Monthly Water Situation Report July 2018

Natural Resources Wales

- **The monthly rainfall total for Wales during July was 82% of the Long Term Average (LTA, 1961-90). South East, South West and North Wales received 83%, 84% and 78% of the LTA, respectively.**
- **At the end of July, the differences between soil moisture deficit (SMD) values and the LTA across Wales were from 27.8 to 85.1 mm. Soil in all 23 squares was drier than the LTA for July.**
- **For river flows in Wales, 5 out of 29 indicator sites (which had flow data available) were classed as *Below normal* and *13* sites were *Notably low*. *9* sites were classed as *Exceptionally low*. The remaining 2 sites were *Normal*.**
- **The cumulative reservoir storage for most of the indicator sites (14 out of 18) was greater than 60% at the end of July. All indicator reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total for Wales was 82% of the LTA for July, with most of this rain falling on the last weekend of July. The percentage of rainfall recorded in catchments compared with their LTA across Wales was between 69% (Conwy and Dee) and 108% (Cleddau and Pembrokeshire). The rainfall total for Wales was 14.3mm less than the July LTA. For South East, South West and North Wales the rainfall totals were 83%, 84% and 78% of LTA, respectively.

Due to a dry June, the accumulated rainfall for the last 2 months (June – July) and 3 months (May – July) were below the LTA with values of 52% and 61% of LTA for Wales, respectively.

Geographic regions	Latest Month: July	Last 2 months: June - July	Last 3 months: May - July	Last 6 months: Feb - July	Last 12 months: Aug 2017 - July 2018	Ranking for current month since 1910	Ranking for the last two month since 1910	Ranking for the last three month since 1910
	% LTA							
North	78	54	62	89	107	29	8	2
South-west	84	53	58	97	109	30	5	3
South-east	83	51	63	97	104	29	7	6
Wales	**82**	**52**	**61**	**94**	**107**	**29**	**6**	**4**

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 27.8 to 85.1 mm and soil in all the 23 squares was drier than the LTA for July.

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows were between *Exceptionally low* and *Normal* for all the indicator sites across Wales. 5 out of 29 indicator sites (which had flow data available) were classed as *Below normal* and 13 sites were *Notably low*. 9 sites were classed as *Exceptionally low* and the remaining 2 sites were *Normal* for July.

***South East*:** Flows in the area ranged from 24% (River Yscir at Pont ar Yscir) to 50% (River Monnow at Grosmont. Please note that the flow at this station might be overestimated) of the July LTA values.
South West: The river flows within this area ranged from 9% (River Ystwyth at Pont Llolwyn) to 62% (River Cleddau at Treffgarne) of the July LTA values.
***North*:** Flows in the area ranged from 13% (River Cefni at Bodffordd) to 75% (River Alwen at Druid and River Dee at Manley Hall) of the July 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 July at indicator sites (9 data available sites) were classed between *Exceptionally low* (Eastwick and Pont y Cambwll) to *Above normal (*Fernbank). 3 sites were classed as *Below normal* (Pant-y-Lladron, Llanfair DC and Handley) and 3 sites were classed as *Normal* (Greenfield Garage, Dodleston Obs and Broxton Obs).

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

Reservoir Storage

At the end of July the the cumulative reservoir storage for most of the indicator sites (14 out of 18) were greater than 60% 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.

For our latest dry weather update please refer to our webpage here:
https://naturalresources.wales/guidance-and-advice/environmental-topics/water-management-and-quality/dry-weather-update/?lang=en

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Natural Resources Wales

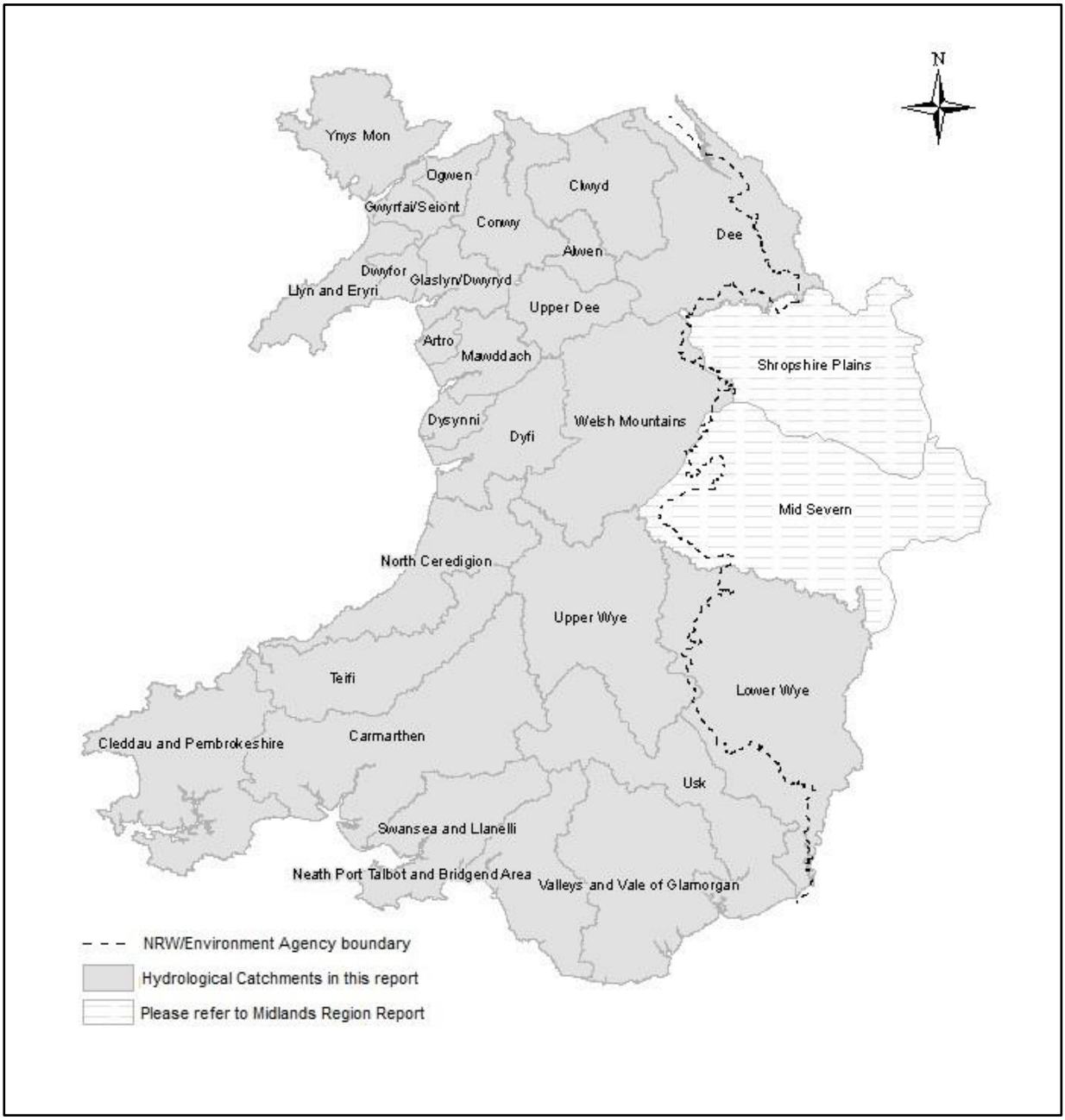

Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

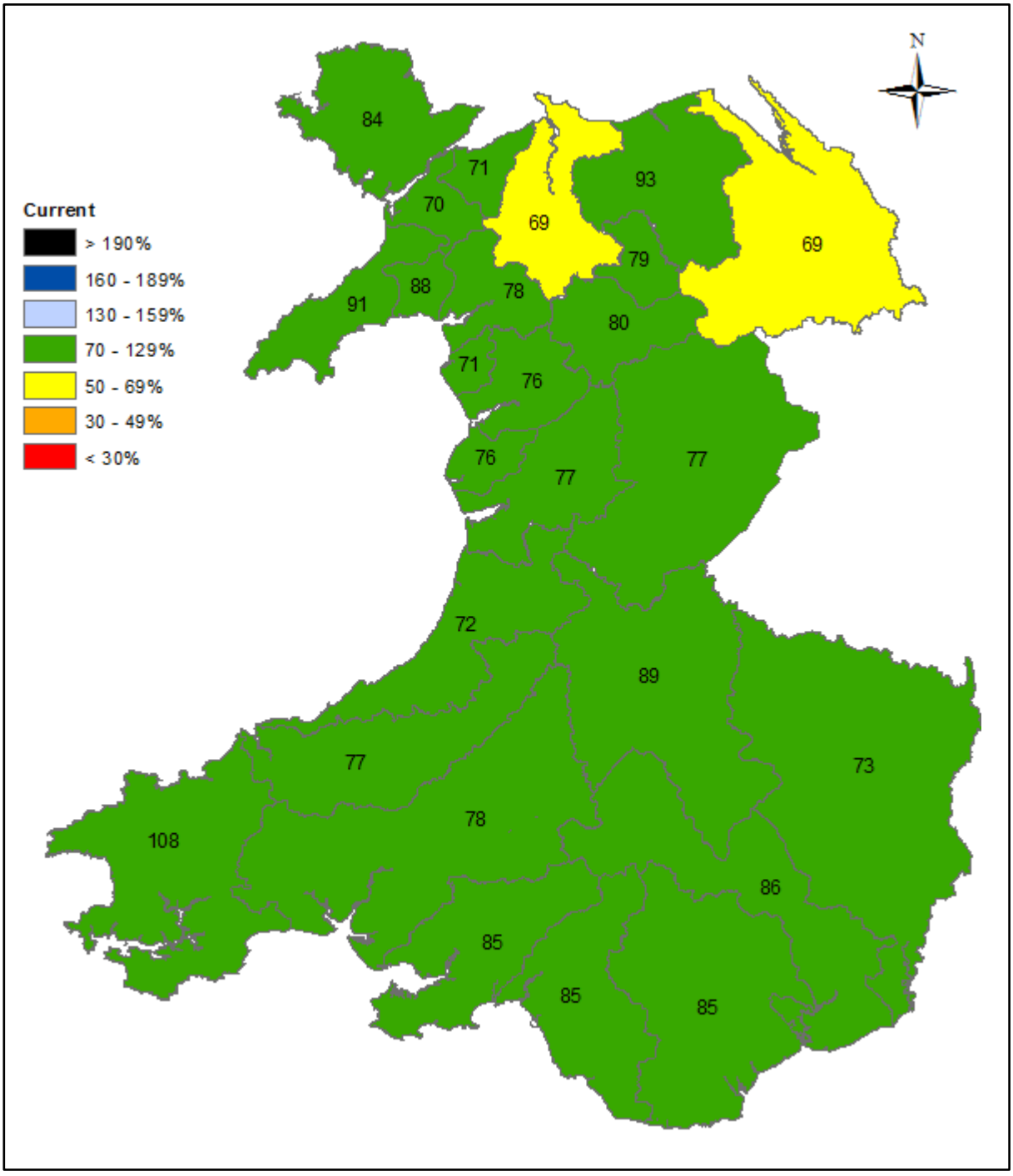

Figure 2: Calculated catchment average July rainfall totals as a percentage of the 1961-90 July long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

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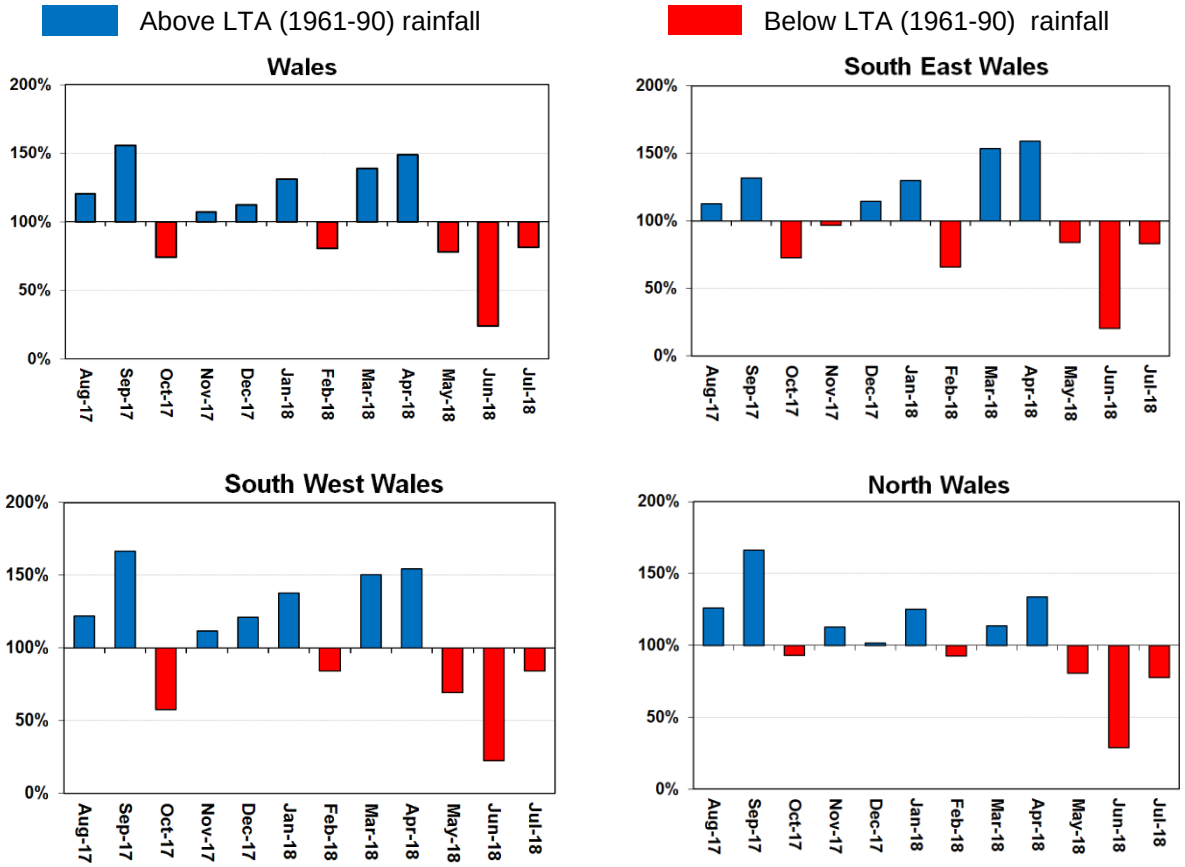
Rainfall Charts

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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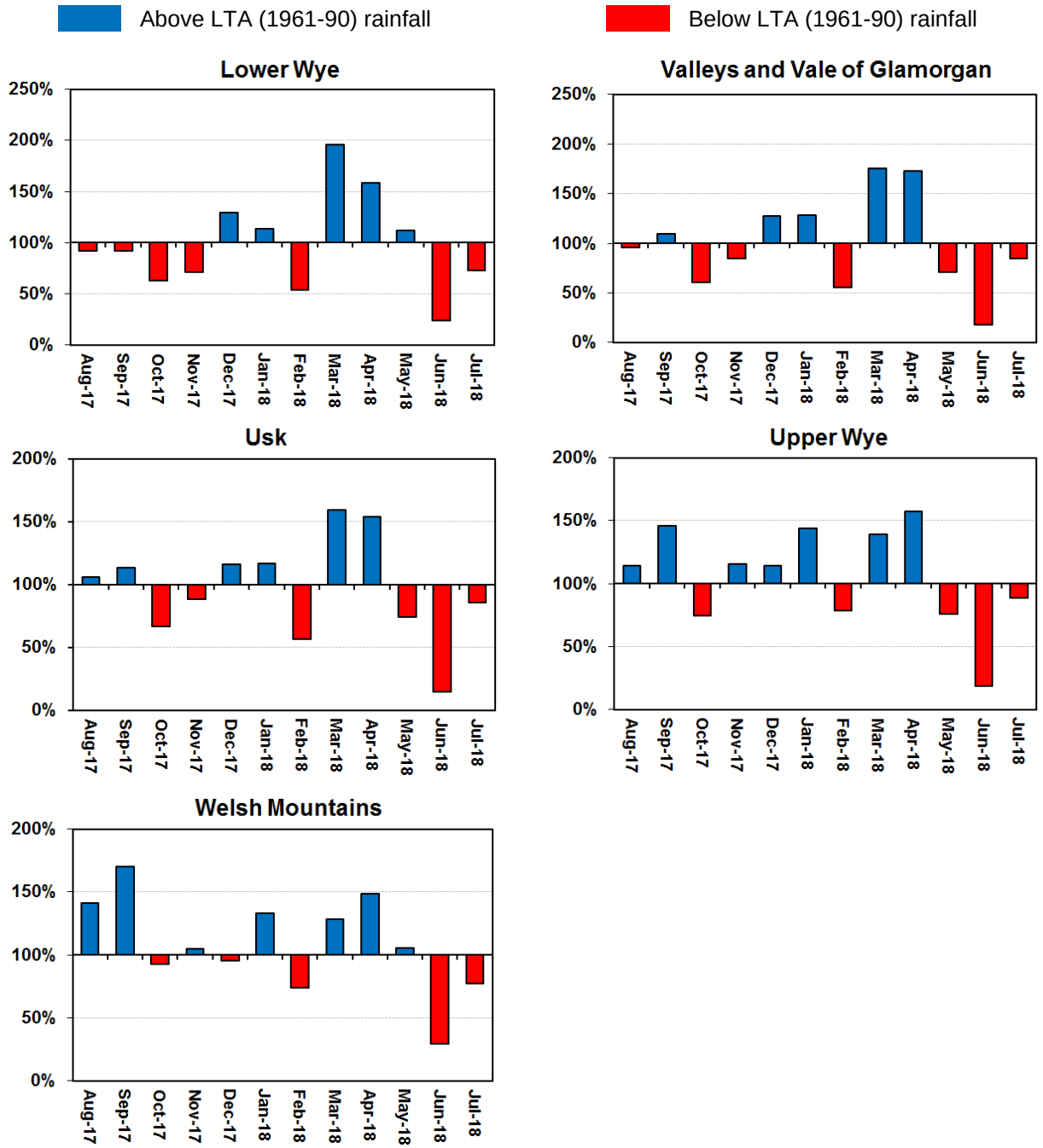
Figure 4: Rainfall Charts: South East Wales



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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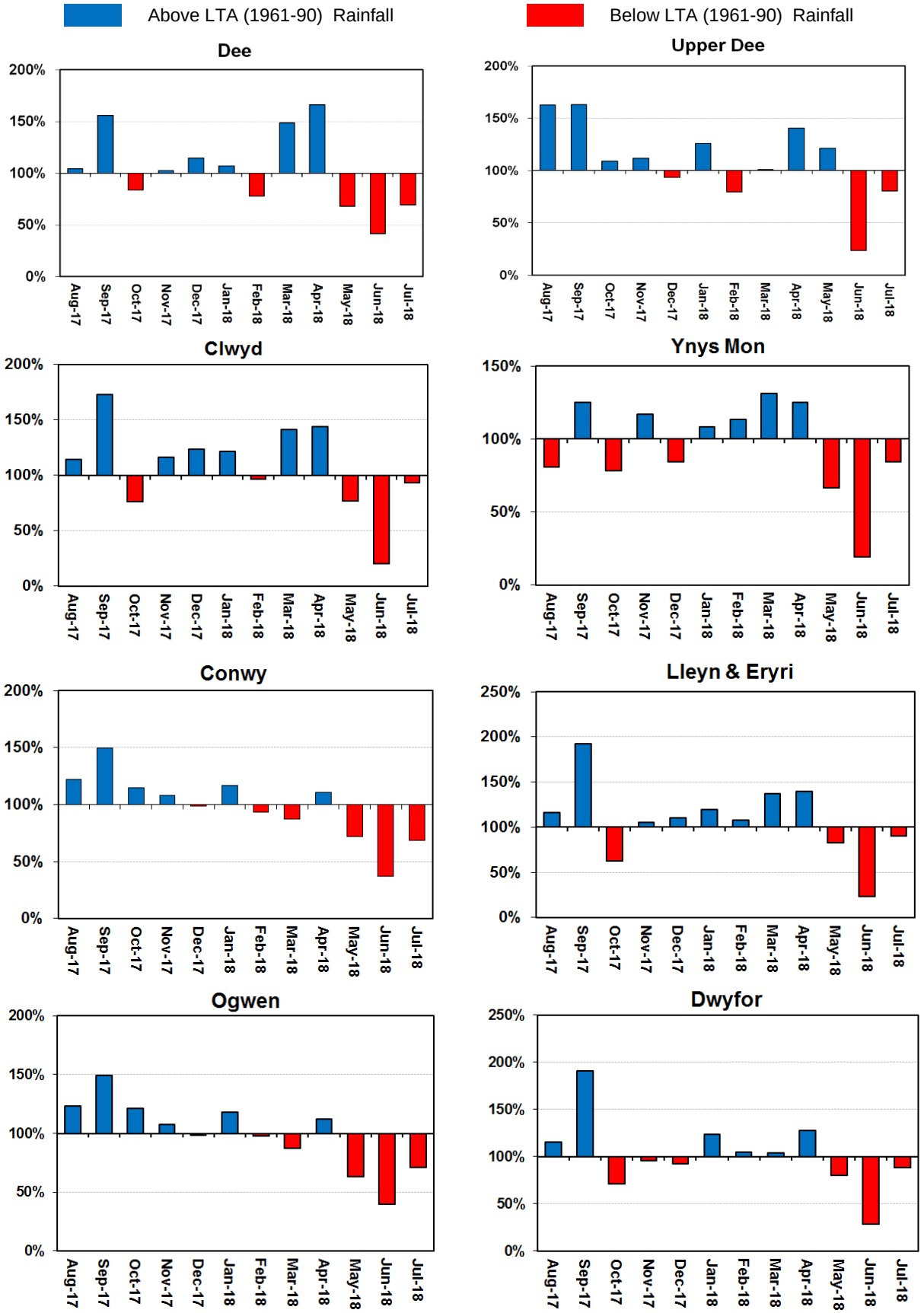
Figure 5: Rainfall Charts: North Wales



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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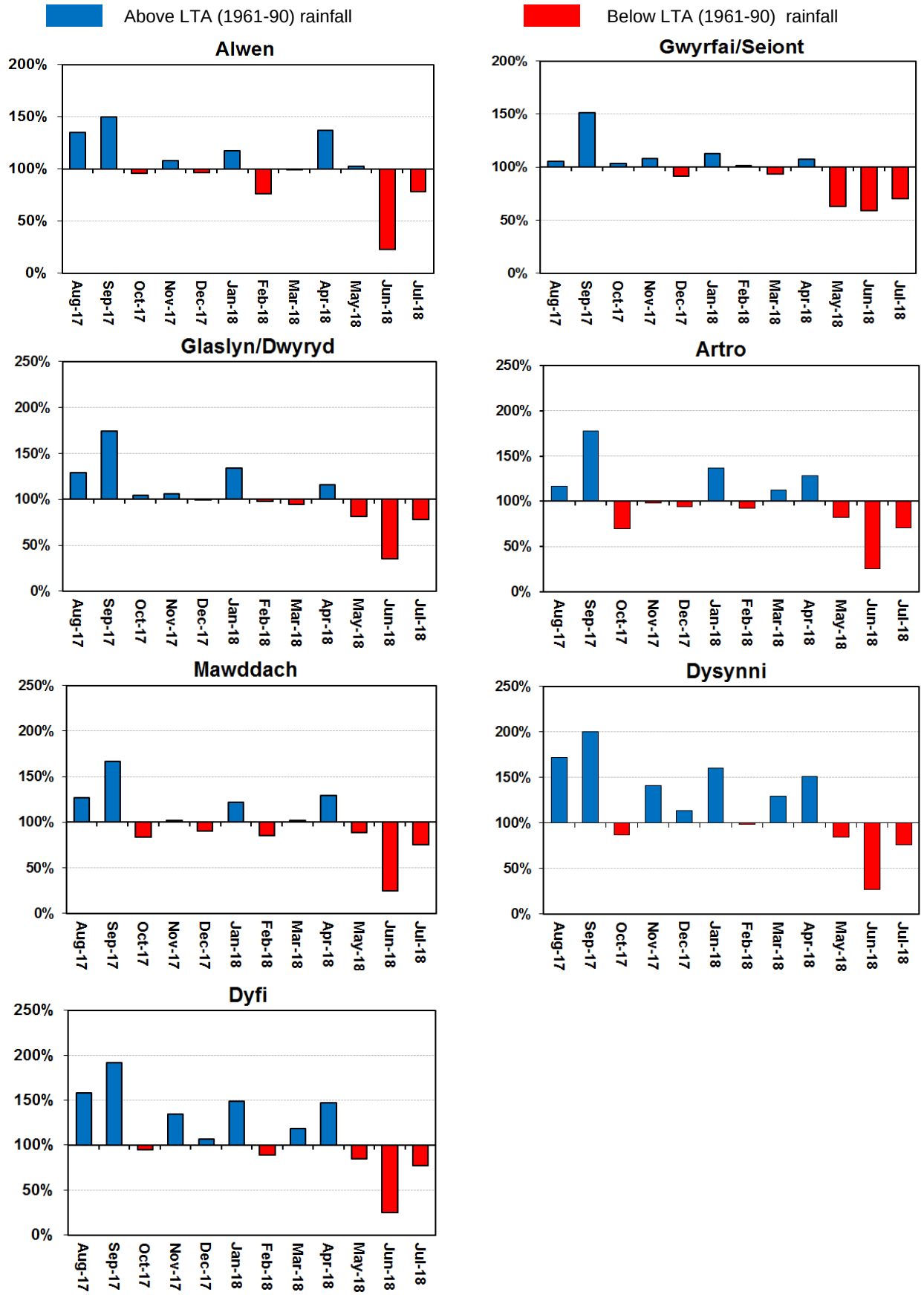

Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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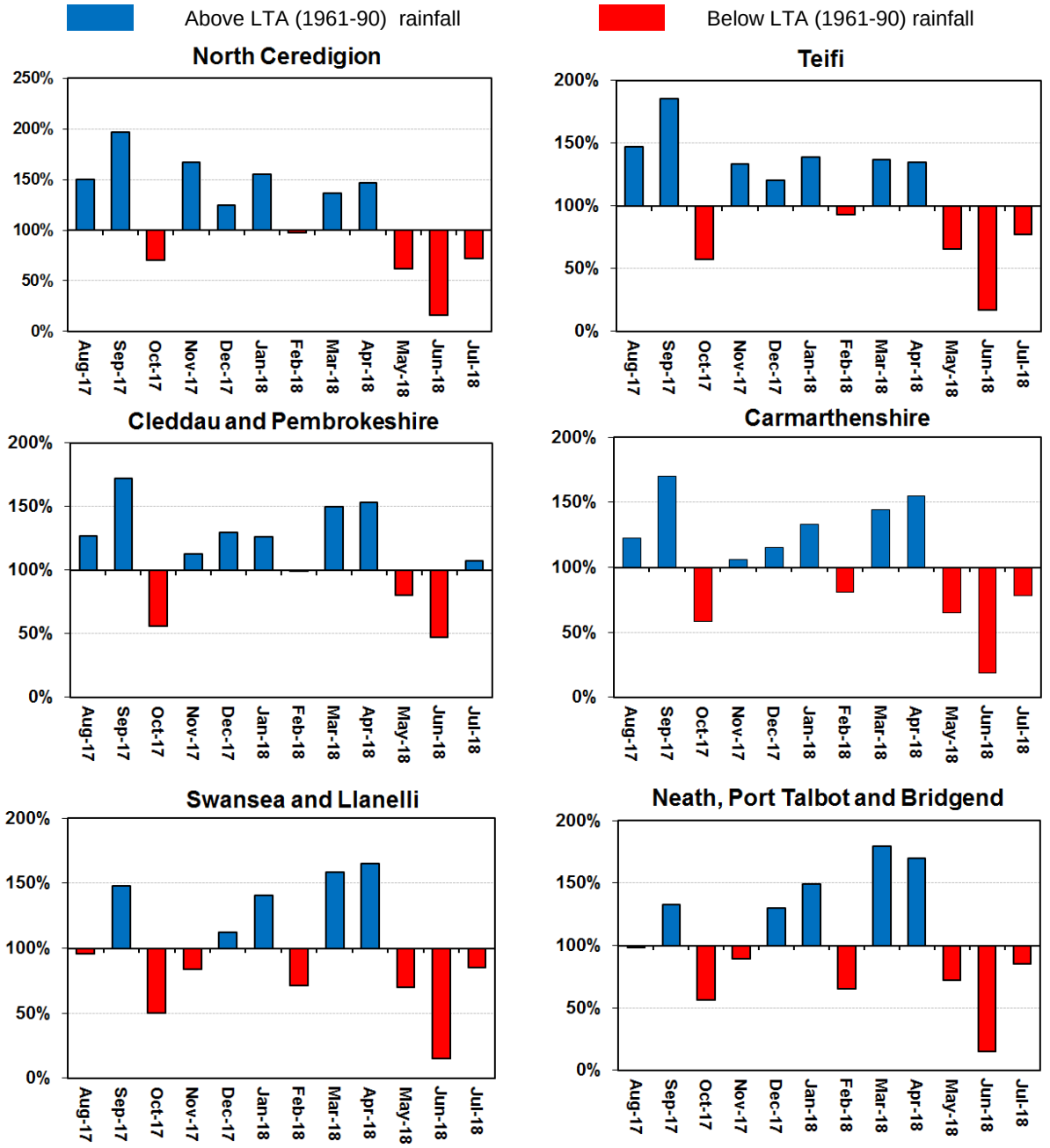
Figure 6: Rainfall Charts: South West Wales



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)

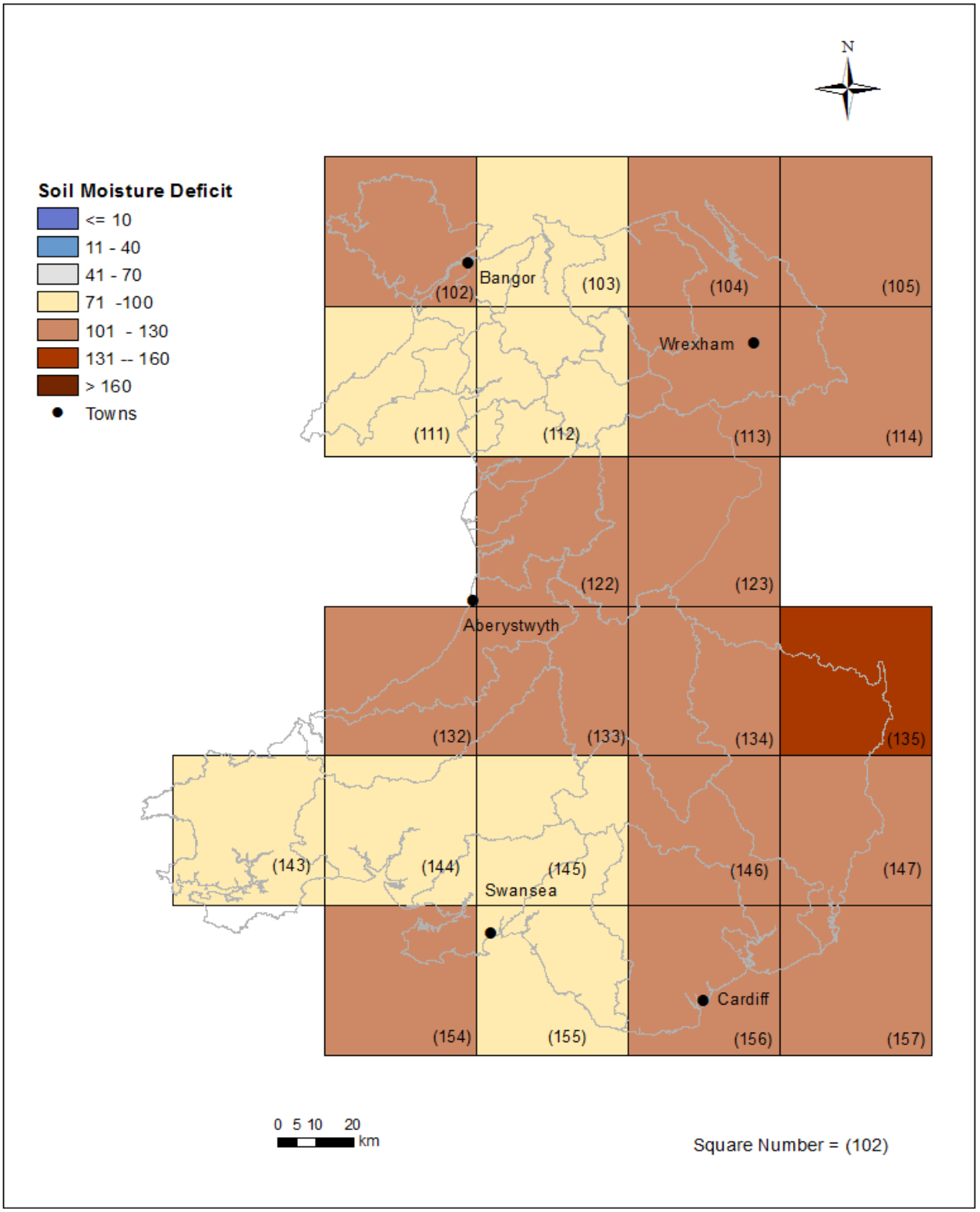

Figure 7: MORECS soil moisture deficits (mm) for July for real land use for Natural Resources Wales ***(Source: Met Office © Crown Copyright).***

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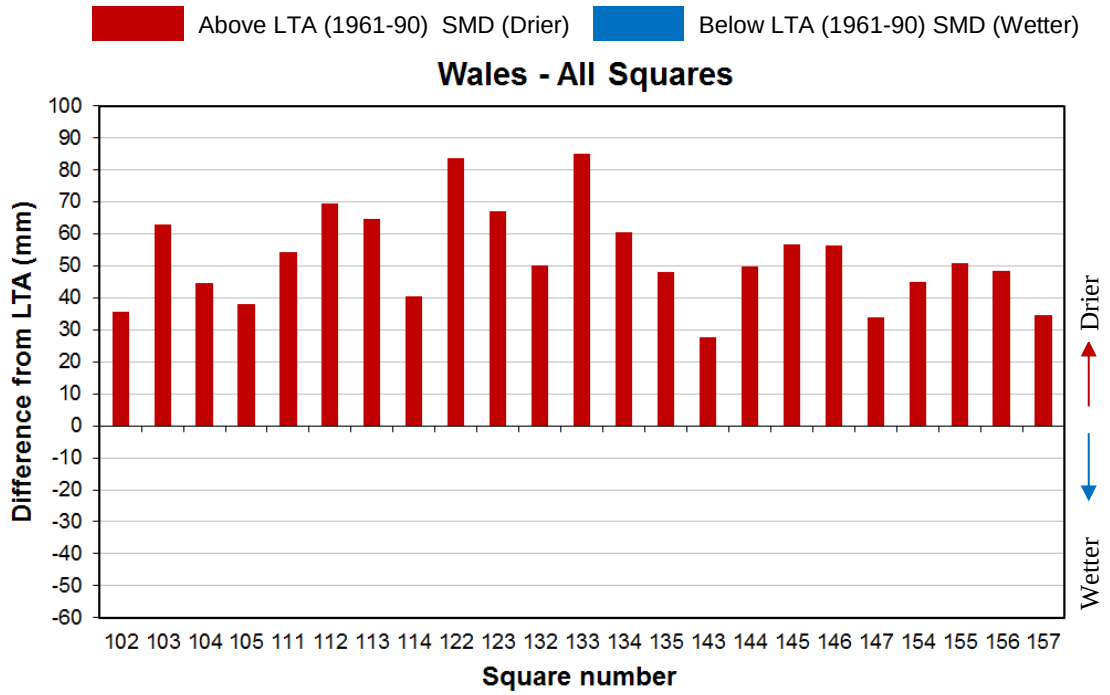

Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for July for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

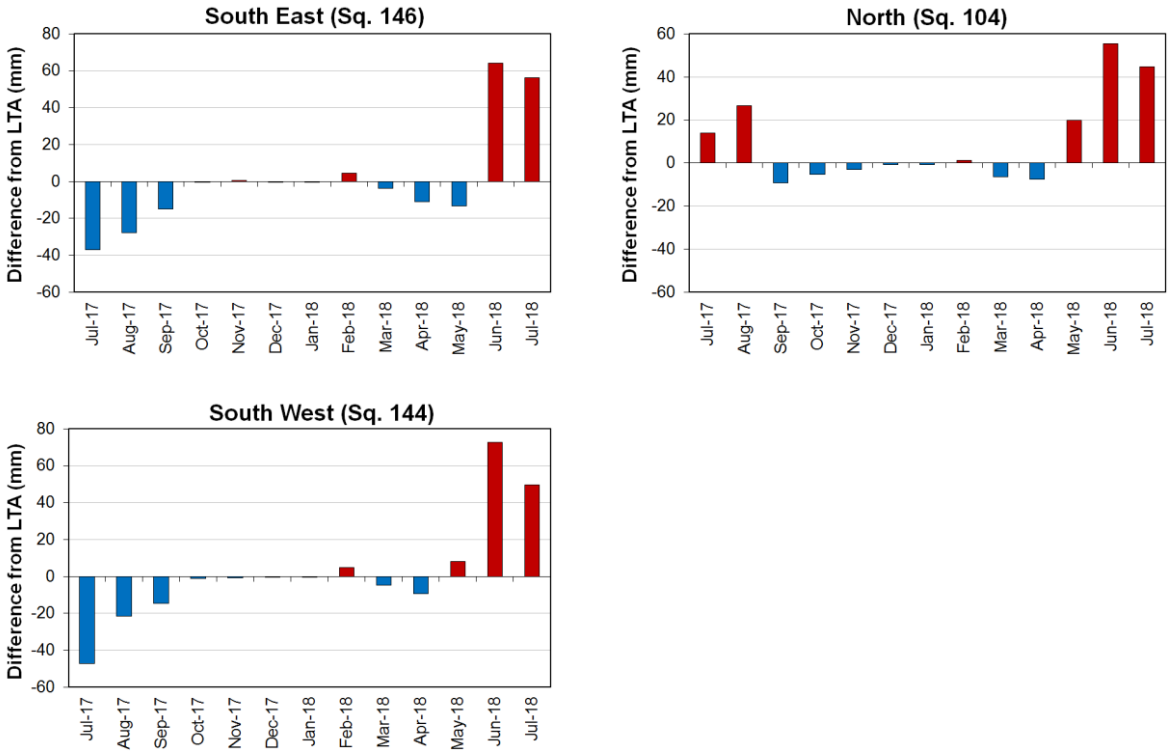

Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales.)

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River Flow

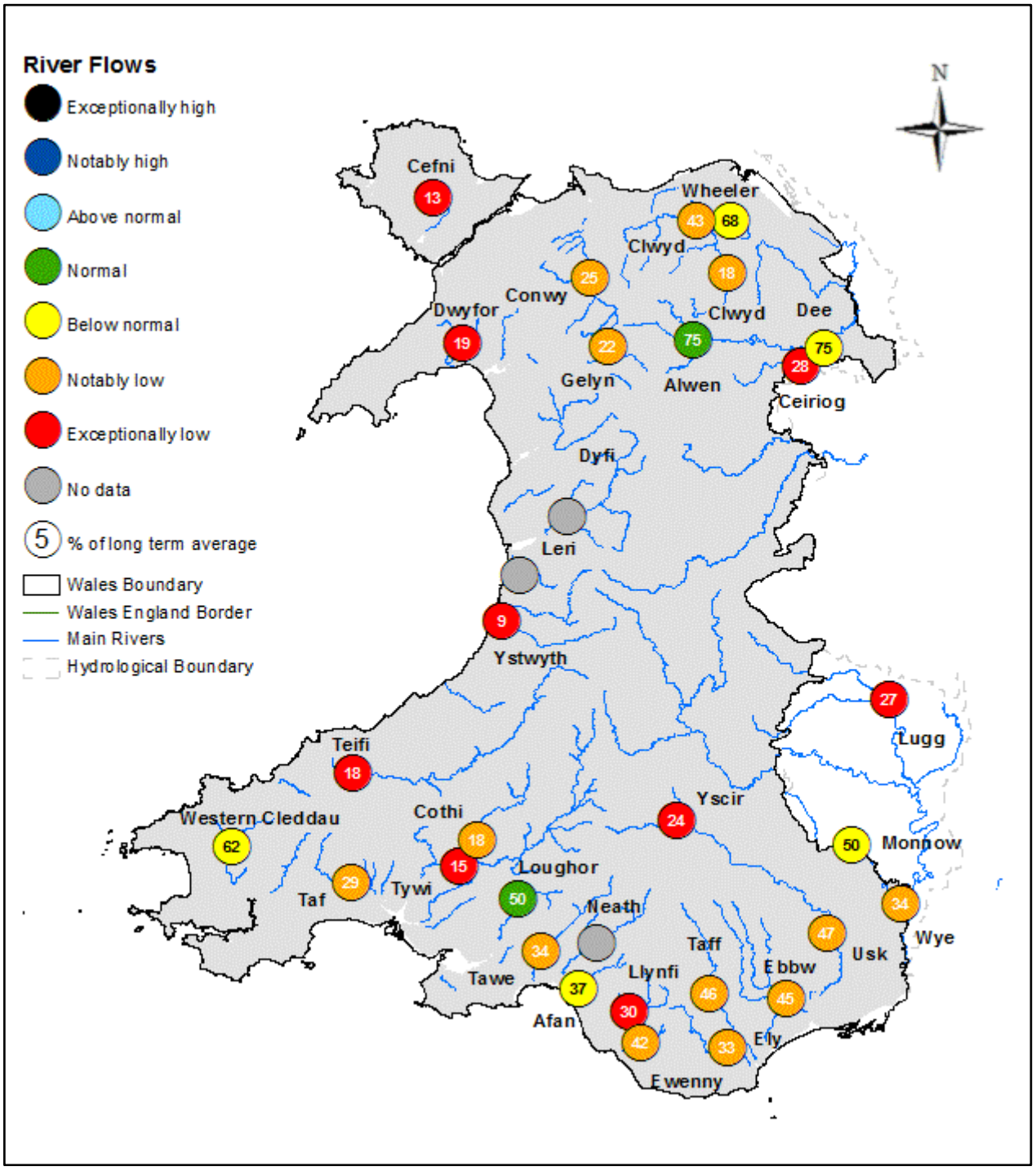

Figure 10: Monthly mean river flow for July, classed relative to analysis of historic July monthly means *(Source: Natural Resources Wales).*

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SITE NAME	RIVER	July 2018			July 2017		July 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 low	27%	0.72	29%	0.77	2.64	0.64	23.20
Grosmont	Monnow	Below normal	50%	0.99	58%	1.14	1.98	0.44	13.20
Pont ar Yscir	Yscir	Exceptionally low	24%	0.16	42%	0.28	0.67	0.15	3.13
Pontypridd	Taff	Notably low	46%	4.18	117%	10.60	9.03	2.59	36.60
Redbrook	Wye	Notably low	34%	9.34	65%	17.70	27.27	7.43	174.00
Rhiwderin	Ebbw	Notably low	45%	1.41	106%	3.30	3.11	1.26	10.90
St Fagans	Ely	Notably low	33%	0.66	120%	2.42	2.02	0.47	7.69
Trostrey Weir	Usk	Notably low	47%	4.41	82%	7.72	9.37	3.39	32.10
River Flow Sites : North Area									
Bodfari	Wheeler	Below normal	68%	0.30	64%	0.28	0.44	0.23	1.34
Bodffordd	Cefni	Exceptionally low	13%	0.01	150%	0.12	0.08	0.01	0.44
Brynkinalt Weir	Ceiriog	Exceptionally low	28%	0.33	57%	0.66	1.16	0.28	6.37
Cwmlanerch	Conwy	Notably low	25%	2.05	118%	9.71	8.22	0.65	30.80
Cynefail	Gelyn	Notably low	22%	0.07	119%	0.38	0.32	0.04	1.05
Dol y Bont	Leri						0.96	0.13	3.50
Druid	Alwen	Normal	75%	1.39	78%	1.44	1.85	0.53	10.30
Dyfi bridge	Dyfi						9.48	0.82	42.50
Garndolbenmaen	Dwyfor	Exceptionally low	19%	0.29	146%	2.27	1.55	0.10	5.88
Manley Hall	Dee	Below normal	75%	10.30	78%	10.70	13.79	8.52	58.40
Pont y Cambwll	Clwyd	Notably low	43%	0.96	68%	1.52	2.23	0.69	13.00
Ruthin Weir	Clwyd	Notably low	18%	0.07	43%	0.17	0.40	0.05	3.47
River Flow Sites : South West Area									
Capel Dewi	Tywi	Exceptionally low	15%	2.41	71%	11.30	15.90	2.75	70.40
Clog y Fran	Taf	Notably low	29%	0.75	104%	2.68	2.57	0.38	12.40
Coytrahen	Llynfi	Exceptionally low	30%	0.42	116%	1.60	1.38	0.24	4.53
Felin Mynachdy	Cothi	Notably low	18%	0.83	86%	3.92	4.54	0.38	20.80
Glanteifi	Teifi	Exceptionally low	18%	1.87	118%	12.40	10.50	1.82	50.90
Keepers Lodge	Ewenny	Notably low	42%	0.40	107%	1.02	0.95	0.30	2.90
Marcroft	Afan	Below normal	37%	1.20	134%	4.30	3.22	0.56	9.99
Pont Llolwyn	Ystwyth	Exceptionally low	9%	0.25	88%	2.52	2.85	0.38	12.60
Treffgarne *	Western Cleddau	Below normal	62%	0.69	143%	1.59	1.11	0.33	2.62
Resolven	Neath				218%	10.50	4.81	0.41	19.00
Tir-y-Dail	Loughor	Normal	50%	0.52	103%	1.06	1.03	0.20	4.49
Ynystanglws	Tawe	Notably low	34%	2.14	141%	8.95	6.34	1.03	27.80

Figure 11: Monthly mean river flow for July with comparison against previous year expressed as a percentage of the July long term average and classed relative to analysis of historic July 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 due to the maintainance work at the gauge station.Flow for Grosmont might be overestimated)

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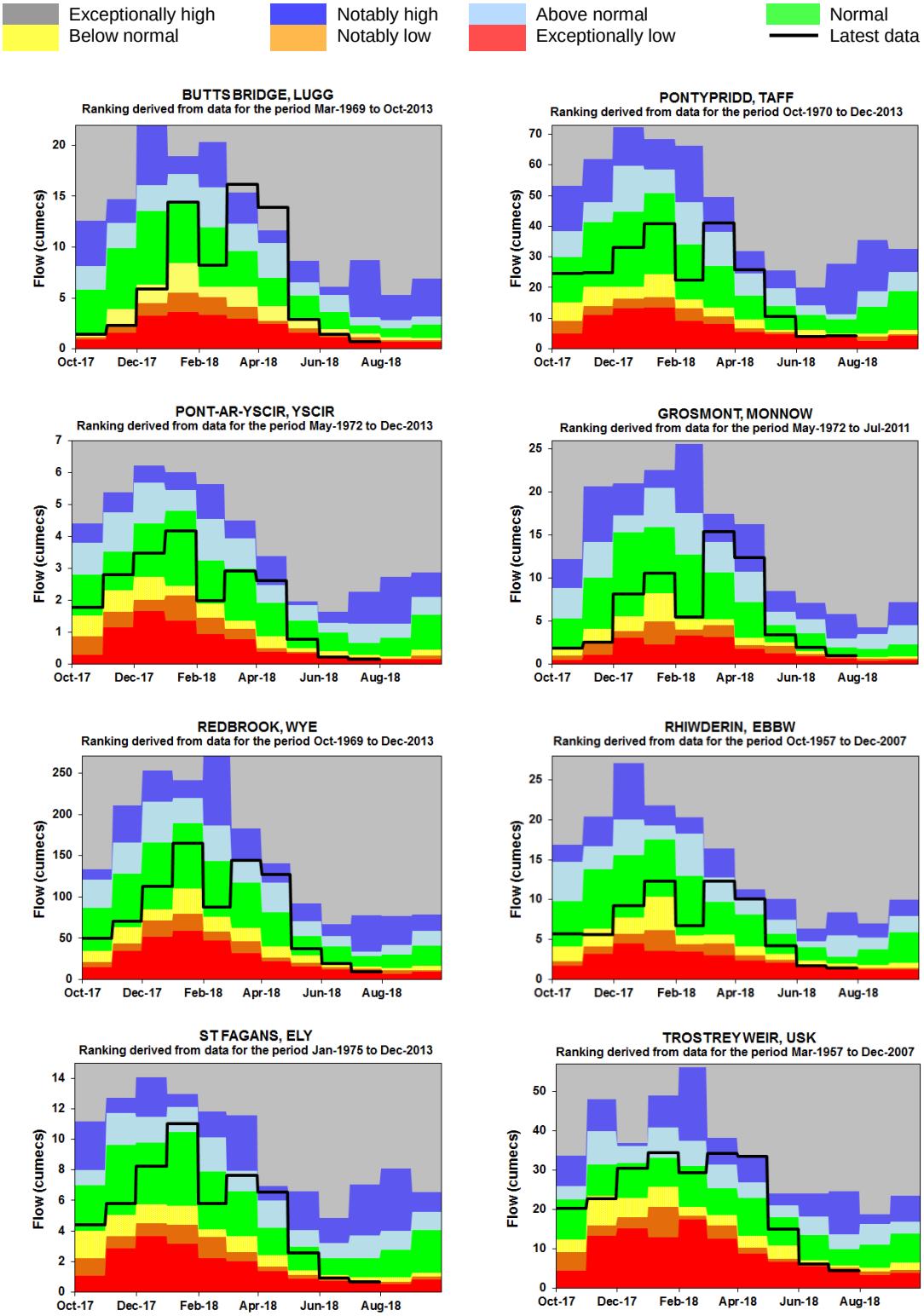
River Flow Charts

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*).

(Please note that flow for Grosmont might be overestimated)

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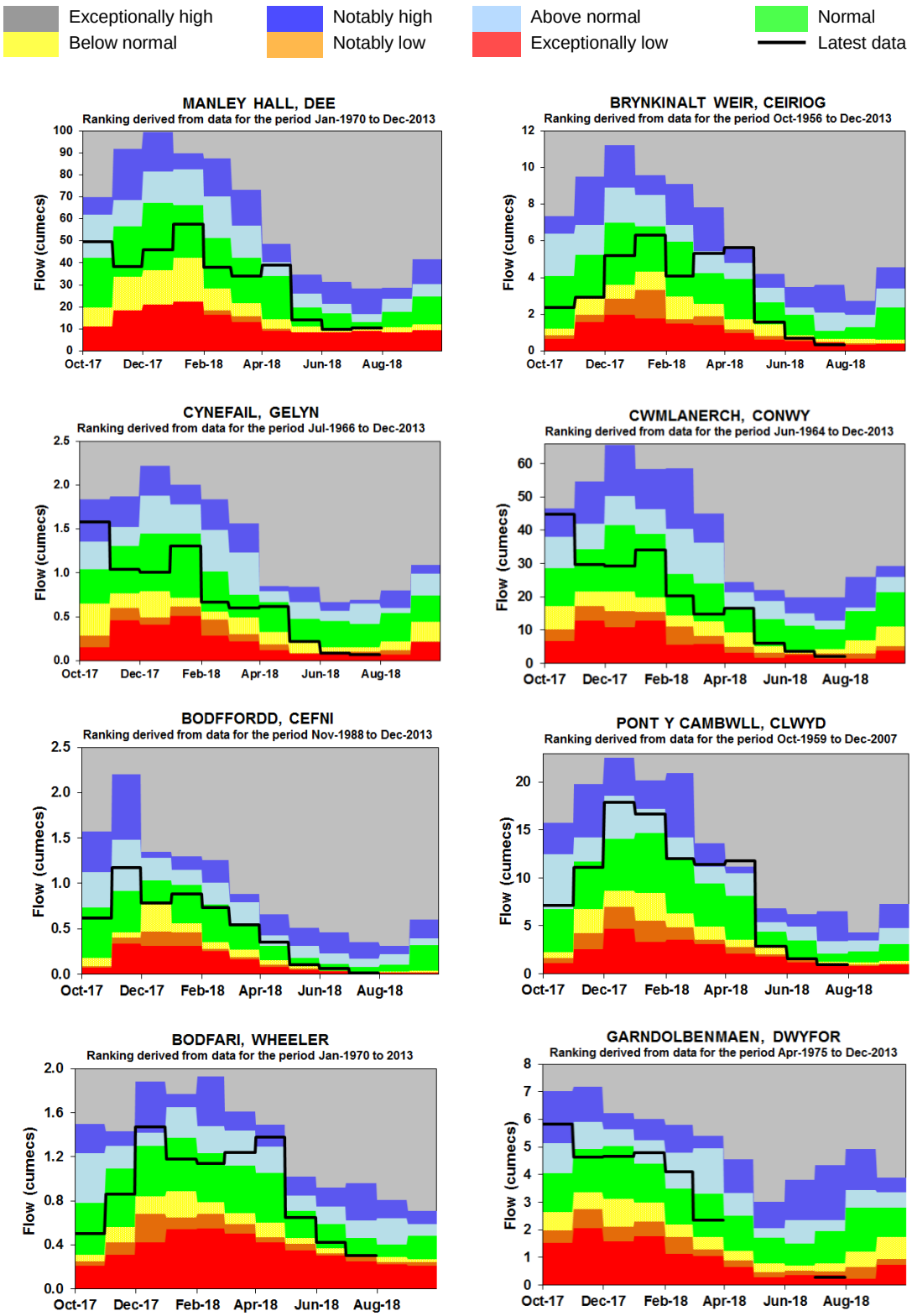
Figure 13: River Flow Charts: North Wales



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 to June 2018 due to maintenance work)

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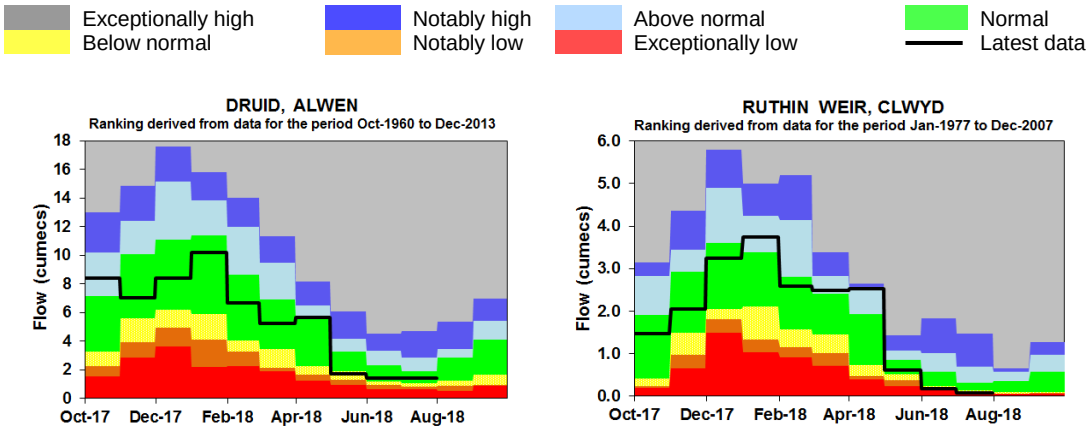
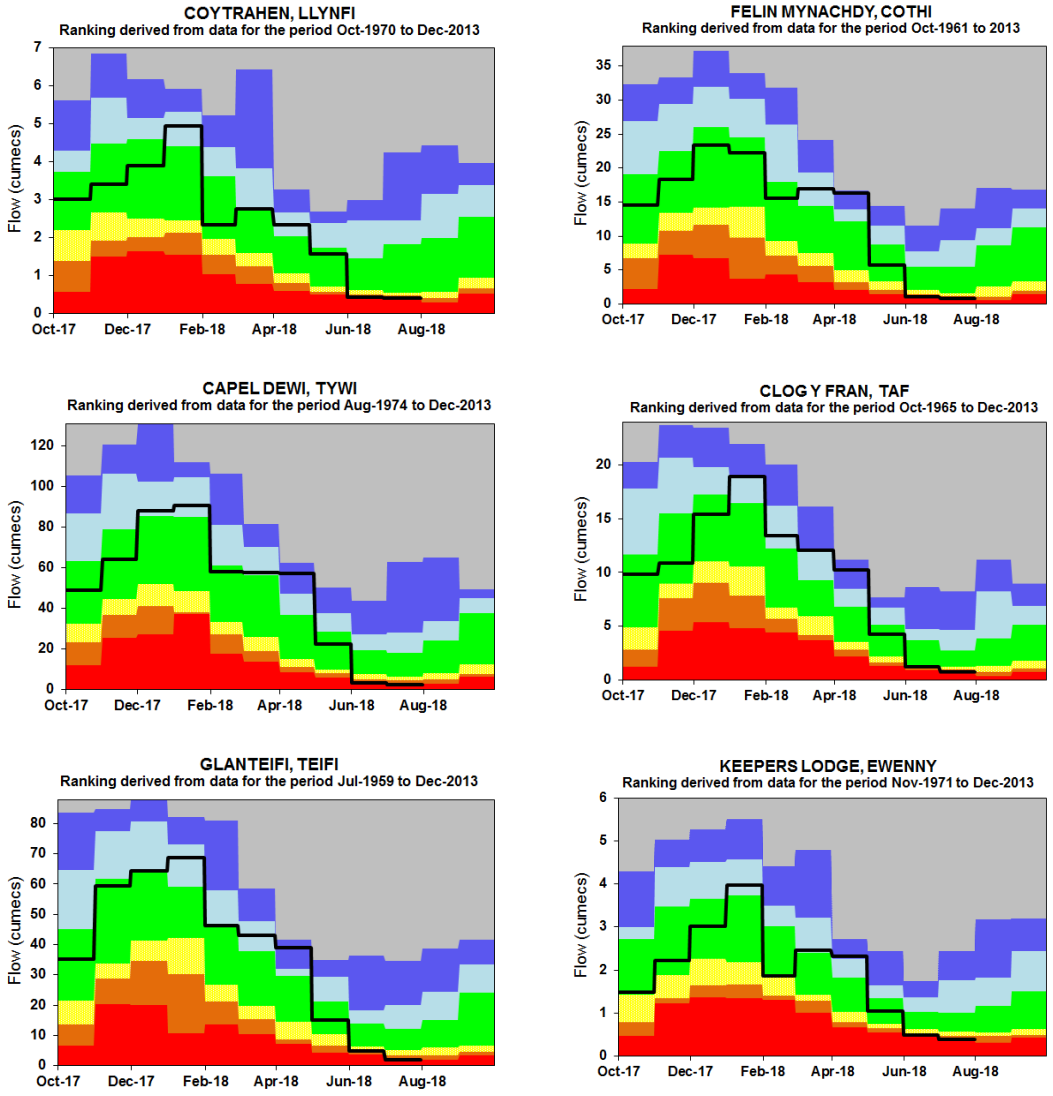


Figure 14: River Flow Charts: South West Wales



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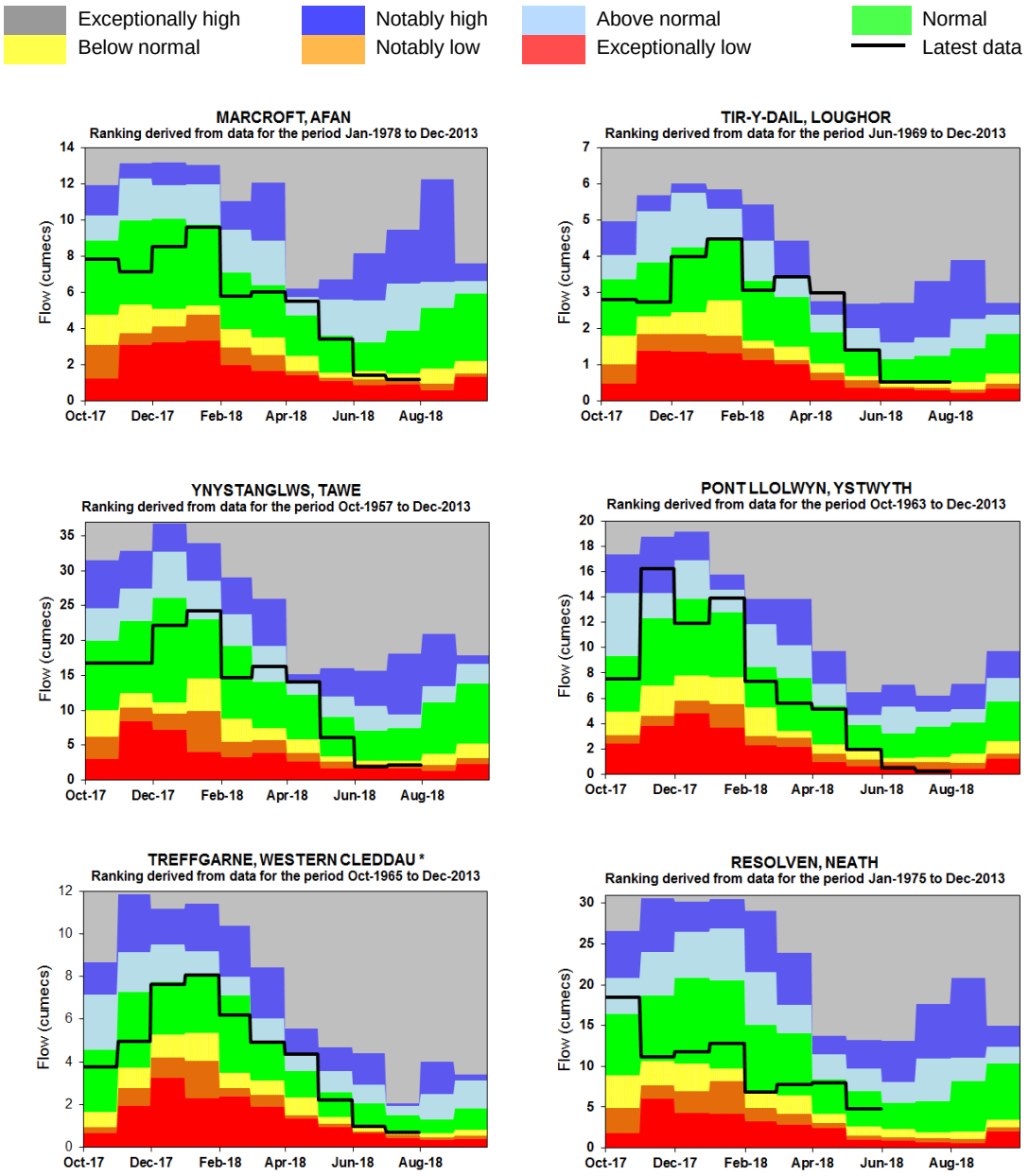

Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).*

(* Please note that for Treffgarne station the ranking bands were derived using scaled historical flows (1965-2003) from the downstream station at Prendergast Mill. There were no flow data for June and July 2018 for Resolven)

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Groundwater Levels

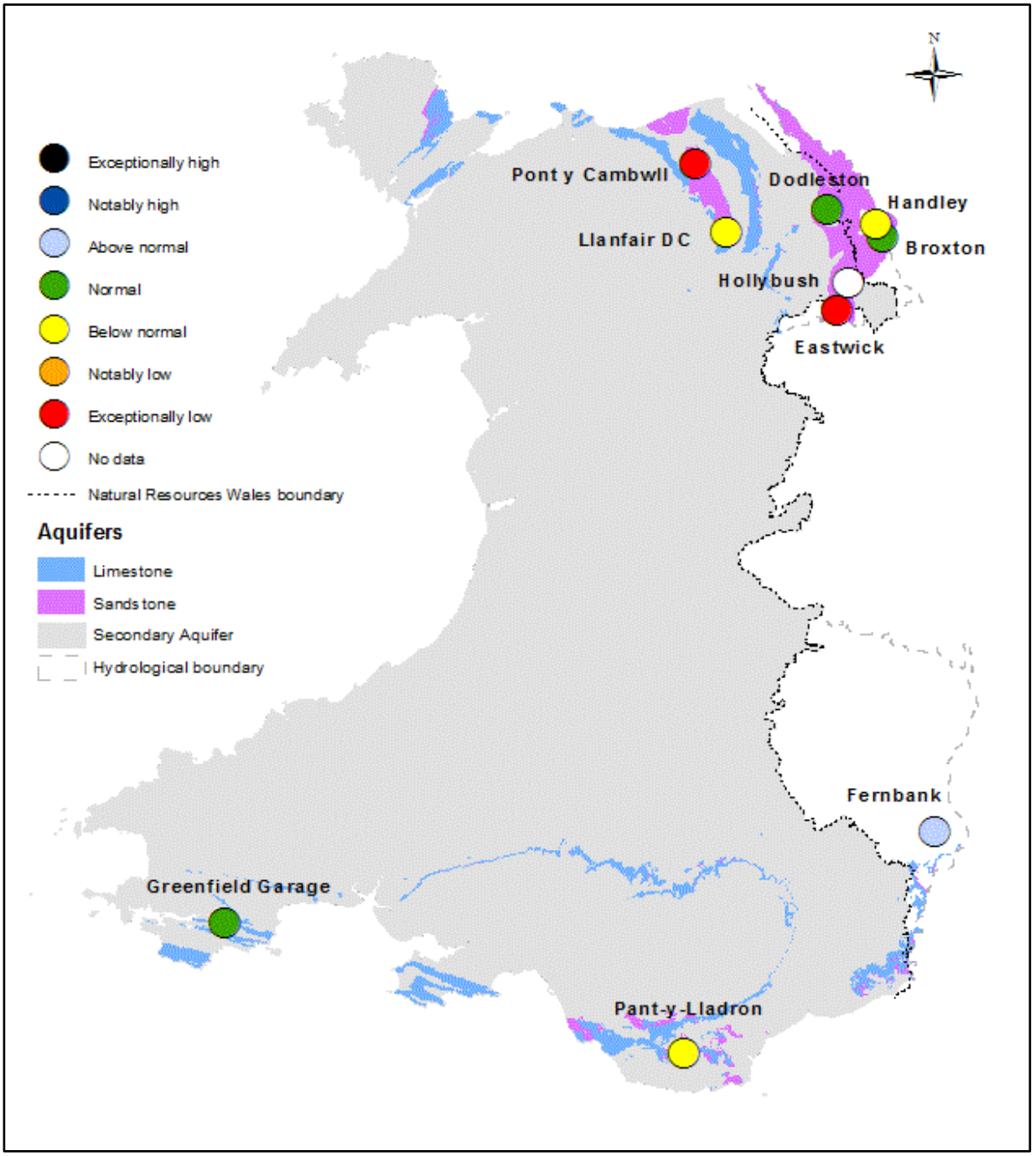

Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic July groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

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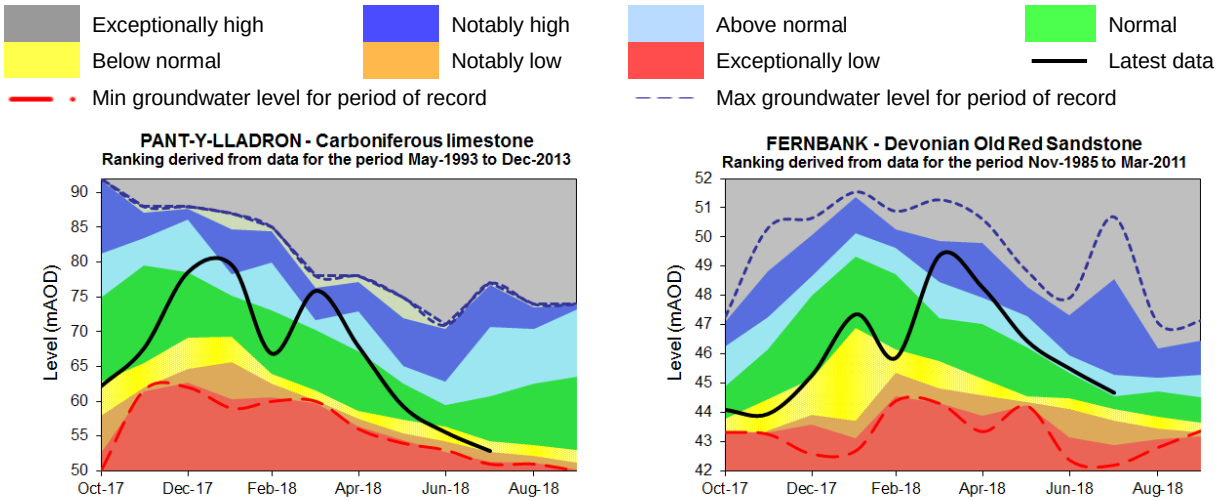
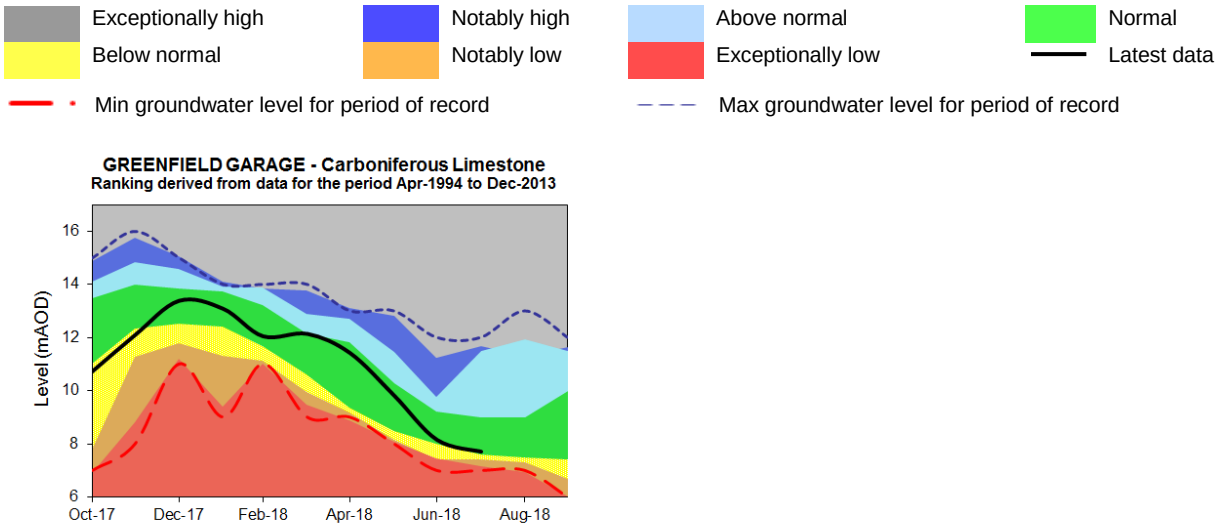
Groundwater charts

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).* (Please note that data is not available for May and July 2018 for Pant-y-Lladron)

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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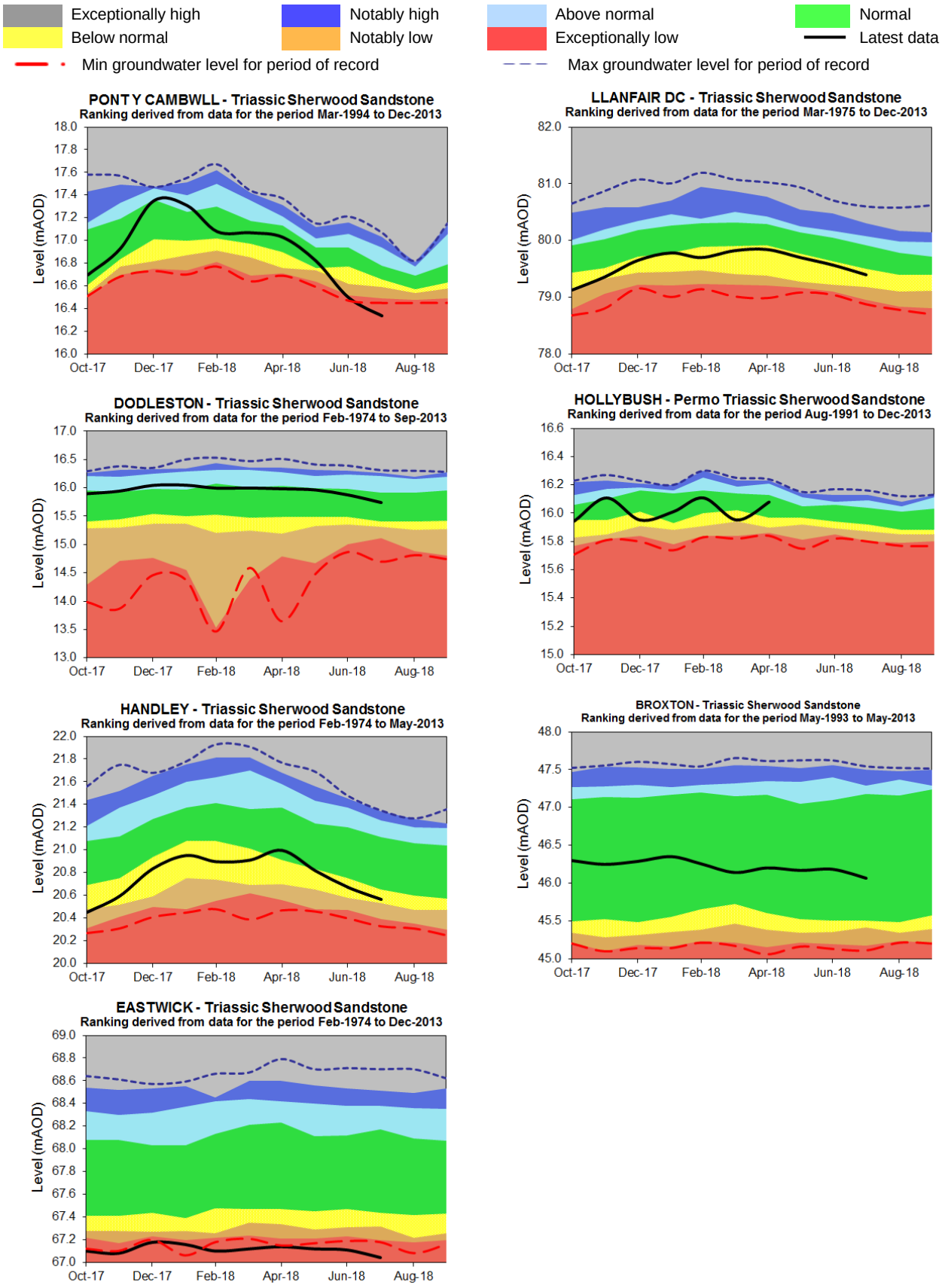
Figure 18: Groundwater level charts: North Wales



End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales and Environment Agency)*. (Please note that data is not available for May, June and July 2018 for Hollybush)

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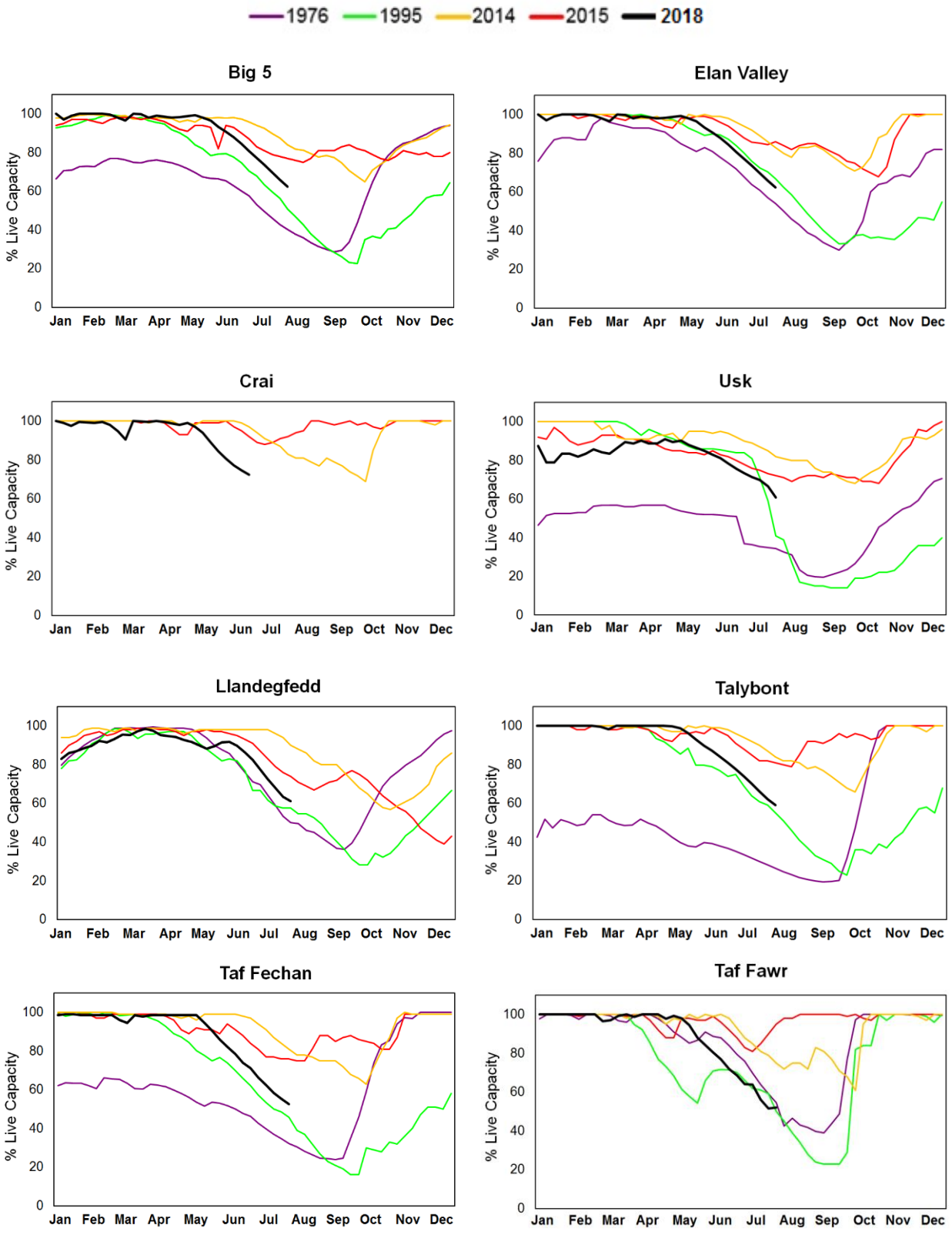
Reservoir Storage

Figure 19: Reservoir charts: South East Wales



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

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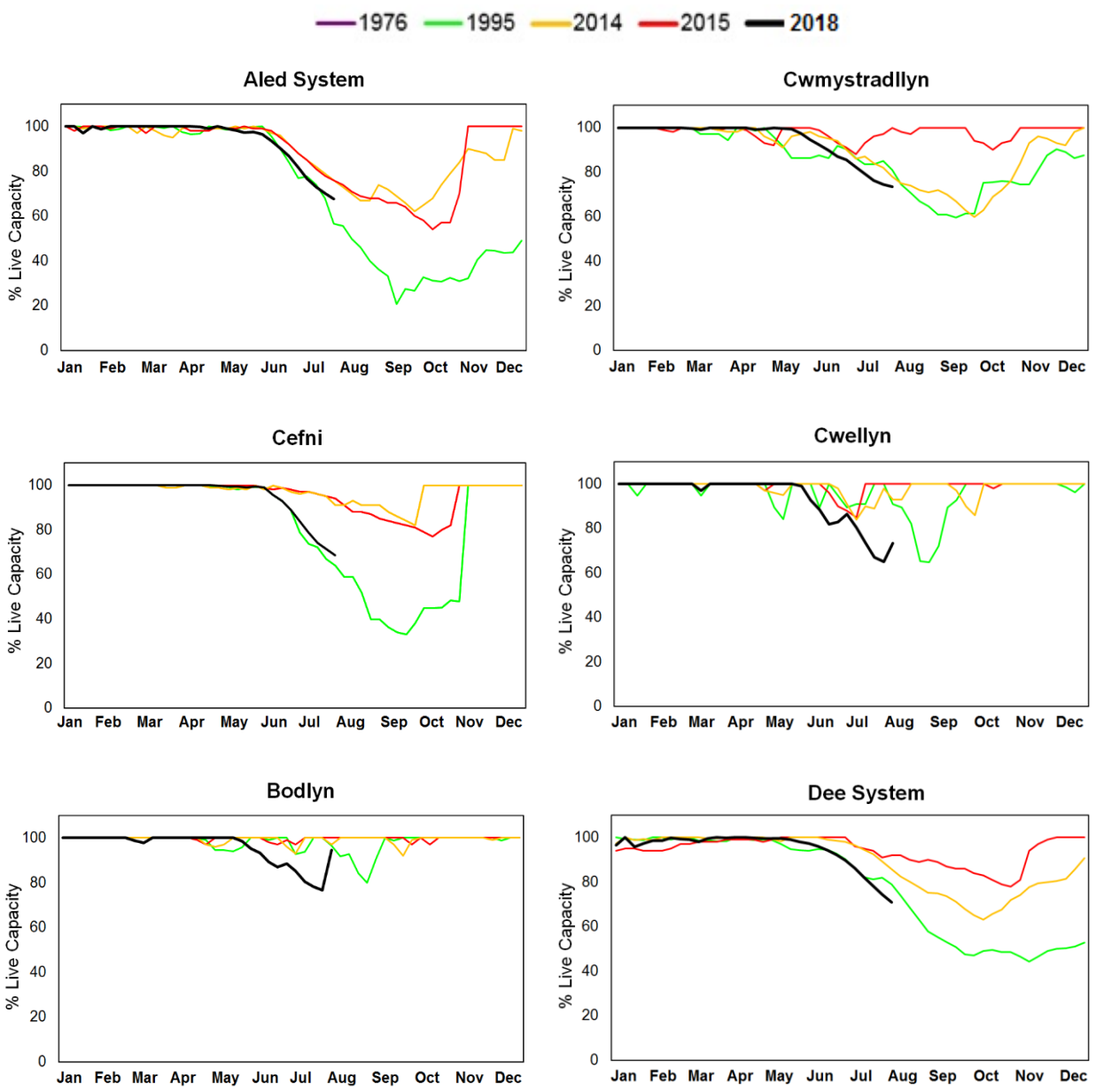
Figure 20: Reservoirs charts: North Wales



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

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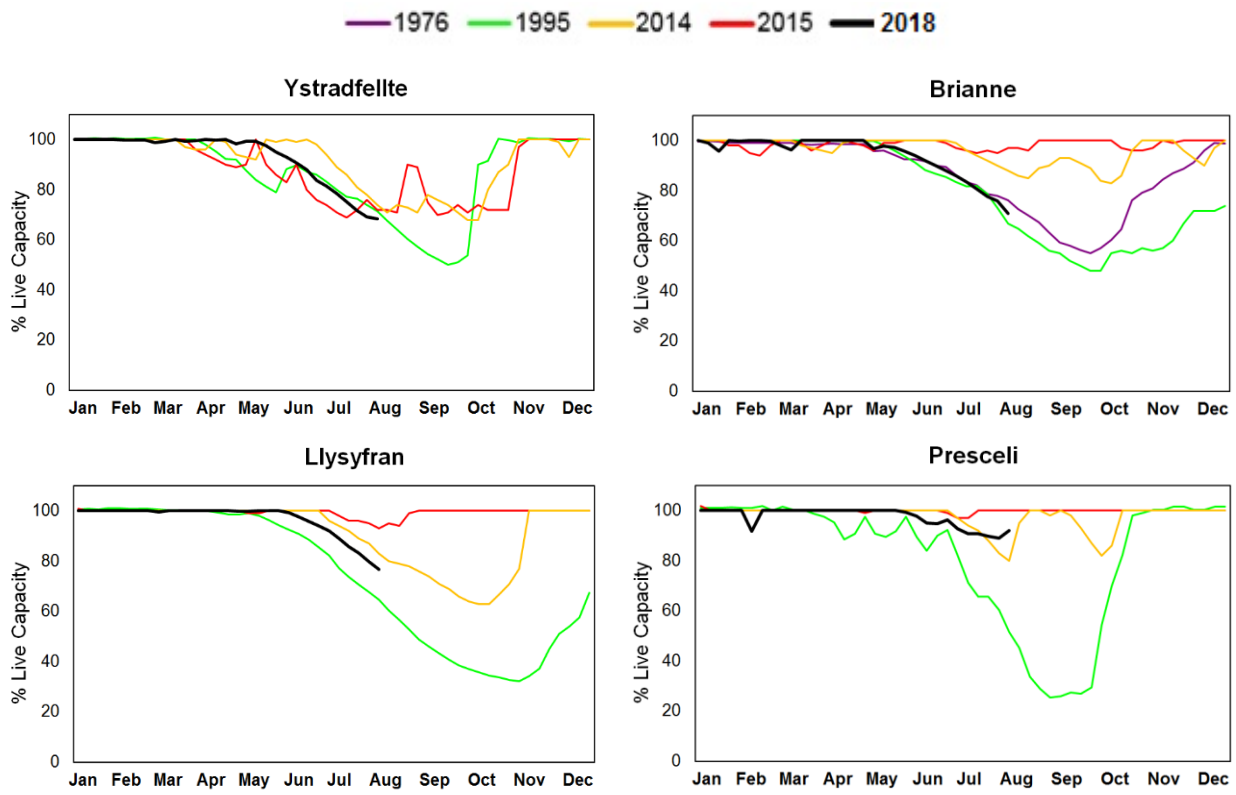
Figure 21: Reservoirs charts: South West Wales



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).