

Monthly water situation report

South West Region

Summary – February 2014

Since 15 December 2013 the Region has had a prolonged period of rainfall, with only a few days of respite. For the Region as a whole it has been the wettest winter (December to February) on record. In February Wessex received 241% LTA rainfall, Devon and Cornwall received 209% LTA, and the South West had 221%, making it the fourth wettest February for the Region on record. Wessex has now had the wettest six months on record.

River levels responded to the rainfall right across the Region, with all but one monitoring site recording *exceptionally high* mean flows for the month. Six flow reporting sites recorded their highest February monthly mean flows on record. The high flows resulted in numerous Flood Warnings being issued in both Areas. High tides and strong winds also resulted in many coastal Flood Warnings and a number of these warnings were of the Severe category. Groundwater remains high, with all sites recording *exceptionally high* levels for the time of year. Soil moisture deficit remained at zero. Reservoir levels are at, or close to, capacity across the Region.

Rainfall

Rainfall was above average for February across the Region, with an average of 221% LTA (185 mm). Devon and Cornwall Area received 209% LTA (210 mm) while Wessex Area received 241% LTA (157 mm). These were all wetter than January in relation to the long term averages and it was wetter in the east of the Region. It was the fourth wettest February on record for the South West, and the wettest start to the year on record for both Wessex and Devon and Cornwall. Wessex has had the wettest six months on record.

Rainfall events this February occurred throughout the month. Only three catchments received less than 200% of LTA and rainfall across the Region ranged from West Cornwall which had 172% of its LTA over the catchment, to the Lower Hampshire Avon with 307% LTA. Fulwood raingauge in West Somerset was the wettest in February with 318% of the LTA, whilst Kilkhampton raingauge in North East Cornwall only received 135% LTA.

Soil Moisture Deficit

With the ongoing rainfall, soils are saturated with significant amounts of standing water. The Soil Moisture Deficit reflects this remaining at 0 mm across the Region.

River Flows

All reported rivers across the Region, bar the Lower Avon at Knapp Mill, recorded *exceptionally high* monthly mean flows for February. Cornwall saw the highest and lowest flows against LTA. Monthly mean flows ranged from 185% LTA on the Hayle at St Erth, up to 329% LTA on the Fowey at Restormel. Six reported sites recorded their highest February mean flow on record.

All daily mean river flows reached *exceptionally high* levels in the first two weeks of February, following the high rainfall of January continuing into February. All rivers ended the month with *above normal* to *exceptionally high* daily flows.

Groundwater Levels

Groundwater sites are still recharging following the rainfall over the last few months. Groundwater levels are all at *exceptionally high* levels at the end of February. Four sites have experienced their highest level since continuous records began in 1992.

The exceptional groundwater levels have led to significant groundwater flooding particularly in southeast Wessex. Groundwater flood alerts remain in force for the West of Dorset, Cranborne Chase and Salisbury Plain and there

is a flood warning for the South Winterborne Valley. Further details can be found by searching for “Flooding from groundwater” on our Website.

Reservoir Storage

South West Water strategic reservoirs fully refilled during February and total storage rose from 98 to 99% even though one of the smaller reservoir groups (KTT, 2% of strategic storage) is being held at around 50% full for reservoir safety work. Wessex Water total storage remained at 100%, and Bristol Water total storage dropped from 100% to 99%.

Flood Warnings and Alerts

Area	Severe Flood Warnings	Flood Warnings	Flood Alerts
Devon	5	44 (25 were coastal.)	77 (22 were coastal.)
Cornwall	5	35 (29 were coastal.)	51 (18 were coastal.)
Wessex North	2	38 (12 were coastal.)	51 (19 were coastal.)
Wessex South	8	84 (51 were coastal.)	68 (49 were coastal.)

Sites Providing Stream Support

River	Site	End of Month Status
River Allen	Wyke Down	Off
Chitterne Brook	Codford Road	Off
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 Wylye	Brixton Deverill	Off
River Wylye	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	None
Dorset Frome	None
Stour	None
Piddle	None
Bride	None
Wylye	None
Bristol Avon	None
Somerset	None

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Rainfall

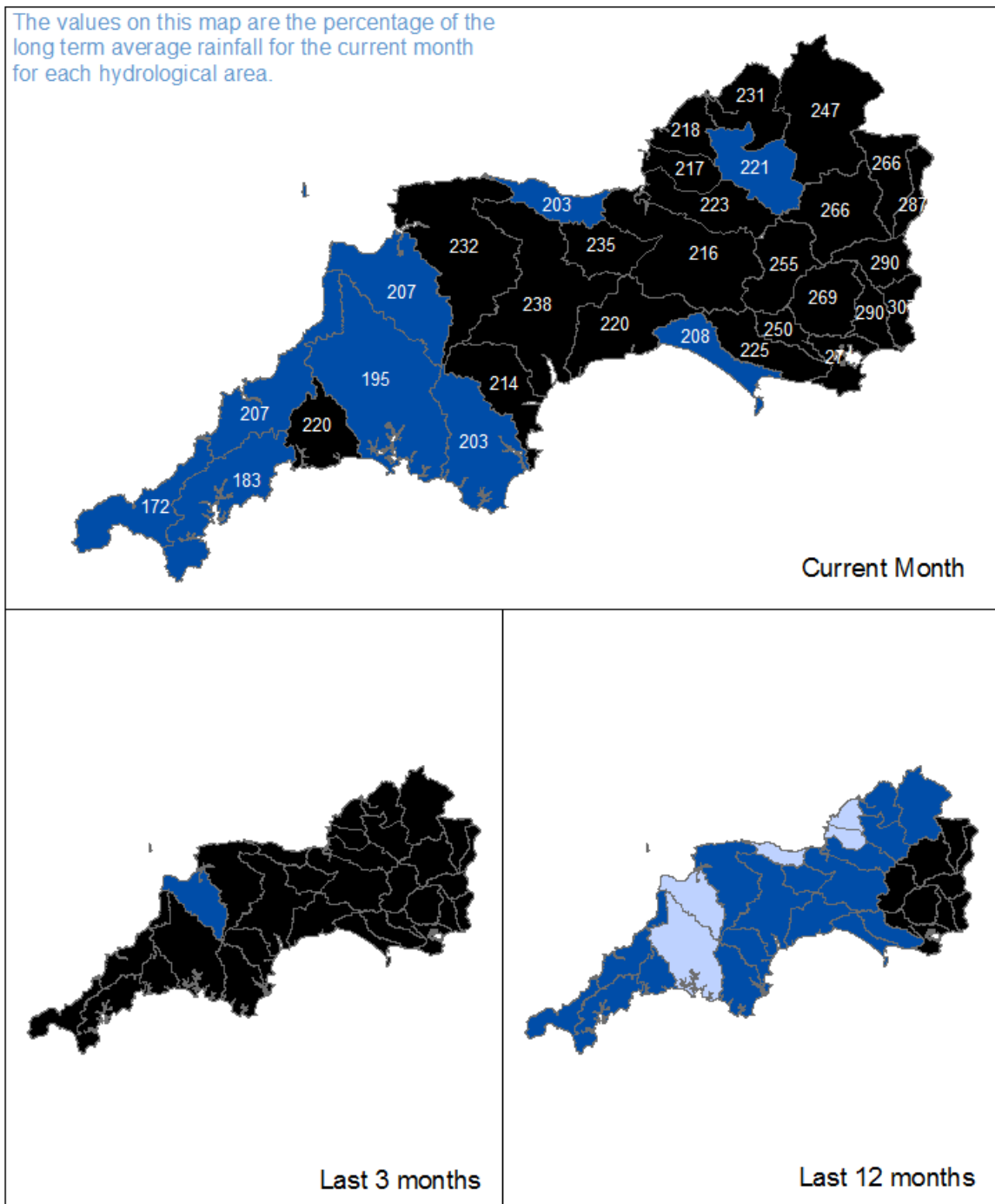


Figure 1.1: Total rainfall for hydrological areas across South West England for the current month (up to 28 February 2014), the last three months and the last 12 months, classed relative to an analysis of respective historic totals. The values on the current month map are the percentage of the February 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.

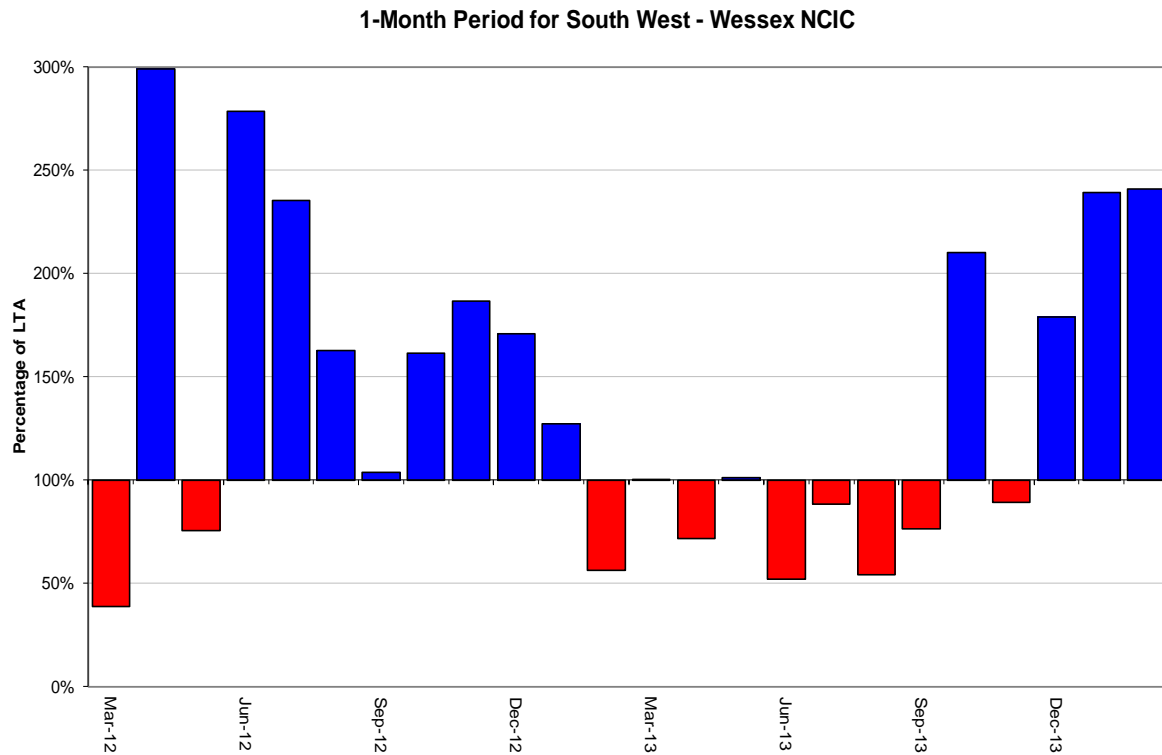
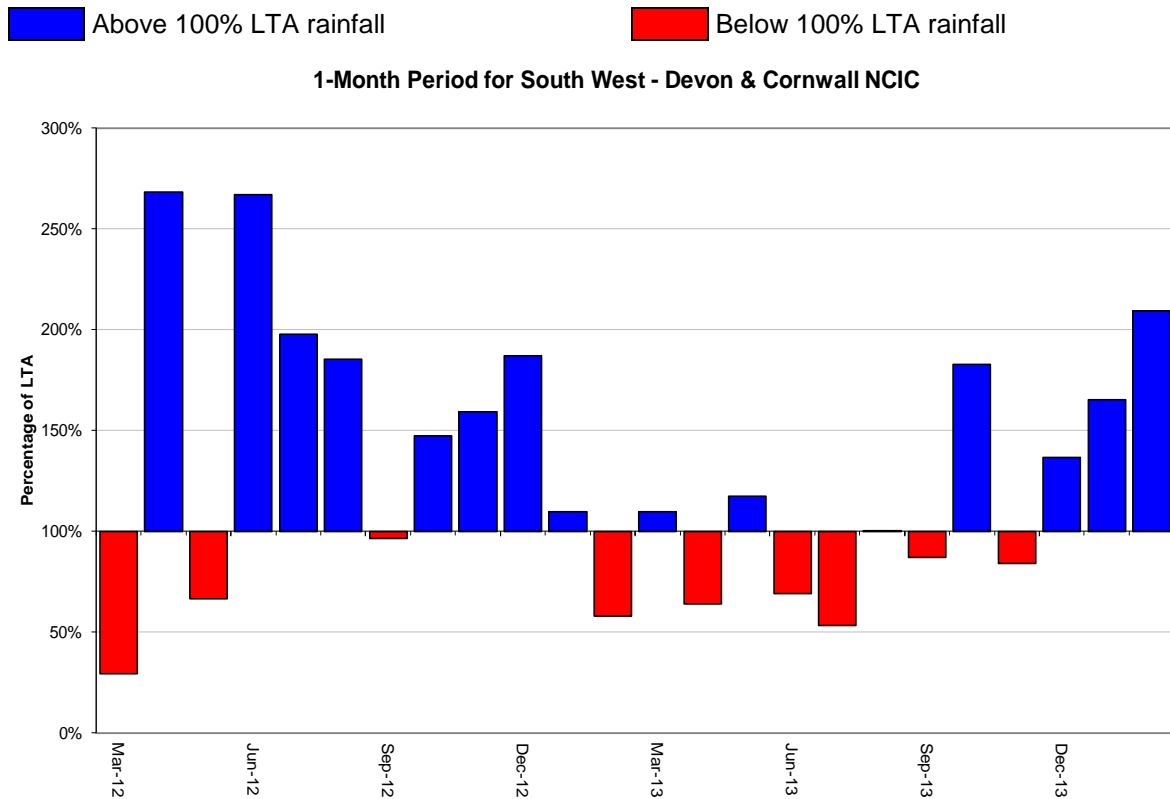


Figure 1.2: Monthly rainfall totals as a percentage of the 1961 – 1990 long term average. Produced using final and provisional NCIC (National Climate Information Centre) data. (Source: Met Office © Crown Copyright, 2014).

Soil Moisture Deficit

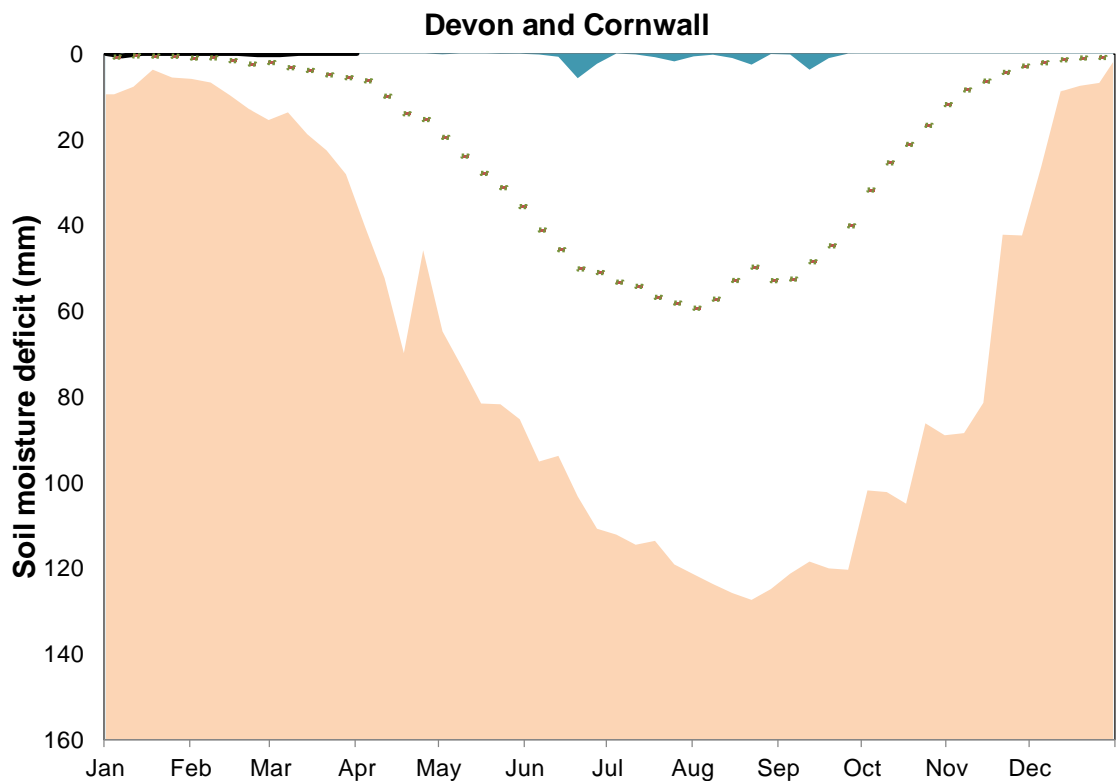
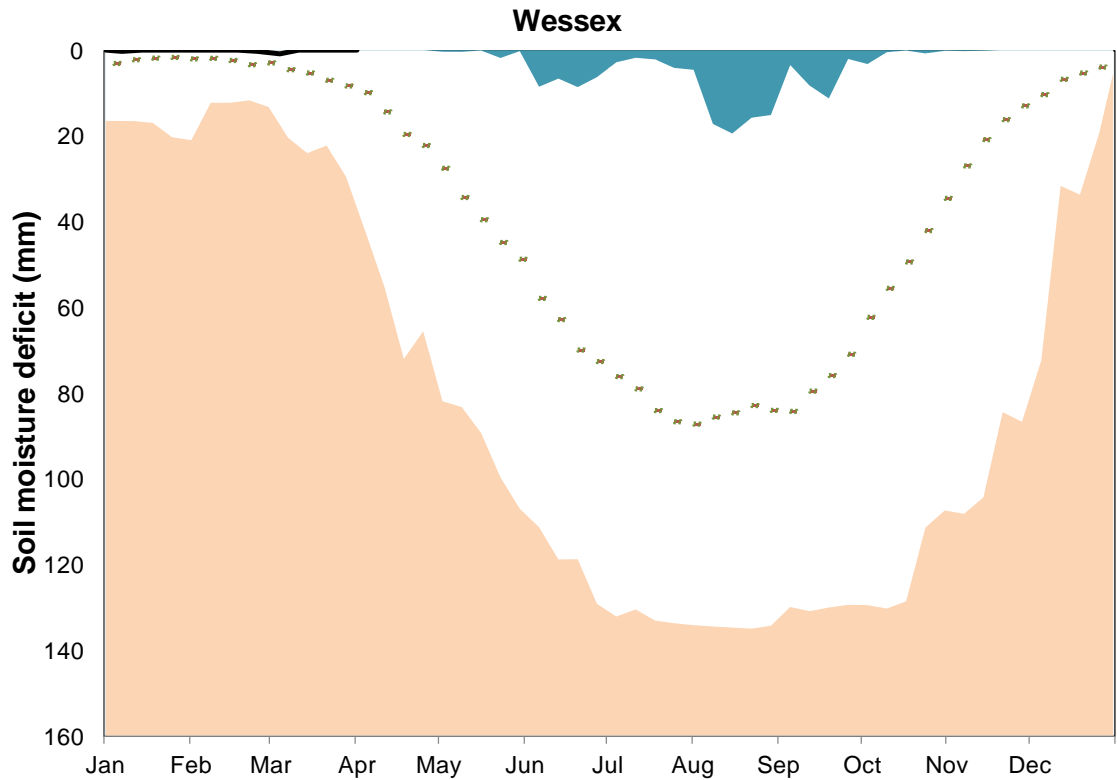


Figure 2.1: Latest soil moisture deficit compared to maximum, minimum, and 1961 – 1990 long term average. Weekly MORECS data for real land use (Source: Met Office © Crown Copyright, 2013).

River Flow

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

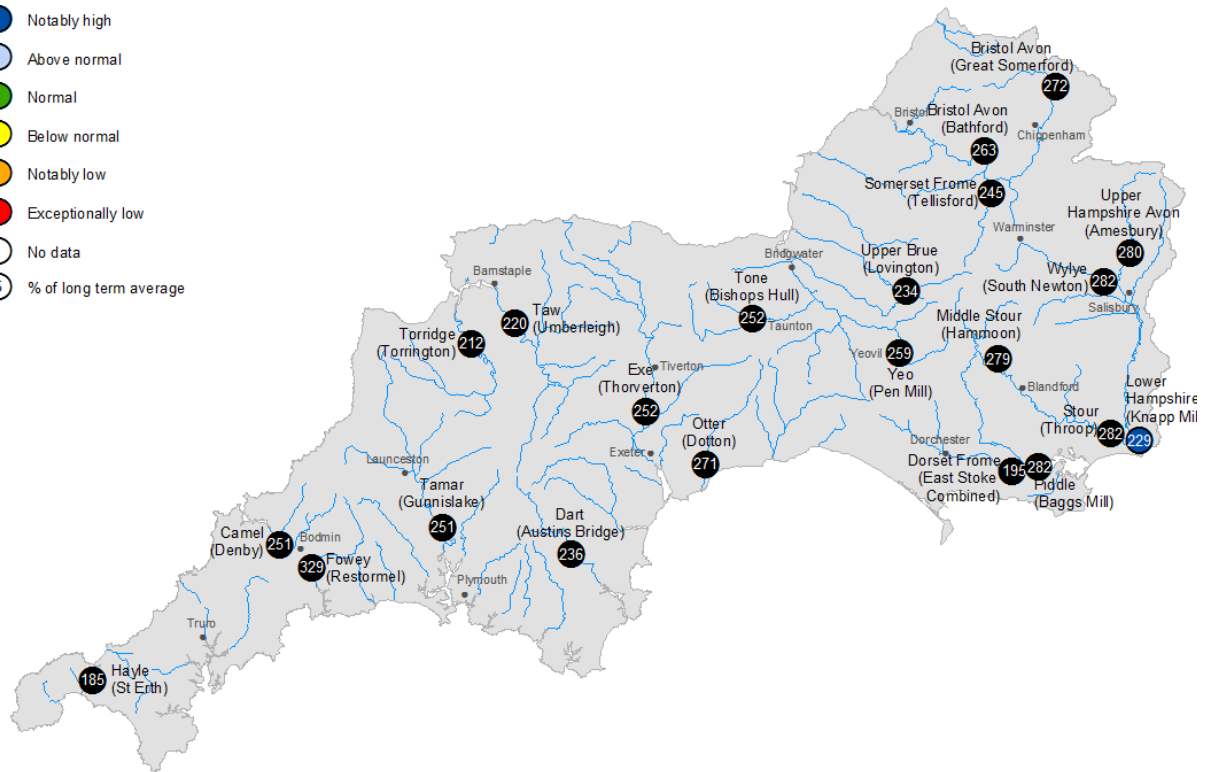
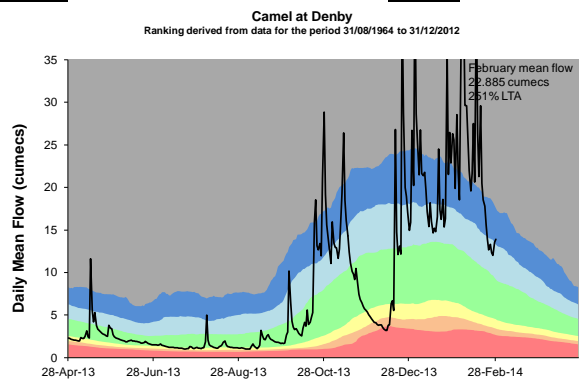
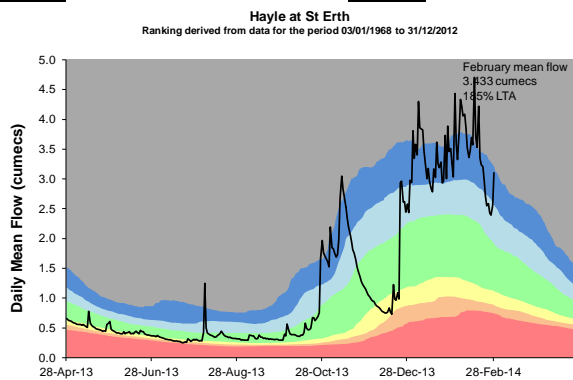
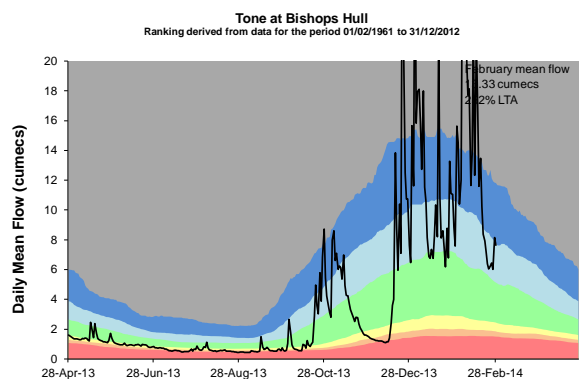
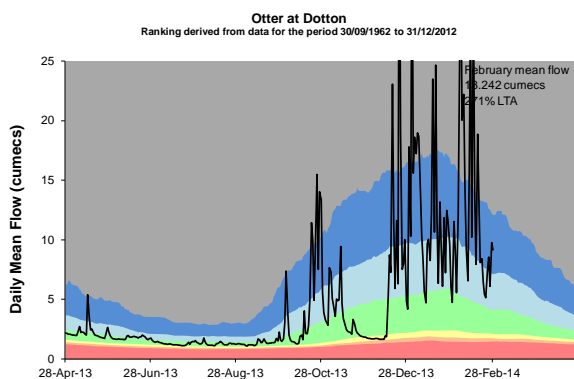
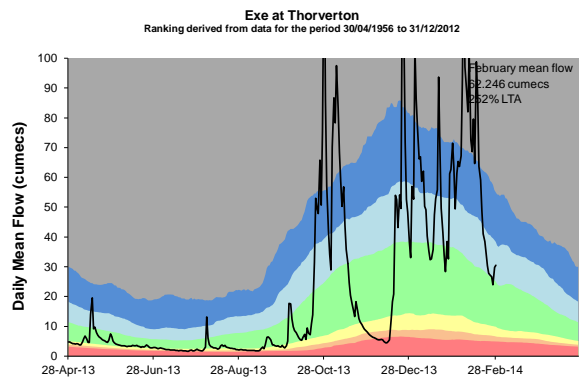
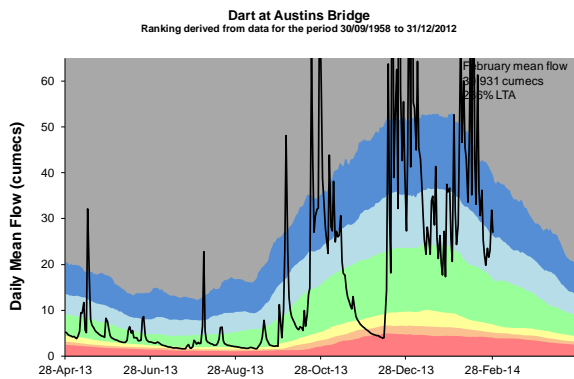
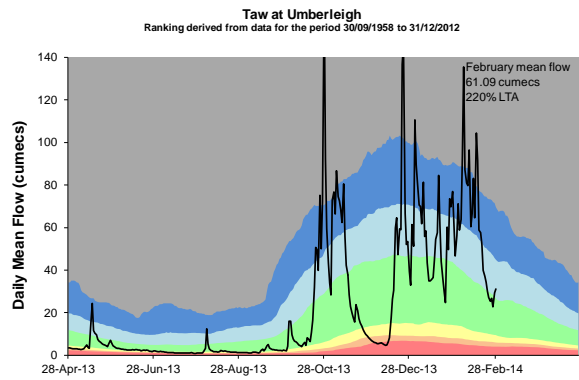
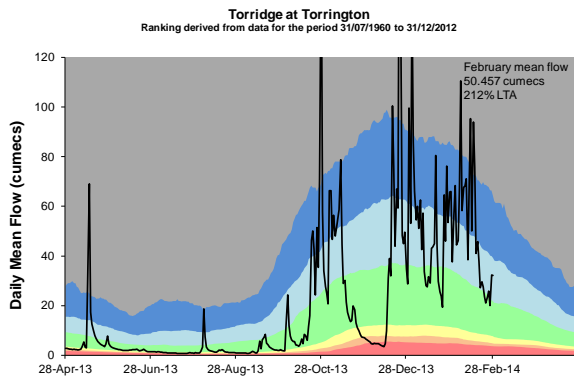
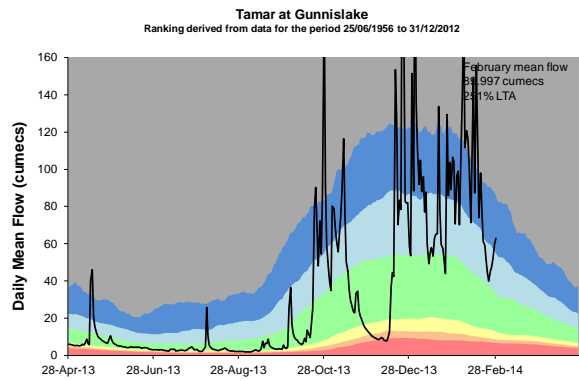
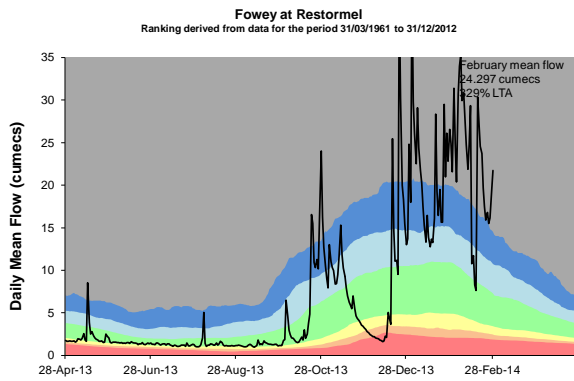
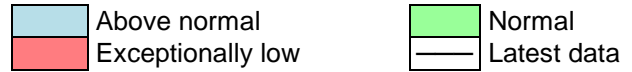
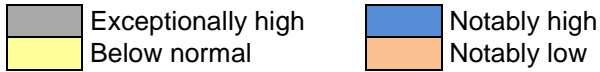
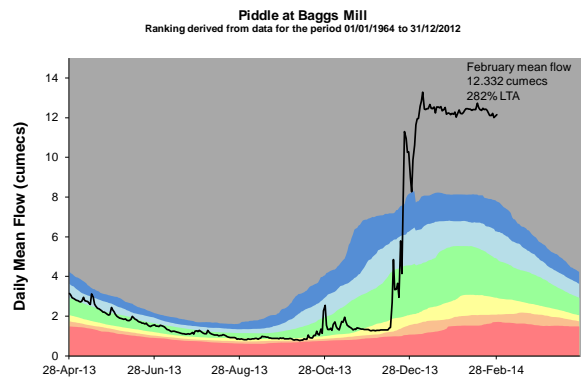
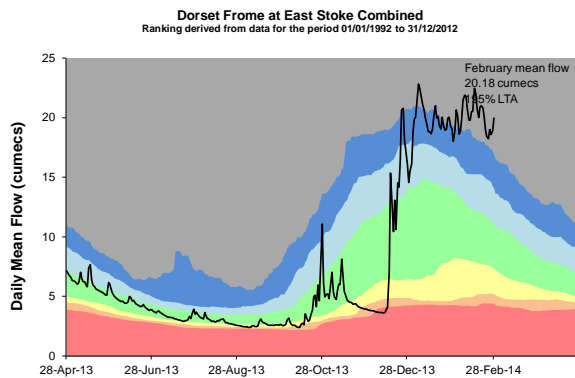
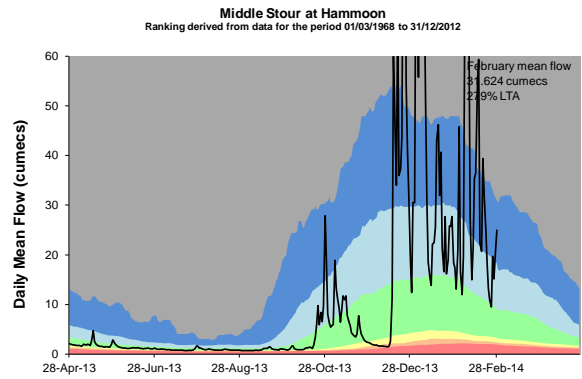
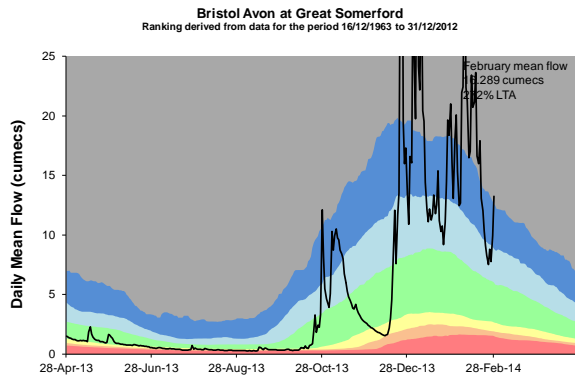
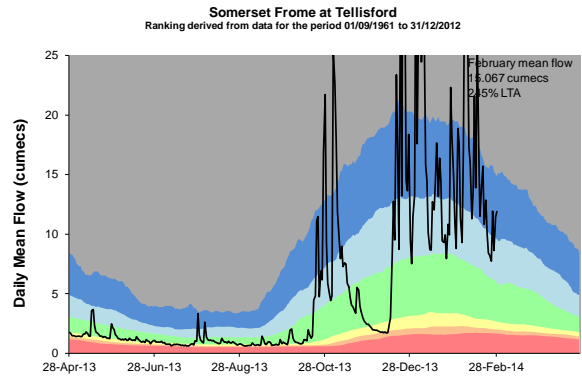
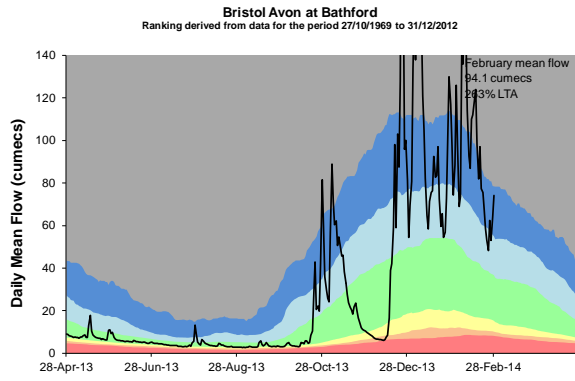
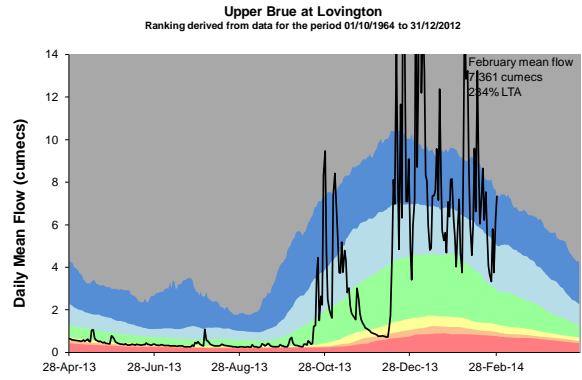
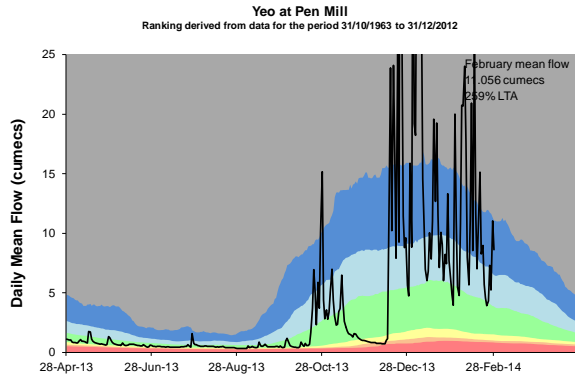
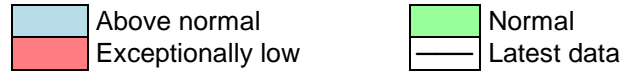
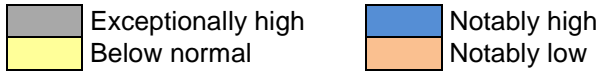


Figure 3.1: Monthly mean river flows at indicator sites for February 2014, expressed as a percentage of the respective long term average and classed relative to an analysis of historic February monthly means (Source: Environment Agency). Crown copyright. All rights reserved. Environment Agency, 100026380,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







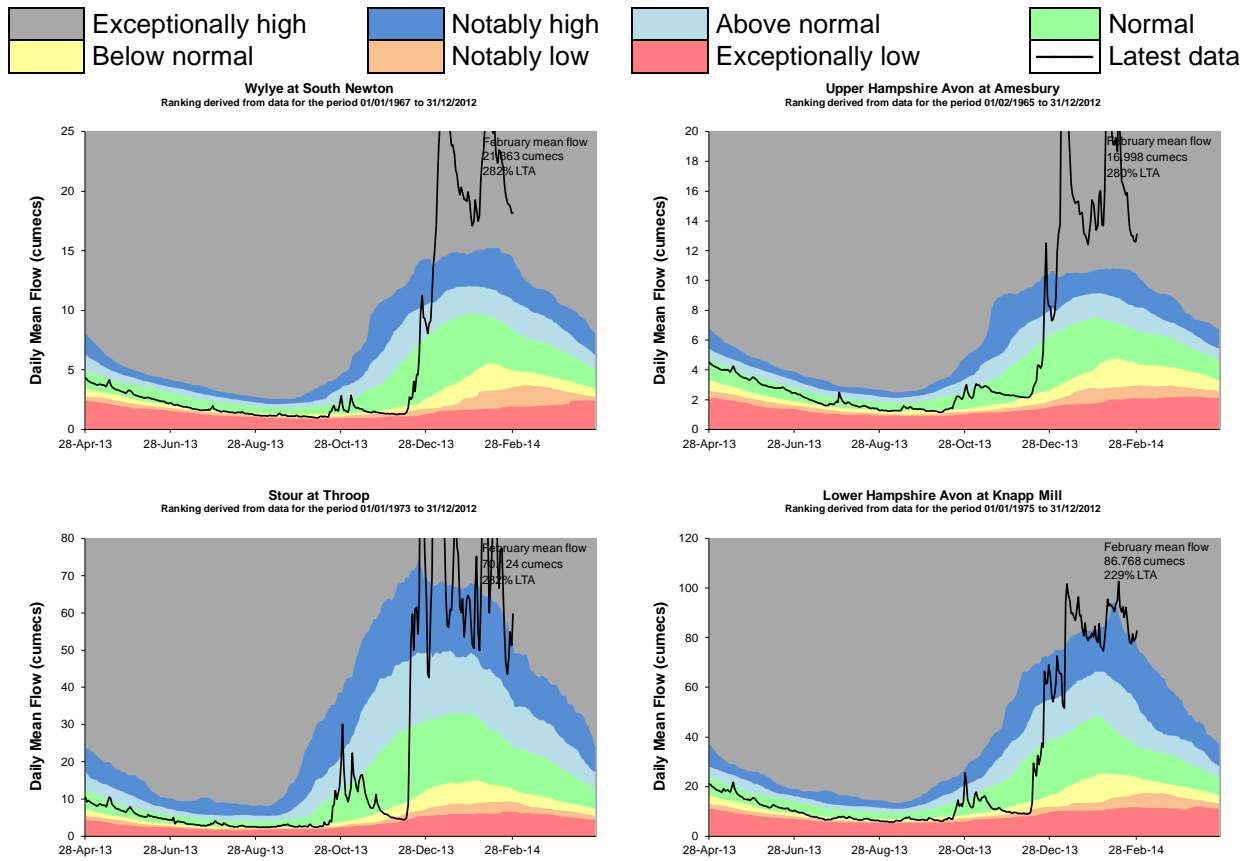


Figure 3.2: Indicator river flow sites for South West Region. Daily mean flow compared to an analysis of historic daily mean flows. (Source: Environment Agency).

Groundwater Levels

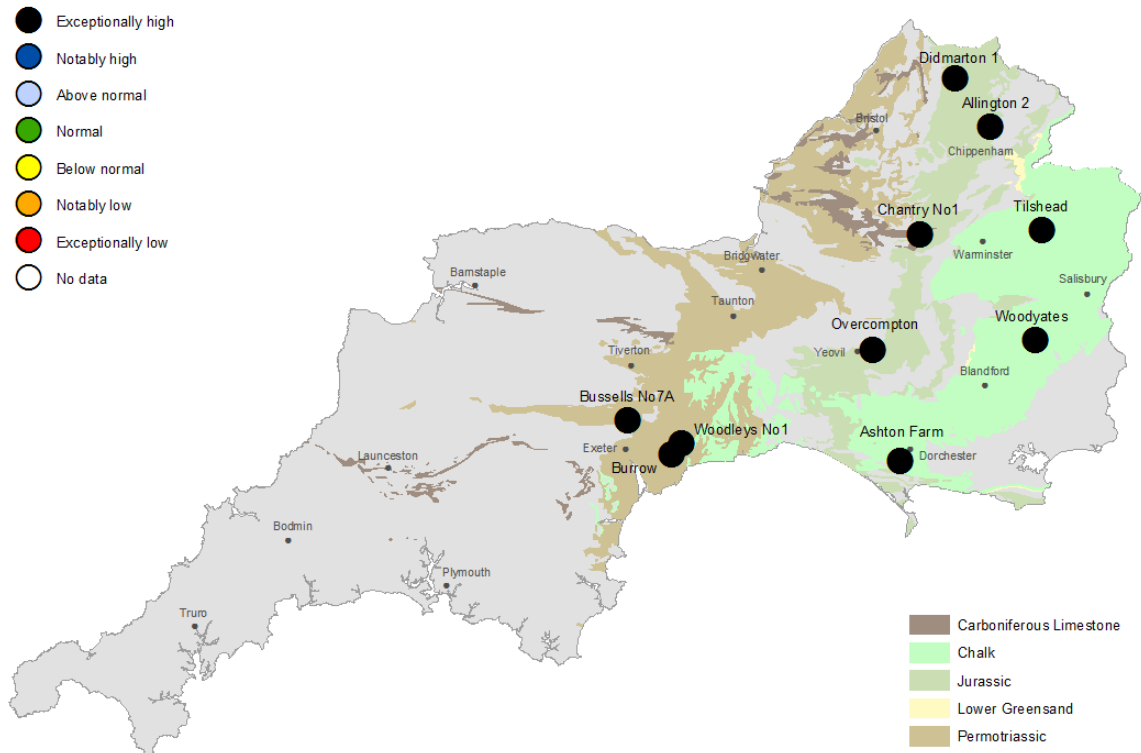
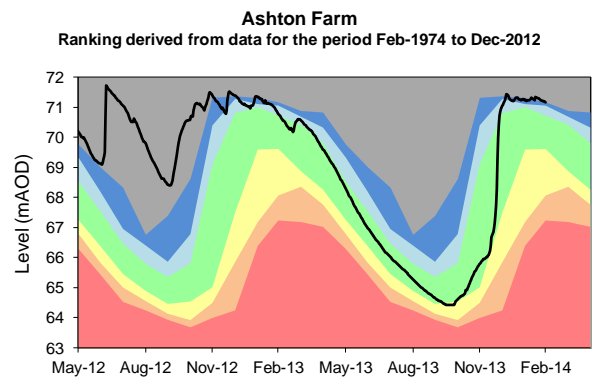
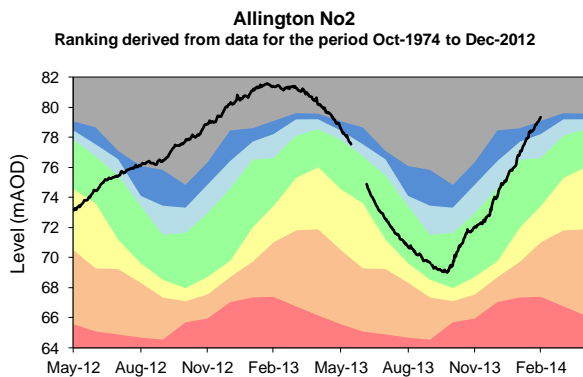
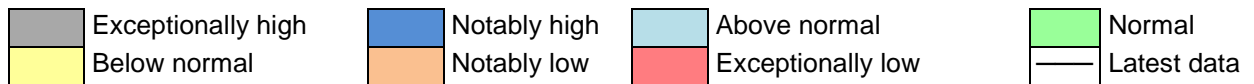
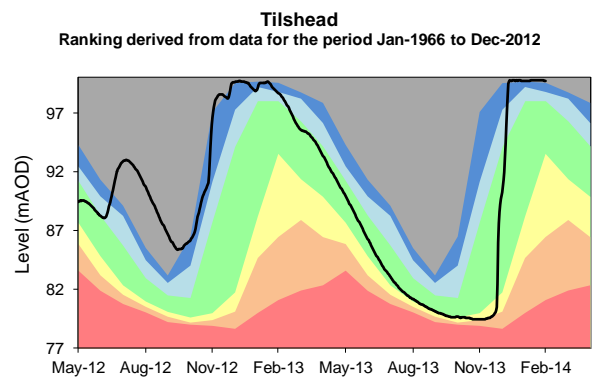
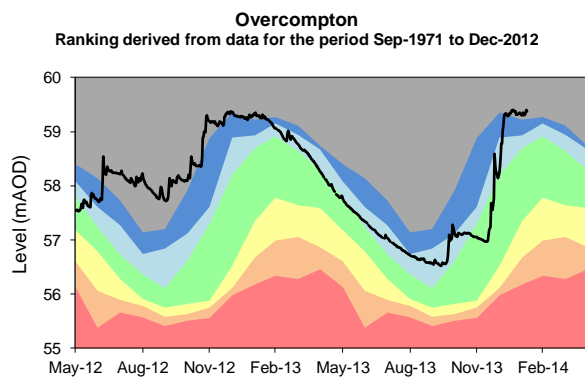
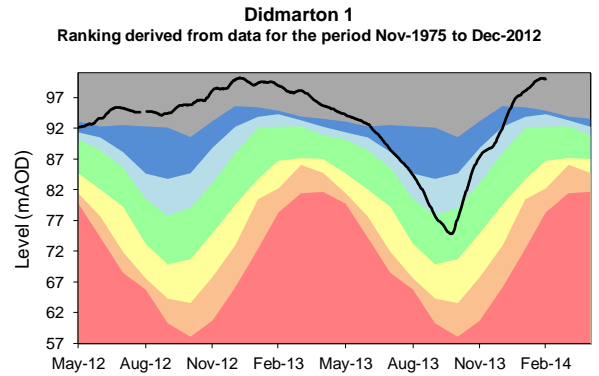
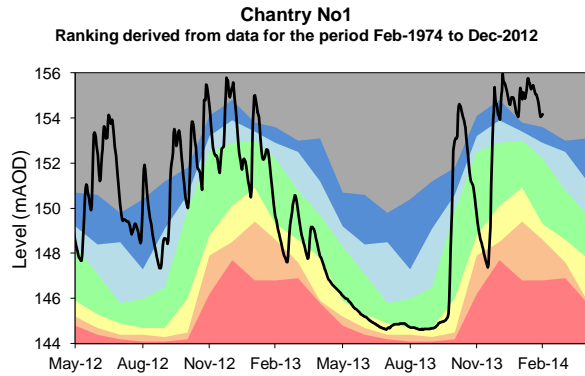
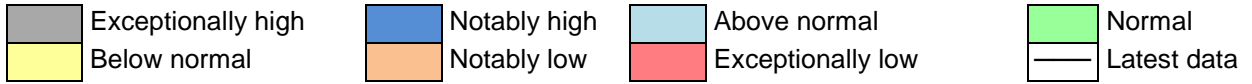
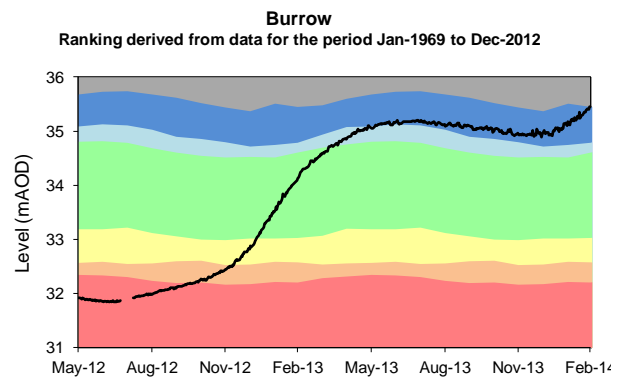
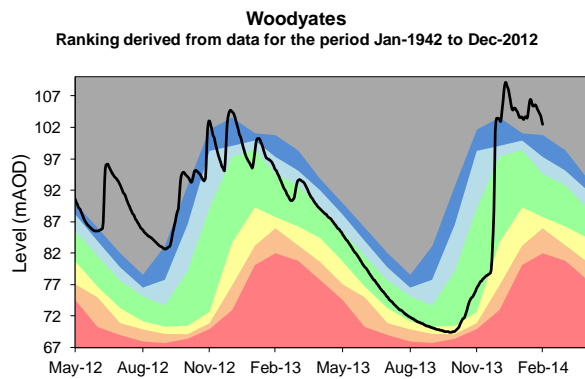


Figure 4.1: Groundwater levels for indicator sites at the end of February 2014, classed relative to an analysis of respective historic February levels (Source: Environment Agency). Geological map reproduced with permission from UK Groundwater Forum, BGS © NERC. Note: groundwater levels are reported at 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.





Tilshead Borehole was artesian during most of January and into February



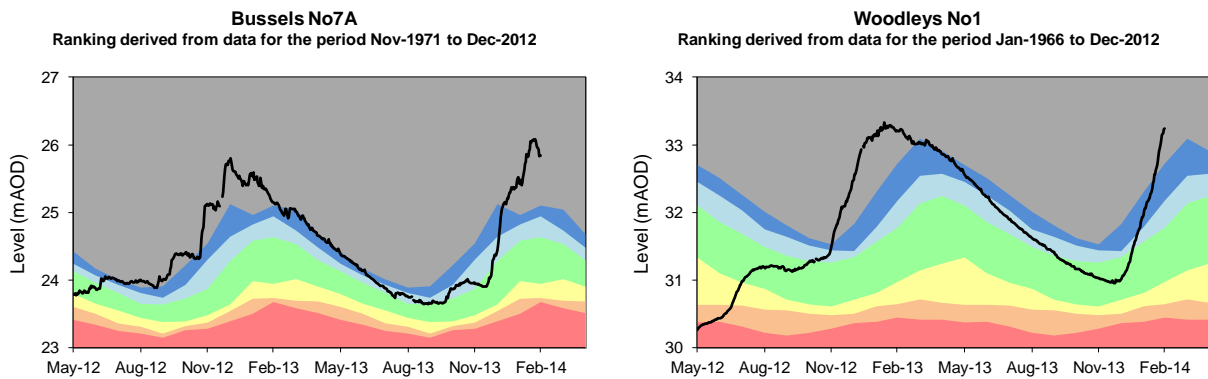
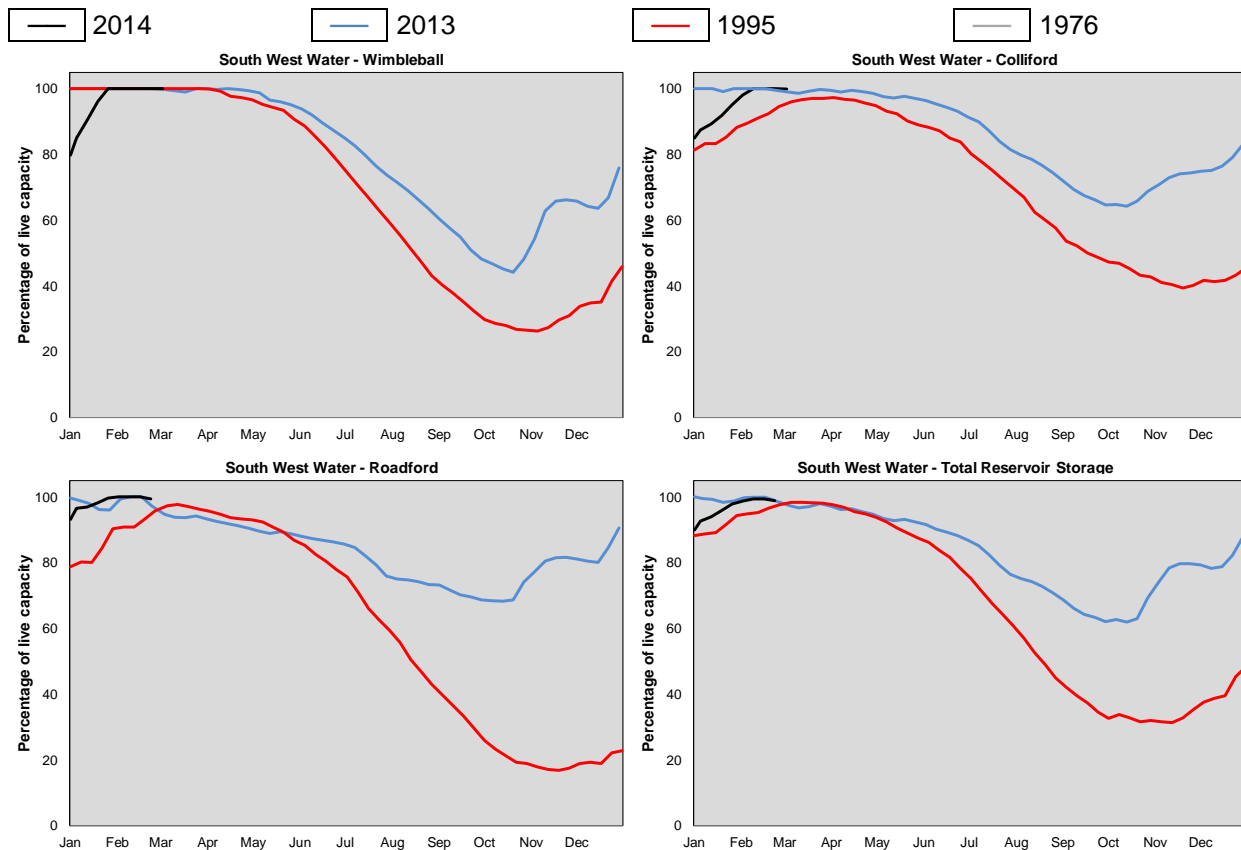


Figure 4.2: Indicator groundwater level sites for major aquifers. End of month groundwater levels compared to analysis of historic end month levels (Source: Environment Agency, 2013).

Reservoir Stocks



Reservoir Stocks

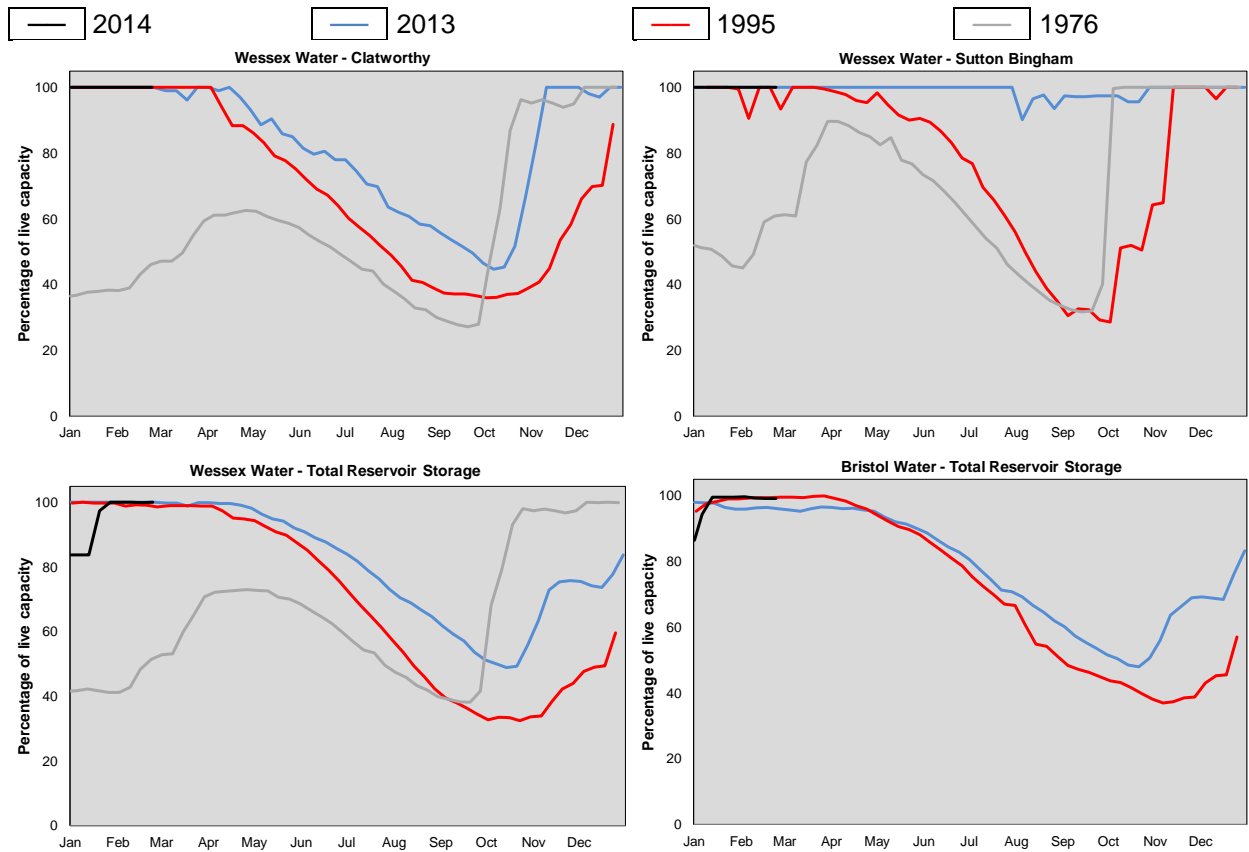


Figure 5.1: Reservoir stocks in South West Region (Source: Water companies).

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).
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
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 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).

Useful Links

Flood Warnings	http://www.environment-agency.gov.uk/homeandleisure/floods/31618.aspx
River Levels on the Internet	http://www.environment-agency.gov.uk/homeandleisure/floods/riverlevels Please note that this site reports river level rather than river flow.

Rainfall Catchments

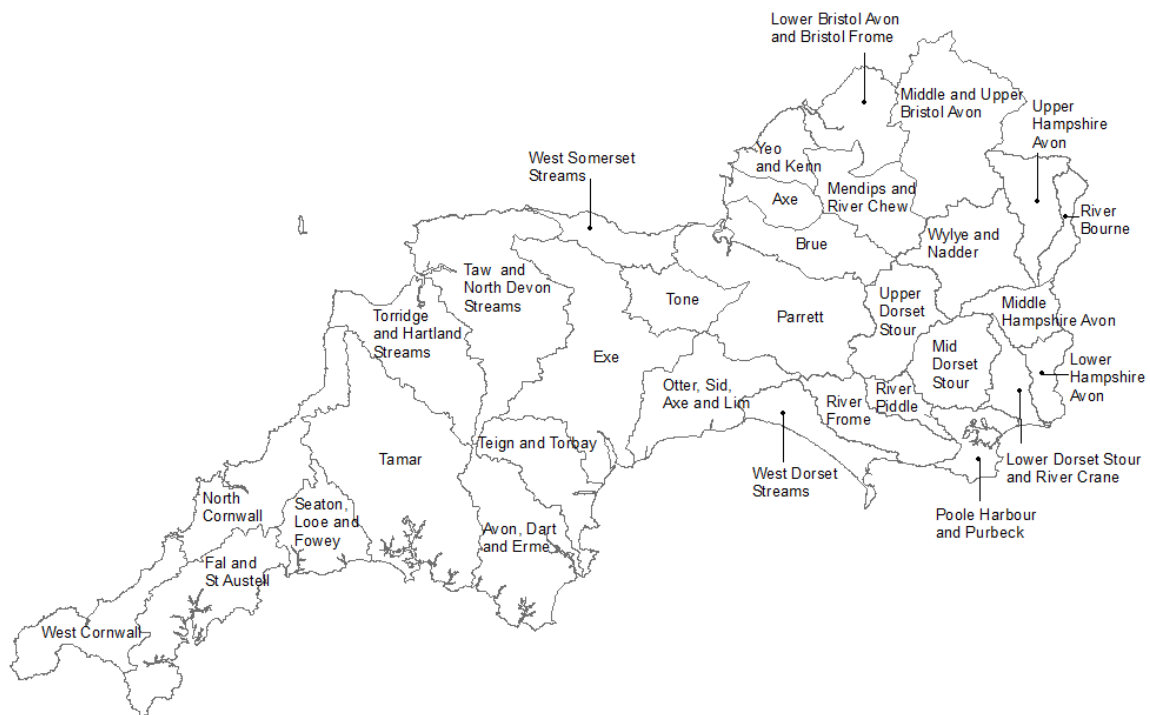


Figure 6.1: Rainfall catchments in South West Region. Crown copyright. All rights reserved. Environment Agency, 100026380, 2013.