

# monthly water situation report

## South East Region, North East Thames Area

### Summary – May 2011

The sustained dry spell has continued to result in declining river flows and groundwater levels at our indicator sites. The low rainfall has continued to have the greatest impact upon the urban rivers of North London and the clay catchments of the Roding, Beam and Ingrebourne.

#### Rainfall

The low rainfall of March and April has continued in to May. Several heavy rainfall events meant that recorded rainfall was notably higher than April but remained well below average in all areas. The North East Thames Area average in May was just 17 mm, or 33 percent of the Long Term Average (LTA), an improvement on the 4 mm recorded in April. The total rainfall over the past three months, was the lowest on record across the North East Thames Area.

#### Soil Moisture Deficit/Recharge

The generally dry weather and warm temperatures during May have combined to increase the Soil Moisture Deficit (SMD) across the Area. By the end of May, SMD varied from 89 mm in the Chilterns-East-Colne area to 97 mm in North London and the Lower Lee catchments. The North East Thames Area average end of May SMD was 94 mm, much higher than the 60 mm end of month SMD LTA. As a result of the high SMD across the North East Thames Area, only the Chilterns-East-Colne received any effective rainfall / recharge during May.

#### River Flows

River flows across the area continued to decline during May. The heavy rainfall caused rivers to rise for a short time but all our indicator sites have returned to their low levels. Only the River Misbourne remains at *normal* flows. The rivers Colne, Gade, Ver, Mimram and Lee at Feildes Weir are *below normal*, the rivers Brent and Ash are *notably low*. The rivers worst effected by the current dry weather are the Crane, Roding, Ingrebourne and Lee at Water Hall all of which are *exceptionally low* for the time of year.

The lowest May monthly mean flows since records began were recorded at our indicator sites on the Crane at Cranford (1978- Present), Roding at Redbridge (1950 – Present) and the Ingrebourne at Upminster (1971- Present). No flood warnings or alerts were issued during May in the North East Thames Area.

#### Groundwater Levels

Groundwater levels continue their seasonal decline. Our groundwater indicator sites at Ashley Green, Ballingdon Farm, Hixham Hall and Wapseys Wood are *below normal* levels for May. With the end of the normal recharge season (Oct-May), groundwater levels are not expected to rise significantly until the winter period.

#### Environmental Impact

The table below shows the abstraction licence flow constraints that were in force in May out of a Summer maximum of 21:

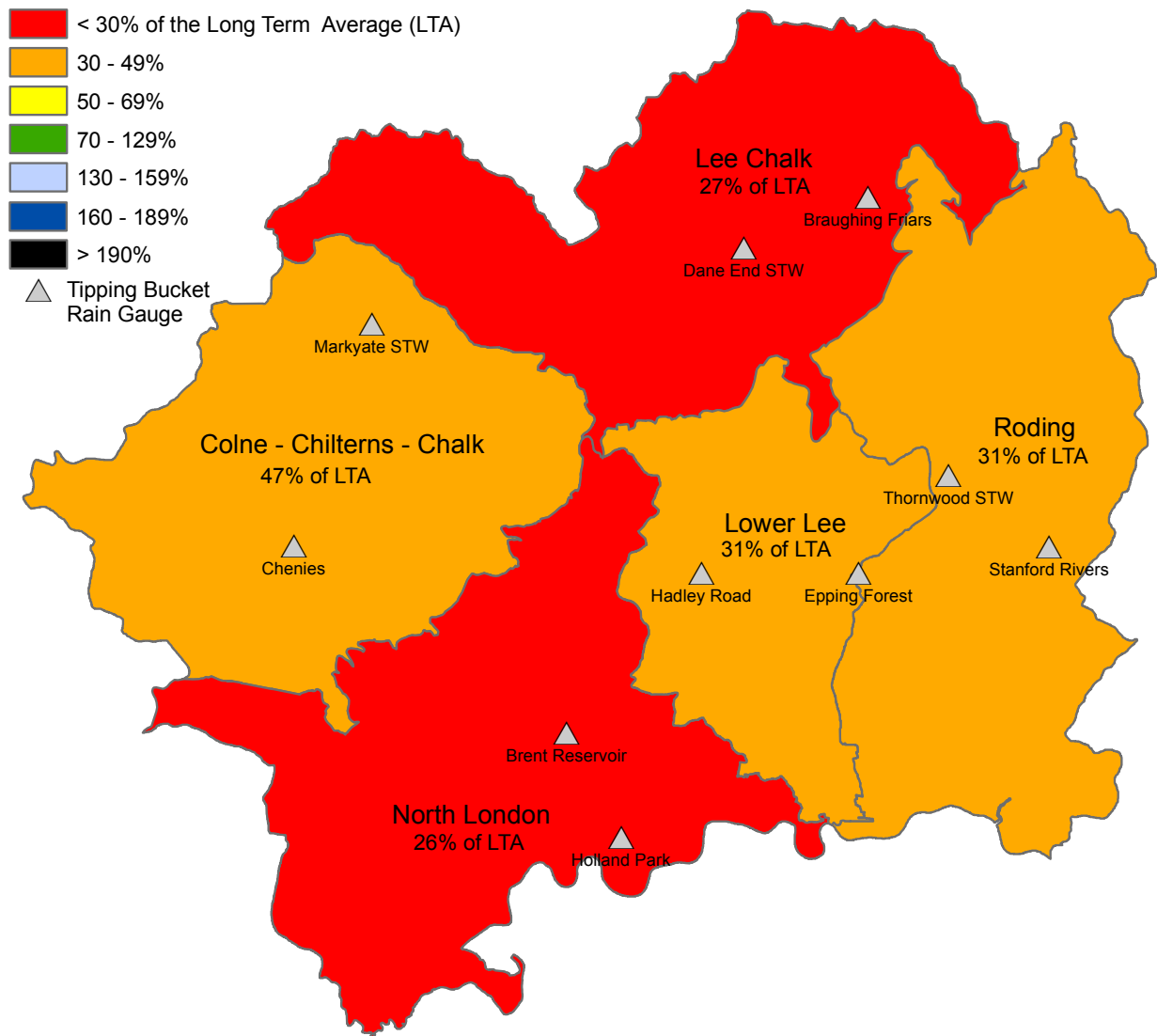
Week Commencing	2 May	9 May	16 May	23 May	31 May
Number of Constraints	2	1	N/A	3	7

#### Sources

All of our Chalk rivers in both the Colne and the Upper Lee catchments have seen their sources migrating further downstream. Only the River Misbourne has remained stable with flows from Deep Mill Lane to its confluence with the River Colne.

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# Rainfall Map

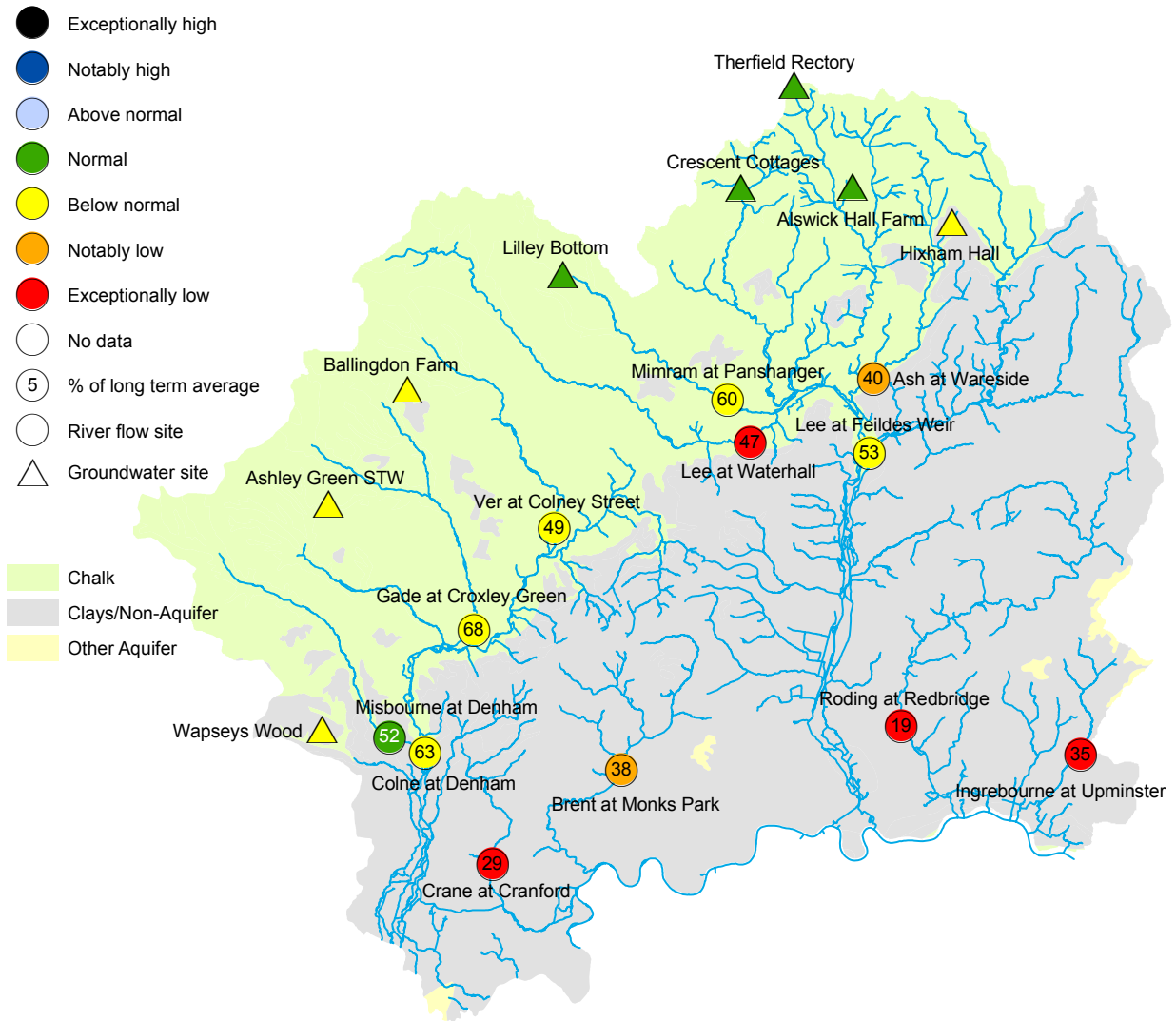


Data source: Rainfall calculated using Thames Soil Moisture Model.

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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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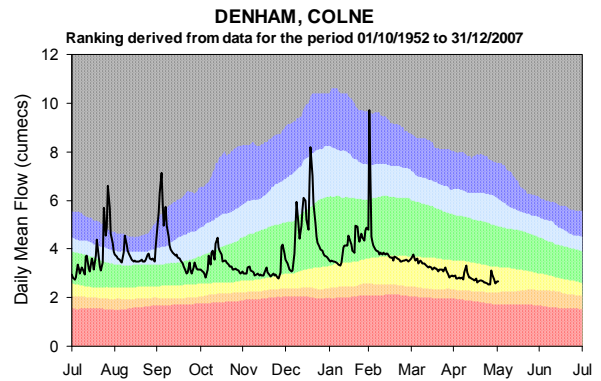
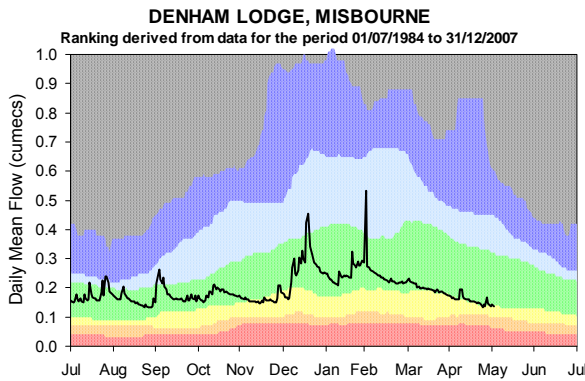
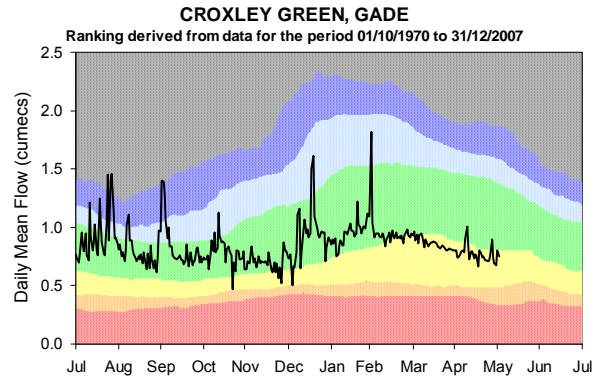
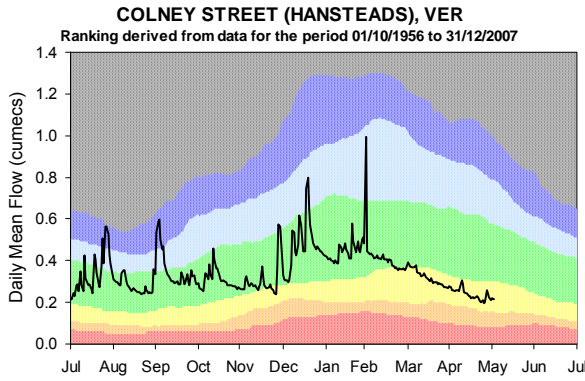
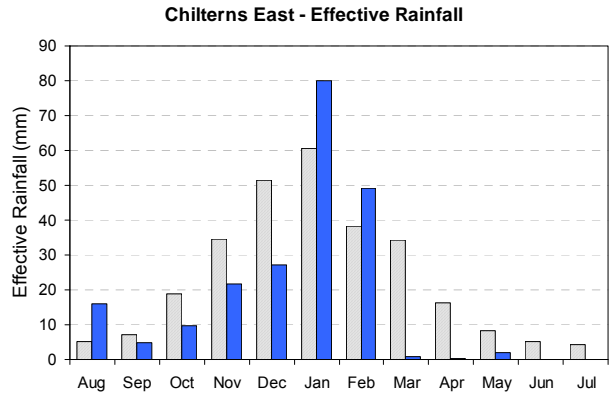
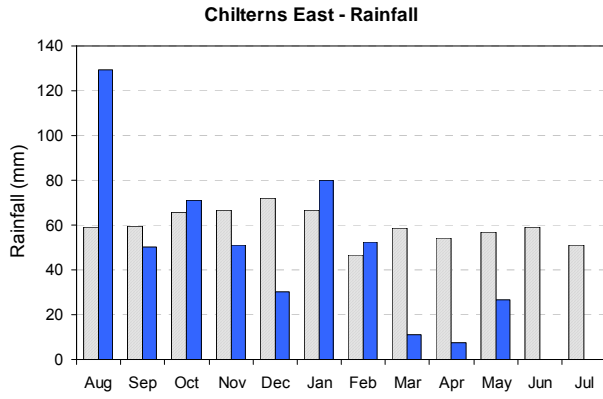
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# Colne



 Monthly total rainfall (mm)

 Long-term average rainfall (mm)



 Exceptionally high  
 Below normal

 Notably high  
 Notably low

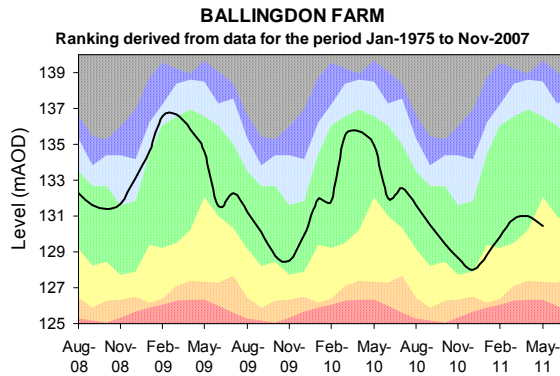
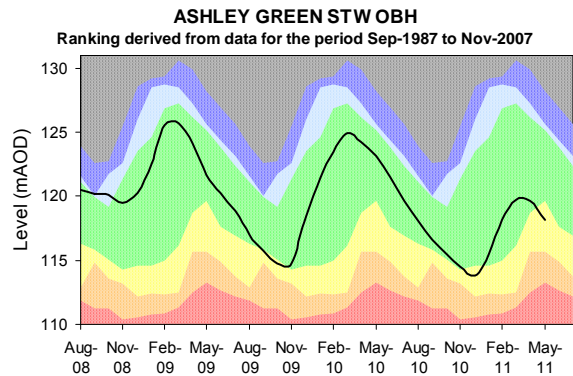
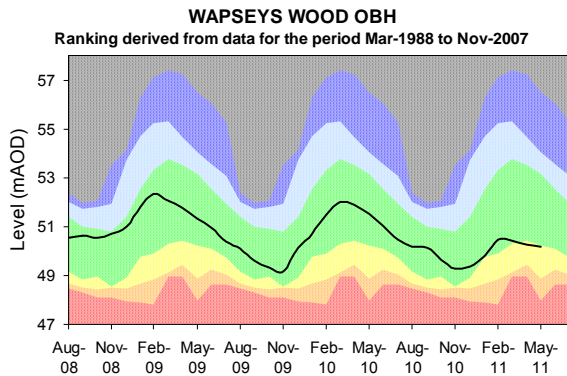
 Above normal  
 Exceptionally low

 Normal  
 Latest data

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# Colne Groundwater



Exceptionally high  
Below normal

Notably high  
Notably low

Above normal  
Exceptionally low

Normal  
— Latest data

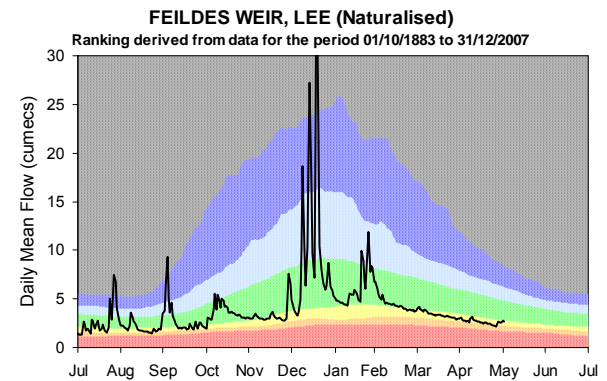
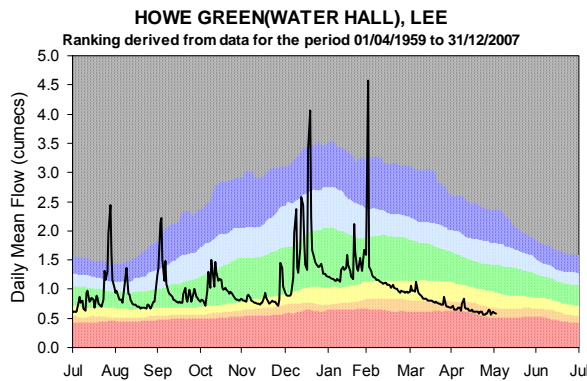
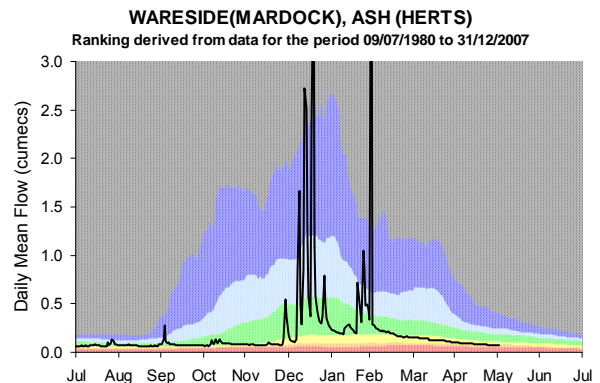
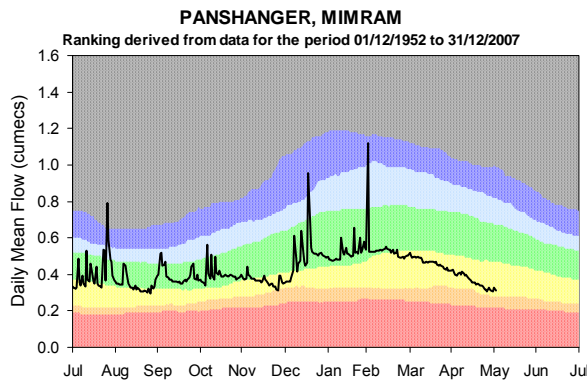
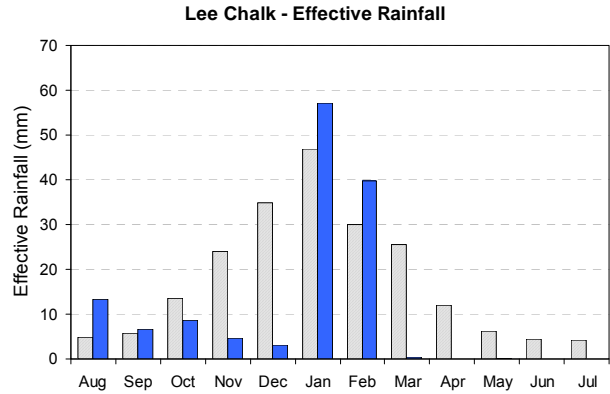
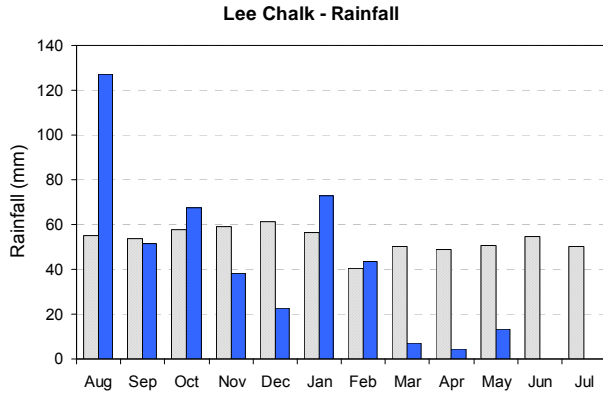
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# Upper Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
Below normal

Notably high  
Notably low

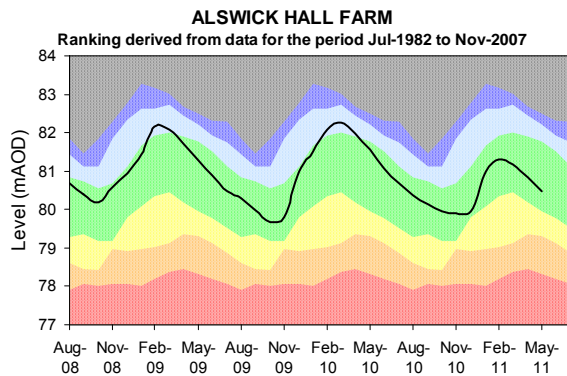
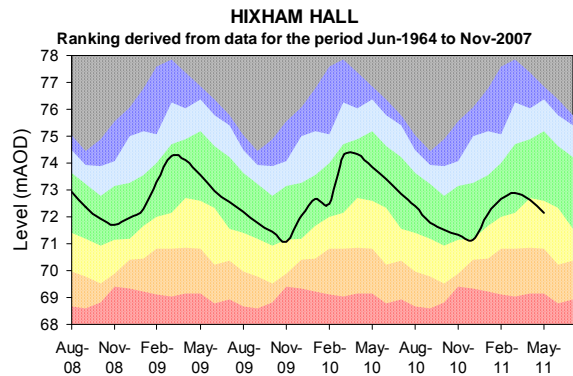
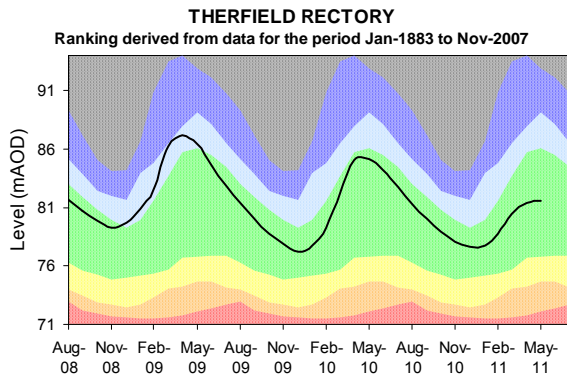
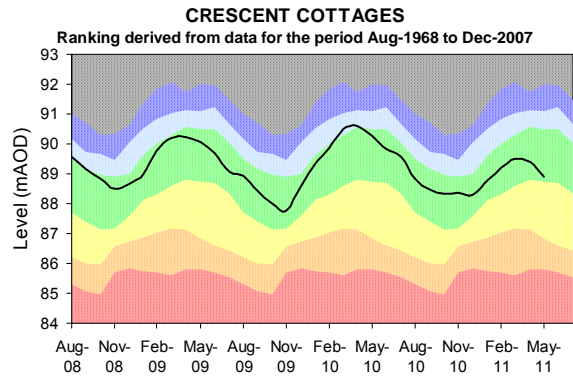
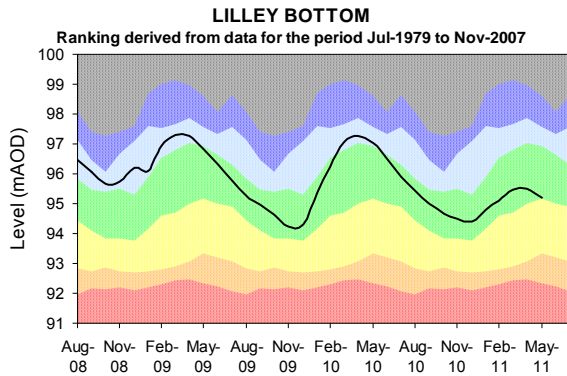
Above normal  
Exceptionally low

Normal  
— Latest data

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# Upper Lee Groundwater



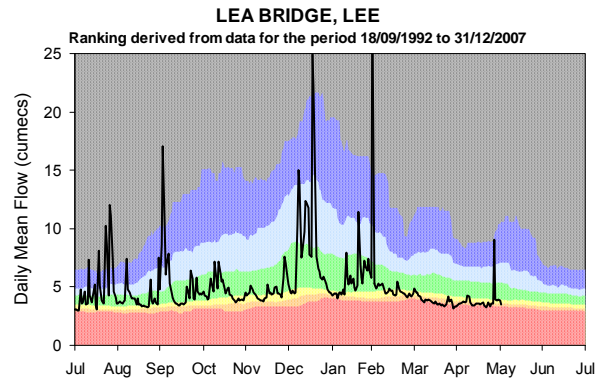
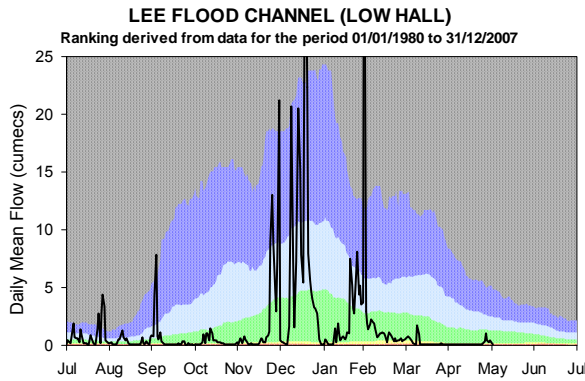
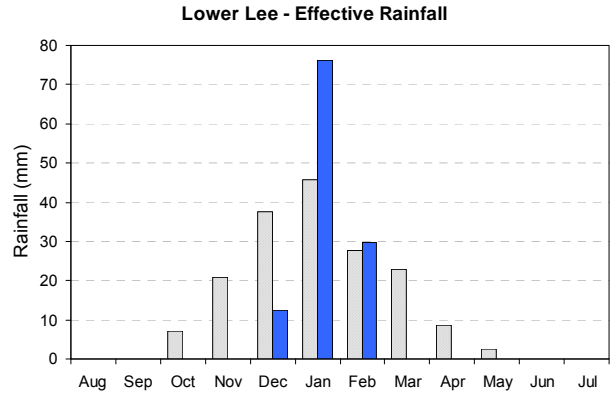
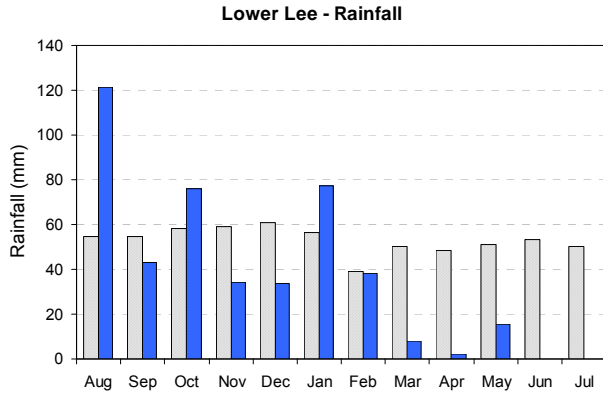
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# Lower Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
 Below normal

Notably high  
 Notably low


Above normal  
 Exceptionally low

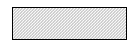
Normal  
 Latest data

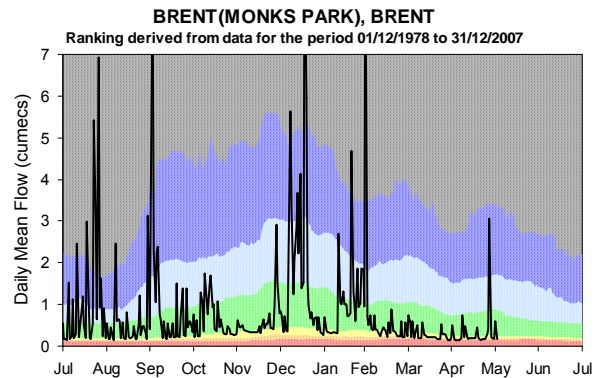
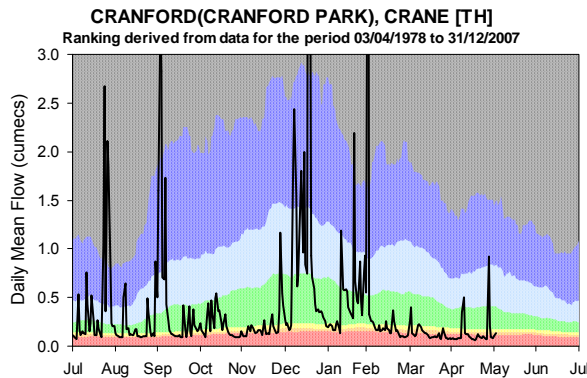
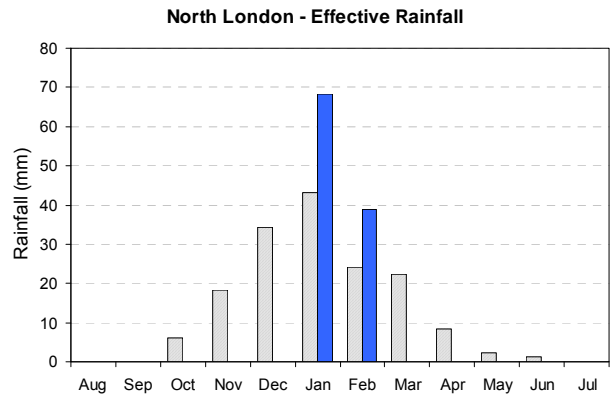
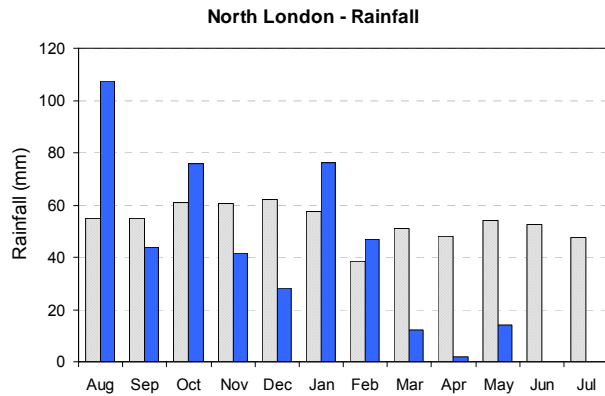
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

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

 Monthly total rainfall (mm)

 Long-term average rainfall (mm)



 Exceptionally high  
 Below normal

 Notably high  
 Notably low

 Above normal  
 Exceptionally low

 Normal  
 Latest data

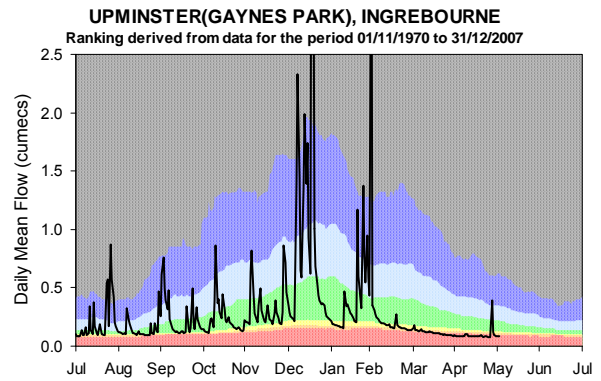
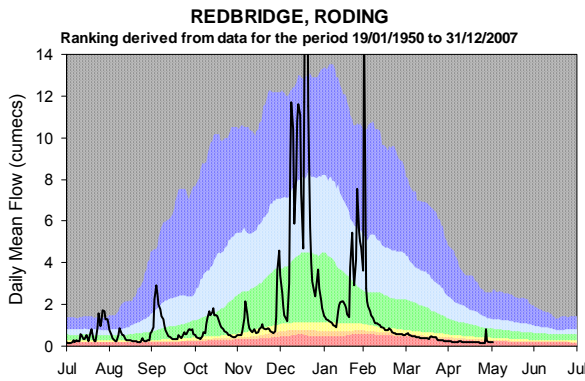
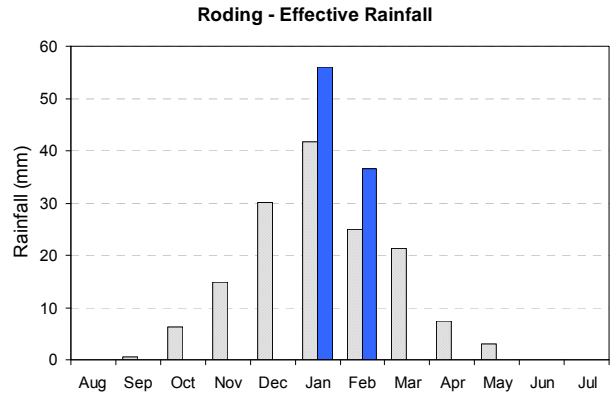
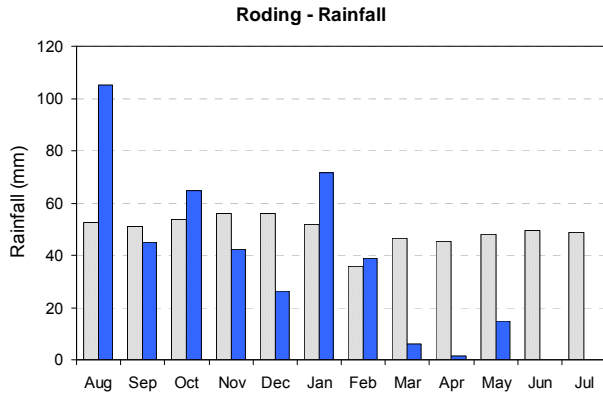
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# Roding

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high  
Below normal

Notably high  
Notably low

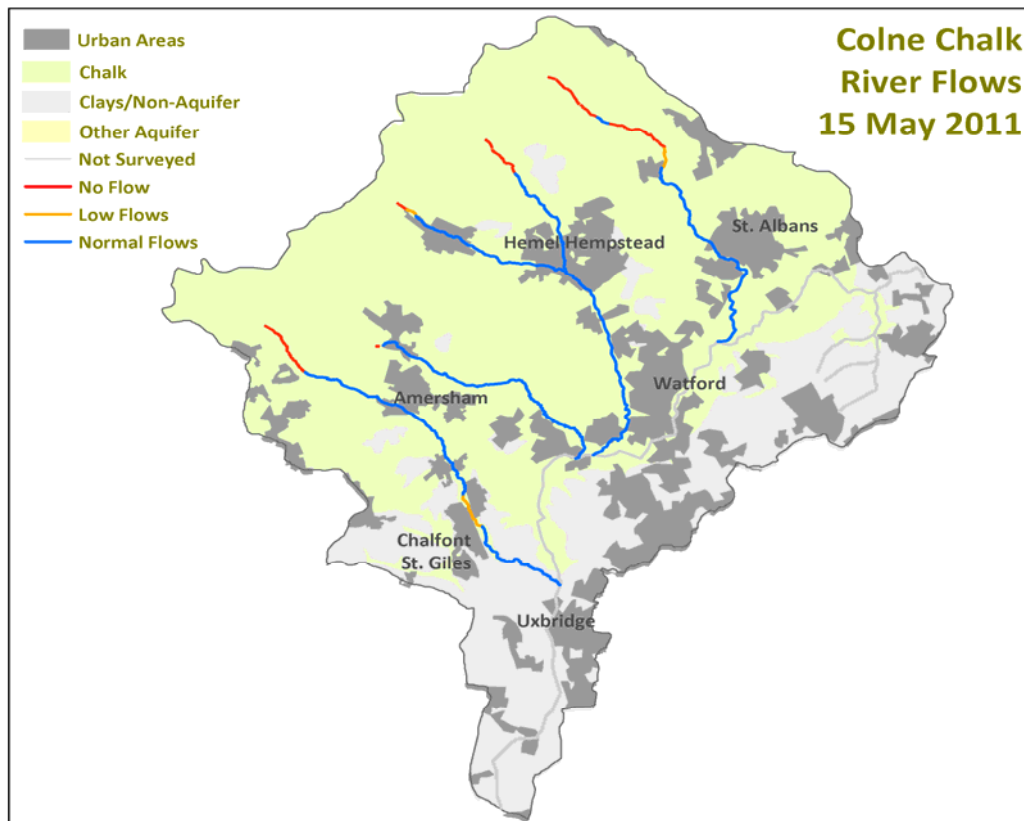
Above normal  
Exceptionally low

Normal  
Latest data

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## Flows in the chalk fed rivers – May 2011



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

### Rainfall and Effective Rainfall – May 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	27	57	47	2	8	25
Lee - Chalk	13	51	25	0	6	0
North London	14	54	26	0	2	0
Lower Lee	16	51	31	0	3	0
Roding Catchment	15	48	31	0	3	0
North East Thames Area Average	17	52	33	0	4	0

### Soil Moisture Deficit (SMD) - May 2011

Area	End of Month SMD (mm)	End of Month SMD LTA (mm)
Chilterns- East - Colne	89	56
Lee - Chalk	94	59
North London	97	60
Lower Lee	97	62
Roding Catchment	94	61
North East Thames Area Average	94	60

### Rainfall and Effective Rainfall – Summer total for period 1 April 2011 to 31 May 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	35	111	32	2	24	8
Lee - Chalk	18	100	18	0	18	0
North London	16	102	16	0	11	0
Lower Lee	18	99	18	0	11	0
Roding Catchment	17	93	18	0	10	0
North East Thames Area Average	21	101	21	0	15	0

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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).