Monthly Water Situation Report
December 2015

Natural Resources Wales

- **The monthly rainfall total received for Wales during December was 228% of the Long Term Average (LTA, 1961-90). North, South West and South East Wales received 256%, 216% and 212% of the LTA, respectively.**
- **At the end of December, soil moisture deficit (SMD) across Wales was 0 (no deficit) for all MORECS squares and they were all saturated. The difference when compared to the long term average December (1961-90), ranged from -0.1mm to -3.4mm.**
- **For river flows in Wales, 23 out of 29 indicator sites were classed as *Exceptionally high* for December, 4 sites were classed as *Notably high and* 1 site was *Above normal.* The remaining 1 site was classed as *Normal*.**
- **The overall reservoir storage across all indicator sites was 100% full at the end of December and all reservoirs were within normal operating ranges.**

Rainfall*

The monthly rainfall total received for Wales was 228% of the LTA for December. Wales experienced the wettest December since records began in 1910. The year of 2015 was also the 10th wettest year on record.

The percentage of rainfall recorded in catchments compared with the long term average (1961-90) across Wales was between 148% (Dee) and 321% (Ogwen). The rainfall total for Wales was 200mm more than the December LTA. For South East, South West and North Wales the rainfall totals were 212%, 216% and 256% 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, all the 23 MORECS squares had SMD values of 0 (no deficit) and they were all saturated due to the significant amount of rainfall received during December. The difference when compared to the long-term average December (1961-90), ranged from -0.1mm to -3.4mm.

SMD Map	National
SMD Charts	Compare to LTA

River Flows

River flows at 23 sites (out of 29) were classed as *Exceptionally high.* 4 sites were classed as *Notably high* and 1 site was *Above normal.* The remaining 1 site was *Normal.*

***North*:** Flows in the area ranged from 121% (River Wheeler at Bodfari) to 324% (River Conwy at Cwmlanerch) of the December LTA Values.

***South East*:** Flows in the area ranged from 122% (River Monnow at Grosmont) to 411% (River Usk at Trostrey Weir) of the December LTA values.

South West: The river flows within this area ranged from 150% (River Ewenny at Keepers Lodge) to 276% (River Cothi at Felin Mynachdy) of the December 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 December at all indicator sites (10 sites) were classed between *Notably low* (Eastwick) and *Notably high (*Dodleston*)* with 1 site (Handley) classed as *Below normal* and 4 sites (Pant-y-Lladron,Fernbank, Pony y Cambwll and Dodleston) classed as *Above normal*. The remaining 3 sites (Greenfield garage, Llanfair and Hollybush) were classed as *Normal.*

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

Reservoir Storage

At the end of December storage almost all the indicator reservoirs (14 out of 17) were 100% full and one reservoir (Llandegfedd) was relative low (43% of the capacity) due to being drawn down for reservoir safety maintenance works. This reservoir has now started to refill.

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

Return to Summary

Natural Resources Wales

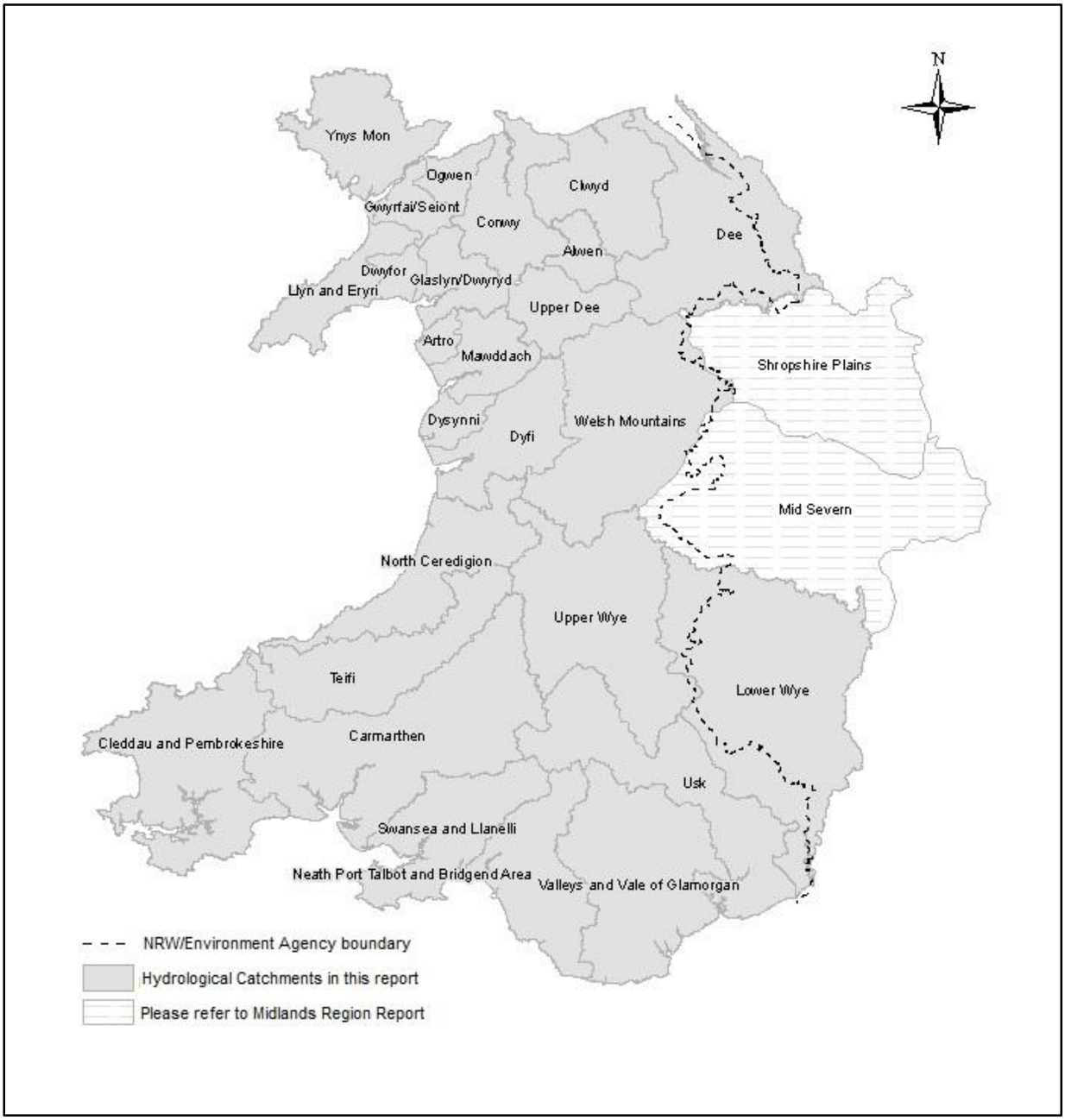


Figure 1: The Natural Resources Wales Water Situation Report features sites in the catchments shown. Parts of the Shropshire Plains and Mid Severn catchments are within Wales. For full information on these catchments, please see the Environment Agency Midlands Water Situation Report.

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

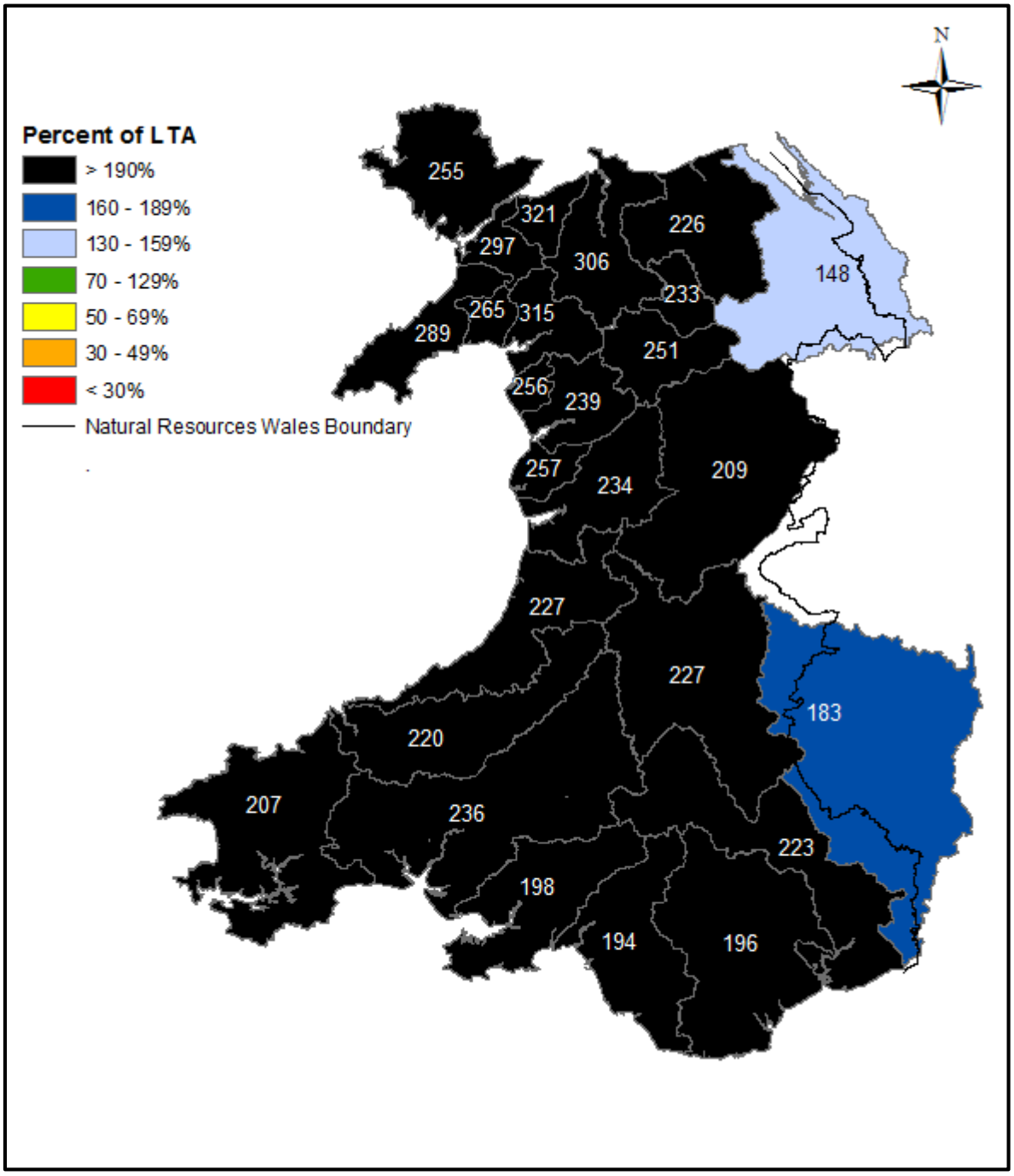
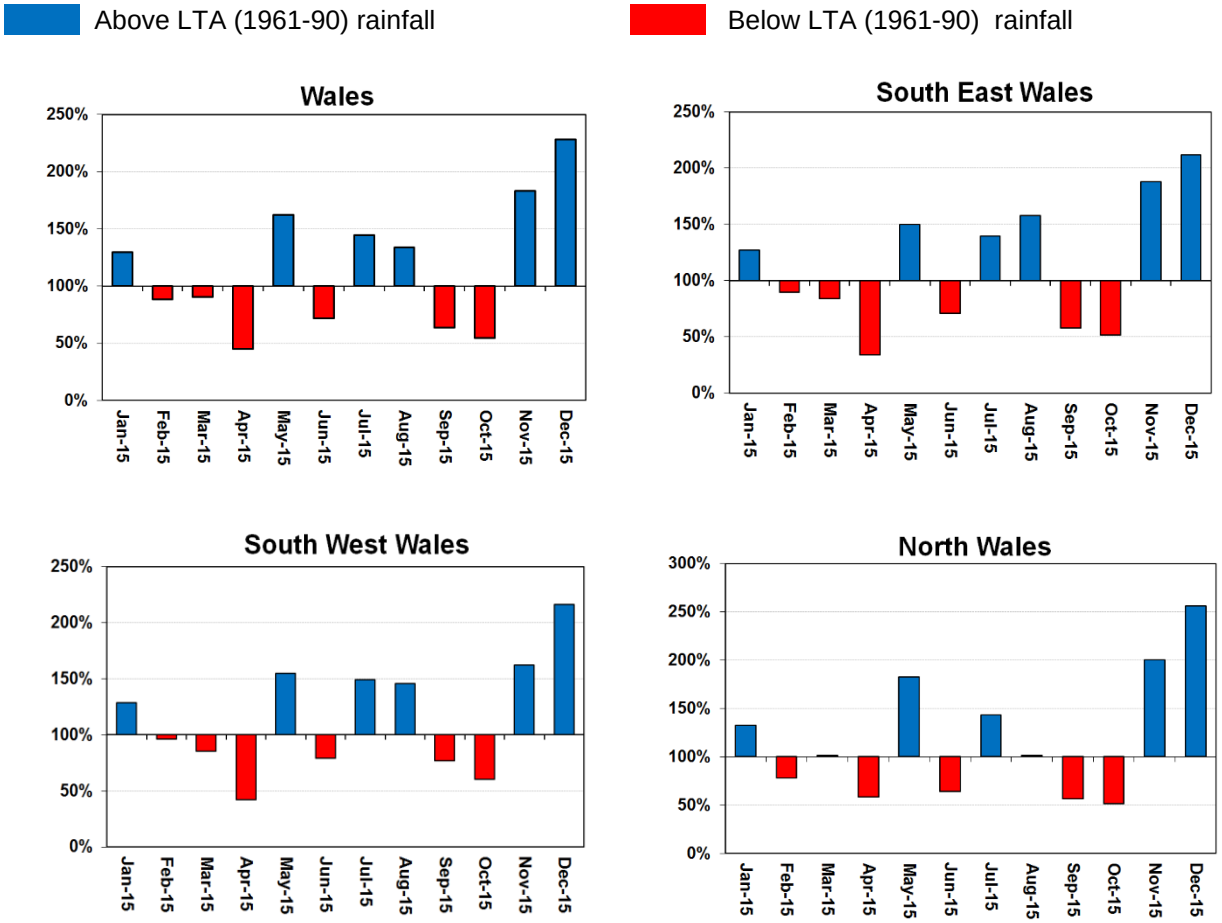


Figure 2: Calculated catchment average December rainfall totals as a percentage of the 1961-90 December long term average for Natural Resources Wales catchments, using NCIC (National Climate Information Centre) data (*Source: Met Office © Crown Copyright).*

Return to Summary

Rainfall Charts

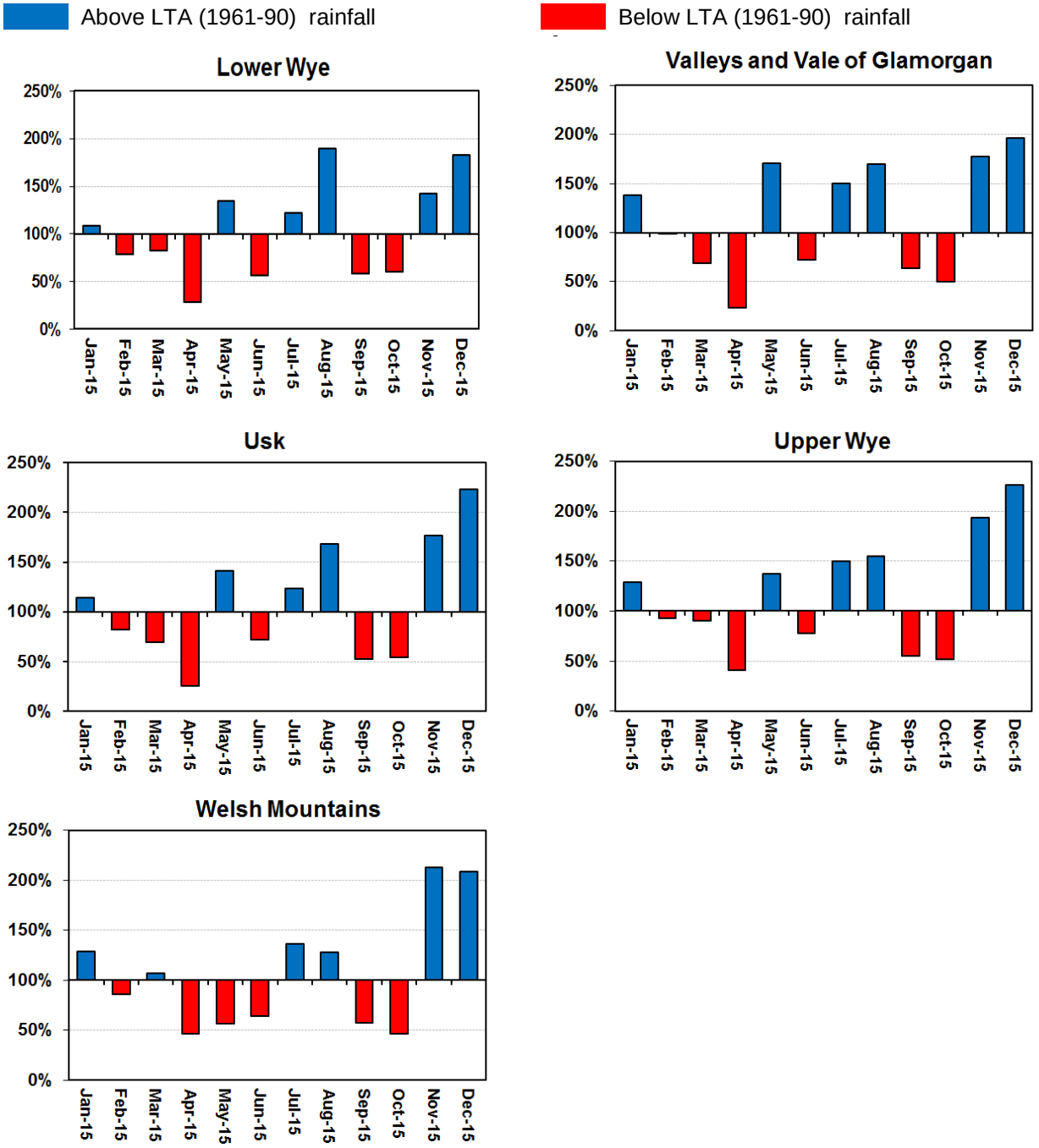
Figure 3: Rainfall Charts: National and Areas



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

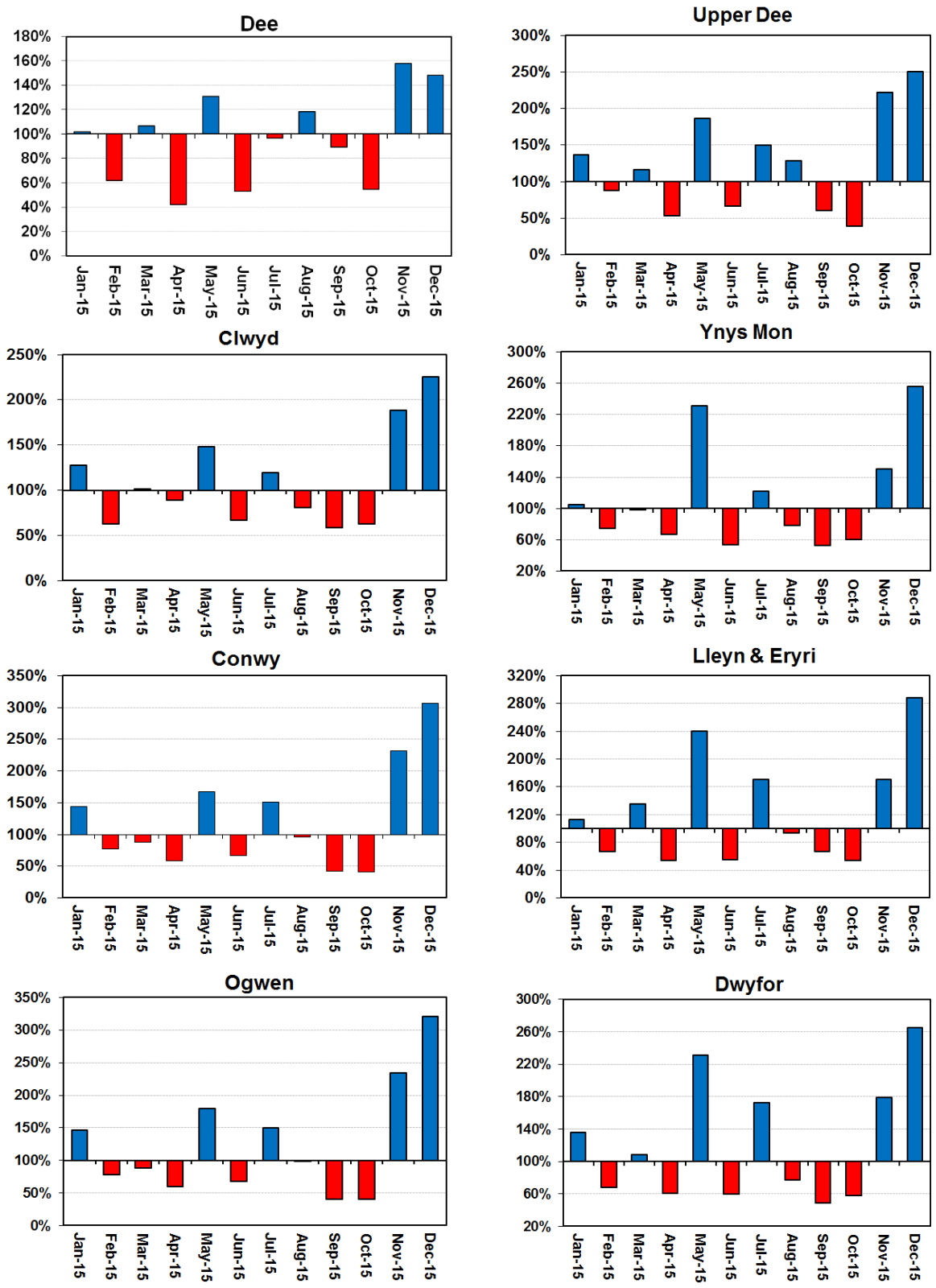


Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for South East Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

Return to Summary

Figure 5: Rainfall Charts: North Wales

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

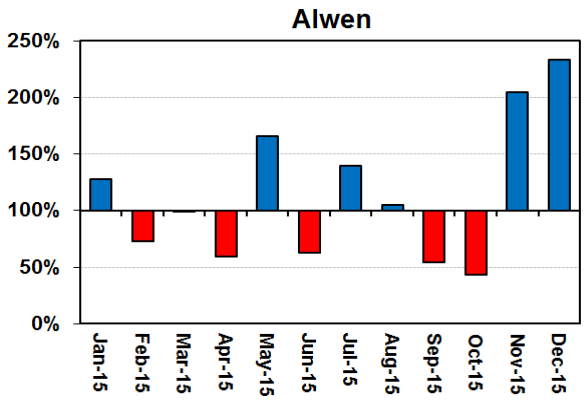


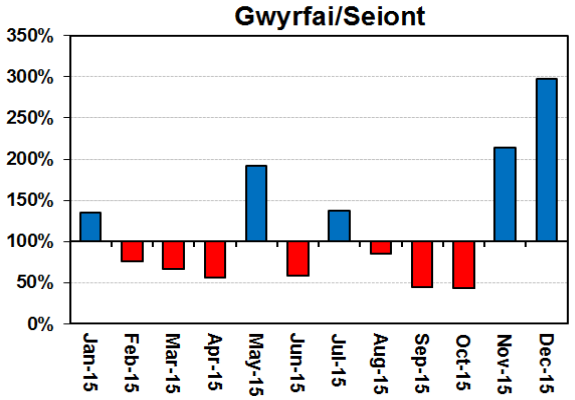
Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

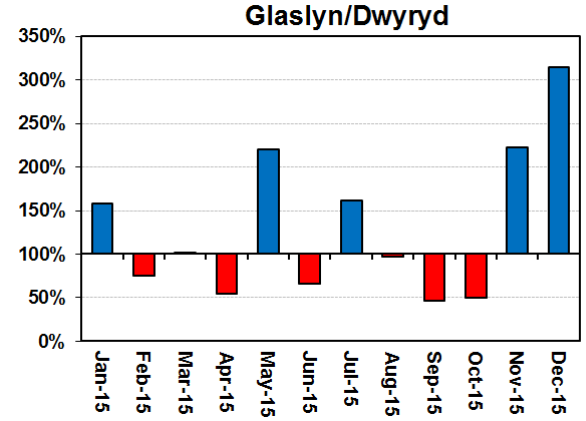
Return to Summary

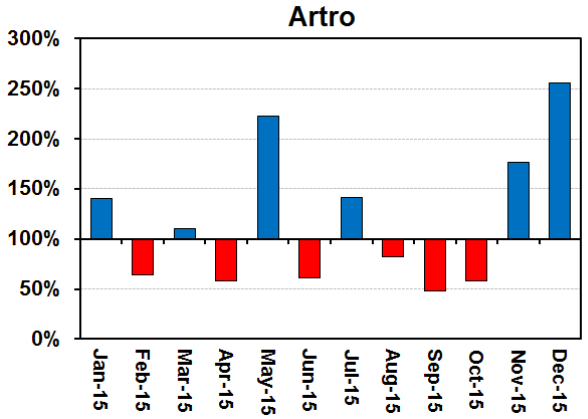
Above LTA (1961-90) rainfall

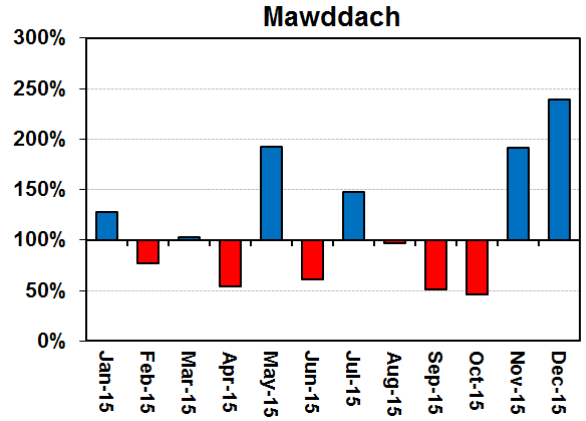
Below LTA (1961-90) rainfall

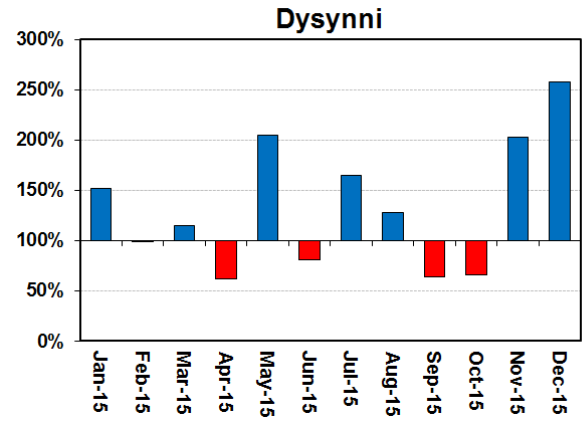


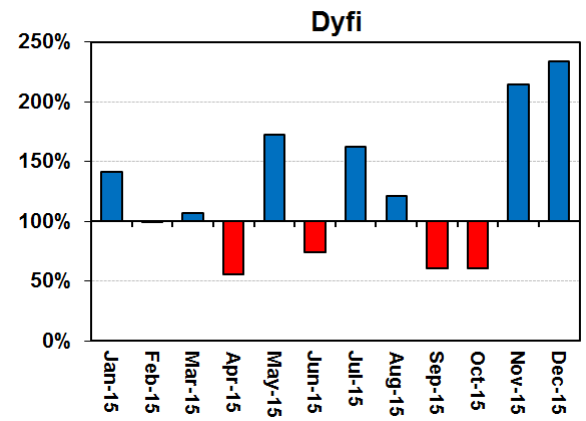








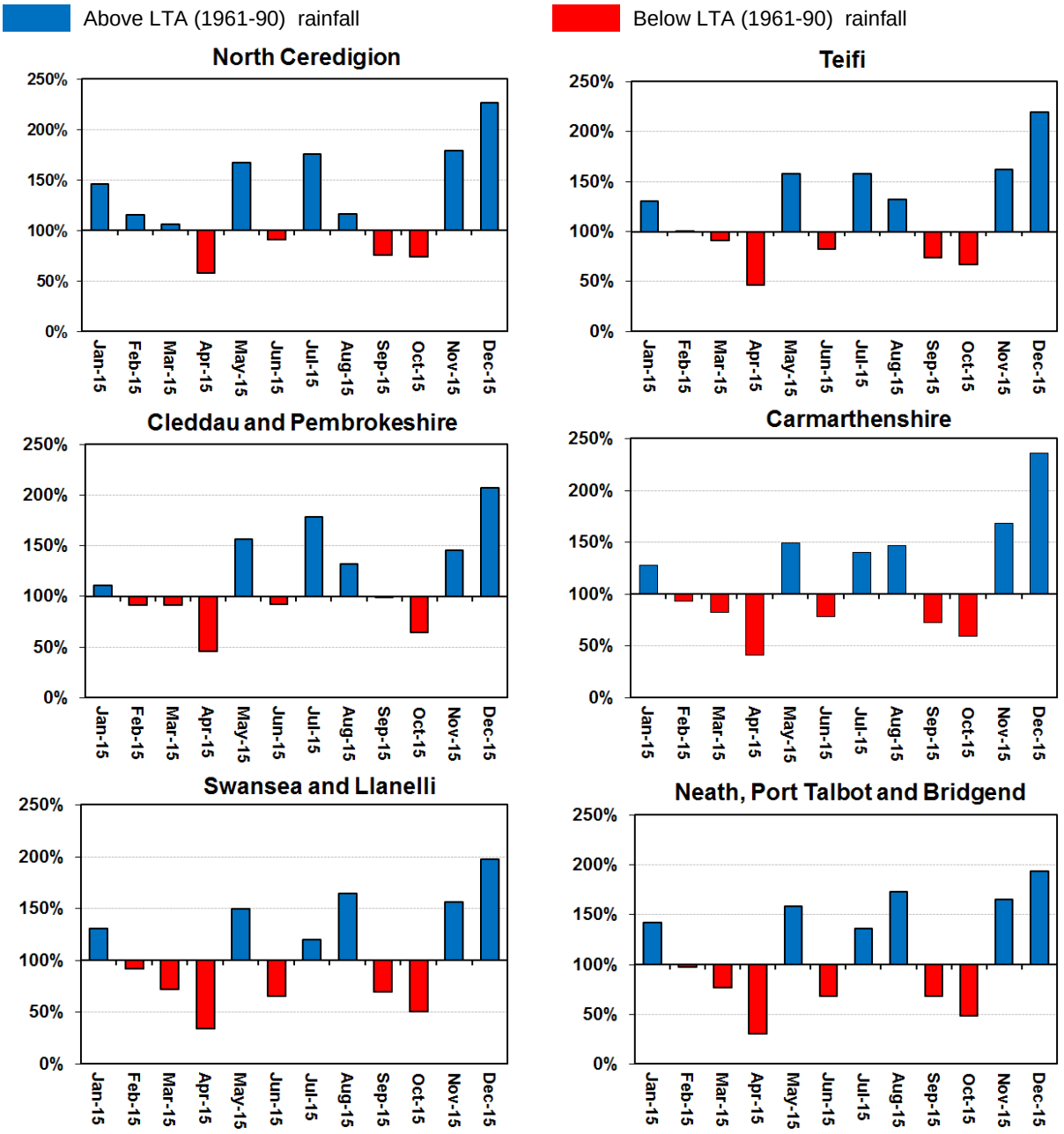




Comparison of monthly rainfall totals to the 1961-90 long term average expressed as percentage for North Wales, using NCIC (National Climate Information Centre) data *(Source: Met Office © Crown Copyright).*

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)

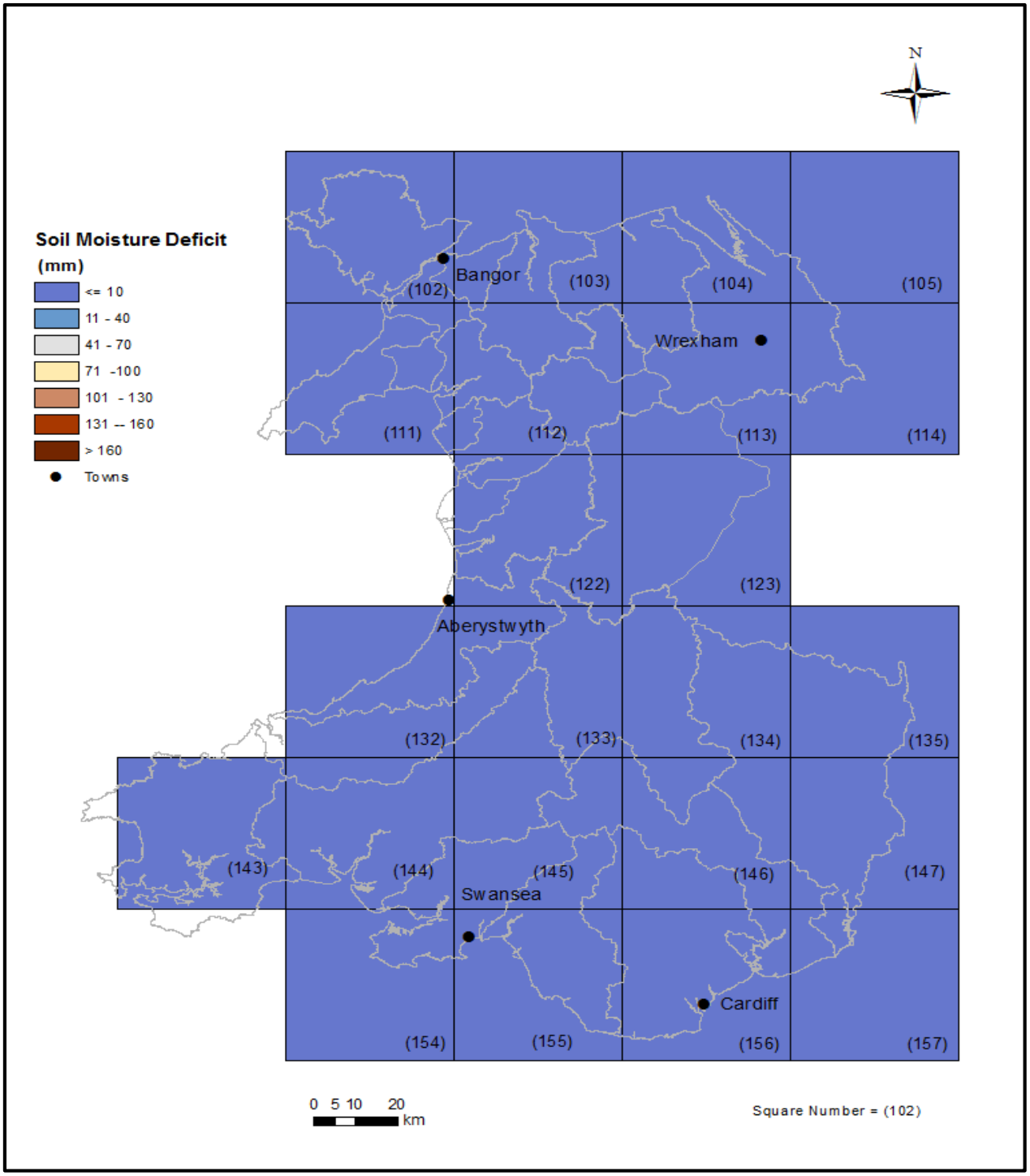


Figure 7: MORECS soil moisture deficits (mm) for December for real land use for Natural Resources Wales *(Source: Met Office © Crown Copyright).*

Return to Summary

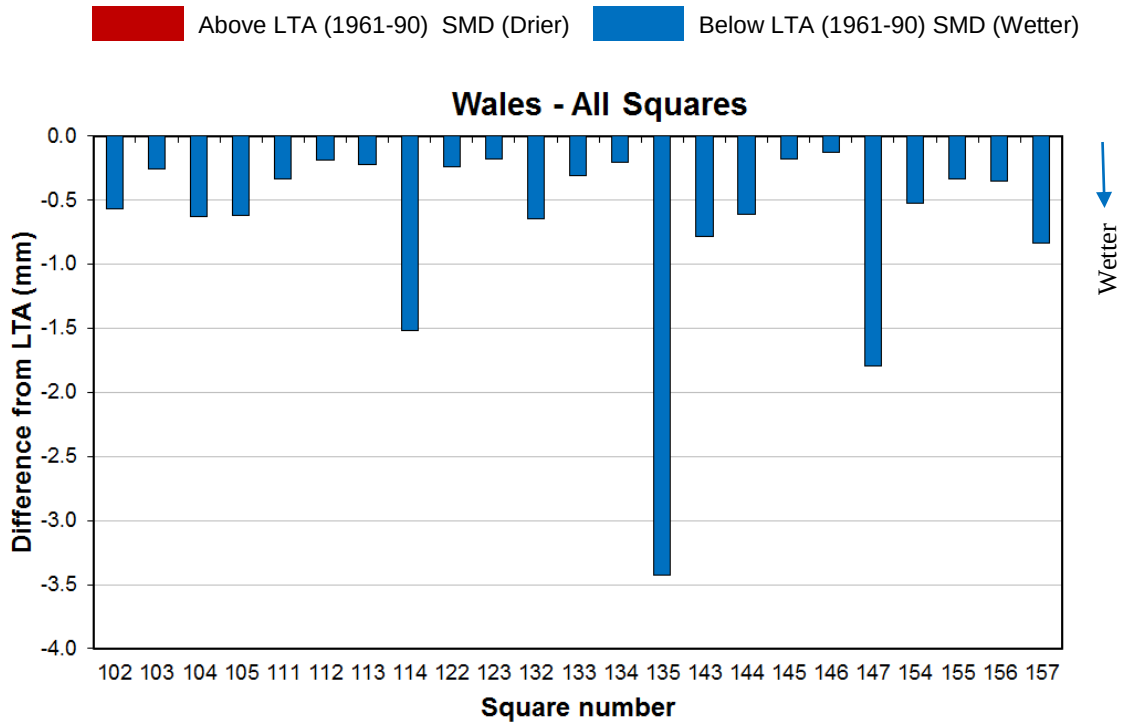


Figure 8: MORECS month end soil moisture deficits difference (mm) from the 1961-90 long term monthly average (LTA) for December for real land use for Natural Resources Wales squares (*Source: Met Office © Crown Copyright*).

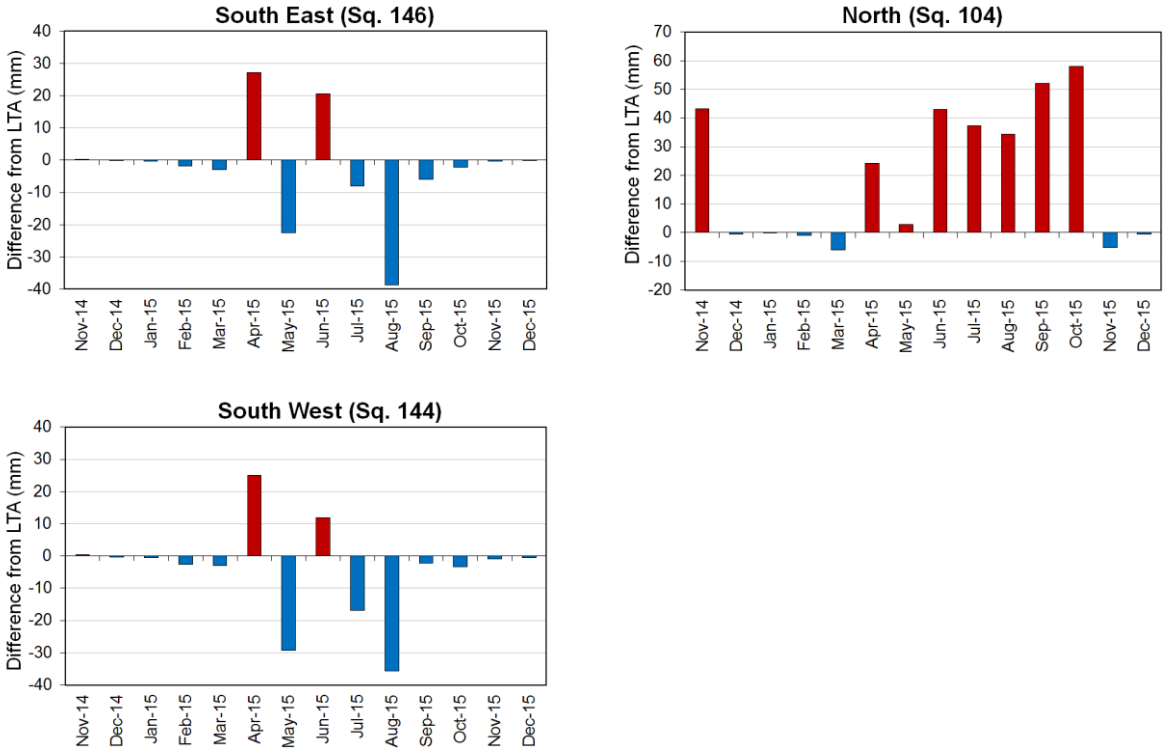


Figure 9: MORECS month end soil moisture deficit difference (mm) from the 1961-90 long term monthly average (LTA) for real land use for South East, North and South West (*Source: Met Office © Crown Copyright*). (Note: no LTA available for Natural Resources Wales)

Return to Summary

River Flow

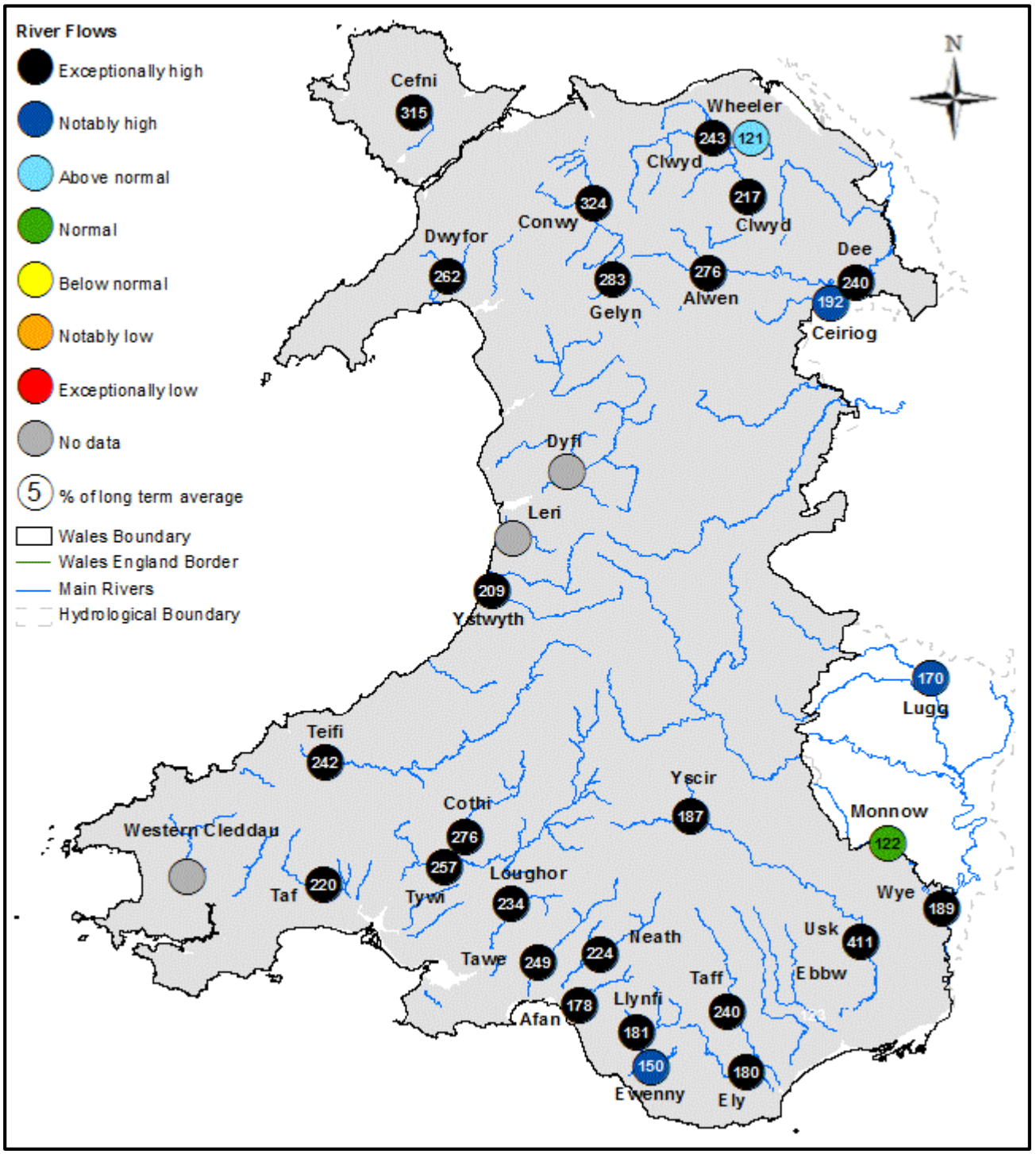


Figure 10: Monthly mean river flow for December, classed relative to analysis of historic December monthly means *(Source: Natural Resources Wales).*

Return to Summary

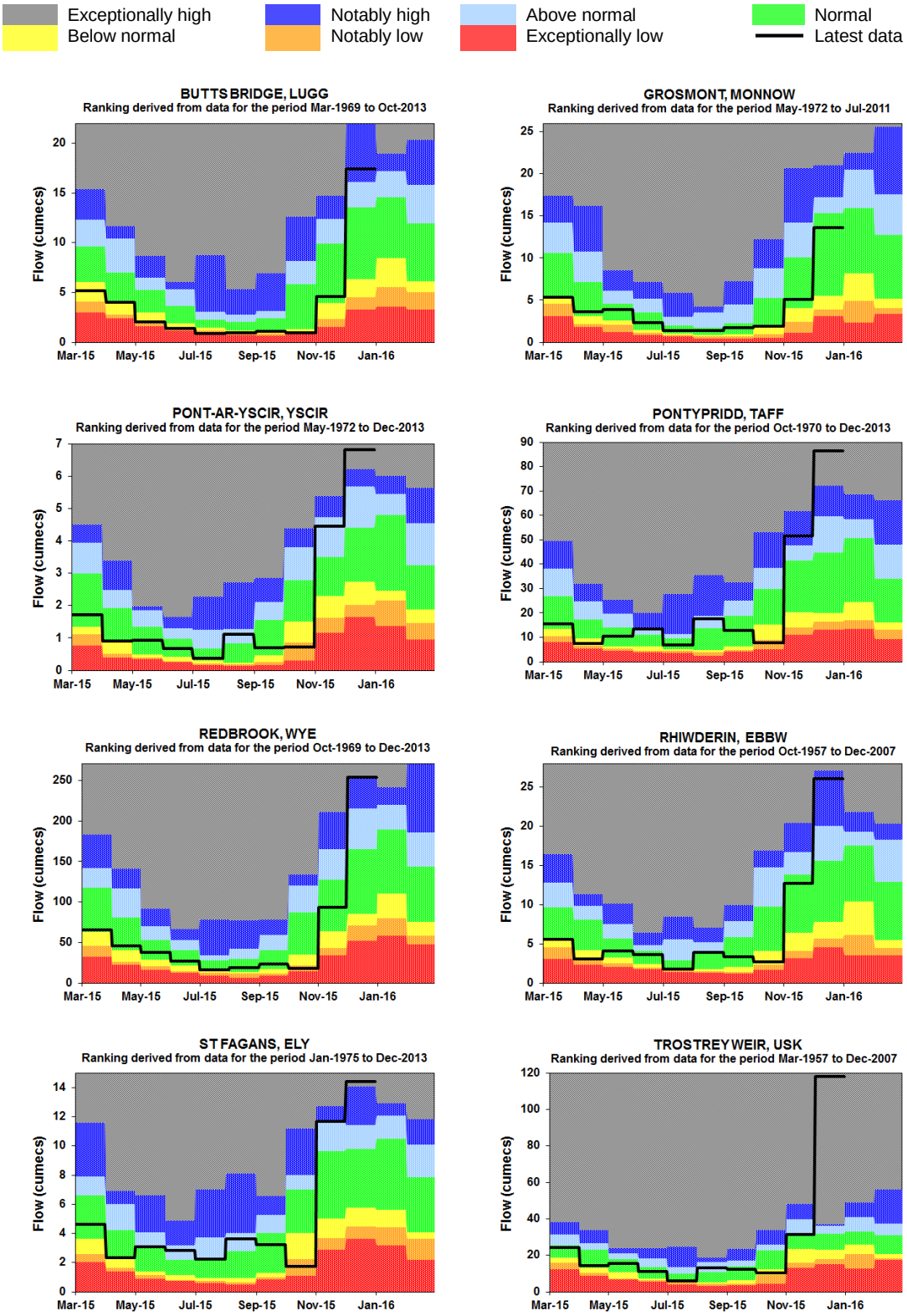
SITE NAME	RIVER	December 2015			December 2014		December LTA		
		Class	% of LTA	Flow (m3/s)	% of LTA	Flow (m3/s)	LTA	Monthly Min (m3/s)	Monthly Max (m3/s)
River Flow Sites : South East Area									
Butts Bridge	Lugg	Notably high	170%	17.44	84%	8.59	10.25	2.96	27.40
Grosmont	Monnow	Normal	122%	13.60	57%	6.39	11.12	1.45	31.00
Pont ar Yscir	Yscir	Exceptionally high	187%	6.81	86%	3.14	3.65	1.05	6.77
Pontypridd	Taff	Exceptionally high	240%	86.40	96%	34.44	35.94	8.79	77.50
Redbrook	Wye	Exceptionally high	189%	254.00	86%	115.12	134.57	36.50	305.00
Rhiwderin	Ebbw	Notably high	206%	26.10	64%	8.10	12.93	3.34	29.40
St Fagans	Ely	Exceptionally high	180%	14.40	112%	8.97	7.98	2.76	15.70
Trostrey Weir	Usk	Exceptionally high	411%	118.01	113%	32.39	28.68	14.11	94.50
River Flow Sites : North Area									
Bodfari	Wheeler	Above normal	121%	1.32	60%	0.65	1.09	0.34	2.25
Bodffordd	Cefni	Exceptionally high	315%	2.77	62%	0.55	0.88	0.27	1.38
Brynkinalt Weir	Ceiriog	Notably high	192%	10.70	84%	4.70	5.57	1.45	14.50
Cwmlanerch	Conwy	Exceptionally high	324%	104.00	110%	35.21	32.11	7.58	66.80
Cynefail	Gelyn	Exceptionally high	283%	3.31	143%	1.67	1.17	0.36	2.33
Dol y Bont	Leri						2.60	1.11	4.39
Druid	Alwen	Exceptionally high	276%	25.90	93%	8.71	9.37	2.93	19.40
Dyfi bridge	Dyfi						41.16	7.50	88.30
Garndolbenmaen	Dwyfor	Exceptionally high	262%	10.63	86%	3.48	4.05	1.47	6.61
Manley Hall	Dee	Exceptionally high	240%	129.00	102%	54.51	53.66	18.30	105.00
Pont y Cambwll	Clwyd	Exceptionally high	243%	29.65	99%	12.12	12.20	3.83	25.40
Ruthin Weir	Clwyd	Exceptionally high	217%	6.62	92%	2.81	3.05	0.73	6.15
River Flow Sites : South West Area									
Capel Dewi	Tywi	Exceptionally high	257%	182.00	81%	57.12	70.92	18.60	137.00
Clog y Fran	Taf	Exceptionally high	220%	31.00	81%	11.37	14.06	3.90	25.50
Coytrahen	Llynfi	Exceptionally high	181%	6.50	118%	4.26	3.60	0.98	6.71
Felin Mynachdy	Cothi	Exceptionally high	276%	57.20	74%	15.32	20.76	6.03	41.80
Glanteifi	Teifi	Exceptionally high	242%	132.00	84%	45.92	54.57	16.70	105.00
Keepers Lodge	Ewenny	Notably high	150%	4.52	97%	2.92	3.01	1.15	5.99
Marcroft	Afan	Exceptionally high	178%	14.10			7.94	1.92	13.50
Pont Llolwyn	Ystwyth	Exceptionally high	209%	23.10	133%	14.76	11.07	2.22	22.60
Resolven	Neath	Exceptionally high	224%	36.30	103%	16.71	10.43	3.39	17.30
Tir-y-Dail	Loughor	Exceptionally high	234%	8.30	93%	3.28	16.20	2.90	30.40
Ynystanglws	Tawe	Exceptionally high	249%	48.40	106%	20.60	3.54	1.20	6.41

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

Return to Summary

River Flow Charts

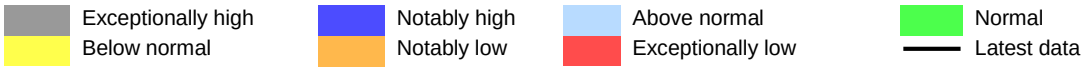
Figure 12: River Flow Charts: South East Wales

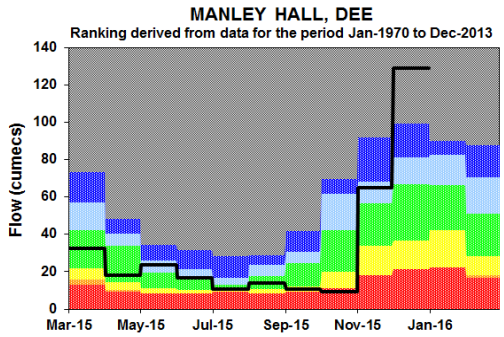


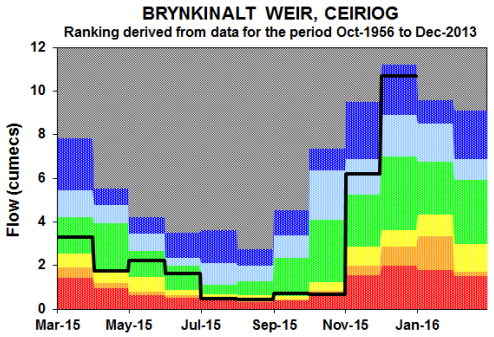
Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels (*Source: Natural Resources Wales*).

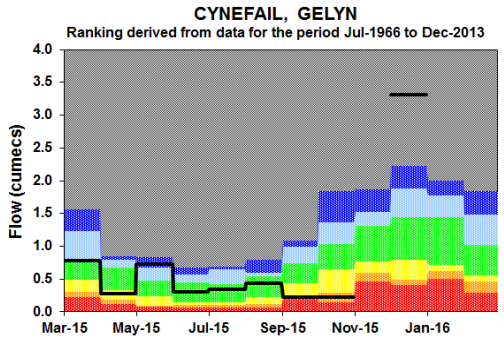
Return to Summary

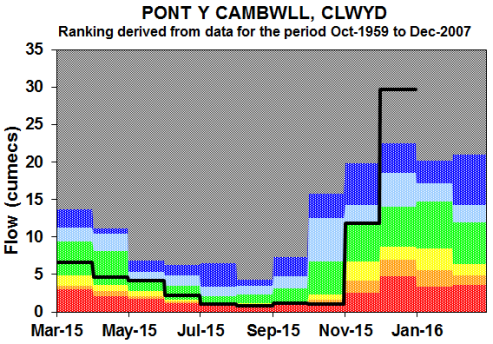
Figure 13: River Flow Charts: North Wales

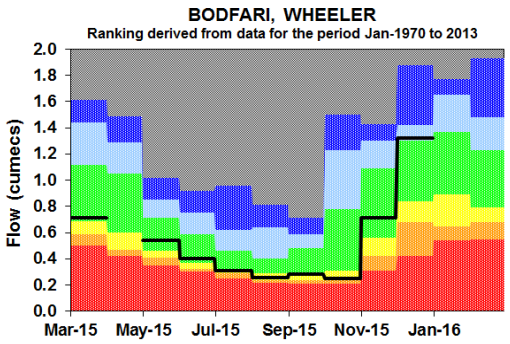


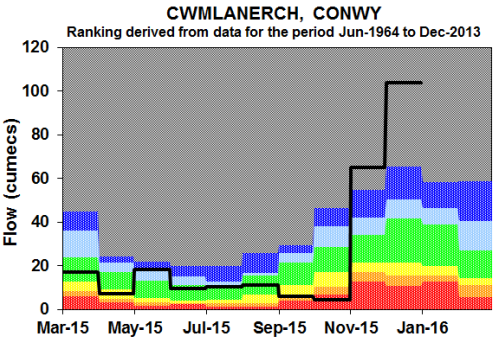


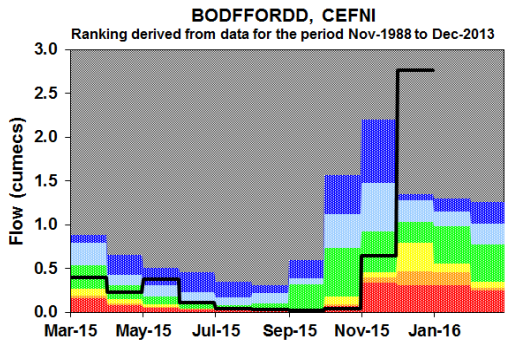


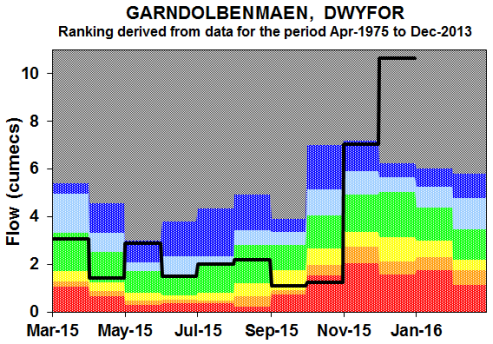












Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels (*Source: Natural Resources Wales*). (Please note that there is nodata available for River Gelyn at Cynefail in November 2015)

Return to Summary

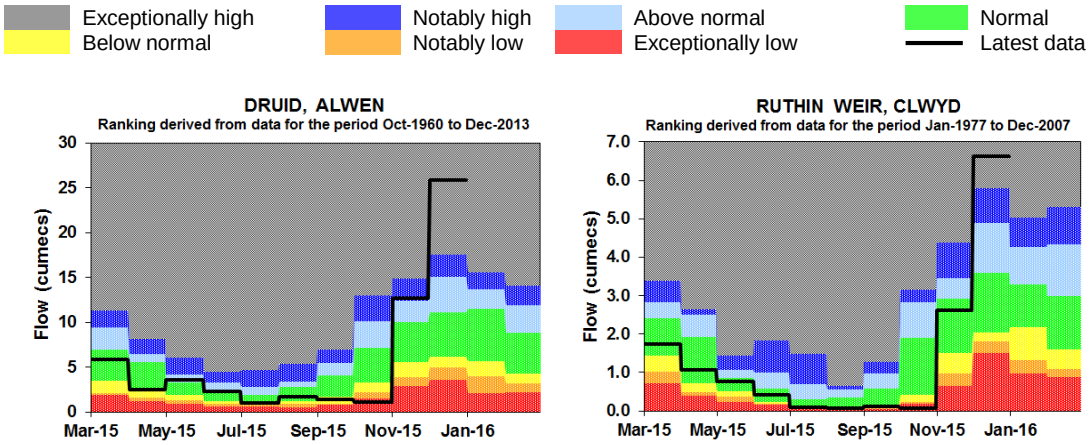
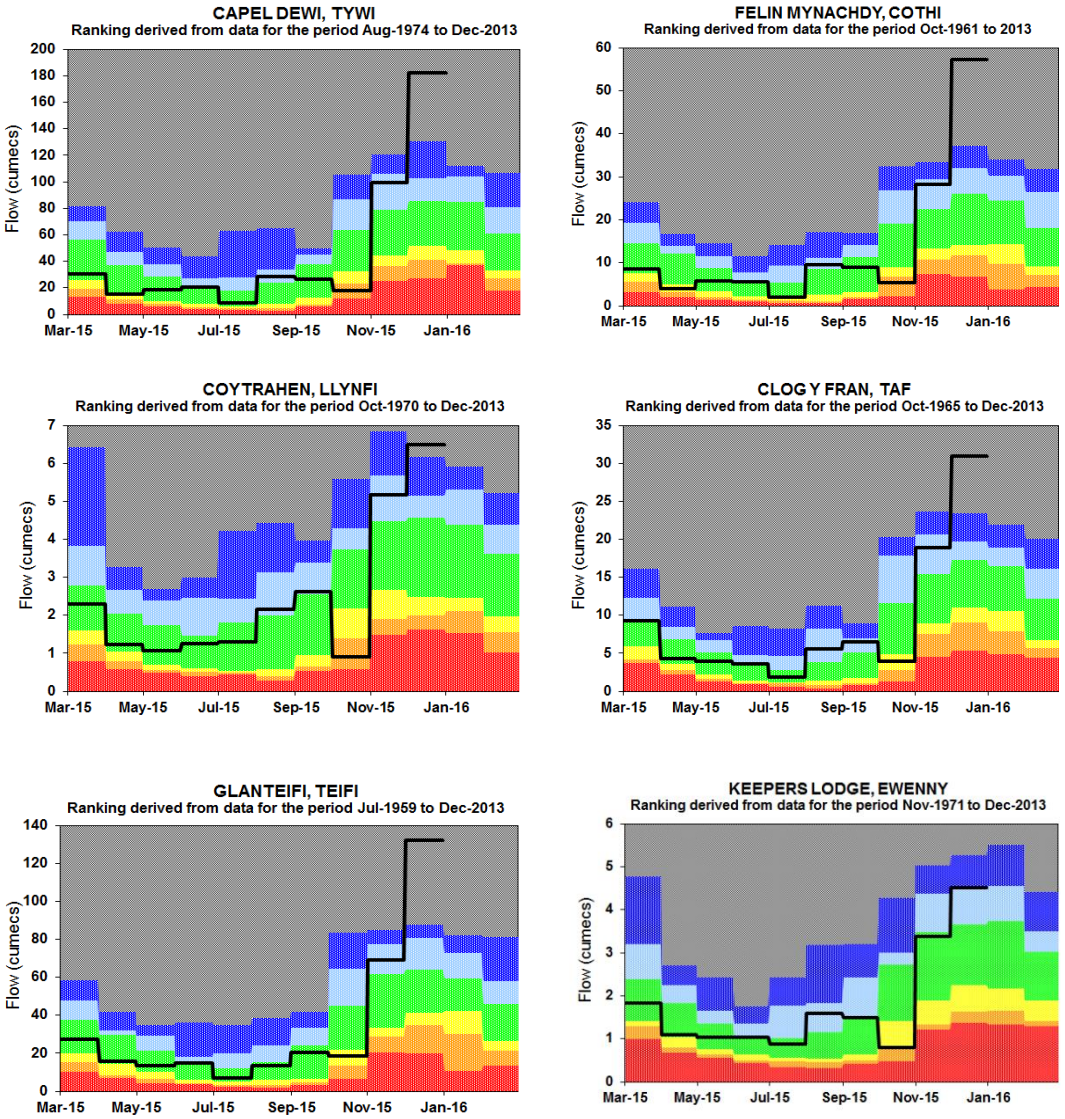
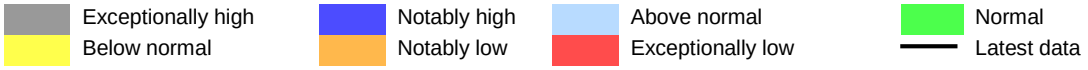
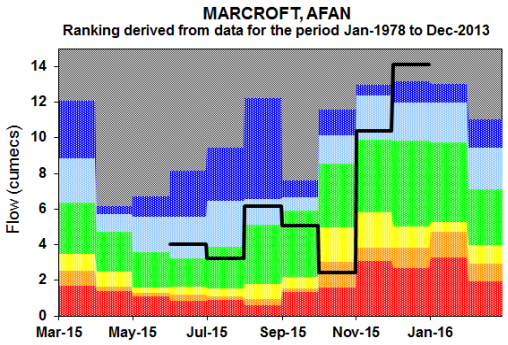


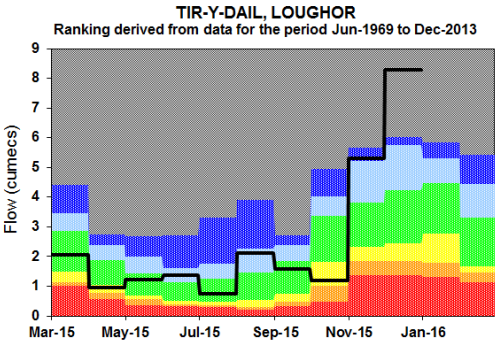
Figure 14: River Flow Charts: South West Wales

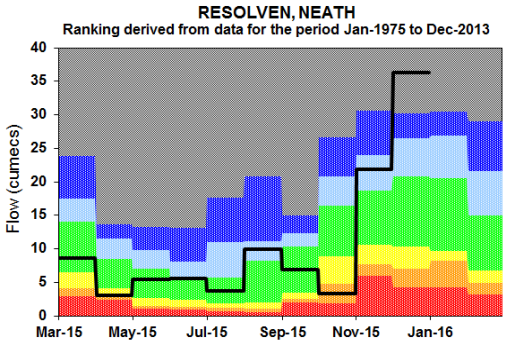


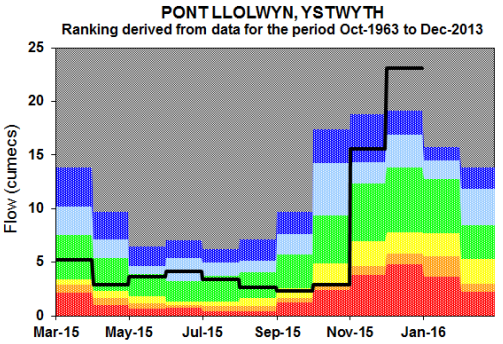
Return to Summary

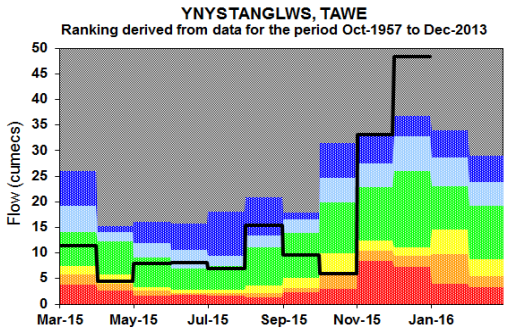












Monthly mean river flows for the last 10 months classed relative to the analysis of historic river levels. *(Source: Natural Resources Wales).* (Please note that there is no data available before June 2015 for the site of River Afan at Marcroft

Return to Summary

Groundwater Levels

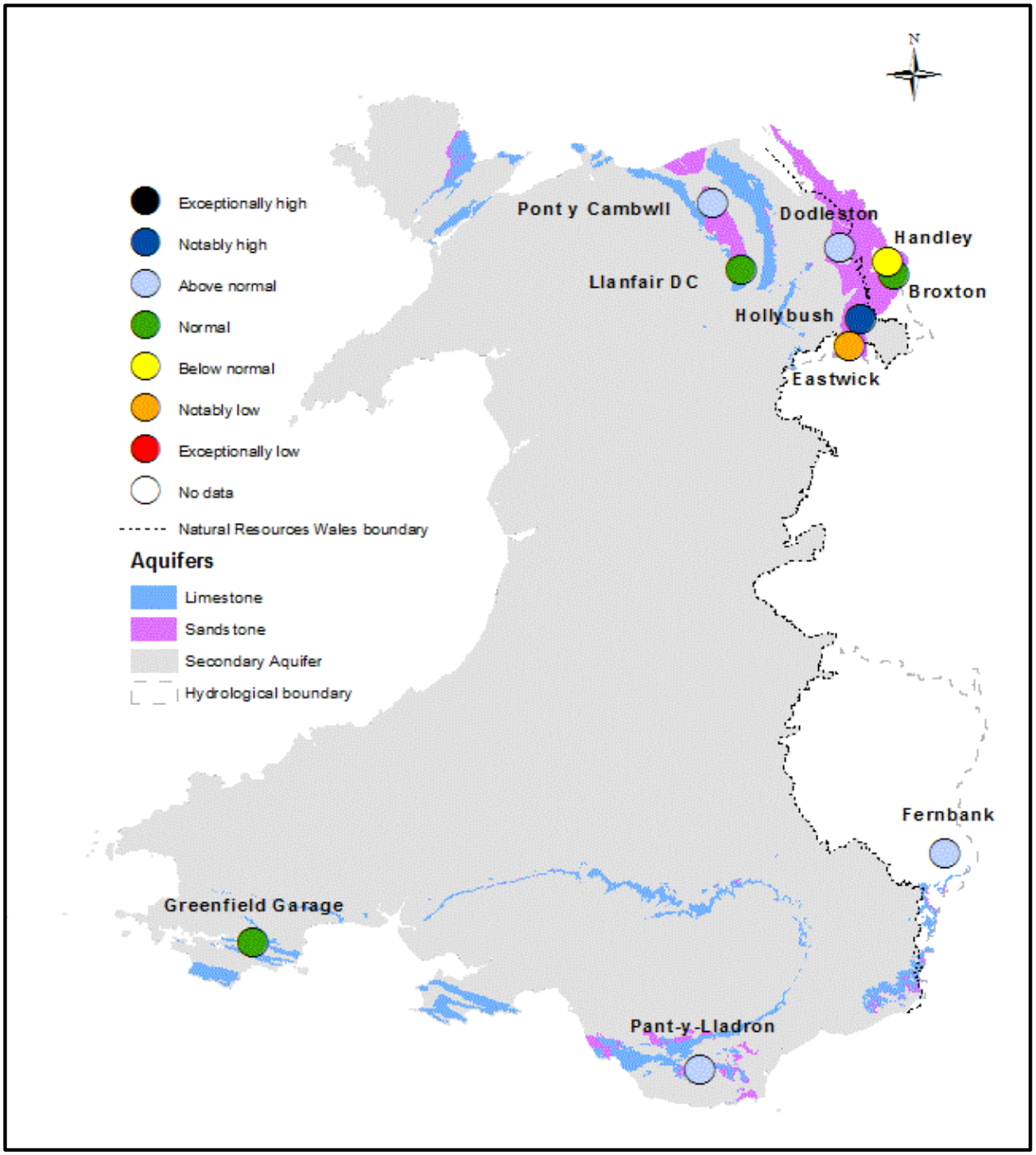
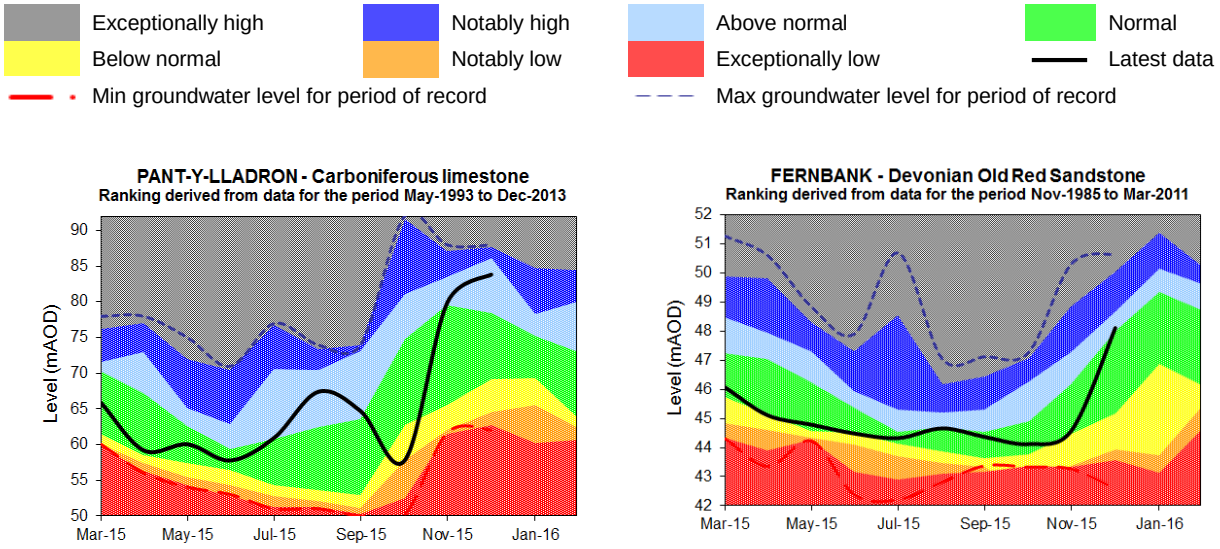


Figure 15: Groundwater levels at the end of month classed relative to an analysis of historic December groundwater levels *(Source: Natural Resources Wales and Environment Agency).*

Return to Summary

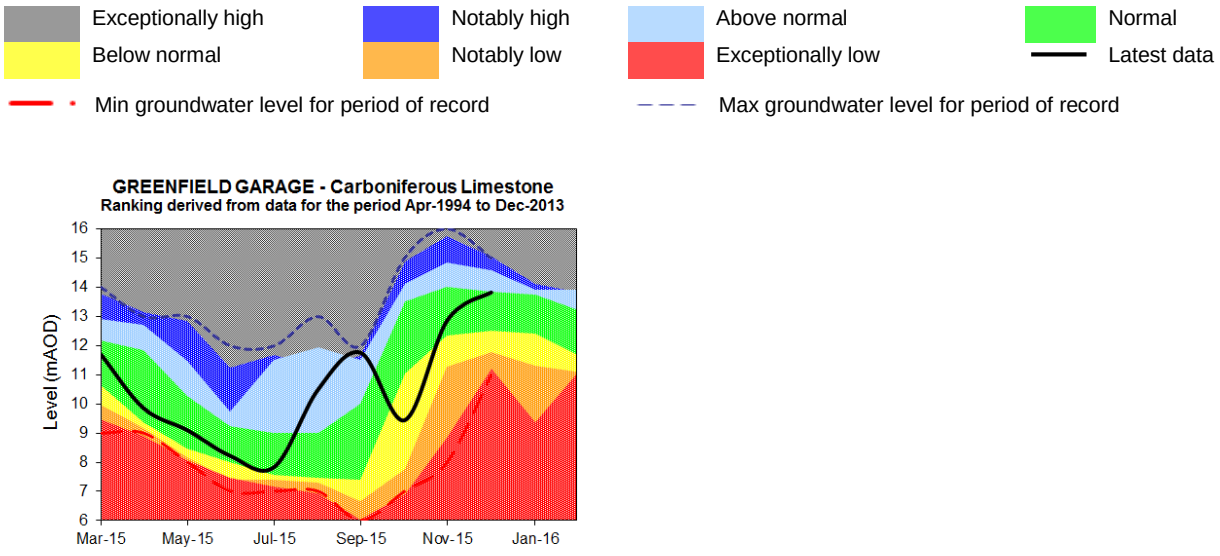
Groundwater charts

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).*

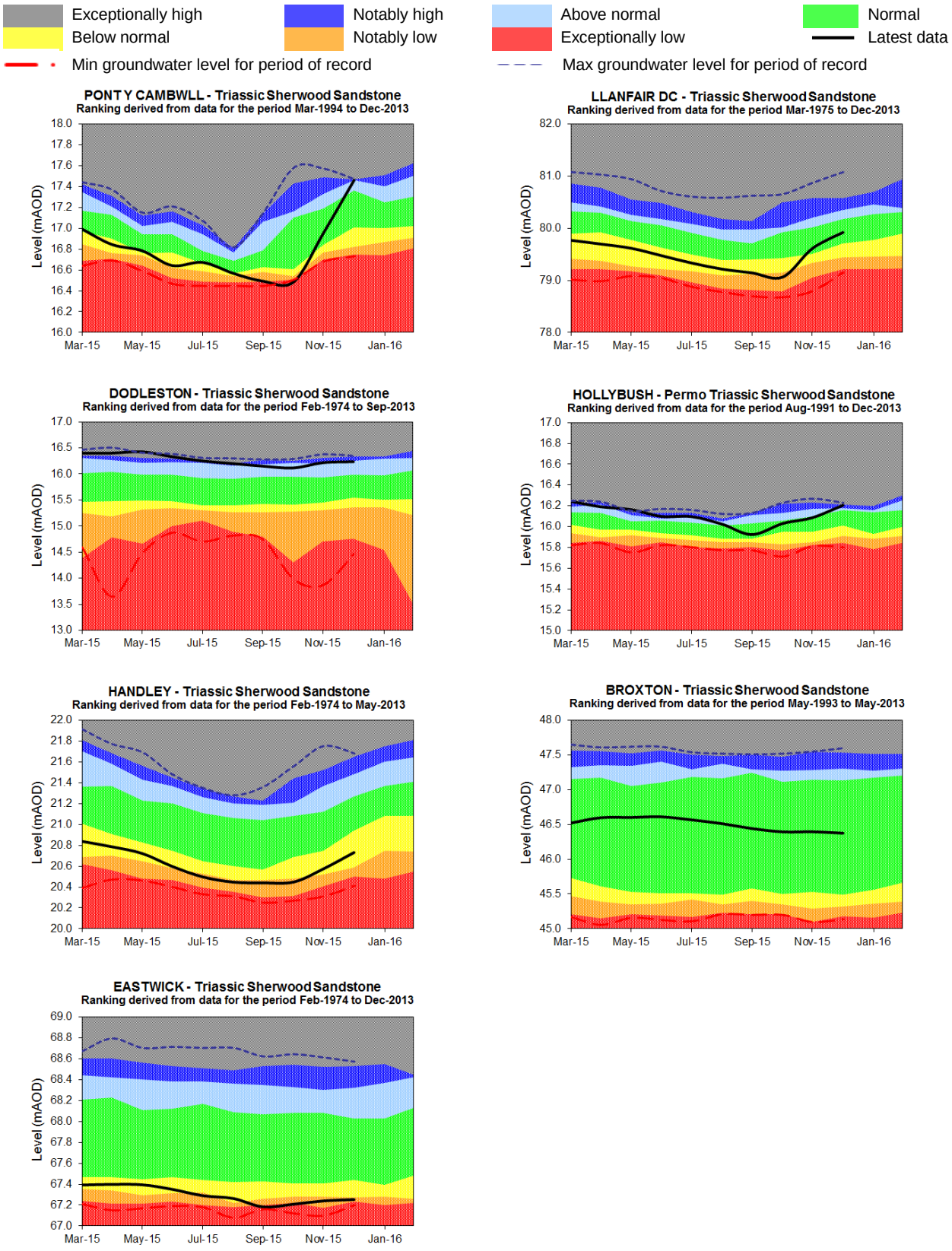
Figure 17: Groundwater level charts: South West Wales



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

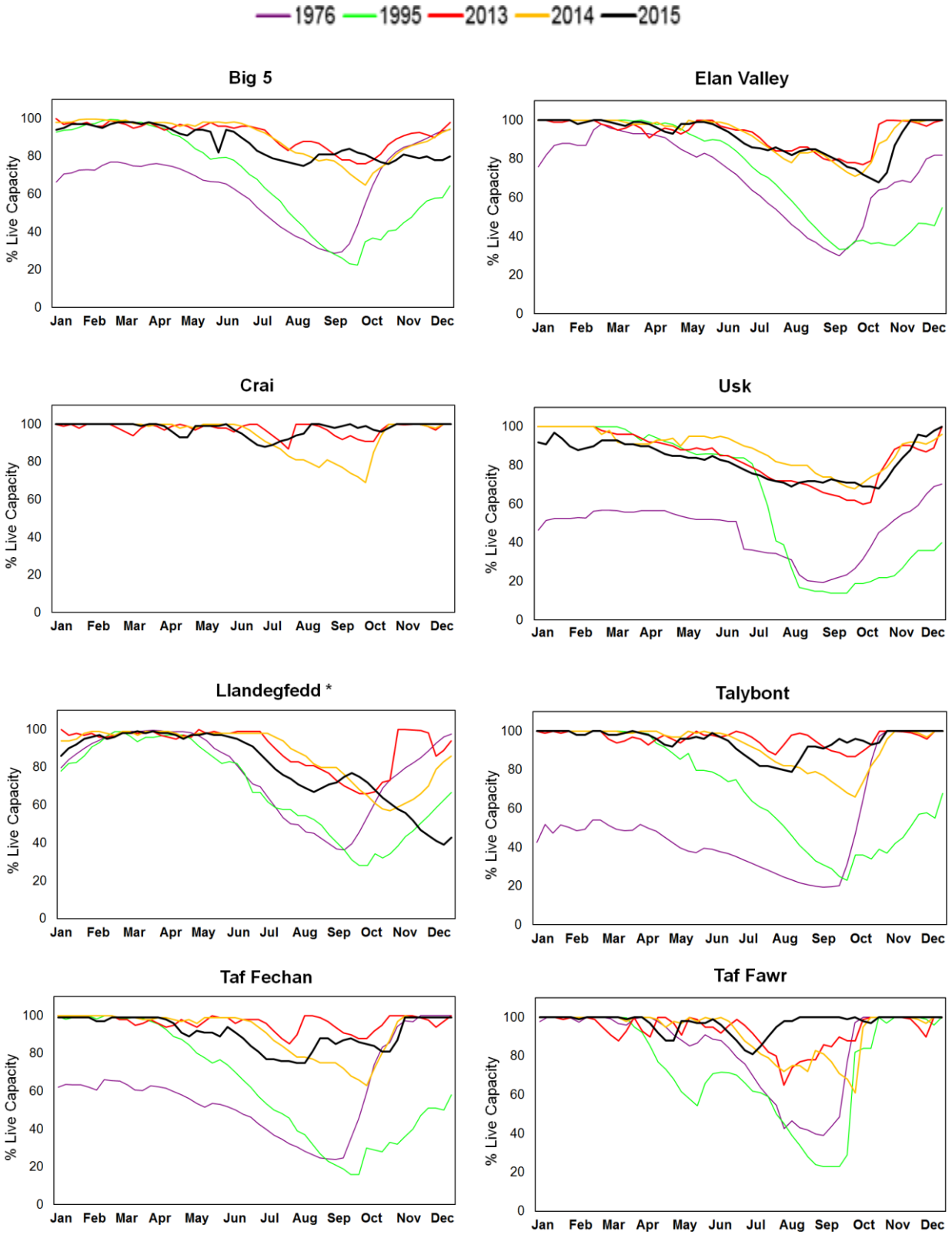


End of month groundwater levels for the past 10 months for index sites *(Source: Natural Resources Wales and Environment Agency)*.

Return to Summary

Reservoir Storage

Figure 19: Reservoir charts: South East Wales

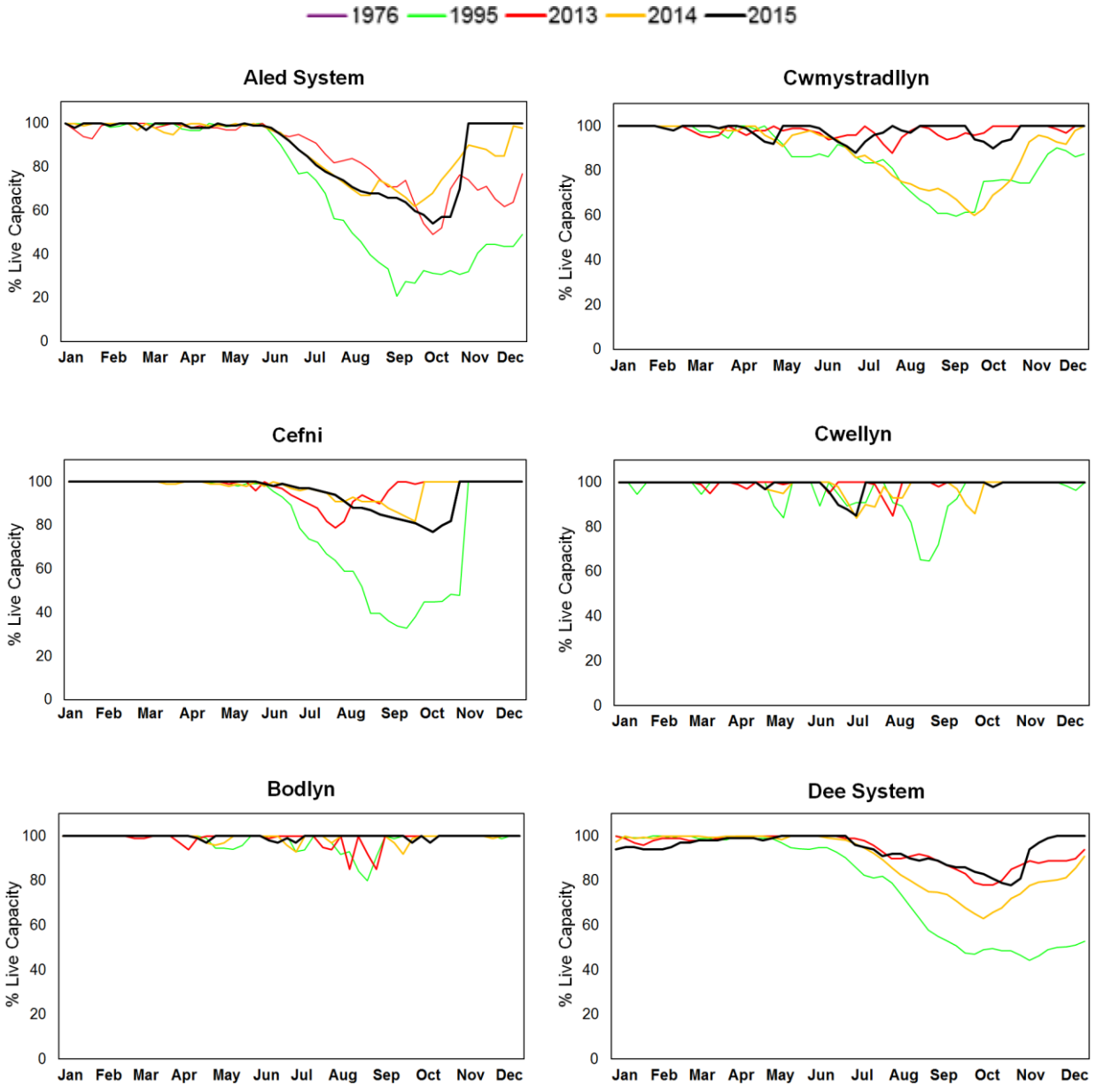


Weekly reservoir stocks for Natural Resources Wales index sites *(Source: Water Companies)*

(*Please note that the Llandegfedd reservoir started to fill up after being drawn down for reservoir safety maintenance works)

Return to Summary

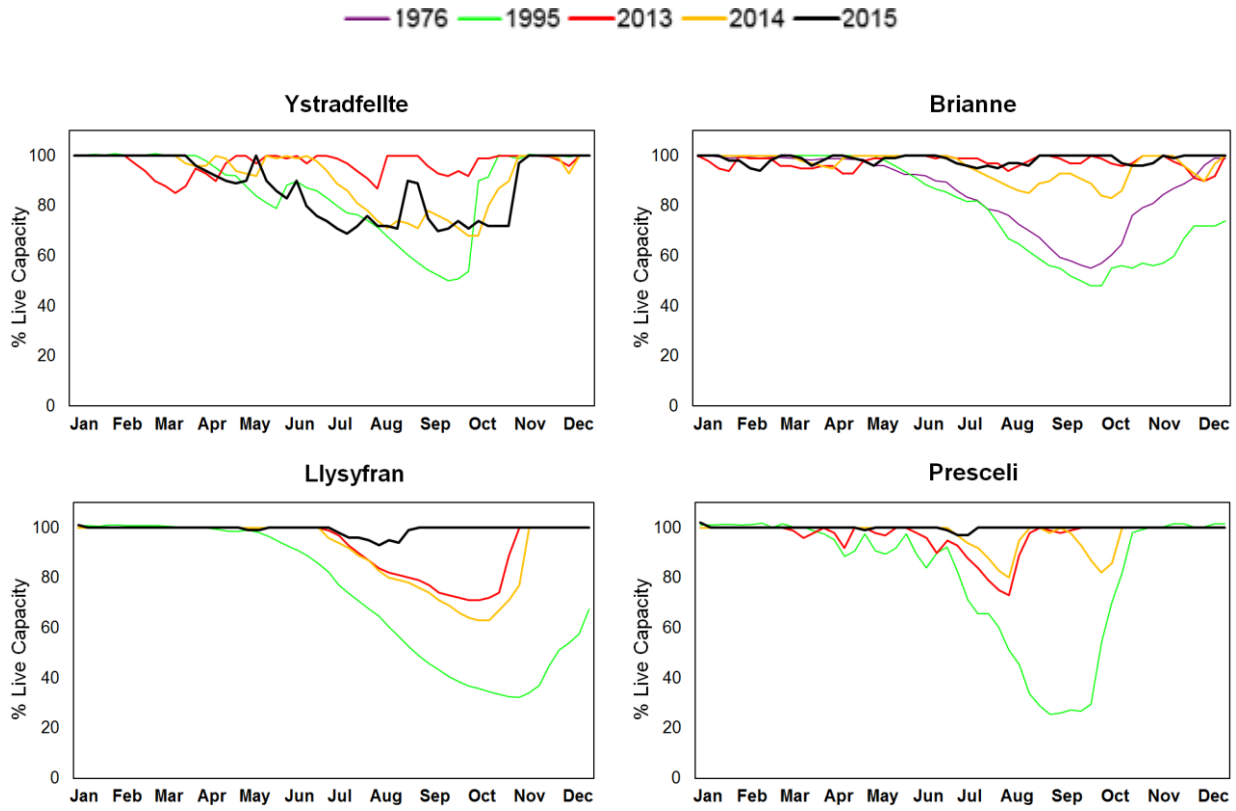
Figure 20: Reservoirs charts: North Wales



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).