Monthly Water Situation Report November 2017

Natural Resources Wales

- **The monthly rainfall total for Wales during November was 107% of the Long Term Average (LTA, 1961-90). South East, South West and North Wales received 97%, 111% and 113% of the LTA, respectively.**
- **At the end of November, soil moisture deficit (SMD) values across Wales were from 0 to 83.1mm for all MORECS squares. Soil in 10 squares (out of 23) was slightly wetter than the LTA while 4 squares were drier than the LTA. The remaining 9 squares were similar to the LTA for November.**
- **For river flows in Wales, 24 out of 30 indicator sites (which had flow data available) were classed as *Normal* and 3 were classed as *Below normal*. For the remaining 3 sites they were classed as *Notably low, Above normal* and *Notably high*, respectively for November.**
- **The overall cumulative reservoir storage across the indicator sites was greater than 90% except 4 reservoirs (Aled and Aled Isaf, Usk, Llandegfedd and the Big Five) at the end of November and all reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total for Wales was 107% of the LTA for November. The percentage of rainfall recorded in catchments compared with the LTA across Wales was between 71% (Lower Wye) and 167% (North Ceredigion). The rainfall total for Wales was 10.9mm more than the November LTA. For South East, South West and North Wales the rainfall totals were 97%, 111% and 113% 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 and 83.1mm. 10 squares were slightly wetter than the long term average while 4 squares were drier than the LTA. The remaining 9 squares were similar to the LTA for November.

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows were between *Notably low* and *Notably high* for all the indicator sites across Wales. 24 out of 30 indicator sites (which had flow data available) were classed as *Normal* and 3 were classed as *Above normal*. For the remaining 3 sites they were classed as *Notably low*, *Above normal* and *Notably high* for November.

***South East*:** Flows in the area ranged from 32% (River Monnow at Grosmont) to 92% (River Yscir at Pont ar Yscir) of the November LTA values.

South West: The river flows within this area ranged from 73% (River Neath at Resolven) to 164% (River Ystwyth at Pont Llolwyn) of the November LTA values.

***North*:** Flows in the area ranged from 66% (River Ceiriog at Brynkinalt Weir) to 139% (River Cefni at Bodffordd) of the November 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 November at indicator sites (8 data available sites) were classed between *Exceptionally low* (Eastwick) to *Above normal (*Dodleston). 4 sites were classed as *Below normal* (Greenfield Garage, Fernbank, Llanfair and Handley) and 2 sites were classed as *Normal* (Pont y Cambwll and Broxton).

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

Reservoir Storage

At the end of November most of the indicator reservoirs (14 out of 18) were greater than 90% full and the remaining 4 reservoirs (Aled and Aled Isaf, Usk,Llandegfedd and Big 5) were 83%, 75%, 66%, and 84% 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.

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Return to Summary

Natural Resources Wales

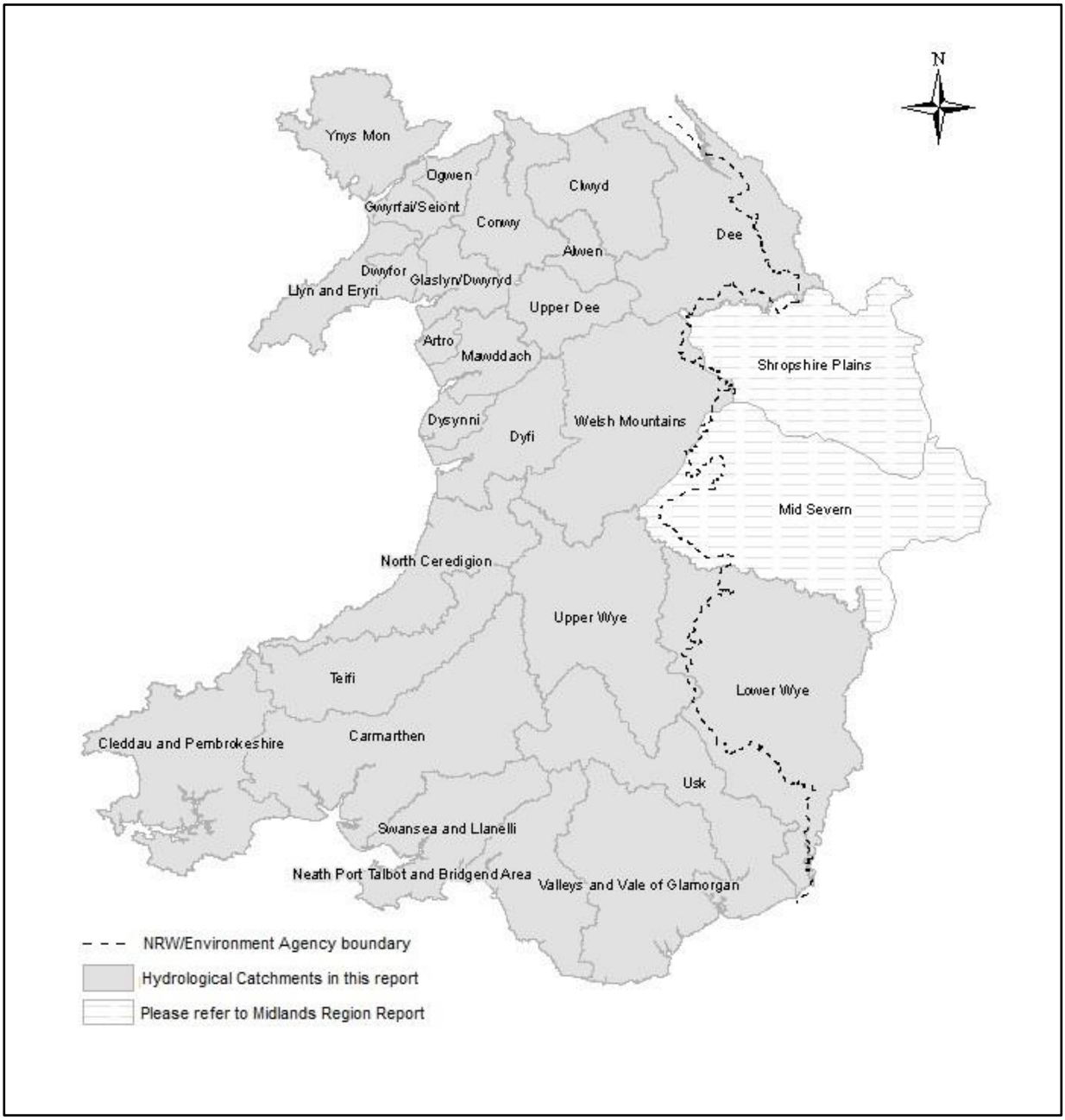


Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

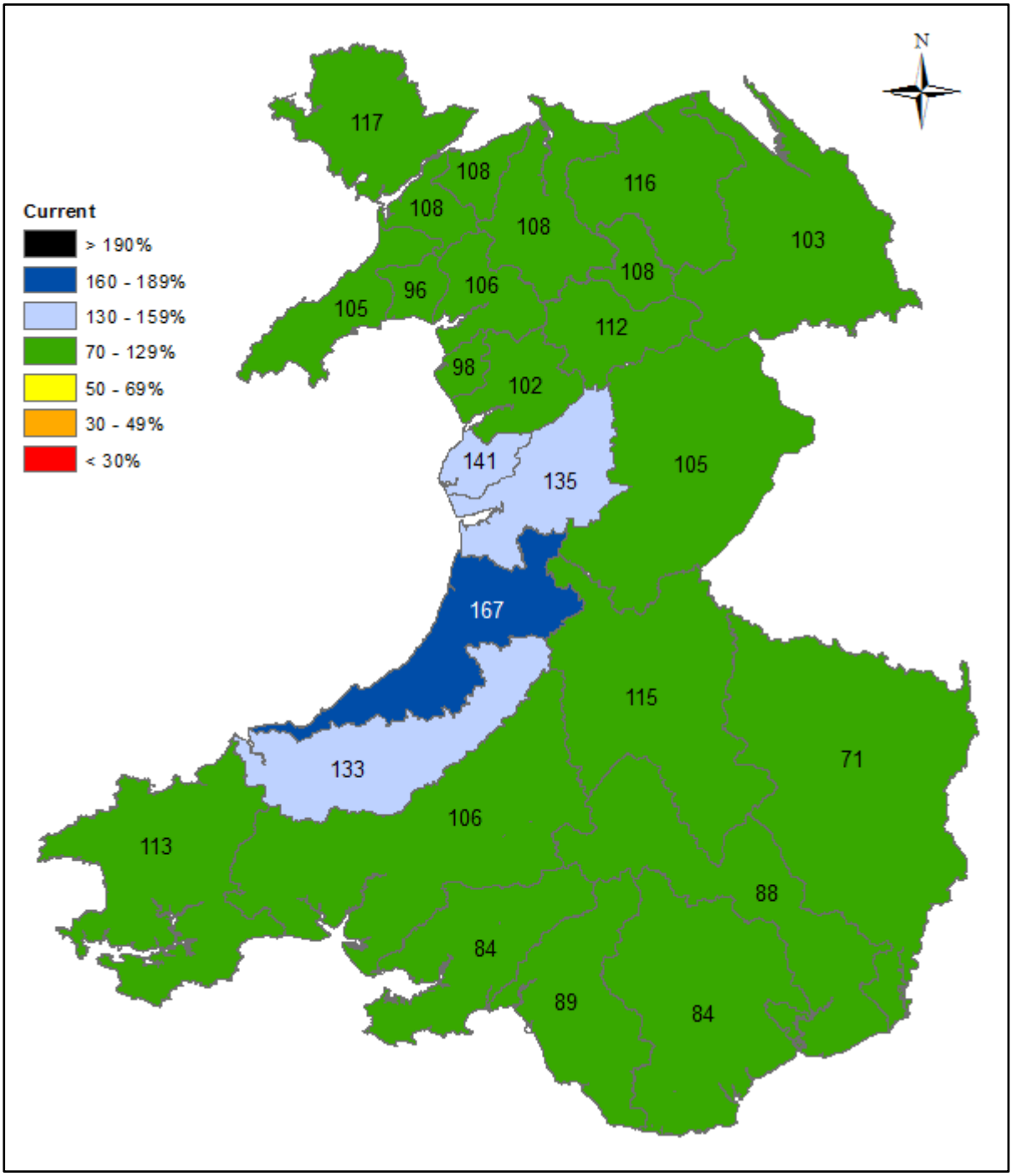
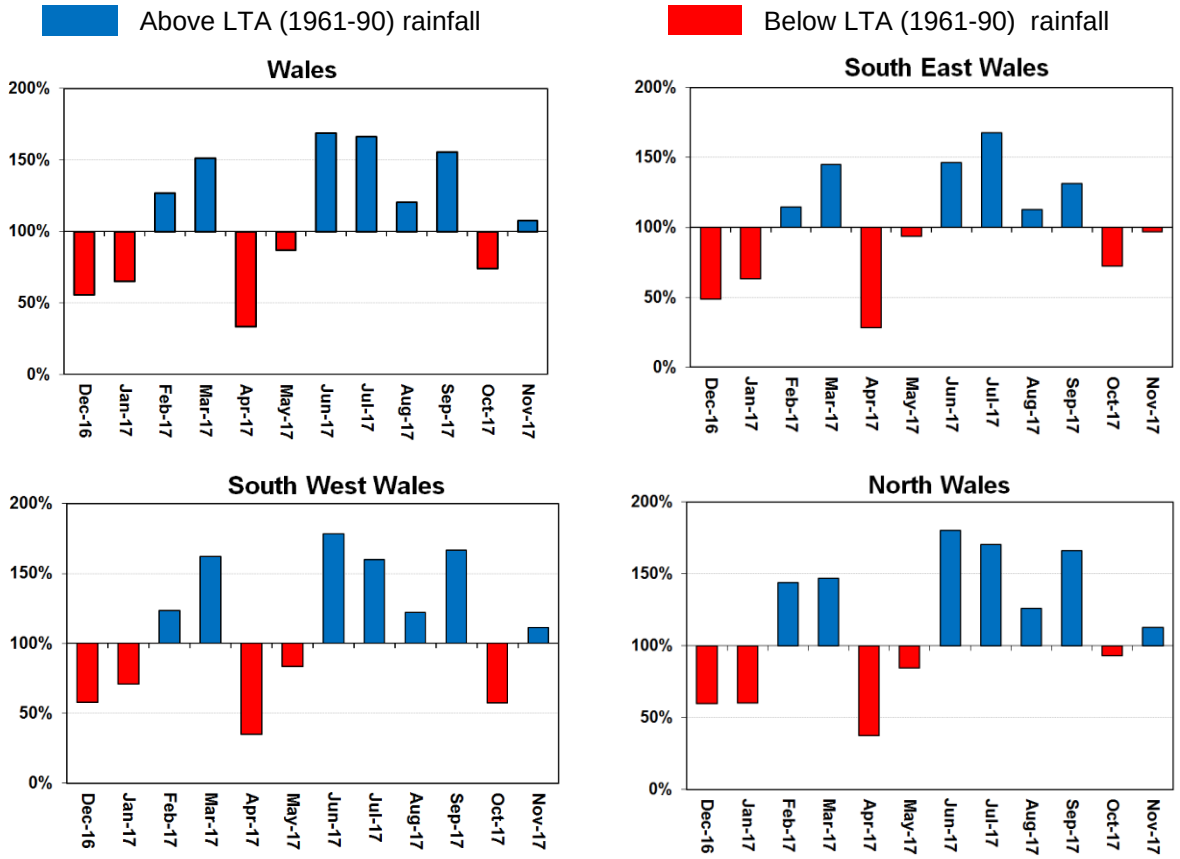


Figure 2: Calculated catchment average November rainfall totals as a percentage of the 1961-90 November long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

Return to Summary

Rainfall Charts

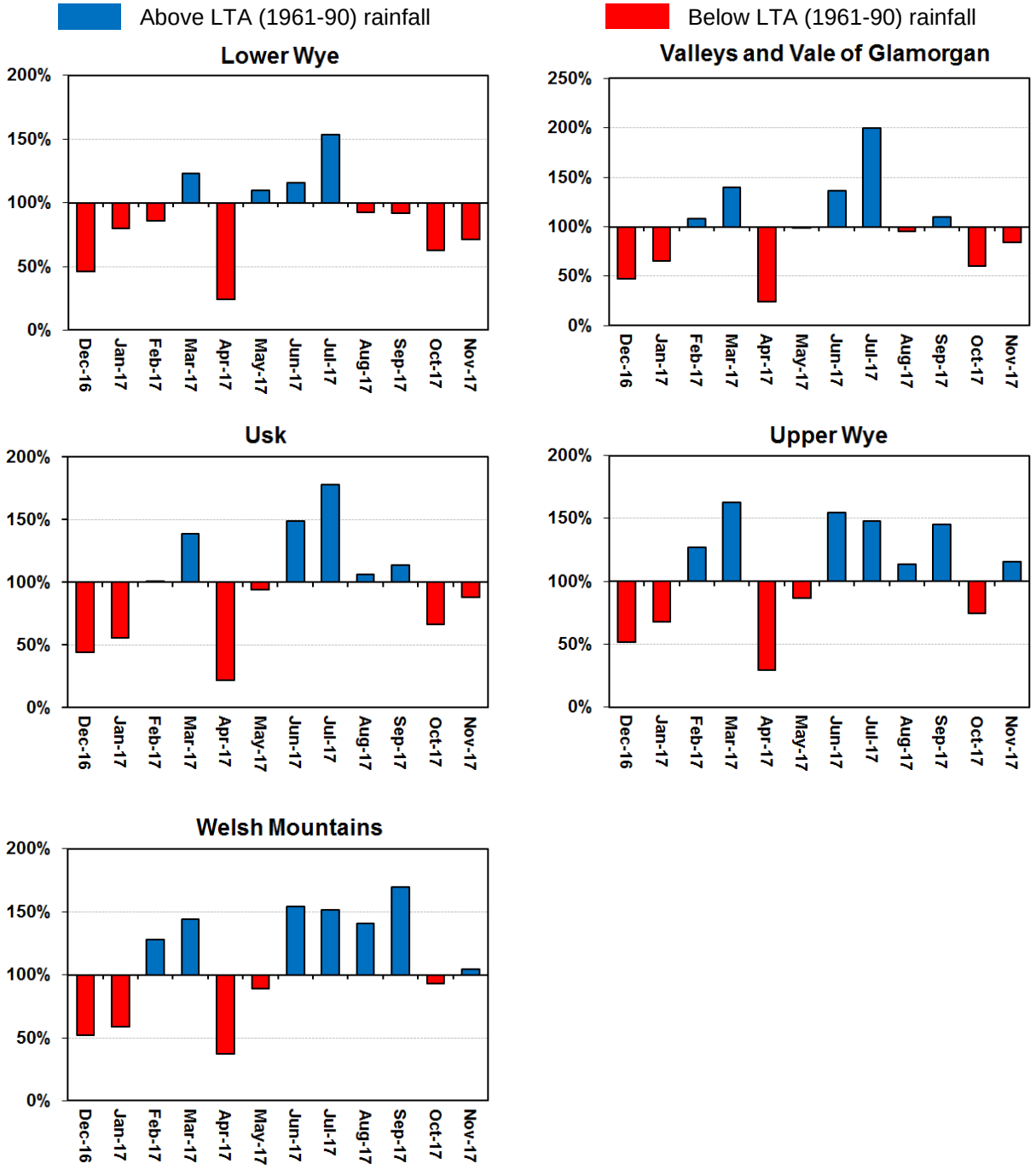
Figure 3: Rainfall Charts: National and Areas



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

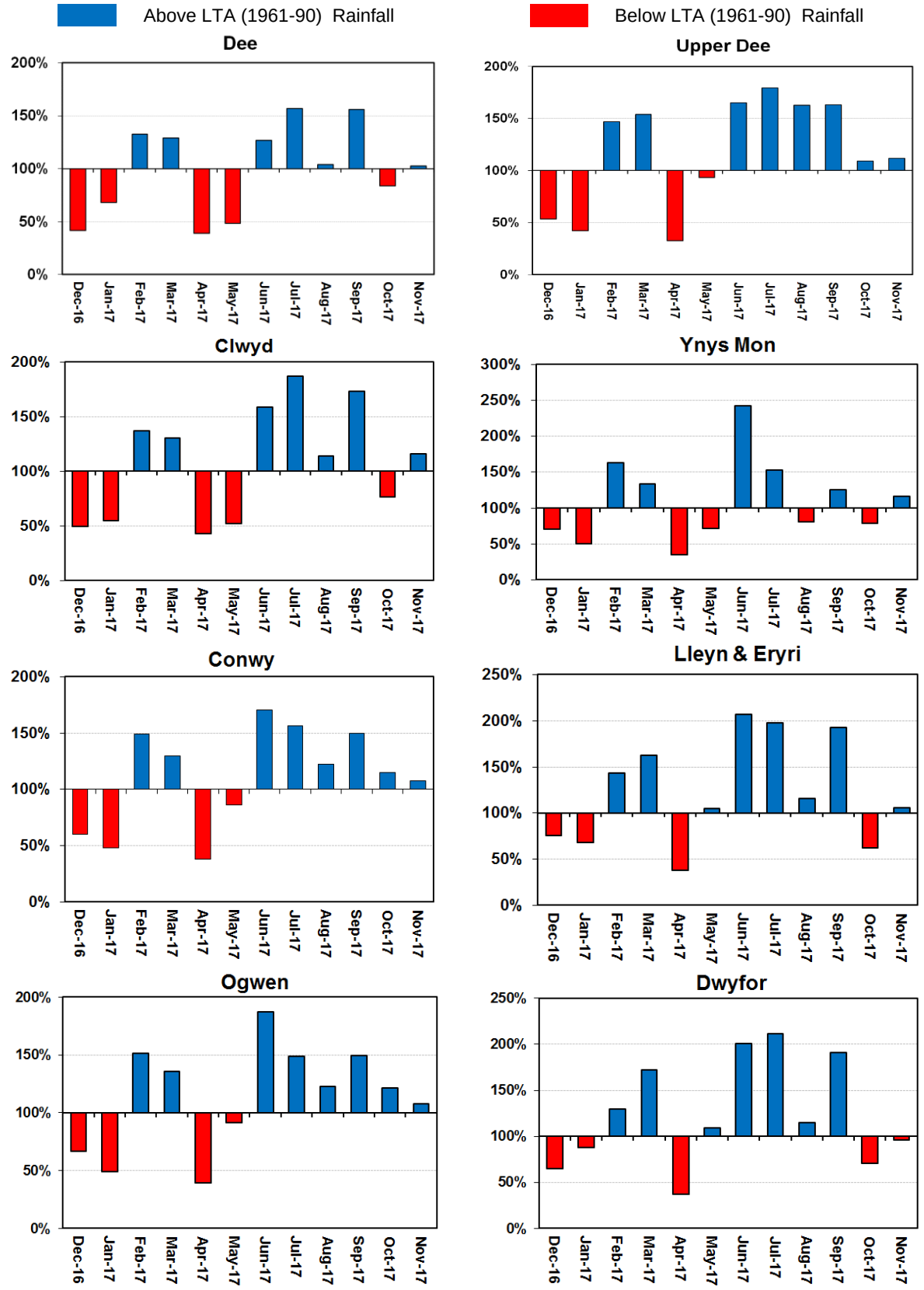
Figure 4: Rainfall Charts: South East Wales



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).*

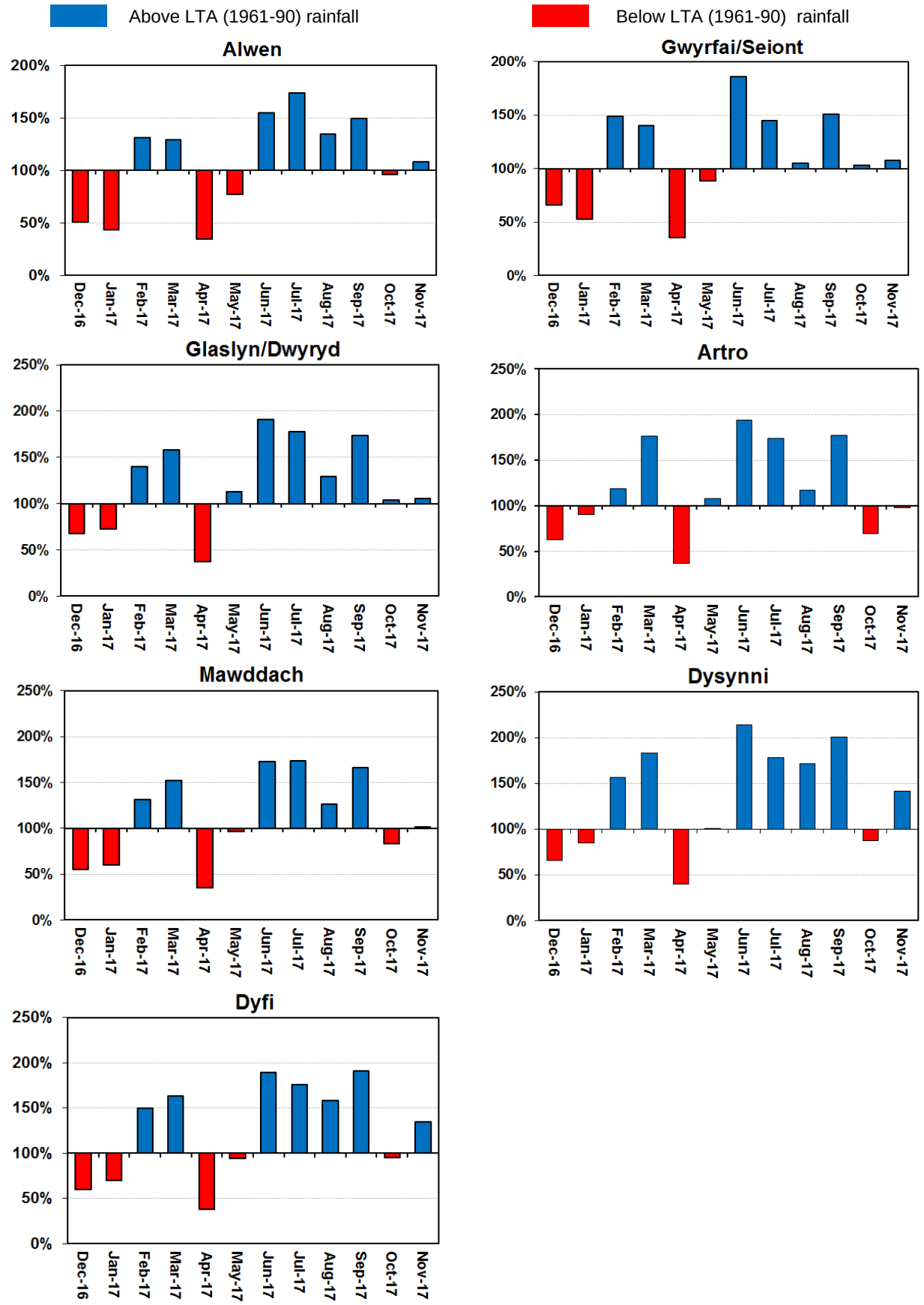
Return to Summary

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).*

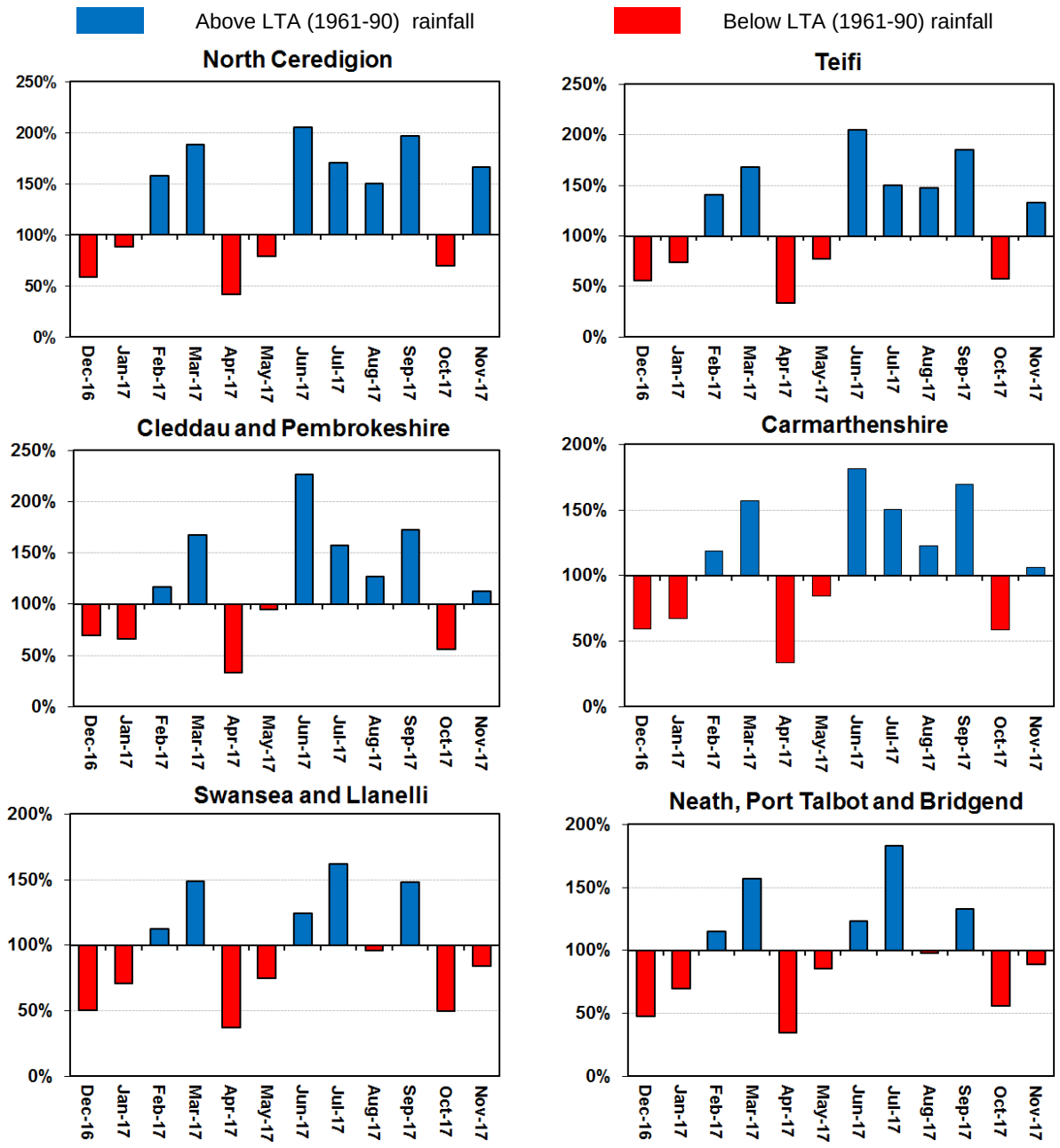
Return to Summary



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)

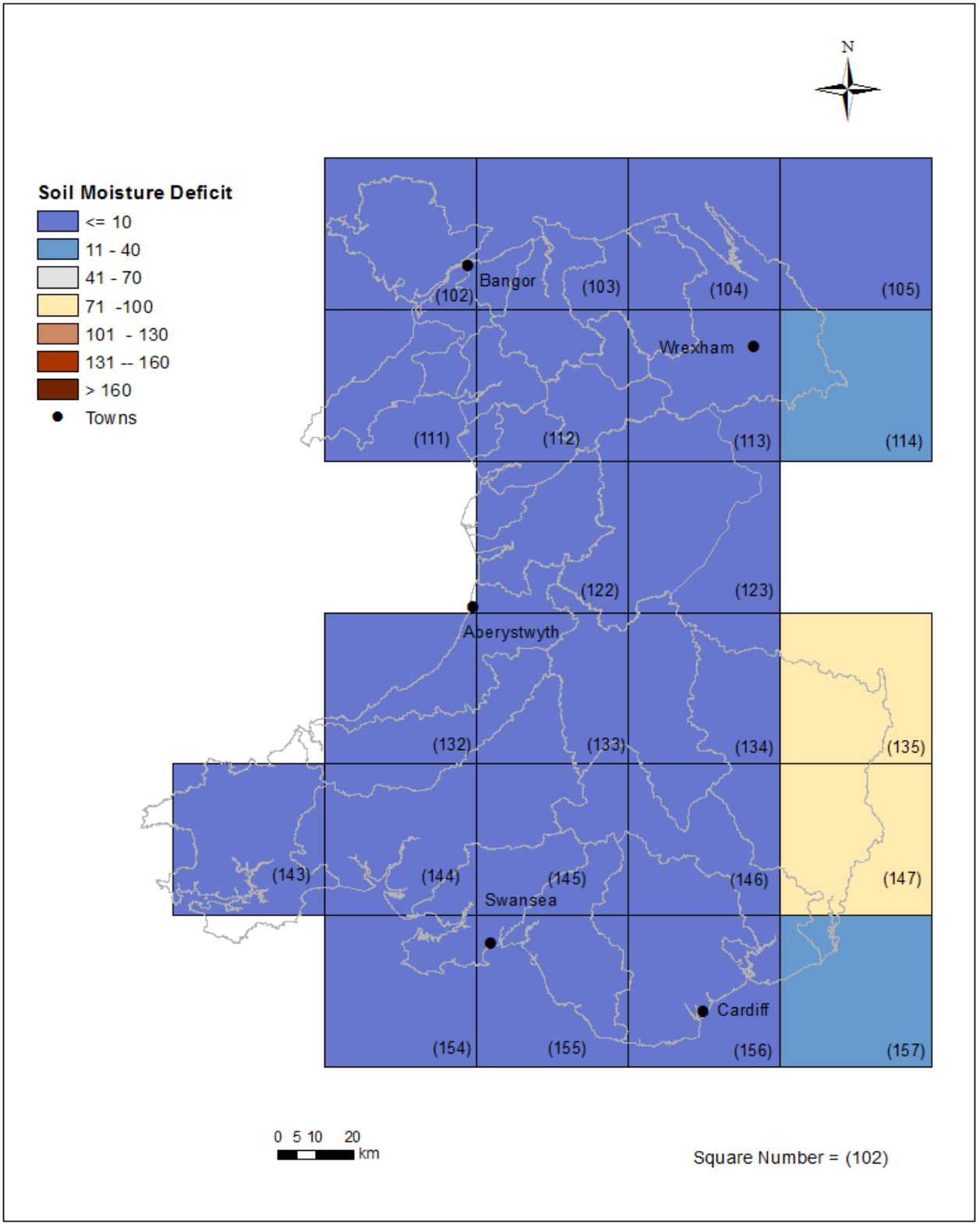


Figure 7: MORECS soil moisture deficits (mm) for November for real land use for Natural Resources Wales *(Source: Met Office © Crown Copyright).*

Return to Summary

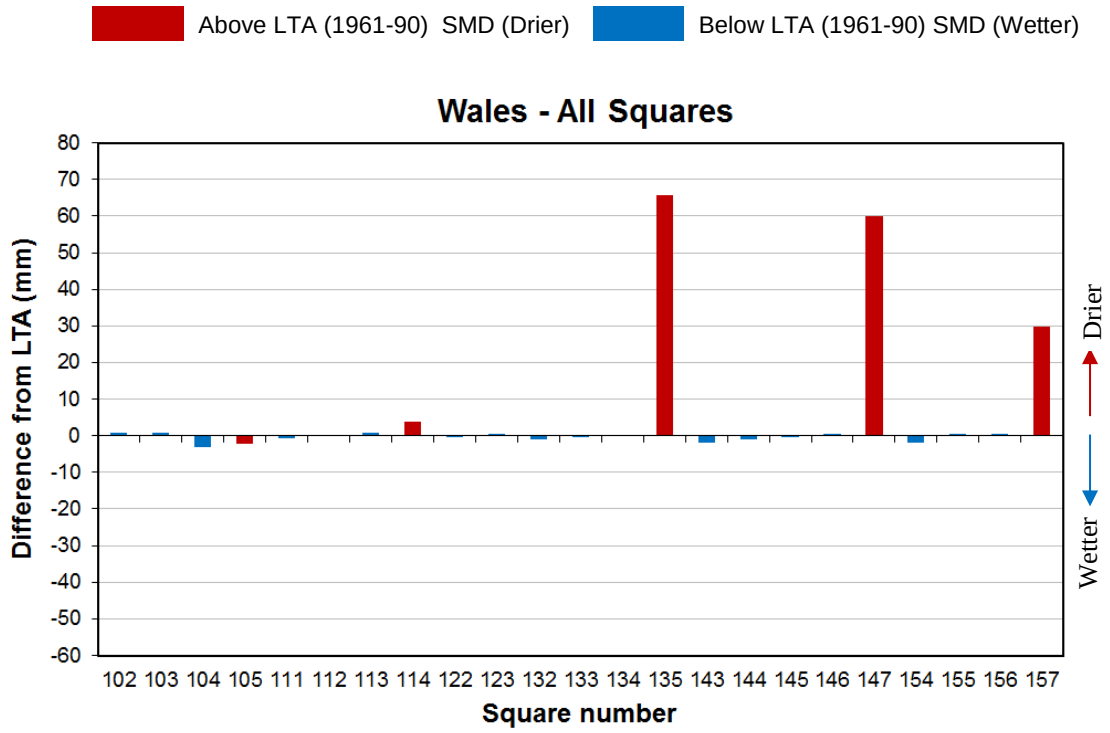


Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for November for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

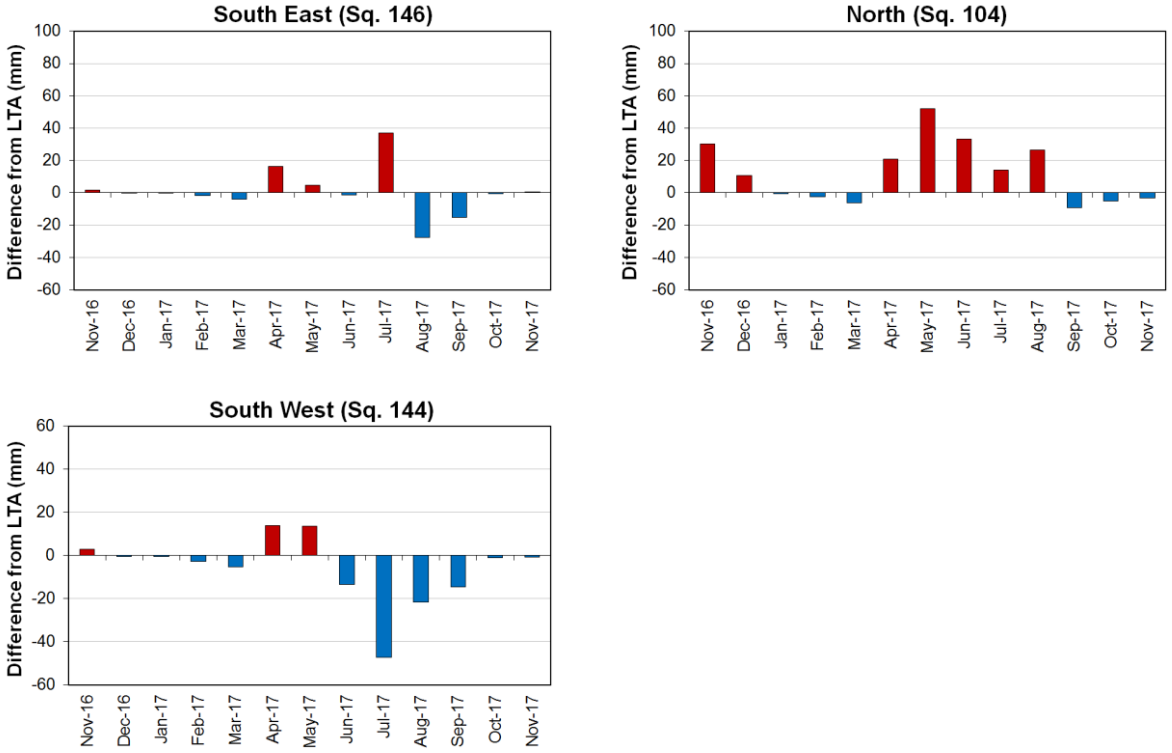


Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales.)

Return to Summary

River Flow

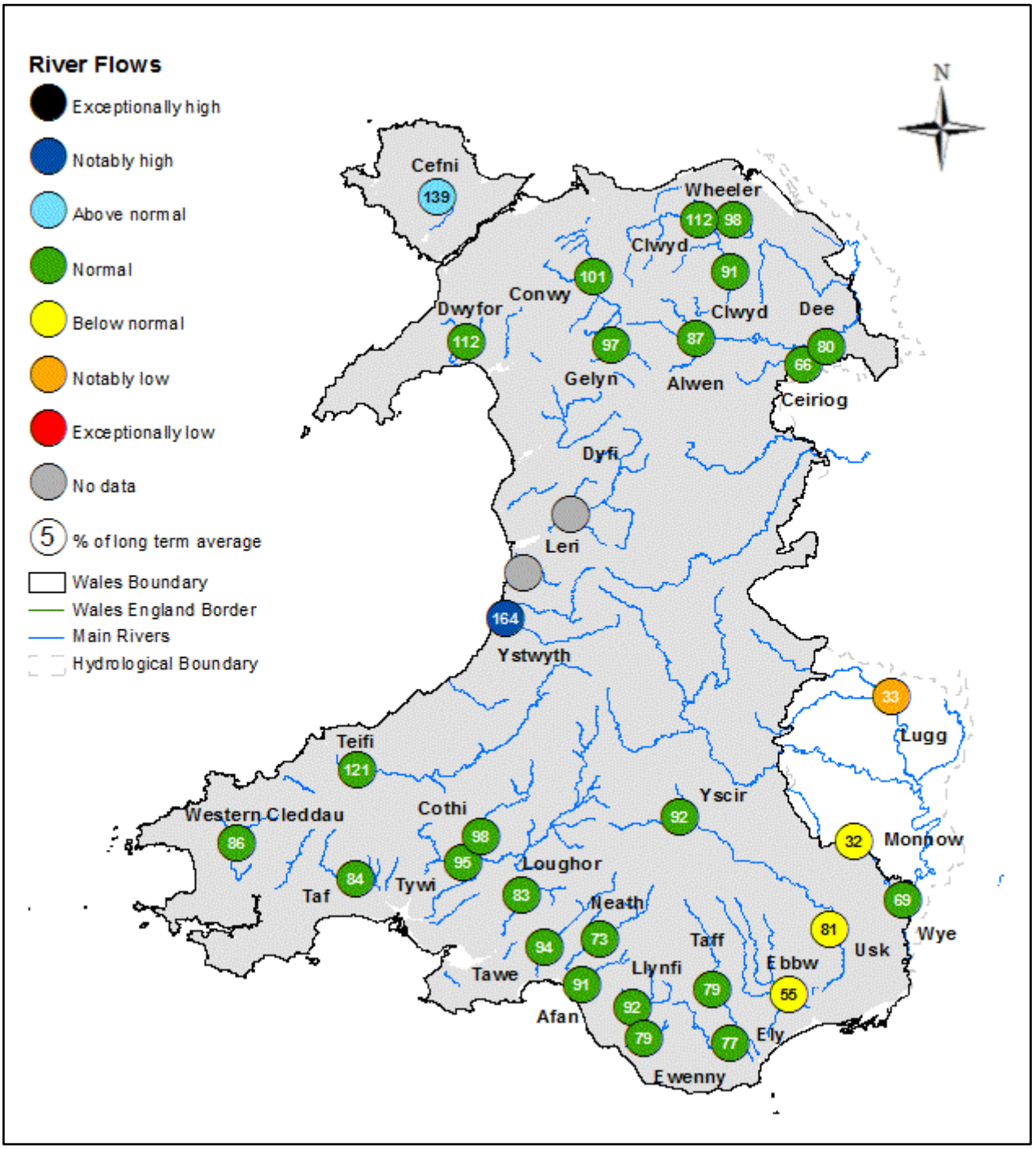


Figure 10: Monthly mean river flow for November, classed relative to analysis of historic November monthly means *(Source: Natural Resources Wales).*

Return to Summary

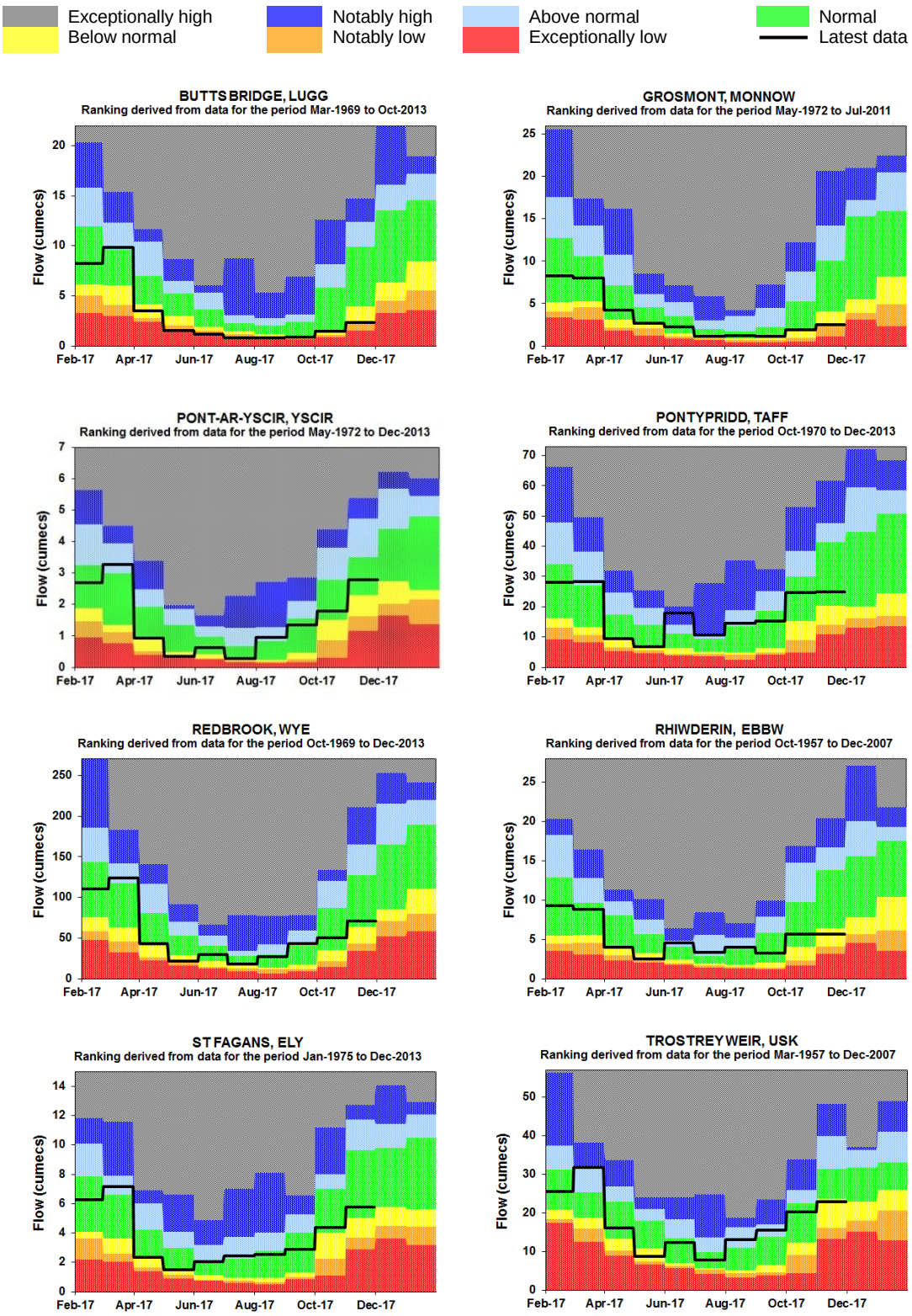
SITE NAME	RIVER	November 2017			November 2016		November LTA		
		Class	% of LTA	Flow (m3/s)	% of LTA	Flow (m3/s)	LTA	Monthly Min (m3/s)	Monthly Max (m3/s)
River Flow Sites : South East Area									
Butts Bridge	Lugg	Notably low	33%	2.32	69%	4.94	7.11	0.99	19.30
Grosmont	Monnow	Below normal	32%	2.52	86%	6.70	7.81	0.83	21.40
Pont ar Yscir	Yscir	Normal	92%	2.79	62%	1.88	3.04	0.90	6.40
Pontypridd	Taff	Normal	79%	24.80	46%	14.50	31.44	10.10	71.20
Redbrook	Wye	Normal	69%	71.00	63%	64.60	102.25	32.80	272.00
Rhiwderin	Ebbw	Below normal	55%	5.65	63%	6.51	10.39	1.94	24.50
St Fagans	Ely	Normal	77%	5.78	83%	6.27	7.51	2.31	14.80
Trostrey Weir	Usk	Below normal	81%	22.80	60%	16.70	27.99	9.75	68.70
River Flow Sites : North Area									
Bodfari	Wheeler	Normal	98%	0.86	89%	0.78	0.88	0.25	3.81
Bodffordd	Cefni	Above normal	139%	1.17	62%	0.52	0.84	0.33	2.37
Brynkinalt Weir	Ceiriog	Normal	66%	2.91	60%	2.64	4.42	1.27	11.40
Cwmlanerch	Conwy	Normal	101%	29.70	61%	17.90	29.45	9.05	71.70
Cynefail	Gelyn	Normal	97%	1.04	64%	0.68	1.07	0.38	2.92
Dol y Bont	Leri						2.53	0.90	4.78
Druid	Alwen	Normal	87%	7.00	55%	4.40	8.06	2.47	20.10
Dyfi bridge	Dyfi						36.93	14.00	86.30
Garndolbenmaen	Dwyfor	Normal	112%	4.64	62%	2.55	4.14	1.06	7.71
Manley Hall	Dee	Normal	80%	38.20	58%	27.70	47.52	15.70	114.00
Pont y Cambwll	Clwyd	Normal	112%	11.10	69%	6.84	9.88	1.68	34.40
Ruthin Weir	Clwyd	Normal	91%	2.05	51%	1.15	2.26	0.42	7.32
River Flow Sites : South West Area									
Capel Dewi	Tywi	Normal	95%	64.30	43%	28.70	67.47	23.00	145.00
Clog y Fran	Taf	Normal	84%	10.90	57%	7.41	13.02	3.76	27.80
Coytrahen	Llynfi	Normal	92%	3.40	63%	2.32	3.68	1.28	7.12
Felin Mynachdy	Cothi	Normal	98%	18.40	41%	7.77	18.73	5.94	44.70
Glanteifi	Teifi	Normal	121%	59.30	53%	25.90	49.12	16.10	115.00
Keepers Lodge	Ewenny	Normal	79%	2.21	81%	2.27	2.79	1.08	5.67
Marcroft	Afan	Normal	91%	7.13	45%	3.48	7.82	2.85	14.20
Pont Llolwyn	Ystwyth	Notably high	164%	16.20	60%	5.97	9.89	3.28	23.70
Treffgarne *	Western Cleddau	Normal	86%	4.95	111%	6.39	9.25	2.18	21.00
Resolven	Neath	Normal	73%	11.20	38%	5.80	15.44	5.10	33.70
Tir-y-Dail	Loughor	Normal	83%	2.72	51%	1.66	3.28	1.05	6.51
Ynystanglws	Tawe	Normal	94%	16.80	46%	8.35	17.96	7.06	36.30

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

Return to Summary

River Flow Charts

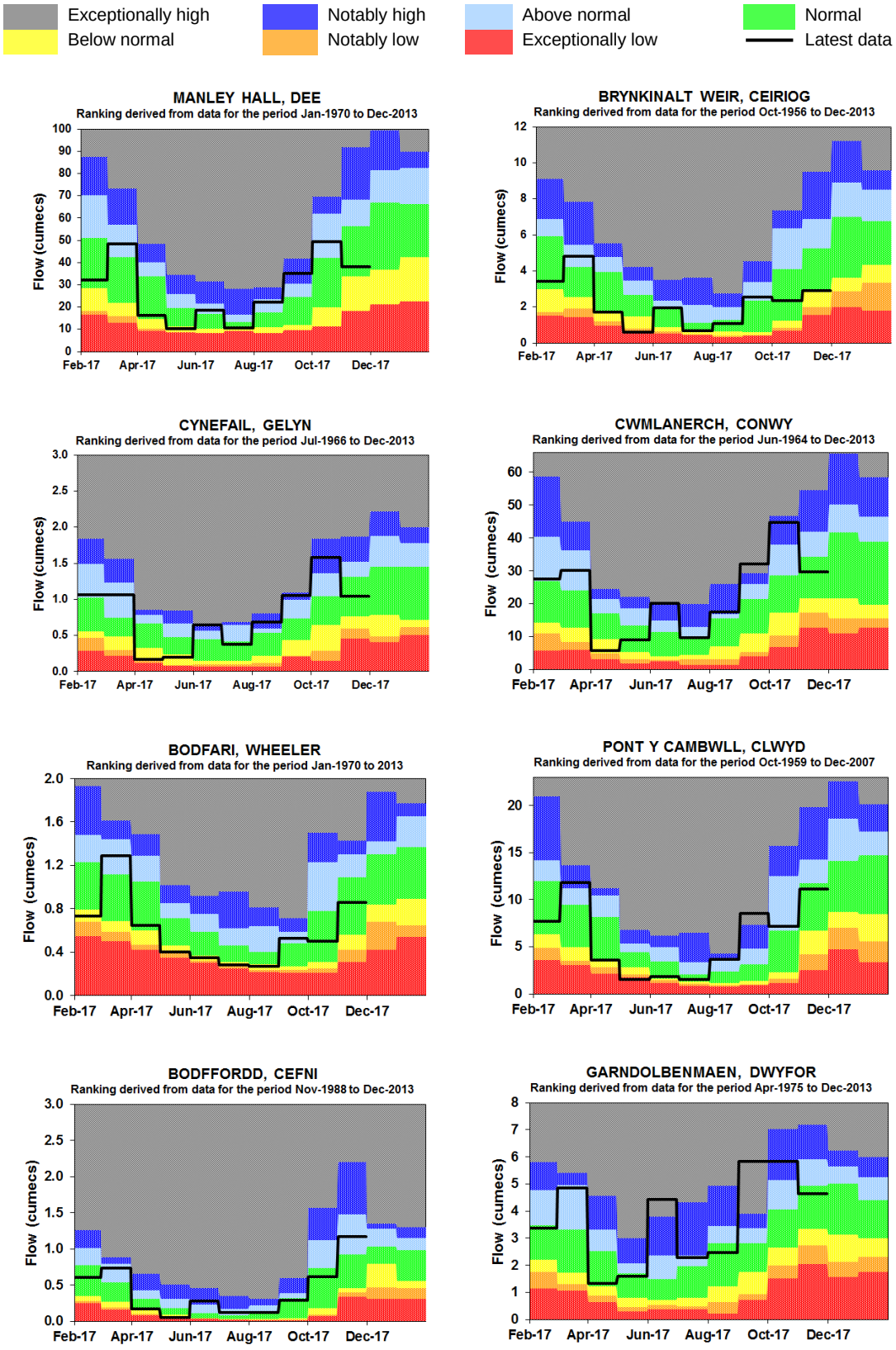
Figure 12: River Flow Charts: South East Wales



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*).

Return to Summary

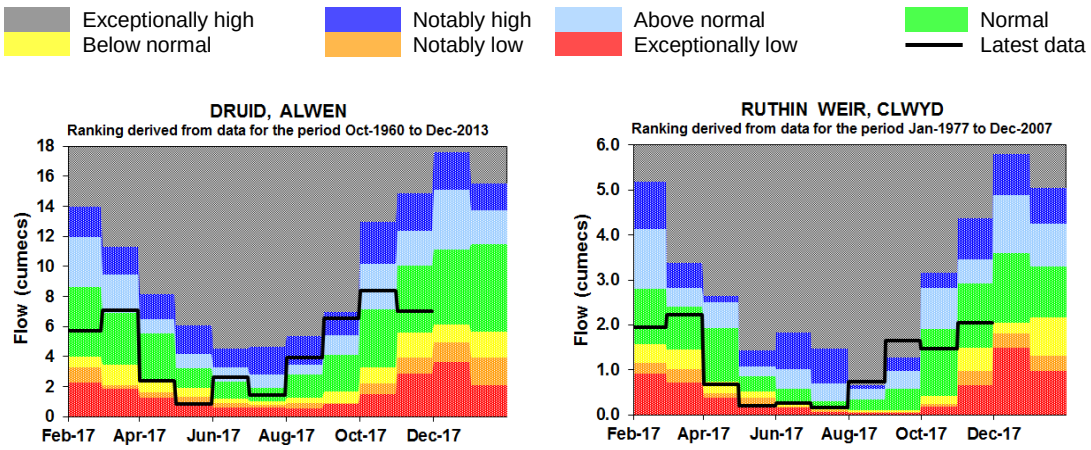
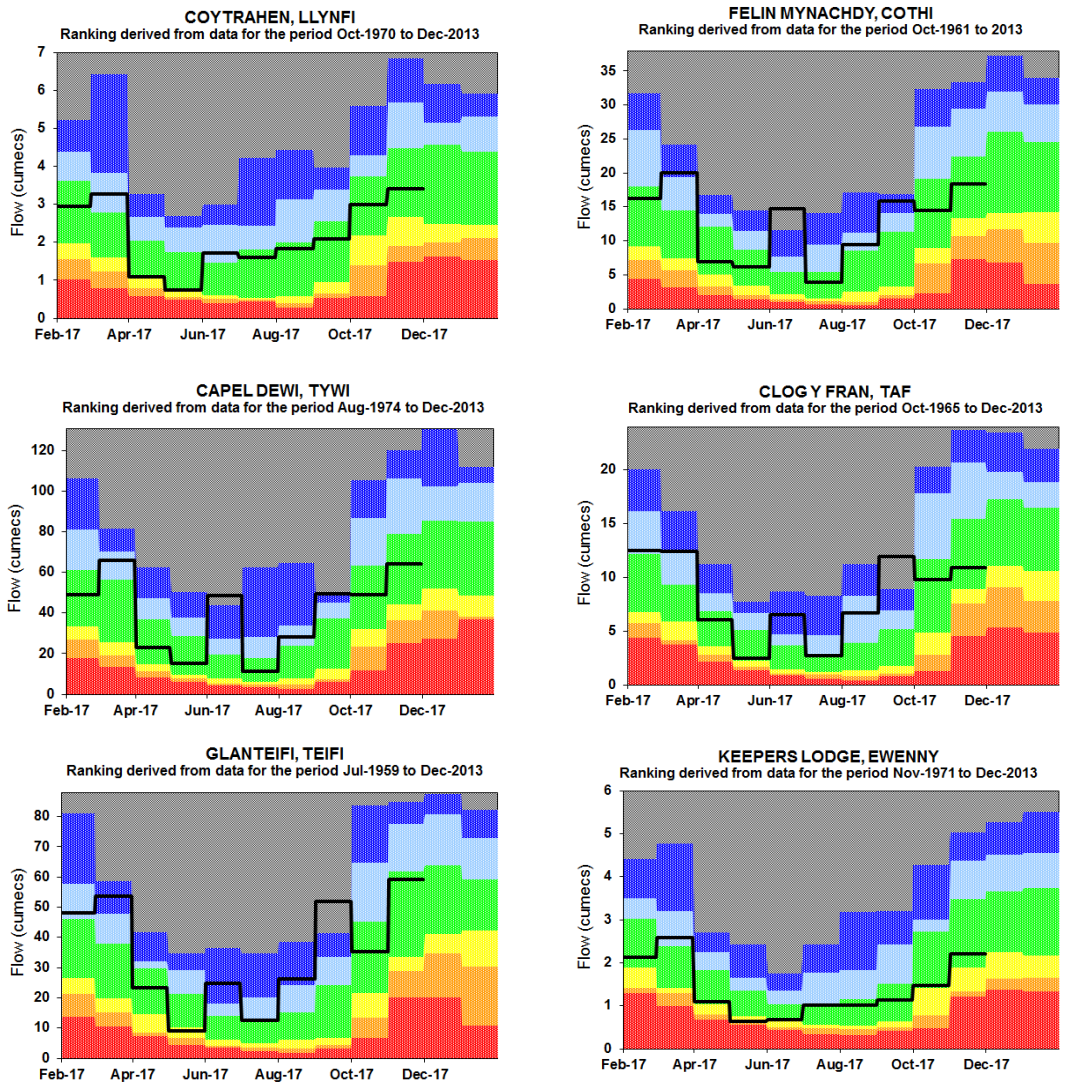
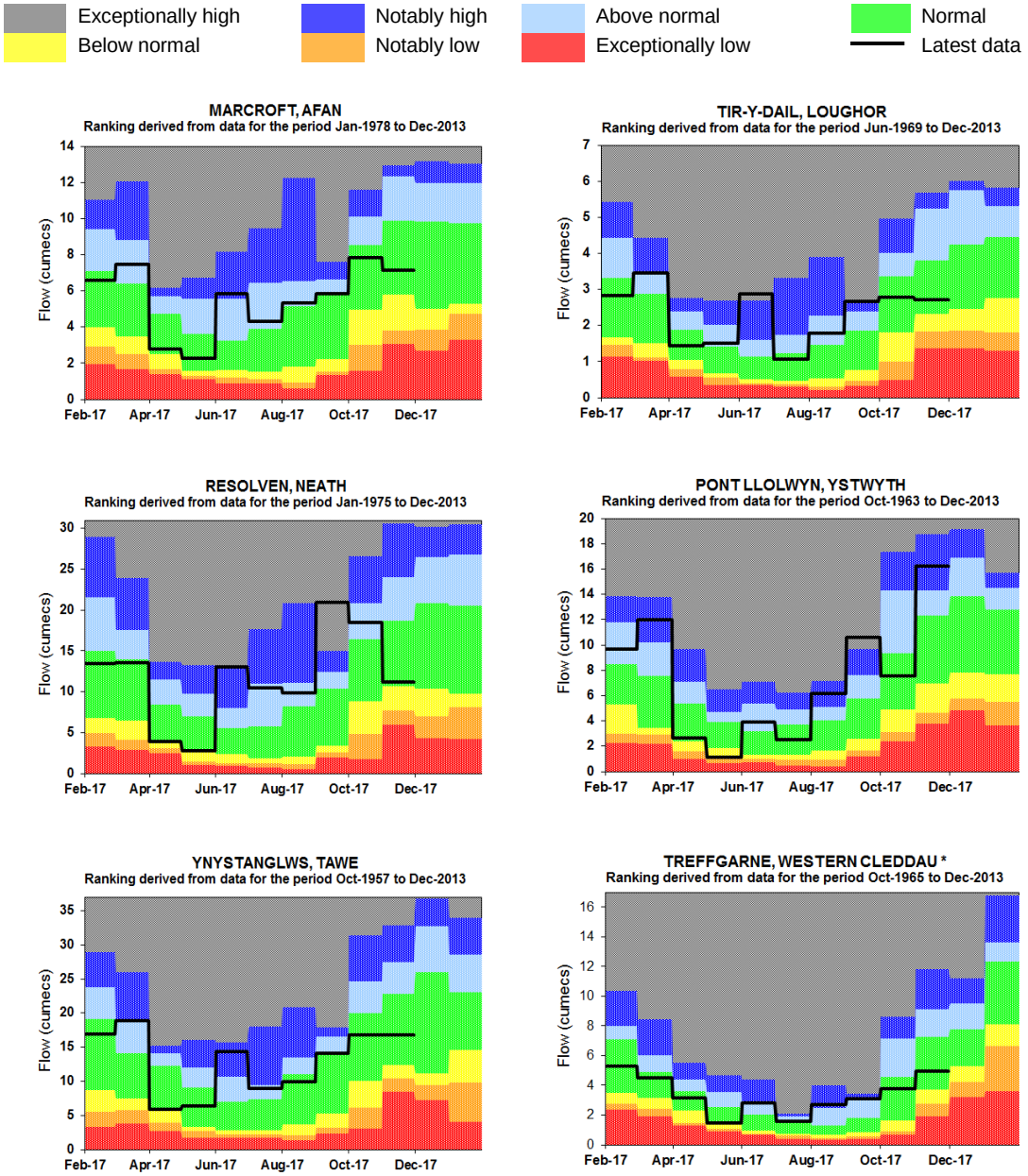


Figure 14: River Flow Charts: South West Wales



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 for Treffgarne station the ranking bands were derived using scaled historical flows (1965-2003) from the downstream station at Prendergast Mill)

Return to Summary

Groundwater Levels

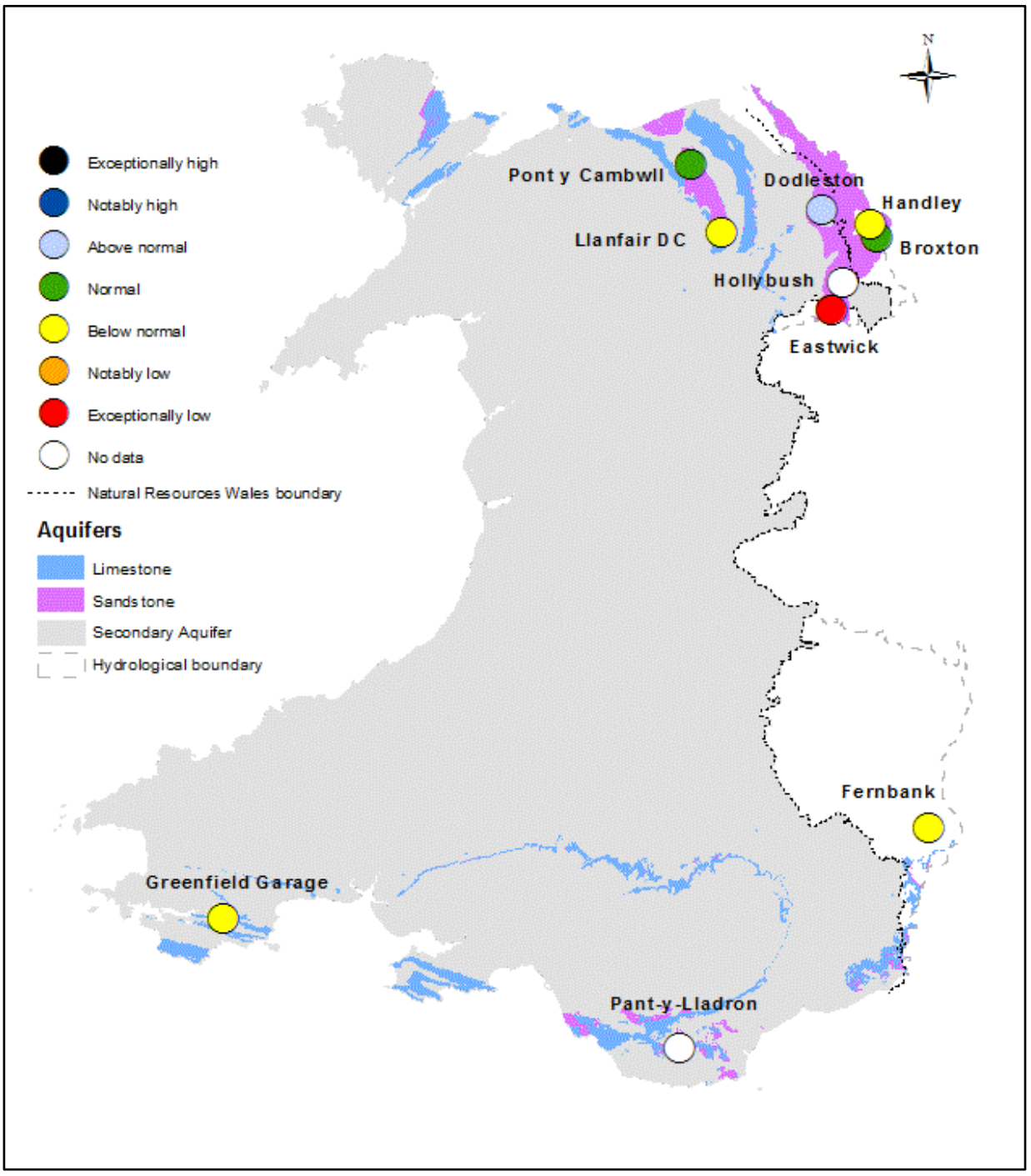
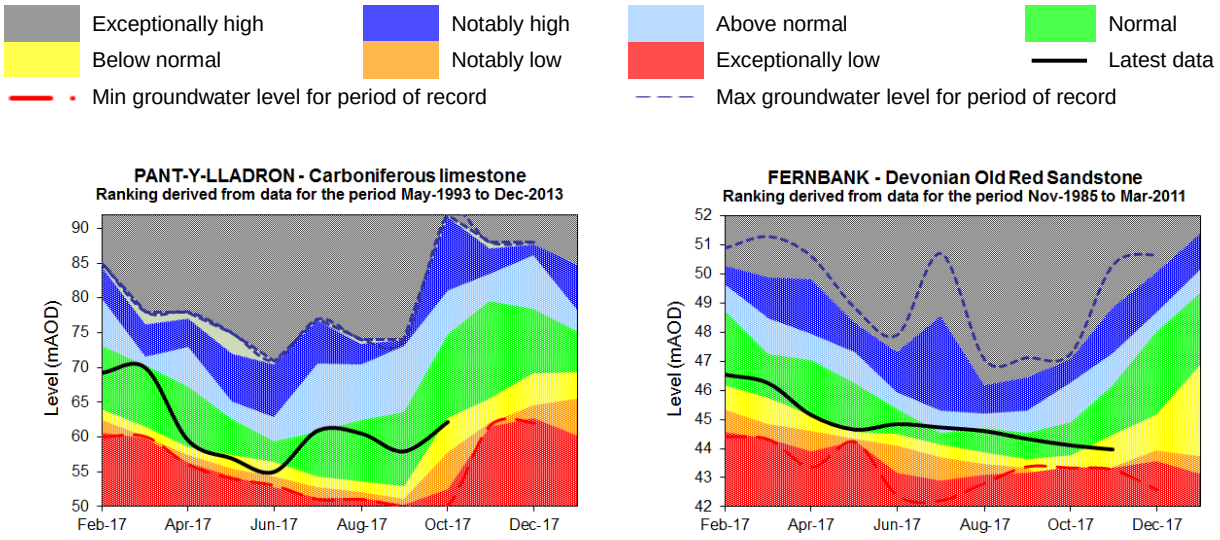


Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic November groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

Return to Summary

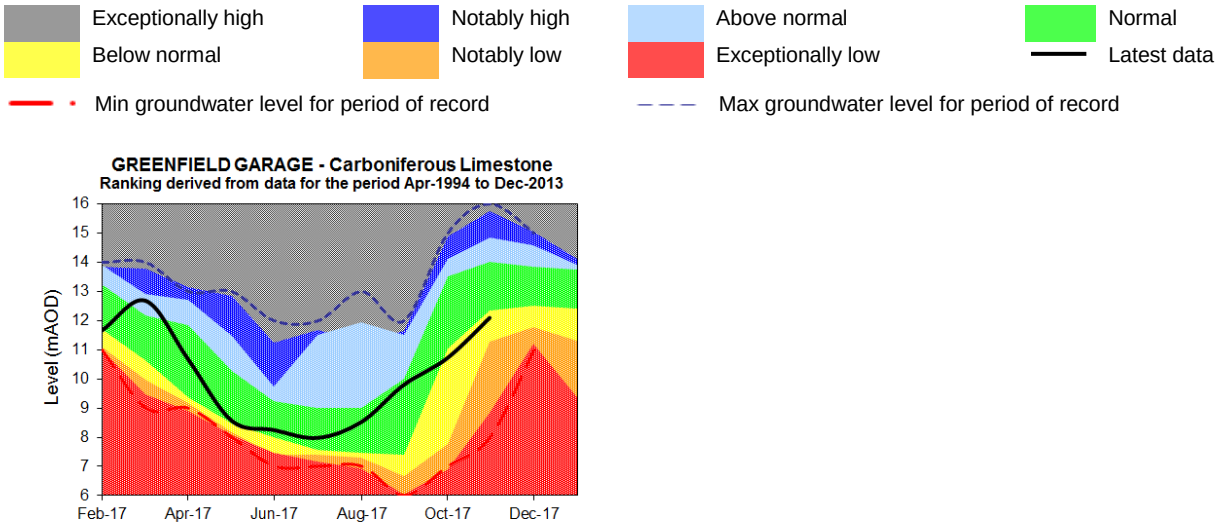
Groundwater charts

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).* (Please note that there is no data for Pant-Y_Lladron for November)

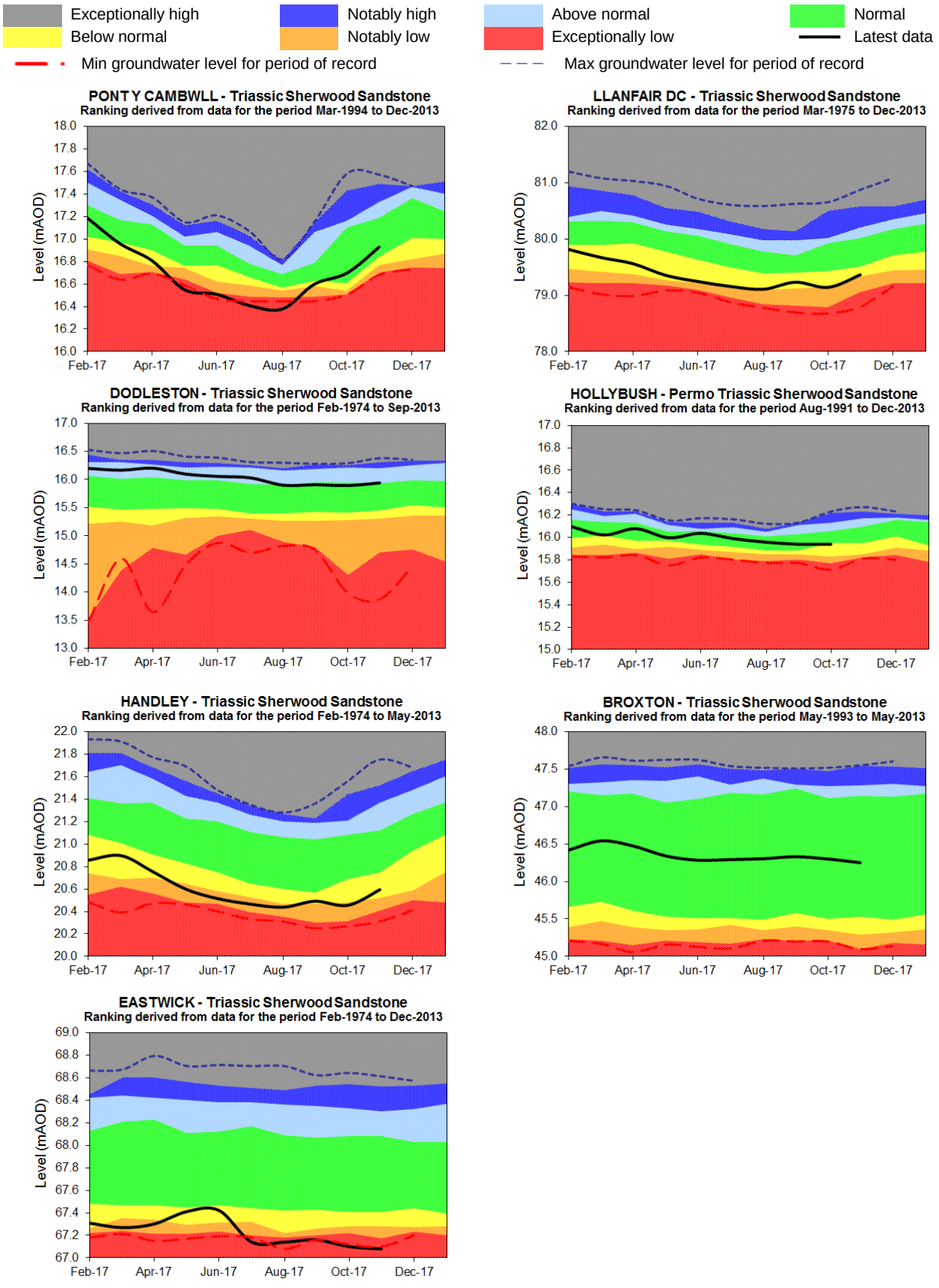
Figure 17: Groundwater level charts: South West Wales



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

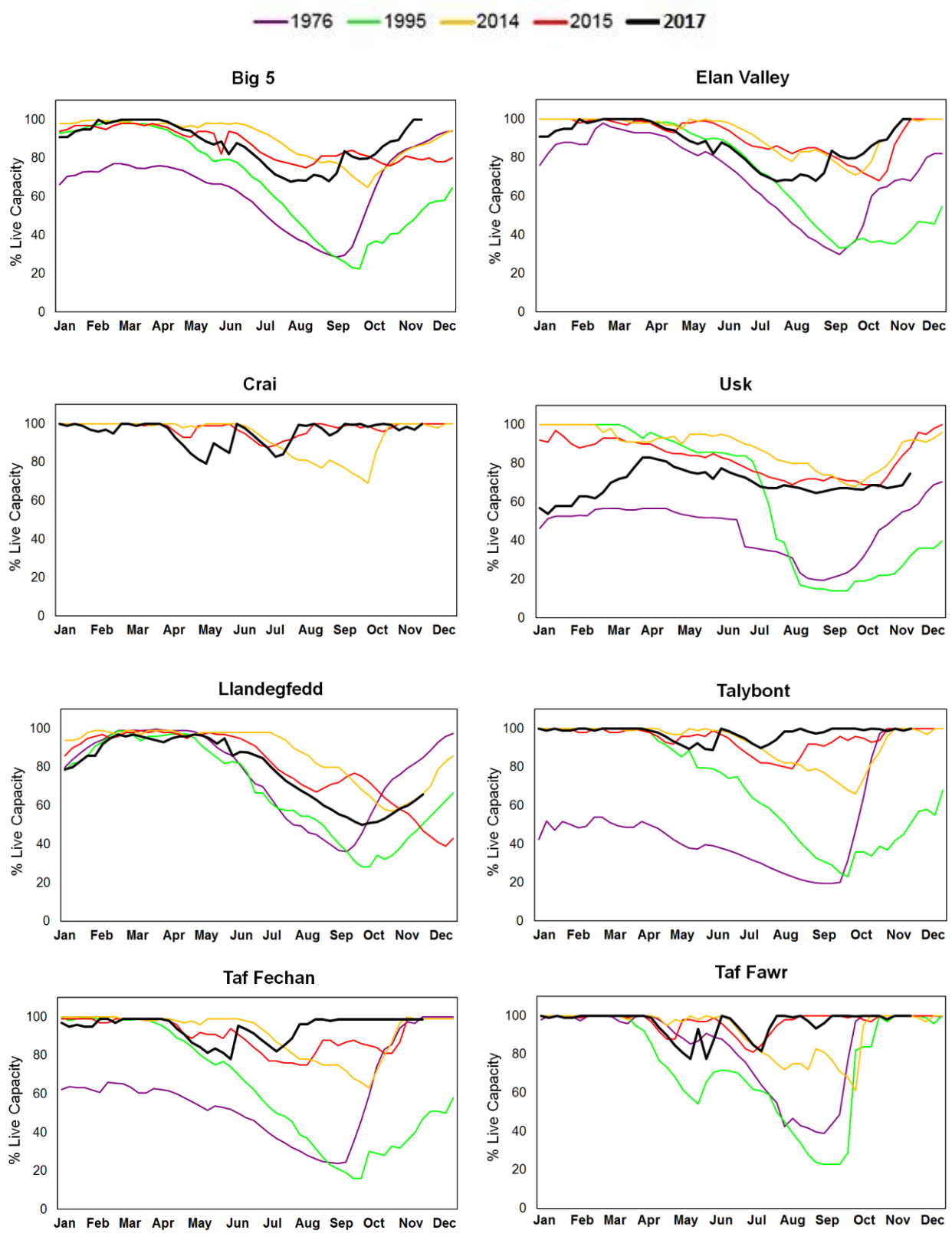


End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales and Environment Agency)*. (Please note that there is no data for Hollybush for November)

Return to Summary

Reservoir Storage

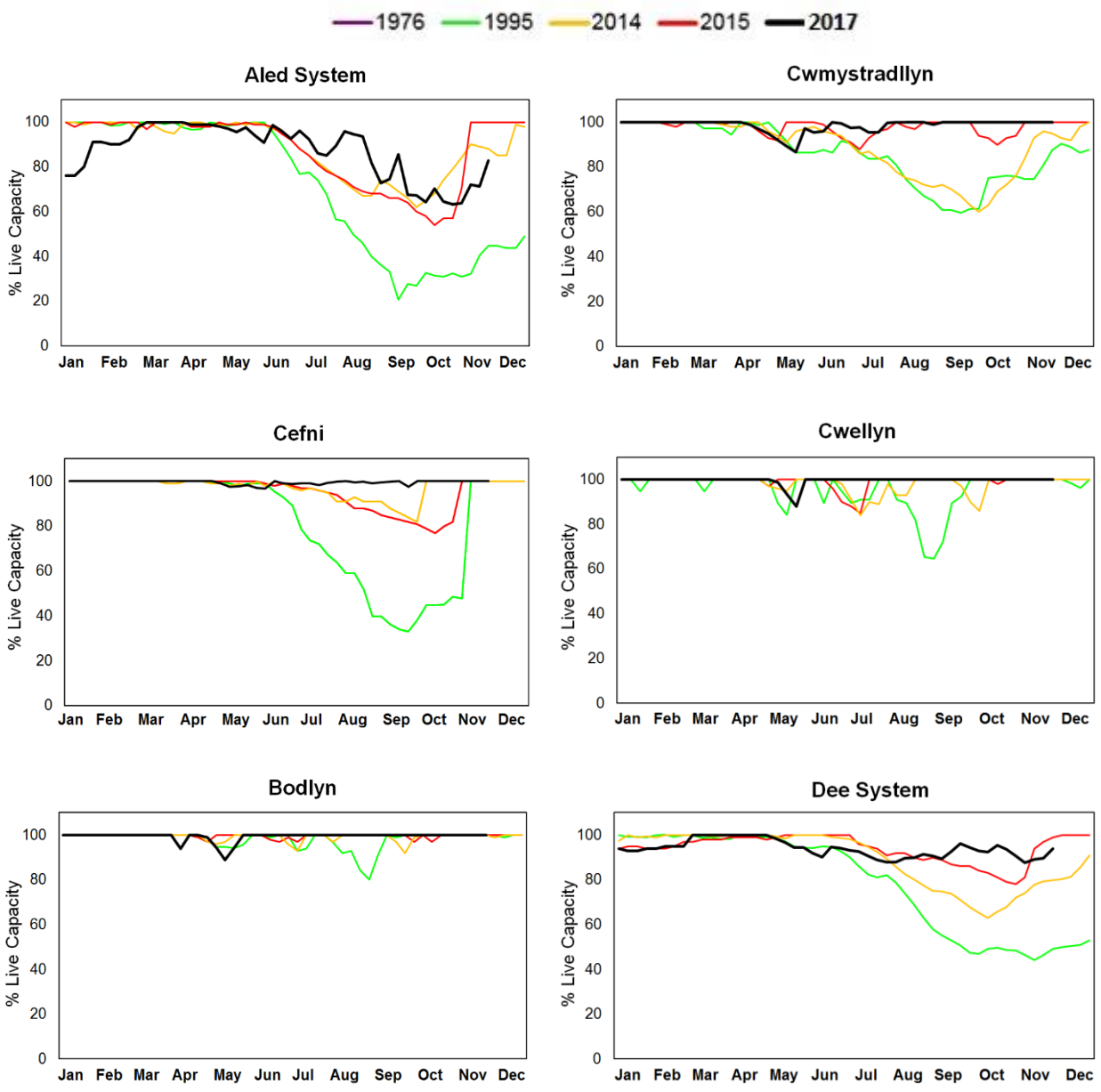
Figure 19: Reservoir charts: South East Wales



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

Return to Summary

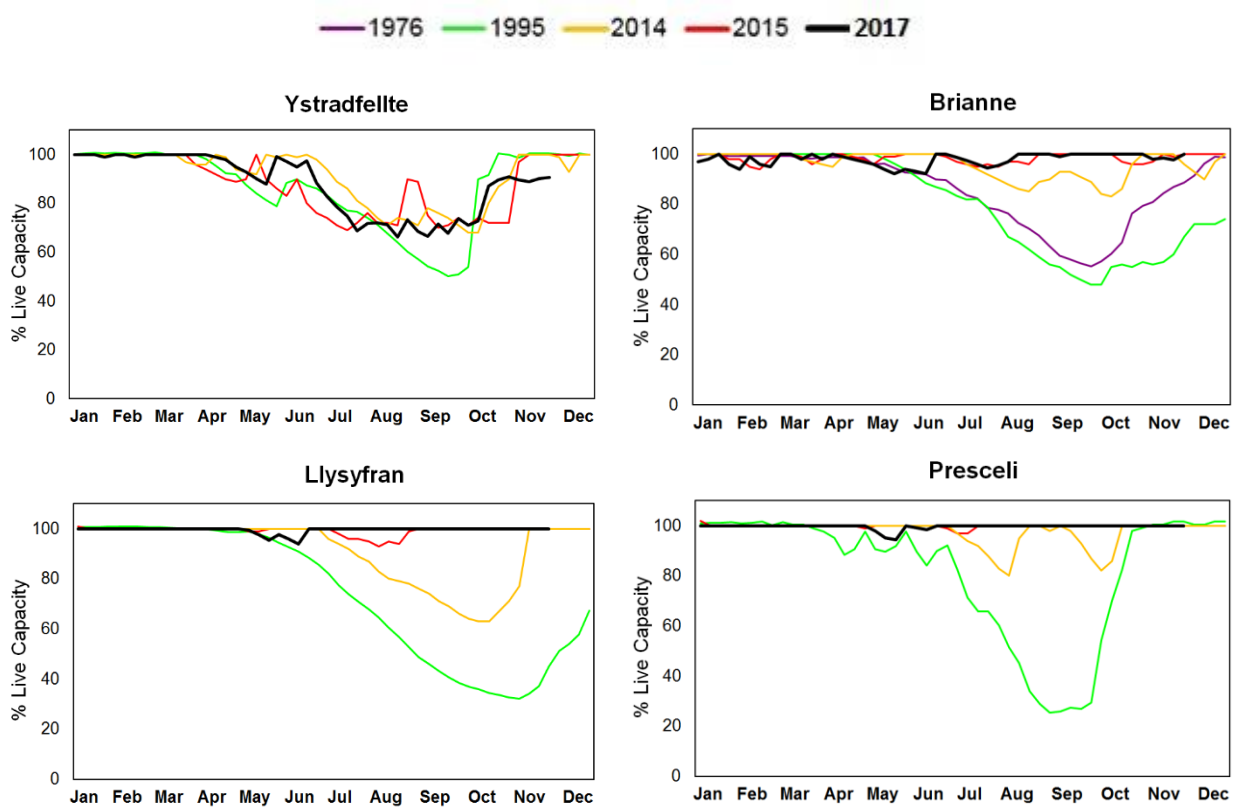
Figure 20: Reservoirs charts: North Wales



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

Return to Summary

Figure 21: Reservoirs charts: South West Wales



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

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).