Monthly Water Situation Report March 2016

Natural Resources Wales

- **The monthly rainfall total received for Wales during March was 108% of the Long Term Average (LTA, 1961-90). North, South West and South East Wales received 98%, 113% and 113% of the LTA, respectively.**
- **At the end of March, soil moisture deficit (SMD) values across Wales were between 1.9 and 6.1mm for all MORECS squares. The difference when compared to the long term average March (1961-90), ranged from -5.7mm to 0.9mm.**
- **For river flows in Wales, 26 out of 30 indicator sites were classed as *Normal* for March and the remaining 4 sites were classed as *Above normal.***
- **The overall reservoir storage across all indicator sites was greater than 97% full at the end of March and all reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total received for Wales was 108% of the LTA for March. The percentage of rainfall recorded in catchments compared with the long term average (1961-90) across Wales was between 80% (Ogwen) and 132% (Lower Wye). The rainfall total for Wales was only 9mm more than the March LTA. For South East, South West and North Wales the rainfall totals were 98%, 113% and 113% 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

For the SMD values, The 23 MORECS squares had SMD values between 1.9 and 6.1mm. Almost all the squares (22 squares) had SMD values which were slightly less than the long-term average (<6mm).

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows at 26 sites (out of 30) were classed as *Normal.* The remaining 4 sites were classed as *Above normal*.

***North*:** Flows in the area ranged from 89% (River Dyfi at Dyfi bridge) to 141% (River Clwyd at Pont y Cambwll) of the March LTA Values.

***South East*:** Flows in the area ranged from 80% (River Lugg at Butts bridge) to 106% (River Usk at Trostrey Weir) of the March LTA values.

South West: The river flows within this area ranged from 87% (River Tywi at Capel Dewi) to 122% (River Teifi at Glanteifi) of the March 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 March at all indicator sites (10 sites) were classed between *Notably low* (Eastwick) and *Exceptionally high* (Hollybush) with 1 site (Handley) classed as *Below normal,* 5 sites (Pant-y-Lladron, Greenfield garage, Pont y Cambwll, Llanfair DC and Broxton) classed as *Normal* and 2 sites (Fernbank and Dodleston) classed as *Above normal.*

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

Reservoir Storage

At the end of March almost all the indicator reservoirs (17 out of 18) were greater than 97% full and the pump storage reservoir (Llandegfedd) has been refilled and is full now after being drawn down for reservoir satety maintenance works.

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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Return to Summary

Natural Resources Wales

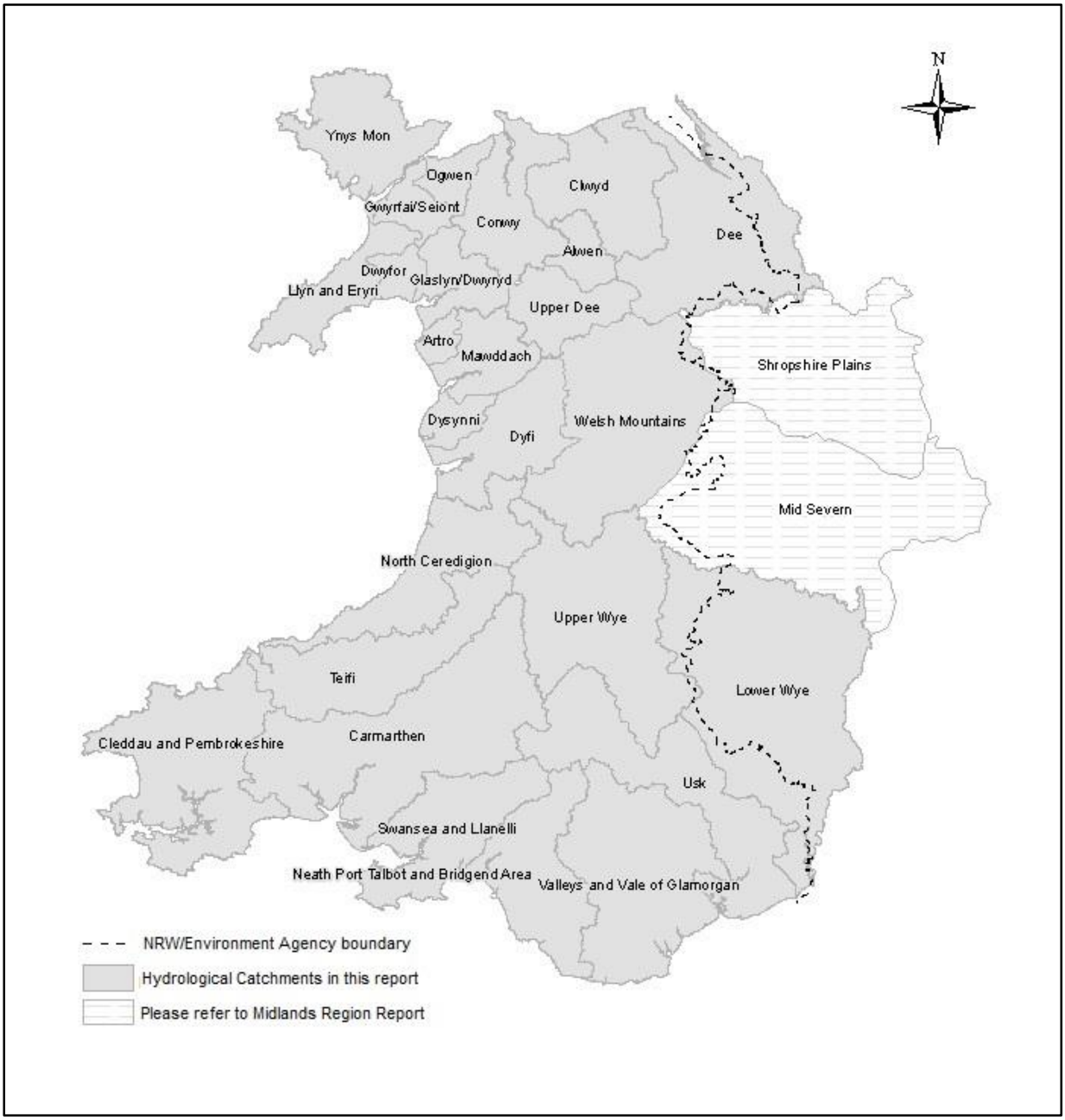


Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

Return to Summary

Rainfall

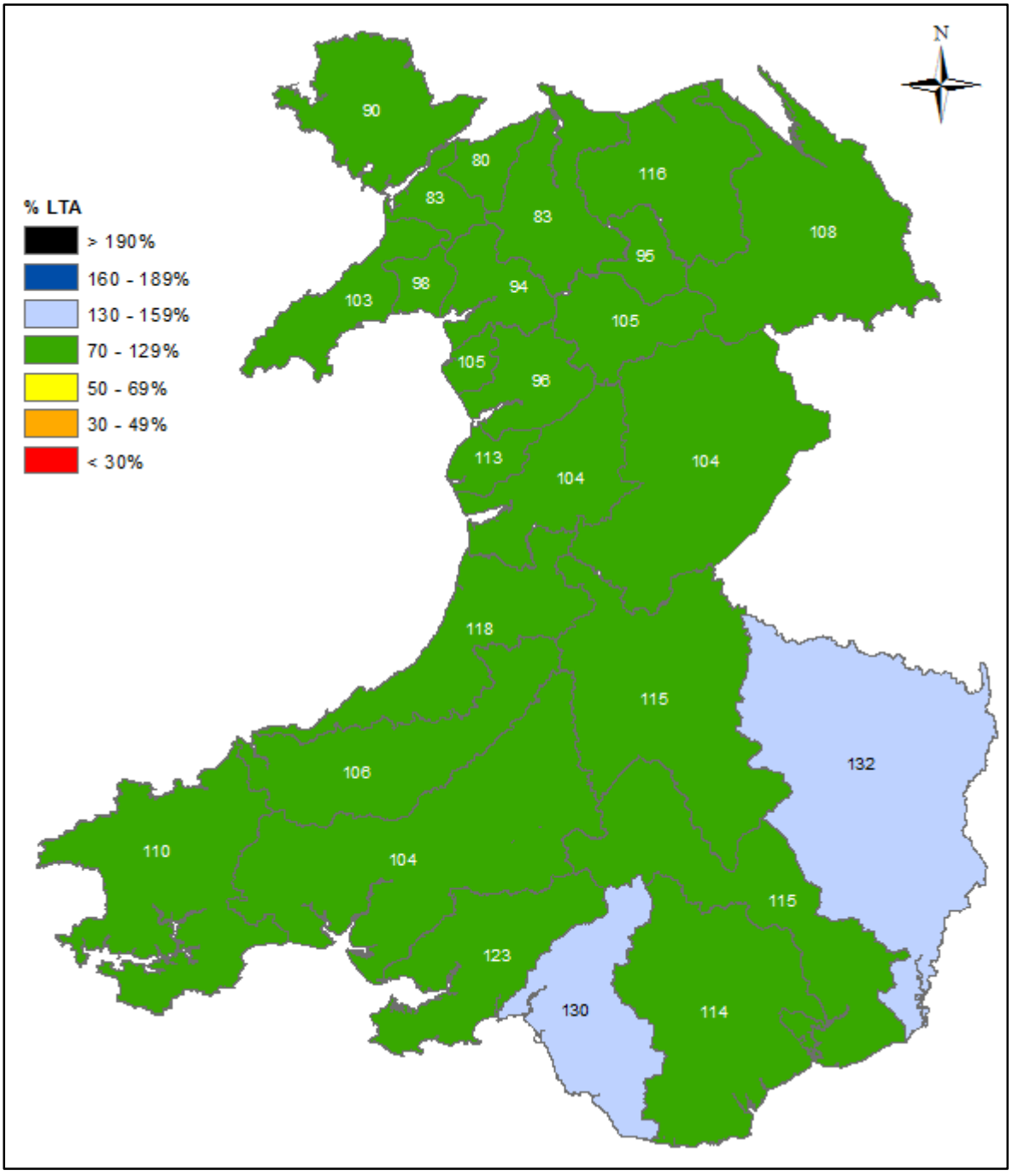
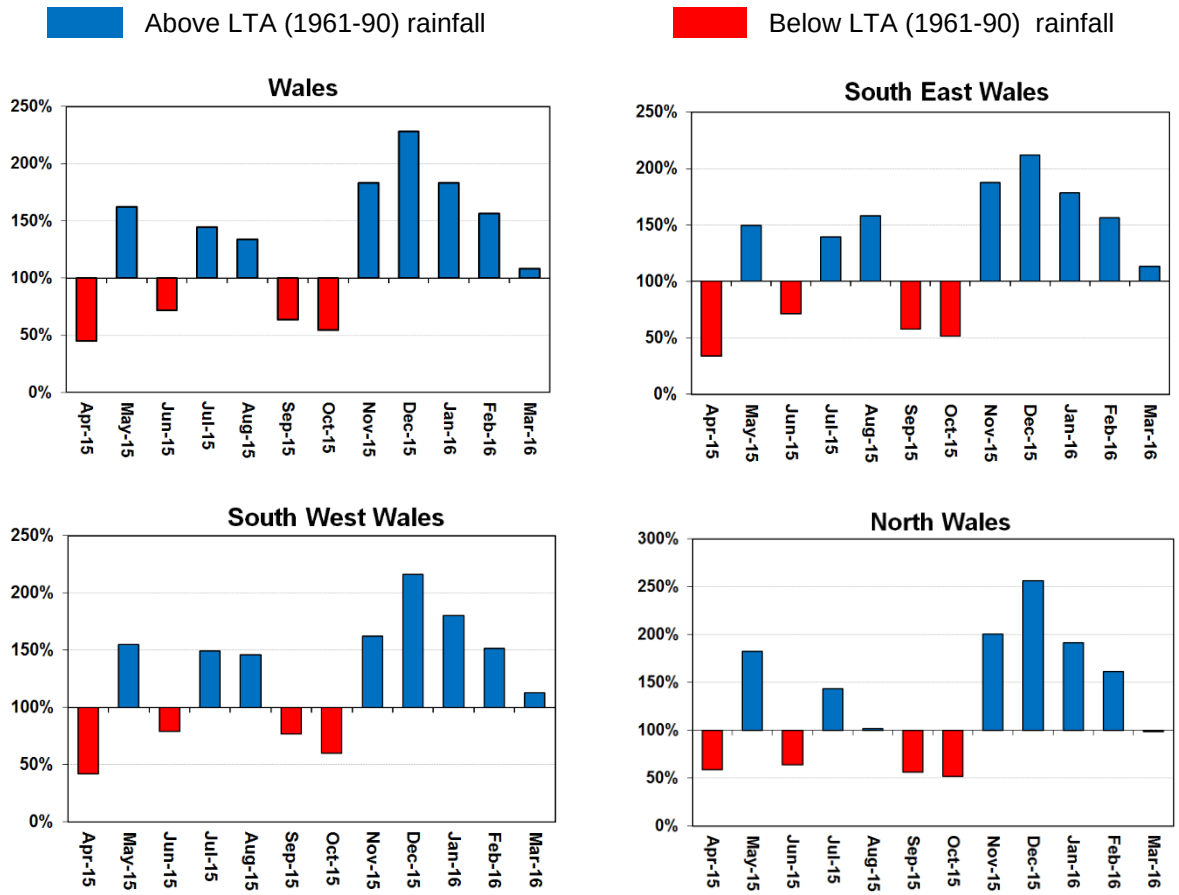


Figure 2: Calculated catchment average March rainfall totals as a percentage of the 1961-90 March long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

Return to Summary

Rainfall Charts

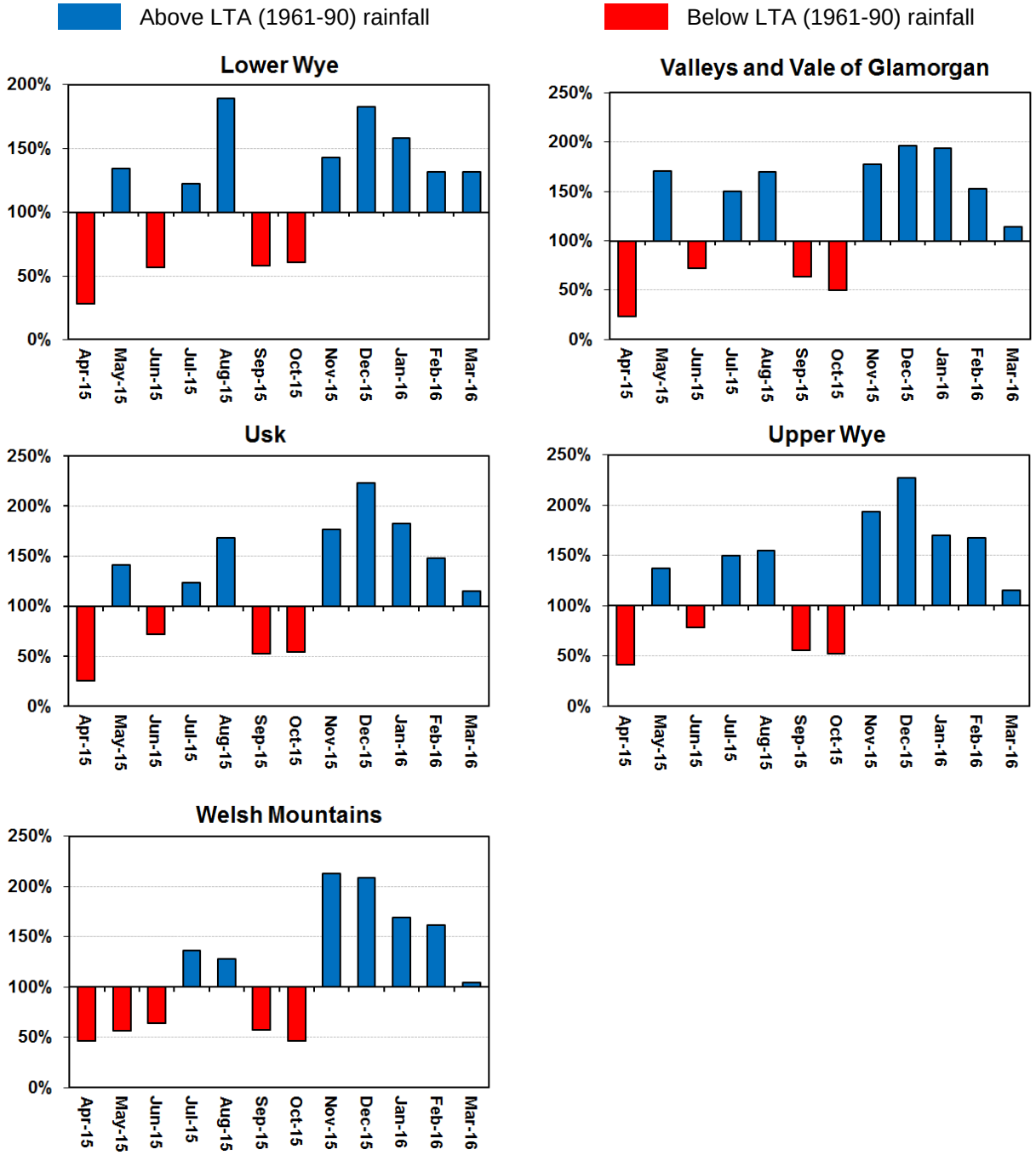
Figure 3: Rainfall Charts: National and Areas



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).*

Return to Summary

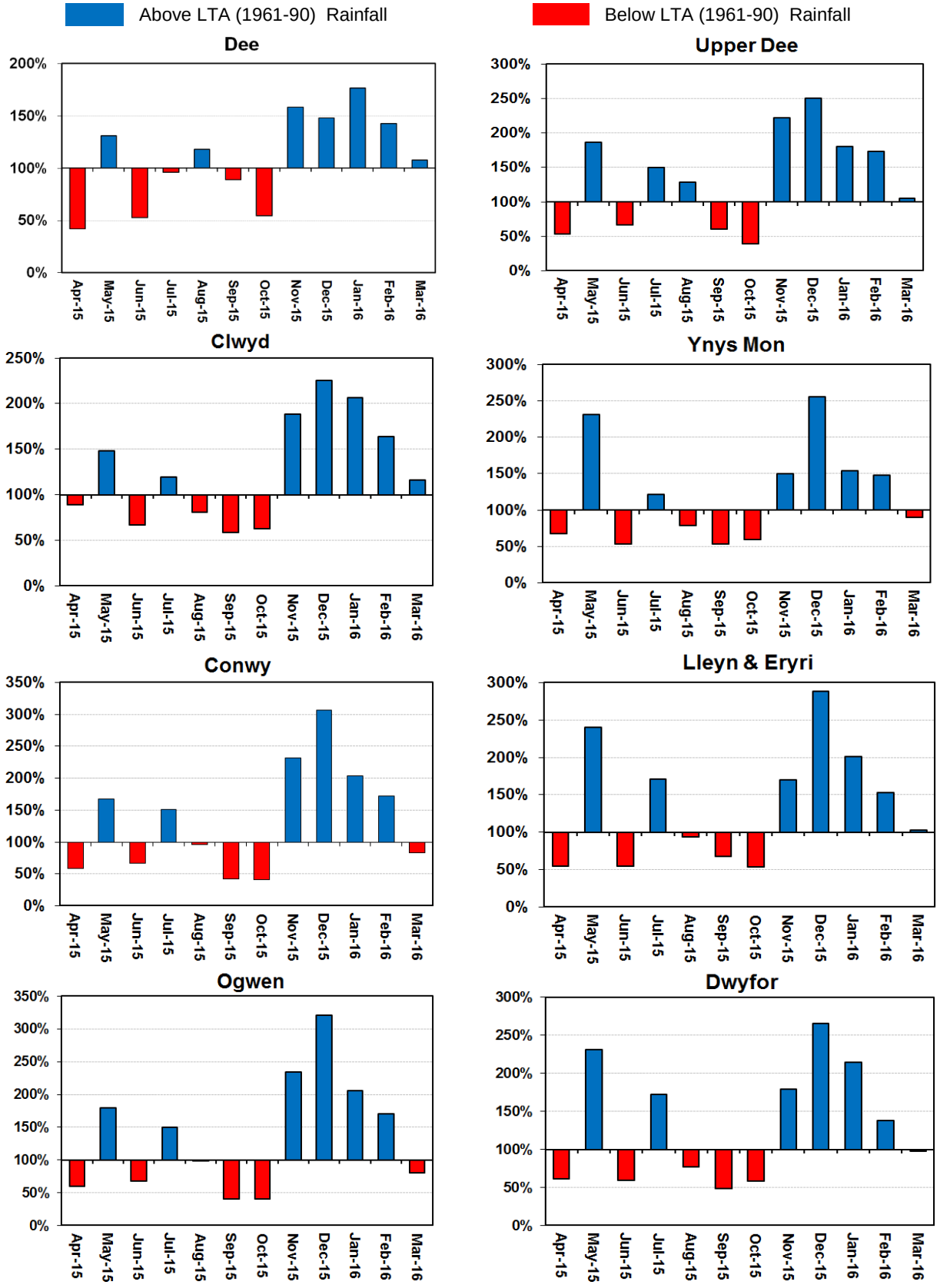
Figure 4: Rainfall Charts: South East Wales



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).*

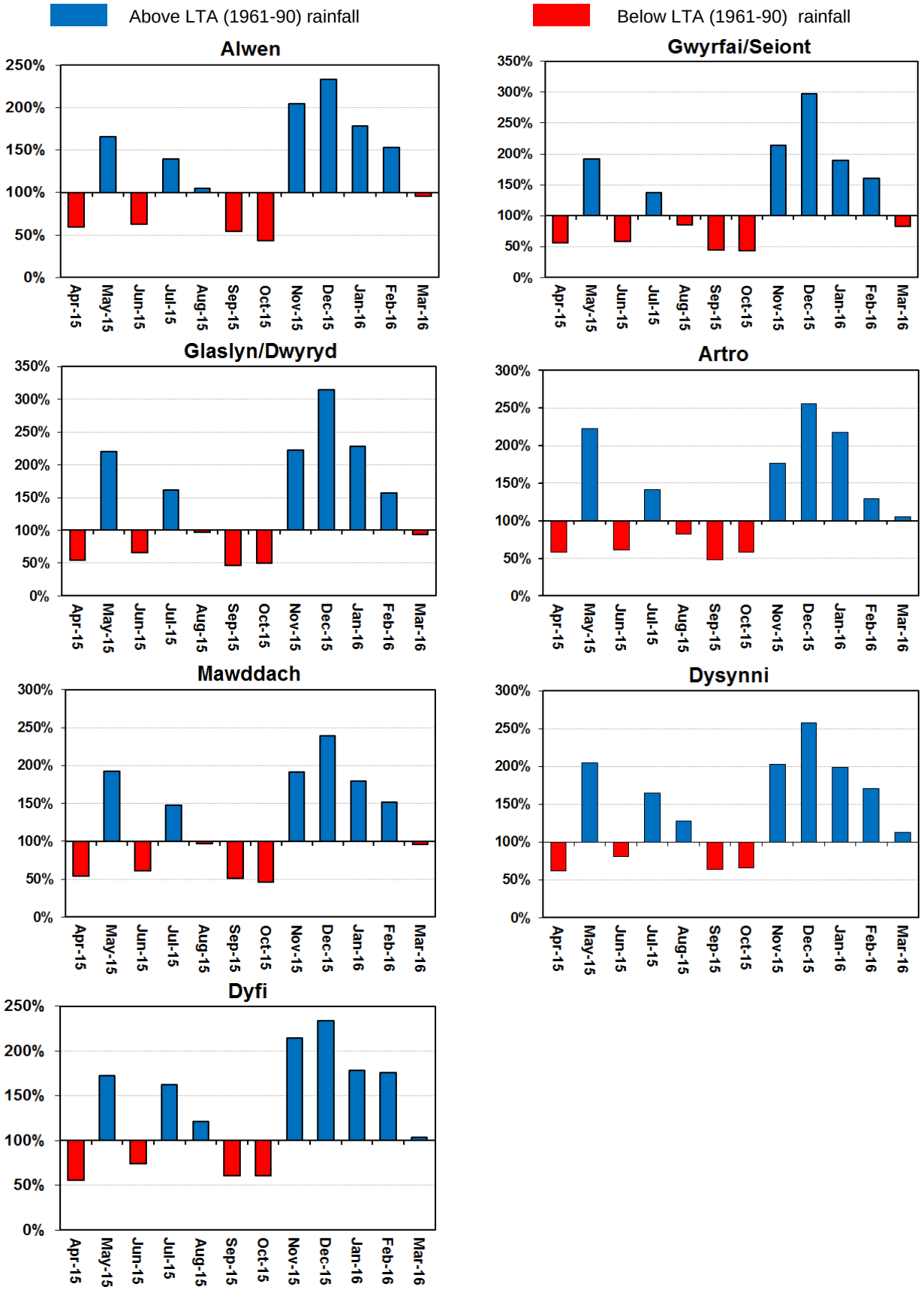
Return to Summary

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).*

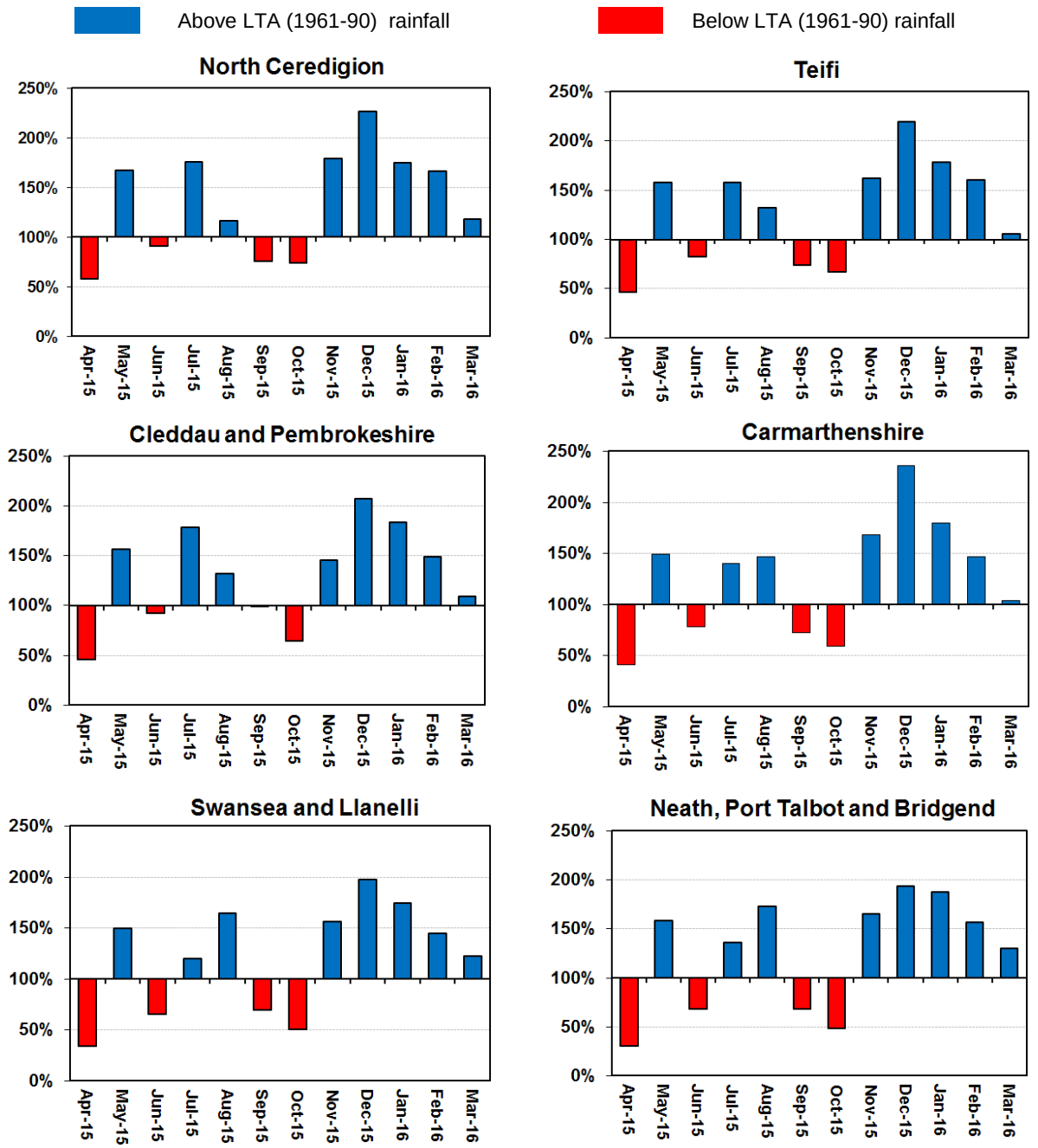
Return to Summary



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).*

Return to Summary

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).*

Return to Summary

Soil Moisture Deficit (SMD)

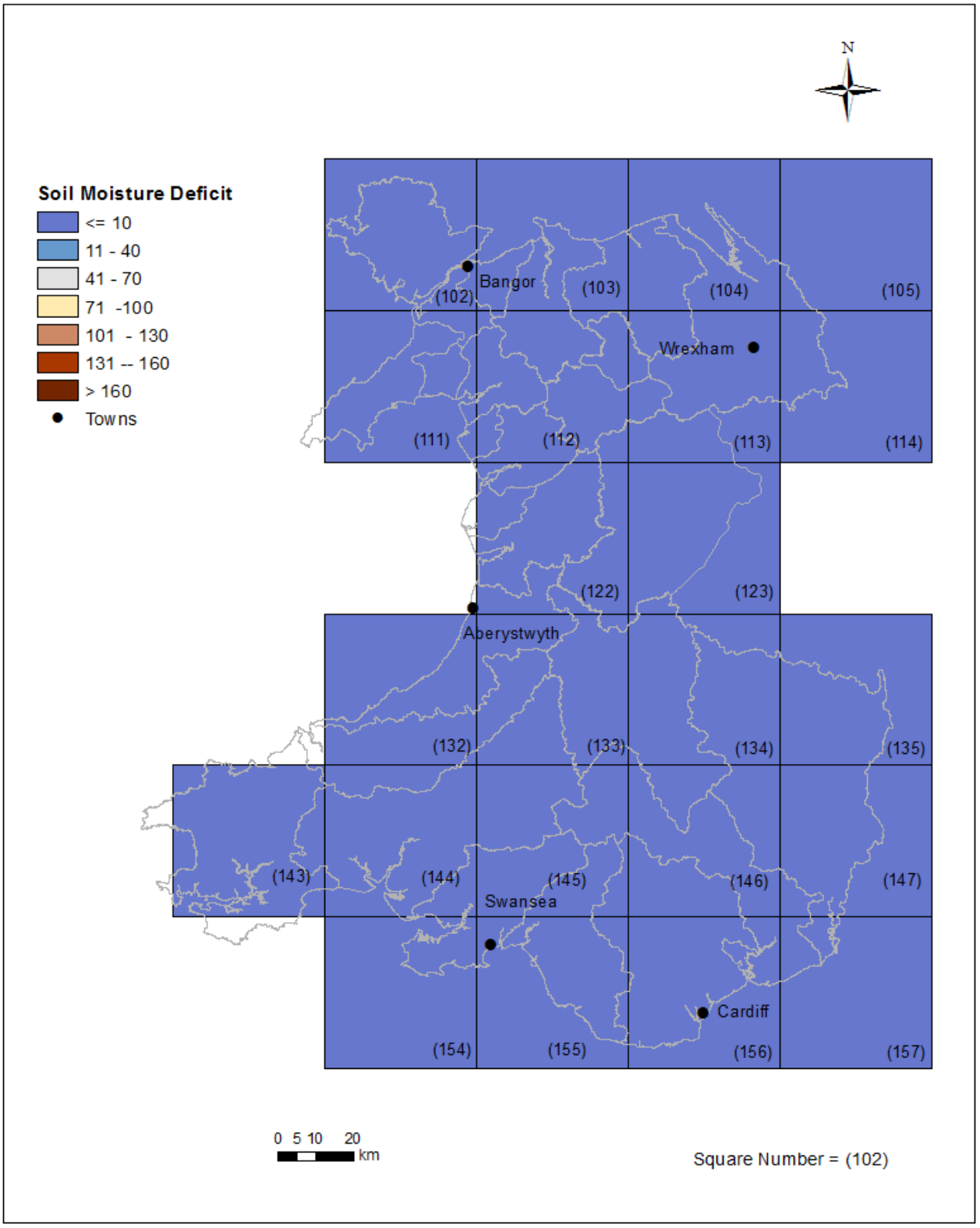


Figure 7: MORECS soil moisture deficits (mm) for March for real land use for Natural Resources Wales *(Source: Met Office © Crown Copyright).*

Return to Summary

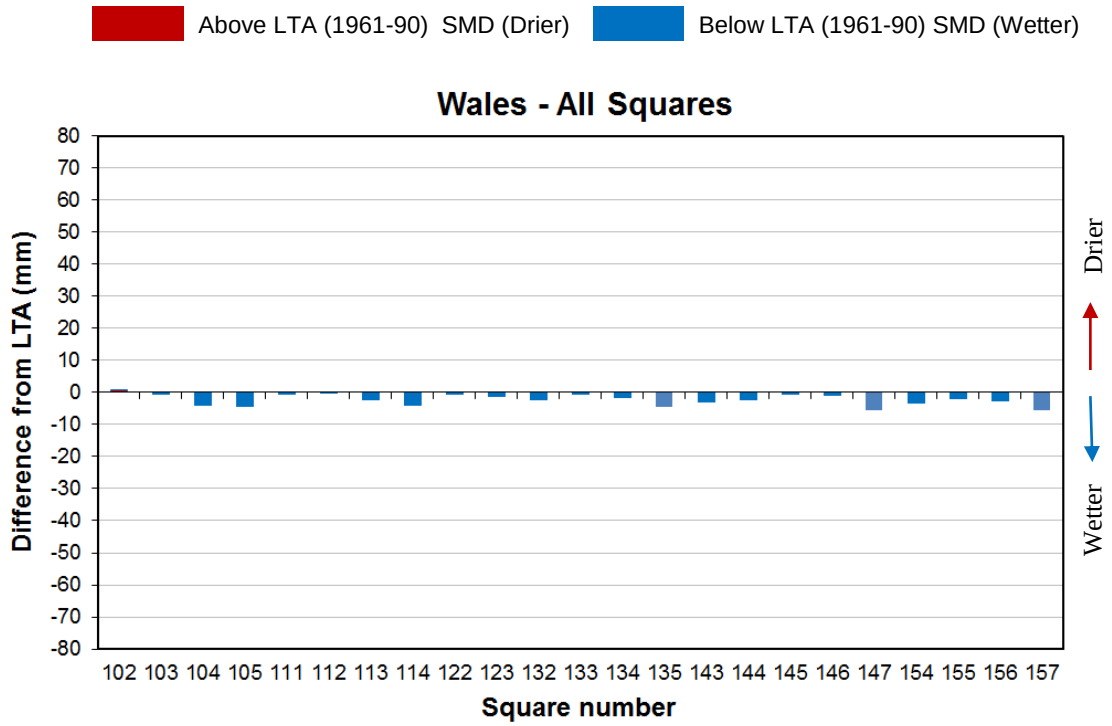


Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for March for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

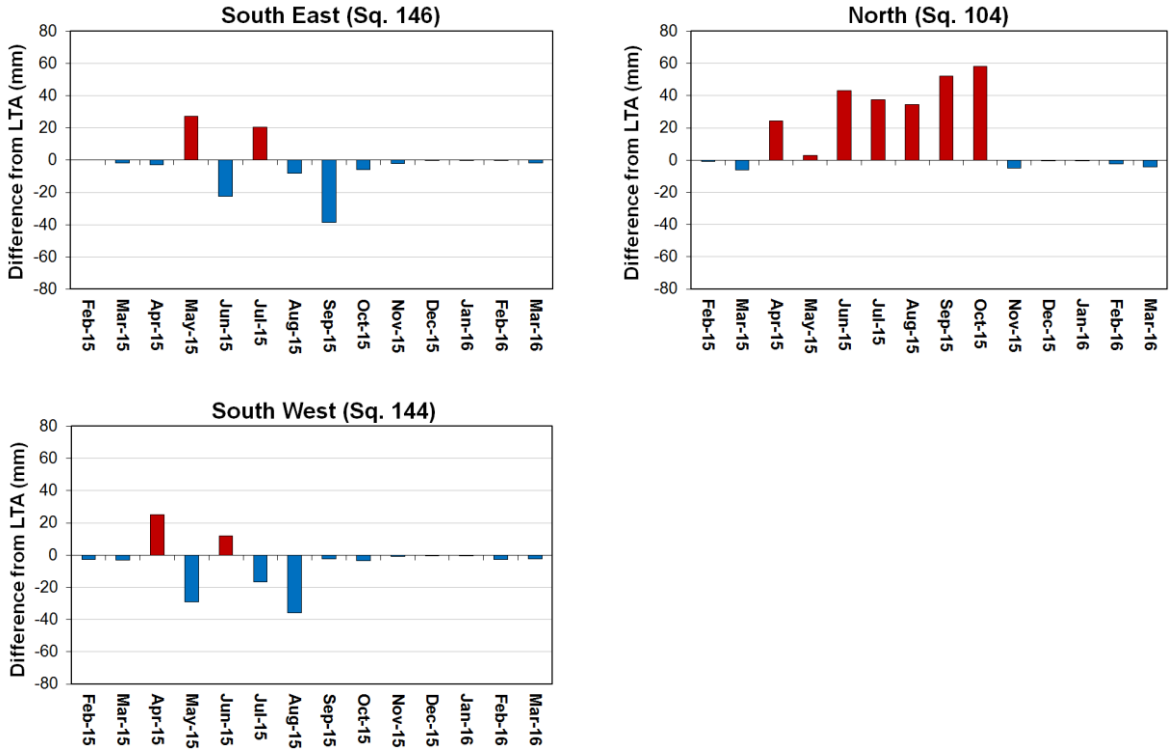


Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales)

Return to Summary

River Flow

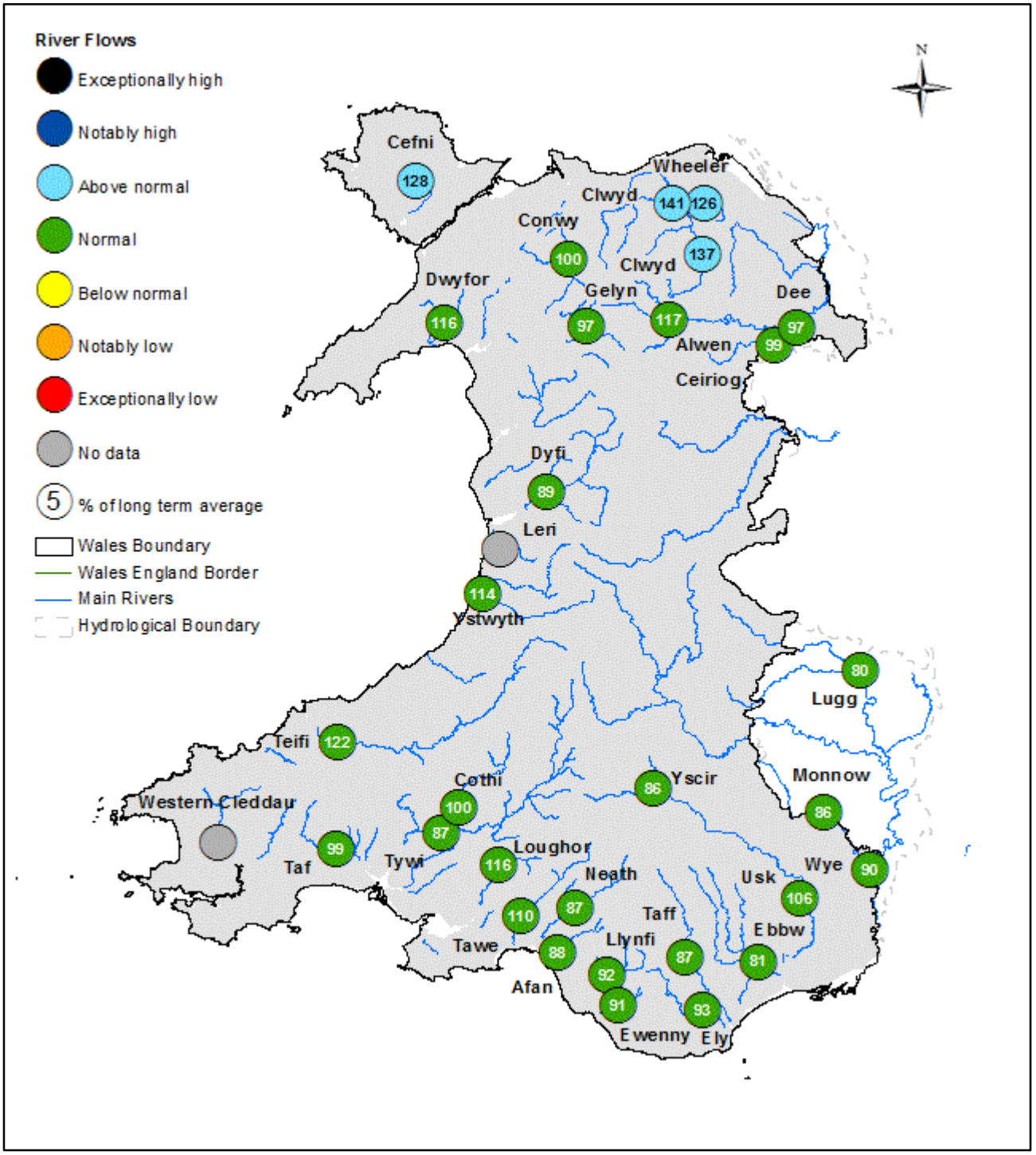


Figure 10: Monthly mean river flow for March, classed relative to analysis of historic March monthly means *(Source: Natural Resources Wales).*

Return to Summary

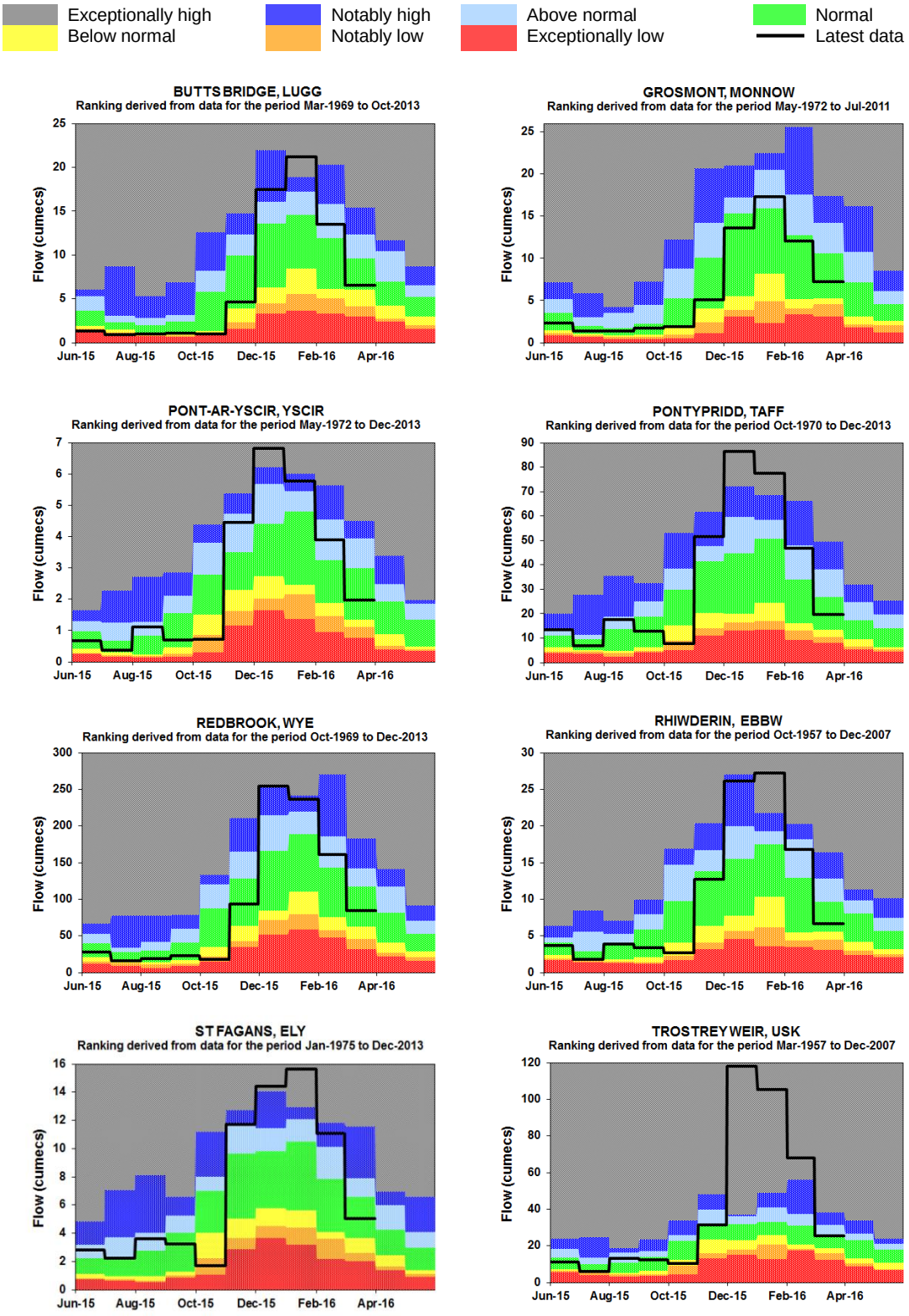
SITE NAME	RIVER	March 2016			March 2015		March LTA		
		Class	% of LTA	Flow (m3/s)	% of LTA	Flow (m3/s)	LTA	Monthly Min (m3/s)	Monthly Max (m3/s)
River Flow Sites : South East Area									
Butts Bridge	Lugg	Normal	80%	6.55	63%	5.19	8.21	1.97	19.80
Grosmont		Normal	86%	7.27	63%	5.34	8.49	1.66	22.50
Pont ar Yscir	Yscir	Normal	86%	1.97	74%	1.71	2.30	0.38	6.30
Pontypridd	Taff	Normal	87%	19.77	69%	15.60	22.74	4.87	72.70
Redbrook	Wye	Normal	90%	84.15	70%	65.70	93.85	20.80	245.00
Rhiwderin	Ebbw	Normal	81%	6.68	67%	5.53	8.26	2.29	25.00
St Fagans	Ely	Normal	93%	5.02	85%	4.60	5.41	1.37	13.60
Trostrey Weir	Usk	Normal	106%	25.27	102%	24.20	23.73	8.23	66.70
River Flow Sites : North Area									
Bodfari	Wheeler	Above normal	126%	1.20	75%	0.71	0.95	0.47	1.76
Bodffordd	Cefni	Above normal	128%	0.55	93%	0.40	0.43	0.16	0.93
Brynkinalt Weir	Ceiriog	Normal	99%	3.65	90%	3.32	3.70	0.73	9.04
Cwmlanerch	Conwy	Normal	100%	19.90	87%	17.16	19.84	5.08	56.00
Cynefail	Gelyn	Normal	97%	0.68	111%	0.78	0.70	0.20	1.63
Dol y Bont	Leri						1.69	0.48	3.90
Druid	Alwen	Normal	117%	6.46	106%	5.83	5.52	1.64	15.30
Dyfi bridge	Dyfi	Normal	89%	24.30			27.25	5.65	75.80
Garndolbenmaen	Dwyfor	Normal	116%	3.23	110%	3.05	2.78	0.83	6.96
Manley Hall	Dee	Normal	97%	33.50	94%	32.30	34.37	10.50	83.60
Pont y Cambwll	Clwyd	Above normal	141%	10.30	90%	6.59	7.30	2.26	17.80
Ruthin Weir	Clwyd	Above normal	137%	2.68			1.96	0.41	4.00
River Flow Sites : South West Area									
Capel Dewi	Tywi	Normal	87%	38.47	69%	30.60	44.18	11.00	138.00
Clog y Fran	Taf	Normal	99%	8.12	113%	9.28	8.18	2.88	26.60
Coytrahen	Llynfi	Normal	92%	2.27	93%	2.30	2.47	0.67	7.64
Felin Mynachdy	Cothi	Normal	100%	12.19	71%	8.61	12.15	2.82	40.70
Glanteifi	Teifi	Normal	122%	37.15	91%	27.60	30.47	8.28	96.70
Keepers Lodge	Ewenny	Normal	91%	1.96	84%	1.82	2.16	0.80	6.00
Marcroft	Afan	Normal	88%	4.91			5.61	1.31	16.50
Pont Llolwyn	Ystwyth	Normal	114%	7.01	85%	5.22	6.17	1.72	18.50
Resolven	Neath	Normal	87%	9.47	79%	8.58	10.91	1.89	33.00
Tir-y-Dail	Loughor	Normal	116%	2.60	92%	2.07	2.25	0.74	5.23
Ynystanglws	Tawe	Normal	110%	13.17	95%	11.40	12.01	3.18	41.60

Figure 11: Monthly mean river flow for March with comparison against previous year expressed as a percentage of the March long term average and classed relative to analysis of historic March monthly means. *(Source: Natural Resources Wales).*

Return to Summary

River Flow Charts

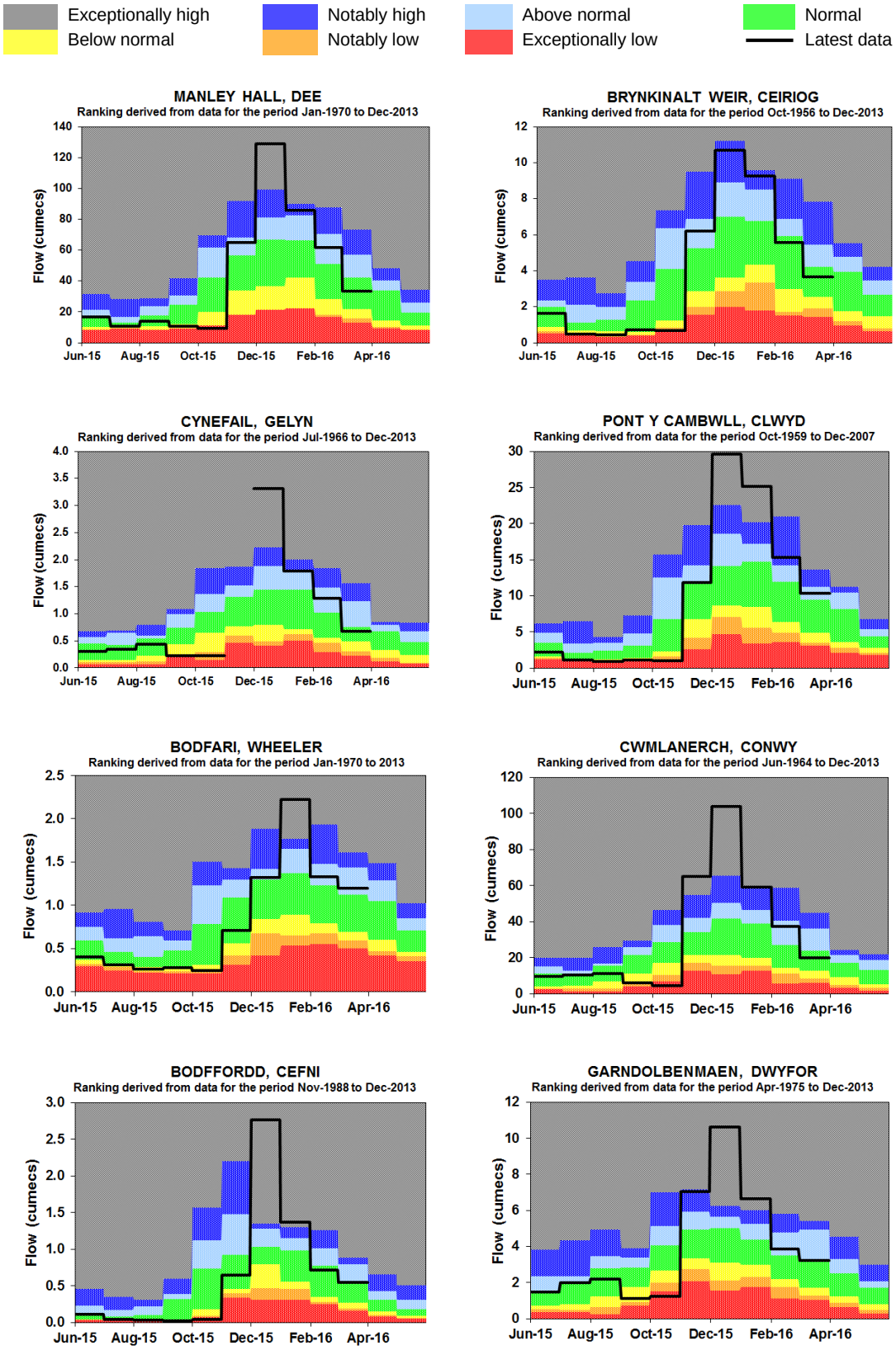
Figure 12: River Flow Charts: South East Wales



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

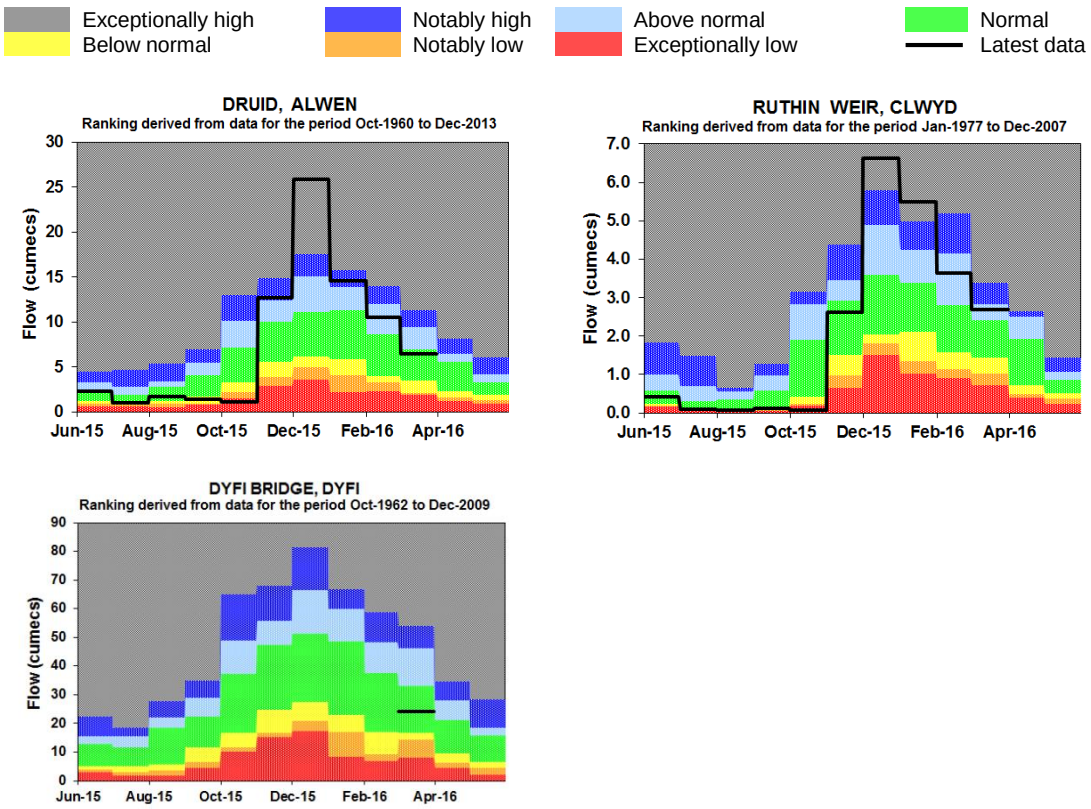
Return to Summary

Figure 13: River Flow Charts: North Wales



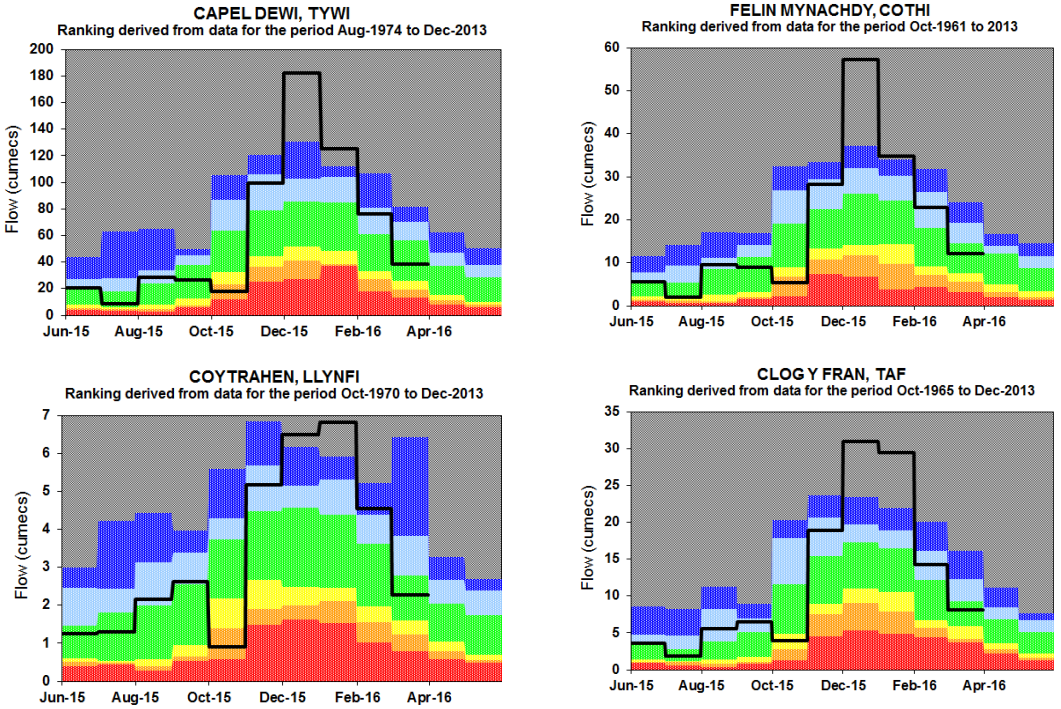
Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels (*Source: Natural Resources Wales*). (Please note that there is no data available for River Gelyn at Cynefail in November 2015)

Return to Summary

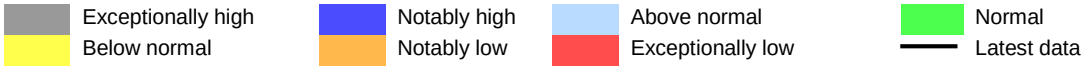


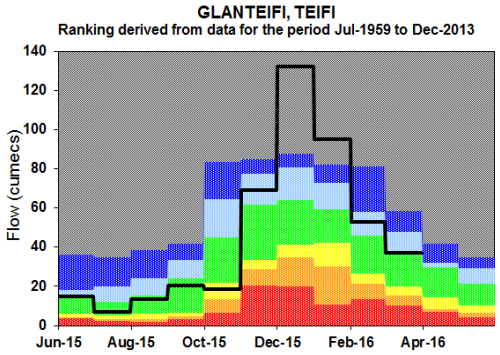
(Please note that there is no data available for River Dyfi at Dyfi Bridge before March 2016)

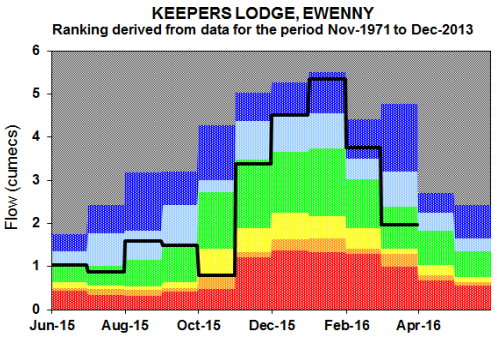
Figure 14: River Flow Charts: South West Wales

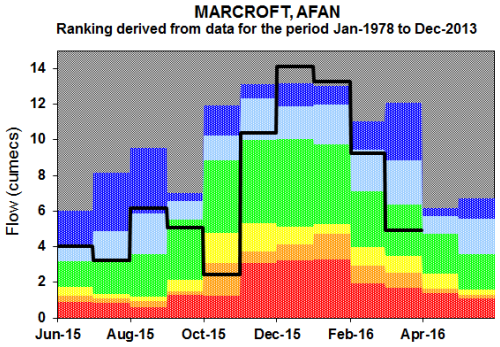


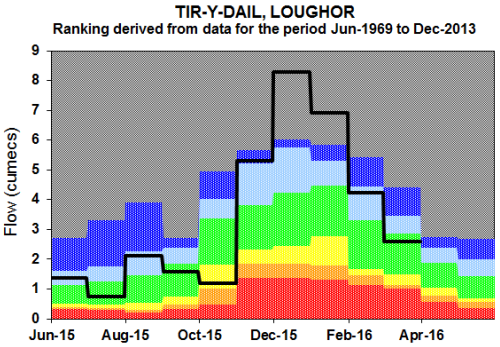
Return to Summary

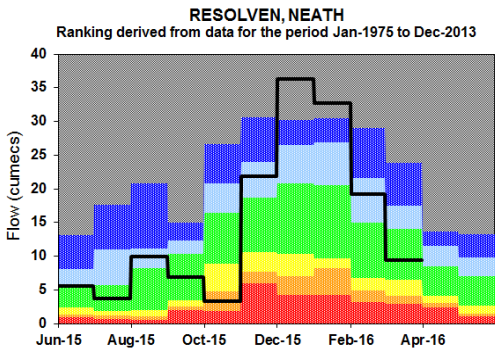


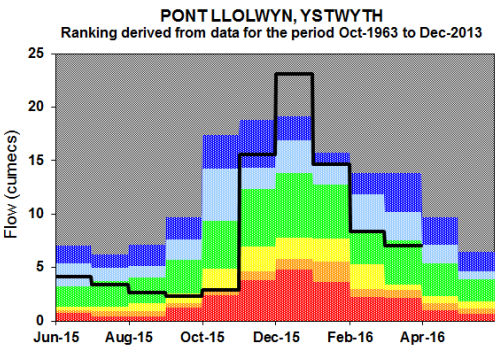


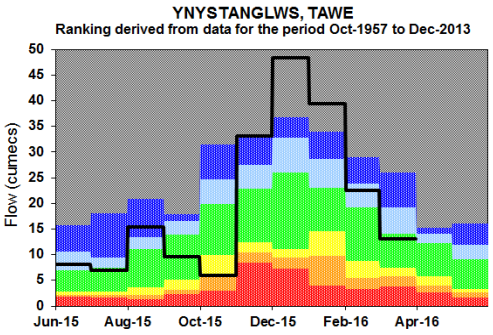












Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).* (Please note that there is no data available before June 2015 for the site of River Afan at Marcroft

Return to Summary

Groundwater Levels

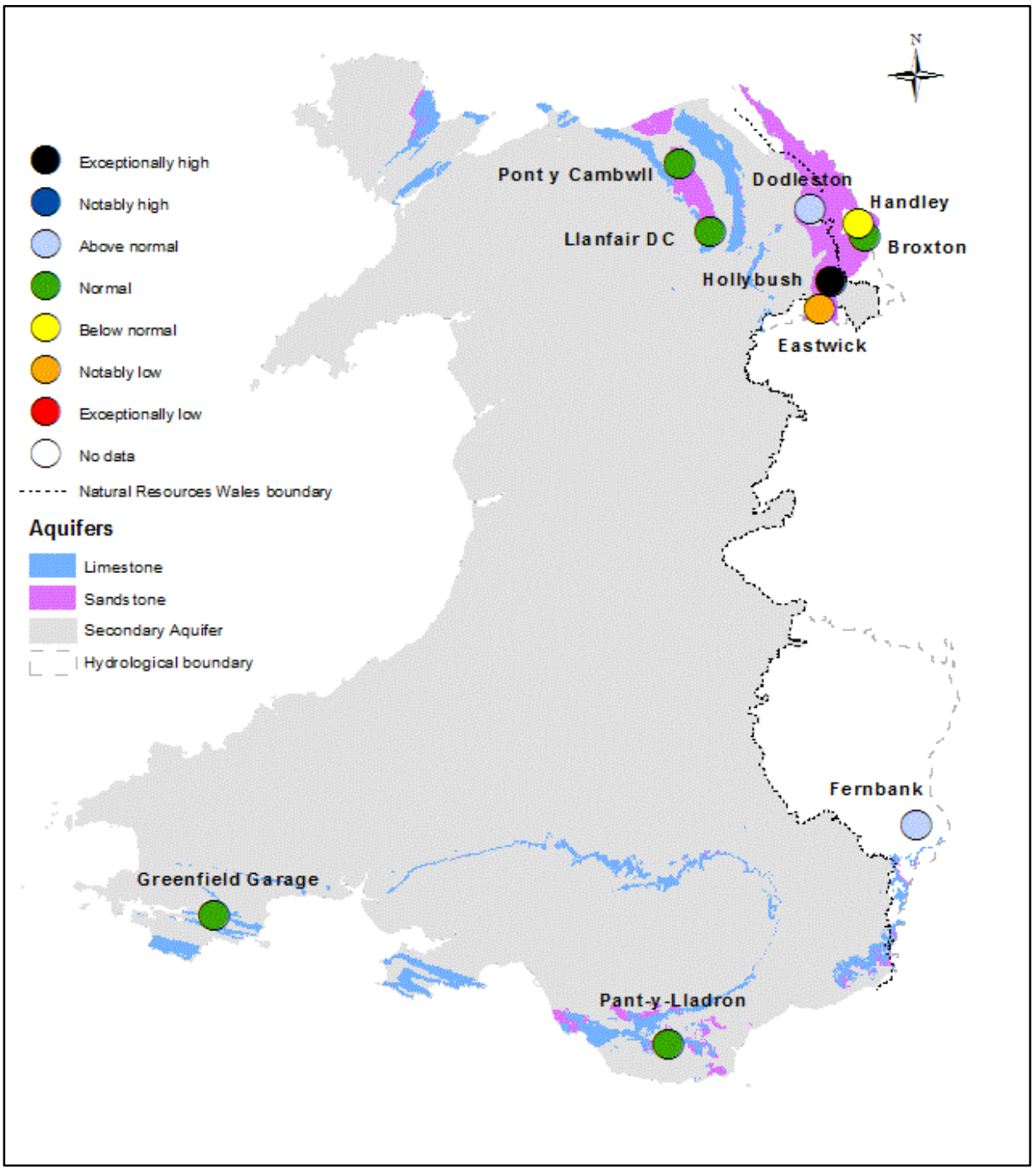
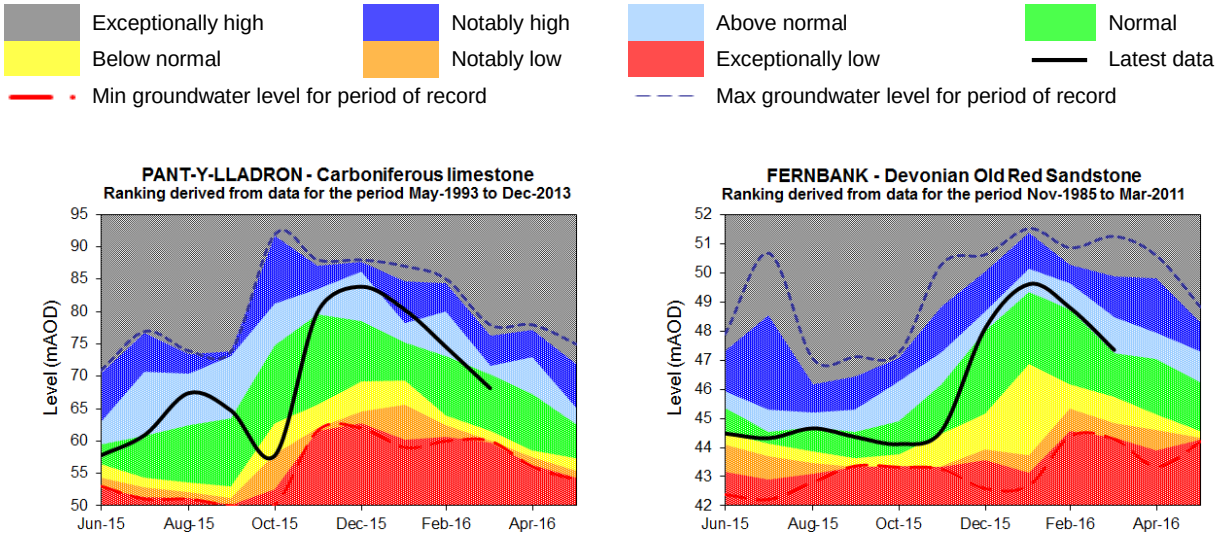


Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic March groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

Return to Summary

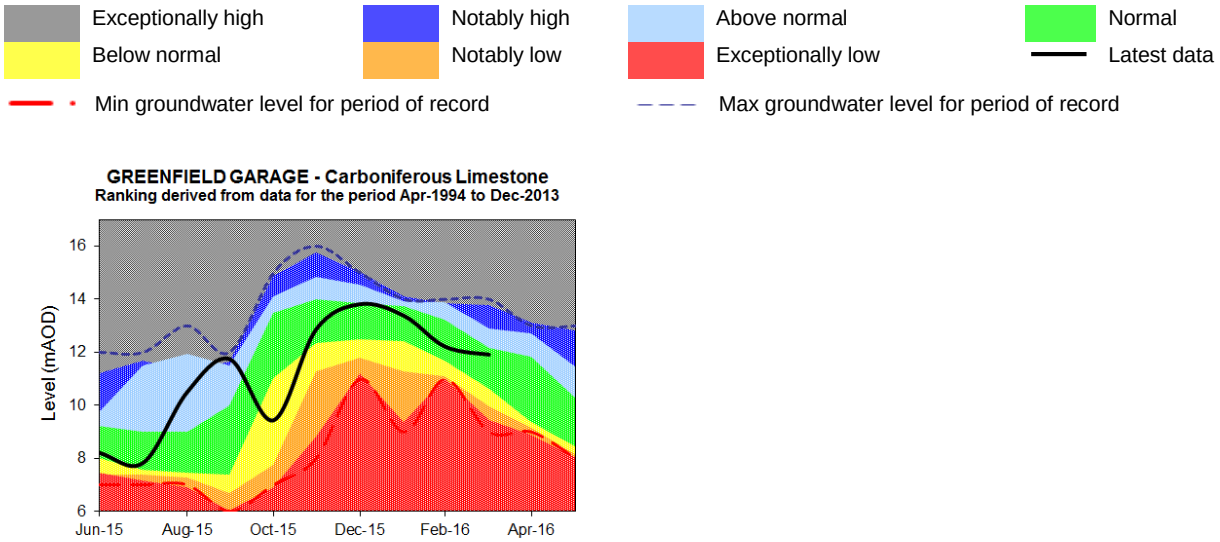
Groundwater charts

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).*

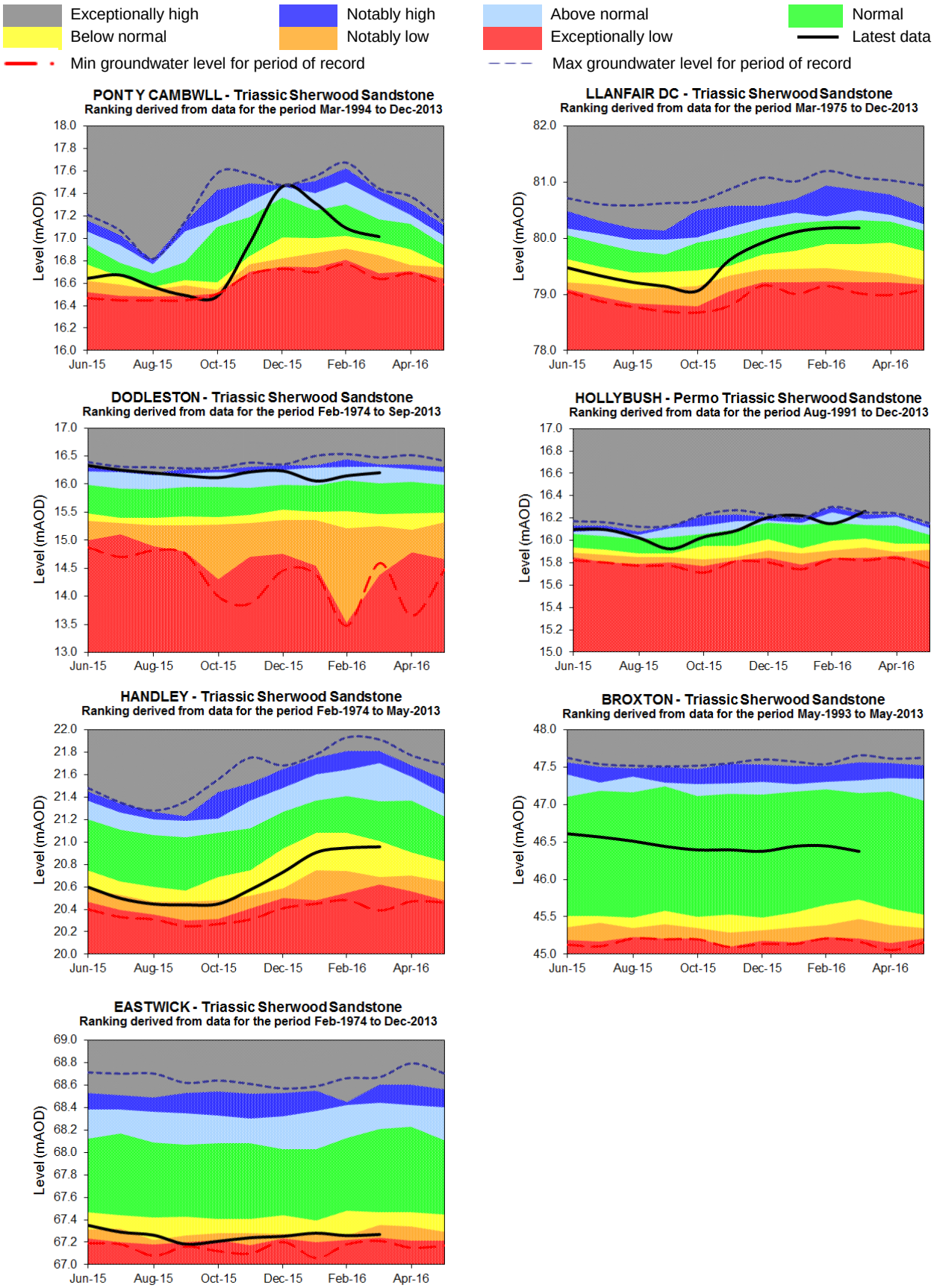
Figure 17: Groundwater level charts: South West Wales



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

Return to Summary

Figure 18: Groundwater level charts: North Wales



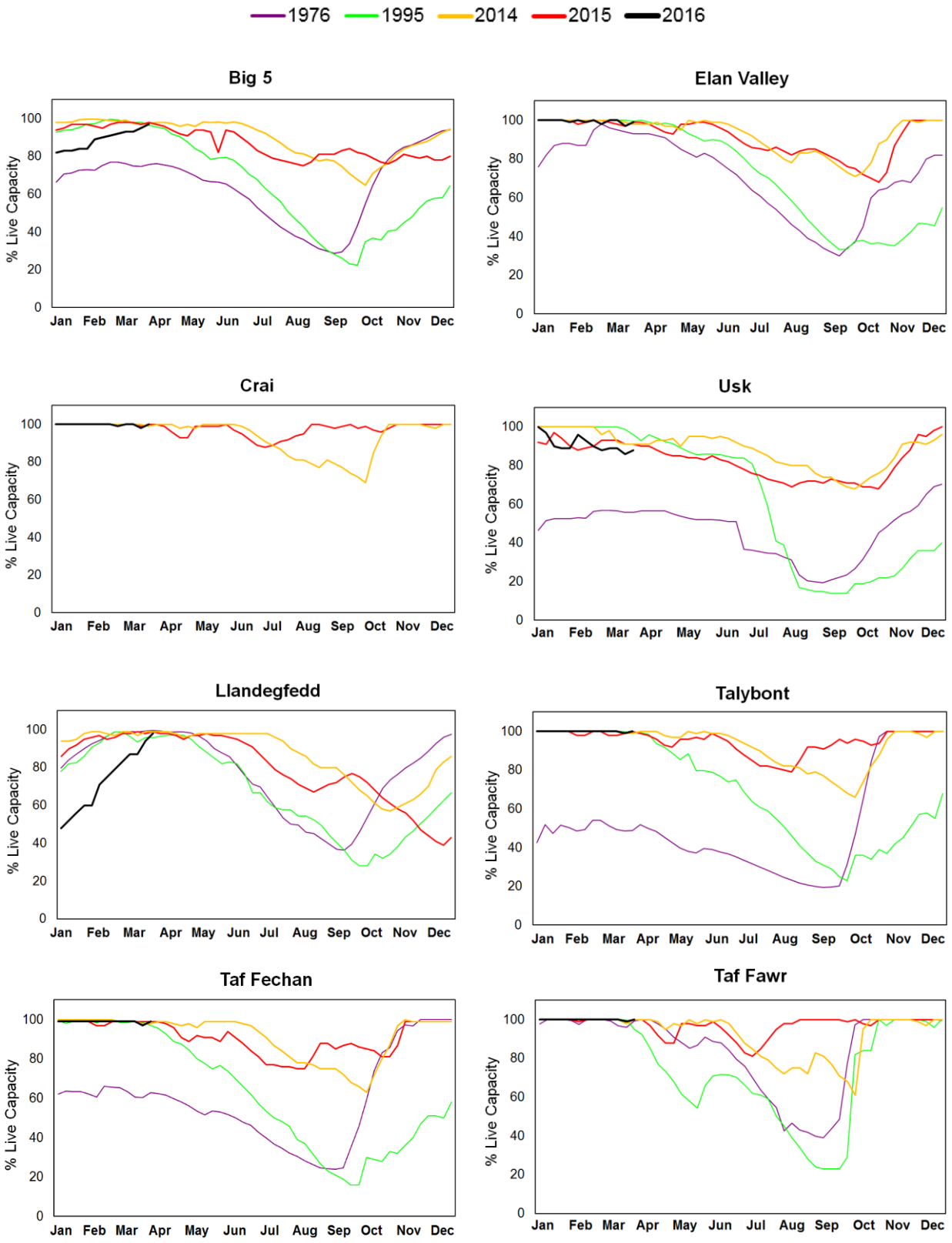
End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales and Environment Agency)*.

All data are provisional and may be subject to revision.

Return to Summary

Reservoir Storage

Figure 19: Reservoir charts: South East Wales

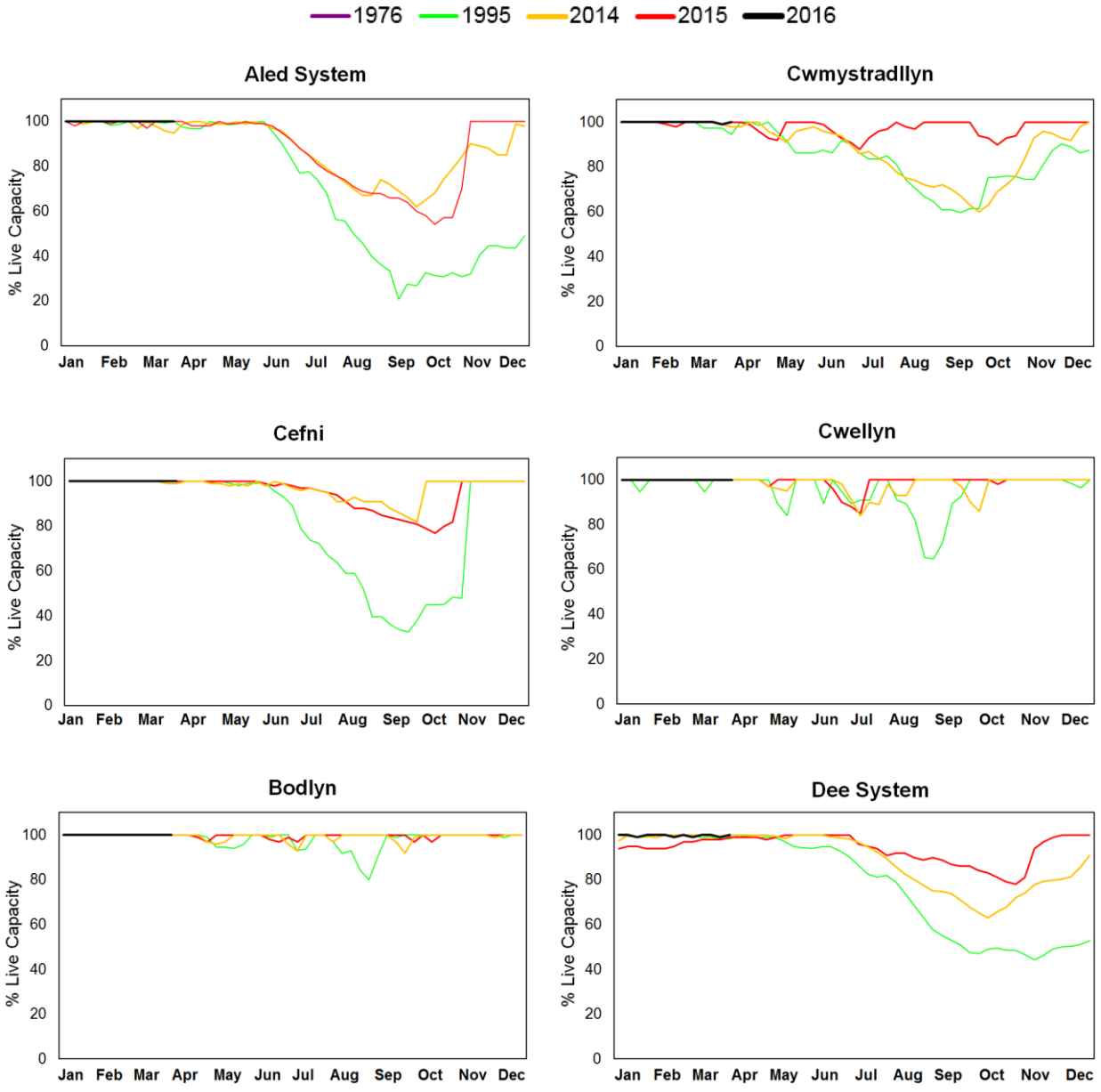


Weekly reservoir stocks for Natural Resources Wales index sites *(Source: Water Companies)*

(*Please note that the Llandegfedd reservoir is nearly full (98% of the capacity) after being filled up due to be drawn down for reservoir safety maintenance works)

Return to Summary

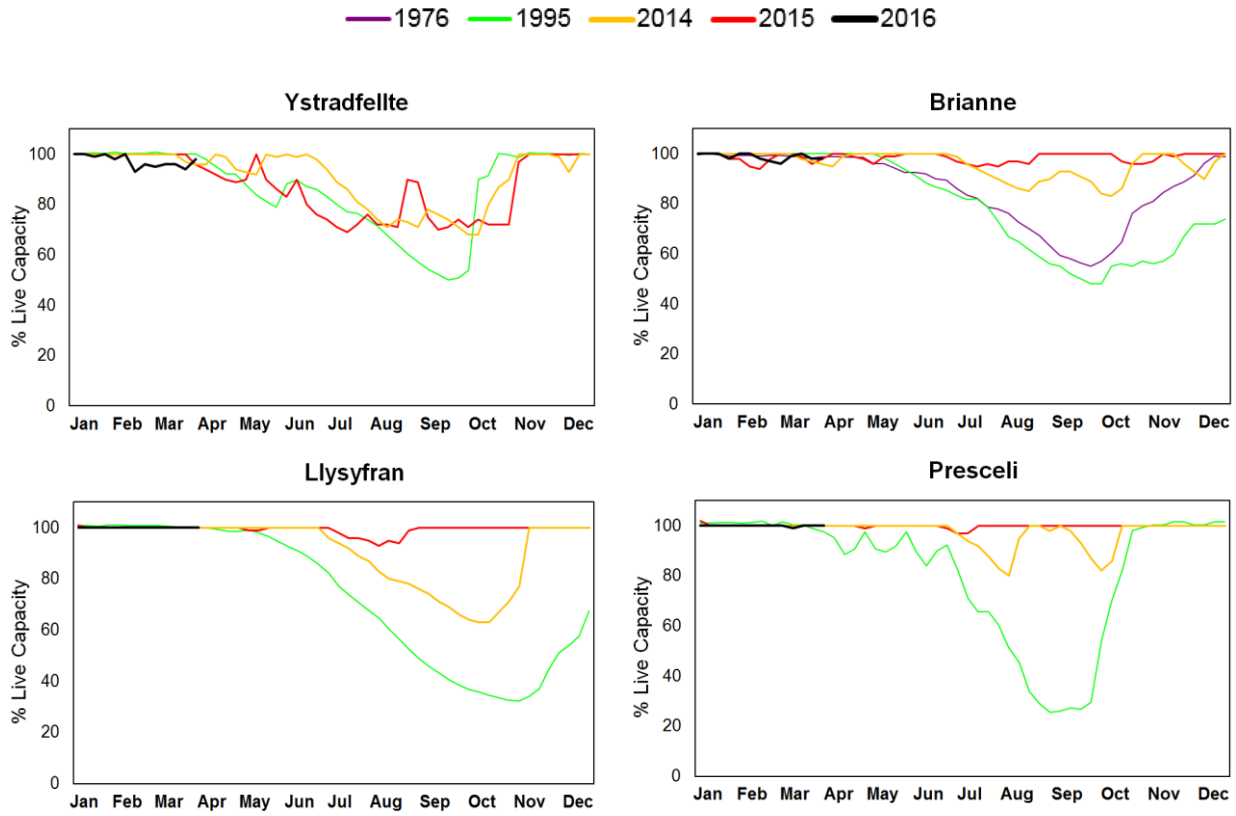
Figure 20: Reservoirs charts: North Wales



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

Return to Summary

Figure 21: Reservoirs charts: South West Wales



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

Return to Summary

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).