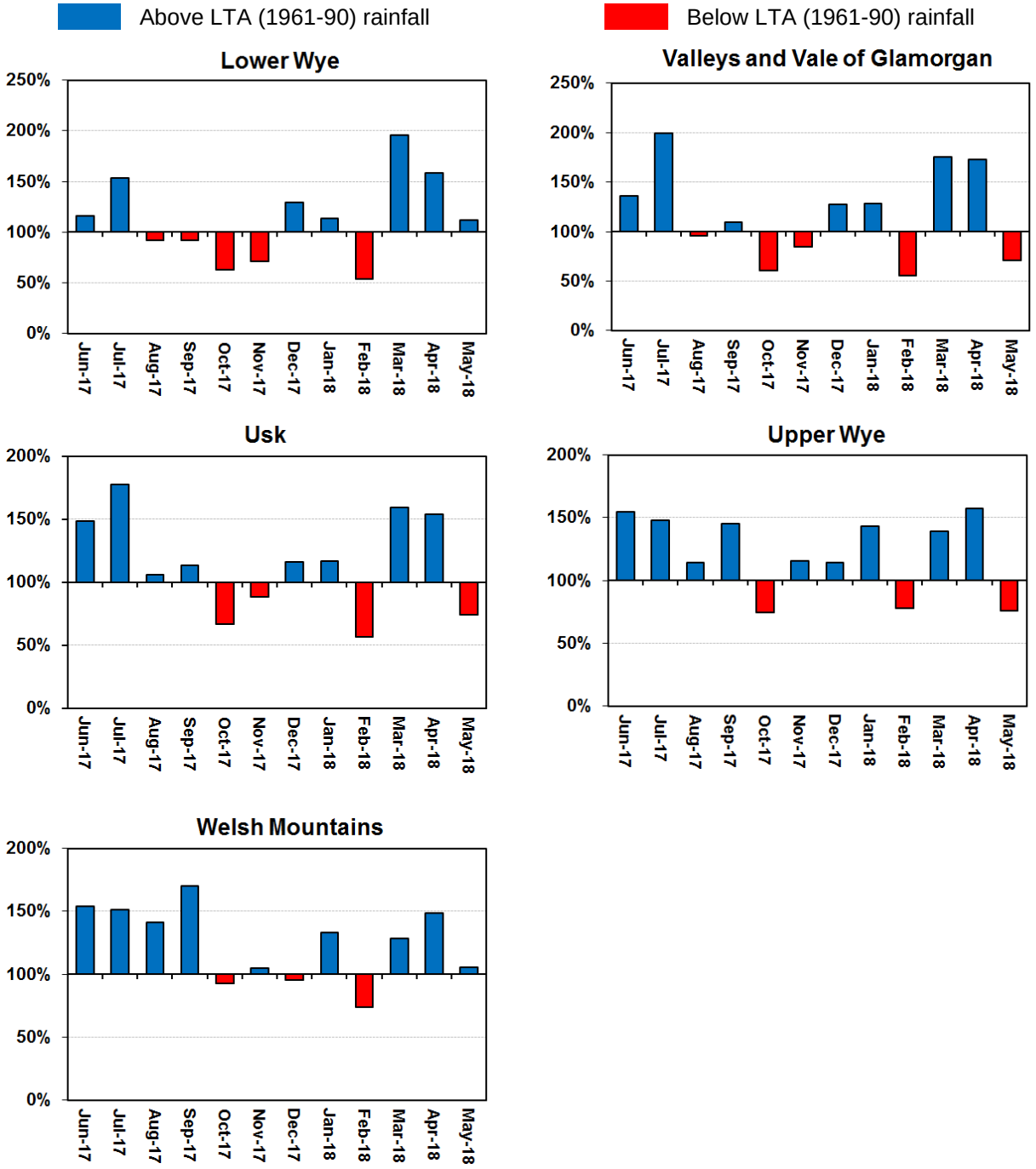
Figure 4: Rainfall Charts: South East Wales



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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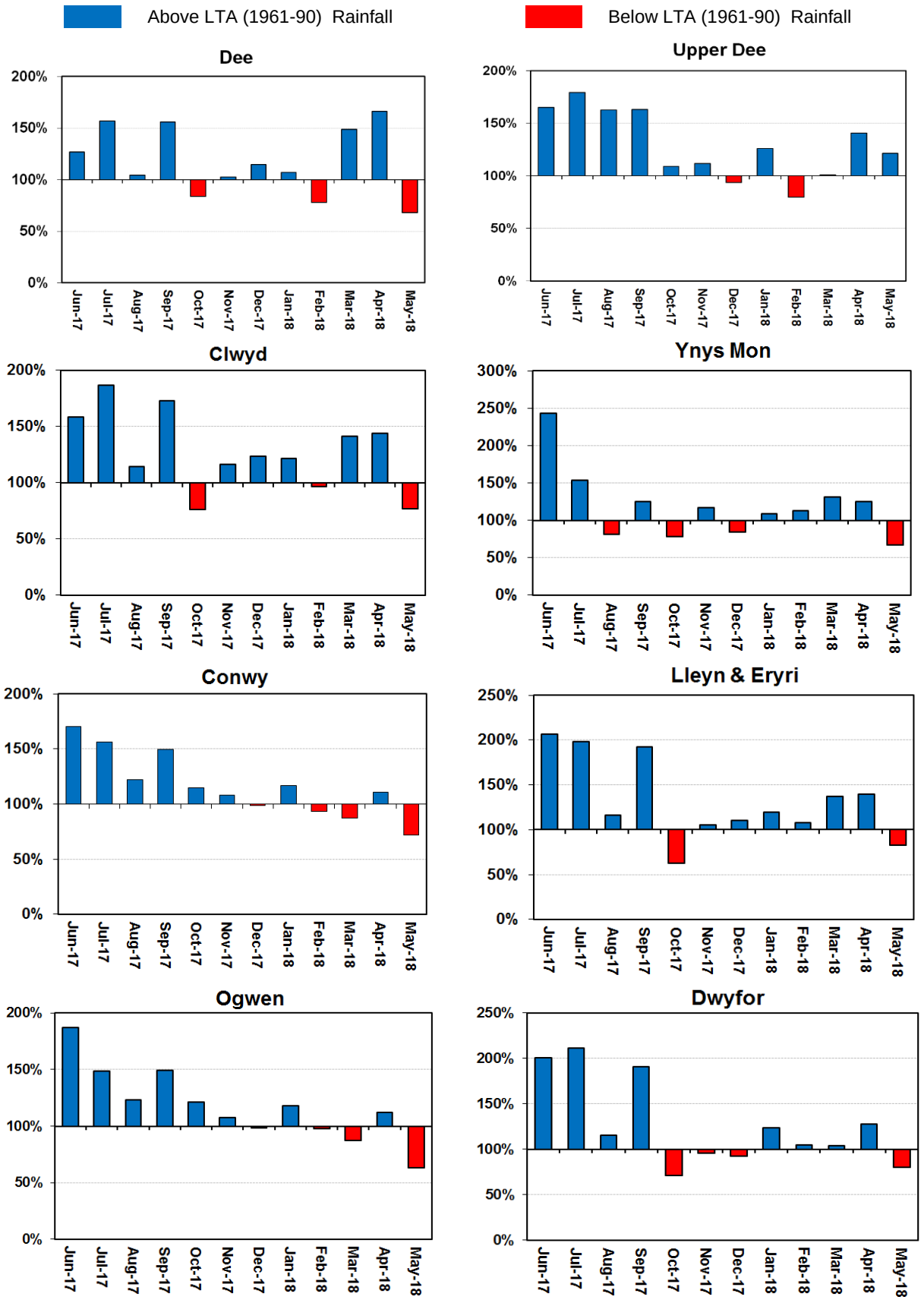
Figure 5: Rainfall Charts: North Wales



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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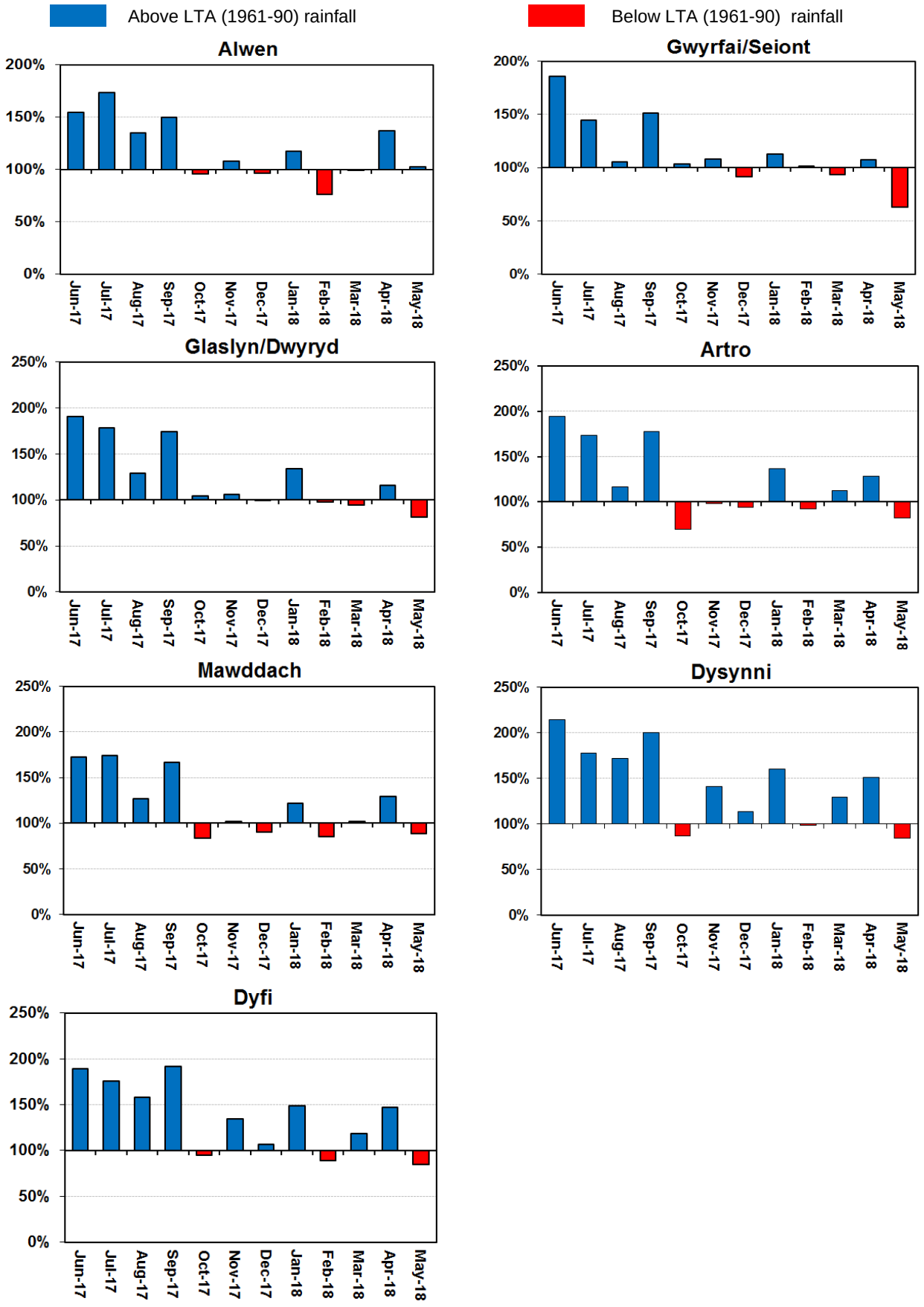

Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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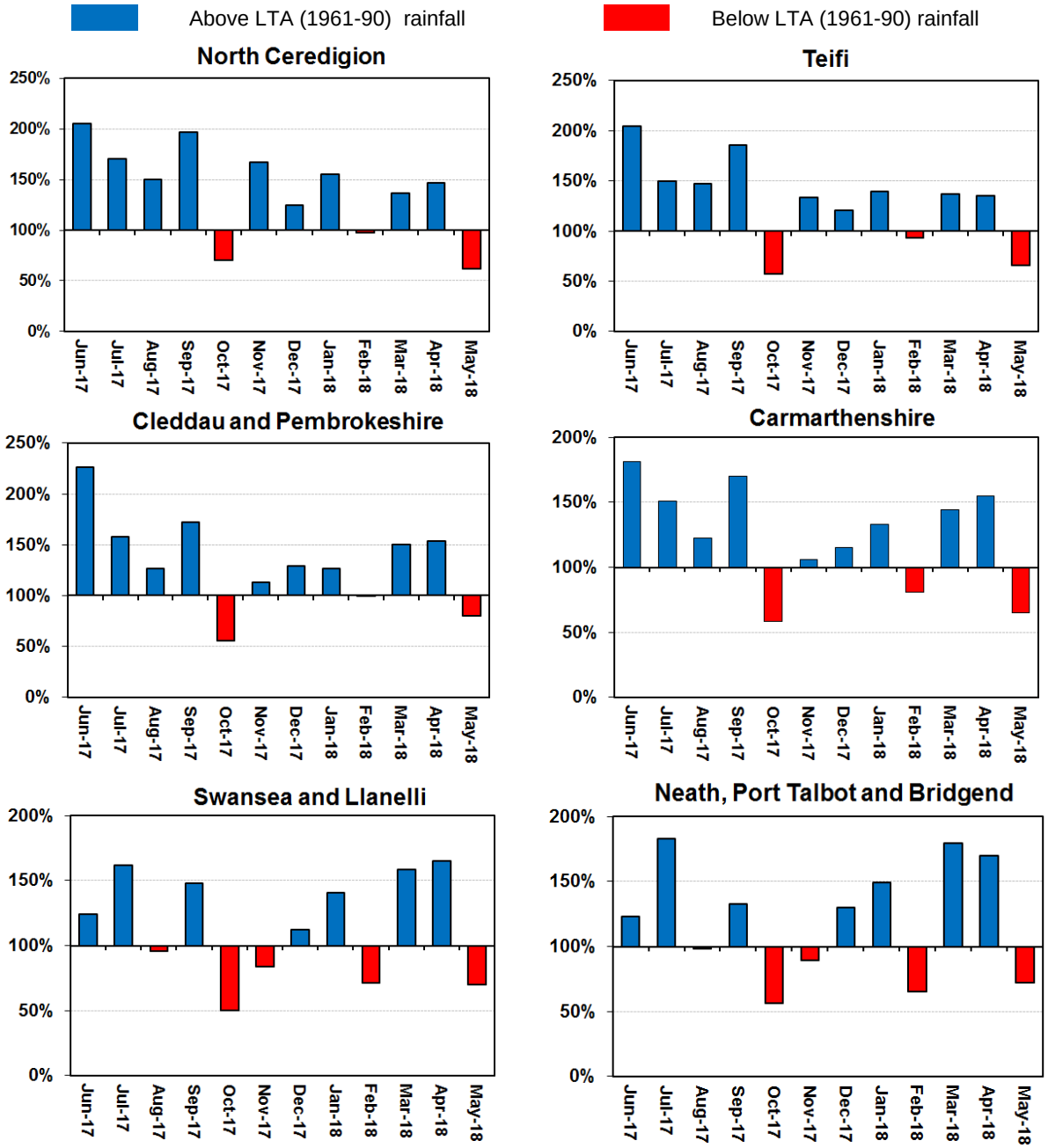
Figure 6: Rainfall Charts: South West Wales



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)

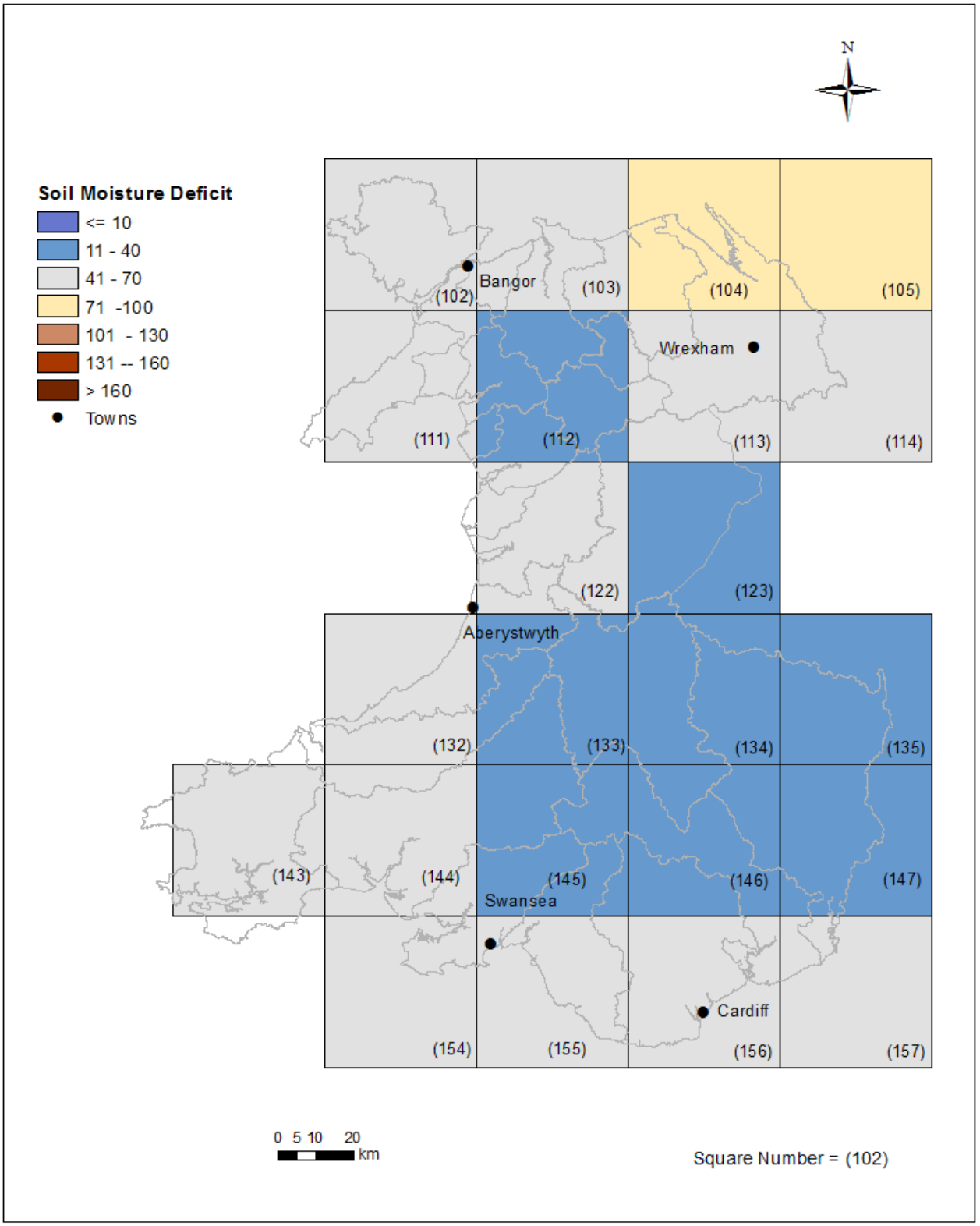

Figure 7: MORECS soil moisture deficits (mm) for May for real land use for Natural Resources Wales ***(Source: Met Office © Crown Copyright).***

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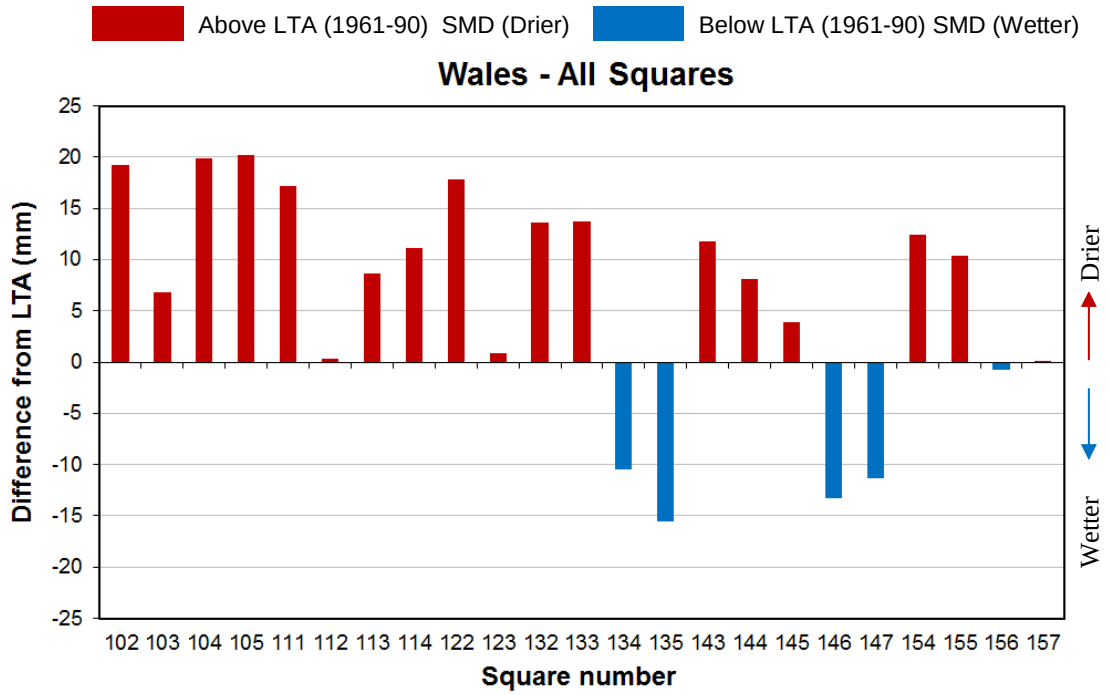

Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for May for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

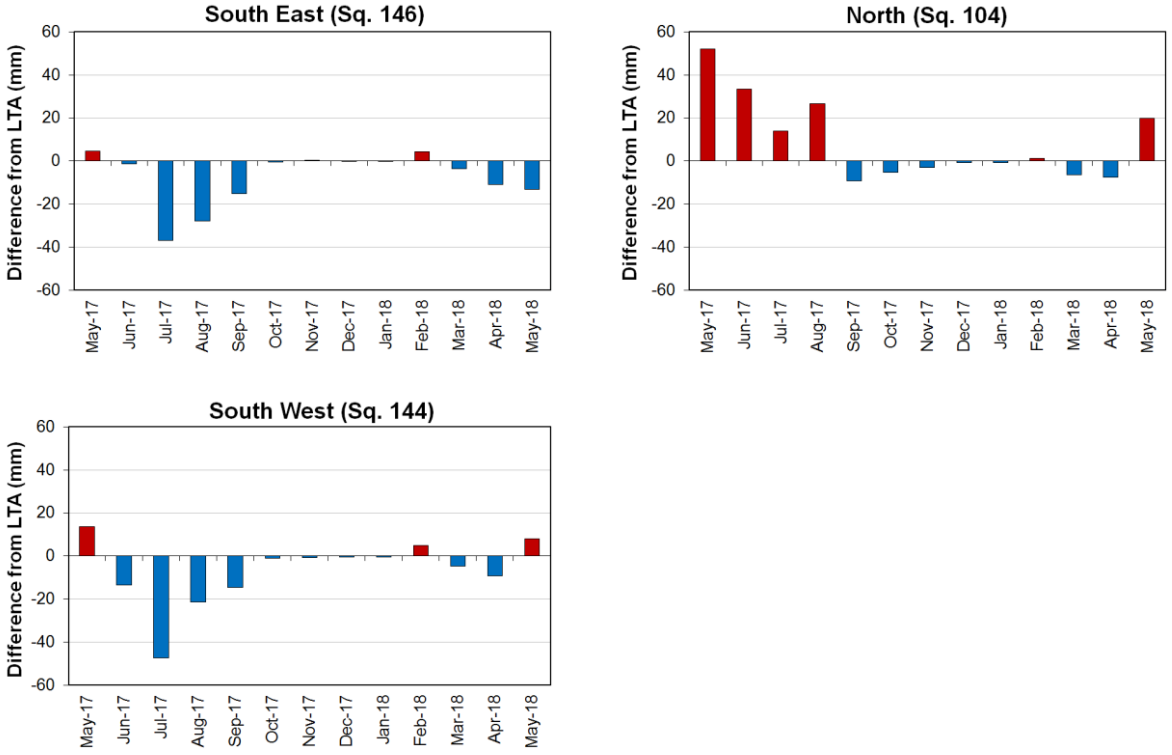

Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales.)

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River Flow

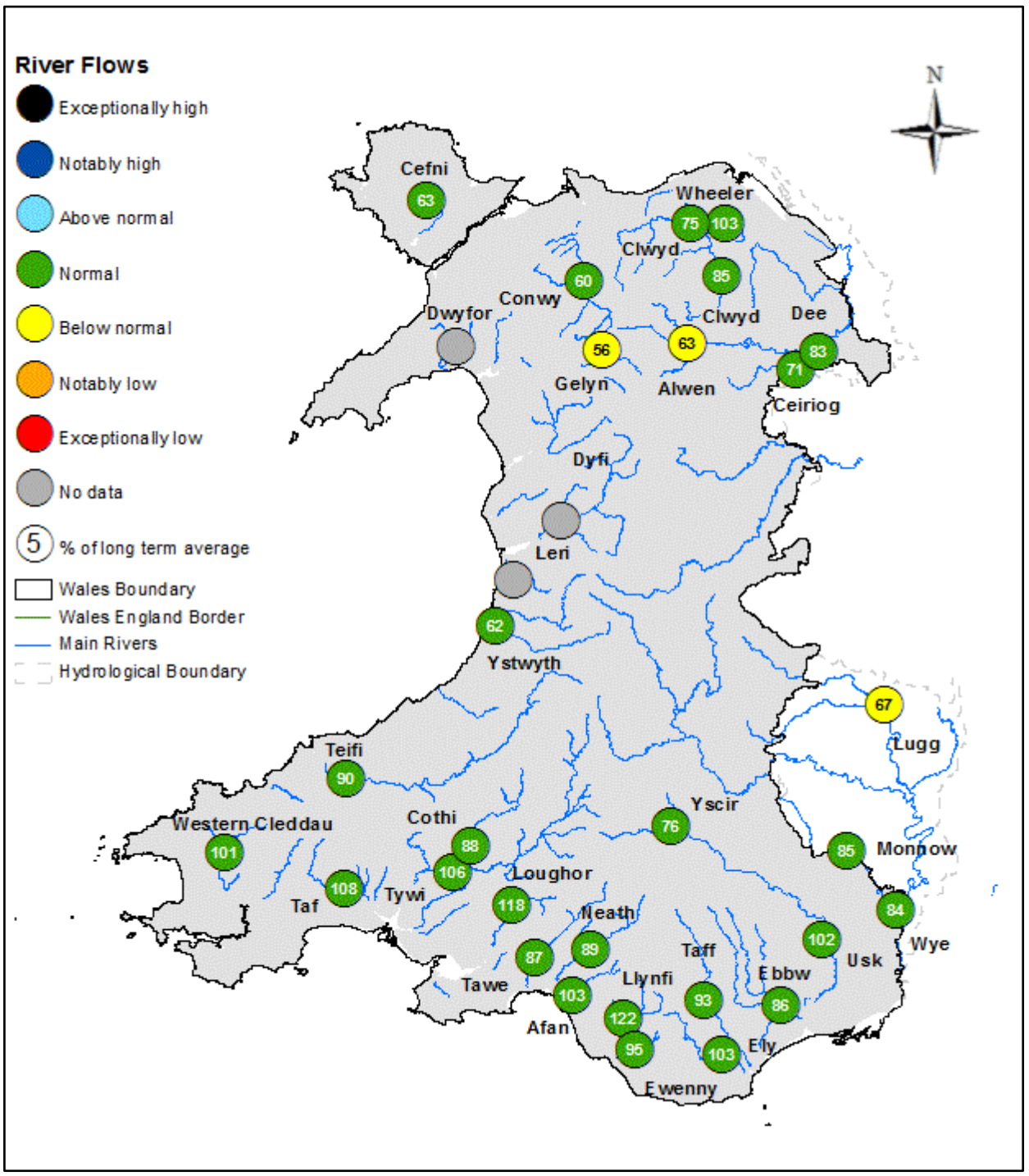

Figure 10: Monthly mean river flow for May, classed relative to analysis of historic May monthly means *(Source: Natural Resources Wales).*

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SITE NAME	RIVER	May 2018			May 2017		May 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	Below normal	67%	2.85	57%	5.89	4.27	1.23	11.50
Grosmont	Monnow	Normal	85%	3.39	73%	8.12	3.99	1.09	9.49
Pont ar Yscir	Yscir	Normal	76%	0.78	95%	3.47	1.02	0.27	3.05
Pontypridd	Taff	Normal	93%	10.60	92%	33.10	11.41	4.03	30.70
Redbrook	Wye	Normal	84%	37.60	84%	113.00	44.70	14.00	130.00
Rhiwderin	Ebbw	Normal	86%	4.20	73%	9.28	4.88	1.45	15.20
St Fagans	Ely	Normal	103%	2.55	103%	8.24	2.47	0.77	6.68
Trostrey Weir	Usk	Normal	102%	14.90	106%	30.50	14.58	5.99	29.80
River Flow Sites : North Area									
Bodfari	Wheeler	Normal	103%	0.65	135%	1.47	0.63	0.31	1.77
Bodffordd	Cefni	Normal	63%	0.10	89%	0.78	0.16	0.04	0.52
Brynkinalt Weir	Ceiriog	Normal	71%	1.56	93%	5.18	2.19	0.60	5.46
Cwmlanerch	Conwy	Normal	60%	6.07	91%	29.20	10.19	0.76	29.20
Cynefail	Gelyn	Below normal	56%	0.22	86%	1.01	0.39	0.07	1.03
Dol y Bont	Leri						0.86	0.16	2.78
Druid	Alwen	Below normal	63%	1.72	89%	8.38	2.71	0.57	6.59
Dyfi bridge	Dyfi						11.90	1.18	35.40
Garndolbenmaen	Dwyfor						1.36	0.19	4.10
Manley Hall	Dee	Normal	83%	14.10	86%	46.10	16.94	8.32	38.60
Pont y Cambwll	Clwyd	Normal	75%	2.86	147%	17.90	3.79	1.27	11.40
Ruthin Weir	Clwyd	Normal	85%	0.61	107%	3.25	0.72	0.22	2.18
River Flow Sites : South West Area									
Capel Dewi	Tywi	Normal	106%	22.30	124%	88.00	21.13	4.50	58.90
Clog y Fran	Taf	Normal	108%	4.23	110%	15.40	3.92	1.02	10.90
Coytrahen	Llynfi	Normal	122%	1.57	108%	3.90	1.29	0.30	2.90
Felin Mynachdy	Cothi	Normal	88%	5.79	113%	23.40	6.59	0.84	17.90
Glanteifi	Teifi	Normal	90%	15.10	118%	64.30	16.70	4.23	39.50
Keepers Lodge	Ewenny	Normal	95%	1.05	100%	3.01	1.11	0.50	2.60
Marcroft	Afan	Normal	103%	3.41	107%	8.53	3.31	0.72	17.80
Pont Llolwyn	Ystwyth	Normal	62%	1.94	107%	11.90	3.13	0.58	10.80
Treffgarne *	Western Cleddau	Normal	101%	2.22	113%	7.62	2.20	0.82	5.18
Resolven	Neath	Normal	89%	4.77	73%	11.80	5.36	0.80	13.80
Tir-y-Dail	Loughor	Normal	118%	1.40	113%	3.99	1.19	0.30	3.51
Ynystanglws	Tawe	Normal	87%	6.12	114%	22.20	7.07	1.38	19.50

Figure 11: Monthly mean river flow for May with comparison against previous year expressed as a percentage of the May long term average and classed relative to analysis of historic May 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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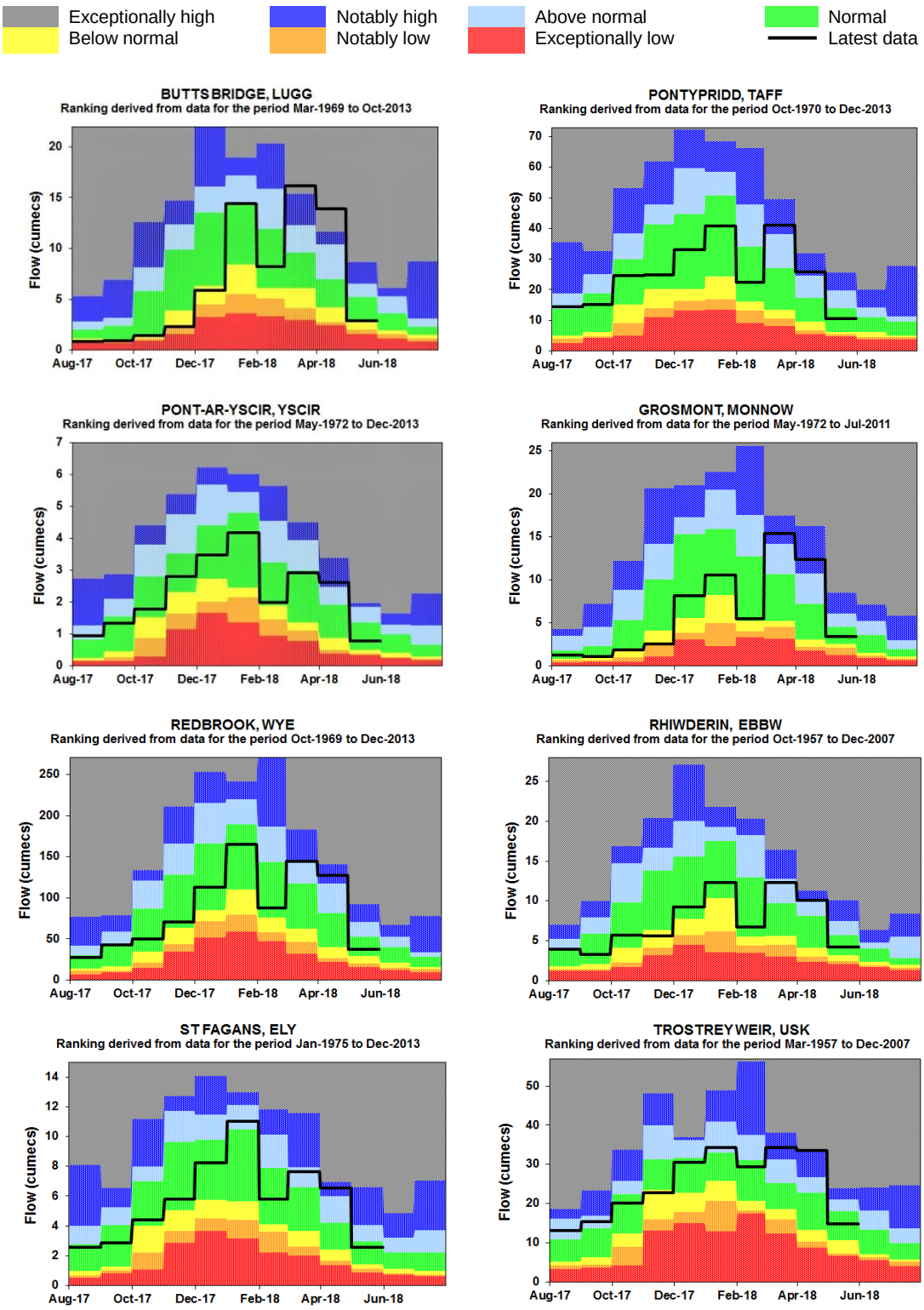
River Flow Charts

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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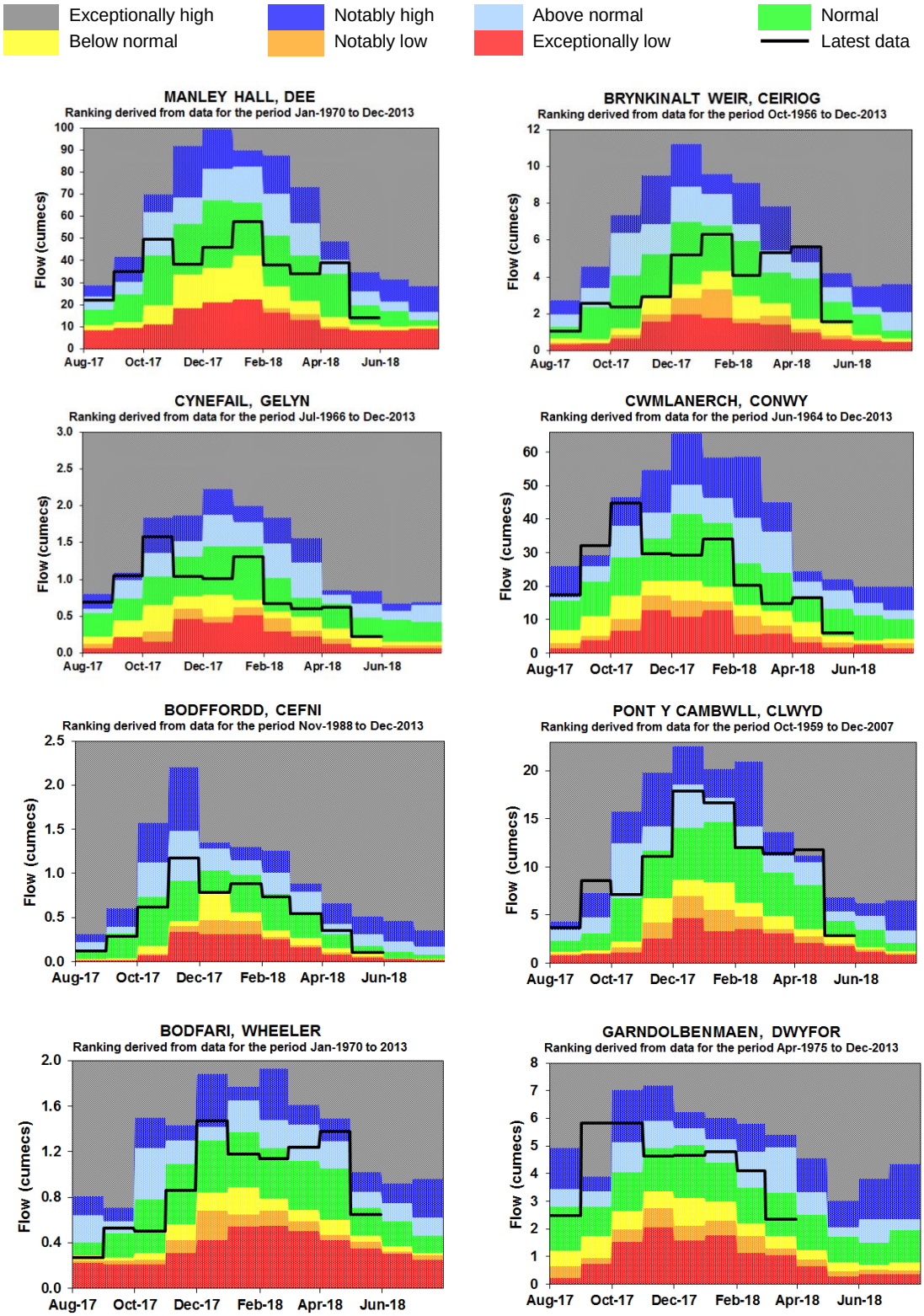
Figure 13: River Flow Charts: North Wales



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 May 2018 due to maintenance work)

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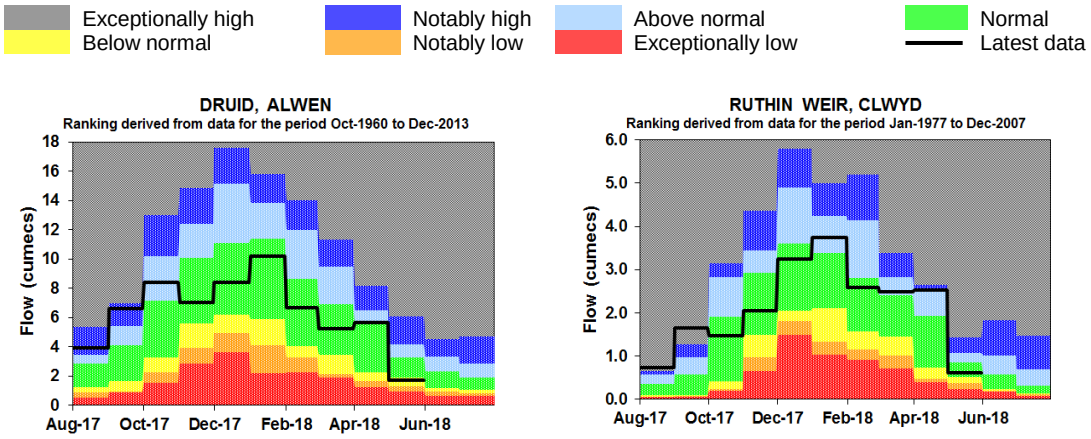
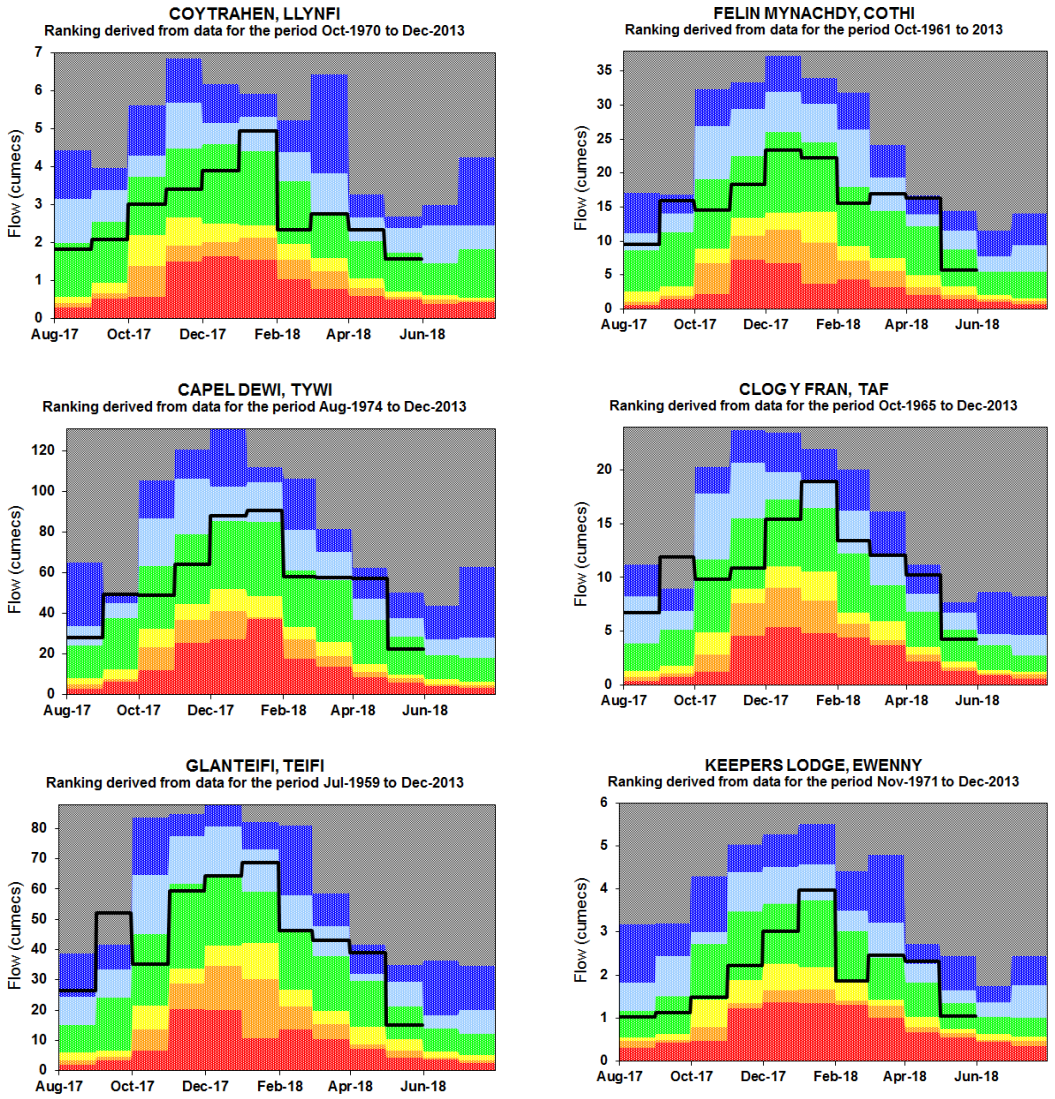


Figure 14: River Flow Charts: South West Wales



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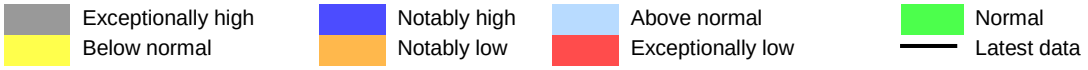

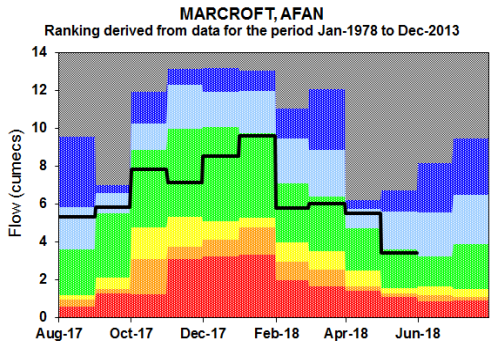

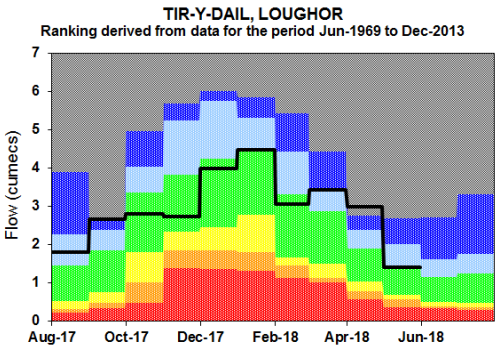

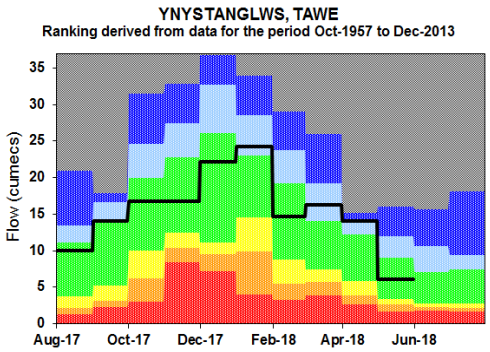

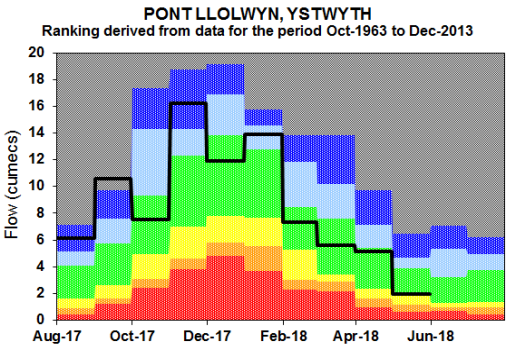

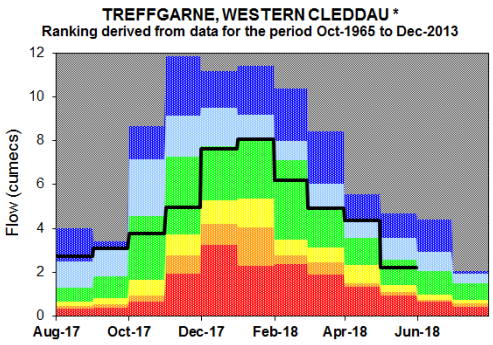

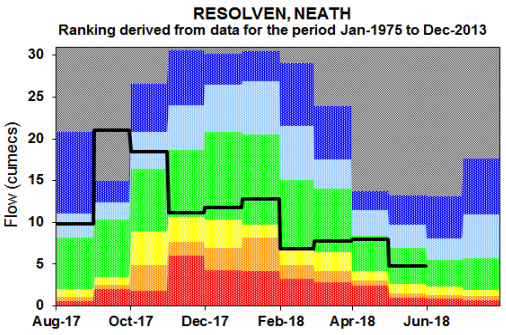

Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).*

(* 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

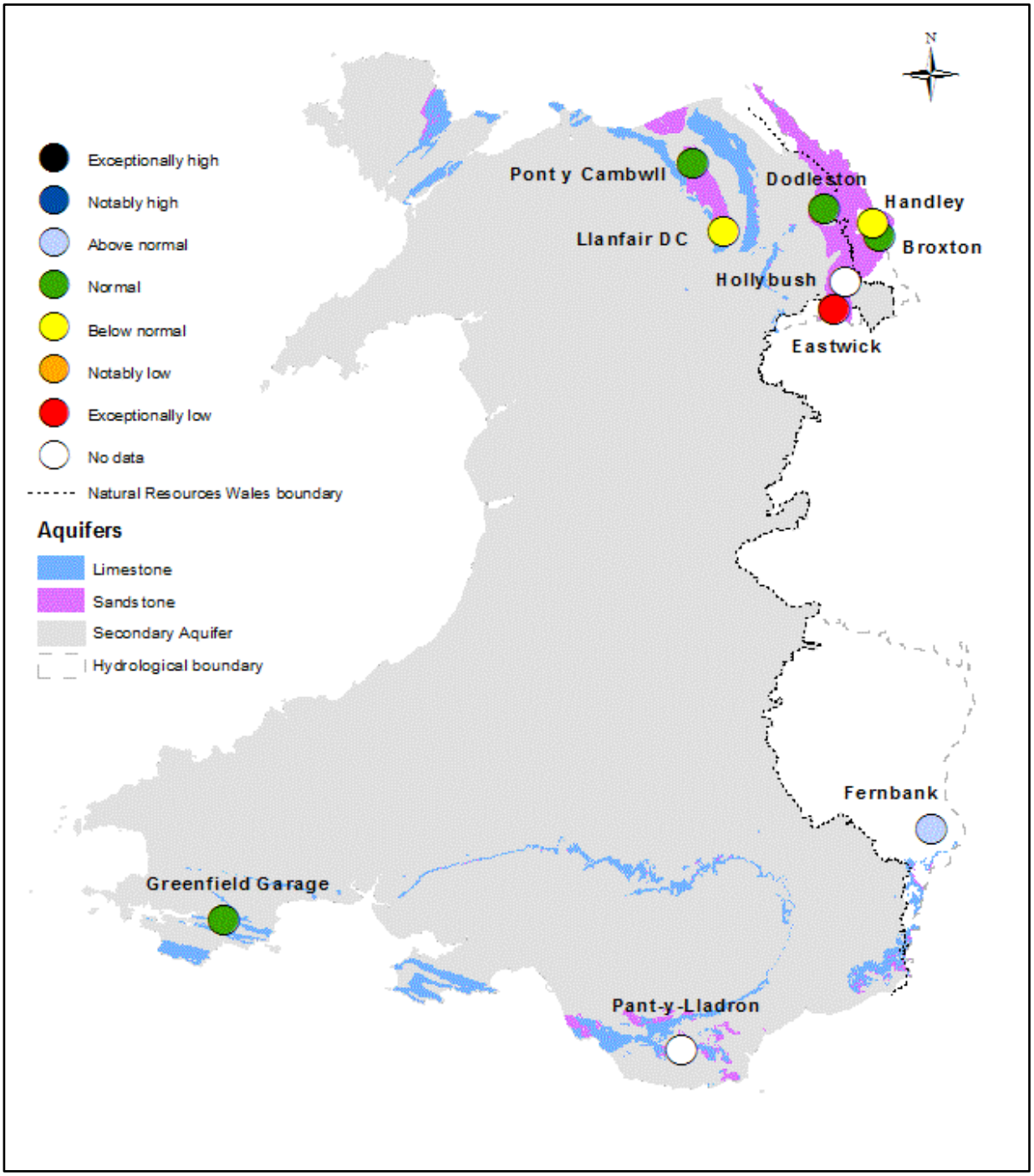

Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic May groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

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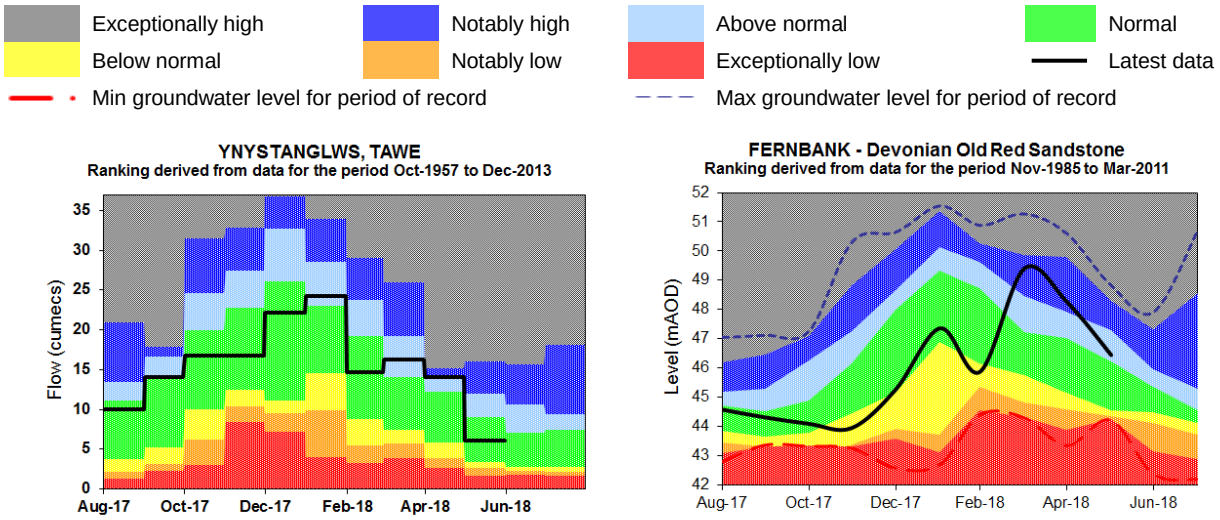
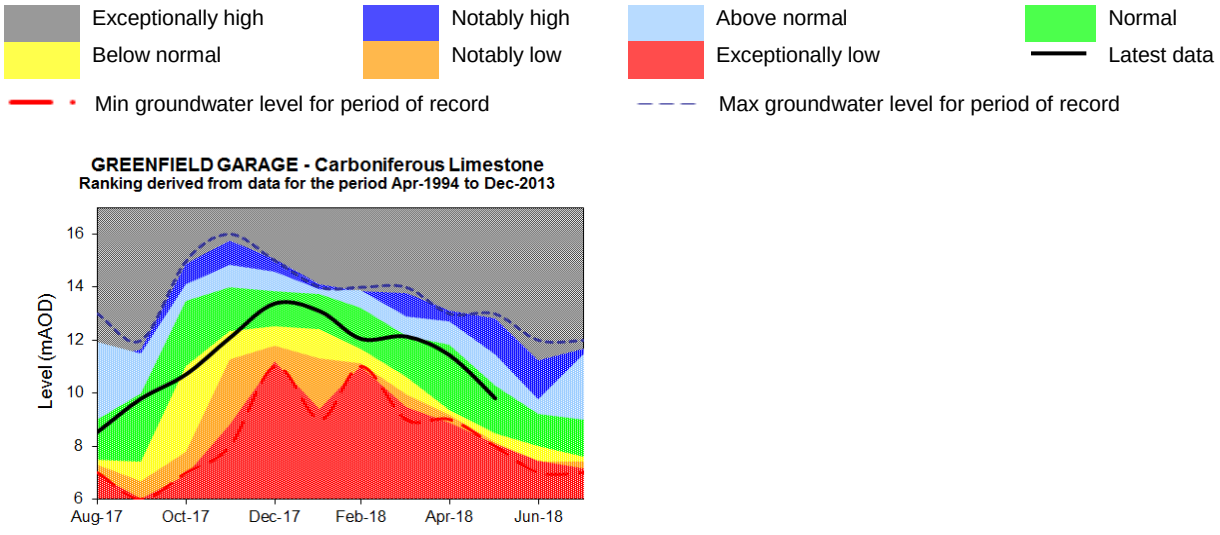
Groundwater charts

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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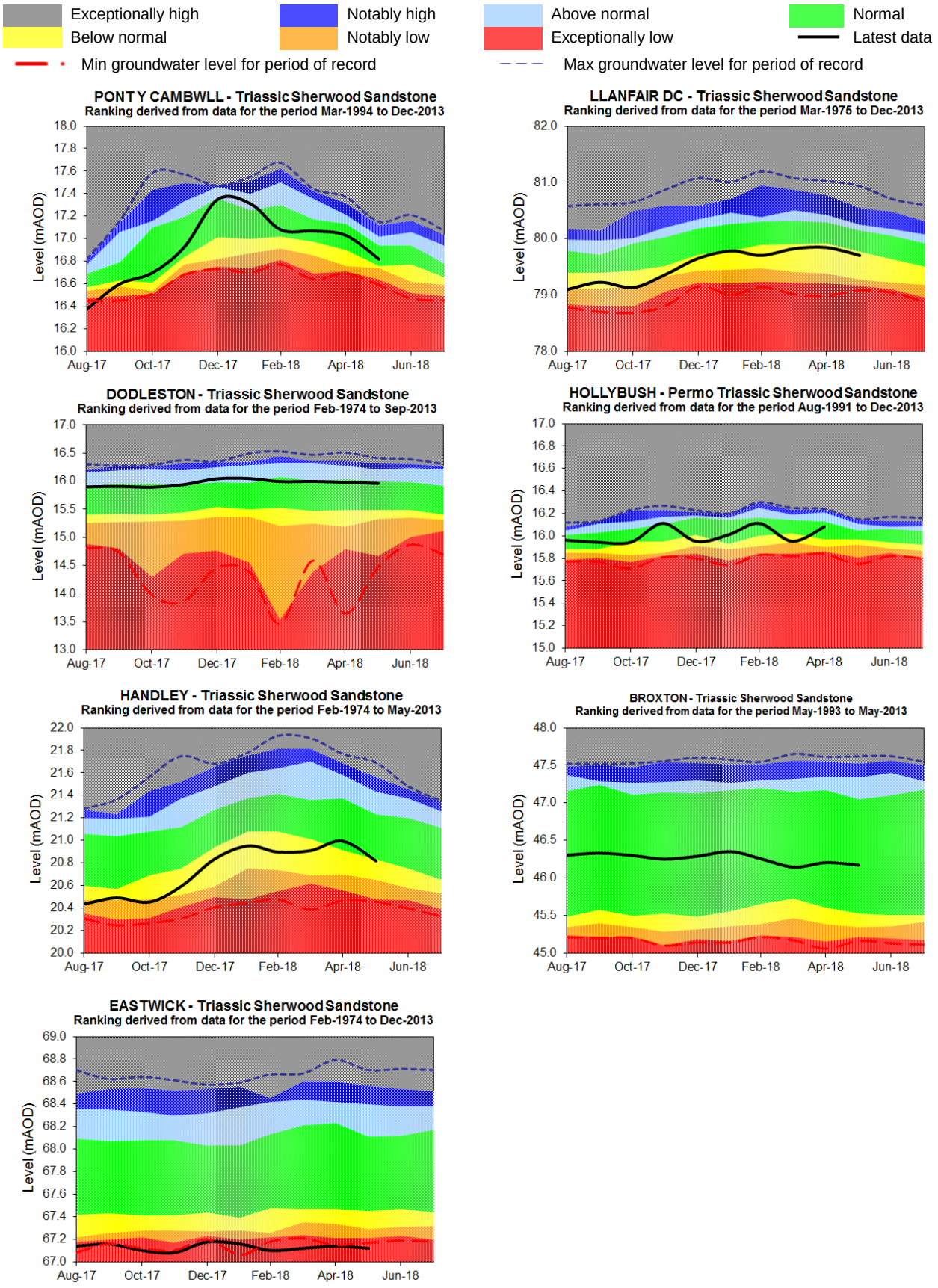
Figure 18: Groundwater level charts: North Wales



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

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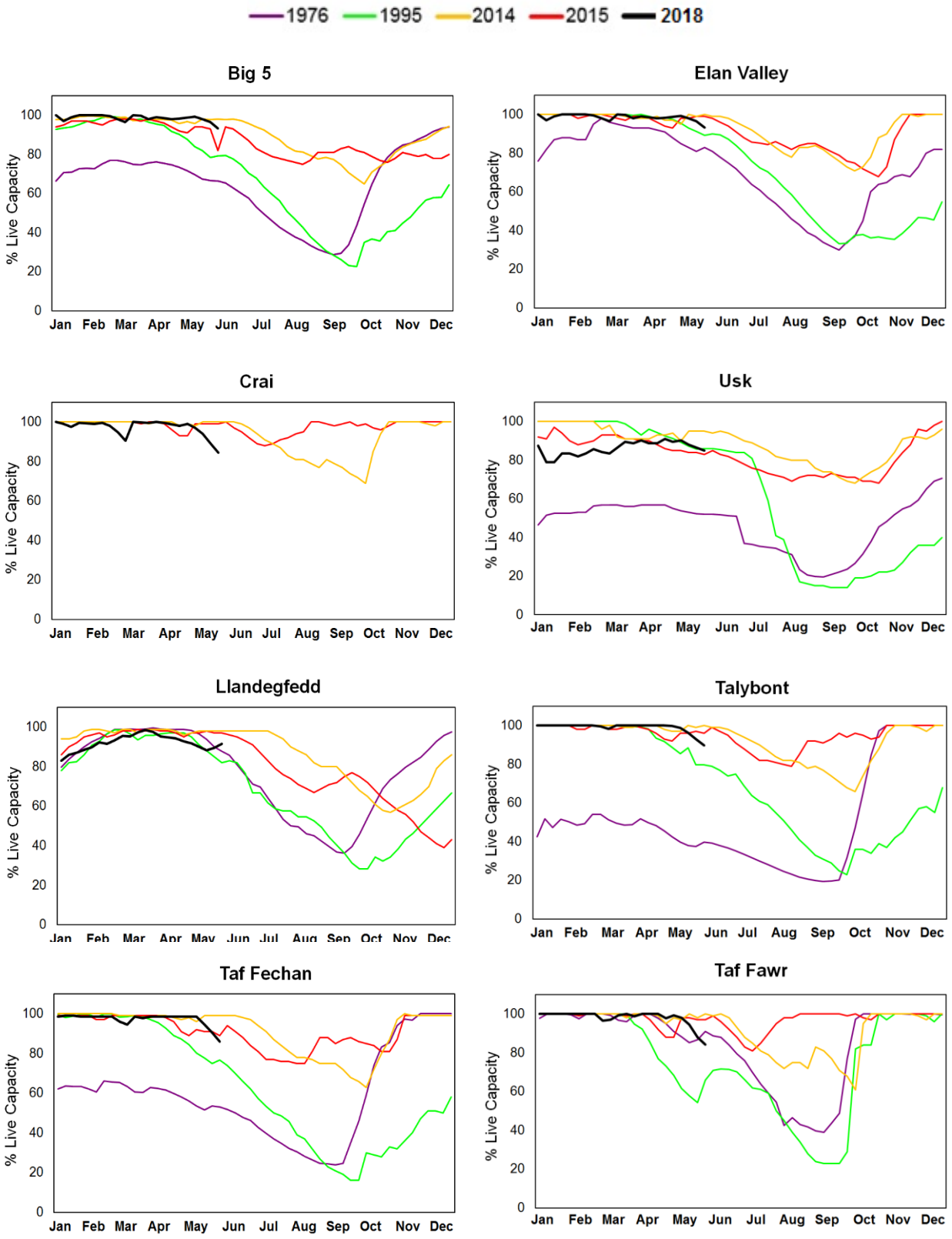
Reservoir Storage

Figure 19: Reservoir charts: South East Wales



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

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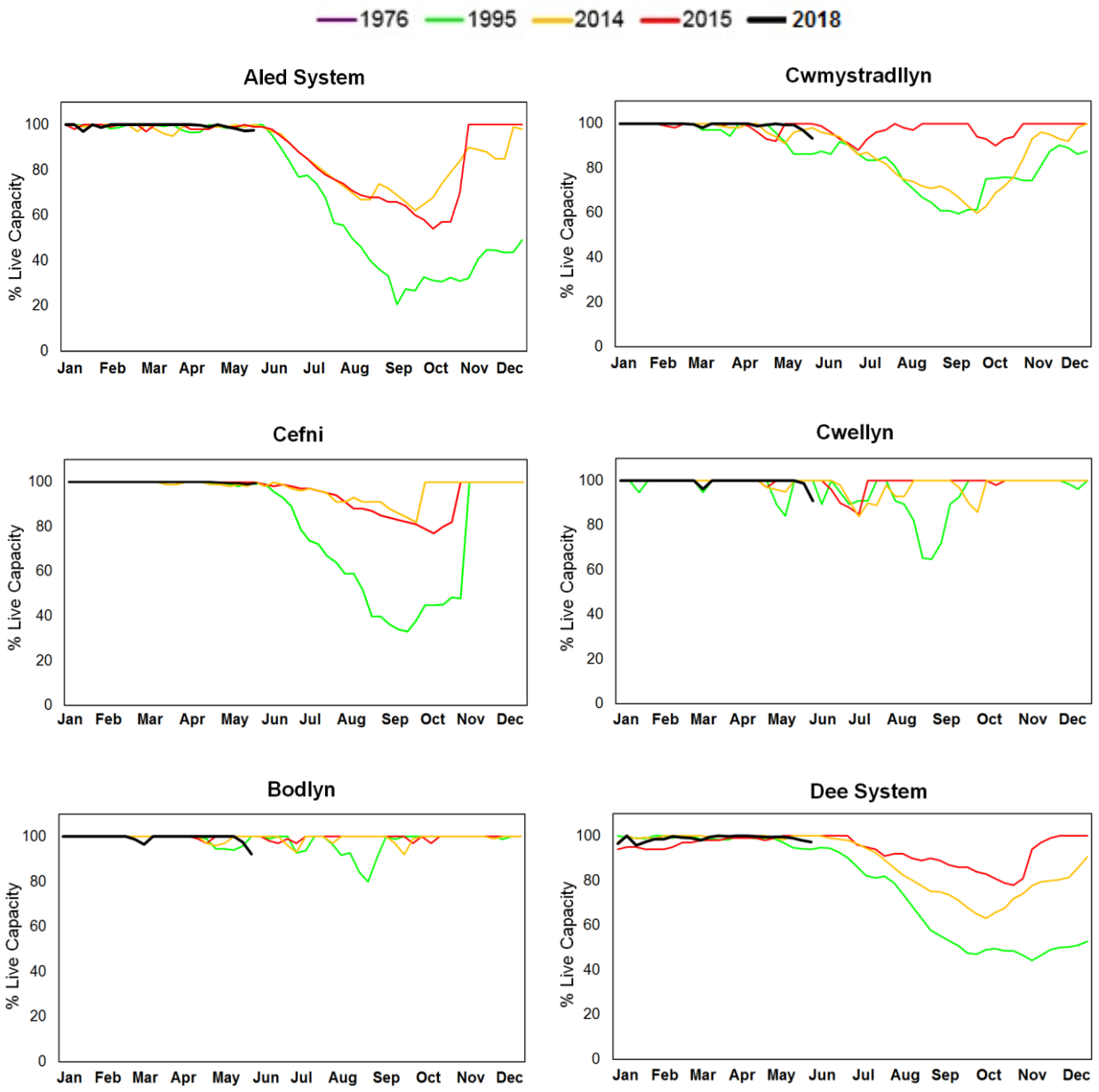
Figure 20: Reservoirs charts: North Wales



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

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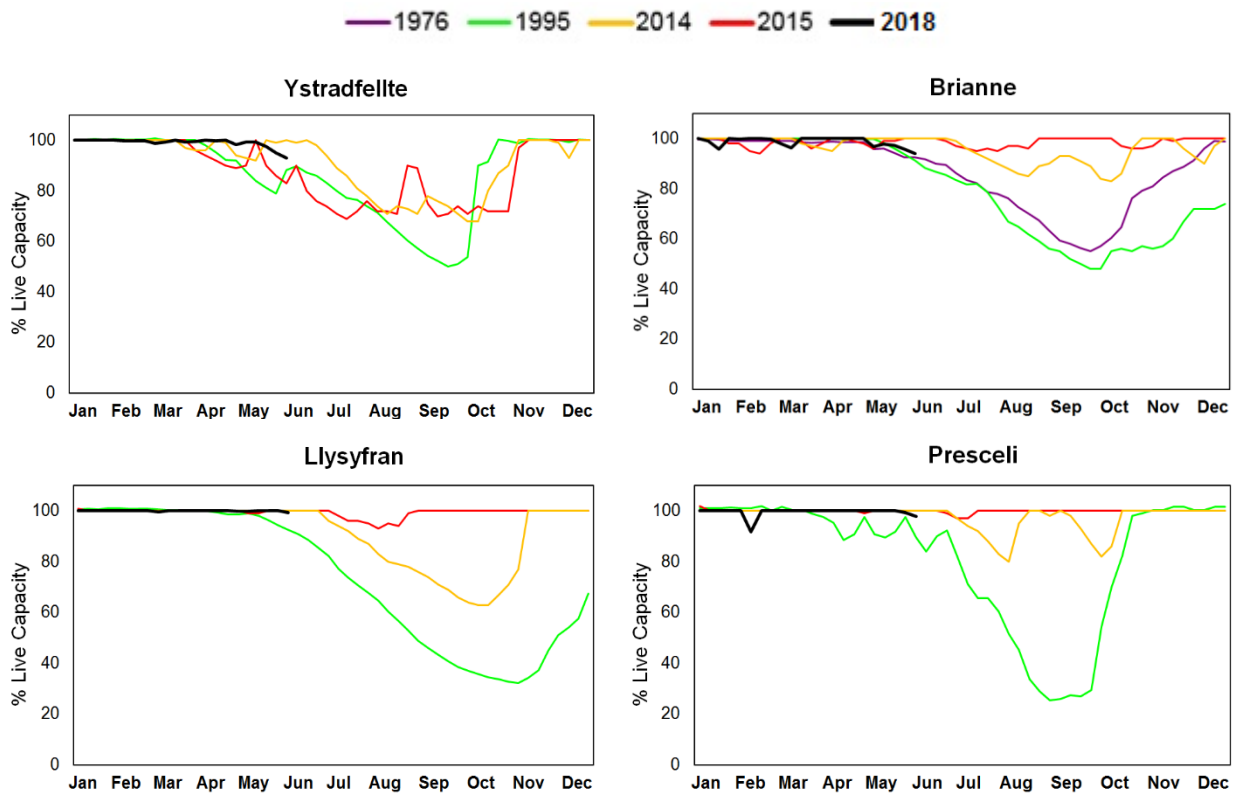
Figure 21: Reservoirs charts: South West Wales



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).