Monthly Water Situation Report May 2016

Natural Resources Wales

- **The monthly rainfall total received for Wales during May was 107% of the Long Term Average (LTA, 1961-90). North, South West and South East Wales received 92%, 114% and 114% of the LTA, respectively.**
- **At the end of May, soil moisture deficit (SMD) values across Wales were between 9 and 71.5mm for all MORECS squares. The difference when compared to the long term average May (1961-90), ranged from -26.7mm (wetter) to 21.3mm (drier).**
- **For river flows in Wales, 23 out of 31 indicator sites which had flow data were classed as *Normal* for May. 5 sites were classed as *Above normal* and the remaining 3 sites were classed as *Below normal*.**
- **The overall reservoir storage across all indicator sites was greater than 93% full at the end of May and all reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total received for Wales was 107% of the LTA for May. The percentage of rainfall recorded in catchments compared with the long term average (1961-90) across Wales was between 71% (Clwyd) and 131% (Swansea and Llanelli). The rainfall total for Wales was only 6mm more than the May LTA. For South East, South West and North Wales the rainfall totals were 114%, 114% and 92% of the 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 between 9 and 71.5mm. 11 out of 23 squares had SMD values which were greater than the long-term average (drier) and the remaining 12 squares had SMD values which were less than the long-term average (wetter)

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows at 23 sites (out of 31 sites which had flow data) were classed as *Normal.* 5 sites were classed as *Above normal* and the remaing 3 sites were classed as *Below normal.*

***North*:** Flows in the area ranged from 56% (River Cefni at Bodffordd) to 113% (River Wheeler at Bodfari) of the May LTA Values.

***South East*:** Flows in the area ranged from 56% (River Lugg at Butts Bridge) to 129% (River Ely at St. Fagans) of the May LTA values.

South West: The river flows within this area ranged from 57% (River Ystwyth at Pont Llolwyn) to 151% (River Loughor at Tir-y-Dail) 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 all indicator sites (10 sites) were classed between *Below normal* (Handley and Eastwick) and *Exceptionally high* (Hollybush). The remaining 7 sites were classed as *Normal (*Pant-y-Lladron, Fernbank, Greenfield Garage, Pont y Cambwll, Llanfair DC Obs and Broxton Obs) and *Notably high* (Dodleston Obs).

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

Reservoir Storage

At the end of May almost all the indicator reservoirs (16 out of 18) were greater than 93% full.

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

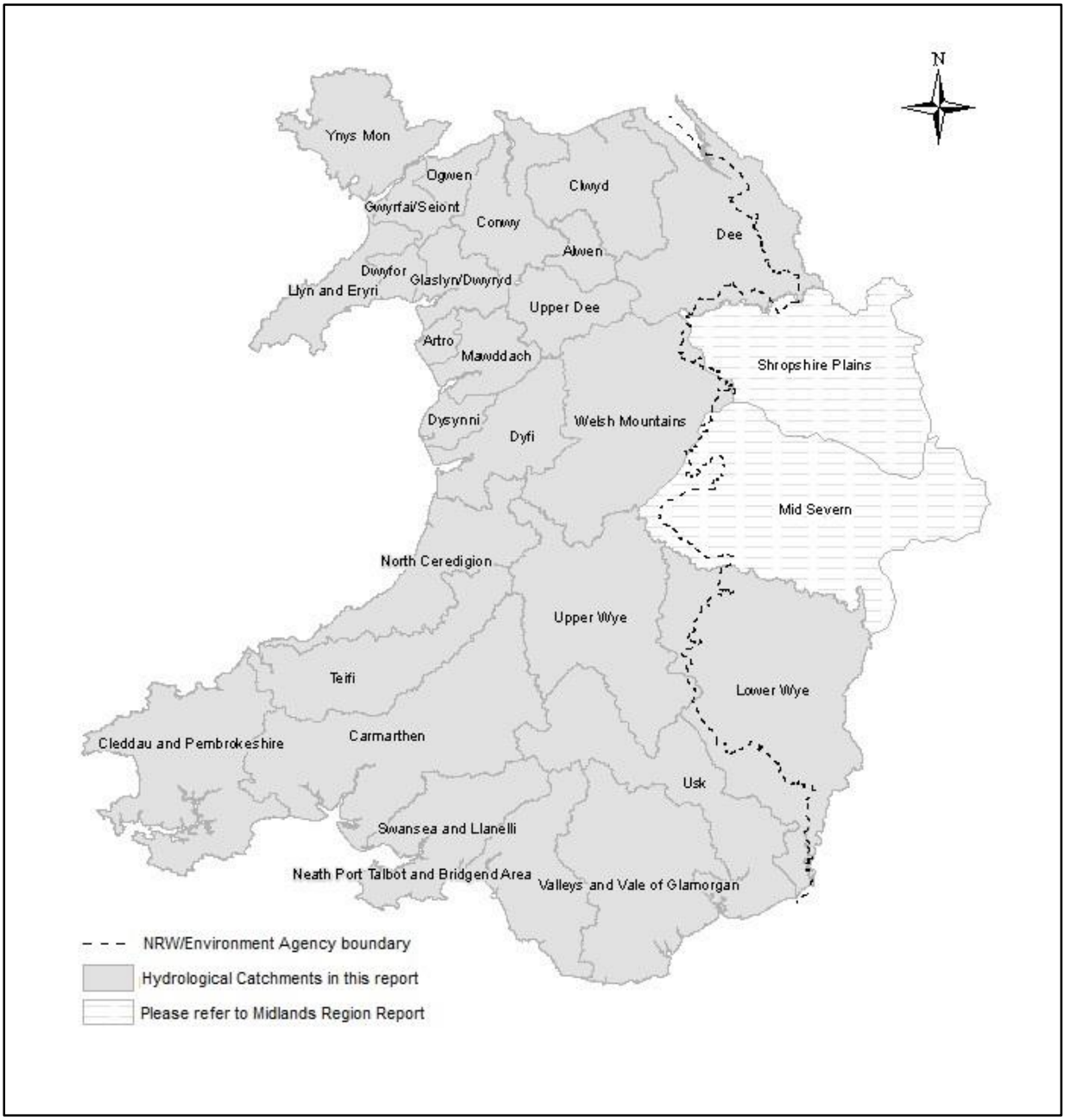

Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

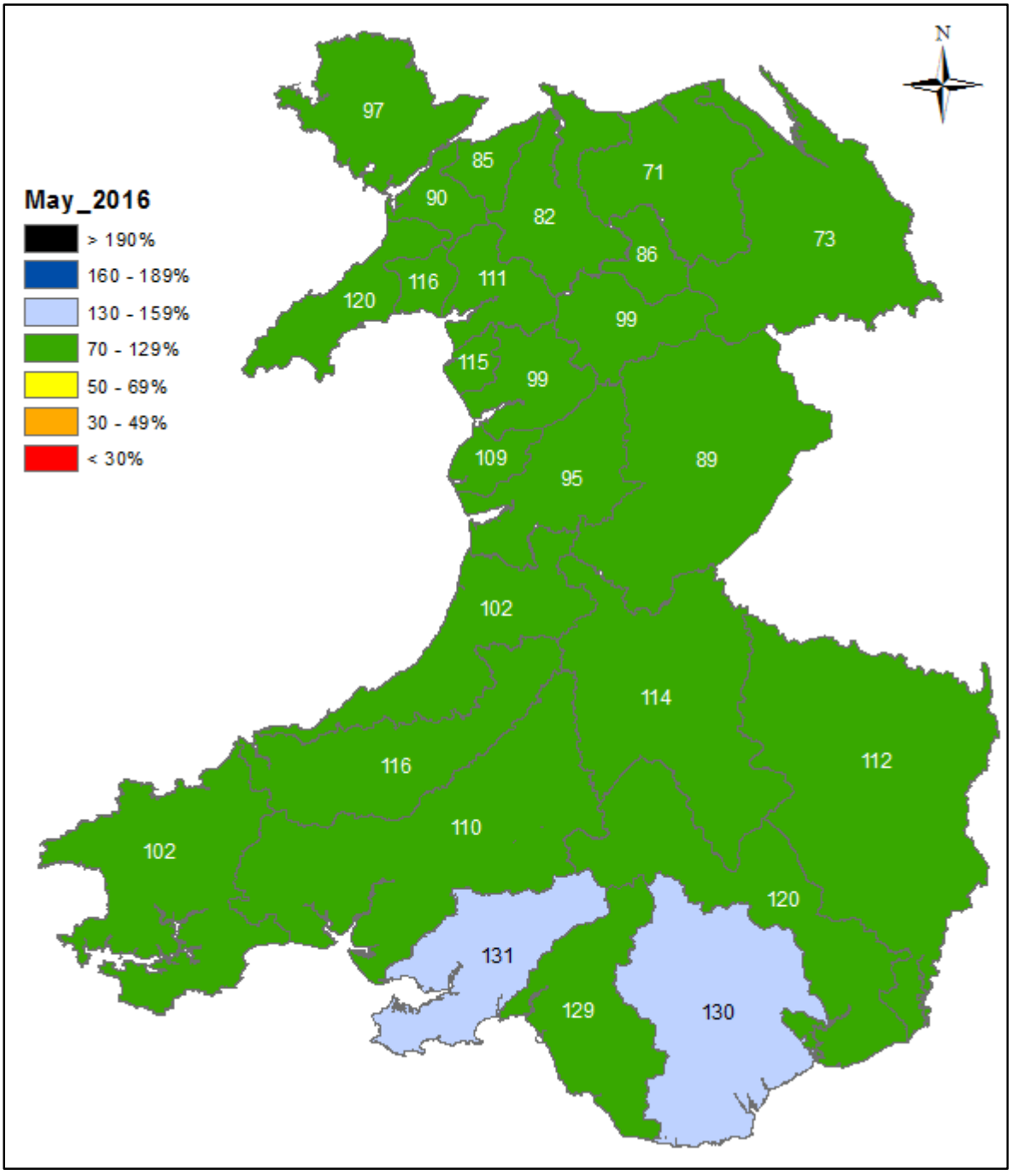

Figure 2: Calculated catchment average May rainfall totals as a percentage of the 1961-90 May long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

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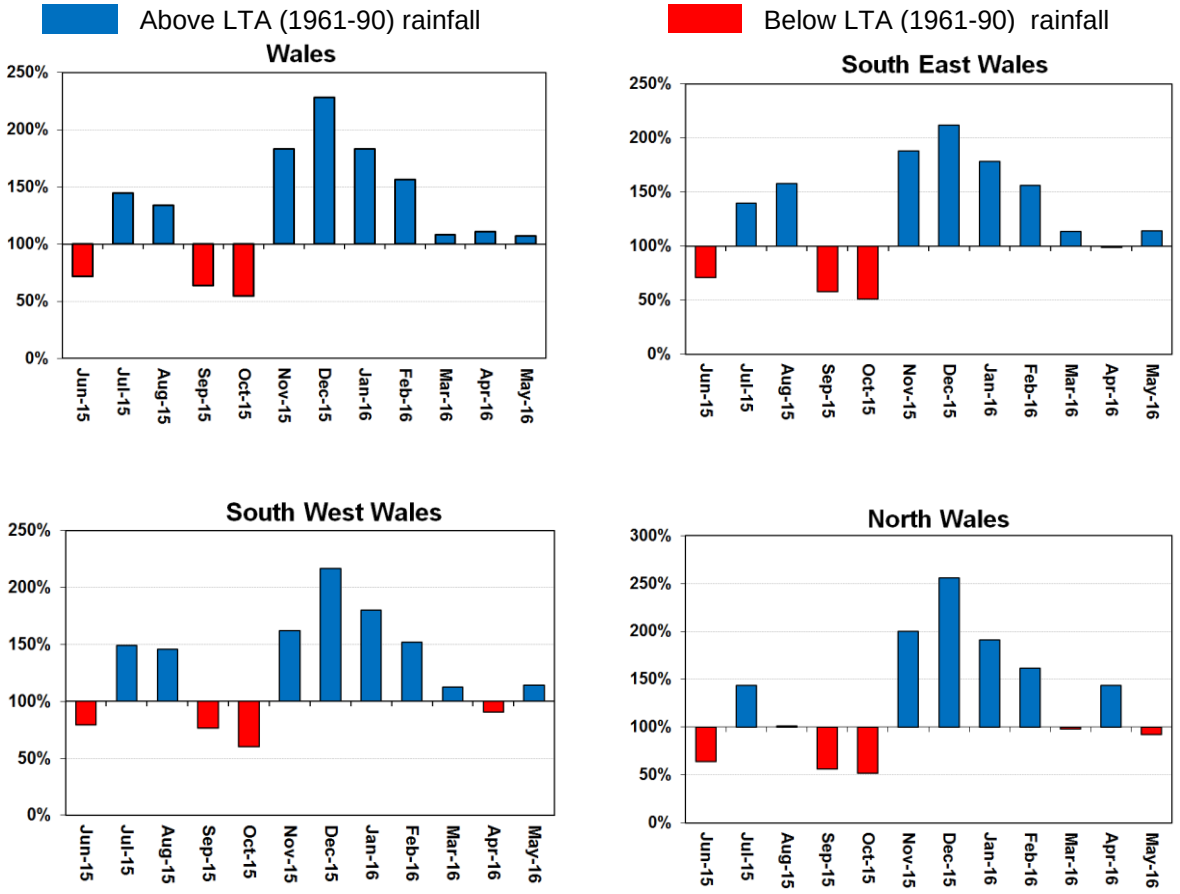
Rainfall Charts

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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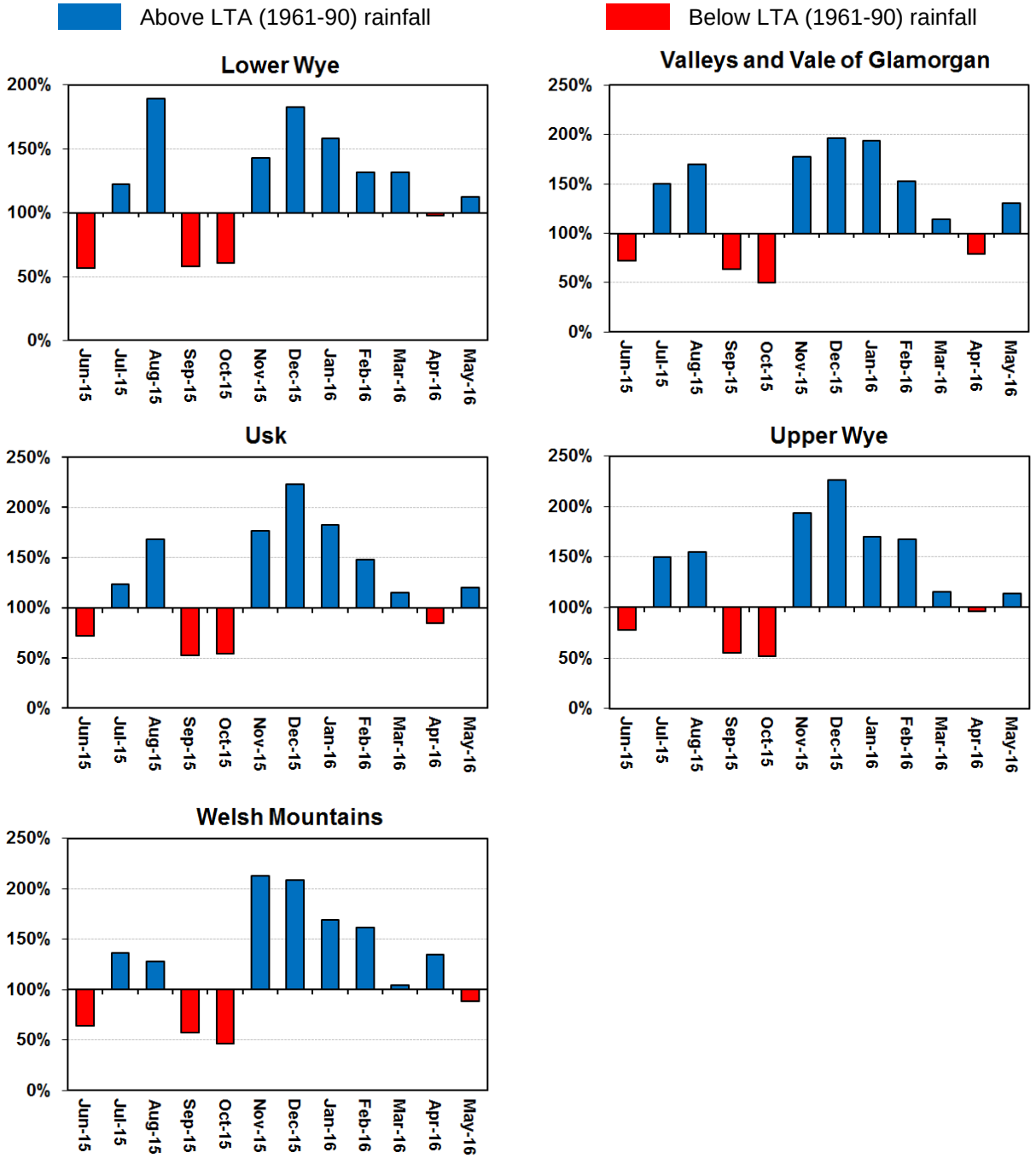
Figure 4: Rainfall Charts: South East Wales



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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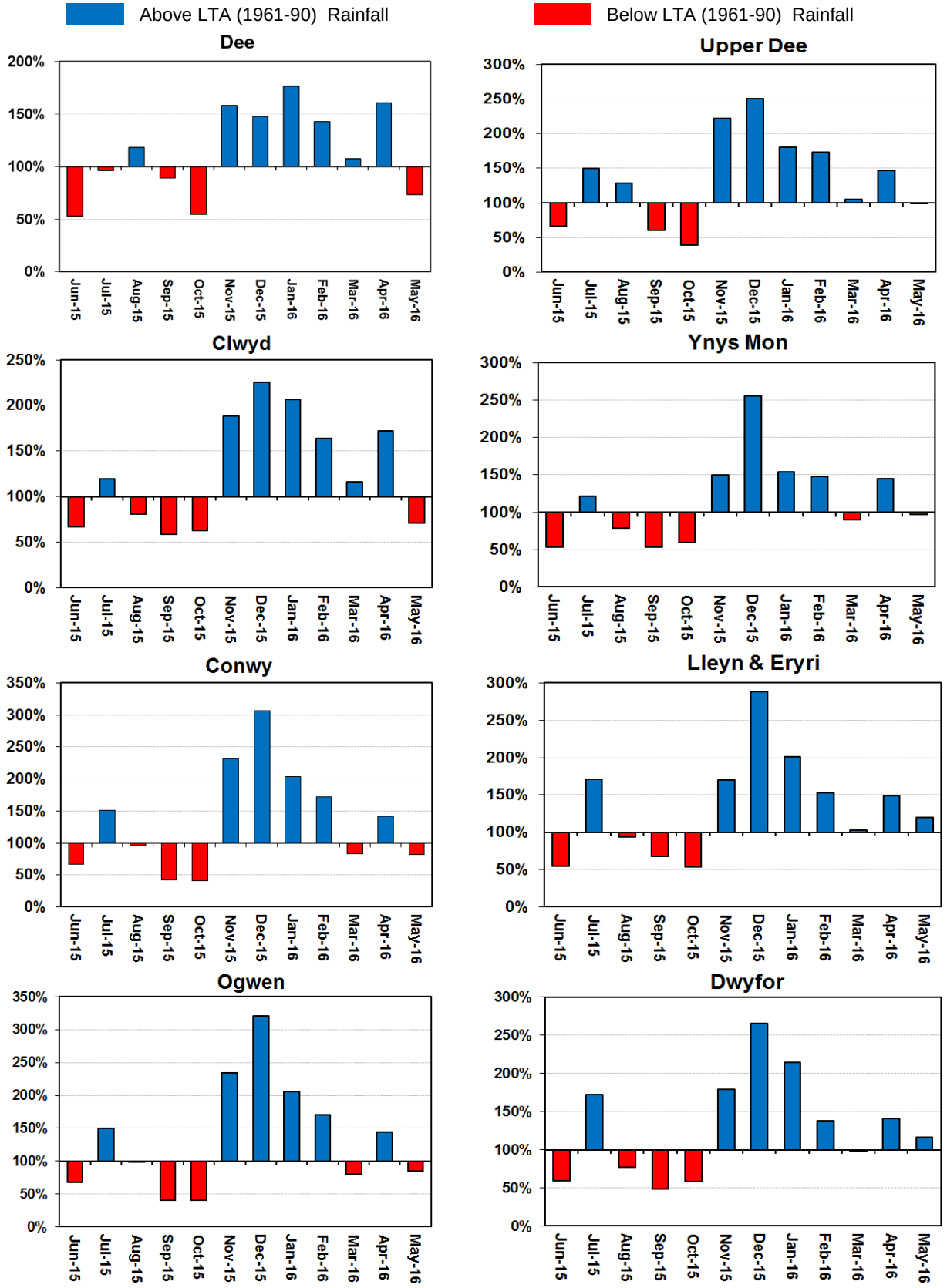
Figure 5: Rainfall Charts: North Wales



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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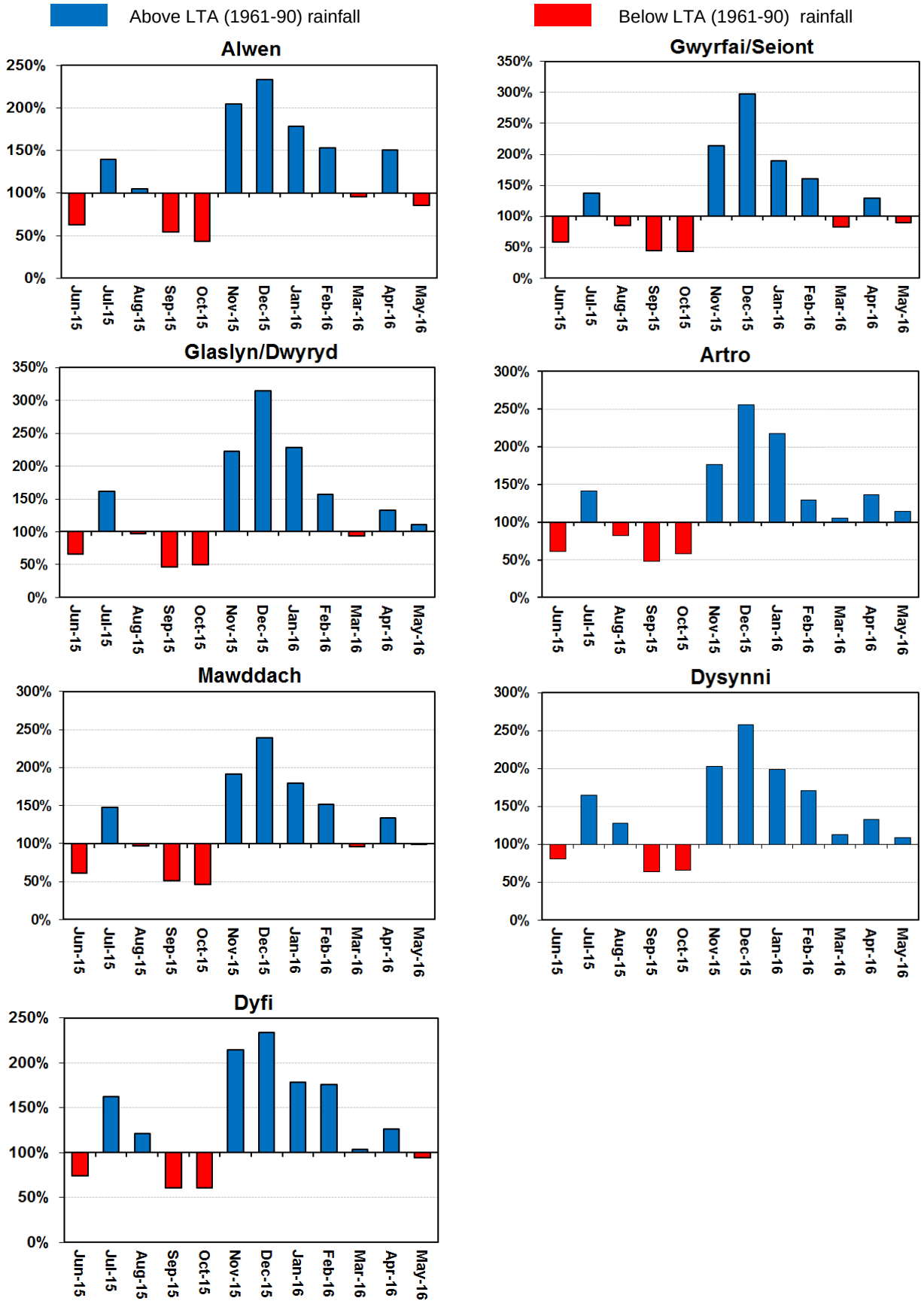

Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

All data are provisional and may be subject to revision.

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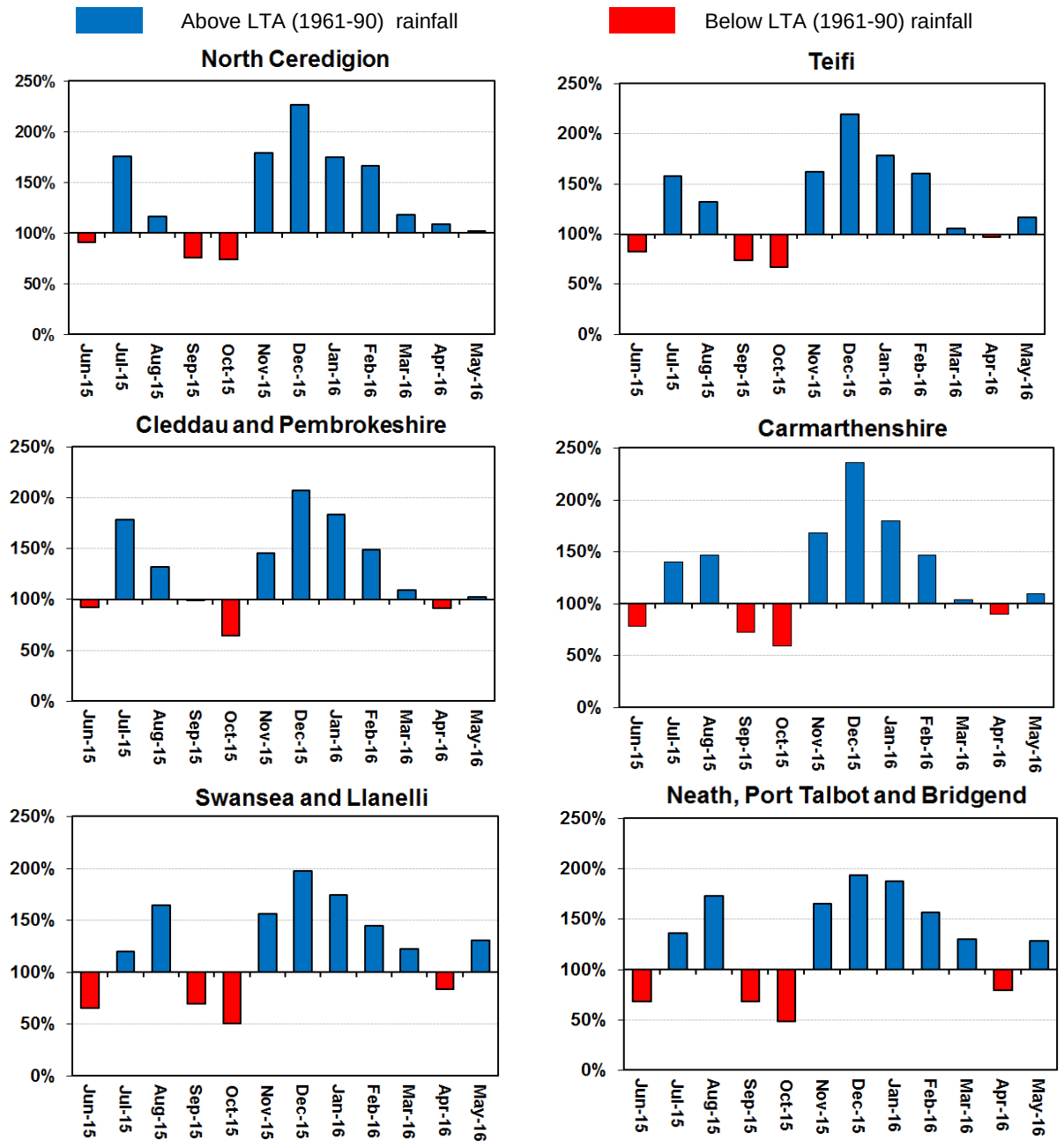
Figure 6: Rainfall Charts: South West Wales



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)

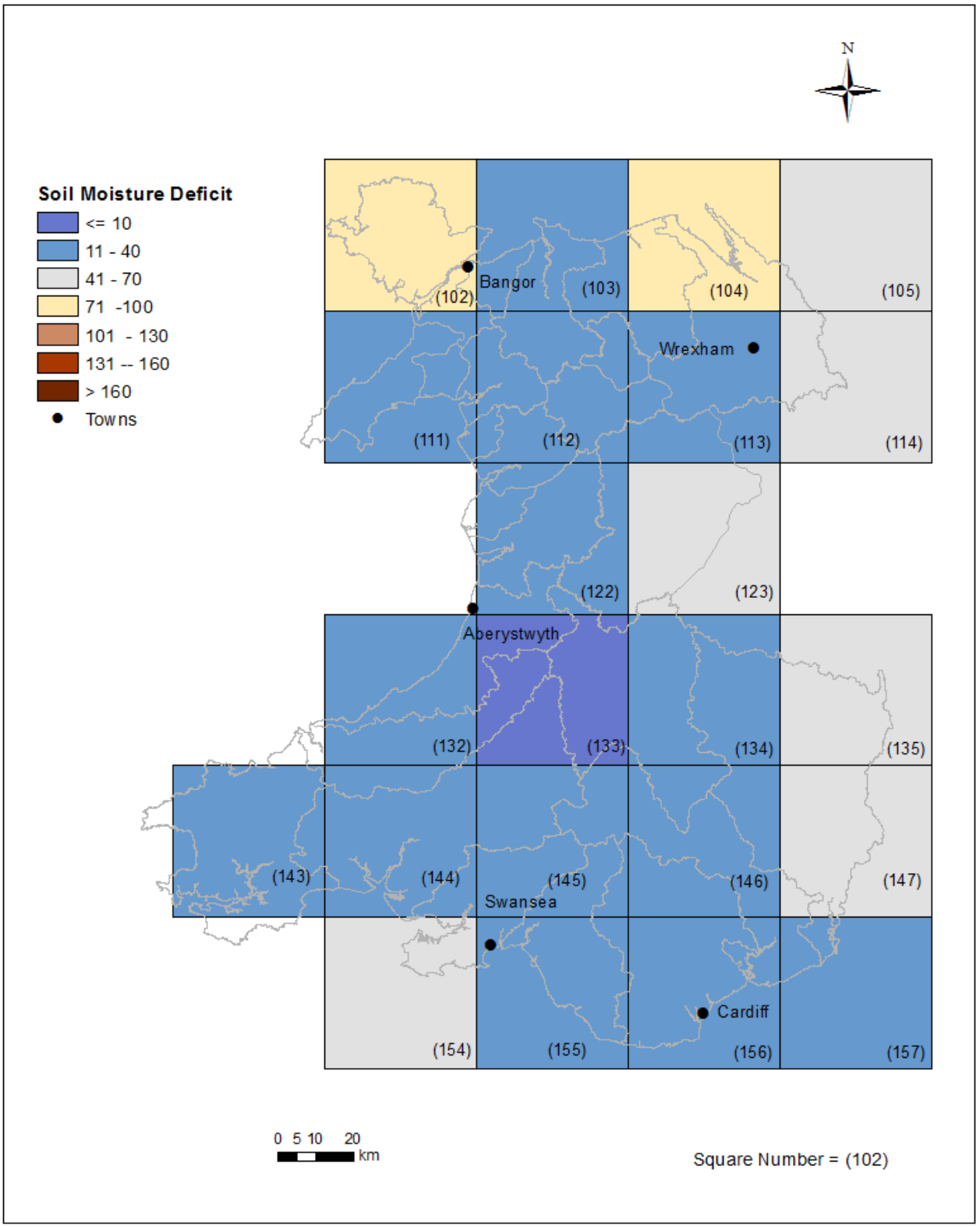

Figure 7: MORECS soil moisture deficits (mm) for May for real land use for Natural Resources Wales *(Source: Met Office © Crown Copyright).*

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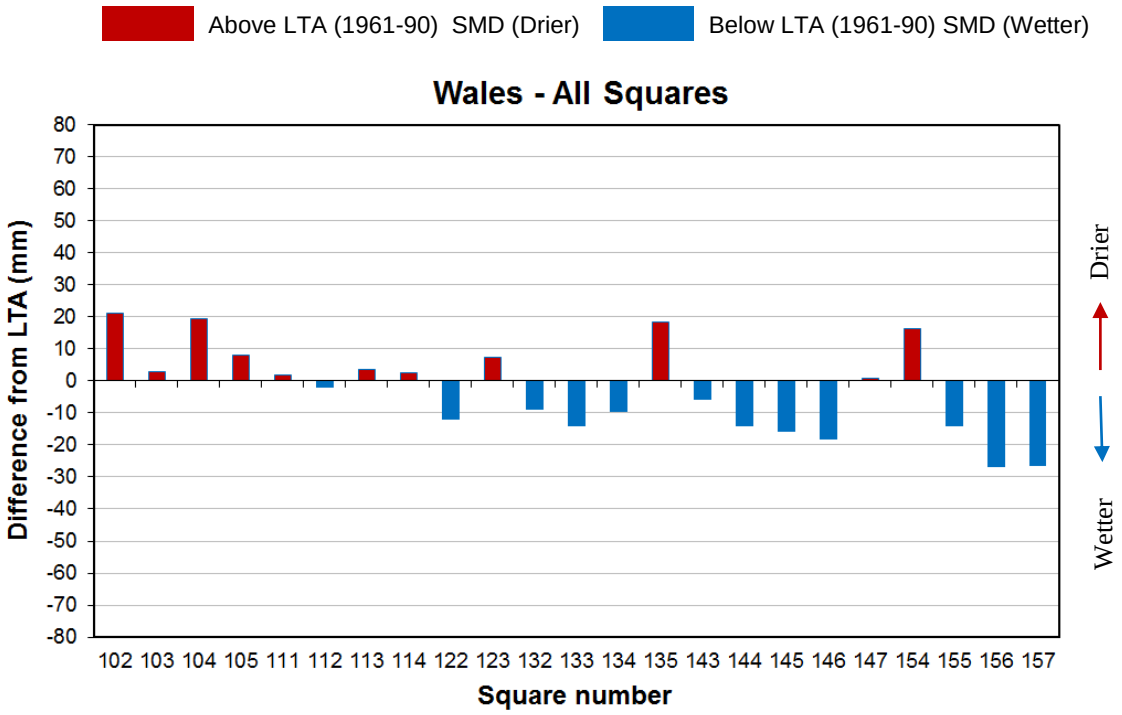

Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for May for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

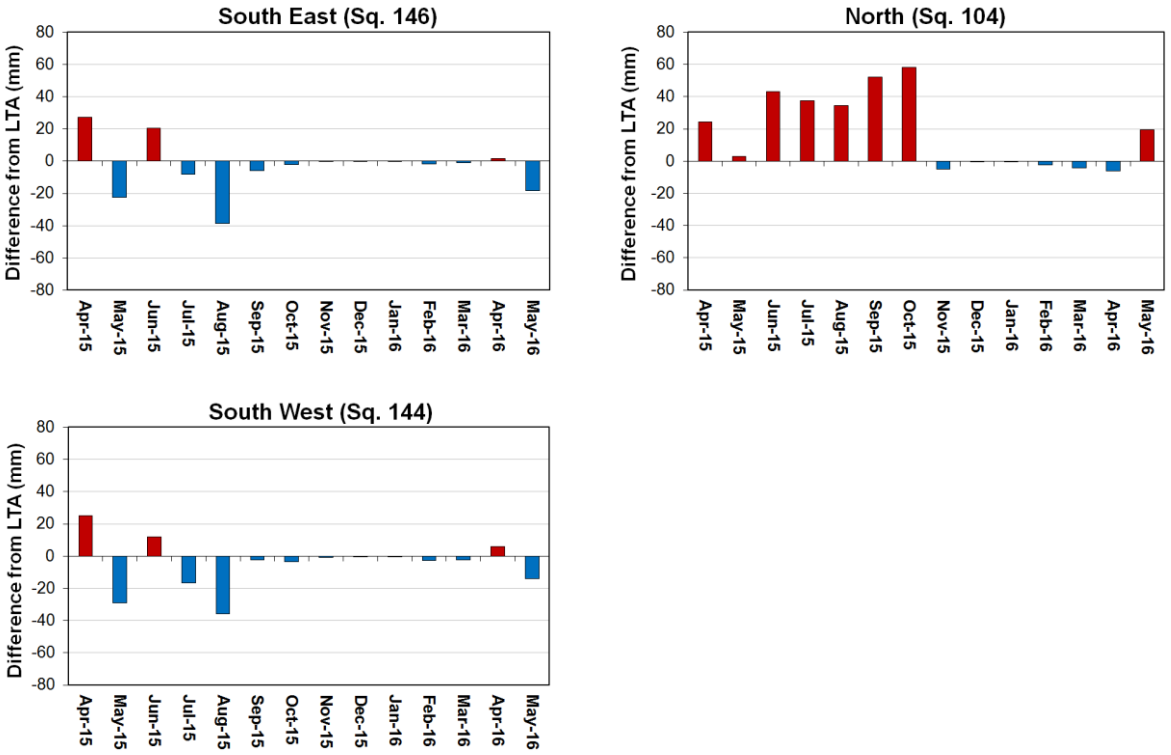

Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales)

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River Flow

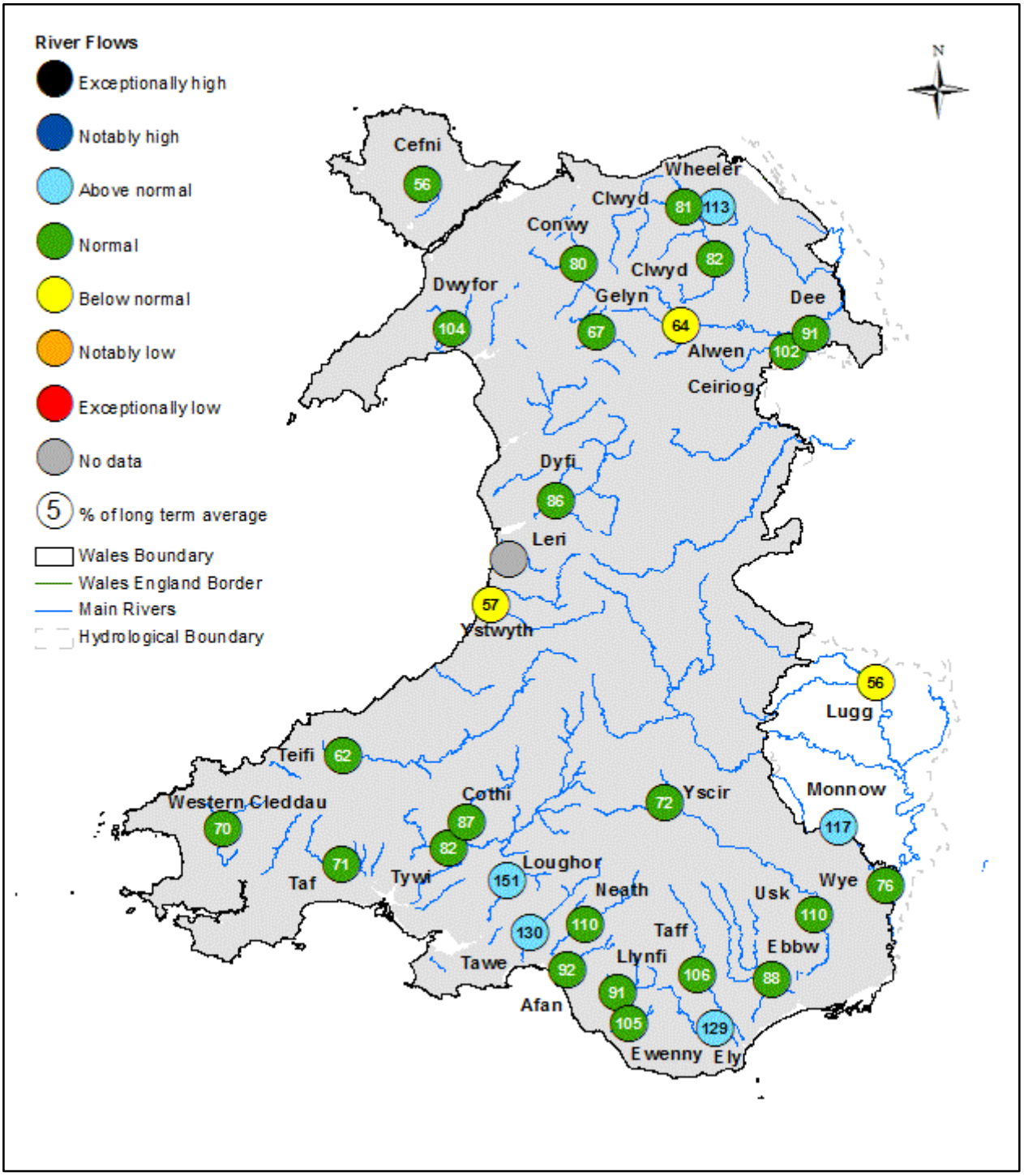

Figure 10: Monthly mean river flow for May, classed relative to analysis of historic May monthly means *(Source: Natural Resources Wales).*

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SITE NAME	RIVER	May 2016			May 2015		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	56%	2.37	48%	2.04	4.27	1.23	11.50
Grosmont	Monnow	Above normal	117%	4.67	96%	3.84	3.99	1.09	9.49
Pont ar Yscir	Yscir	Normal	72%	0.73	14%	0.14	1.02	0.27	3.05
Pontypridd	Taff	Normal	106%	12.10	90%	10.30	11.41	4.03	30.70
Redbrook	Wye	Normal	76%	34.10	85%	38.15	44.70	14.00	130.00
Rhiwderin	Ebbw	Normal	88%	4.28	84%	4.11	4.88	1.45	15.20
St Fagans	Ely	Above normal	129%	3.19	124%	3.06	2.47	0.77	6.68
Trostrey Weir	Usk	Normal	110%	16.00	108%	15.68	14.58	5.99	29.80
River Flow Sites : North Area									
Bodfari	Wheeler	Above Normal	113%	0.71	86%	0.54	0.63	0.31	1.77
Bodffordd	Cefni	Normal	56%	0.09	238%	0.38	0.16	0.04	0.52
Brynkinalt Weir	Ceiriog	Normal	102%	2.23	101%	2.22	2.19	0.60	5.46
Cwmlanerch	Conwy	Normal	80%	8.20	181%	18.48	10.19	0.76	29.20
Cynefail	Gelyn	Normal	67%	0.26	187%	0.73	0.39	0.07	1.03
Dol y Bont	Leri	N/A			N/A	N/A	0.86	0.16	2.78
Druid	Alwen	Below normal	64%	1.74	133%	3.60	2.71	0.57	6.59
Dyfi bridge	Dyfi	Normal	86%	10.20	N/A	N/A	11.90	1.18	35.40
Garndolbenmaen	Dwyfor	Normal	104%	1.41	213%	2.90	1.36	0.19	4.10
Manley Hall	Dee	Normal	91%	15.40	139%	23.54	16.94	8.32	38.60
Pont y Cambwll	Clwyd	Normal	81%	3.08	110%	4.17	3.79	1.27	11.40
Ruthin Weir	Clwyd	Normal	82%	0.59	107%	0.77	0.72	0.22	2.18
River Flow Sites : South West Area									
Capel Dewi	Tywi	Normal	82%	17.40	89%	18.83	21.13	4.50	58.90
Clog y Fran	Taf	Normal	71%	2.79	100%	3.91	3.92	1.02	10.90
Coytrahen	Llynfi	Normal	91%	1.18	82%	1.06	1.29	0.30	2.90
Felin Mynachdy	Cothi	Normal	87%	5.71	86%	5.69	6.59	0.84	17.90
Glanteifi	Teifi	Normal	62%	10.40	80%	13.35	16.70	4.23	39.50
Keepers Lodge	Ewenny	Normal	105%	1.17	94%	1.04	1.11	0.50	2.60
Marcroft	Afan	Normal	92%	3.04	N/A	N/A	3.31	0.72	17.80
Pont Llolwyn	Ystwyth	Below normal	57%	1.79	116%	3.63	3.13	0.58	10.80
Treffgarne *	Western Cleddau	Normal	70%	1.54	101%	5.43	2.2	0.82	5.18
Resolven	Neath	Normal	110%	5.87	103%	1.22	5.36	0.80	13.80
Tir-y-Dail	Loughor	Above Normal	151%	1.80	74%	1.64	1.19	0.30	3.51
Ynystanglws	Tawe	Above Normal	130%	9.18	112%	7.95	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.)

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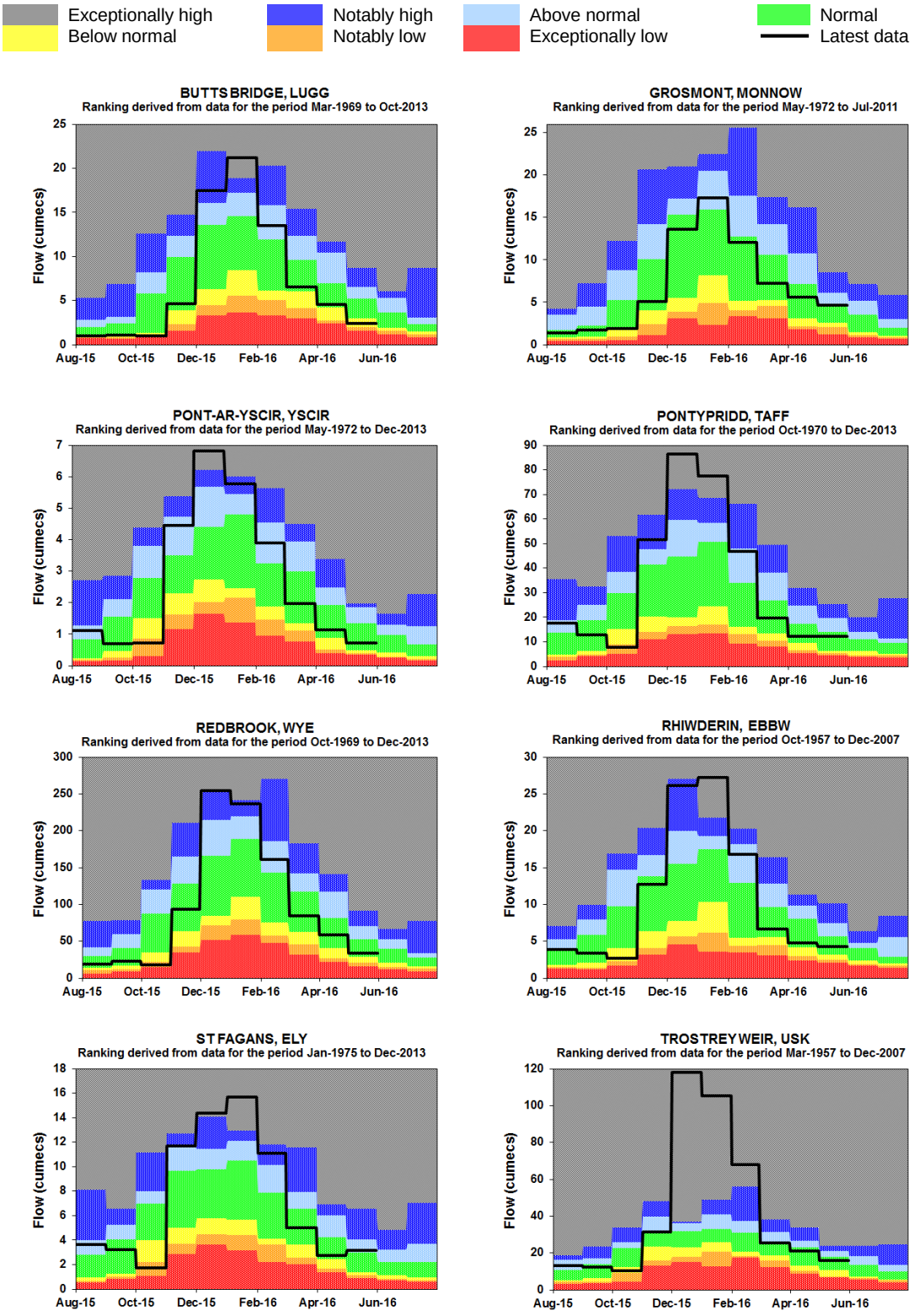
River Flow Charts

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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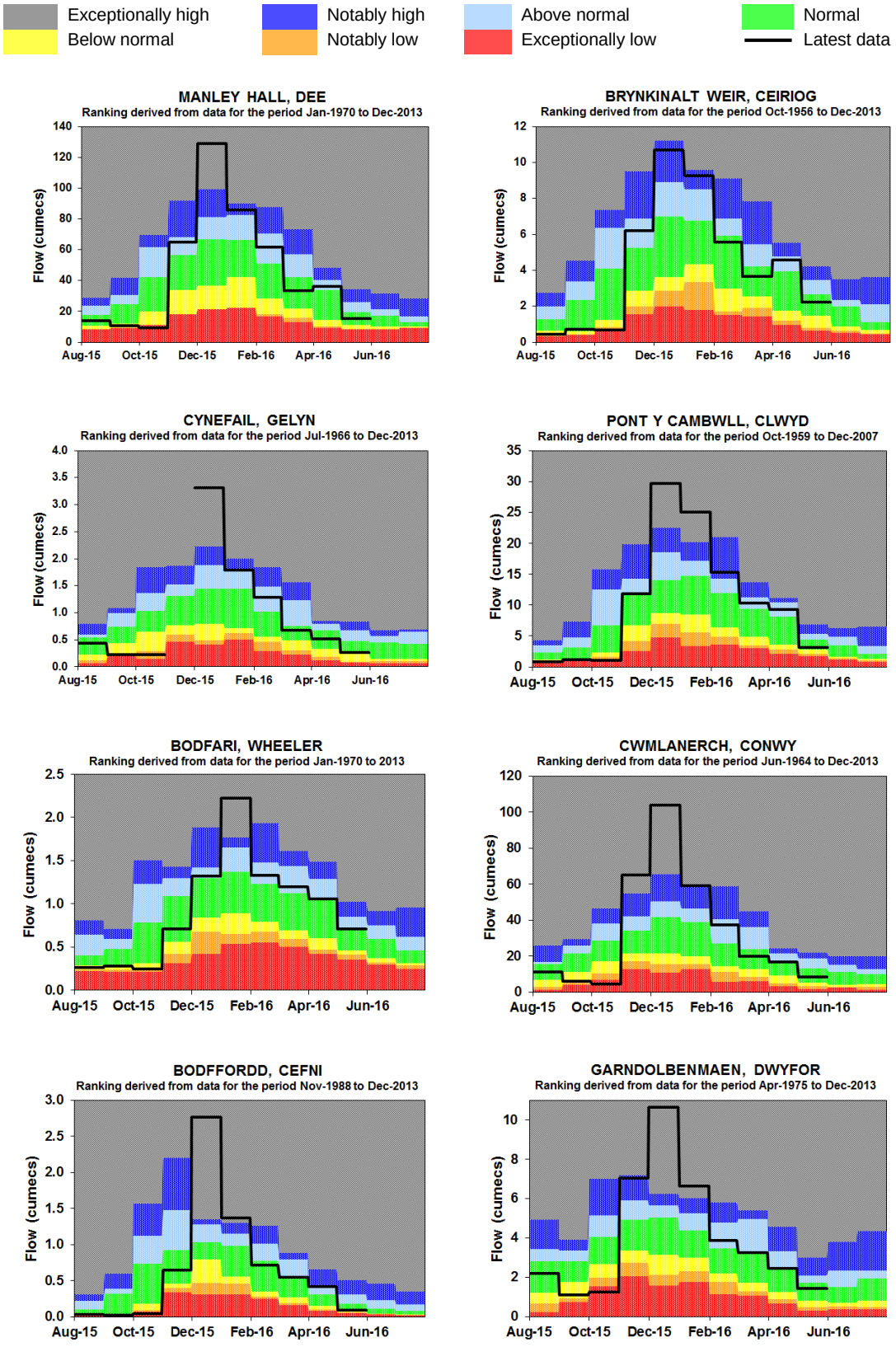
Figure 13: River Flow Charts: North Wales



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 available for River Gelyn at Cynefail in November 2015)

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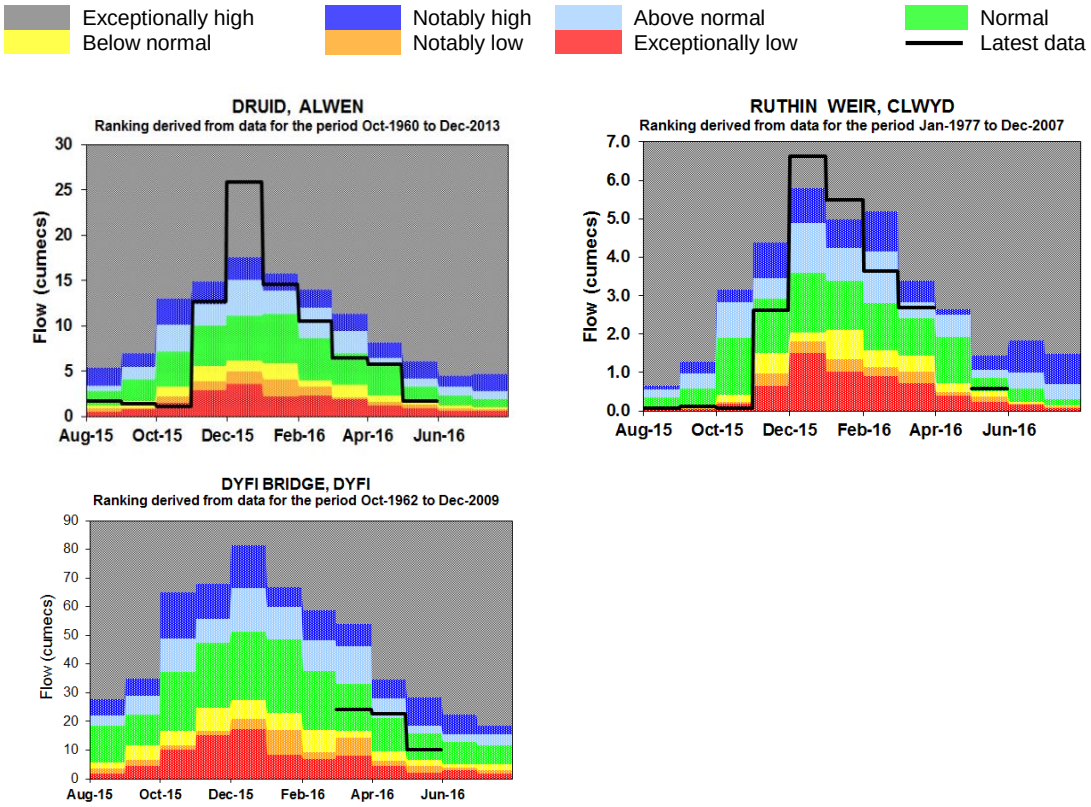
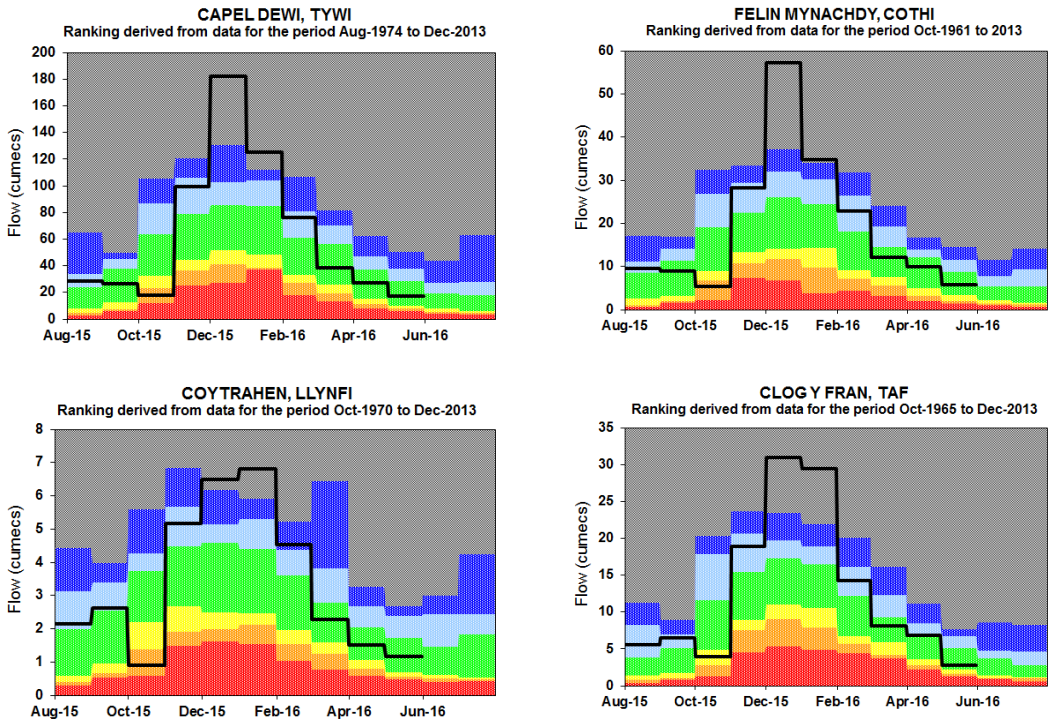


(Please note that there were no data available for River Dyfi at Dyfi Bridge before March 2016 and for River Clwyd at Ruthin Weir for April 2016)

Figure 14: River Flow Charts: South West Wales



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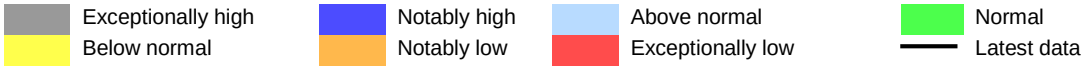

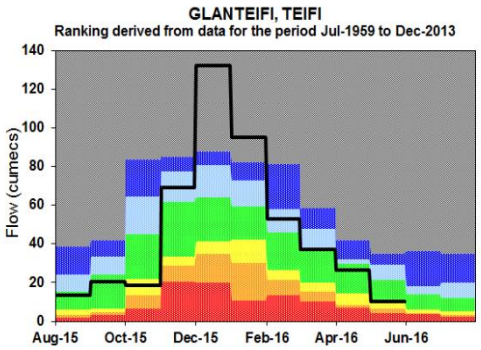

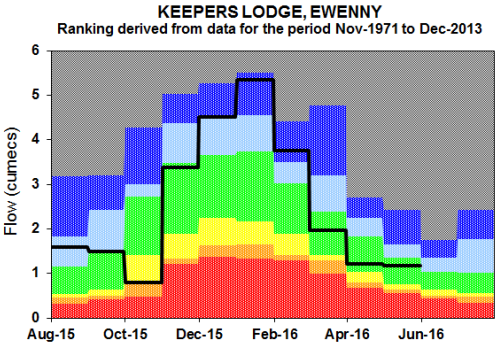

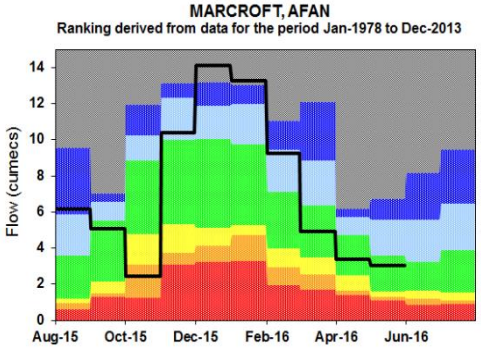

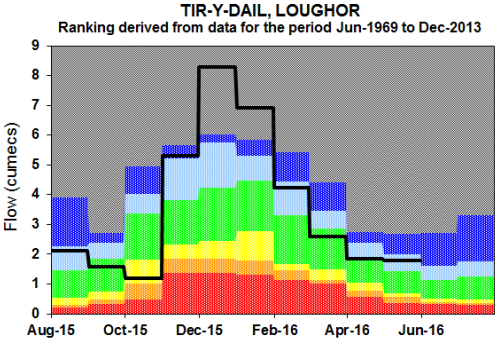

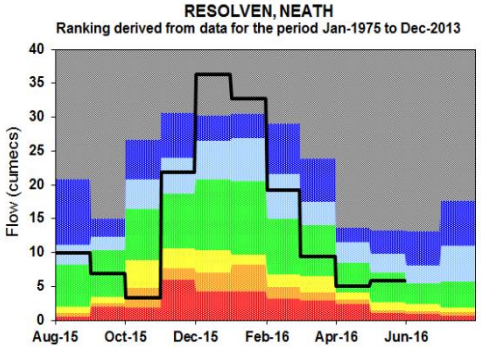

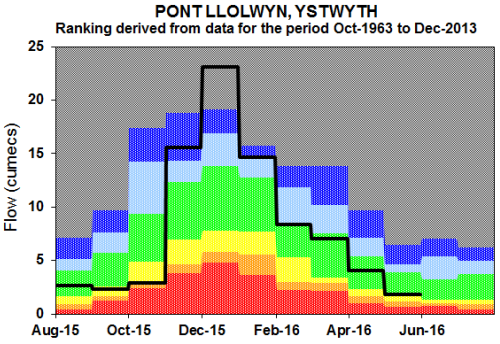

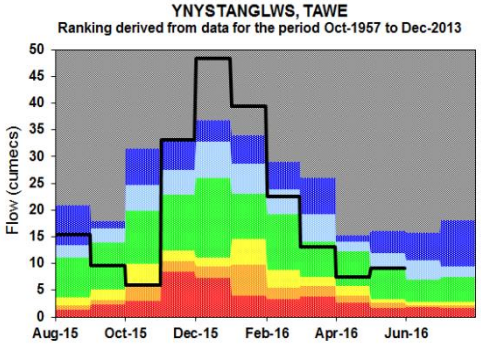

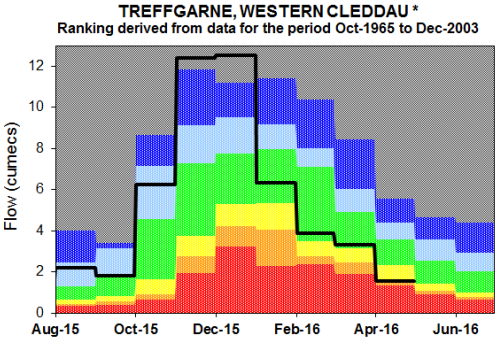

Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).* (* Please note that for Treffgarne station the ranking bands were derived using scaled historical flows (1965-2003) from the downstream station at Prendergast Mill.)

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Groundwater Levels

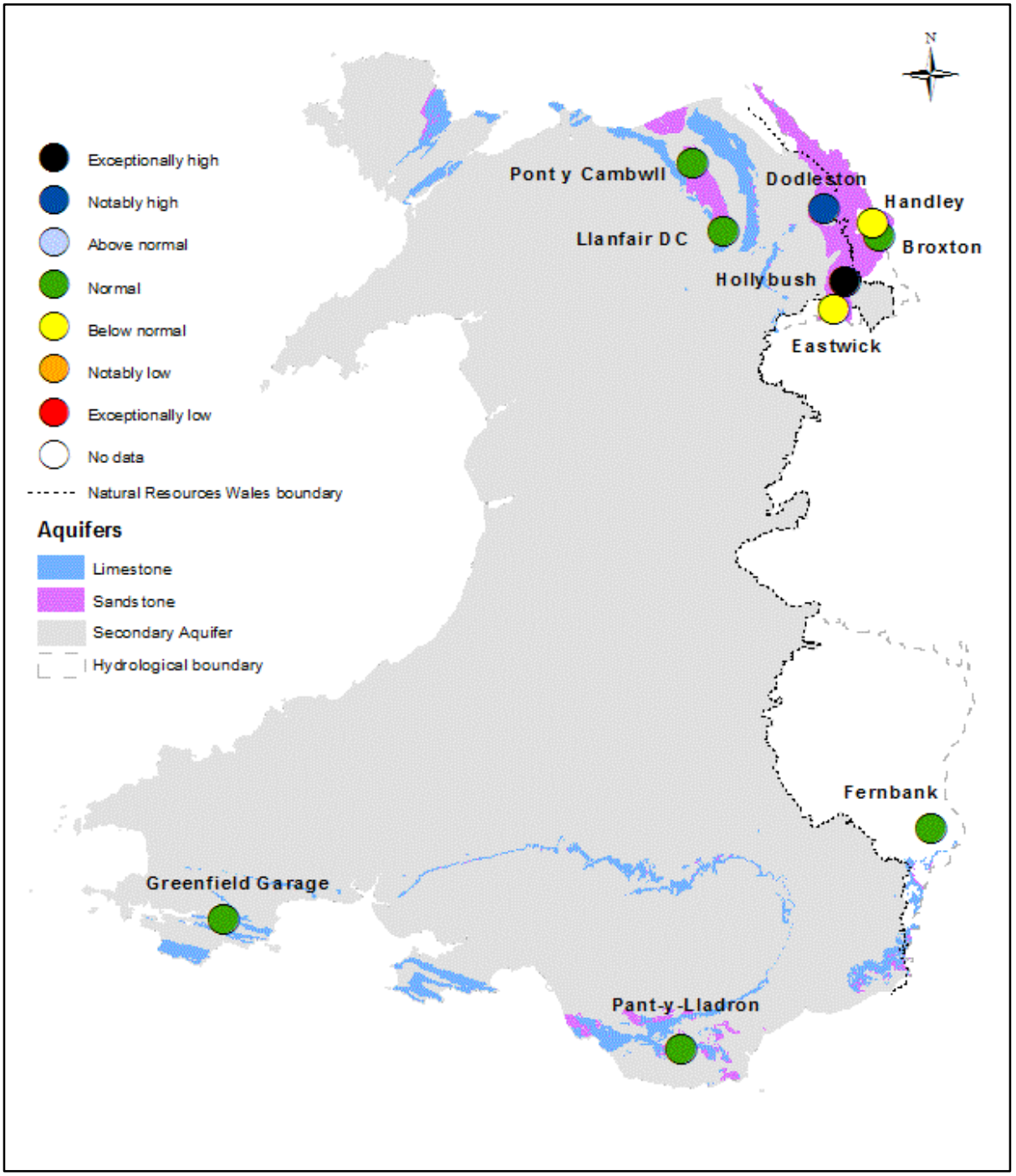

Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic May groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

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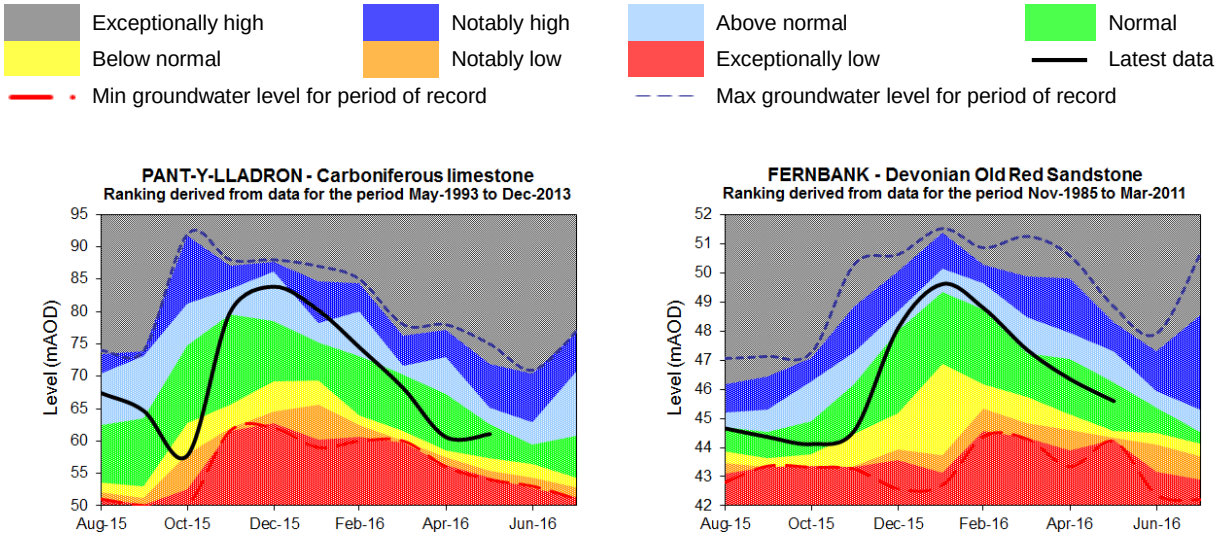
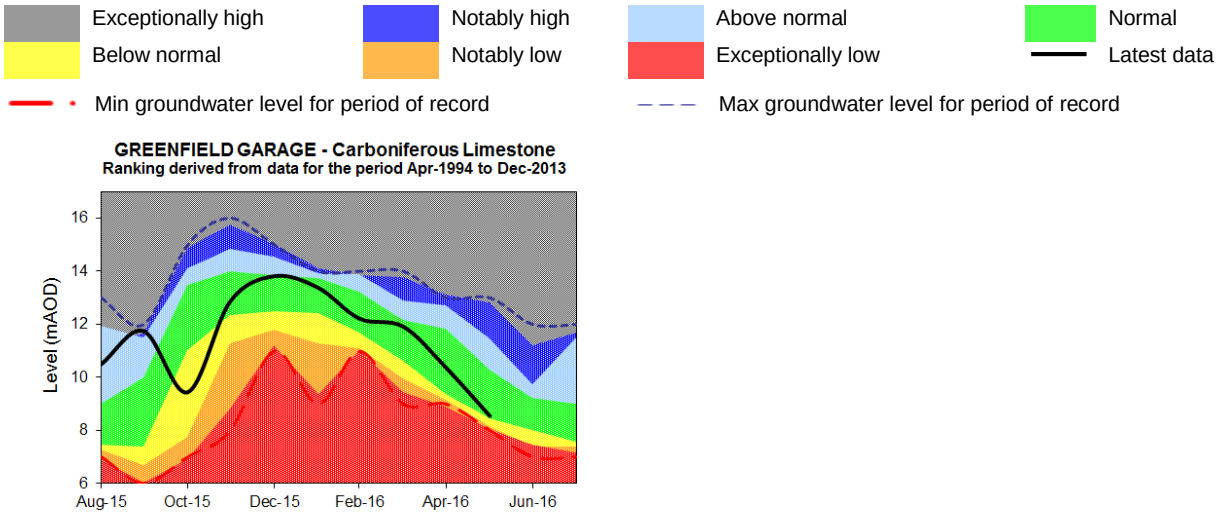
Groundwater charts

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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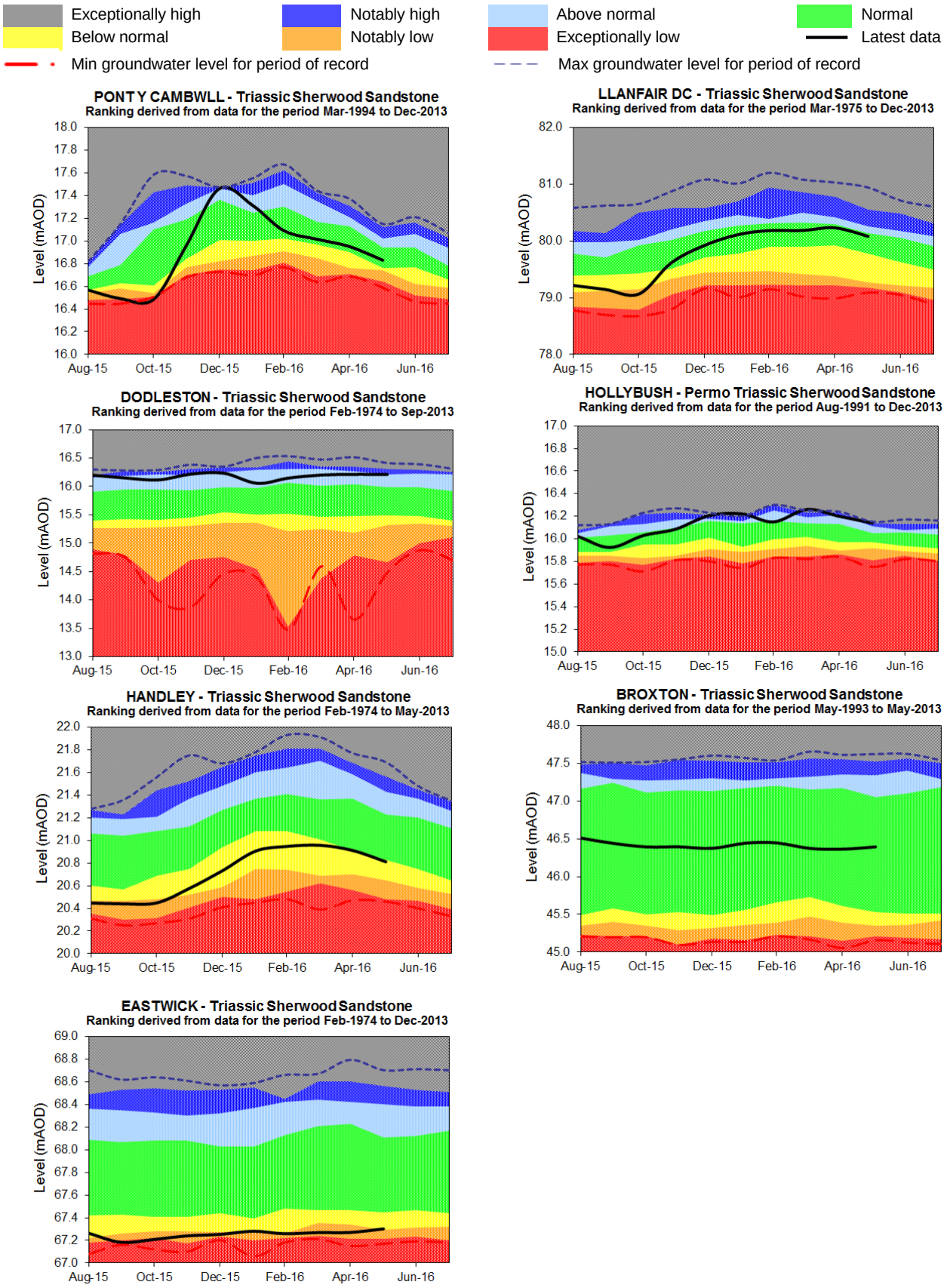
Figure 18: Groundwater level charts: North Wales



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

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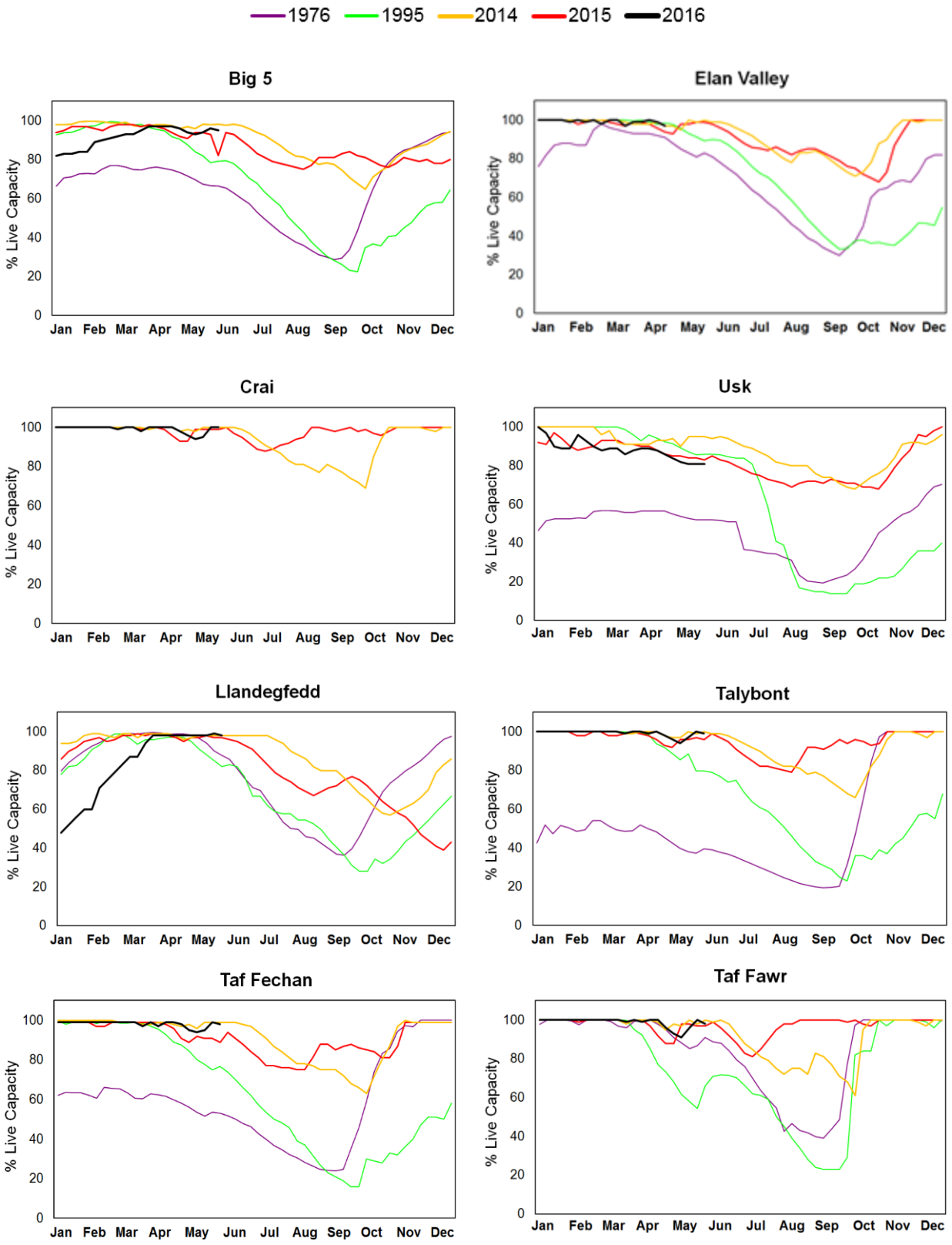
Reservoir Storage

Figure 19: Reservoir charts: South East Wales



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

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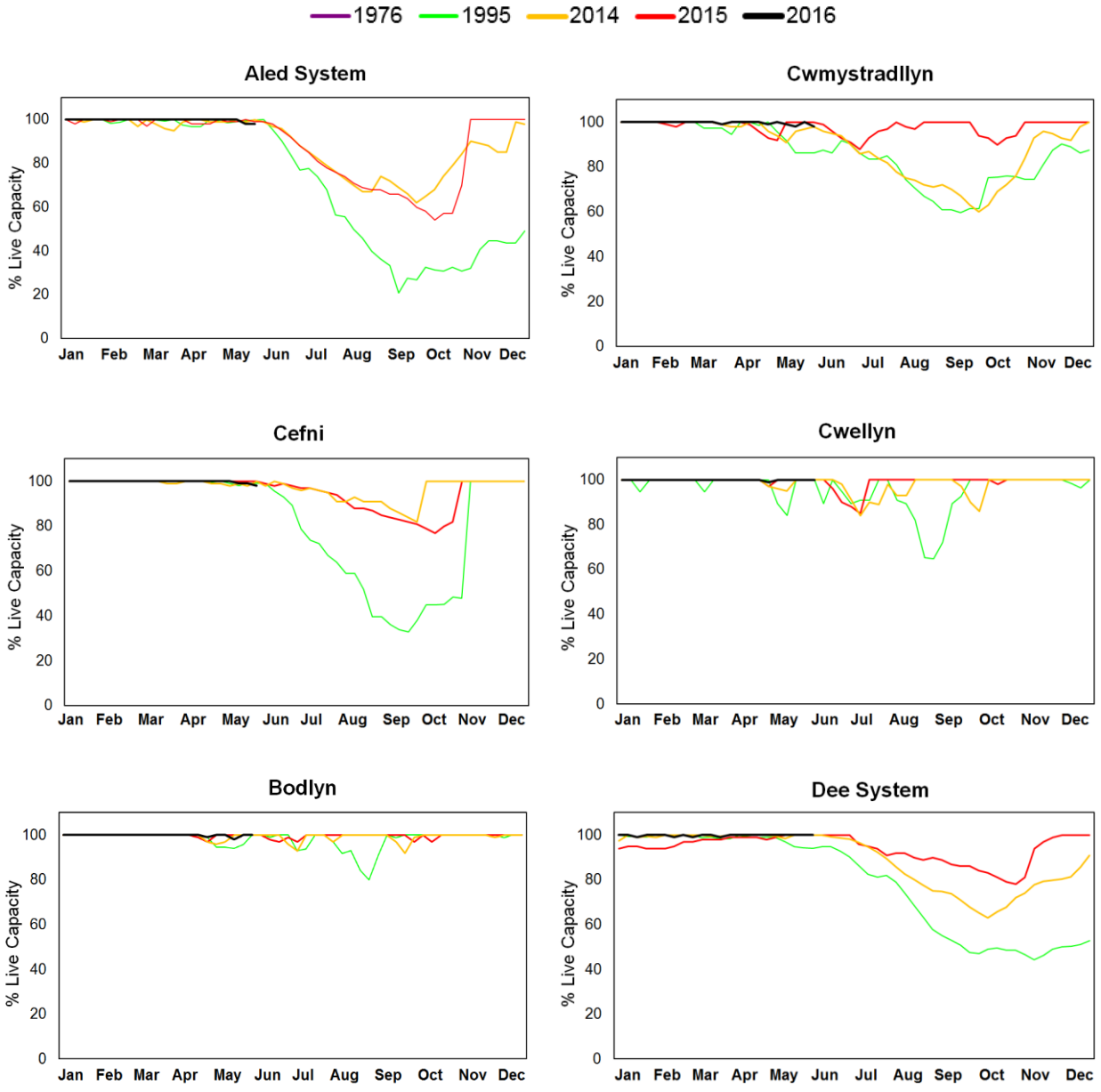
Figure 20: Reservoirs charts: North Wales



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

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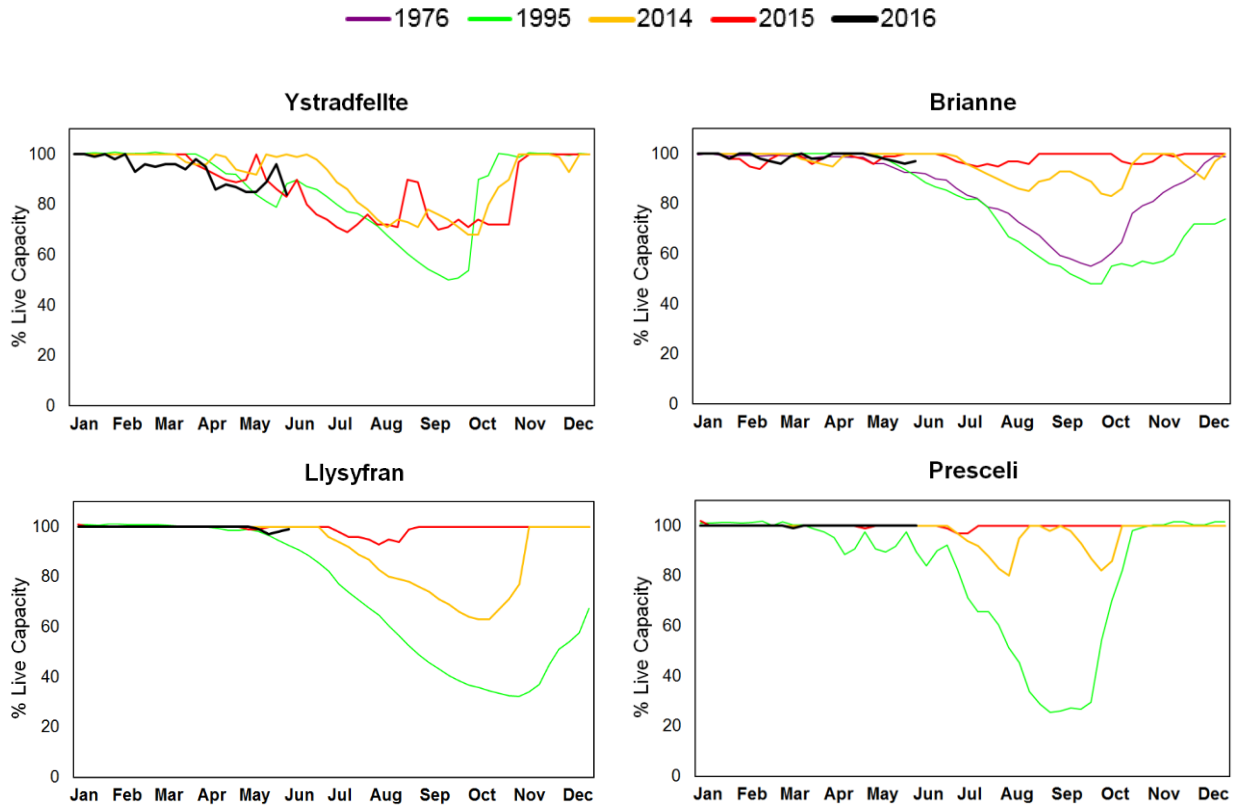
Figure 21: Reservoirs charts: South West Wales



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).