

# monthly water situation report

## Thames Region, North East Area

### Summary – October 2010

A wet start and end to the month resulted in a wet start to the winter hydrological season for North East Area. River flows responded to the rainfall events, while groundwater levels continued to decline.

#### Rainfall

October received above average rainfall across North East Area (NE Area) with 121 per cent of the long term average (LTA) rainfall falling during the month. The Lower Lee recorded *above normal* rainfall for October with 130 per cent of the LTA rainfall received.

The start and end of the month were particularly wet, while little notable rainfall was recorded between the 6<sup>th</sup> and the 20<sup>th</sup>. The largest rainfall totals were recorded on the 1<sup>st</sup> at Chenies with 18.6 mm, 2<sup>nd</sup> at Holland Park with 34.4 mm (the largest daily total recorded in NE Area during October), 5<sup>th</sup> at Heathrow Airport with 15 mm, 22<sup>nd</sup> at Havering Bower with 10mm and on the 26<sup>th</sup> at Prestwood Reservoir with 8.4 mm.

#### Soil Moisture Deficit/Recharge

With the autumnal decrease in plant growth and the increase in rainfall, soil moisture deficits (SMD) were lower than average at the end of October. The Colne-Chilterns-Chalk had an end of month SMD of 27 mm compared with the October LTA SMD of 52 mm. The Lee Chalk was closer to average with an end of month SMD of 52 mm. (October LTA SMD 61 mm)

The dry middle weeks and heavy rainfall events meant that the effective rainfall /recharge was below average for October. The Colne-Chilterns-Chalk received only 53 per cent of its' average recharge while the Lee Chalk experienced greater recharge of 64 per cent of the October LTA.

#### River Flows

River flows responded to the heavy rainfall at the start and end of the month. The majority of river gauges recorded *normal* monthly mean flows for October. The exceptions were the Ver at Colney Street and the Colne at Denham, which both recorded *above normal* monthly mean flows for October.

Two flood watches were issued for NE Area in October - on the 3<sup>rd</sup> for the Middle River Roding and on the 6<sup>th</sup> for the Tidal River Crane.

#### Groundwater Levels

All of the groundwater monitoring locations recorded a continued decline in groundwater levels across the NE Area. All sites remain *normal* for October. Recharge of the aquifer is expected to increase during the next few months with a subsequent rebound in groundwater levels.

#### Environmental Impact

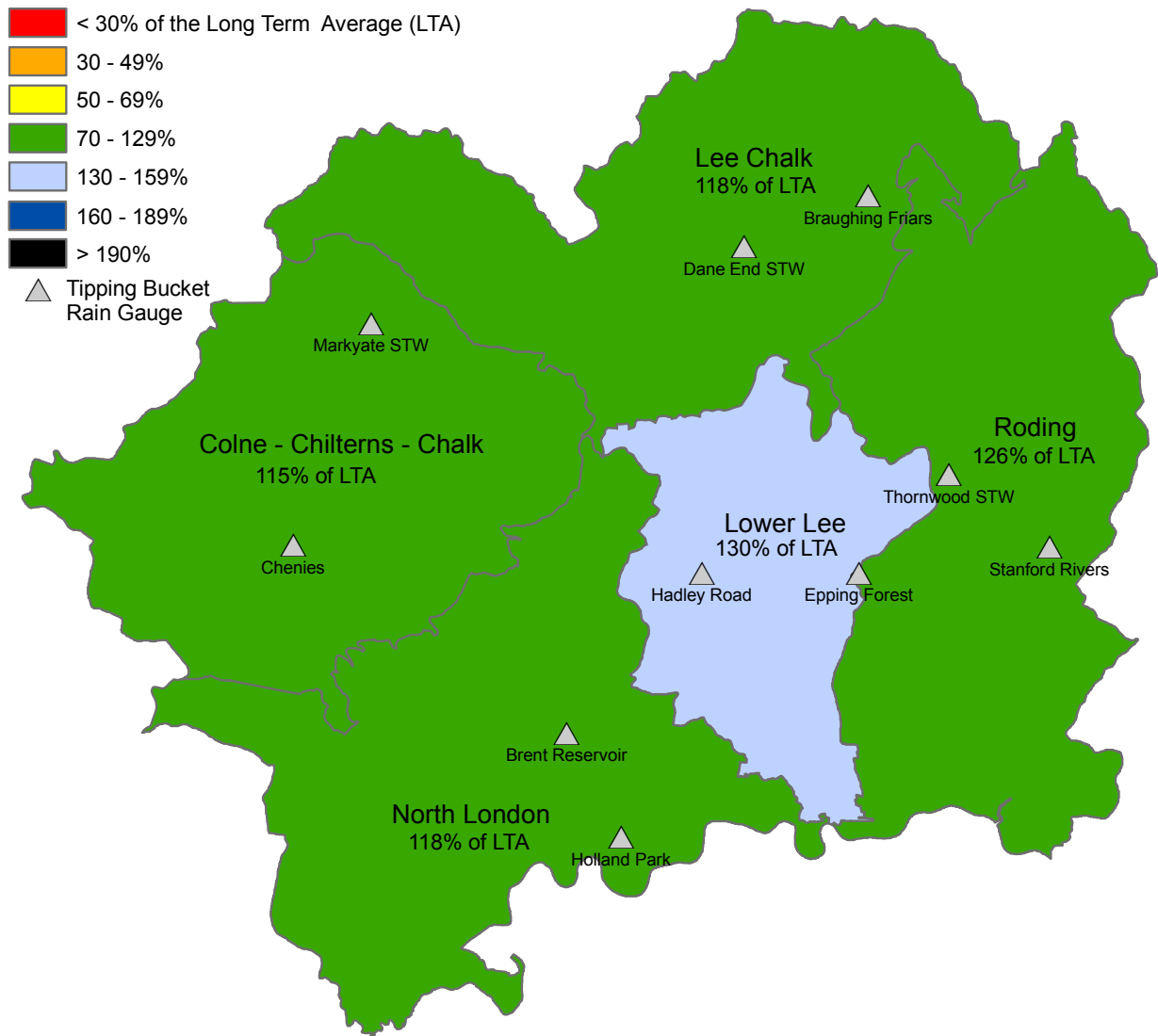
The table below shows the abstraction licence flow constraints that were in force in October, out of a maximum of 27:

Week Ending	11 October	17 October	24 October	31 October
Number of Constraints	3	6	7	2

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# Rainfall Map

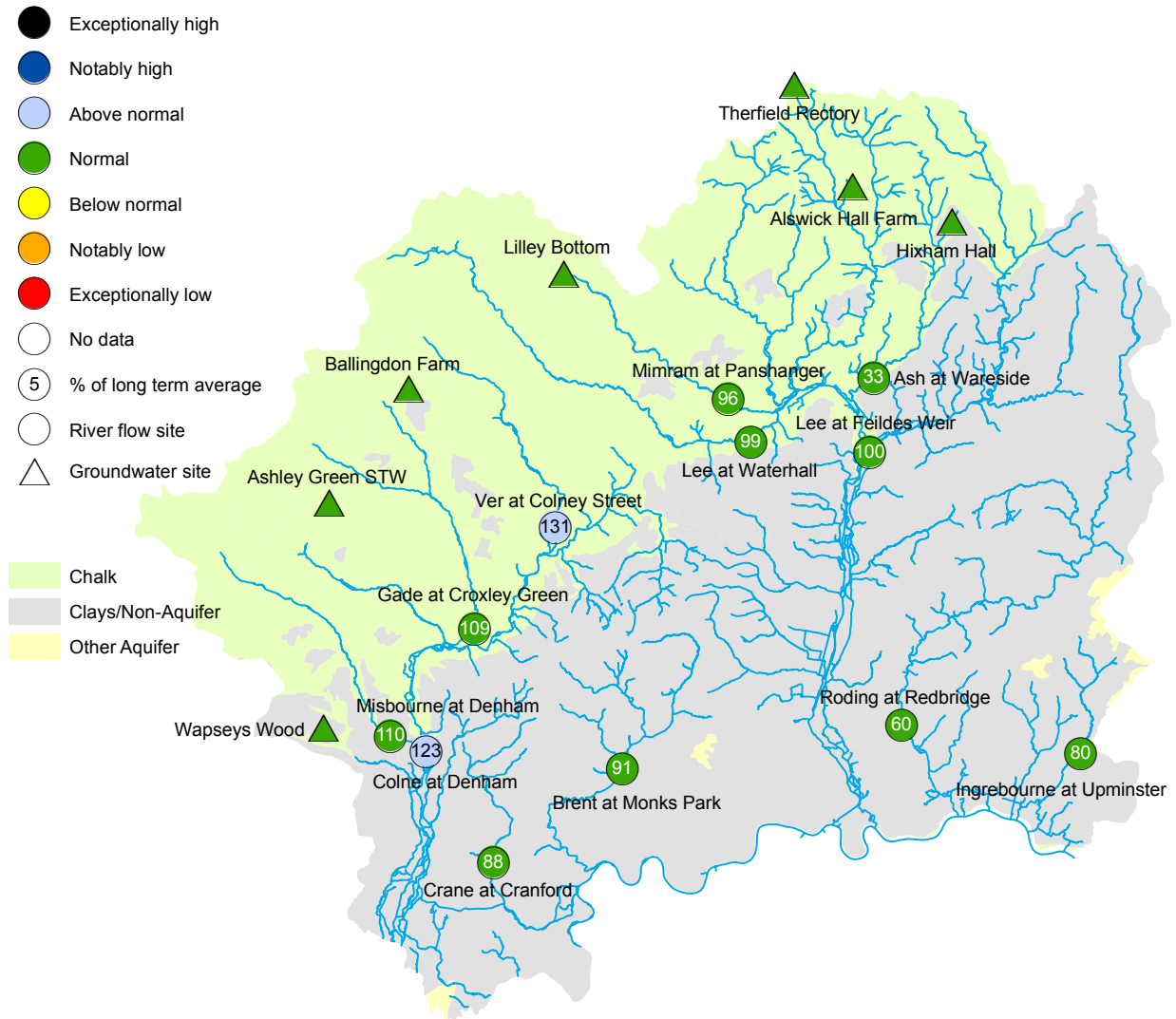


Data source: Rainfall calculated using Thames Soil Moisture Model.

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# River Flow and Groundwater Map




Groundwater site status based on end of month level. Surface water site status based on mean monthly flow.


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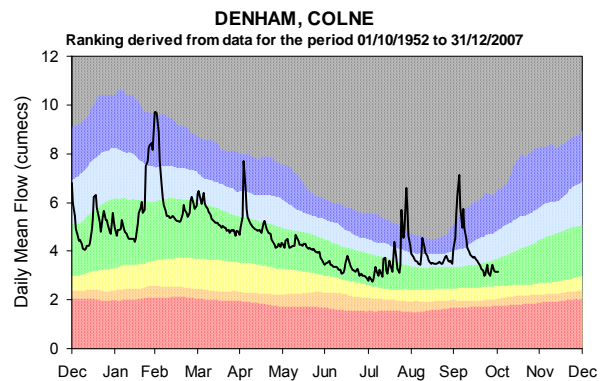
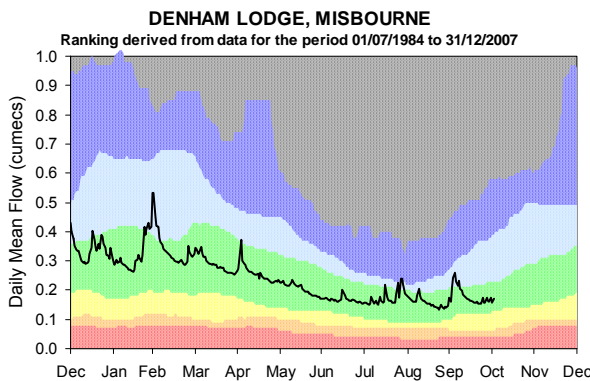
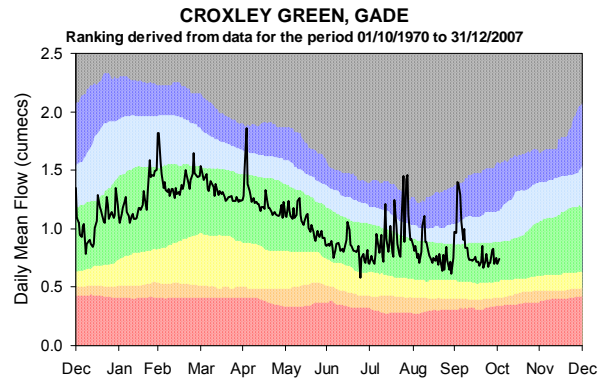
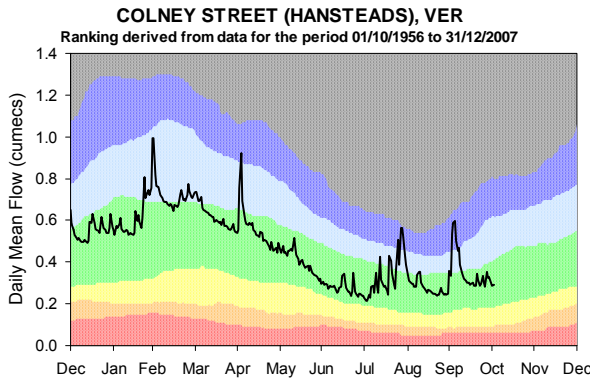
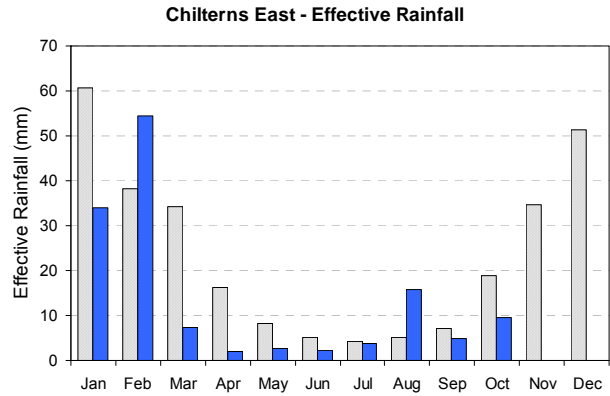
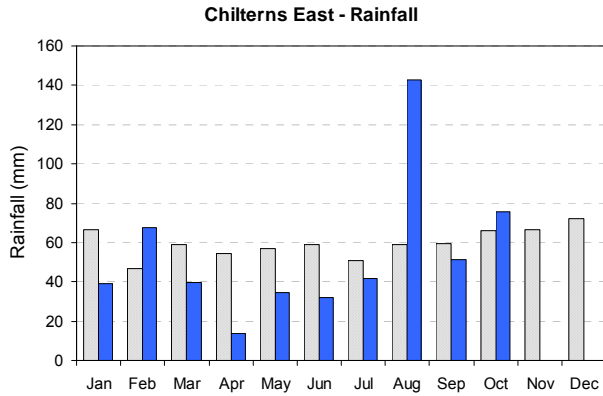
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
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# Colne



 Monthly total rainfall (mm)

 Long-term average rainfall (mm)



 Exceptionally high  
 Below normal

 Notably high  
 Notably low

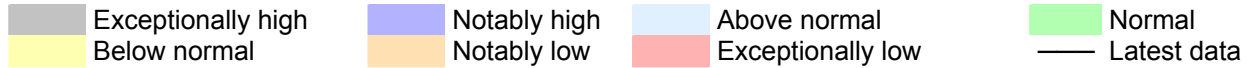
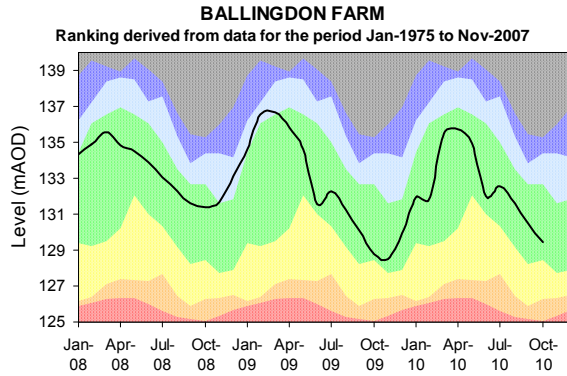
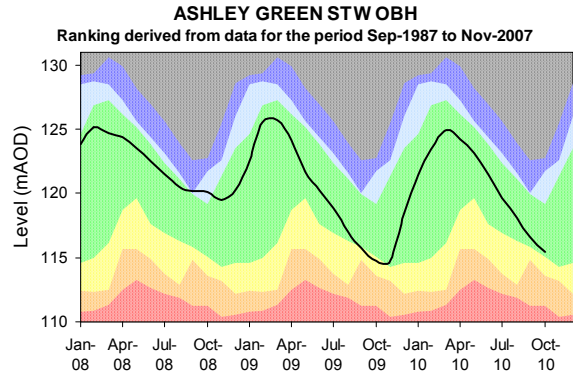
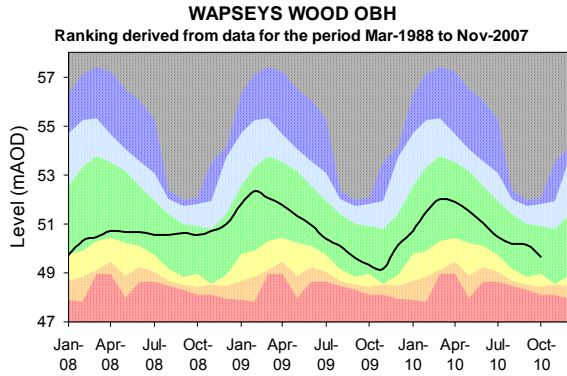
 Above normal  
 Exceptionally low

 Normal  
 Latest data

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# Colne Groundwater



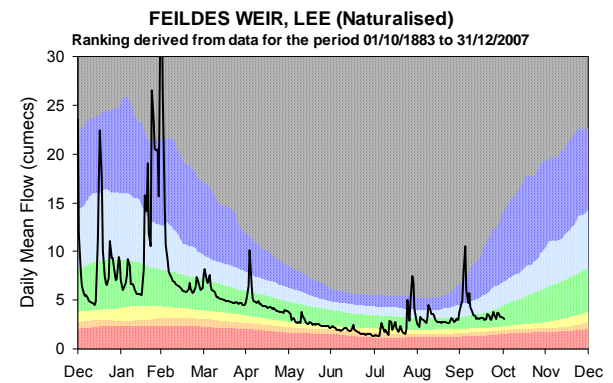
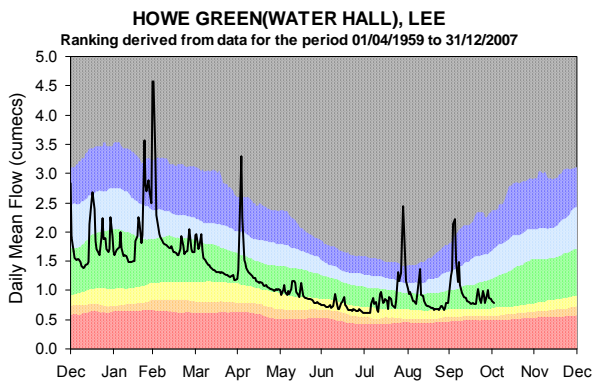
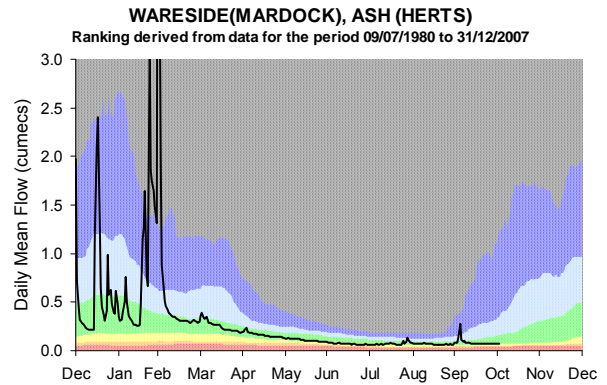
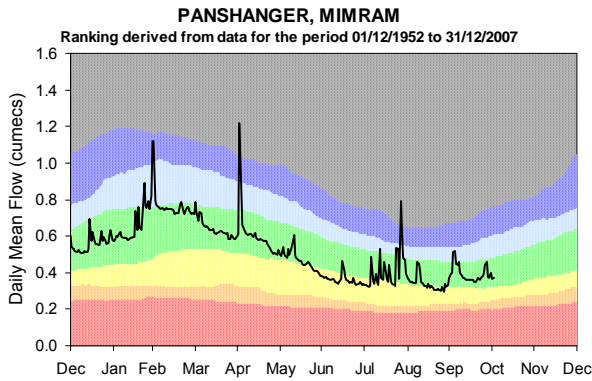
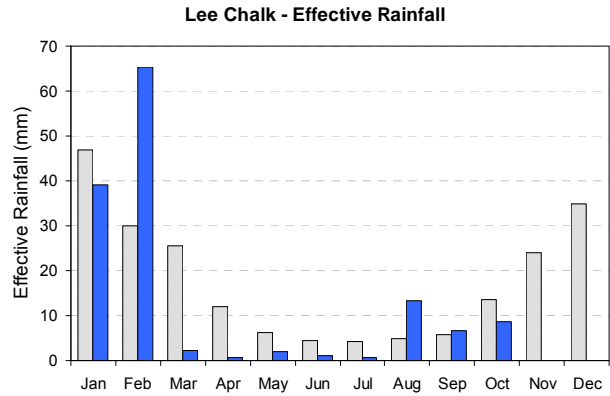
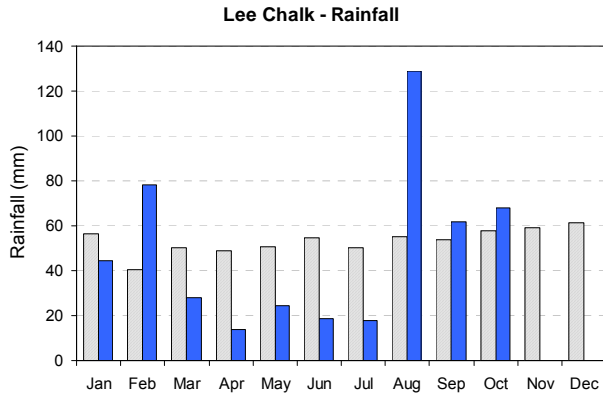
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# Upper Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
Below normal

Notably high  
Notably low

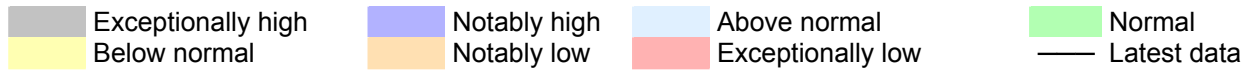
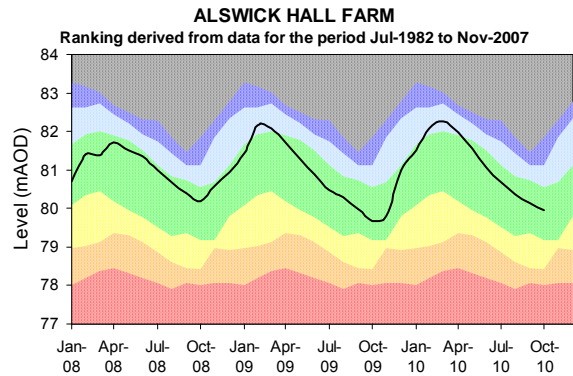
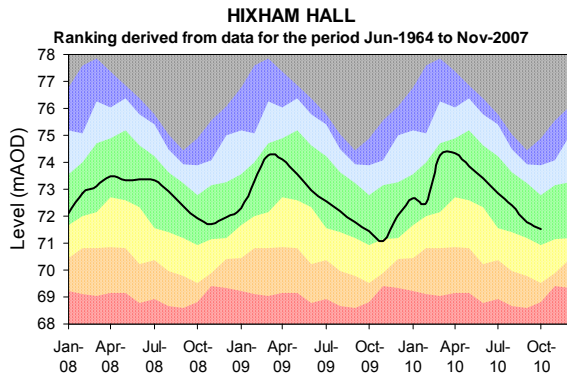
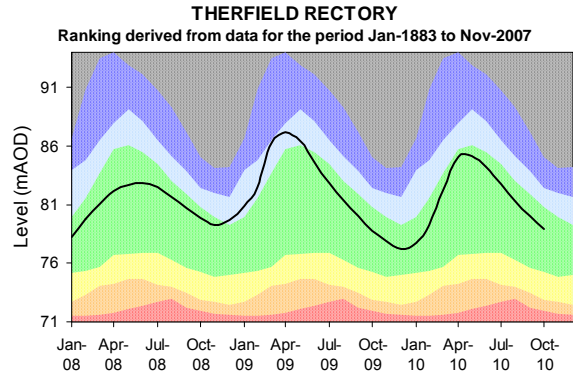
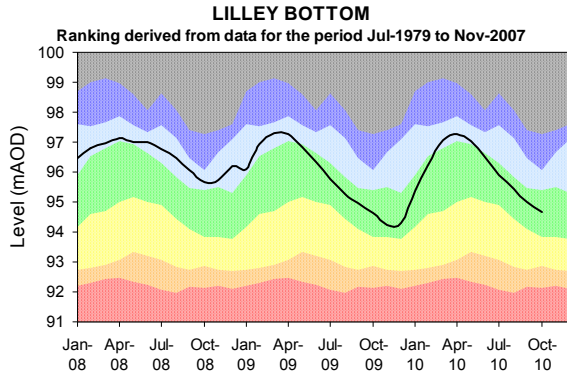
Above normal  
Exceptionally low

Normal  
Latest data

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# Upper Lee Groundwater



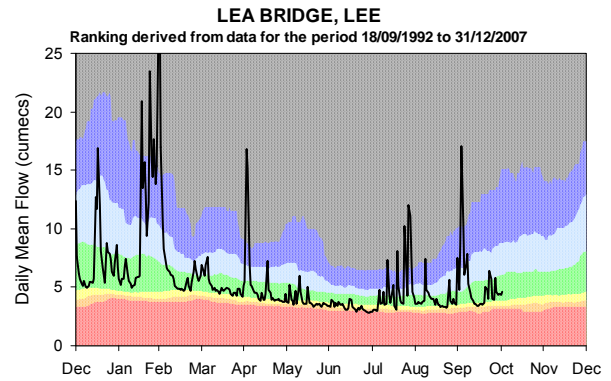
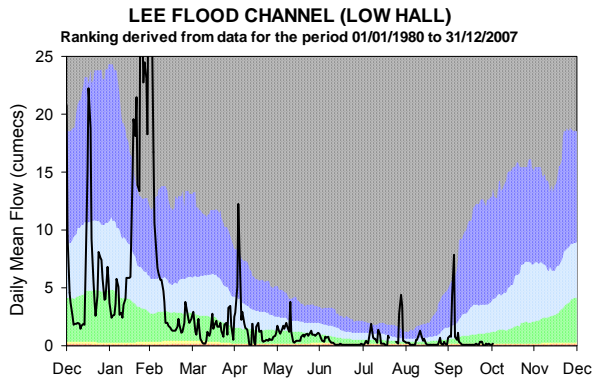
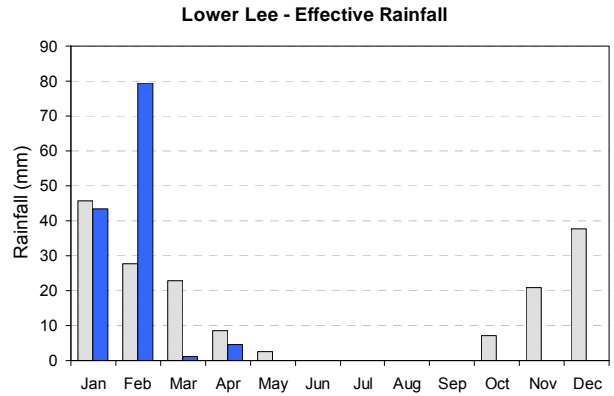
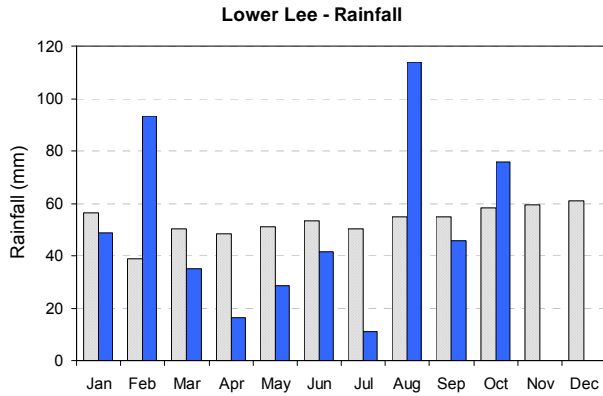
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# Lower Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
Below normal

Notably high  
Notably low

Above normal  
Exceptionally low

Normal  
Latest data

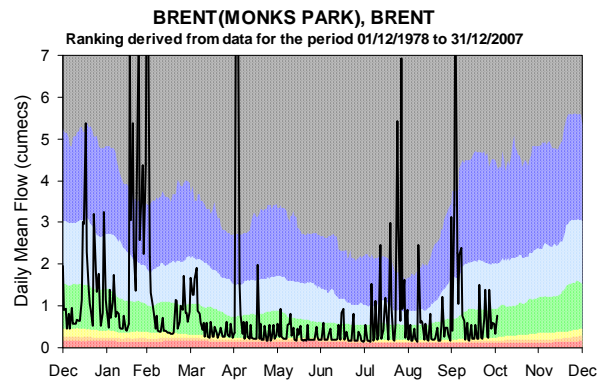
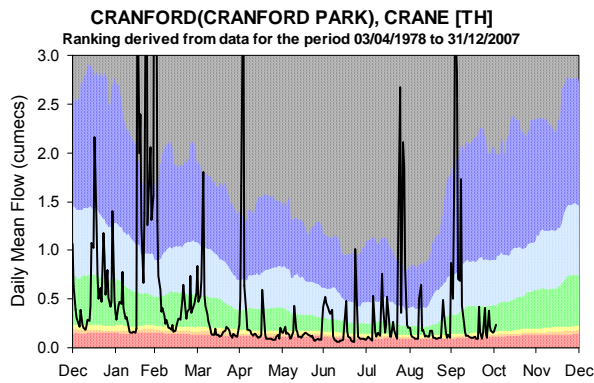
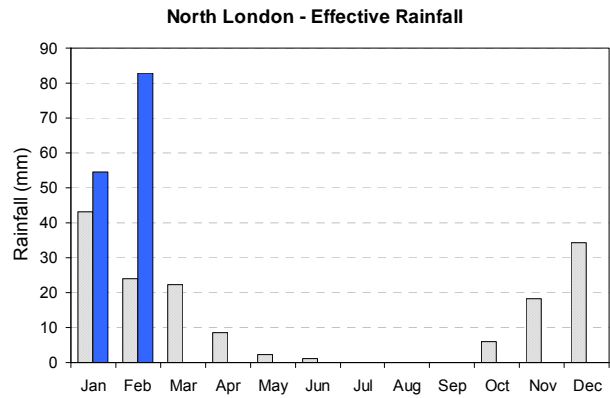
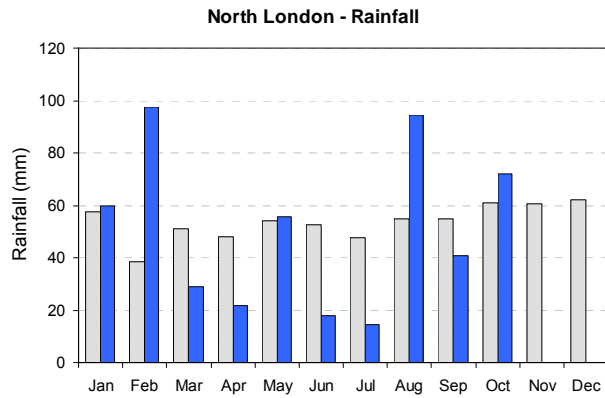
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# North London

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
Below normal

Notably high  
Notably low

Above normal  
Exceptionally low

Normal  
Latest data

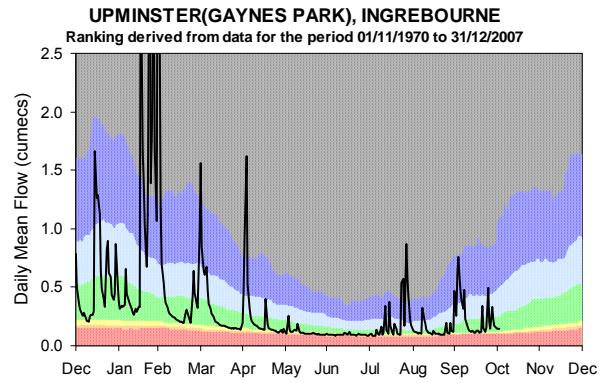
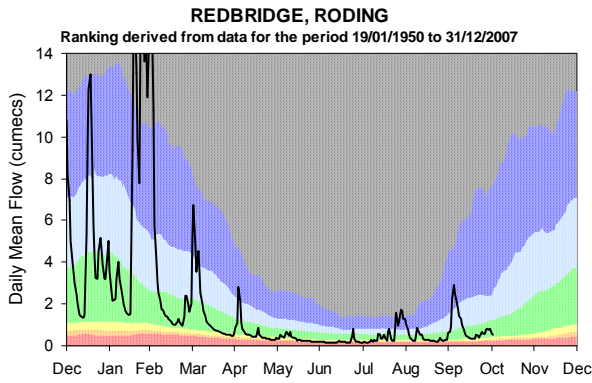
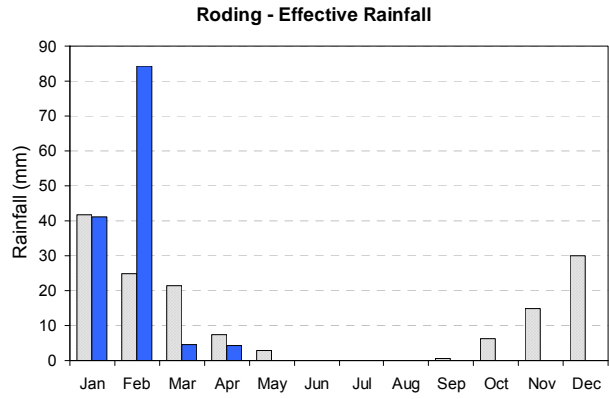
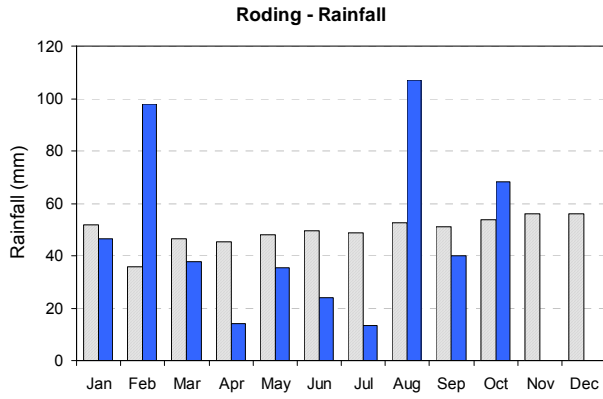
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# Roding

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
Below normal

Notably high  
Notably low

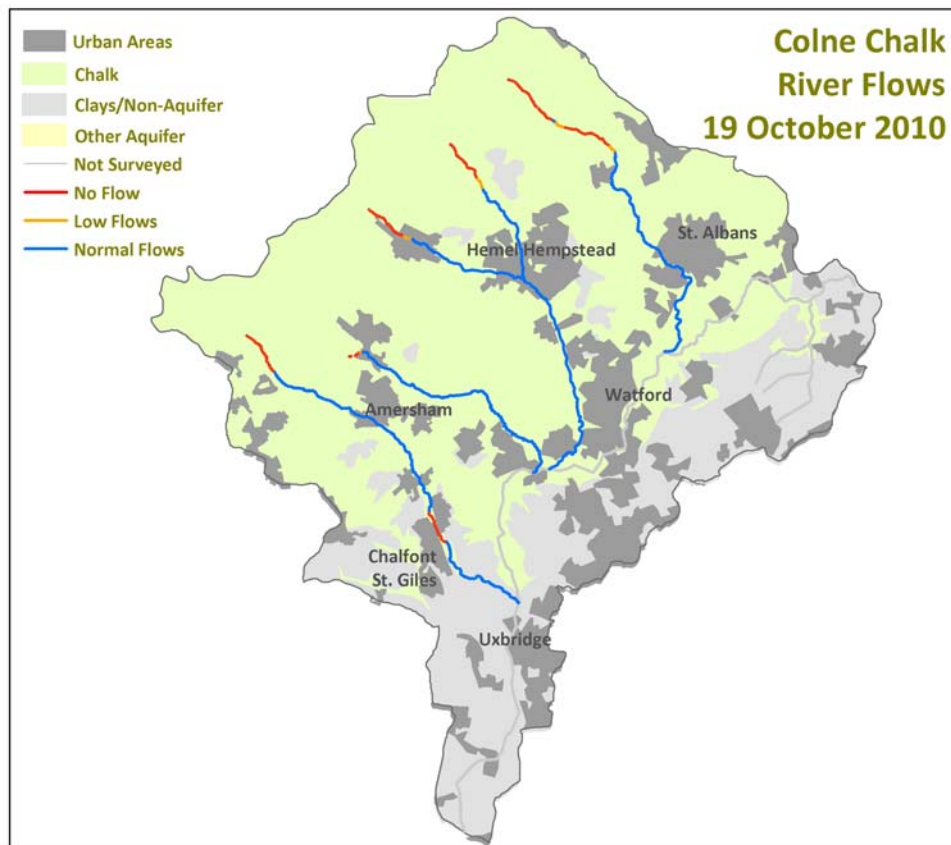
Above normal  
Exceptionally low

Normal  
Latest data

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## Flows in the chalk fed rivers – October 2010



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## Summary of rainfall, effective rainfall and soil moisture deficit

### Rainfall and Effective Rainfall – October 2010

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	76	66	115	10	19	53
Lee - Chalk	68	58	118	9	14	64
North London	72	61	118	0	6	0
Lower Lee	76	58	130	0	7	0
Roding Catchment	68	54	126	0	6	0
North East Area Average	72	59	121	4	10	40

### Soil Moisture Deficit (SMD) - October 2010

Area	End of Month SMD (mm)	End of Month SMD LTA (mm)
Chilterns- East - Colne	27	52
Lee - Chalk	52	64
North London	76	64
Lower Lee	47	60
Roding Catchment	63	66
North East Area Average	53	61

### Rainfall and Effective Rainfall – Winter total for period 1 October to 31 October 2010

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	76	66	115	10	19	53
Lee - Chalk	68	58	118	9	14	64
North London	72	61	118	0	6	0
Lower Lee	76	58	130	0	7	0
Roding Catchment	68	54	126	0	6	0
North East Area Average	72	59	121	4	10	40

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## Glossary

### Term

Aquifer

Areal average rainfall

Effective rainfall

Groundwater

Recharge

Reservoir live capacity

Soil moisture deficit (SMD)

### Definition

A geological formation able to store and transmit water.

The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).

The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).

The water found in an aquifer

The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).

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.

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

Notably high

Above normal

Normal

Below normal

Notably low

Exceptionally low

Value likely to fall within this band 5% of the time

Value likely to fall within this band 8% of the time

Value likely to fall within this band 15% of the time

Value likely to fall within this band 44% of the time

Value likely to fall within this band 15% of the time

Value likely to fall within this band 8% of the time

Value likely to fall within this band 5% of the time

### Units

cumecs

mAOD

Cubic metres per second ( $\text{m}^3 \text{s}^{-1}$ )

Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).