Monthly Water Situation Report
November 2015

Natural Resources Wales

- **The monthly rainfall total received for Wales during November was 183% of the Long Term Average (LTA, 1961-90). North, South West and South East Wales received 200%, 162% and 188% of the LTA, respectively.**
- **At the end of November, soil moisture deficit (SMD) across Wales was between 0mm and 36.6mm for all MORECS squares. The difference when compared to the long term average November (1961-90), ranged from -9.4mm to 19.3mm. 21 out of 23 squares had SMD values less than the LTA (Wetter than the long-term average).**
- **For river flows in Wales, 8 out of 28 indicator sites were classed as *Normal* for November, 13 sites were classed as *Above normal* and 5 sites were *Notably high*. The remaining 2 sites were classed as *Exceptionally high*.**
- **The overall reservoir storage across all indicator sites was above 98% full at the end of November and all reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total received for Wales was 183% of the LTA for November.

The percentage of rainfall recorded in catchments compared with the long term average (1961-90) across Wales was between 143% (Lower Wye) and 234% (Ogwen). The rainfall total for Wales was 122mm more than the November LTA. For South East, South West and North Wales the rainfall totals were 188%, 162% and 200% of the LTA, respectively. Therefore, November was relatively wet when compared to the monthly LTA value for all the three areas where totals were equal or above 143% of LTA.

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, 21 out of 23 MORECS squares had SMD values less than the LTA (wetter than average) while the remaining 2 sites (Square 135 and 147) had values greater than the LTA (driver than average).

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows at 8 sites (out of 28) are classed as *Normal.* 13 sites were classed as *Above normal* and 5 sites were *Notably high*. The remaining 2 sites were classed as *Exceptionally high*.

***North*:** Flows in the area ranged from 77% (River Cefni at Bodffordd) to 221% (River Conwy at Cwmlanerch) of the November LTA Values.

***South East*:** Flows in the area ranged from 65% (River Lugg at Butts Bridge and River Monnow at Grosmont) to 164% (River Taff at Pontypridd) of the November LTA values.

South West: The river flows within this area ranged from 121% (River Ewenny at Keepers Lodge) to 184% (River Tawe at Ynystanglws) 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 all indicator sites were classed between *Notably low* (Eastwick) and *Notably high (*Dodleston*)* with 1 sites (Handley) classed as *Below normal* and 1 site (Pant-y-Lladron) classed as *Above normal*. The remaining 6 sites (Fernbank, Greenfield garage, Pont-y-Cambwll, Llanfair, Hollybush and Broxton) were classed as *Normal.*

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

Reservoir Storage

At the end of November storage at all of the indicator reservoirs exceeded 98% full and 13 out of 17 indicator reservoirs were full (100%) at the end of November. All the reservoirs were within their normal operating ranges .

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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Natural Resources Wales

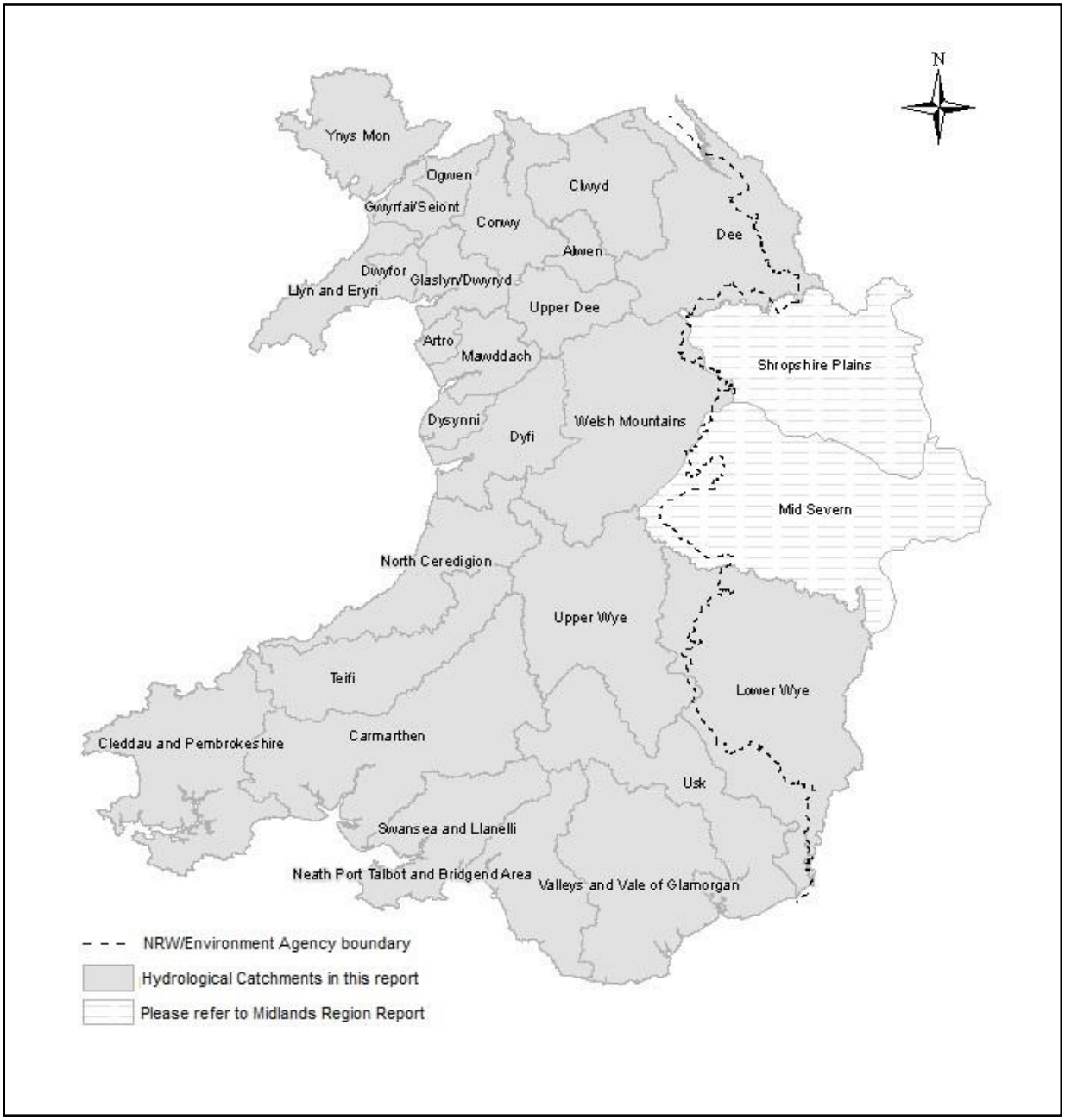

Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

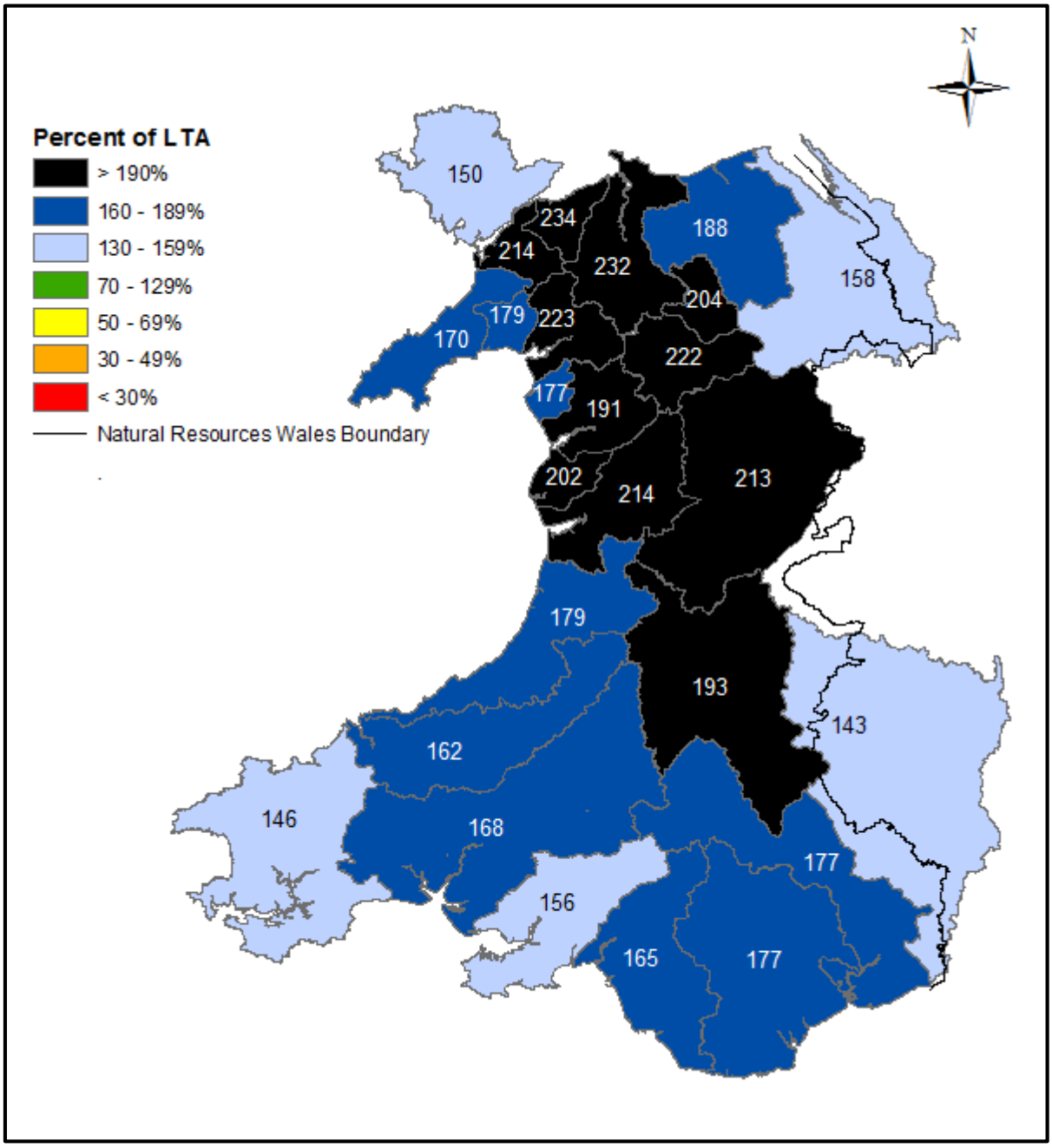

Figure 2: Calculated catchment average November rainfall totals as a percentage of the 1961-90 November long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

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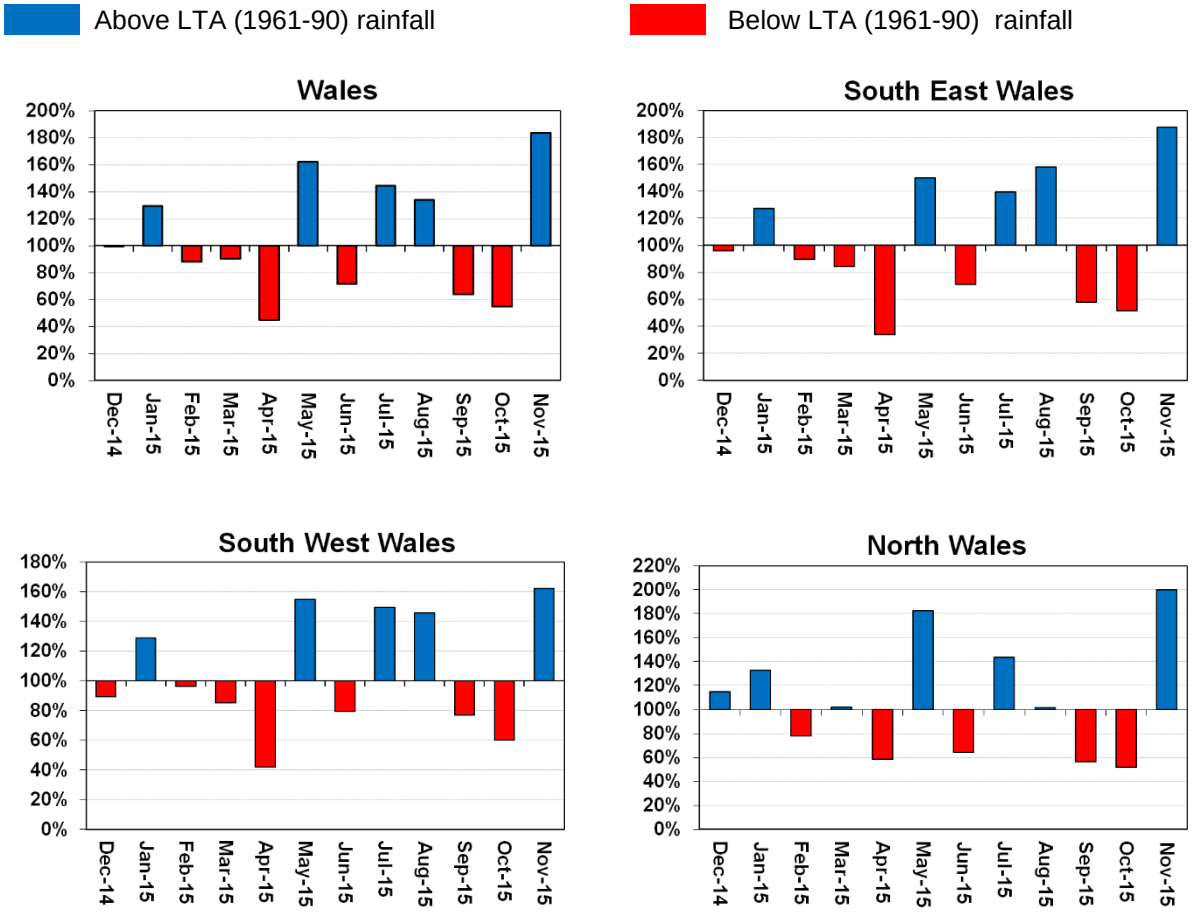
Rainfall Charts

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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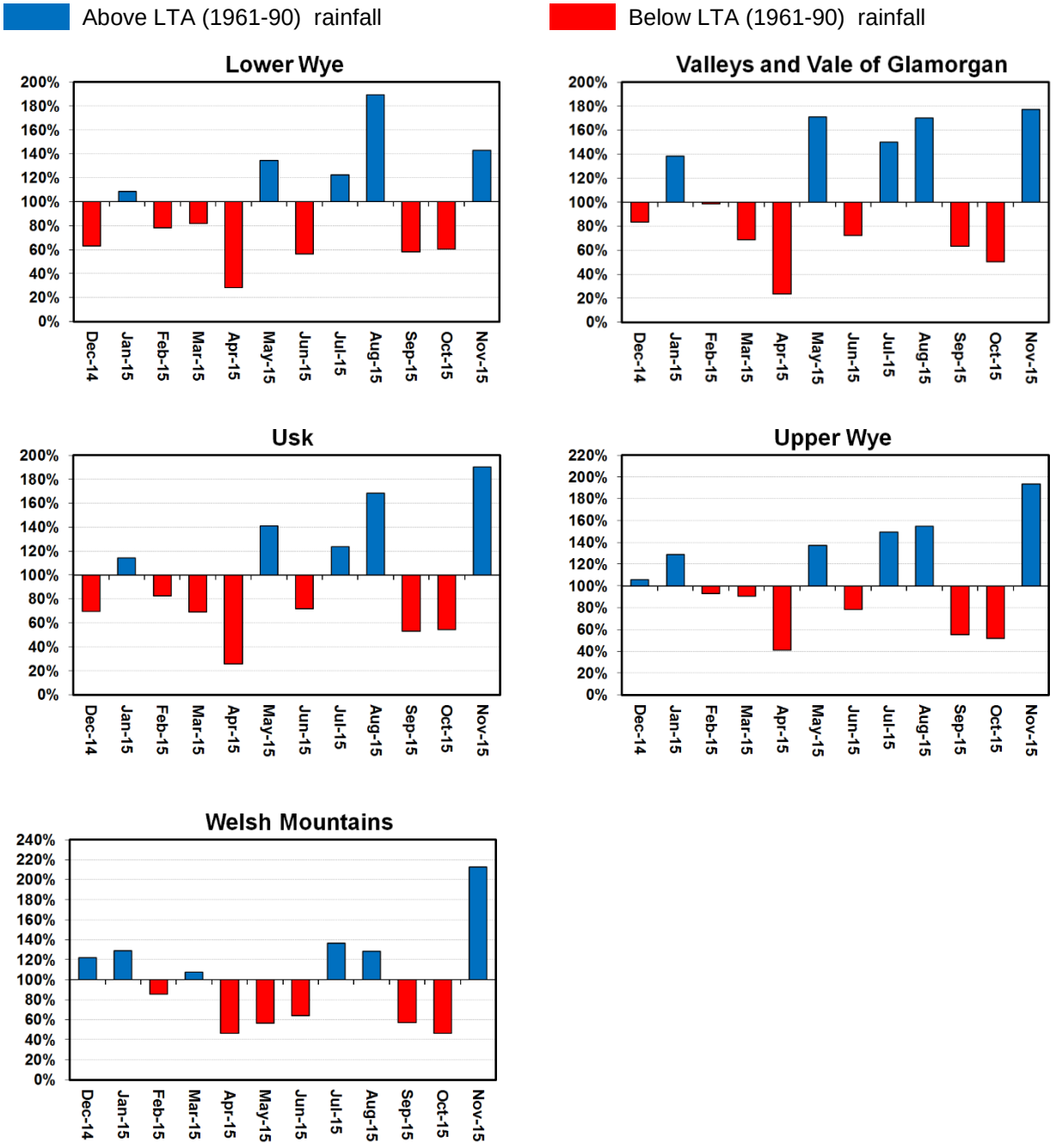
Figure 4: Rainfall Charts: South East Wales



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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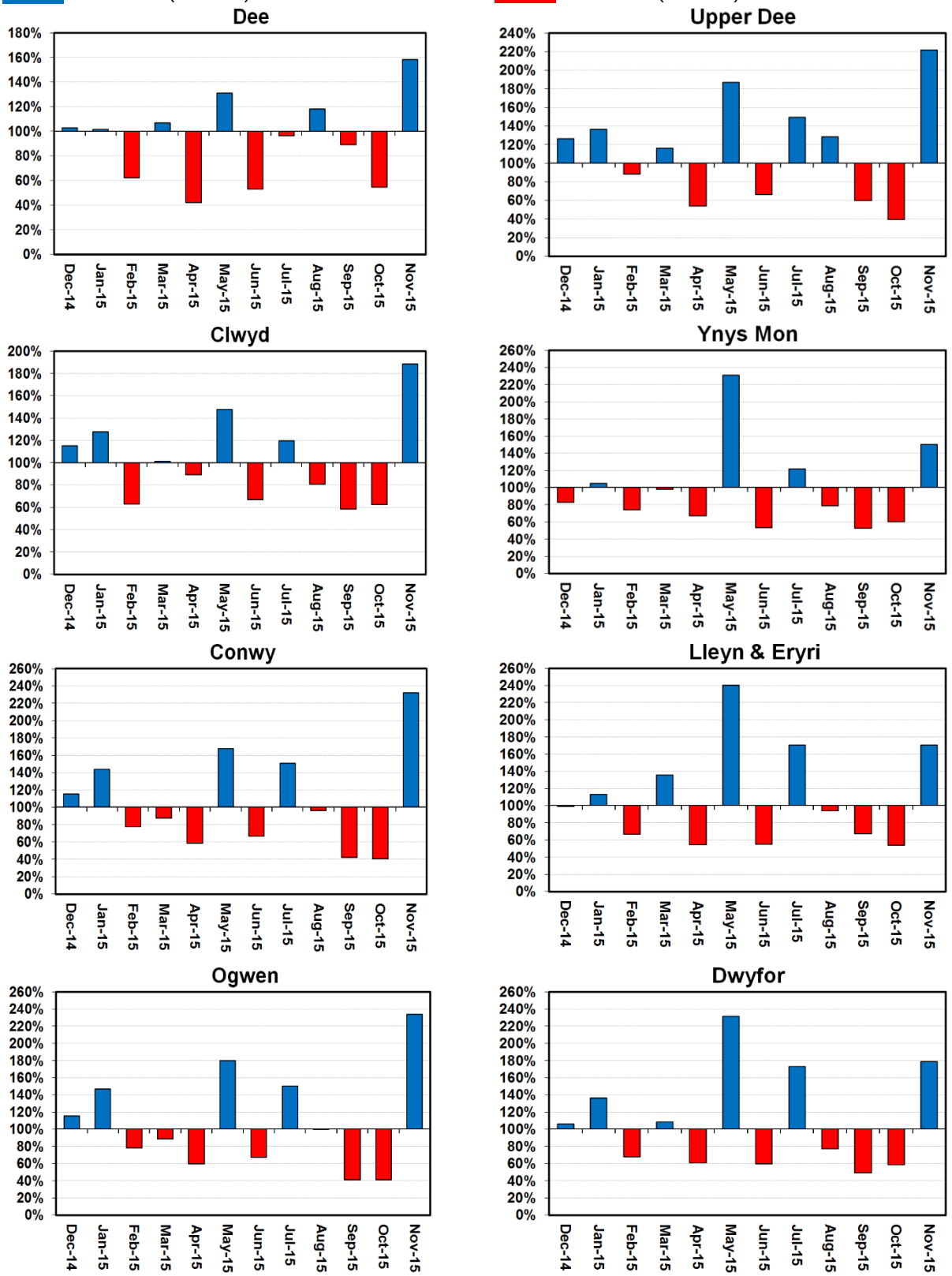
Figure 5: Rainfall Charts: North Wales

Above LTA (1961-90) rainfall Below LTA (1961-90) rainfall



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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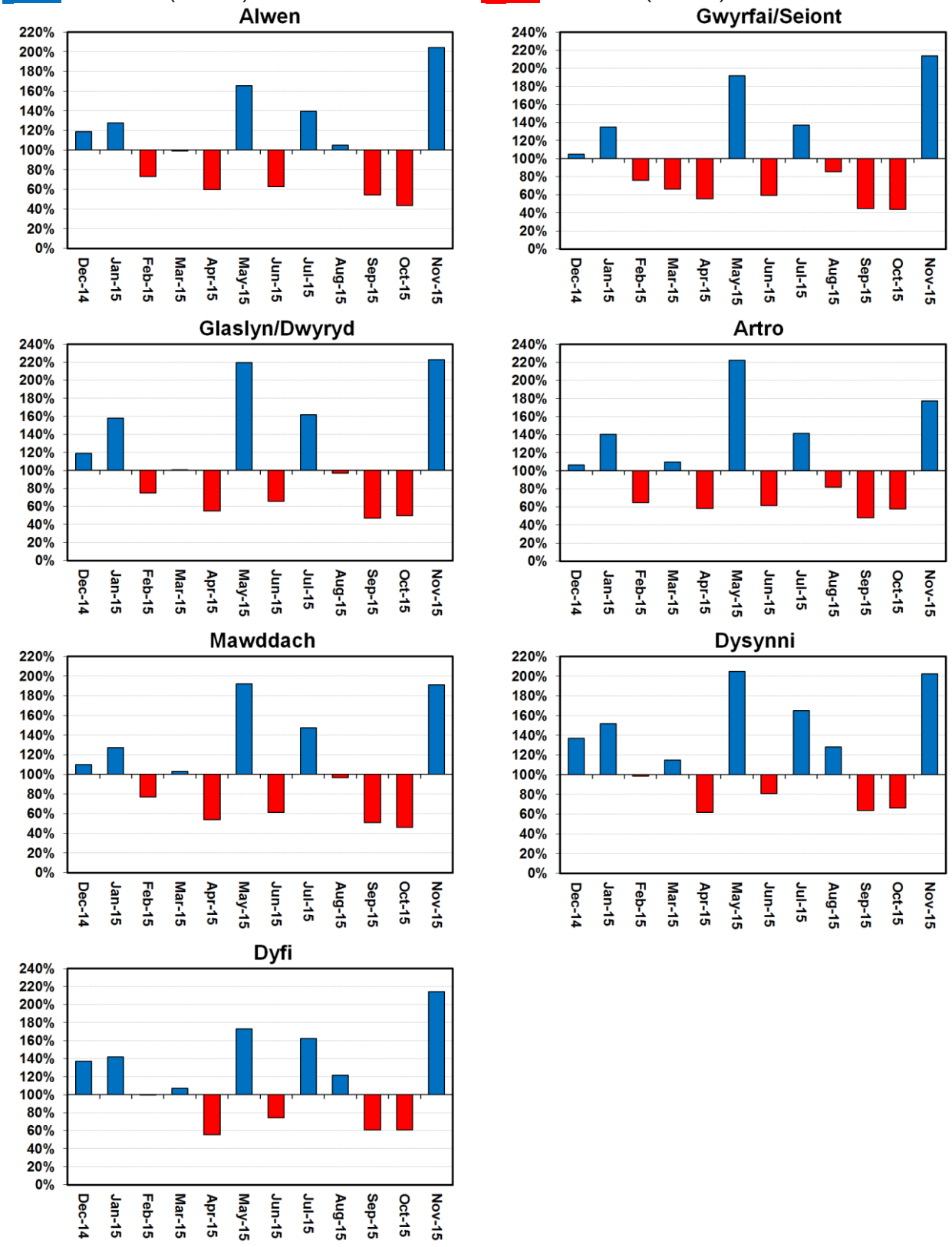
Above LTA (1961-90) rainfall

Below LTA (1961-90) rainfall



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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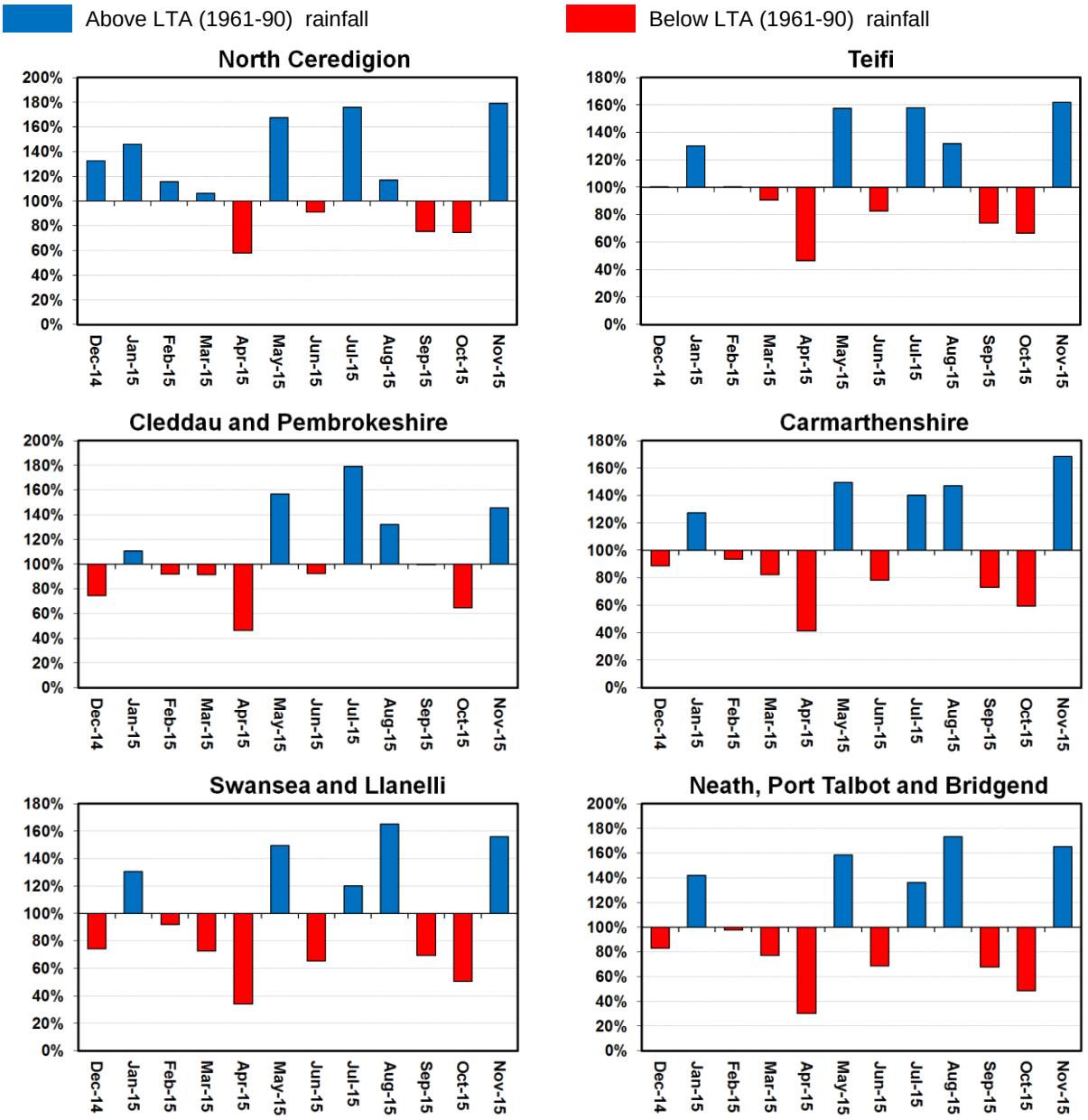
Figure 6: Rainfall Charts: South West Wales



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)

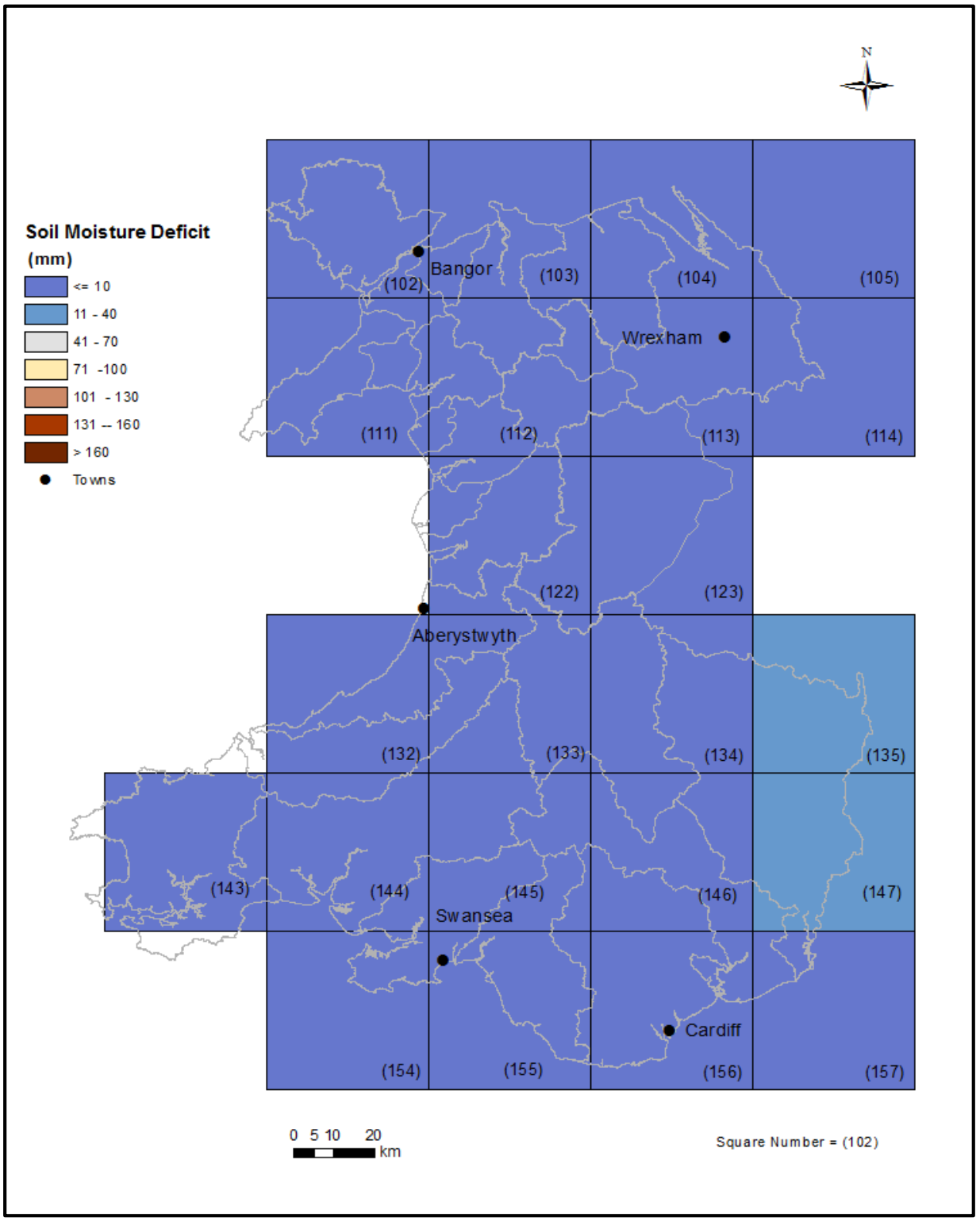

Figure 7: MORECS soil moisture deficits (mm) for November for real land use for Natural Resources Wales *(Source: Met Office © Crown Copyright).*

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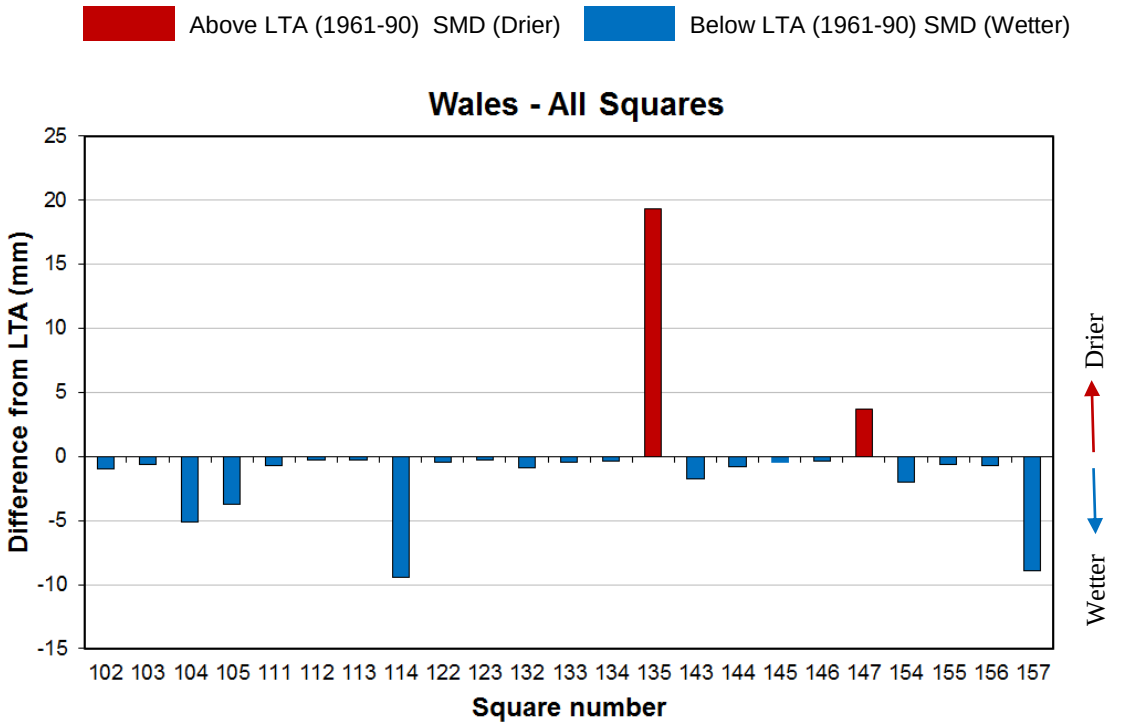

Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for November for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

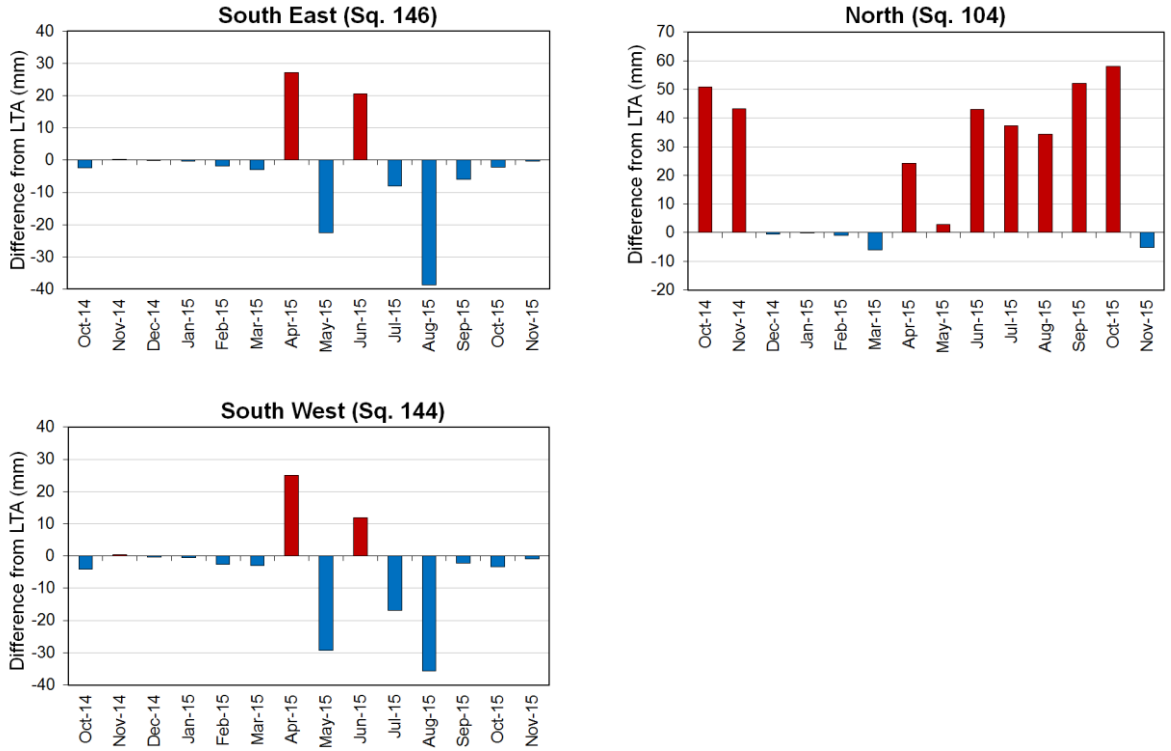

Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales)

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River Flow

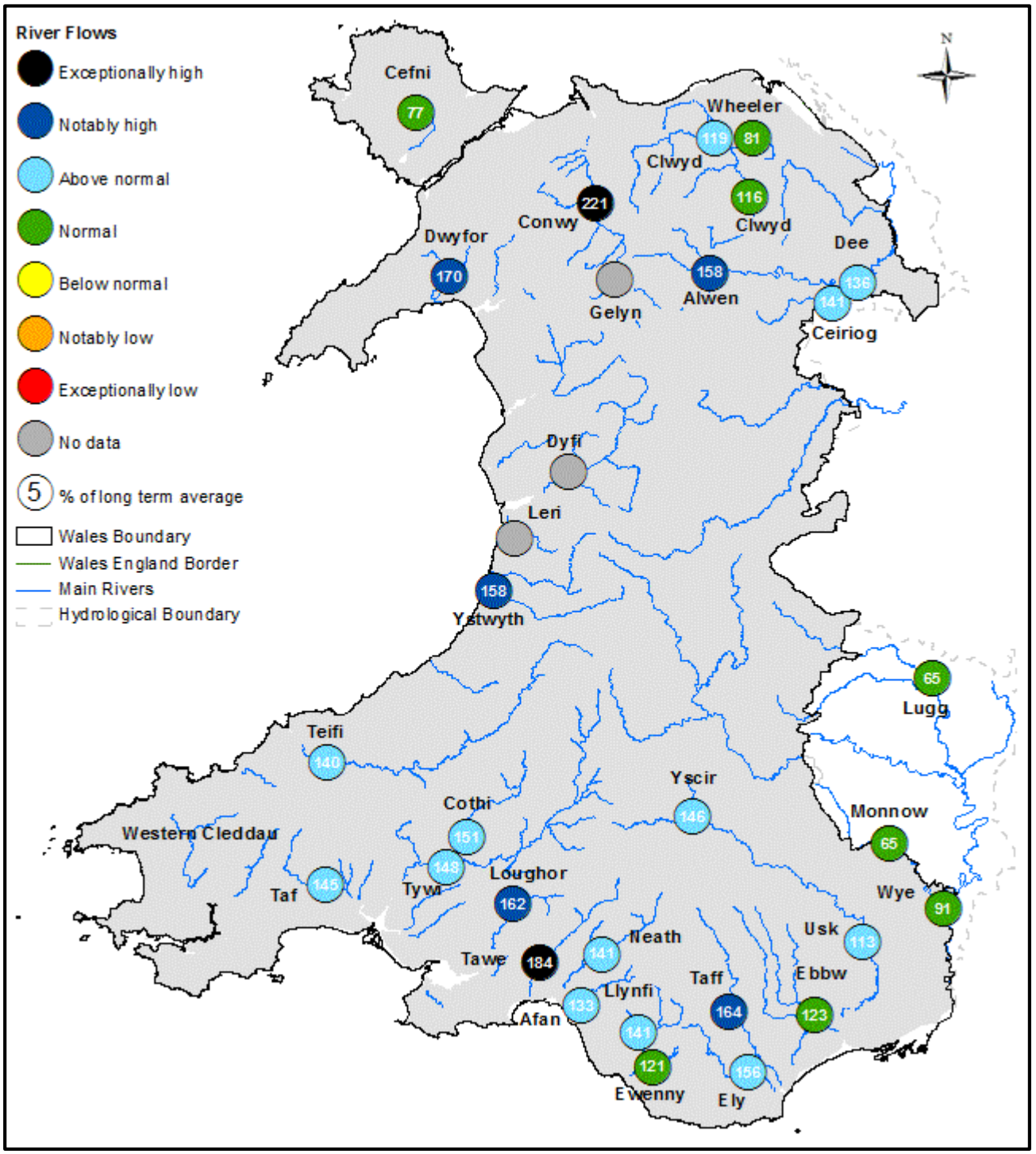

Figure 10: Monthly mean river flow for November, classed relative to analysis of historic November monthly means *(Source: Natural Resources Wales).*

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SITE NAME	RIVER	November 2015			November 2014		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	Normal	65%	4.60	153%	10.09	7.11	0.99	19.30
Grosmont	Monnow	Normal	65%	5.05	149%	10.64	7.81	0.83	21.40
Pont ar Yscir	Yscir	Above normal	146%	4.45	107%	3.35	3.04	0.90	6.40
Pontypridd	Taff	Notably high	164%	51.70	143%	42.80	31.44	10.10	71.20
Redbrook	Wye	Normal	91%	93.40	102%	113.90	102.25	32.80	272.00
Rhiwderin	Ebbw	Normal	123%	12.70	140%	14.07	10.39	1.94	24.50
St Fagans	Ely	Above normal	156%	11.70	131%	9.56	7.51	2.31	14.80
Trostrey Weir	Usk	Above normal	113%	31.60	80%	32.17	27.99	9.75	68.70
River Flow Sites : North Area									
Bodfari	Wheeler	Normal	81%	0.71	40%	0.35	0.88	0.25	3.81
Bodffordd	Cefni	Normal	77%	0.65	84%	0.68	0.84	0.33	2.37
Brynkinalt Weir	Ceiriog	Above normal	141%	6.22	98%	4.22	4.42	1.27	11.40
Cwmlanerch	Conwy	Exceptionally high	221%	65.00	58%	16.85	29.45	9.05	71.70
Cynefail	Gelyn				69%	0.72	1.07	0.38	2.92
Dol y Bont	Leri						2.53	0.90	4.78
Druid	Alwen	Notably high	158%	12.70	60%	4.73	8.06	2.47	20.10
Dyfi bridge	Dyfi						36.93	14.00	86.30
Garndolbenmaen	Dwyfor	Notably high	170%	7.04	79%	3.24	4.14	1.06	7.71
Manley Hall	Dee	Above normal	136%	64.80	73%	33.78	47.52	15.70	114.00
Pont y Cambwll	Clwyd	Above normal	119%	11.80	47%	4.57	9.88	1.68	34.40
Ruthin Weir	Clwyd	Normal	116%	2.62	42%	0.95	2.26	0.42	7.32
River Flow Sites : South West Area									
Capel Dewi	Tywi	Above normal	148%	99.70	110%	72.78	67.47	23.00	145.00
Clog y Fran	Taf	Above normal	145%	18.90	166%	20.81	13.02	3.76	27.80
Coytrahen	Llynfi	Above normal	141%	5.18	131%	4.73	3.68	1.28	7.12
Felin Mynachdy	Cothi	Above normal	151%	28.30	114%	20.79	18.73	5.94	44.70
Glanteifi	Teifi	Above normal	140%	68.90	123%	57.77	49.12	16.10	115.00
Keepers Lodge	Ewenny	Normal	121%	3.38	120%	3.28	2.79	1.08	5.67
Marcroft	Afan	Above normal	133%	10.40			7.82	2.85	14.20
Pont Llolwyn	Ystwyth	Notably high	158%	15.60	75%	7.25	9.89	3.28	23.70
Resolven	Neath	Above normal	141%	21.80	127%	18.91	15.44	5.10	33.70
Tir-y-Dail	Loughor	Notably high	162%	5.32	128%	4.18	3.28	1.05	6.51
Ynystanglws	Tawe	Exceptionally high	184%	33.10	128%	22.97	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).*

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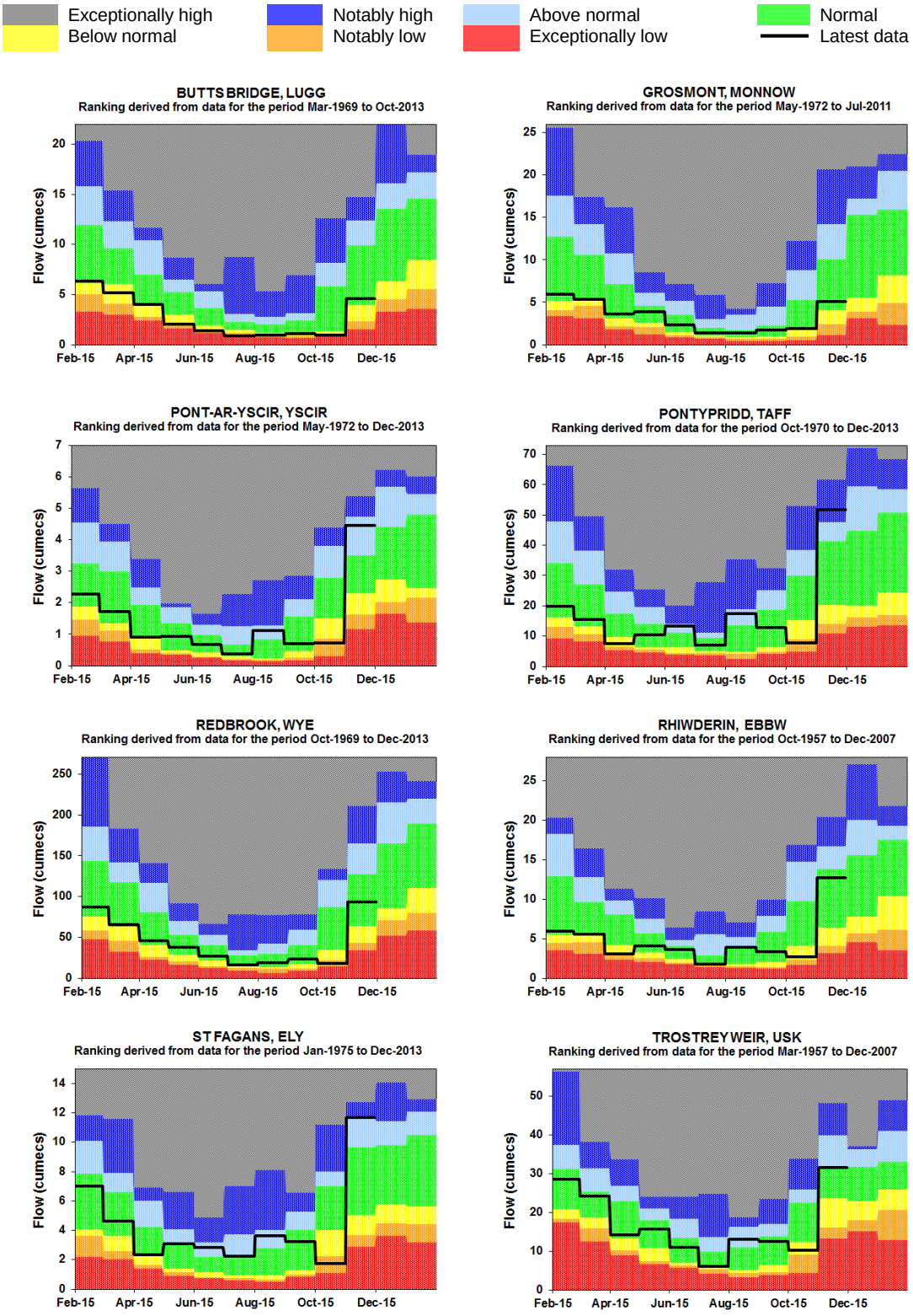
River Flow Charts

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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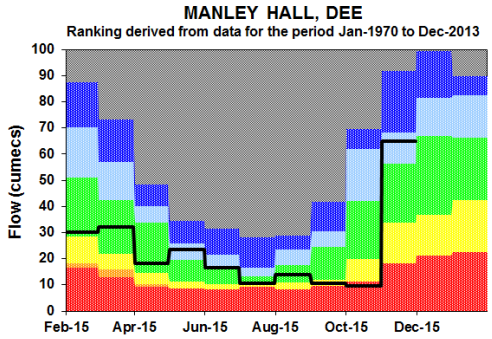
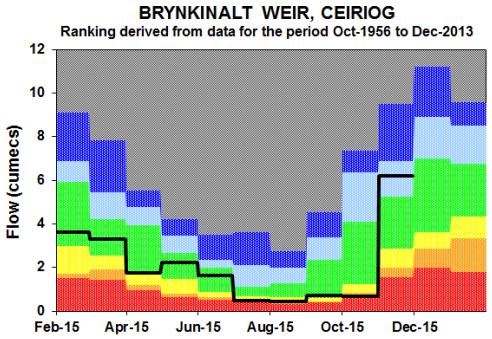
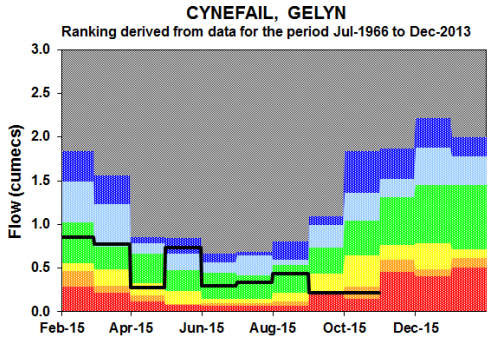
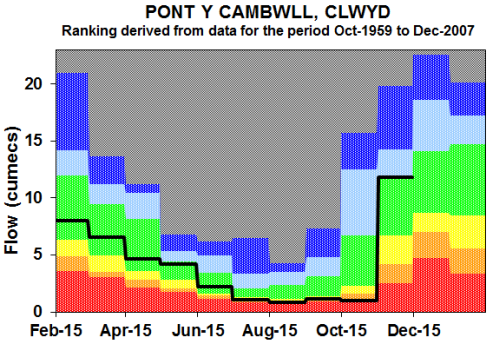
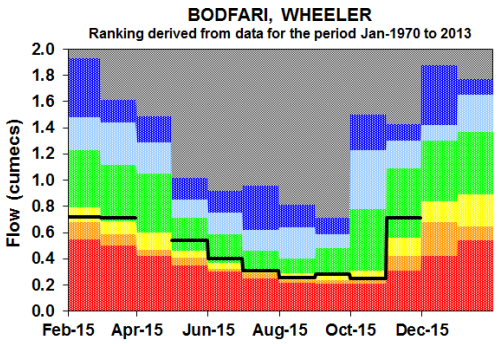
Figure 13: River Flow Charts: North Wales

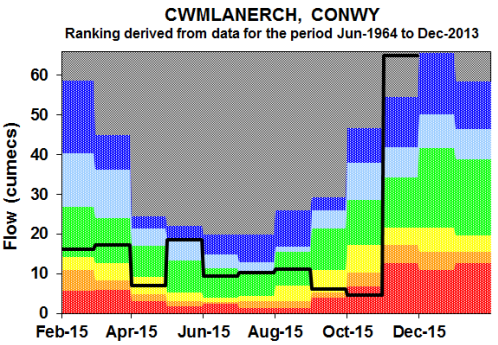


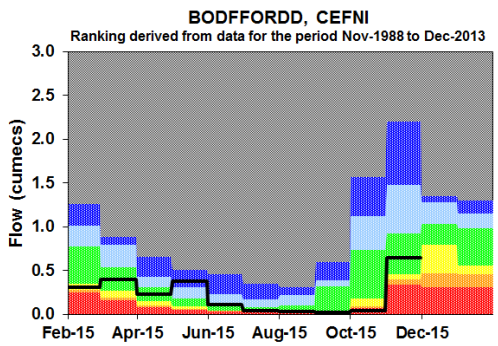


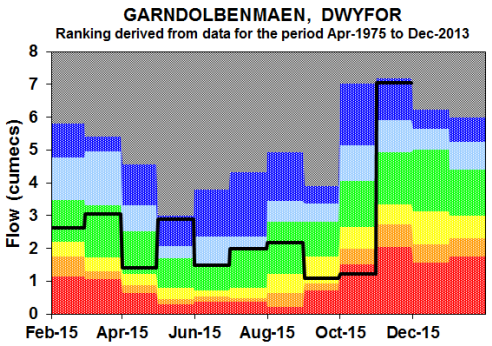












Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels (*Source: Natural Resources Wales*).

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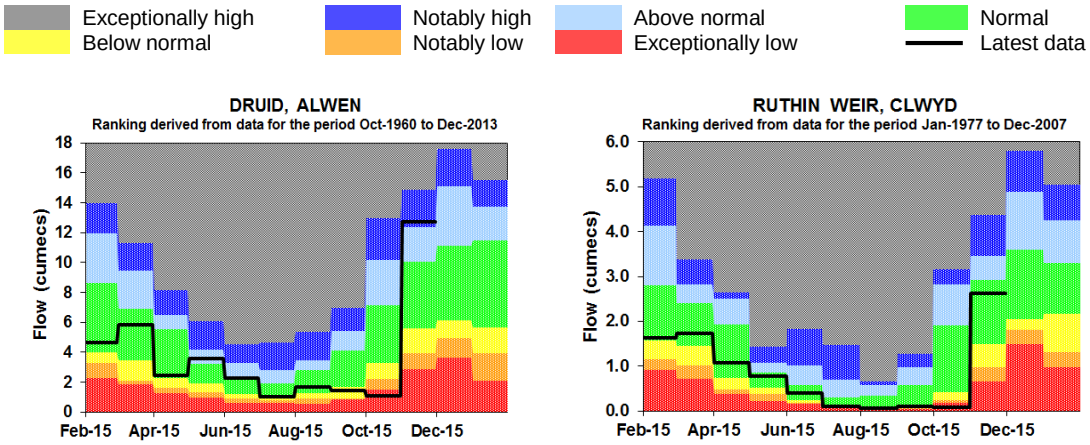
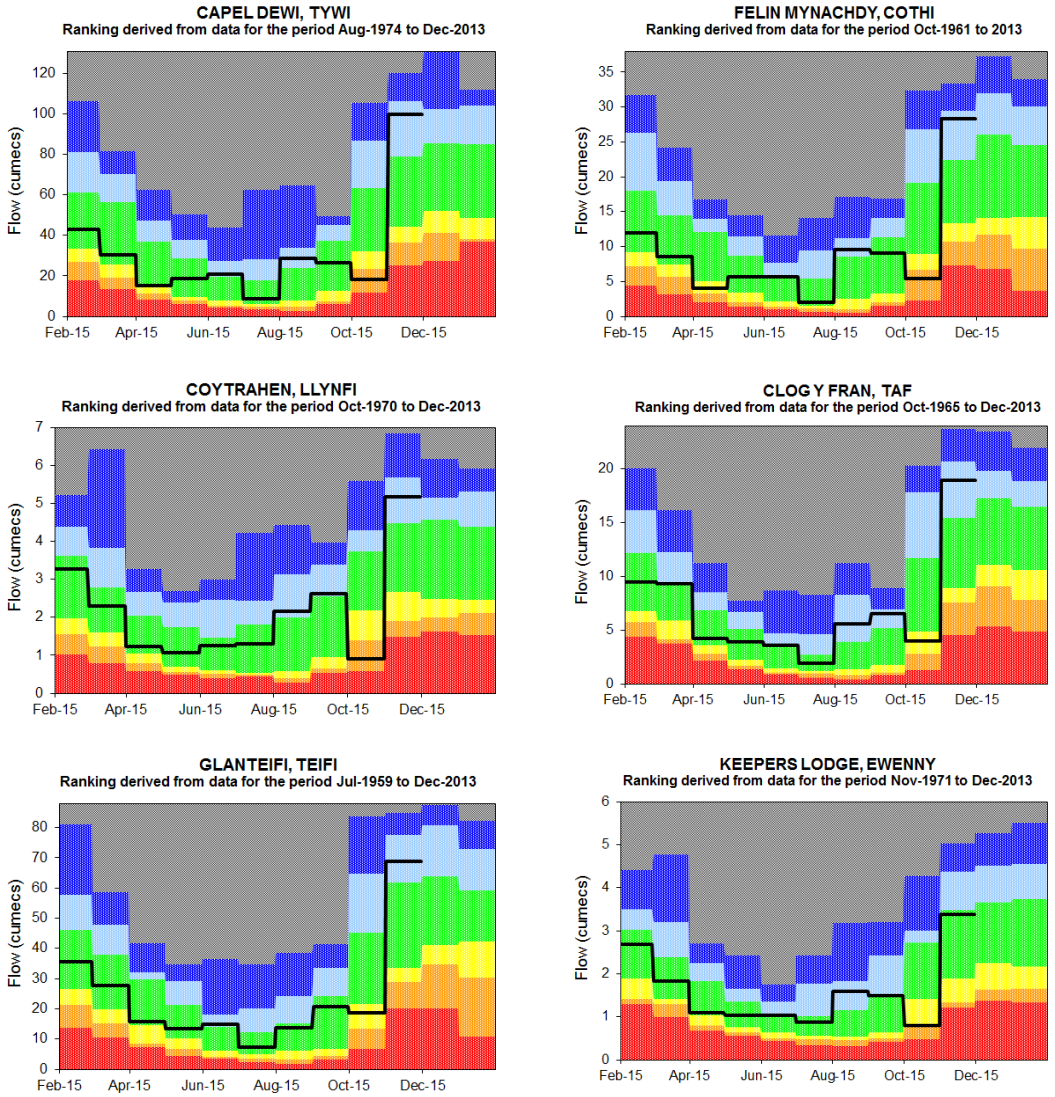


Figure 14: River Flow Charts: South West Wales



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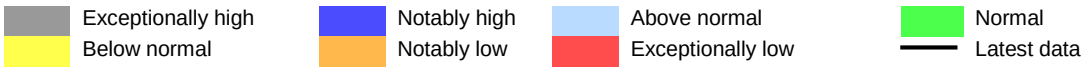

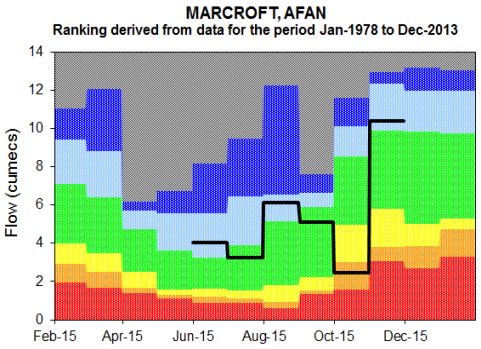

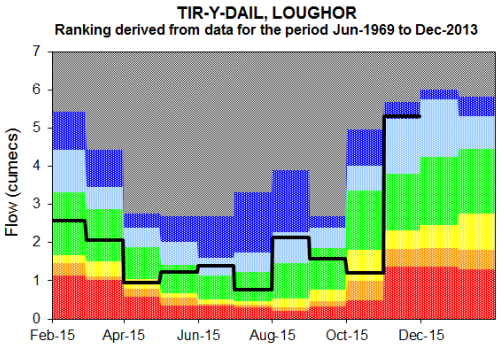

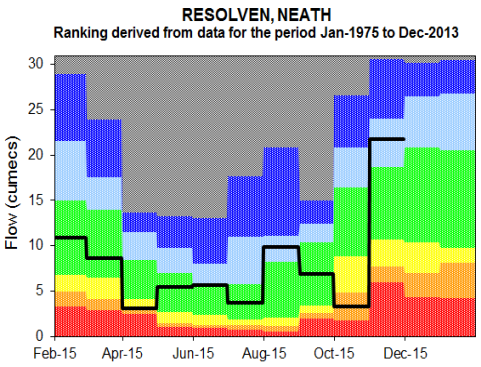

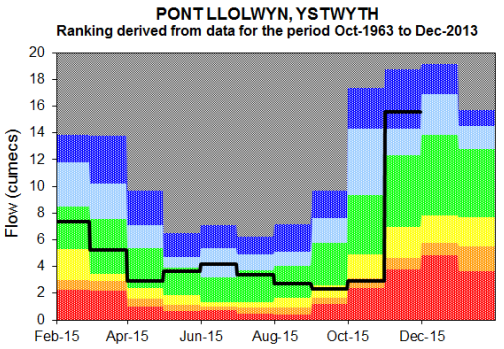

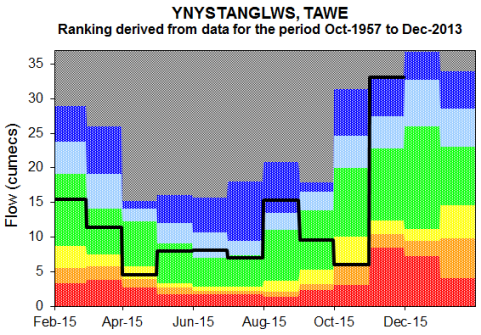

Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).* (please note that there was no data available pre-June 2015 for the site of Marcroft in the river Afan.)

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Groundwater Levels

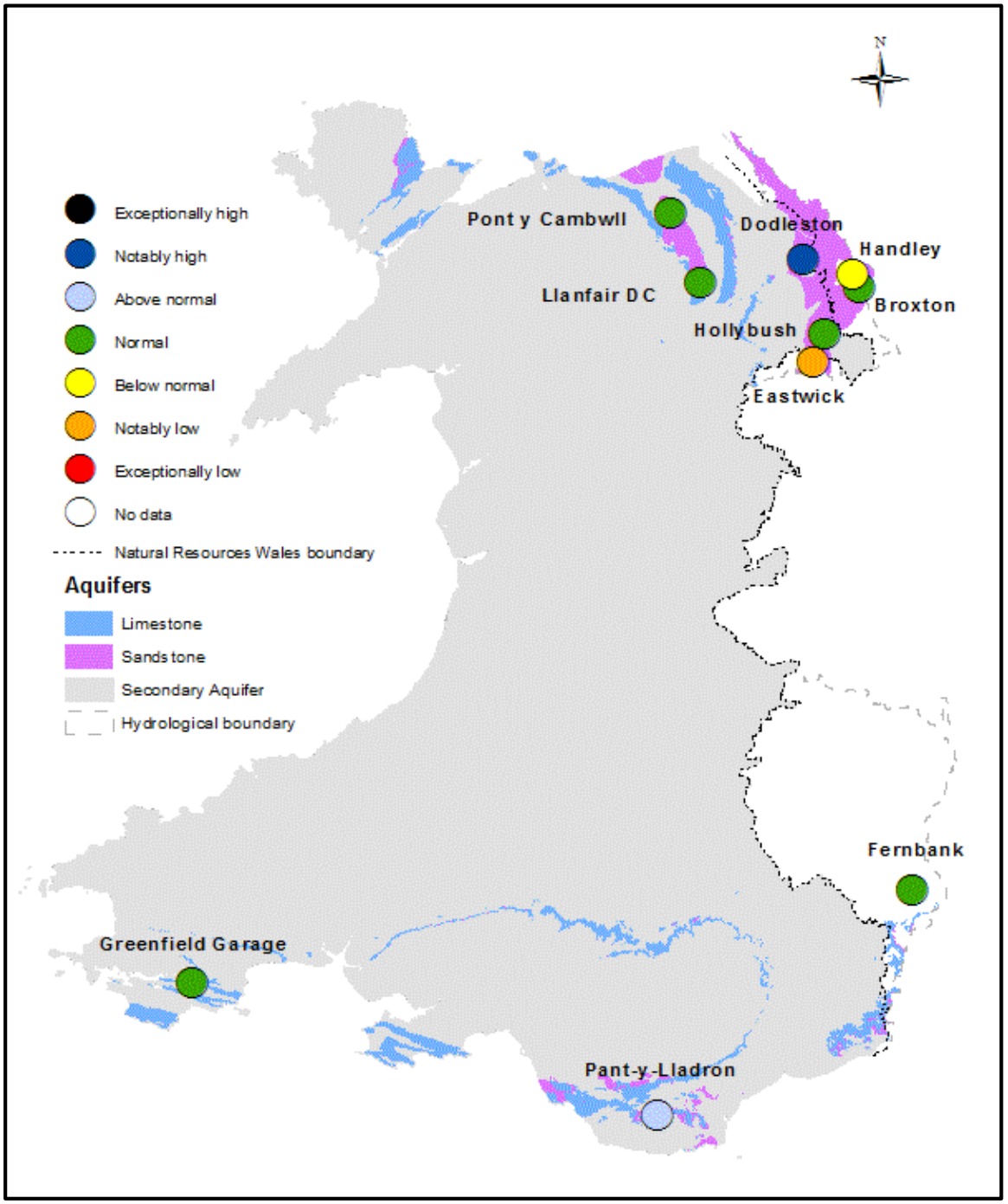

Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic November groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

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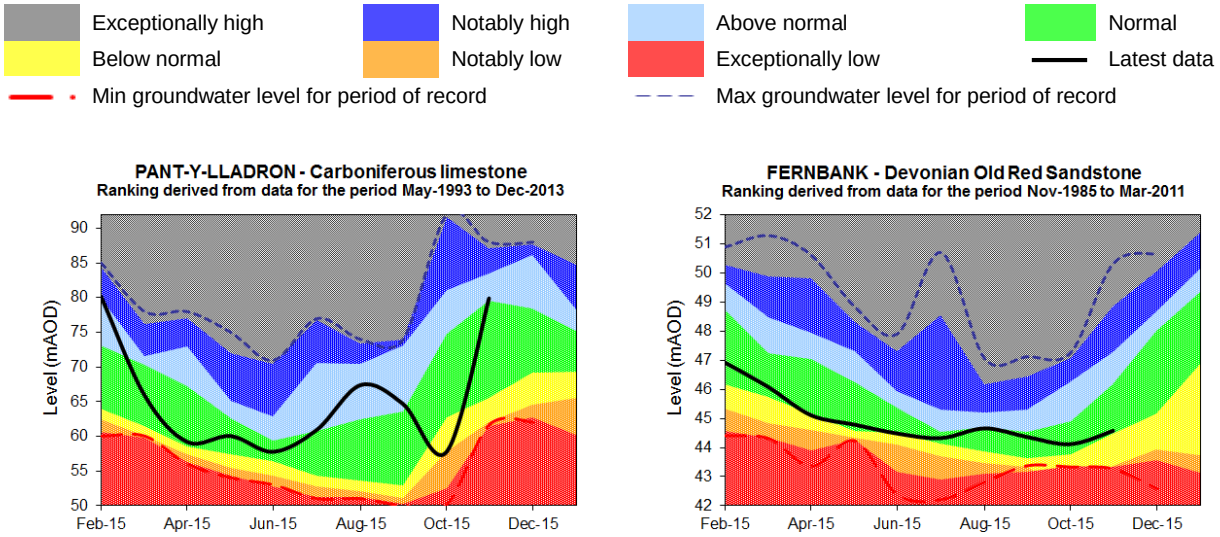
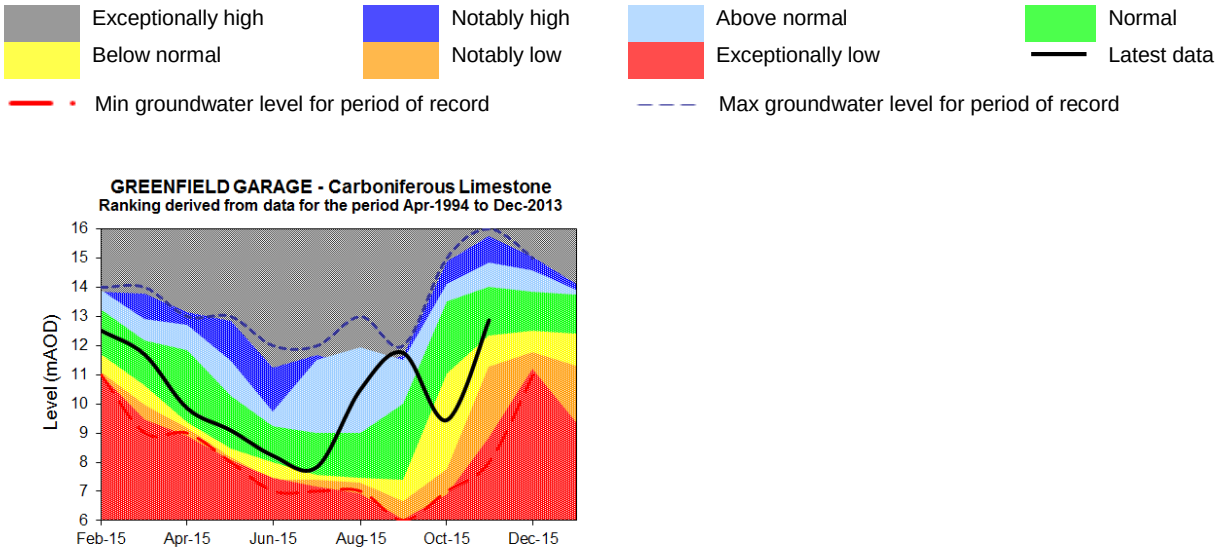
Groundwater charts

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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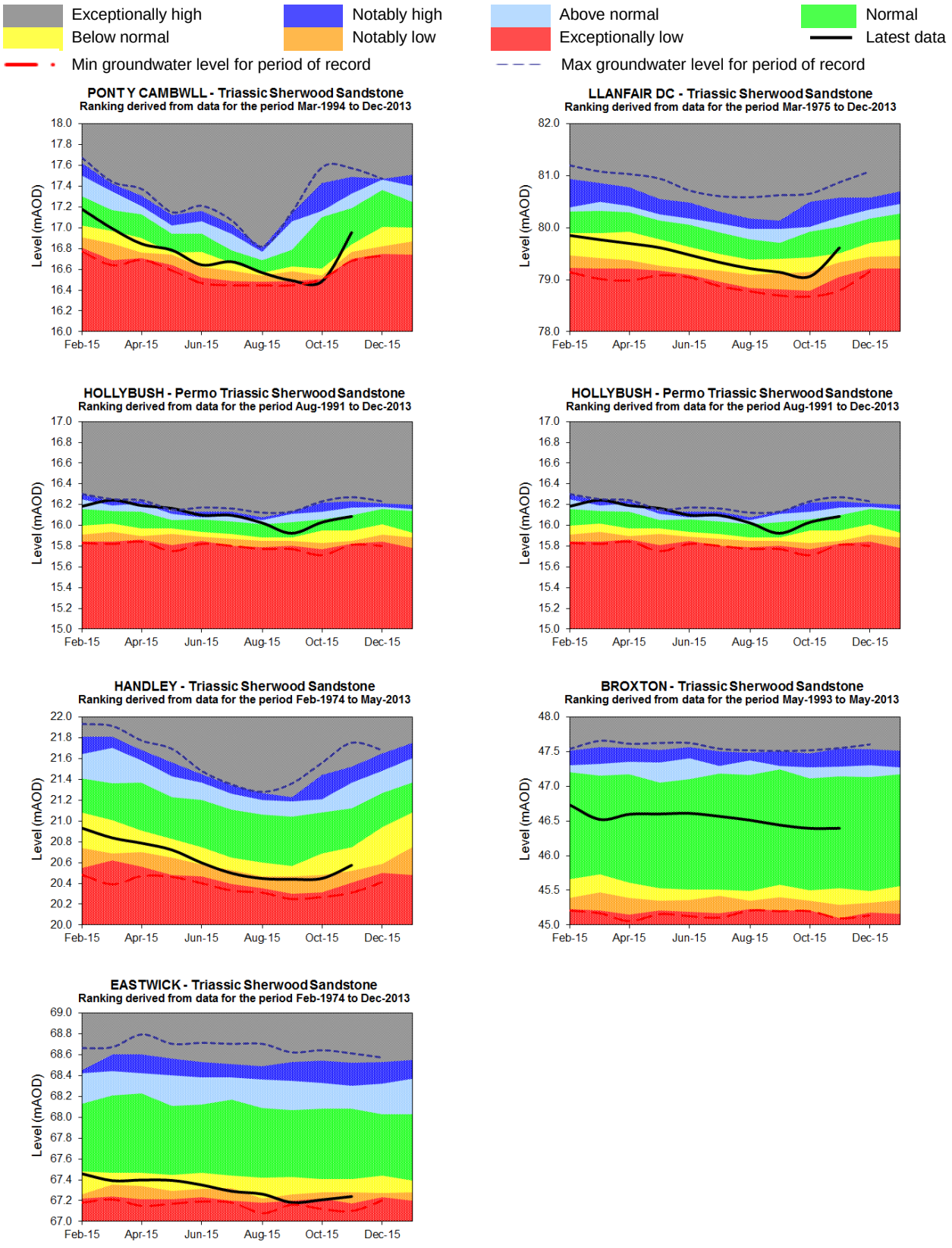
Figure 18: Groundwater level charts: North Wales



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

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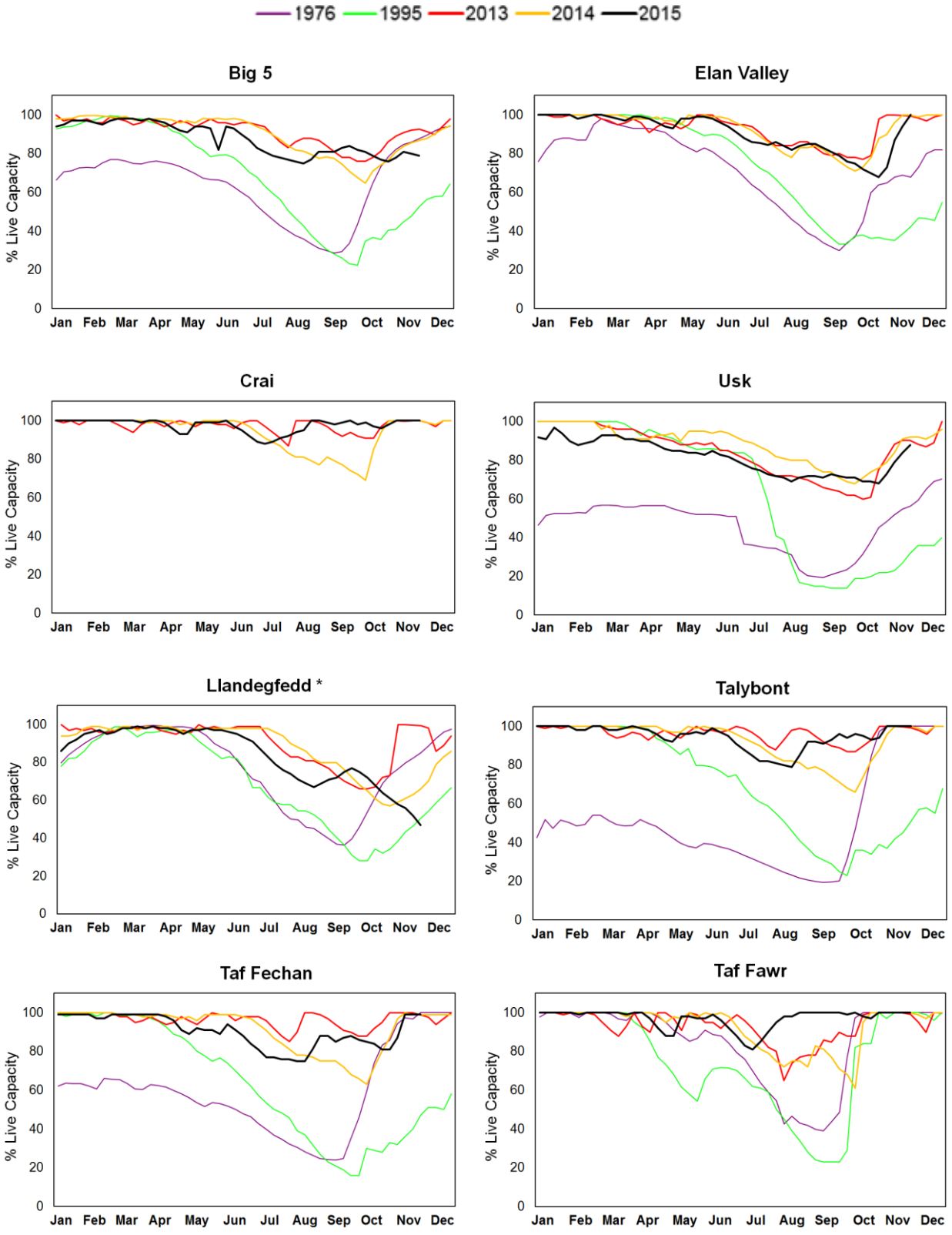
Reservoir Storage

Figure 19: Reservoir charts: South East Wales



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

(*Please note that the Llandegfedd reservoir is being drawn down for reservoir safety maintenance works)

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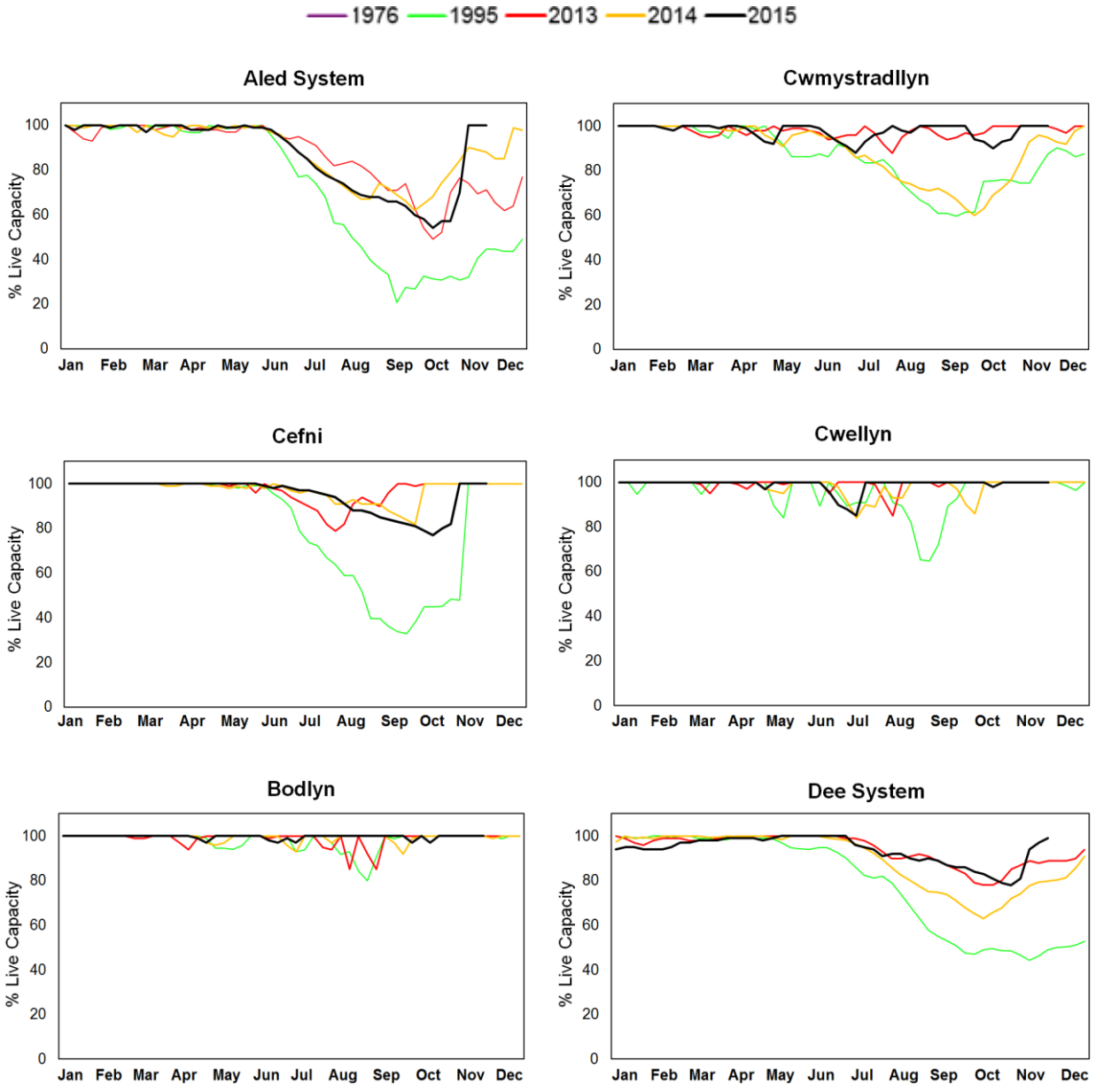
Figure 20: Reservoirs charts: North Wales



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

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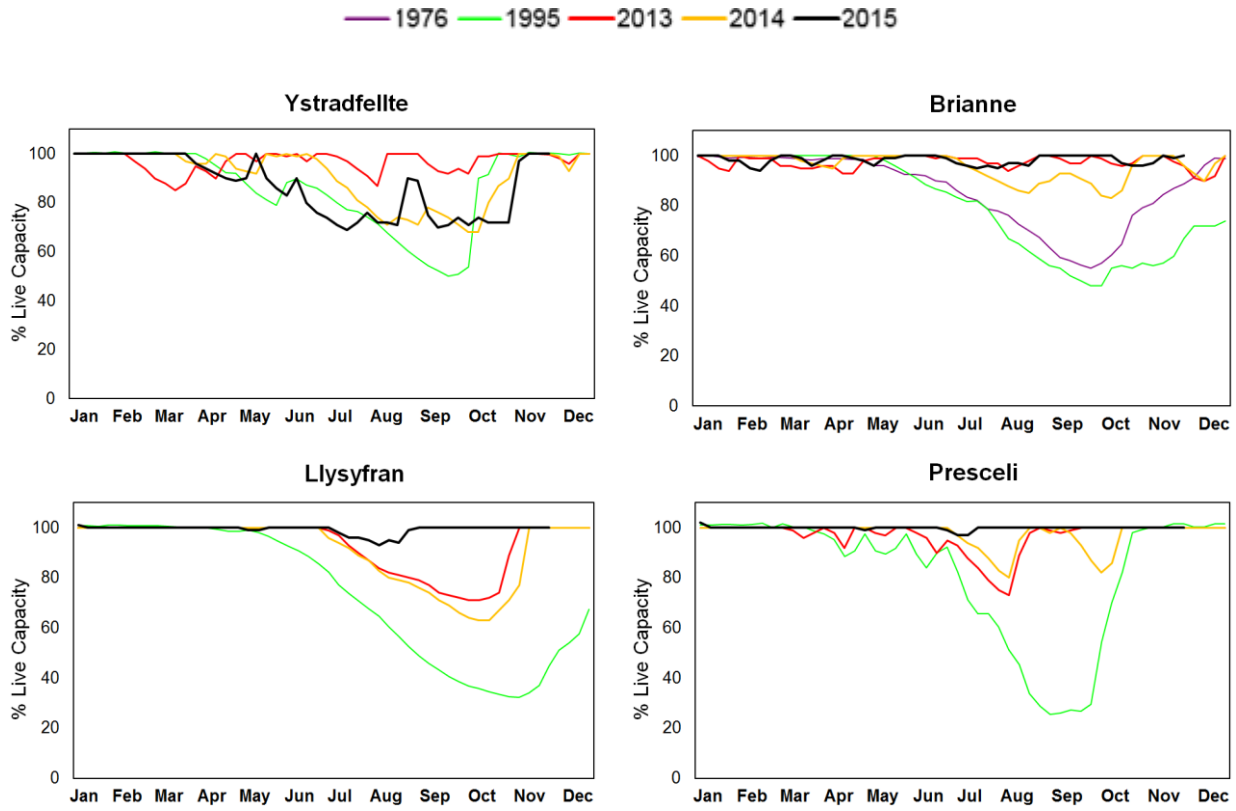
Figure 21: Reservoirs charts: South West Wales



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

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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).