Monthly Water Situation Report October 2017

Summary

- **The monthly rainfall total for Wales during October was 74% of the Long Term Average (LTA, 1961-90). South East, South West and North Wales received 73%, 58% and 93% of the LTA, respectively.**
- **At the end of October, soil moisture deficit (SMD) values across Wales were from 0.8 to 114.6mm for all MORECS squares. Soil in 13 squares (out of 23) was slightly wetter than the LTA while 4 squares were drier than the LTA. The remaining 6 squares were similar to the LTA for October.**
- **For river flows in Wales, 23 out of 30 indicator sites (which had flow data available) were classed as *Normal* and 4 were classed as *Above normal*. The remaining 3 sites were classed as *Notably high* for October.**
- **The reservoir storage across the indicator sites was greater than 90% except 5 reservoirs (Aled and Aled Isaf, Elan Valley, Usk, Ystradfellte, Llandegfedd and the Big Five) at the end of October and all reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total for Wales was 74% of the LTA for October. The percentage of rainfall recorded in catchments compared with the LTA across Wales was between 50% (Swansea and Llanelli) and 122% (Ogwen). The rainfall total for Wales was 36.3mm less than the October LTA. For South East, South West and North Wales the rainfall totals were 73%, 58% and 93% 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

All 23 MORECS squares had SMD values which were between 0.8 and 114.6mm. 13 squares were slightly wetter than the long term average while 4 squares were drier than the LTA. The remaining 6 squares were similar to the LTA for October.

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows were between *Normal* and *Notably high* for all the indicator sites across Wales. 23 out of 30 indicator sites (which had flow data available) were classed as *Normal* and 4 were classed as *Above normal*. The remaing 3 sites were classed as *Notably high* for October.

***South East*:** Flows in the area ranged from 35% (River Lugg at Butts Bridge) to 114% (River Usk at Trostrey Weir) of the October LTA values.

South West: The river flows within this area ranged from 71% (River Ewenny at Keepers Lodge) to 146% (River Neath at Resolven) of the October LTA values.

***North*:** Flows in the area ranged from 76% (River Ceiriog at Brynkinalt Weir) to 188% (River Conwy at Cwmlanerch) of the October 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 October at all indicator sites (10 sites) were classed between *Exceptionally low* (Eastwick) to *Normal (*Pont y Cambwll*,* Fernbank, Broxton and Dodleston). 3 sites were classed as *Below normal* (Pant-y-Lladron, Greenfield Garage and Hollybush) and 2 sites were classed as *Notably low* (Llanfair and Handley).

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

Reservoir Storage

At the end of October most of the indicator reservoirs (13 out of 18) were greater than 90% full and the remaining five reservoirs (Aled and Aled Isaf, Usk, Elan Valley, Llandegfedd and Big 5) were 63%, 69%, 89%, 56% and 79% full respectively. All of them 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.

Author: Zhong Zhang Telephone: 03000 654521

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Natural Resources Wales

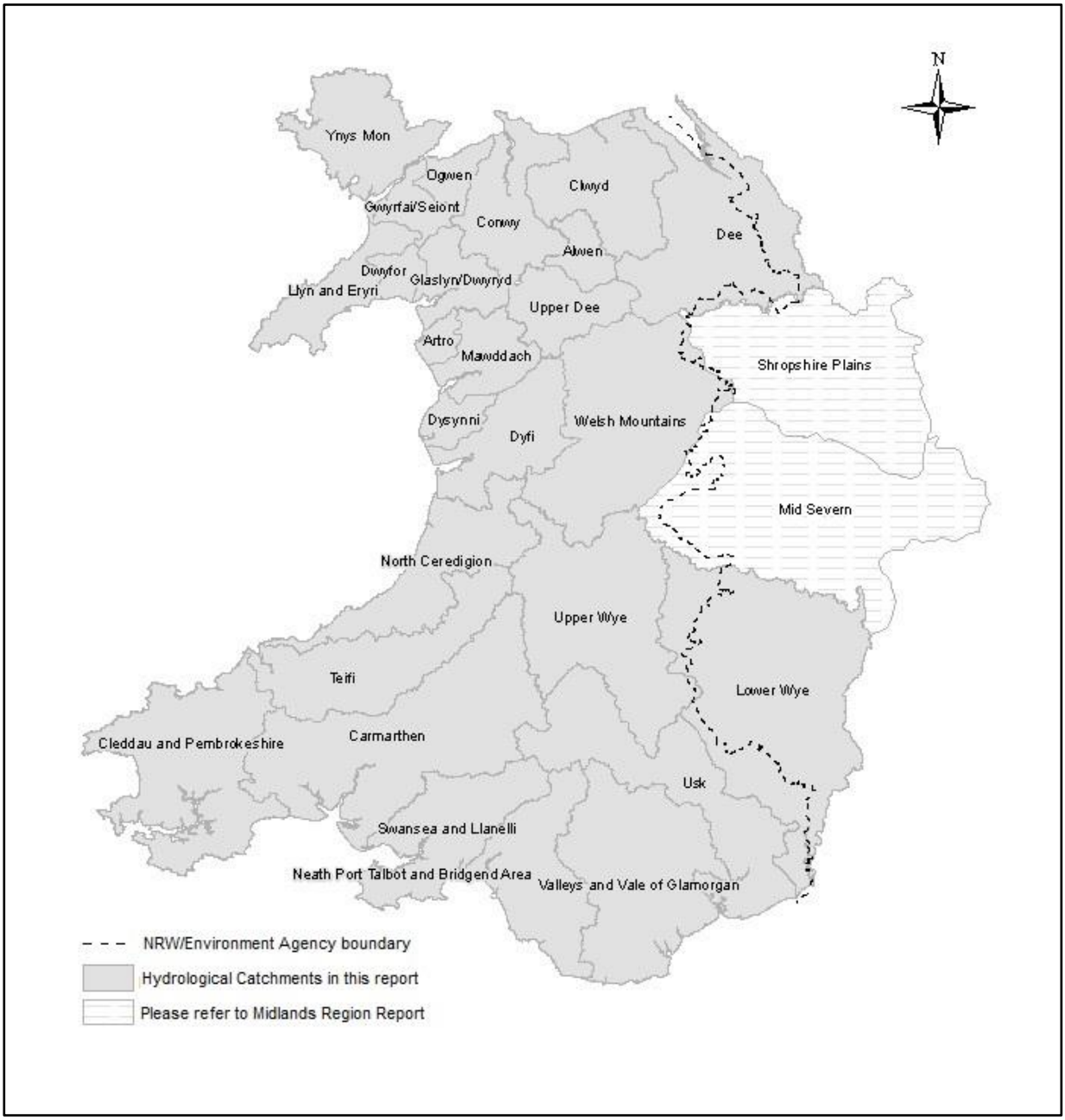

Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

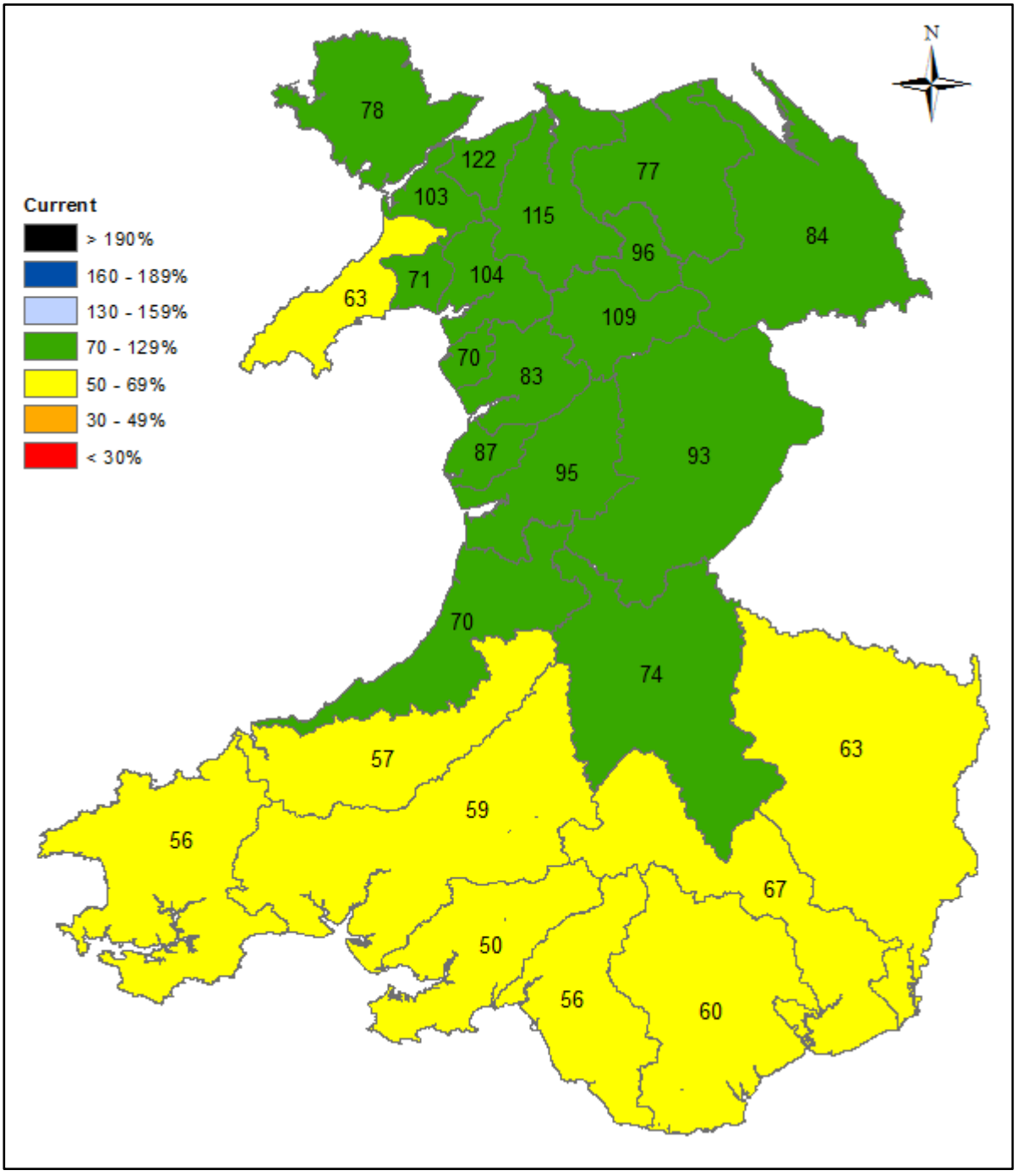

Figure 2: Calculated catchment average October rainfall totals as a percentage of the 1961-90 October long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

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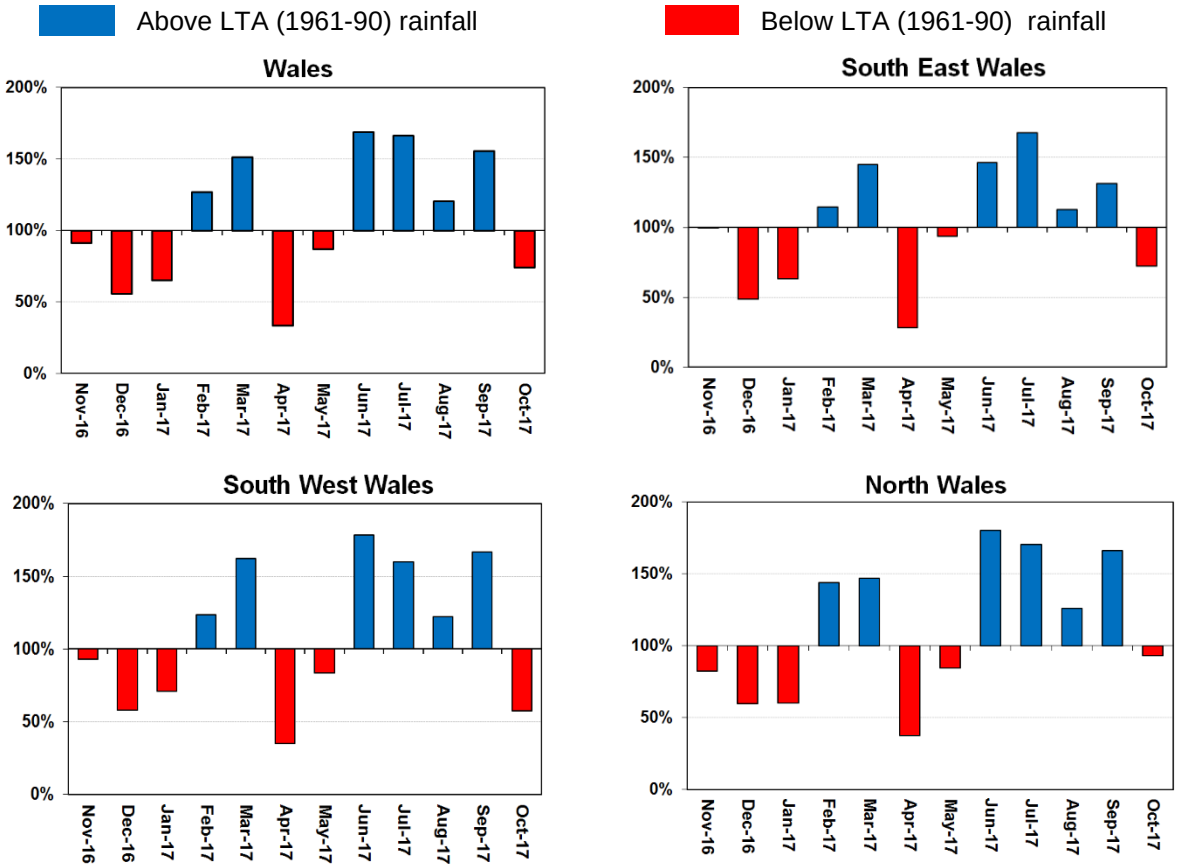
Rainfall Charts

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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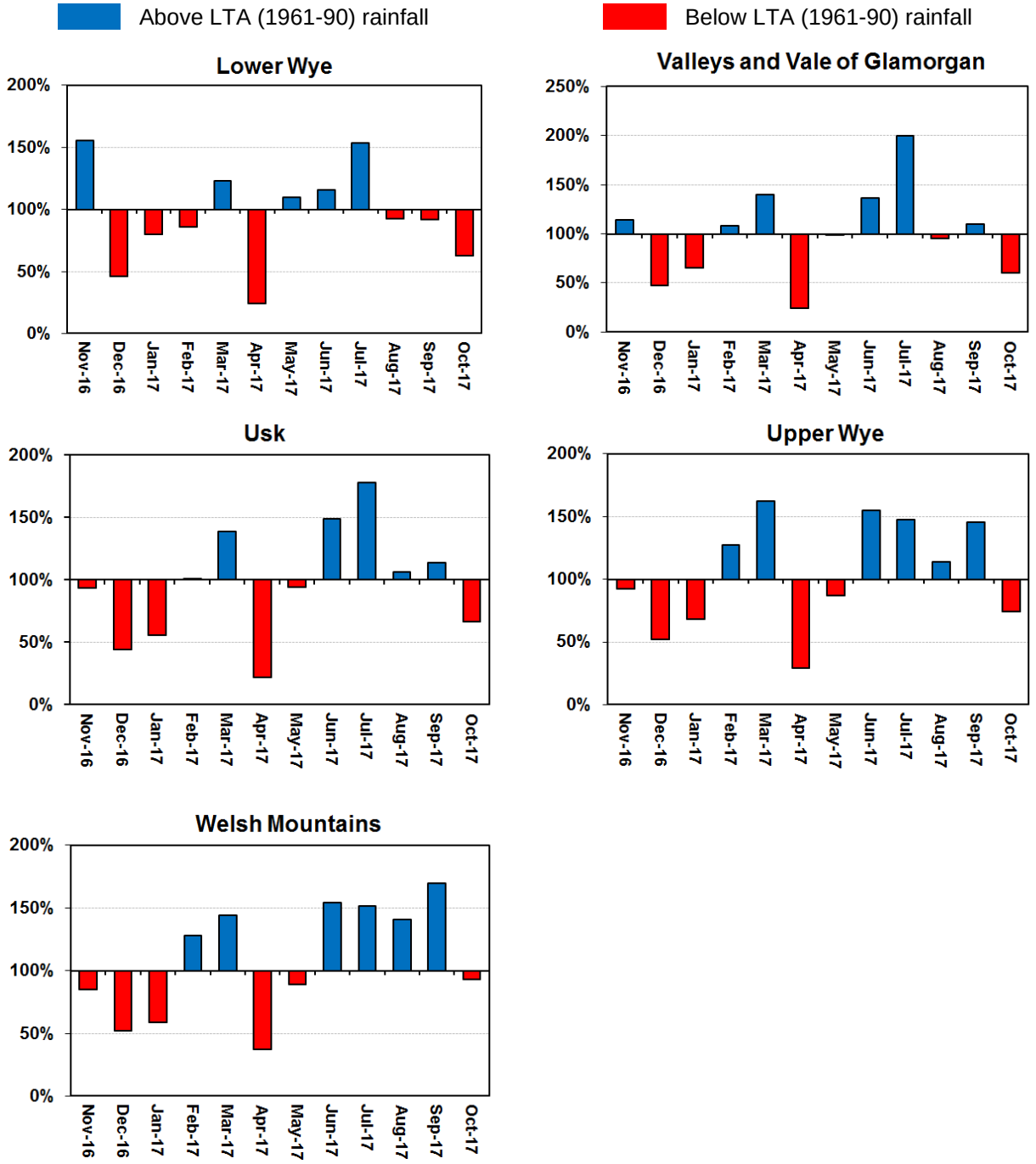
Figure 4: Rainfall Charts: South East Wales



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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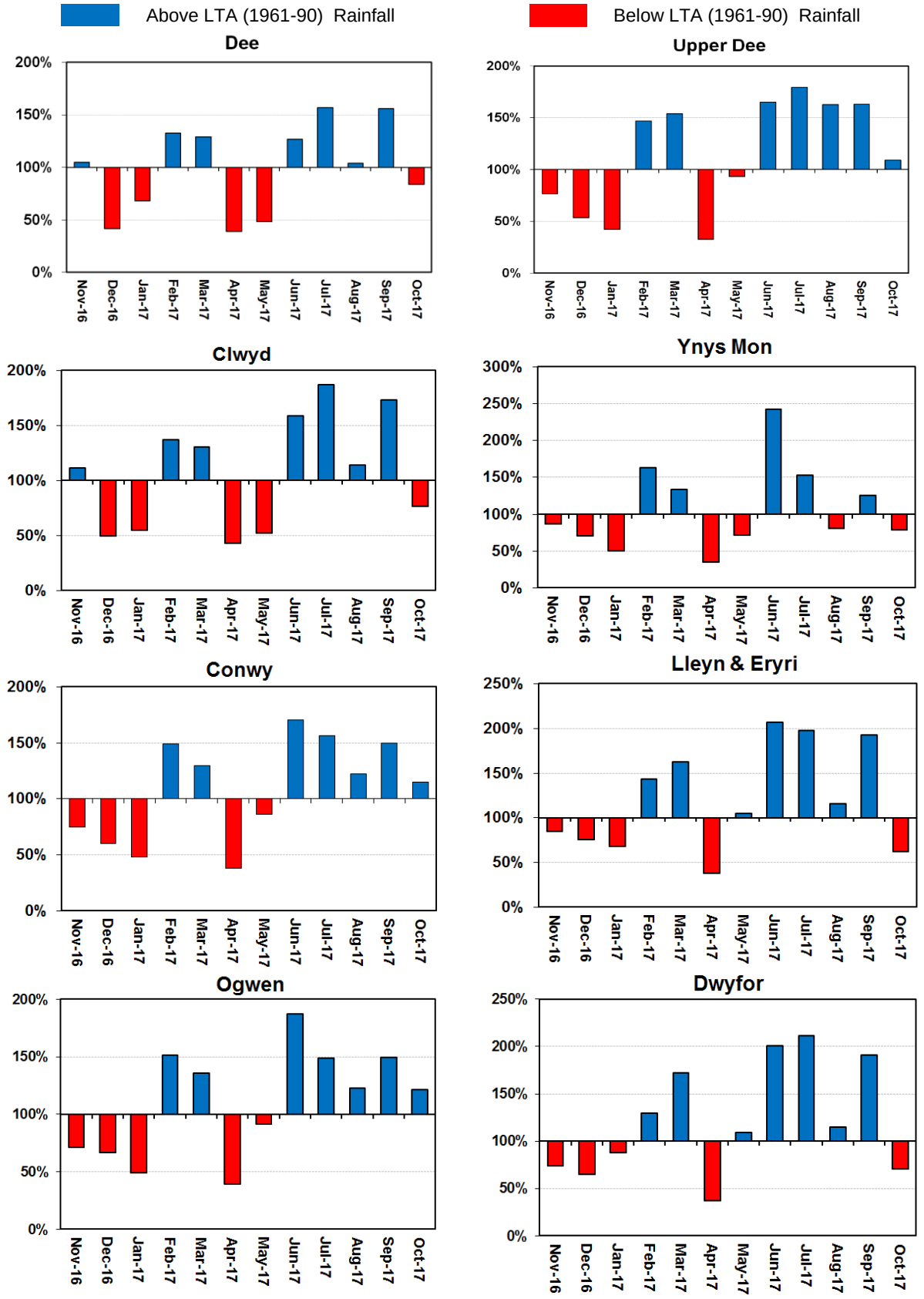
Figure 5: Rainfall Charts: North Wales



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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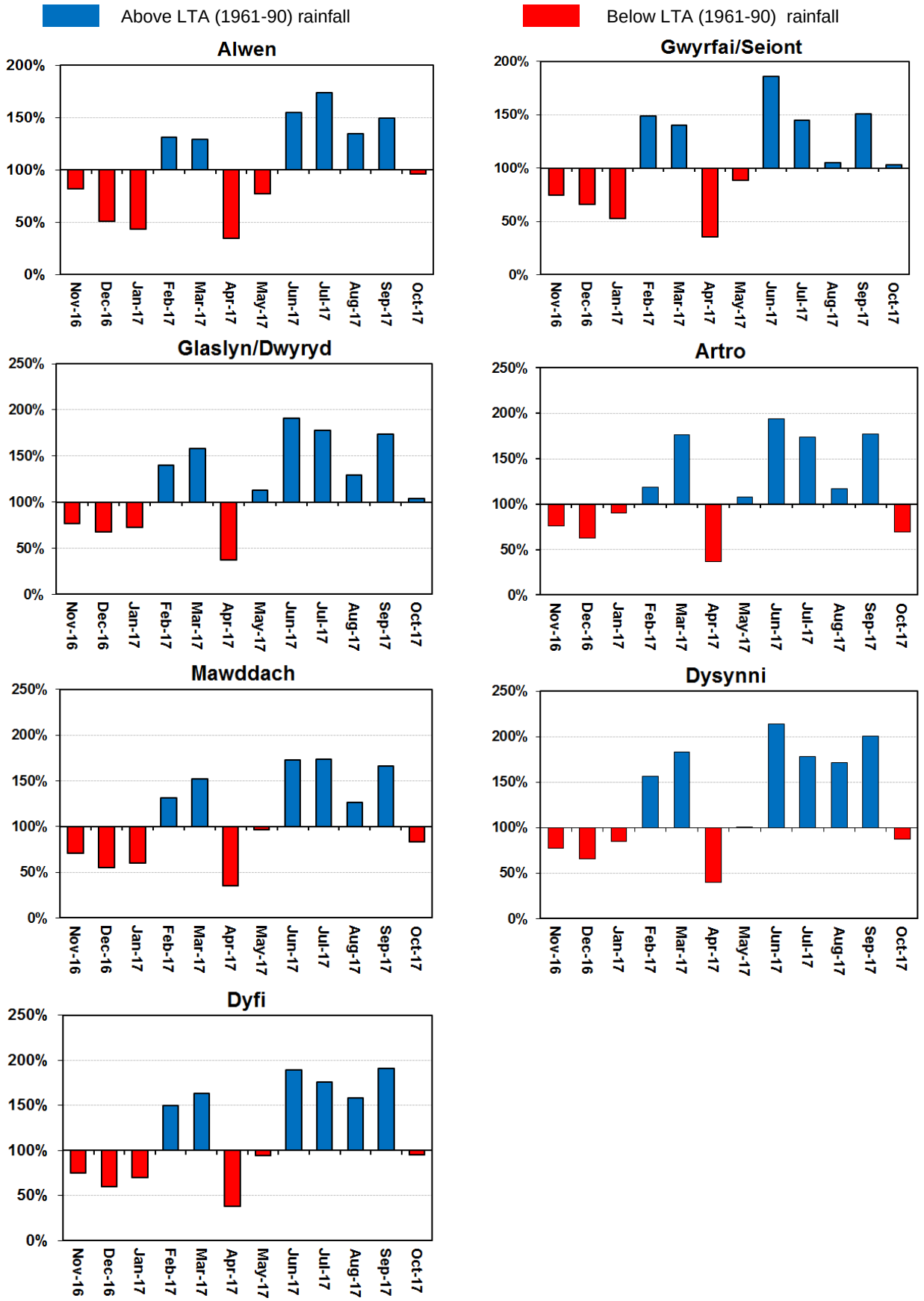

Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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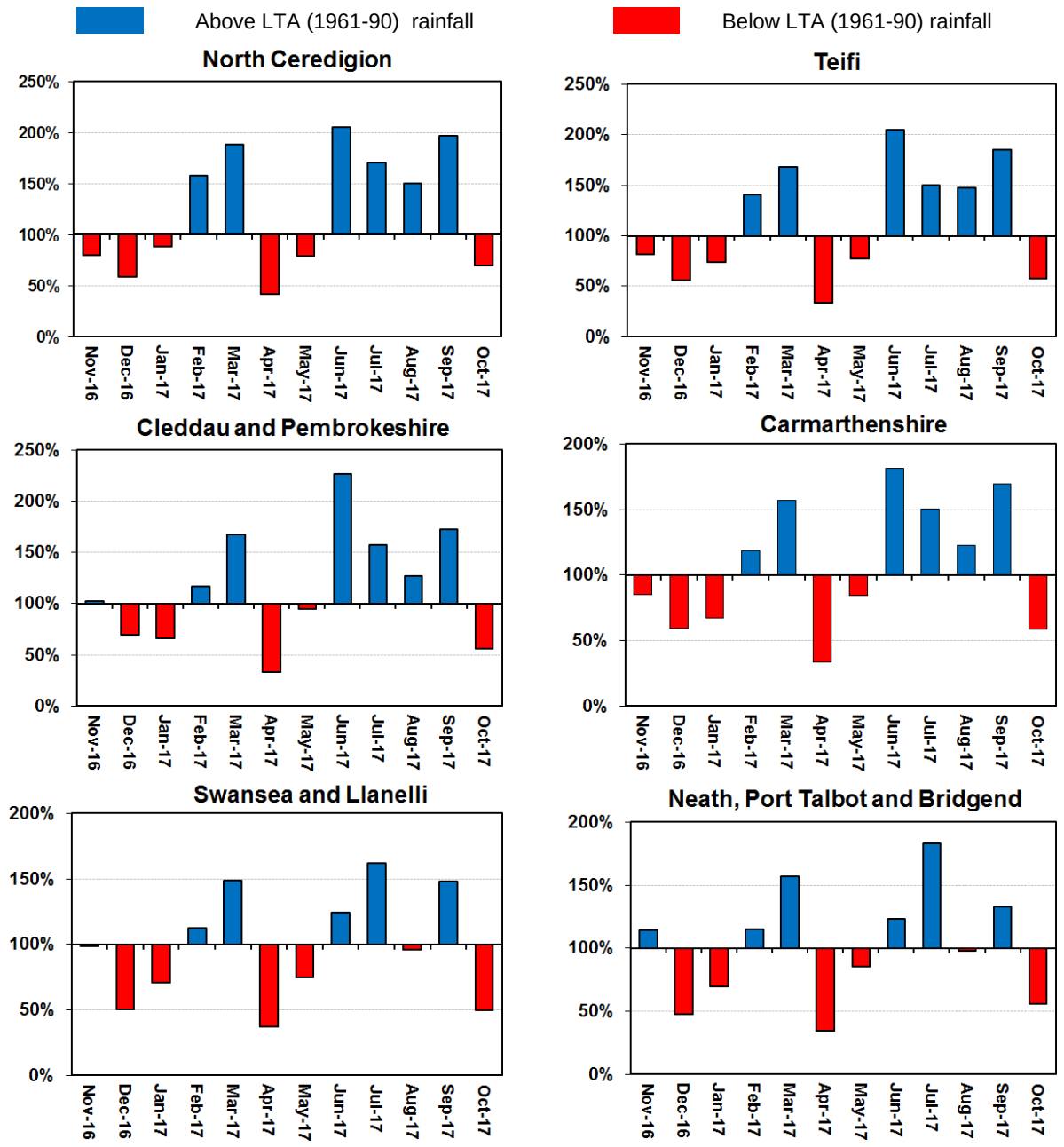
Figure 6: Rainfall Charts: South West Wales



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)

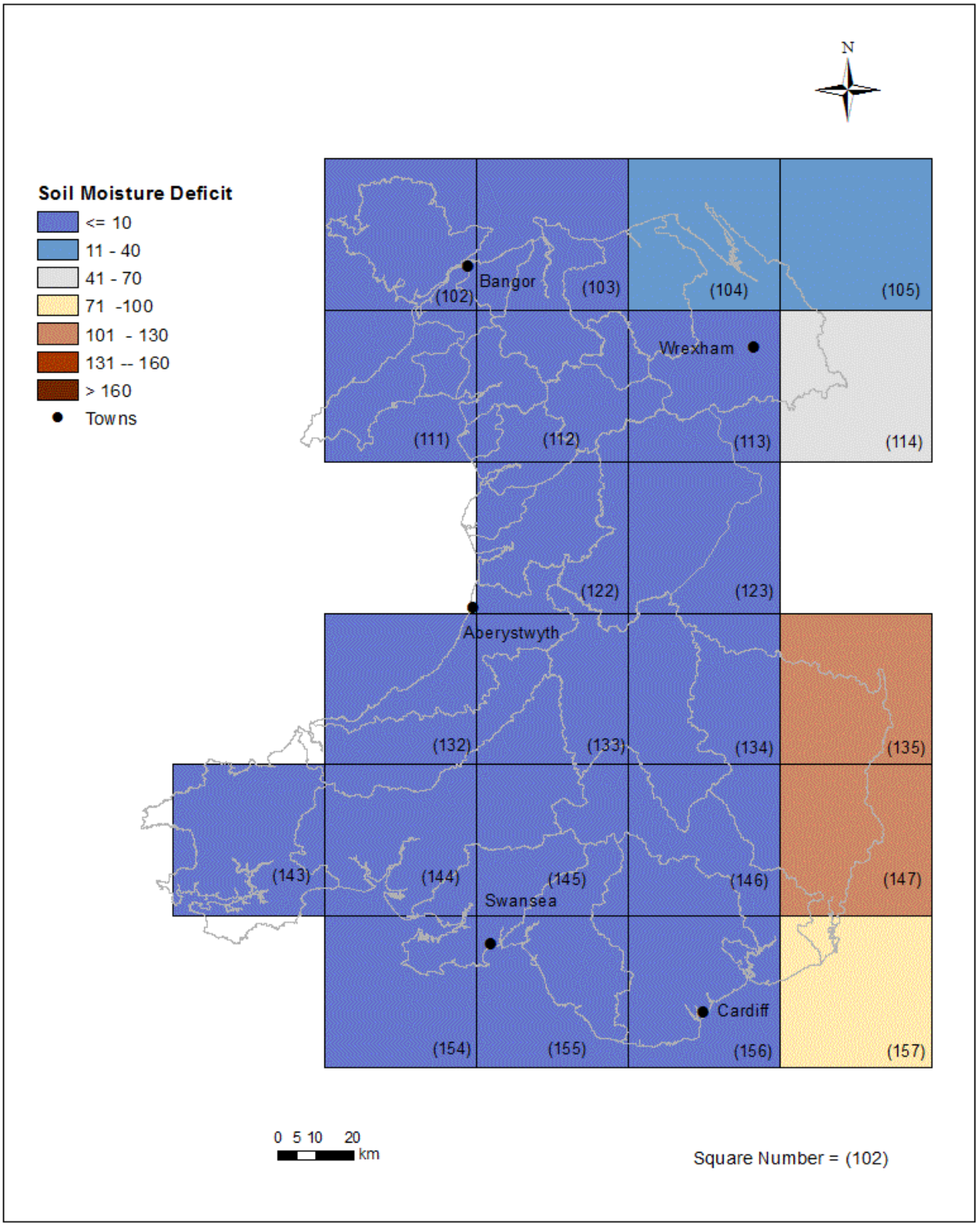

Figure 7: MORECS soil moisture deficits (mm) for October for real land use for Natural Resources Wales *(Source: Met Office © Crown Copyright).*

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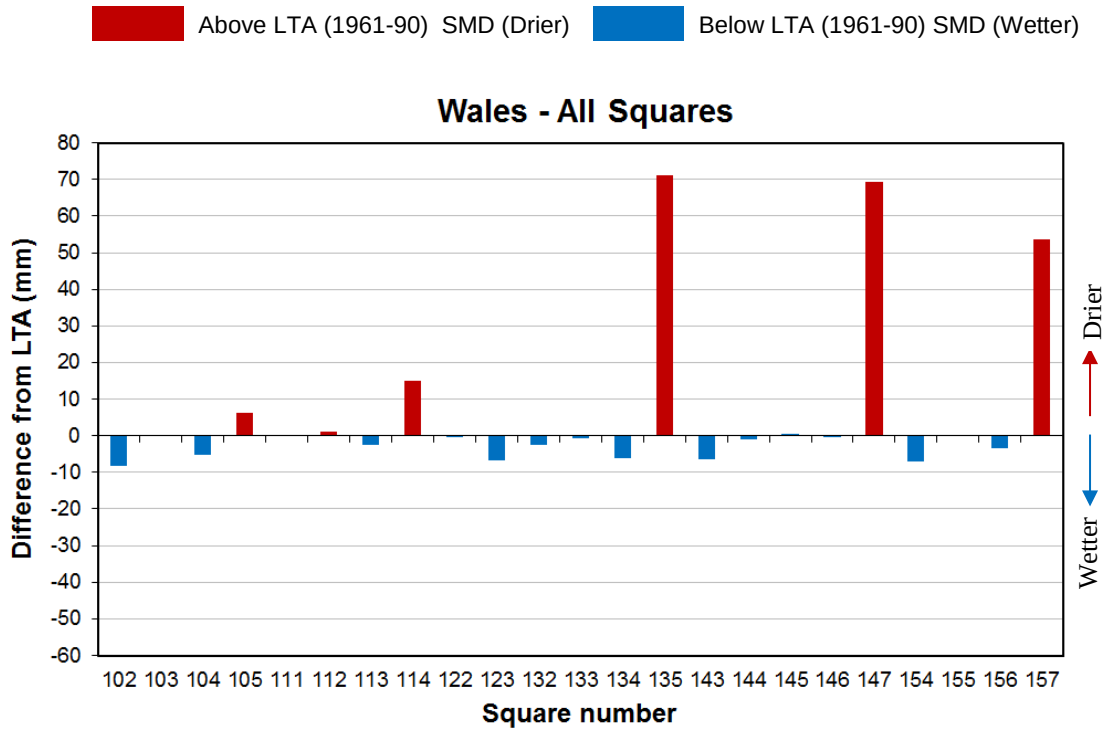

Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for October for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

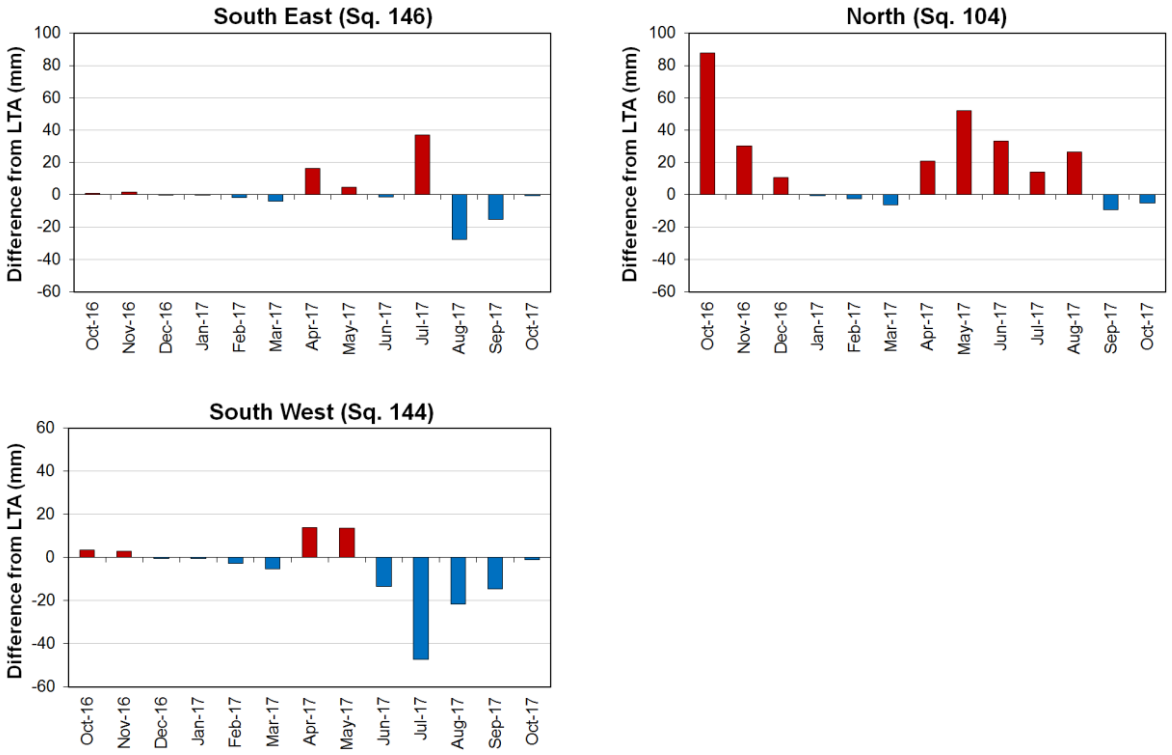

Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales.)

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River Flow

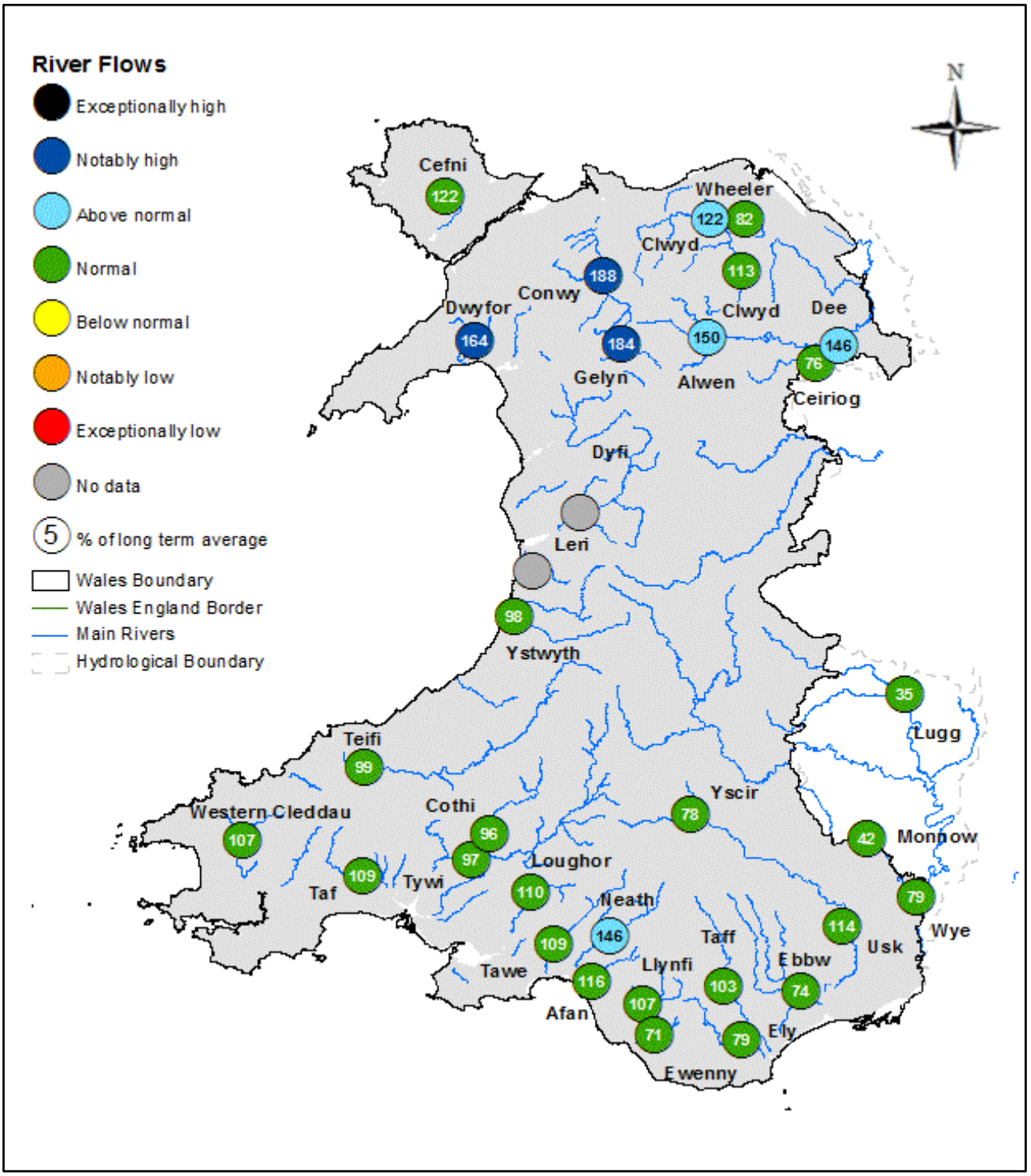

Figure 10: Monthly mean river flow for October, classed relative to analysis of historic October monthly means *(Source: Natural Resources Wales).*

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SITE NAME	RIVER	October 2017			October 2016		October 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	Normal	35%	1.46	23%	0.96	4.15	0.68	14.50
Grosmont	Monnow	Normal	42%	1.86	35%	1.57	4.46	0.35	19.50
Pont ar Yscir	Yscir	Normal	78%	1.78	45%	1.04	2.29	0.19	7.19
Pontypridd	Taff	Normal	103%	24.60	40%	9.59	23.85	3.54	66.30
Redbrook	Wye	Normal	79%	50.00	43%	27.20	63.01	9.53	174.00
Rhiwderin	Ebbw	Normal	74%	5.68	42%	3.21	7.71	0.91	23.20
St Fagans	Ely	Normal	79%	4.38	46%	2.55	5.54	0.71	13.80
Trostrey Weir	Usk	Normal	114%	20.20	64%	11.30	17.71	3.39	59.50
River Flow Sites : North Area									
Bodfari	Wheeler	Normal	82%	0.50	43%	0.26	0.61	0.20	1.77
Bodffordd	Cefni	Normal	122%	0.62	31%	0.16	0.51	0.06	1.60
Brynkinalt Weir	Ceiriog	Normal	76%	2.35	25%	0.76	3.08	0.47	8.13
Cwmlanerch	Conwy	Notably high	188%	44.70	29%	6.87	23.82	2.86	60.10
Cynefail	Gelyn	Notably high	184%	1.58	38%	0.33	0.86	0.09	2.00
Dol y Bont	Leri	No data					2.10	0.14	5.15
Druid	Alwen	Above normal	150%	8.41	31%	1.75	5.61	0.60	15.00
Dyfi bridge	Dyfi	No data					30.07	9.73	77.00
Garndolbenmaen	Dwyfor	Notably high	164%	5.82	36%	1.29	3.54	1.32	9.05
Manley Hall	Dee	Above normal	146%	49.50	45%	15.30	33.87	8.73	75.70
Pont y Cambwll	Clwyd	Above normal	122%	7.17	21%	1.23	5.89	0.94	19.40
Ruthin Weir	Clwyd	Normal	113%	1.48	9%	0.12	0.61	0.20	1.77
River Flow Sites : South West Area									
Capel Dewi	Tywi	Normal	97%	49.10	55%	28.10	50.74	8.81	113.00
Clog y Fran	Taf	Normal	109%	9.82	57%	5.14	9.01	1.02	22.30
Coytrahen	Llynfi	Normal	102%	3.00	43%	1.27	2.94	0.50	6.33
Felin Mynachdy	Cothi	Normal	96%	14.50	56%	8.42	15.04	1.61	37.90
Glanteifi	Teifi	Normal	99%	35.20	57%	20.20	35.70	3.89	98.70
Keepers Lodge	Ewenny	Normal	71%	1.48	55%	1.14	2.09	0.41	4.49
Marcroft	Afan	Normal	116%	7.84	39%	2.62	6.74	0.93	13.60
Pont Llolwyn	Ystwyth	Normal	98%	7.55	43%	3.30	7.74	0.56	19.80
Treffgarne *	Western Cleddau	Normal	107%	3.78	57%	5.14	0.48	10.95	3.53
Resolven	Neath	Above normal	146%	18.50	31%	3.91	12.63	1.57	29.30
Tir-y-Dail	Loughor	Normal	110%	2.79	67%	1.70	2.53	0.43	5.38
Ynystanglws	Tawe	Normal	109%	16.80	48%	7.32	15.37	2.66	43.40

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

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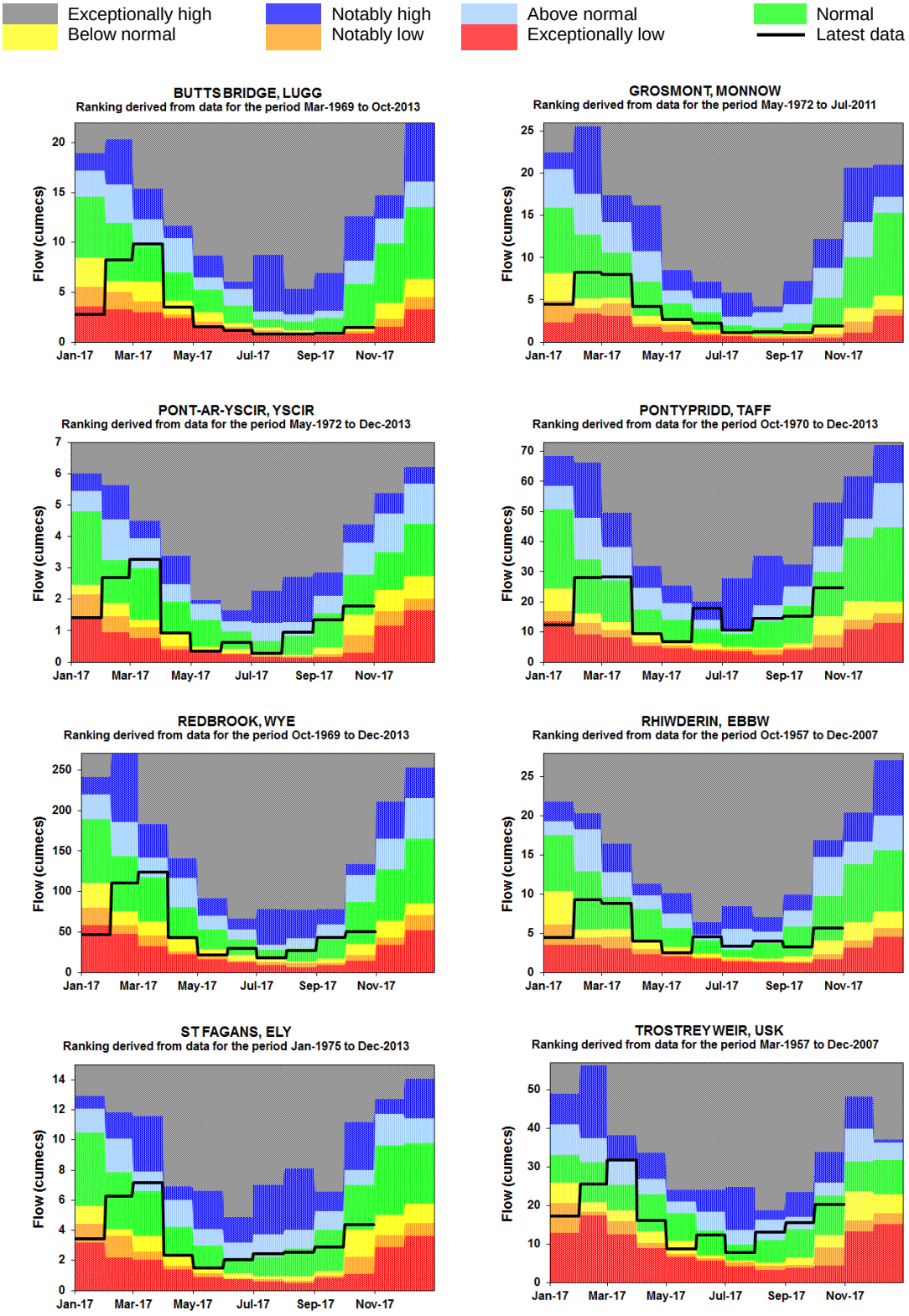
River Flow Charts

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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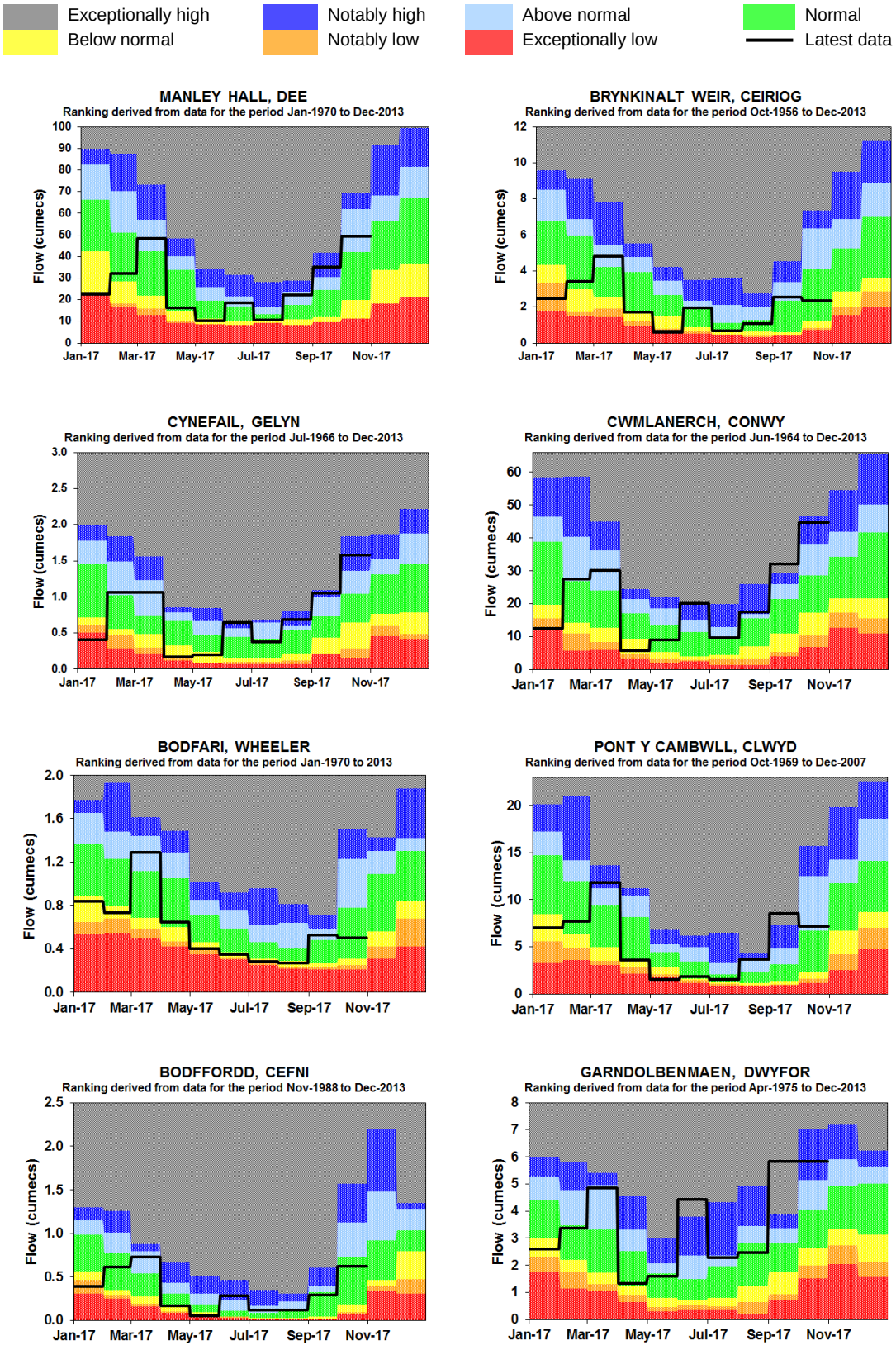
Figure 13: River Flow Charts: North Wales



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

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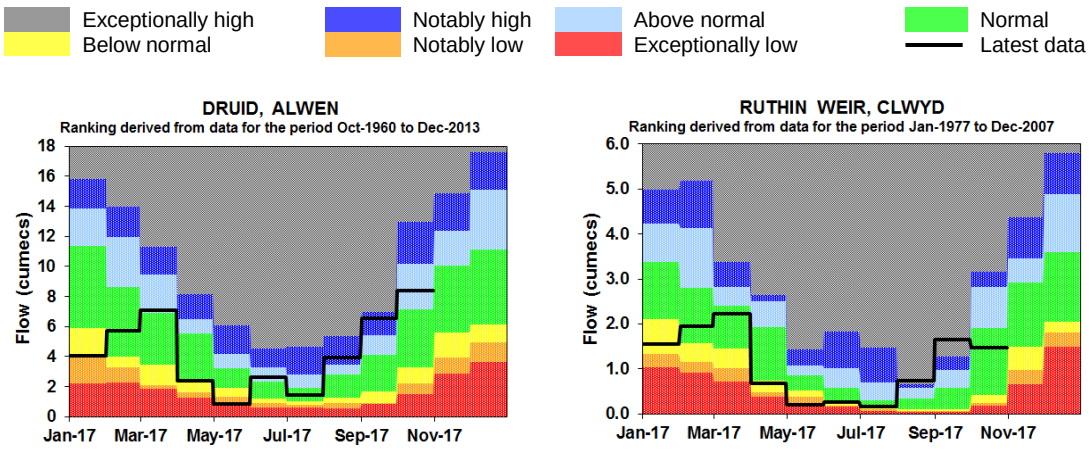
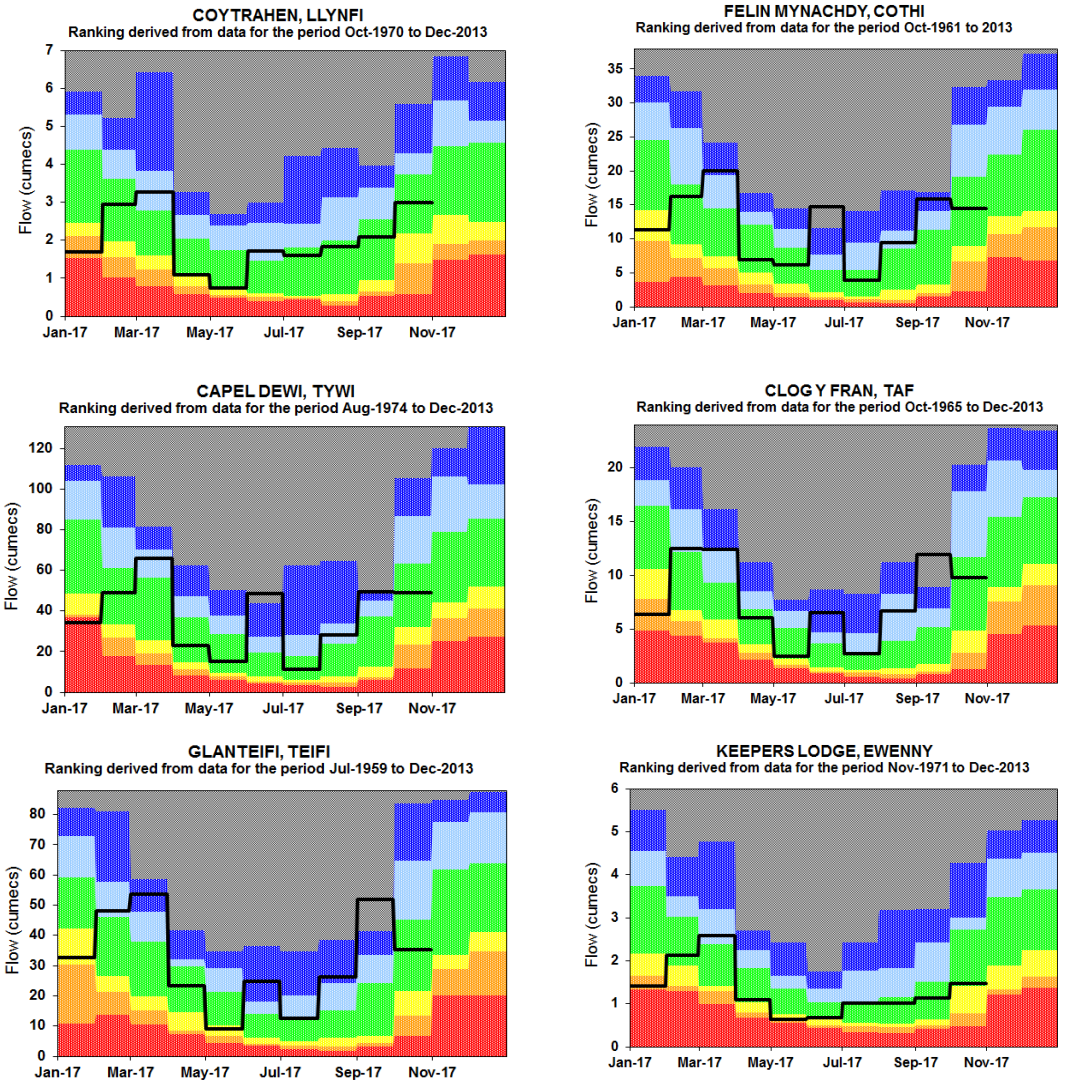


Figure 14: River Flow Charts: South West Wales



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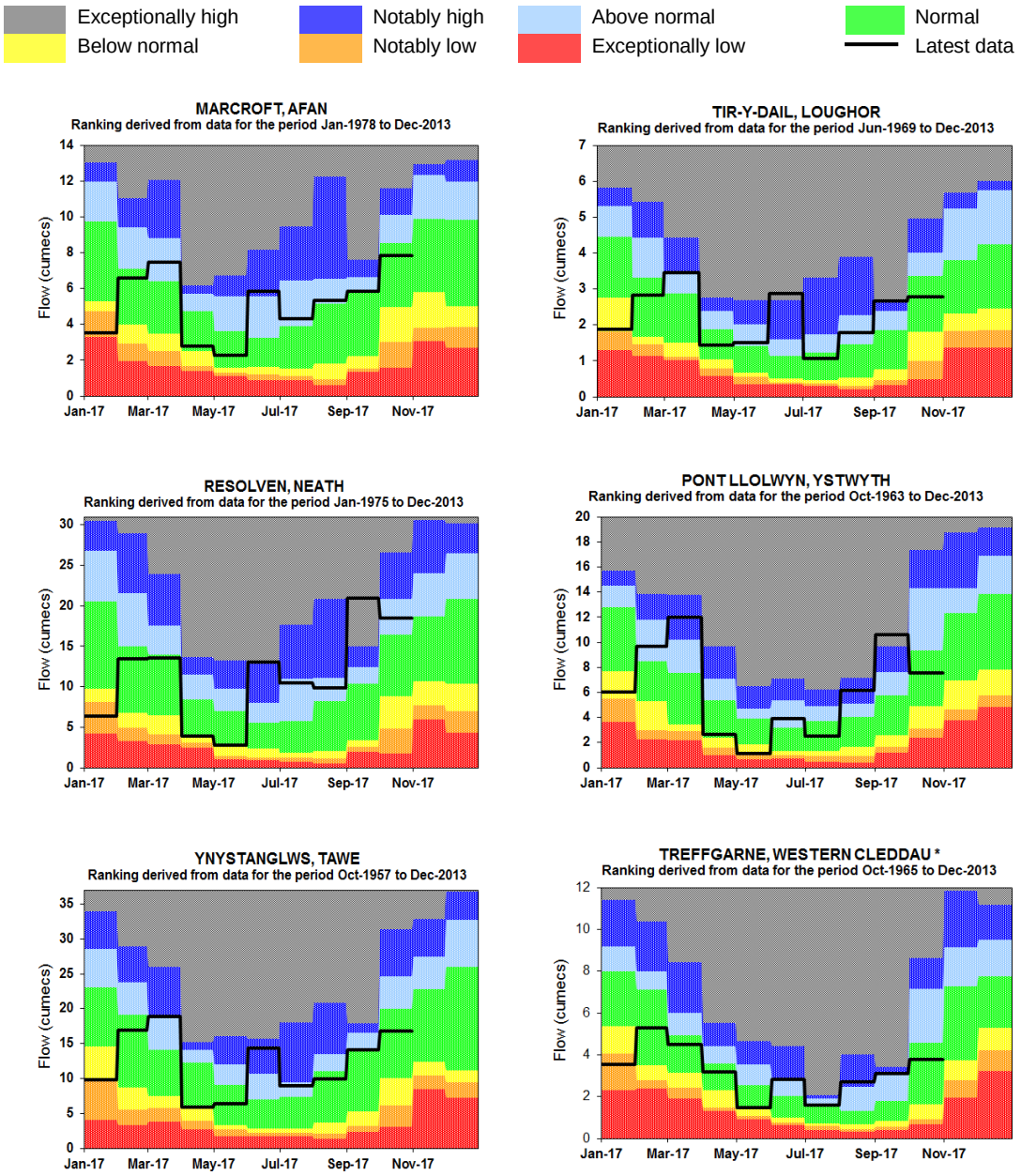

Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).*

(* 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

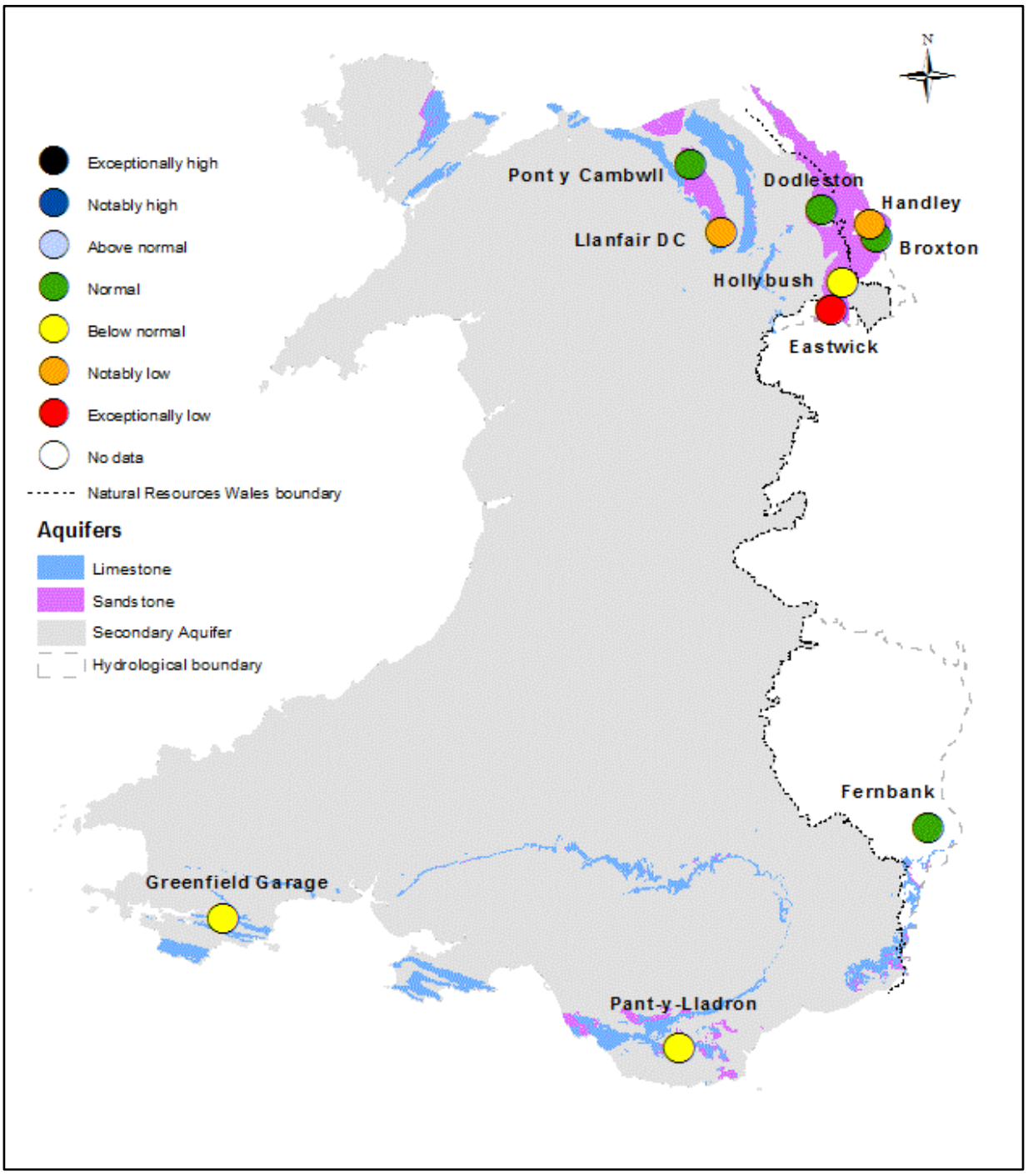

Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic October groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

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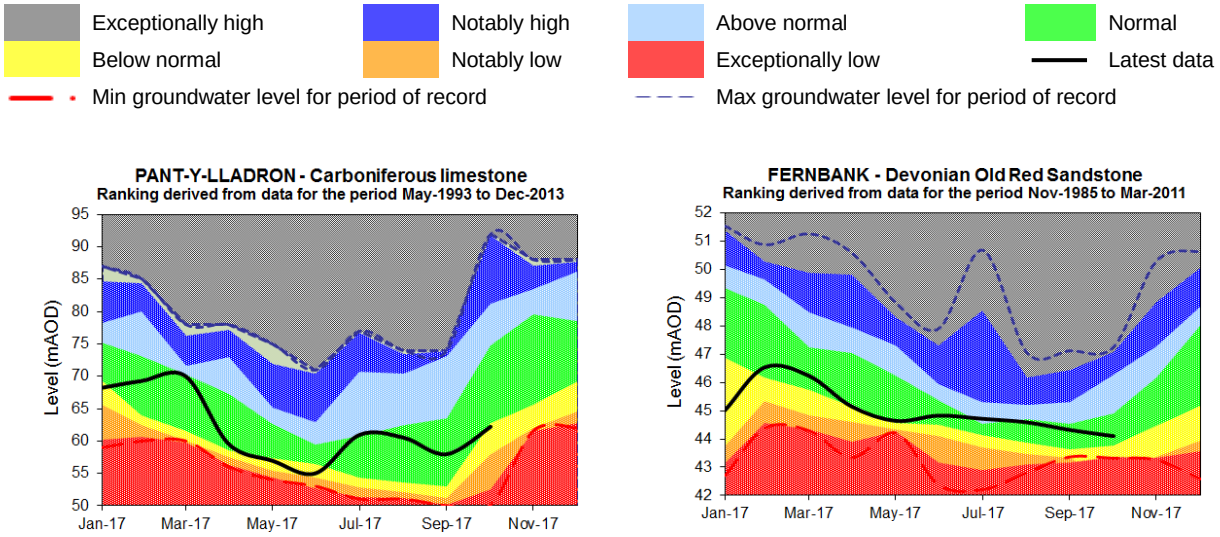
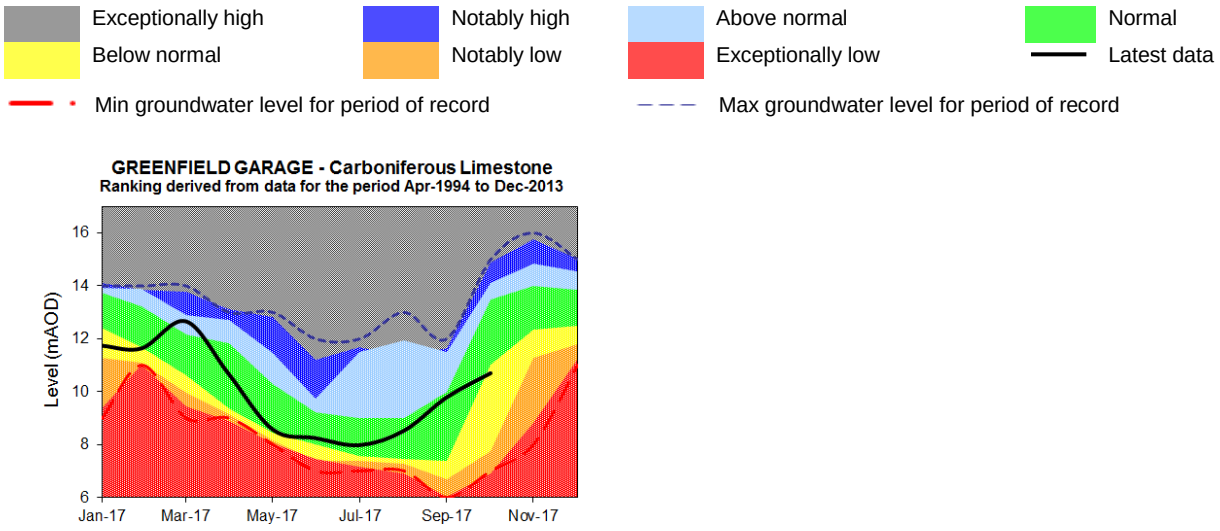
Groundwater charts

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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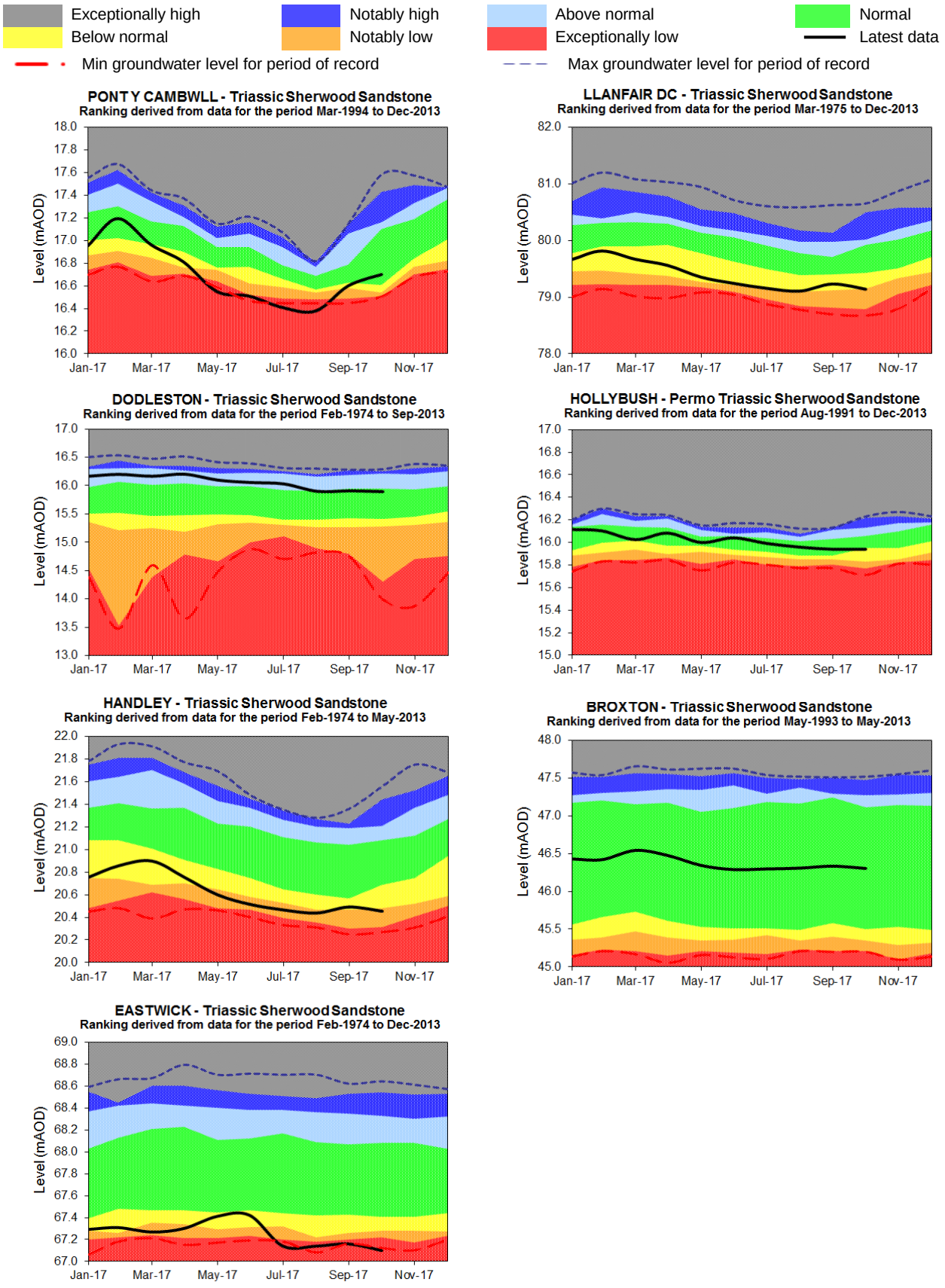
Figure 18: Groundwater level charts: North Wales



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

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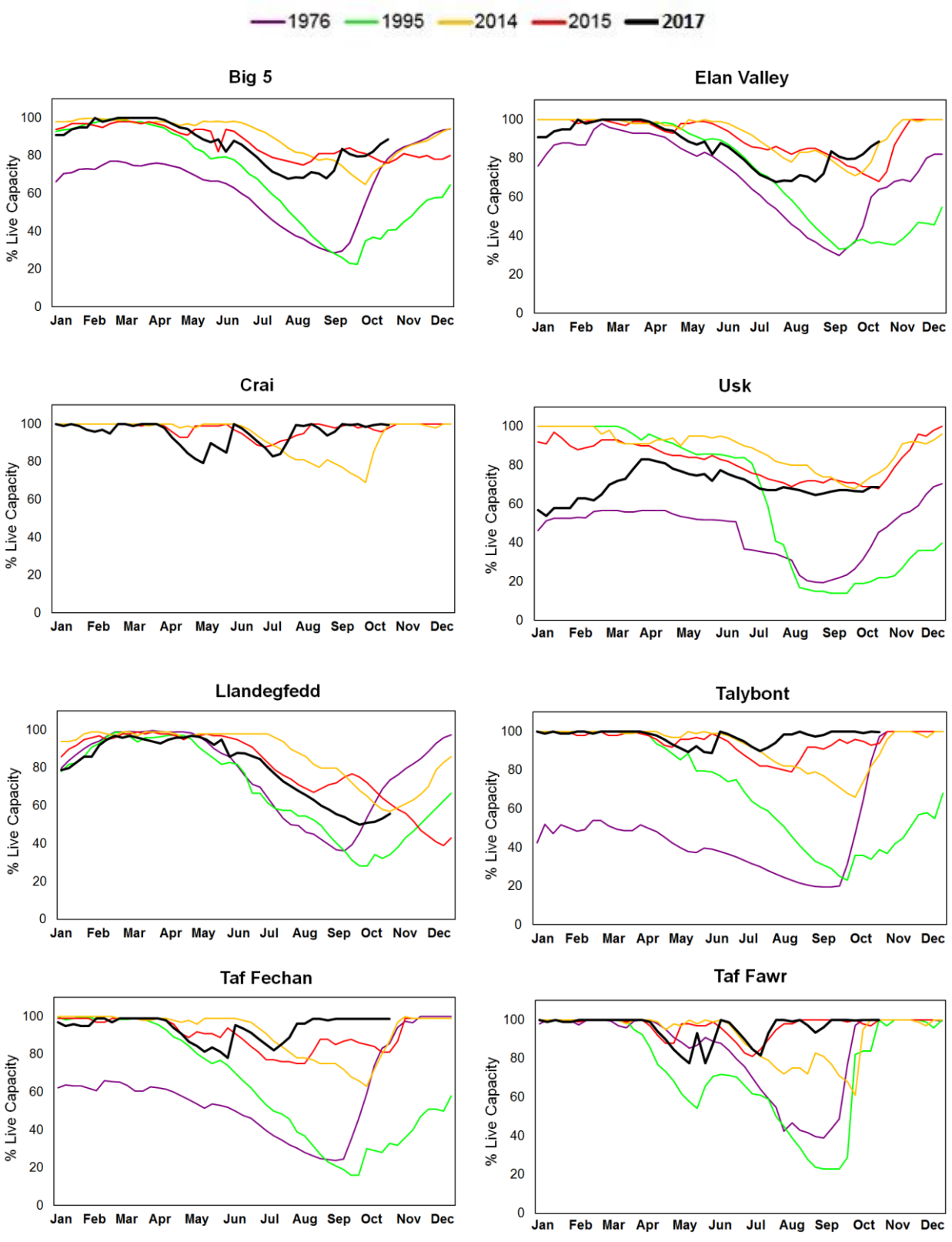
Reservoir Storage

Figure 19: Reservoir charts: South East Wales



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

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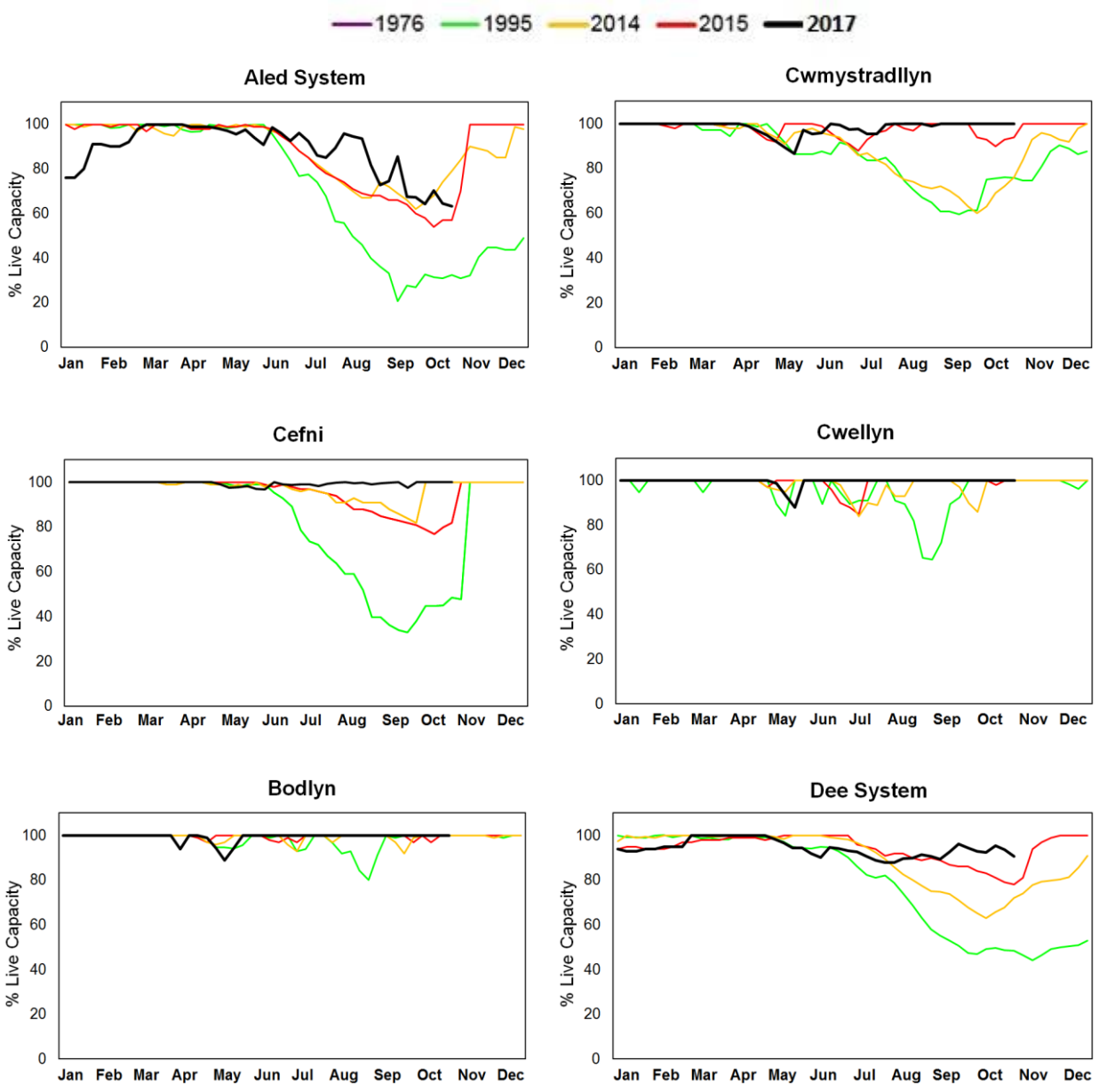
Figure 20: Reservoirs charts: North Wales



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

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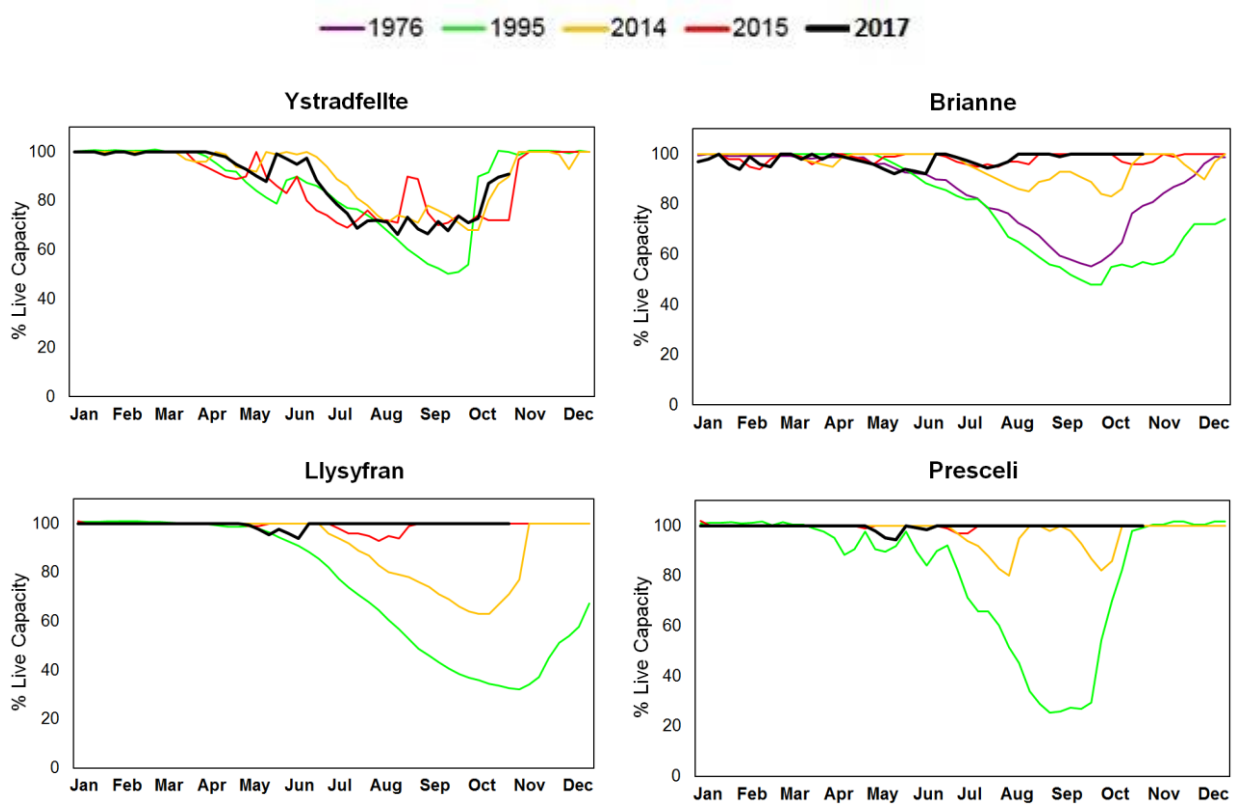
Figure 21: Reservoirs charts: South West Wales



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).