

# Monthly water situation report

## South West Region

### Summary – December 2014

In contrast to December the previous year, the south west of England has experienced a dry December. Rainfall was 64% of the December long term average (LTA), making it the fifth month in 2014 that the two Areas have seen lower than average rainfall. Despite this, river flows have fluctuated throughout the month in response to rainfall events, though the majority of sites had 'normal' flows for the time of year at the end of December. Groundwater levels also remain 'normal' for the time of year at the majority of sites, though levels at some sites have receded. Soil moisture deficit decreased throughout December and is now close to zero in both Areas. Reservoir levels have increased over the month.

### Rainfall

Both Wessex and Devon and Cornwall Areas had below average rainfall for December with 59 mm (63%) and 90 mm (65%) respectively. Rainfall events were staggered throughout the month and occurred between the 9<sup>th</sup> and 11<sup>th</sup>, the 16<sup>th</sup> to the 18<sup>th</sup> and on the 26<sup>th</sup> of December. West Dorset Streams had the lowest rainfall total of 48 mm (50%) over the month, making it 'notably low' for the time of year. Whereas, the West Somerset Streams catchment received the highest total rainfall of 127 mm (96%), making it 'normal' for the time of year.

### Soil Moisture Deficit

Soil moisture deficit (SMD) decreased overall in December due to the occasional rainfall event. By the end of the month, SMD for both Areas was below 1 mm, which is normal for this time of year.

### River Flows

The majority of rivers in the south west of England had 'normal' monthly mean flows for the time of year. With a dry start to the month, many river flows declined but later increased in response to rainfall events. This resulted in more responsive rivers peaking at 'notably high' or 'exceptionally high' flows for the time of year, though these later subsided to 'normal' flows at the majority of sites by the end of the month.

### Groundwater Levels

Groundwater levels remain 'normal' for the time of year at the majority of sites, with some sites in North Wessex and East Devon ranging from 'above normal' to 'exceptionally high'. The majority of groundwater sites remained in the same category throughout the month. The exceptions were Overcompton, Woodyates, and Woodleys No1 which, in response to the dry weather, returned to 'normal' levels for the time of year after being 'above normal'. This decrease in levels also occurred at Bussels No7A, which is now 'above normal' for the time of year. The levels in rapid response boreholes such as Chantry No1 and Ashton Farm have already started to decline.

### Reservoir Storage

Reservoir storage has increased in December, despite the dry weather. South West Water's total storage increased from 78% to 83%, Wessex Water's increased from 78% to 88%, and Bristol Water's increased from 74% to 84%.

### Flood Warnings and Alerts

Area	Flood Warnings	Flood Alerts
Devon	0	14
Cornwall	2 (both were coastal)	3
Wessex North	0	15 (6 were coastal)
Wessex South	0	1 (coastal)



## Sites Providing Stream Support

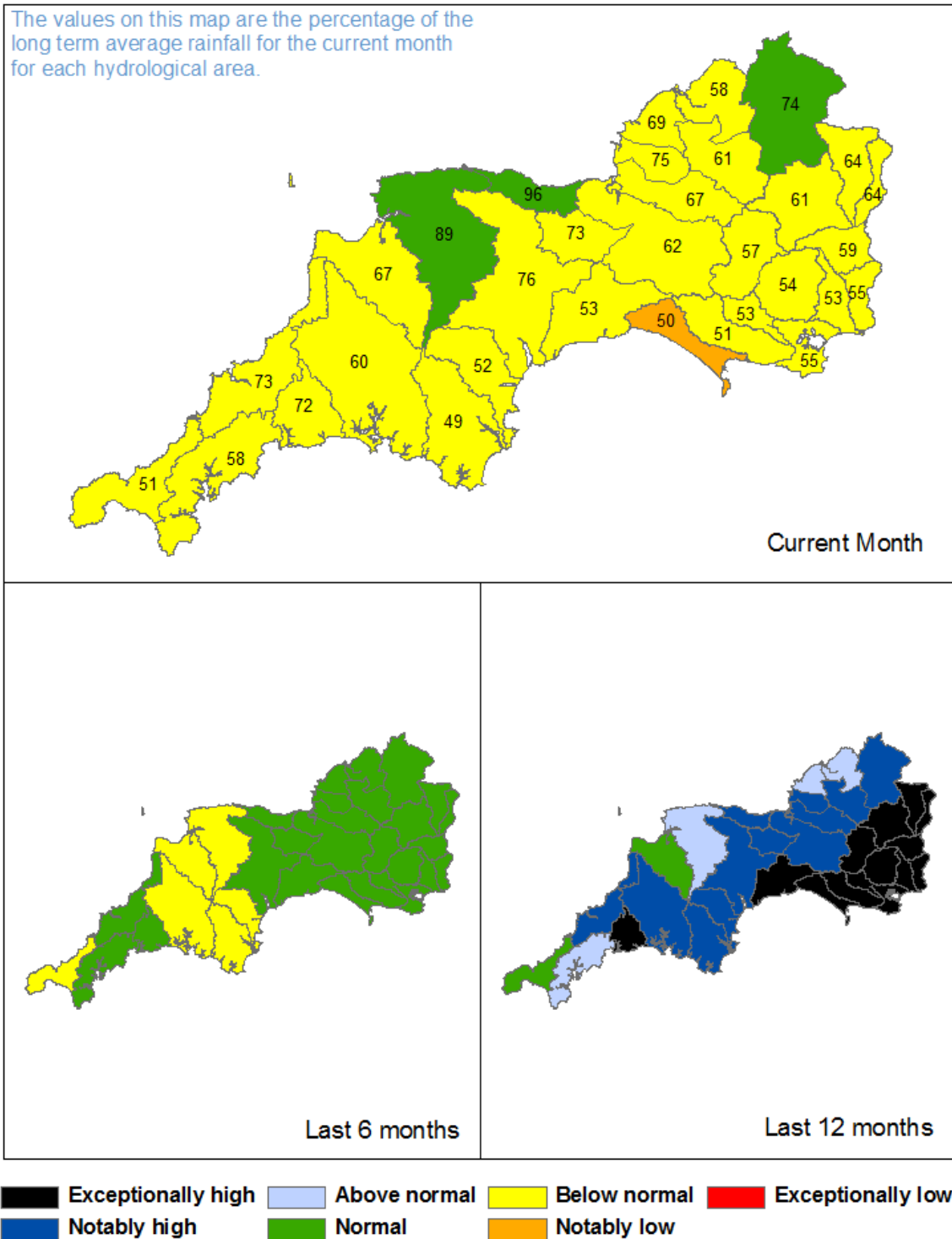
River	Site	End of Month Status
River Allen	Wyke Down	Off
Chitterne Brook	Codford Road	On
Gussage Stream	Gussage All Saints	Off
Devil's Brook	Dewlish WDX	Off
River Piddle	Briantspuddle	Off
South Winterbourne	Winterbourne Abbas	Off
Pimperne Stream	Pimperne	Off
Watergates Stream	Watergates	On
River Wylde	Brixton Deverill	Off
River Wylde	Kingston Deverill	Off
Rodbourne Brook	Lower Stanton St. Quinton	Off
Tetbury Avon	Tetbury	Off
Sherston Avon	Stanbridge	Off
Luckington Brook	Luckington	Off
Gauze Brooke	Hullavington	Off
Charlton Stream	Charlton	Off
Chalfield Brook	South Wraxall	Off
Chalfield Brook	Little Chalfield	Off

## Abstraction Licences Subject to Cease or Restrict

Catchment	End of Month Status
Hampshire Avon	1 cease, 1 restrict
Dorset Frome	3 cease
Stour	--
Piddle	--
Bride	1 restrict
Wylde	--
Bristol Avon	--
Somerset	--

Author: [Hydrology and Water Resource Management](#) Contact details: 07525 969024

# Rainfall

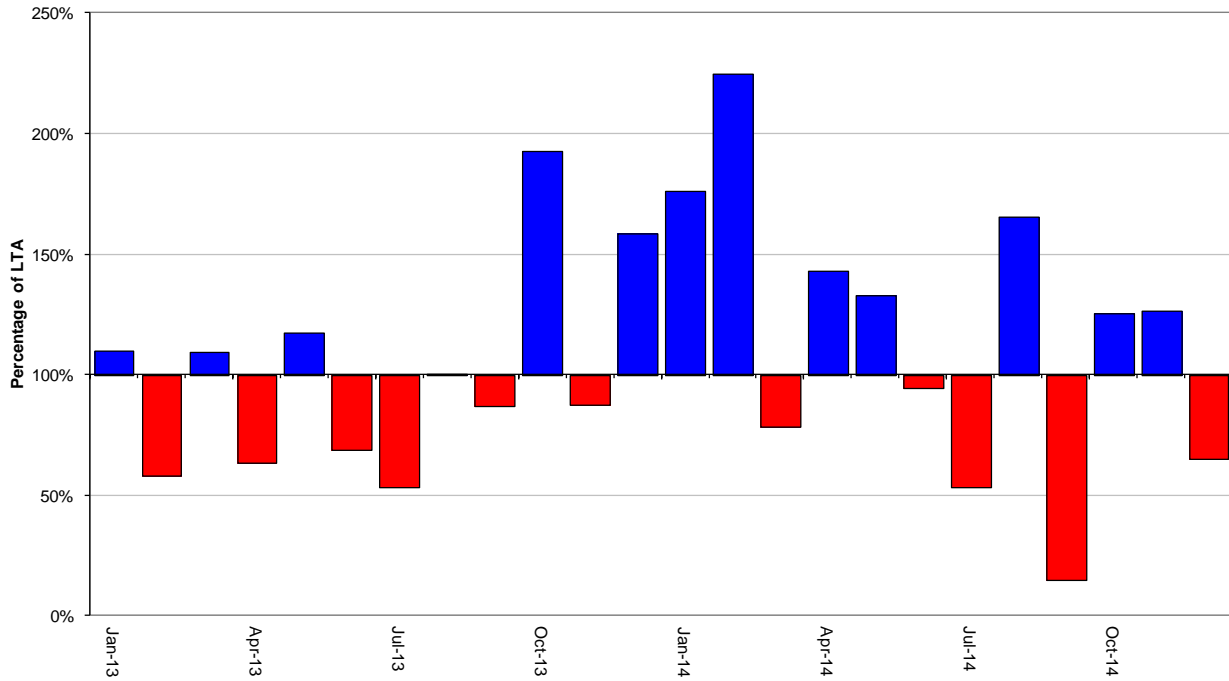


**Figure 1.1:** Total rainfall for hydrological areas across South West England for the current month (up to December), the last three months and the last 12 months, classed relative to an analysis of respective historic totals. The values on the current month map are the percentage of the December long term average rainfall for each hydrological area. Produced using final and provisional NCIC (National Climate Information Centre) data (Source: Met Office © Crown Copyright). Crown copyright. All rights reserved. Environment Agency, 100026380, 2014.

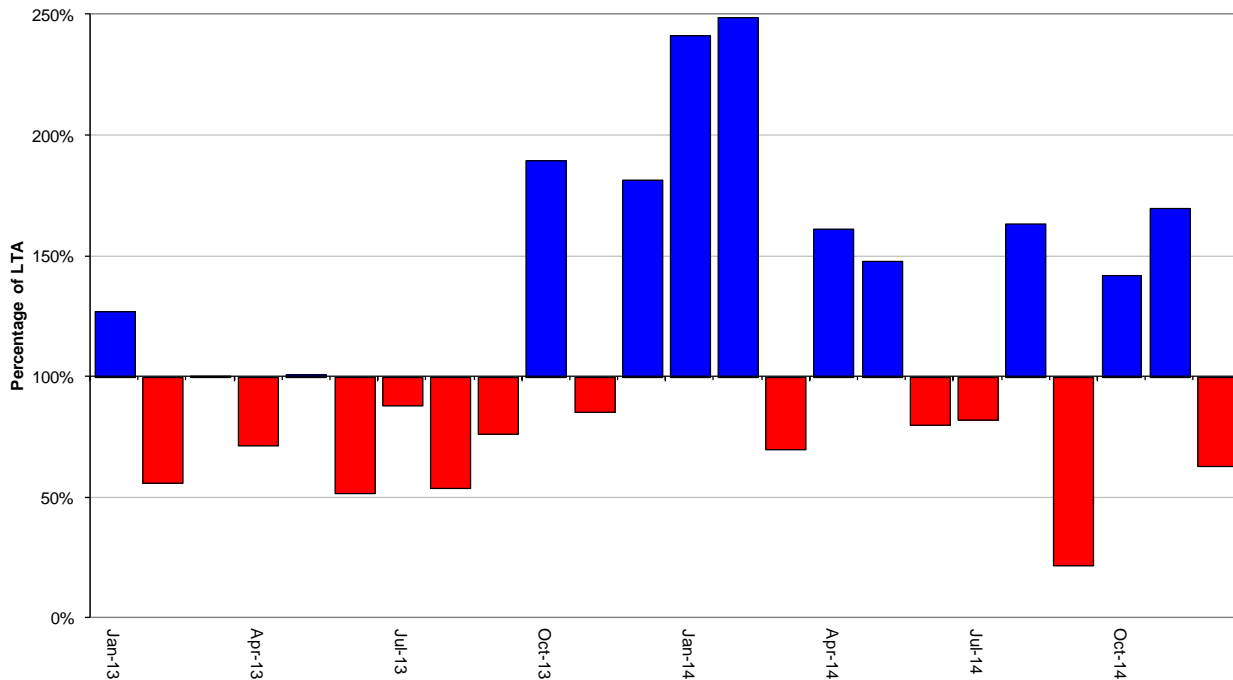
**Above 100% LTA rainfall**

**Below 100% LTA rainfall**

### 1-Month Period for South West - Devon & Cornwall NCIC

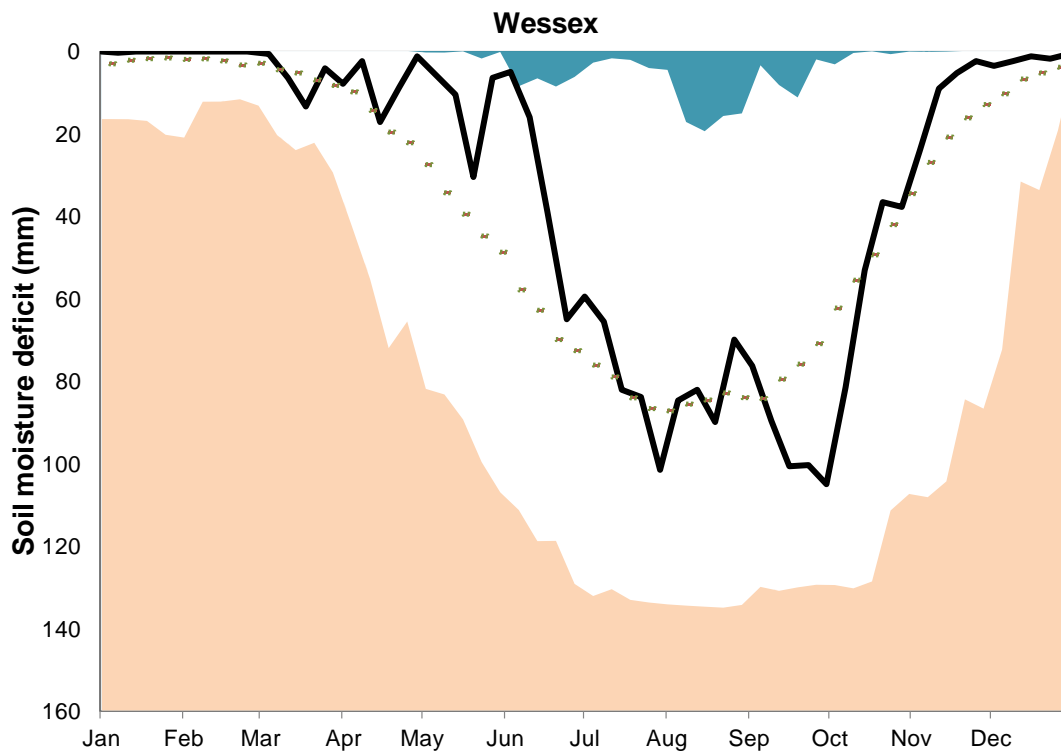
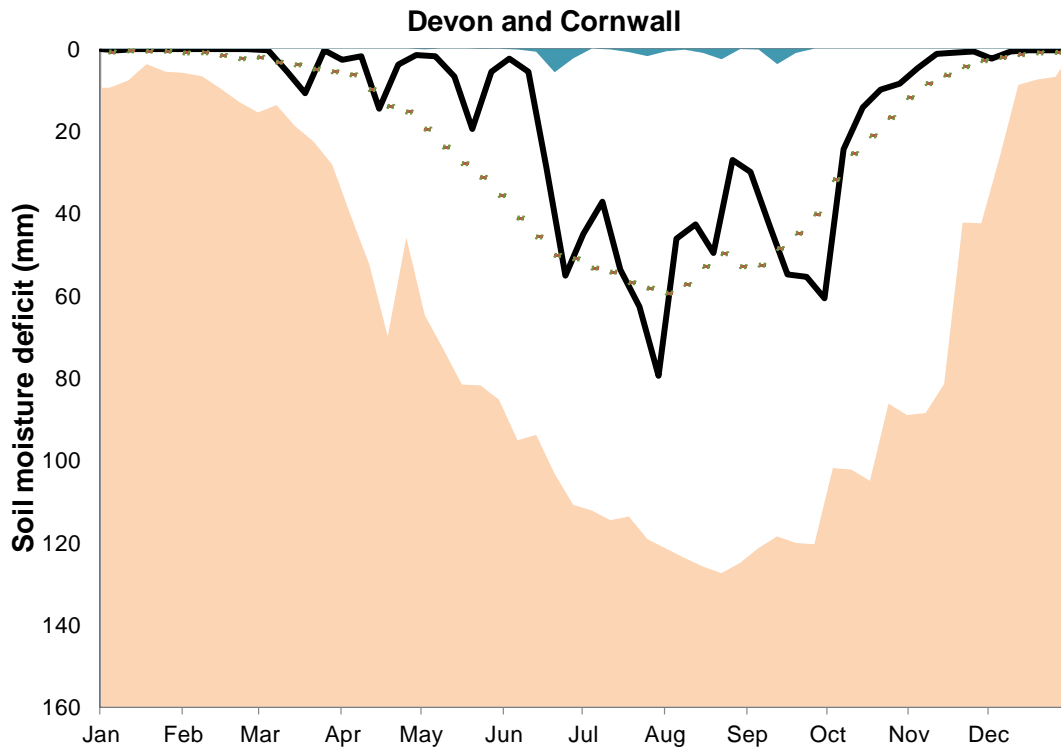


### 1-Month Period for South West - Wessex NCIC



**Figure 1.2:** Monthly rainfall totals as a percentage of the 1961 – 1990 long term average. Produced using final and provisional NCIC (National Climate Information Centre) data. (Source: Met Office © Crown Copyright, 2014).

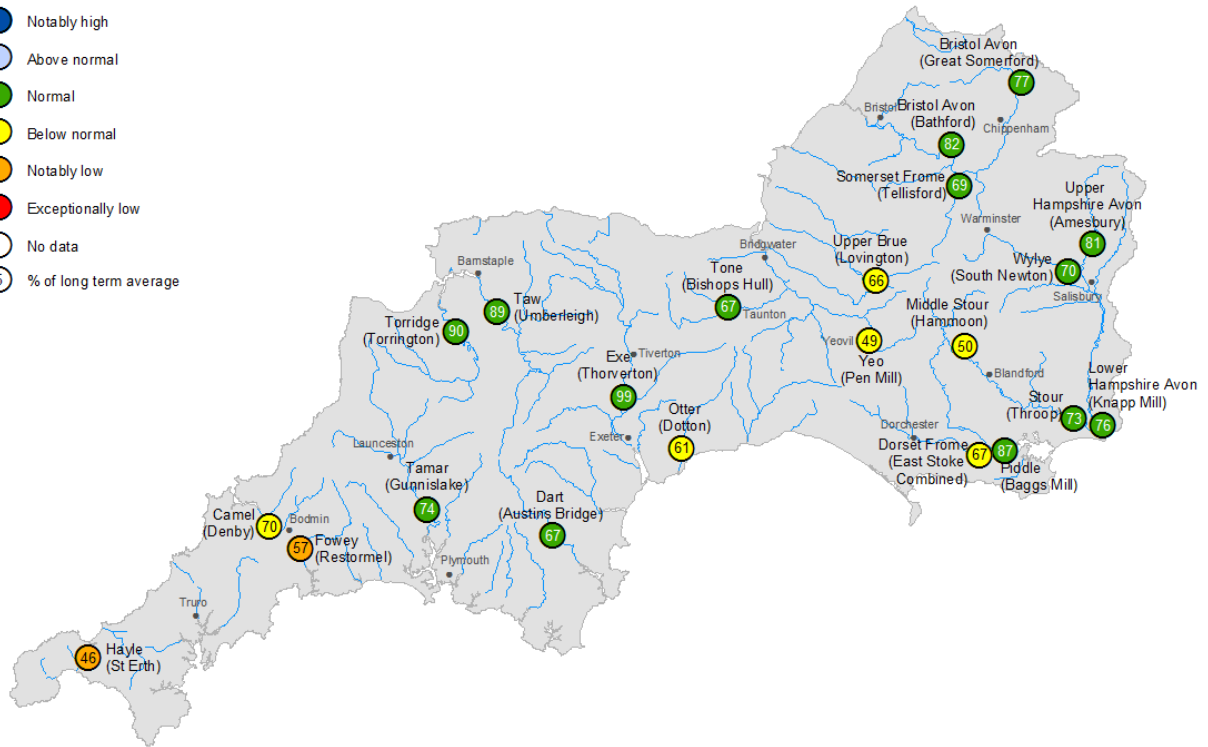
# Soil Moisture Deficit



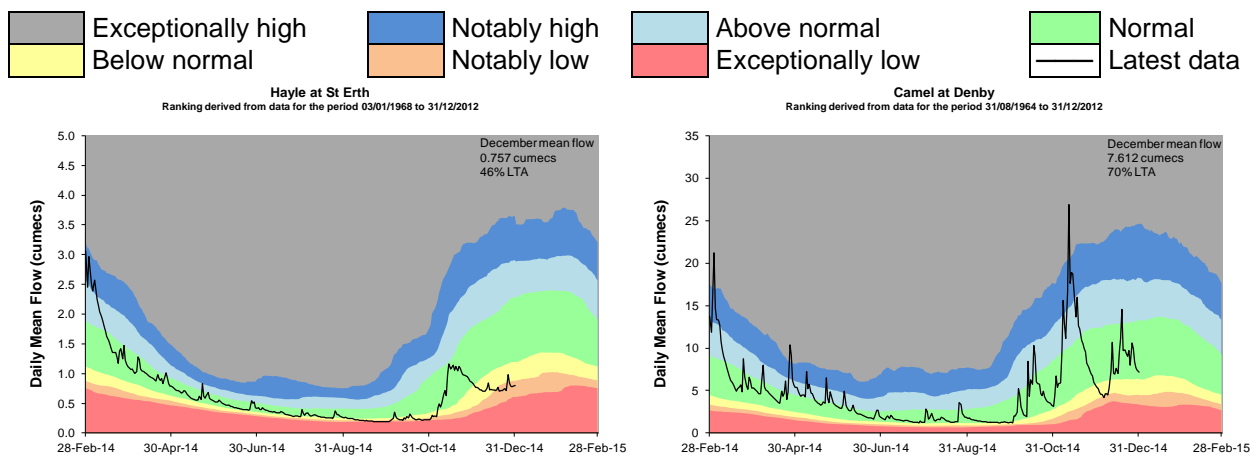
**Figure 2.1:** Latest soil moisture deficit compared to maximum, minimum, and 1961 – 1990 long term average. Weekly MORECS data for real land use (Source: Met Office © Crown Copyright, 2014).

# River Flow

- Exceptionally high
- Notably high
- Above normal
- Normal
- Below normal
- Notably low
- Exceptionally low
- No data
- % of long term average



**Figure 3.1:** Monthly mean river flows at indicator sites for December 2014, expressed as a percentage of the respective long term average and classed relative to an analysis of historic December monthly means (Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100026380, 2014.



customer service line  
03708 506 506

incident hotline  
0800 80 70 60

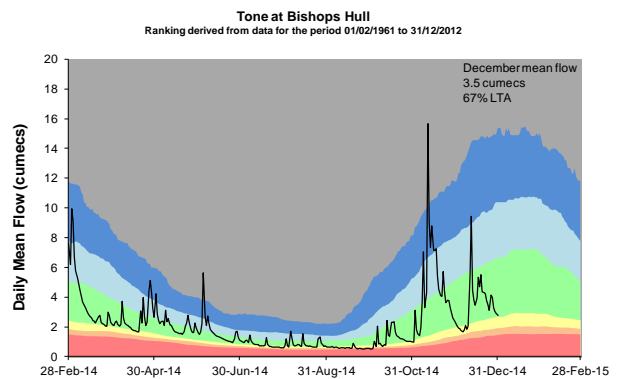
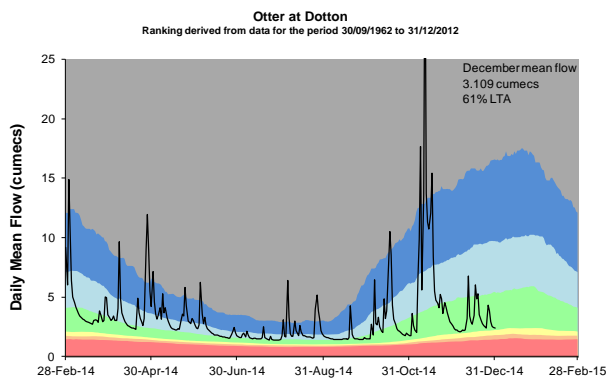
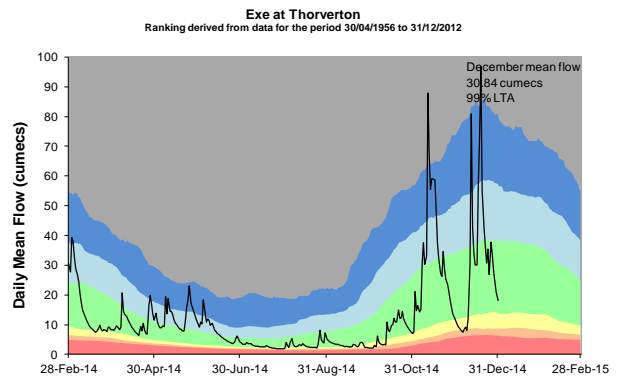
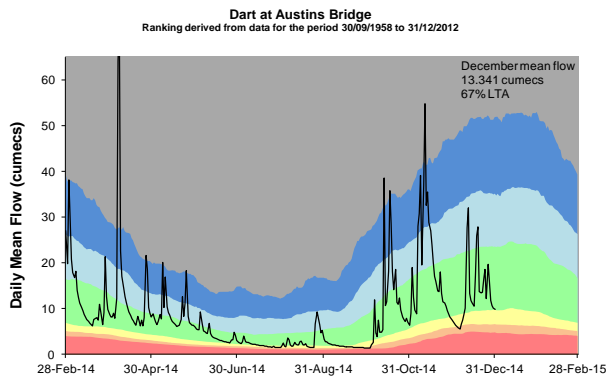
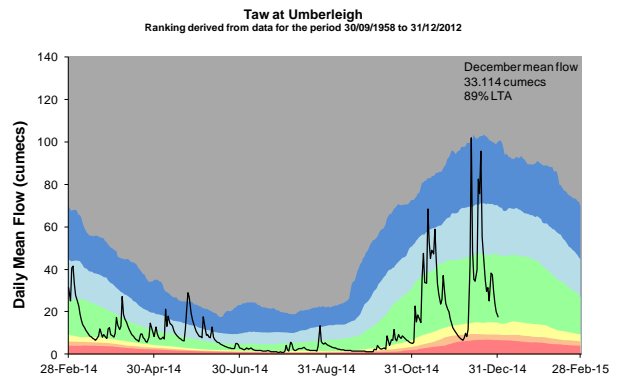
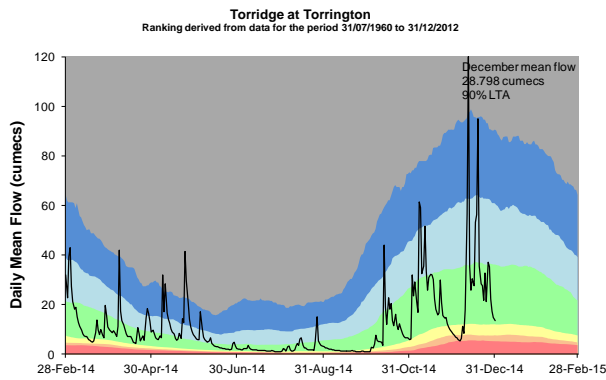
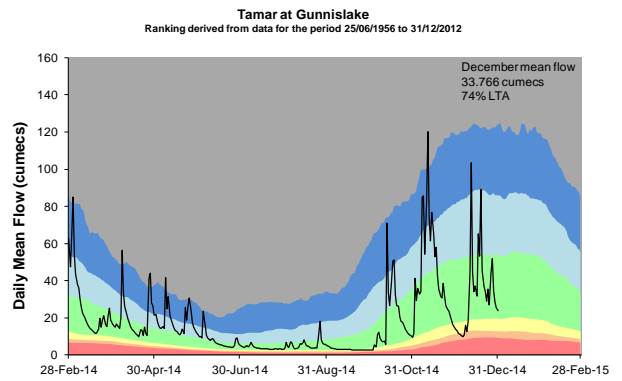
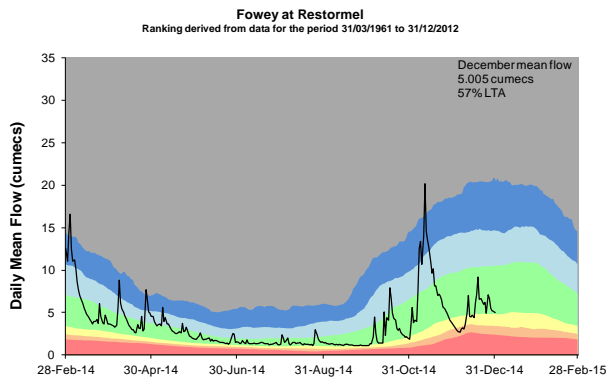
floodline  
0845 988 1188

Exceptionally high  
Below normal

Notably high  
Notably low

Above normal  
Exceptionally low

Normal  
Latest data



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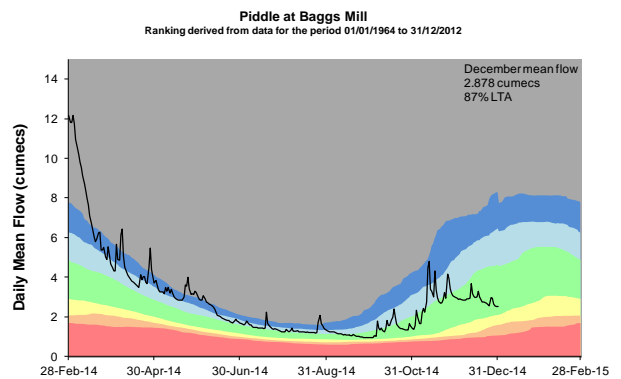
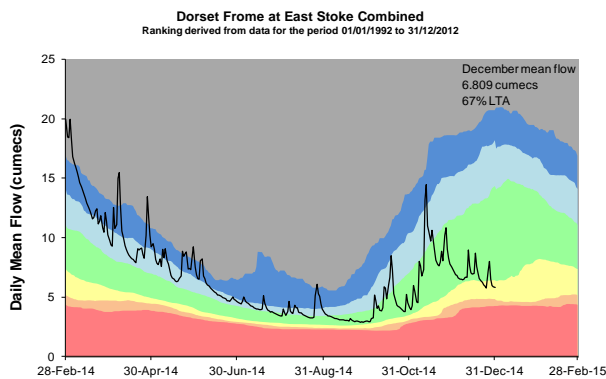
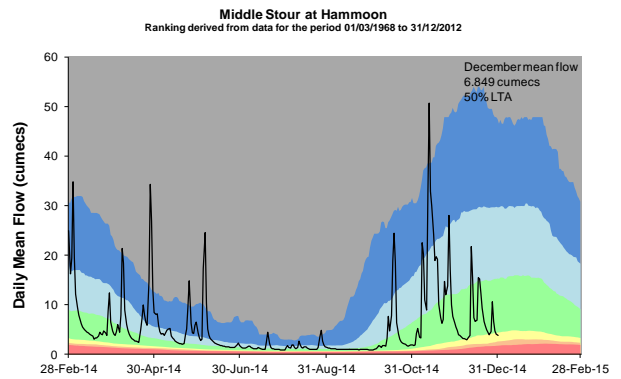
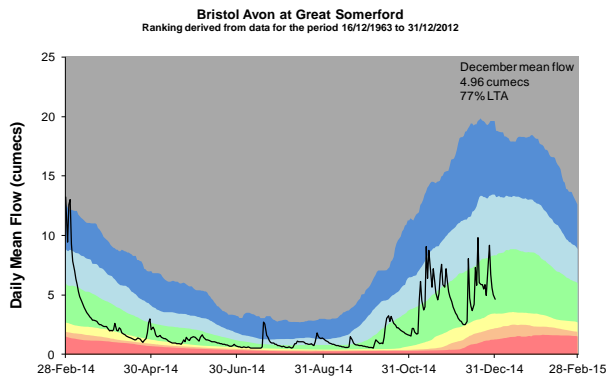
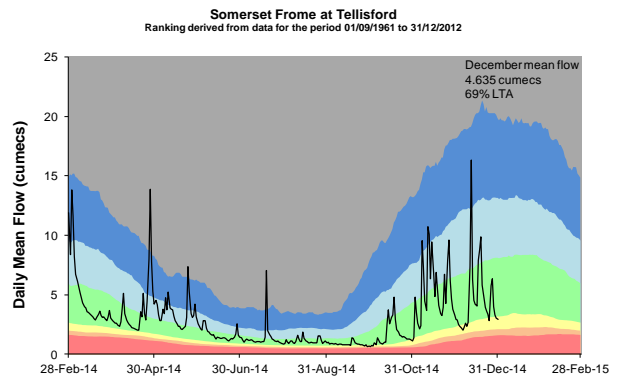
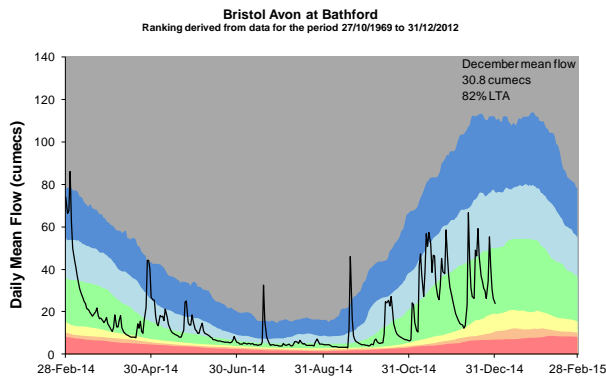
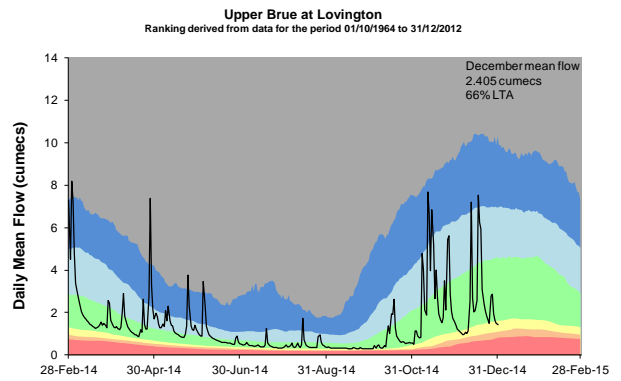
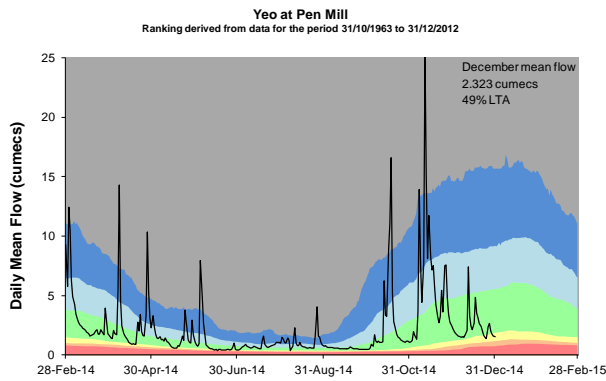
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Exceptionally high  
Below normal

Notably high  
Notably low

Above normal  
Exceptionally low

Normal  
Latest data



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03708 506 506

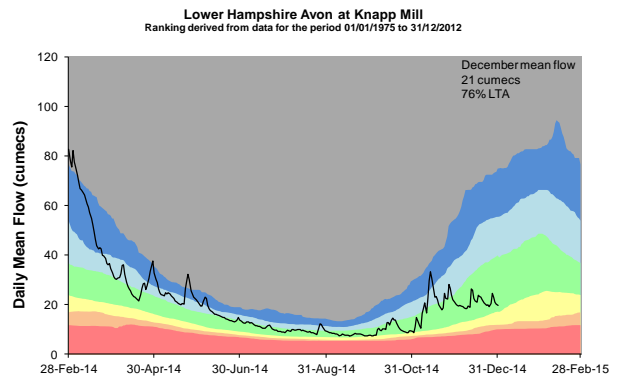
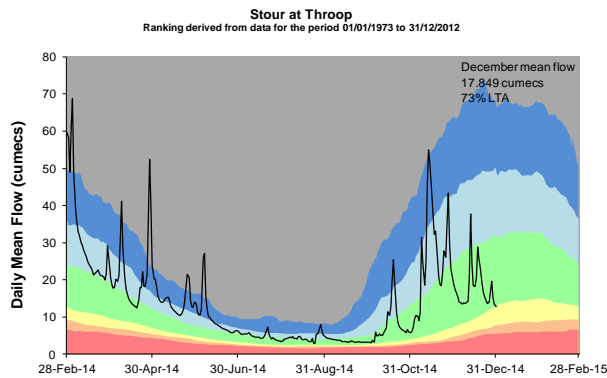
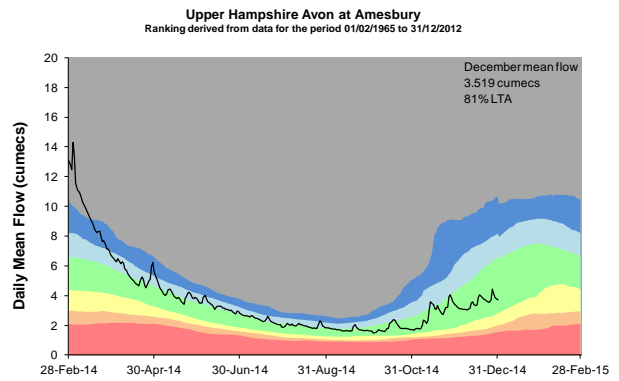
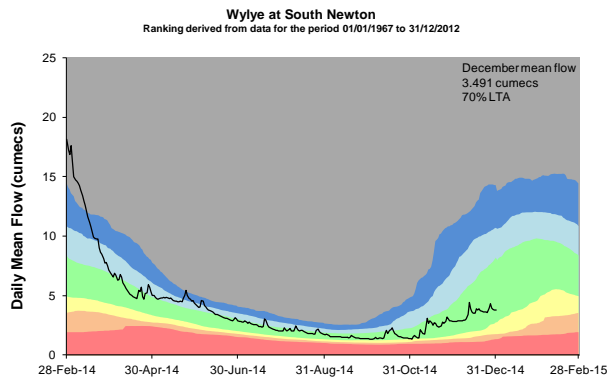
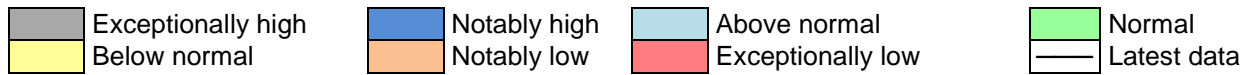
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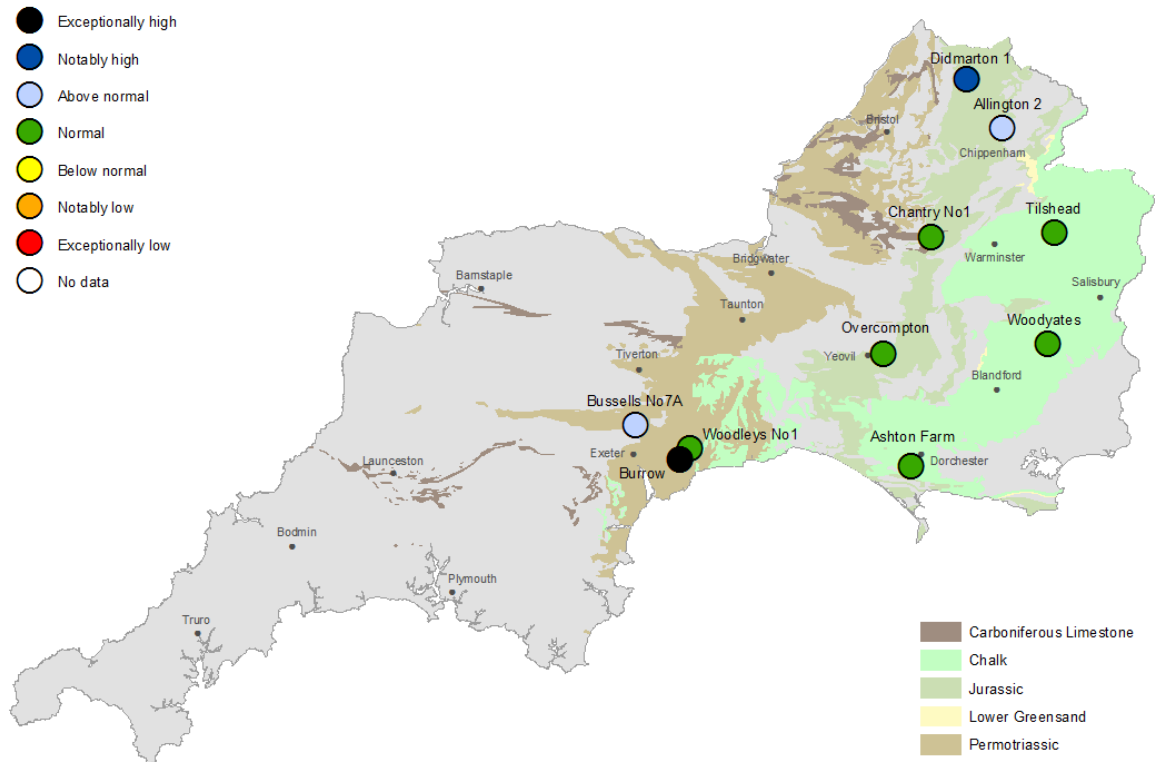
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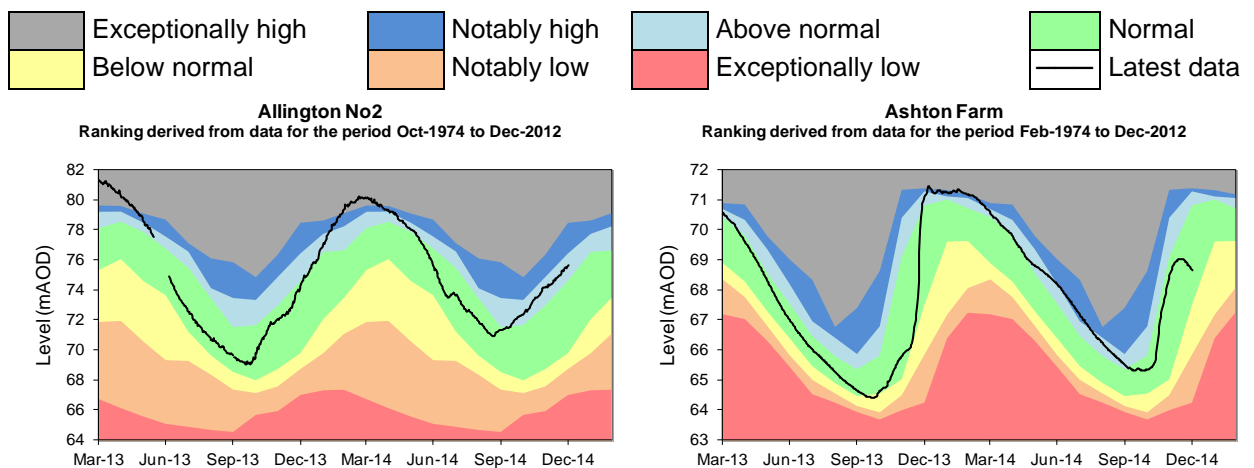


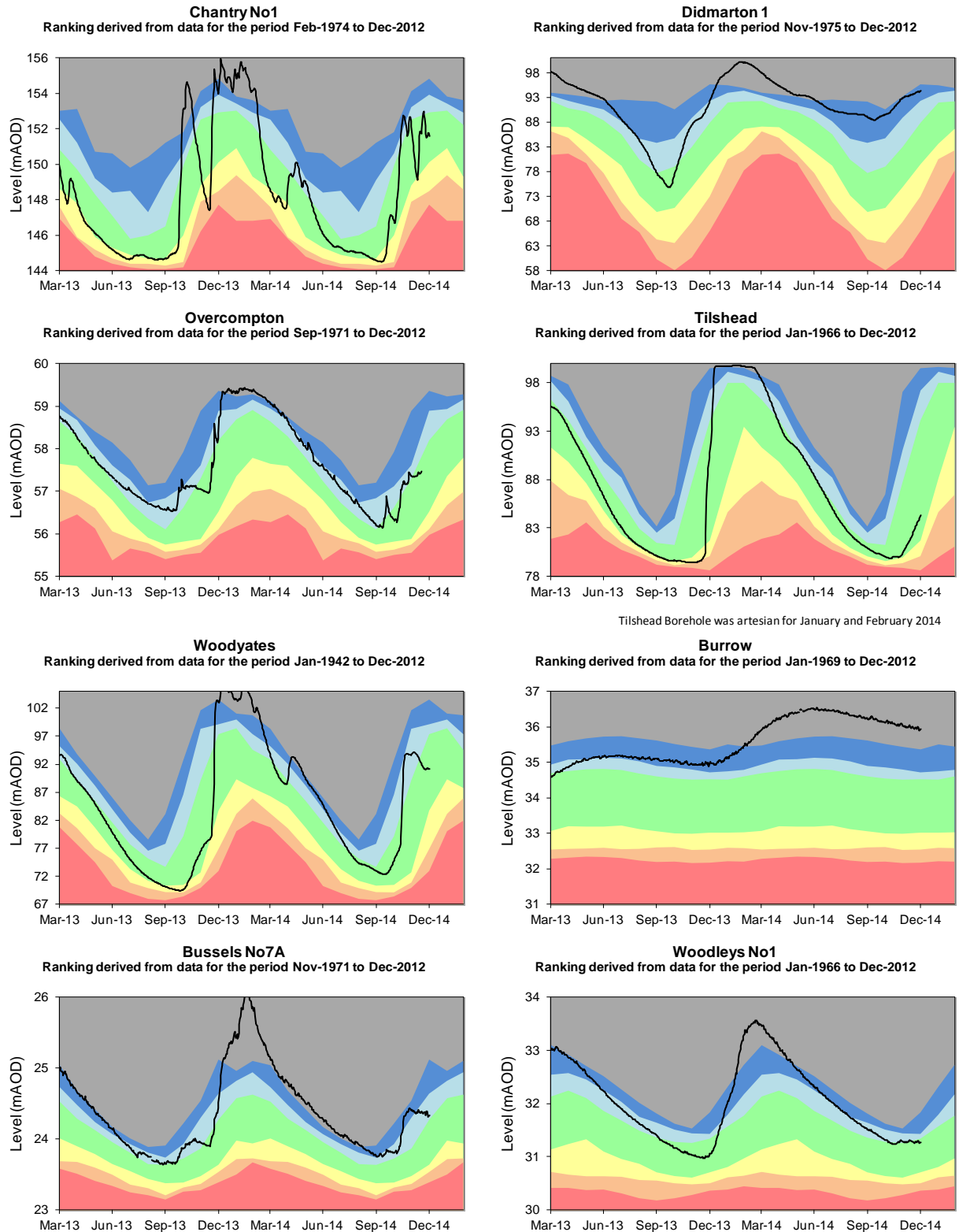
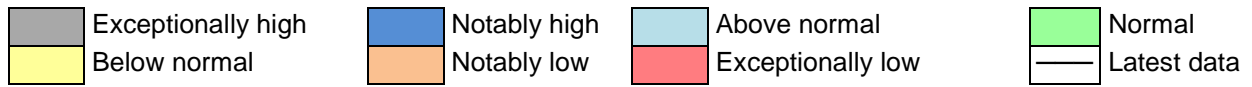
**Figure 3.2:** Indicator river flow sites for South West Region. Daily mean flow compared to an analysis of historic daily mean flows. (Source: Environment Agency).

# Groundwater Levels



**Figure 4.1:** Groundwater levels for indicator sites at the end of December 2014, classed relative to an analysis of respective historic December levels (Source: Environment Agency). Geological map reproduced with permission from UK Groundwater Forum, BGS © NERC. Note: groundwater levels are reported at different times during the month and therefore may not be fully representative of levels at the month end. Crown copyright. All rights reserved. Environment Agency, 100026380, 2014.





**Figure 4.2:** Indicator groundwater level sites for major aquifers. End of month groundwater levels compared to analysis of historic end month levels (Source: Environment Agency, 2014).

# Reservoir Stocks

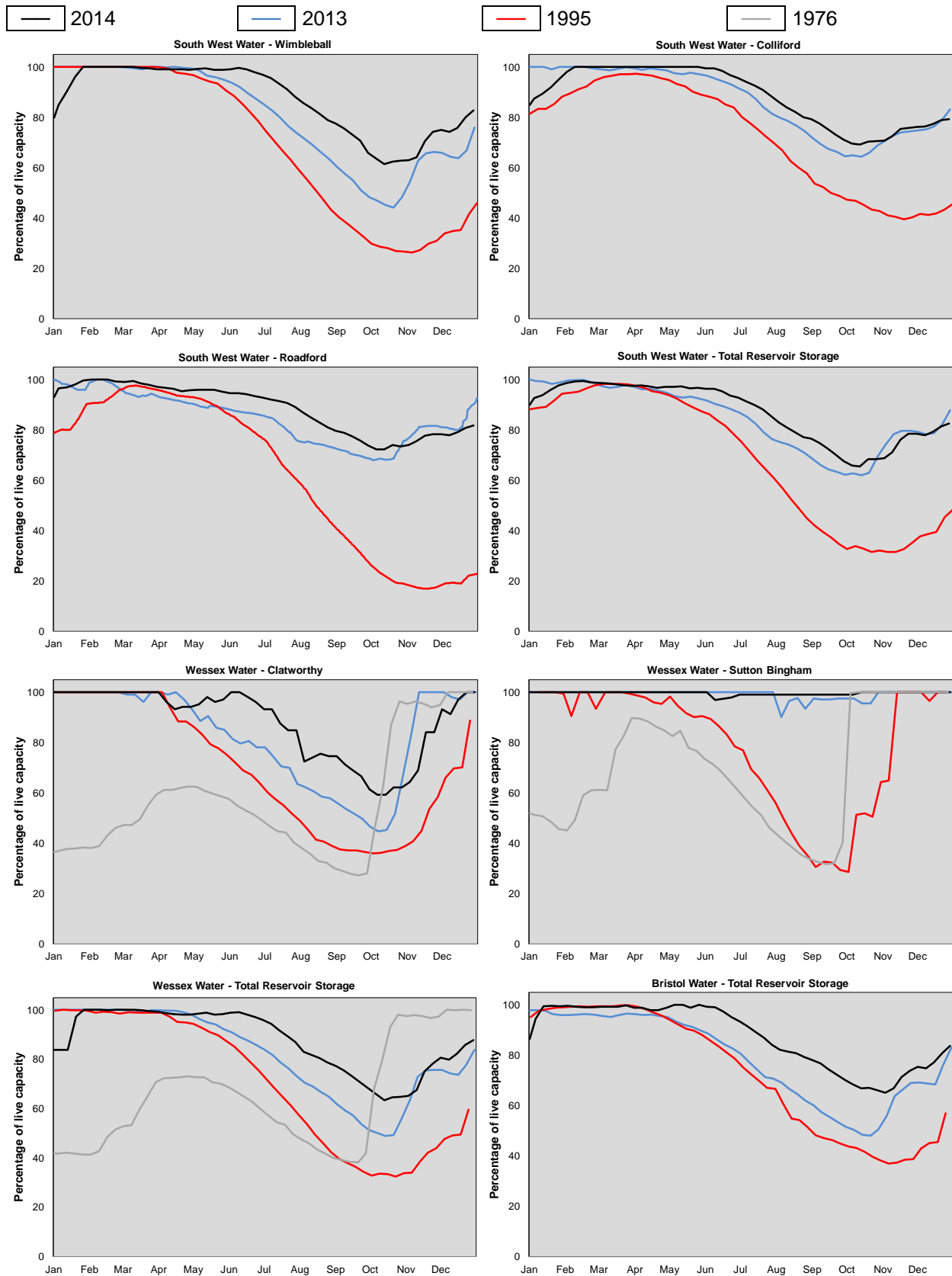


Figure 5.1: Reservoir stocks in South West Region (Source: Water companies).

# 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).
Artesian	The condition where the groundwater level is above ground surface but is prevented from rising to this level by an overlying continuous low permeability layer, such as clay.
Artesian borehole	Borehole where the level of groundwater is above the top of the borehole and groundwater flows out of the borehole when unsealed.
Cumecs	Cubic metres per second ( $m^3s^{-1}$ )
Effective rainfall	The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).
Flood Alert/Flood Warning	Three levels of warnings may be issued by the Environment Agency. Flood Alerts indicate flooding is possible. Flood Warnings indicate flooding is expected. Severe Flood Warnings indicate severe flooding.
Groundwater	The water found in an aquifer.
Long term average (LTA)	The arithmetic mean calculated from the historic record, usually based on the period 1961-1990. However, the period used may vary by parameter being reported on (see figure captions for details).
mAOD	Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).
MORECS	Met Office Rainfall and Evaporation Calculation System. Met Office service providing real time calculation of evapotranspiration, soil moisture deficit and effective rainfall on a 40 x 40 km grid.
Naturalised flow	River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.
NCIC	National Climate Information Centre. NCIC area monthly rainfall totals are derived using the Met Office 5 km gridded dataset, which uses rain gauge observations.
Recharge	The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).
Reservoir gross capacity	The total capacity of a reservoir.
Reservoir live capacity	The capacity of the reservoir that is normally usable for storage to meet established reservoir operating requirements. This excludes any capacity not available for use (e.g. storage held back for emergency services, operating agreements or physical restrictions). May also be referred to as 'net' or 'deployable' capacity.
Soil moisture deficit (SMD)	The difference between the amount of water actually in the soil and the amount of water 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

# Rainfall Catchments



**Figure 6.1:** Rainfall catchments in South West Region. Crown copyright. All rights reserved. Environment Agency, 100026380, 2014.