

monthly water situation report

South East Region, North East Thames Area

Summary – November 2011

Conditions remained dry across the Area for this time of year. The only significant rainfall fell on 3 November and as a consequence there has been little recharge, groundwater levels have continued to fall, and river flows have declined.

Rainfall

November has been another dry month in the North East Thames Area (“the Area”), with just 45% of the long term average (LTA) rainfall for November being recorded, making it the driest since 1989. The month started with only a light spattering of rainfall over the first few days, but culminated with heavy rainfall on 3 November. This rainfall produced totals ranging from 14mm at Runley Wood in the Upper Lee catchment to 39mm at Havering Bower in the Beam catchment.

Soil Moisture Deficit (SMD) / Recharge

SMD has remained consistently high, and the Area ended the month with an SMD of 128mm. By the end of November SMD would be expected to have dropped back to 28mm. There has been no effective rainfall for the North London, Lower Lee, and Roding catchments, and less than 20% of LTA effective rainfall for Chilterns-East-Colne and Lee-Chalk.

With the high SMD and low rainfall, the Area continues to suffer from no meaningful recharge to the groundwater.

River Flows

River flows remained low, as a consequence of the low rainfall, high SMD and low groundwater levels. All our river flow indicator sites recorded *below normal* or less monthly mean flows. Three sites were *notably low*, while eight sites had *exceptionally low* flows. Flows at Redbridge (River Roding), Howe Green (Upper River Lee), and Monks Park (River Brent), recorded their lowest ever monthly mean flow for November. With the low river flows, we did not issue any flood alerts or warnings during November.

Groundwater Levels

Groundwater levels changed little during November and remained at levels similar to October. Seven of the nine indicator sites ended the month at *below normal* levels or lower. Of these, Alswick Farm, Ballingdon Farm and Ashley Green STW recorded *notably low* groundwater levels.

Environmental Impact

The dry weather and low river flows in November resulted in many water abstractions having restrictions imposed. The table below shows the abstraction licence flow constraints that were in force in November, out of a Winter maximum of 51:

Week Commencing	31 Oct	7 Nov	14 Nov	21 Nov	28 Nov
Number of Constraints	49	37	45	47	46

Sources

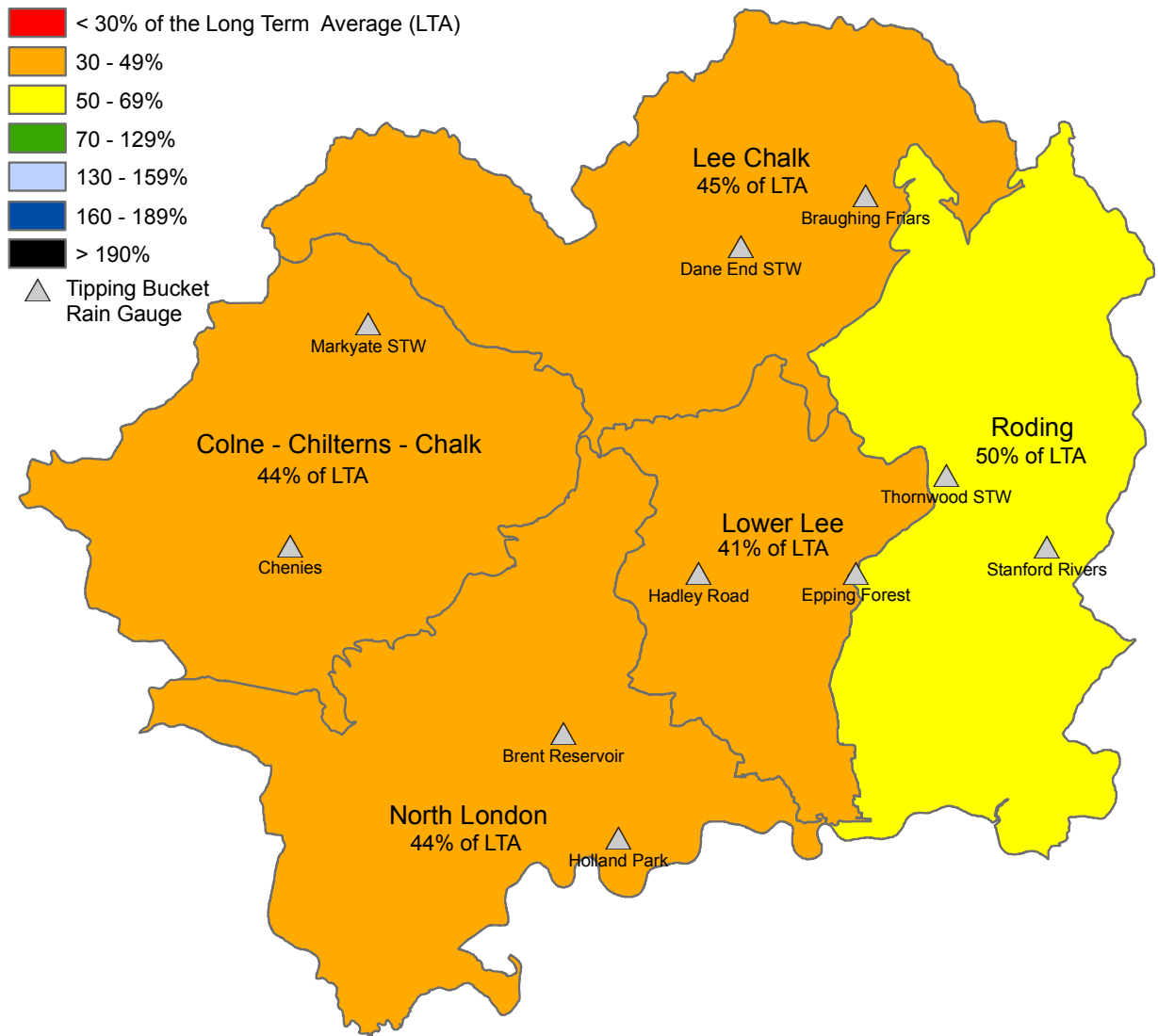
Flows in the Area’s chalk rivers reflected the low rainfall, low groundwater levels and lack of recharge. By the end of November last year, flows had started to recover in the upper reaches. This year we are still seeing sources in the Upper Lee catchment migrating downstream: the River Beane was dry above Watton, and the River Rib had no flow above Buntingford STW.

Much of the Colne chalk rivers’ sources have remained as low as October. On the River Ver at River Hill, only the sewage works have maintained any flow, while the River Gade’s source has migrated further downstream, to below Great Gaddesden, as the groundwater level continued to decline.

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Rainfall Map

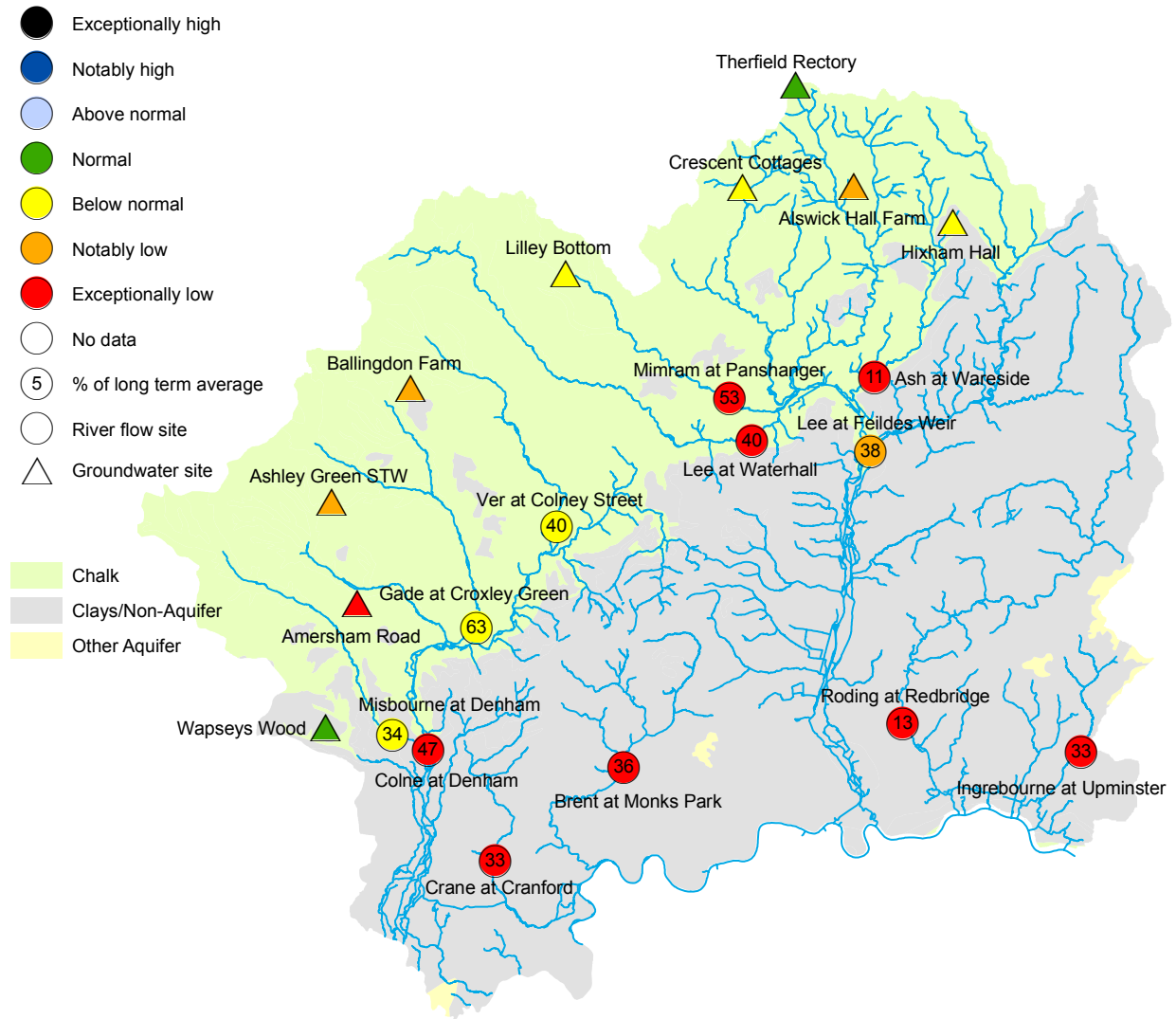


Data source: Rainfall calculated using Thames Soil Moisture Model.

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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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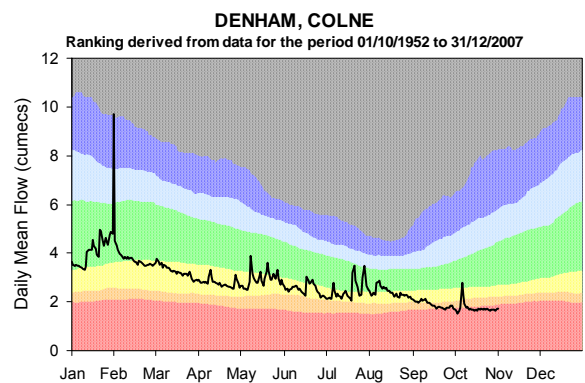
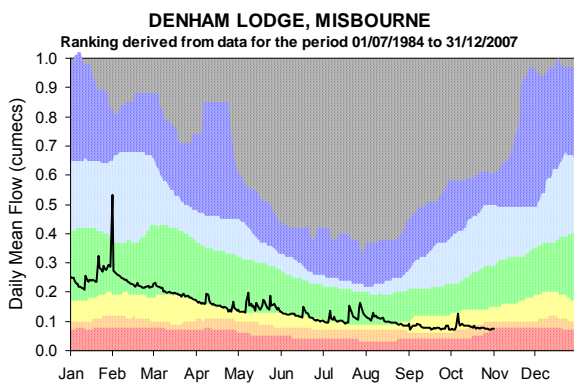
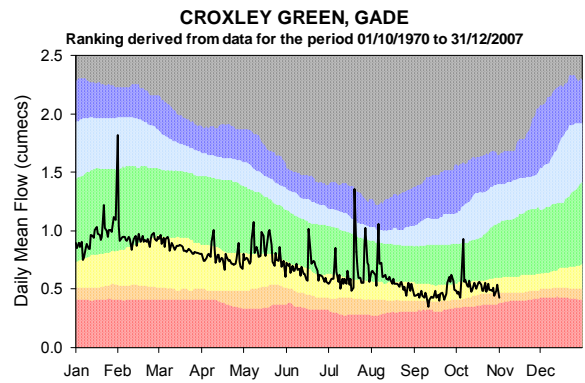
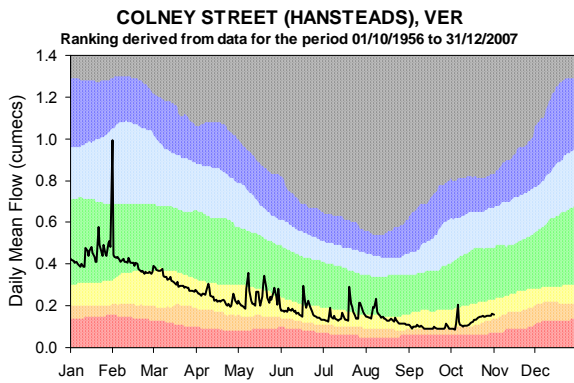
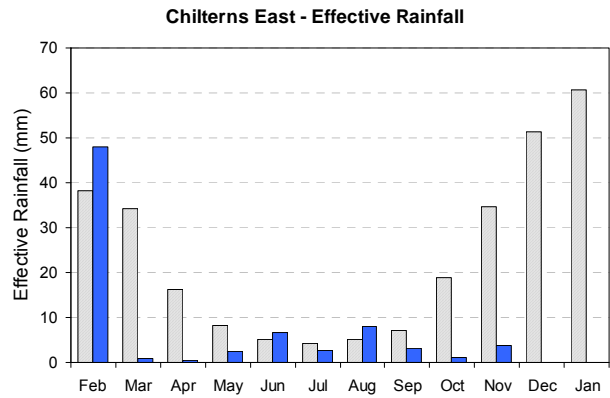
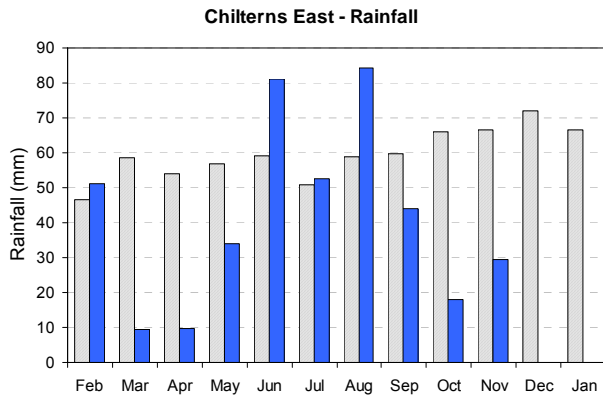
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
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
Colne



 Monthly total rainfall (mm)

 Long-term average rainfall (mm)



 Exceptionally high
 Below normal

 Notably high
 Notably low

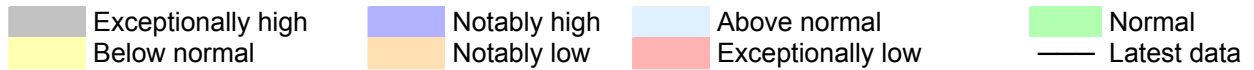
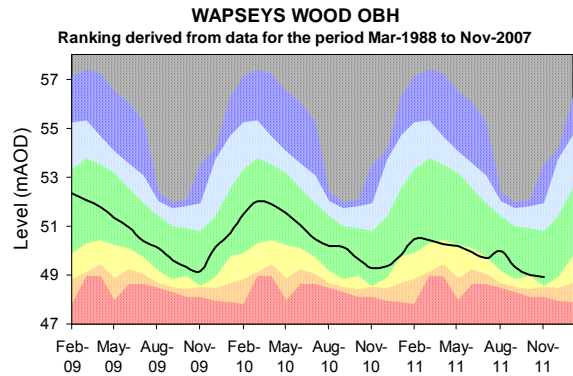
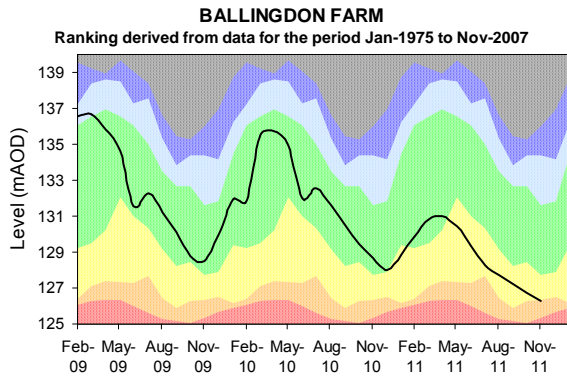
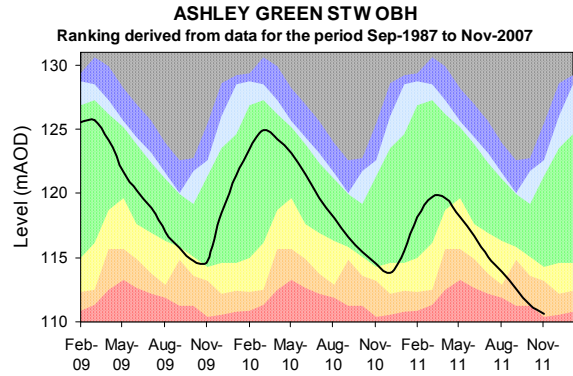
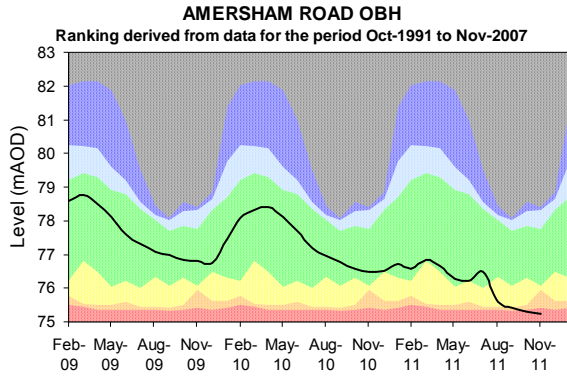
 Above normal
 Exceptionally low

 Normal
 Latest data

All data are provisional and may be subject to revision.

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Colne Groundwater



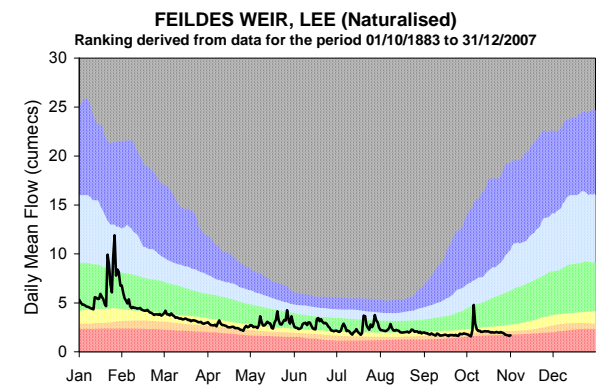
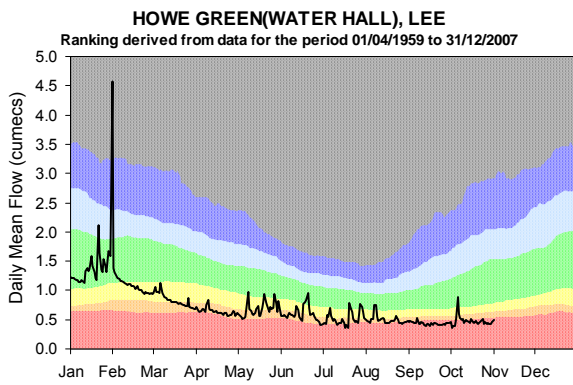
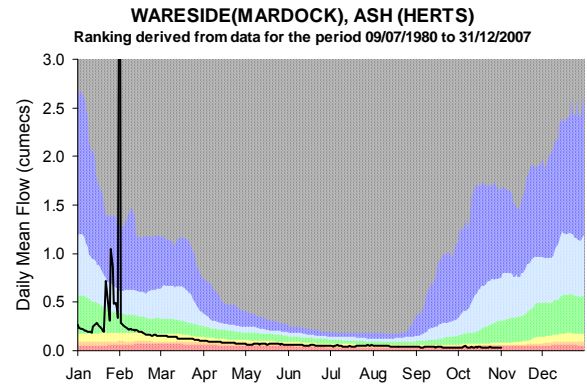
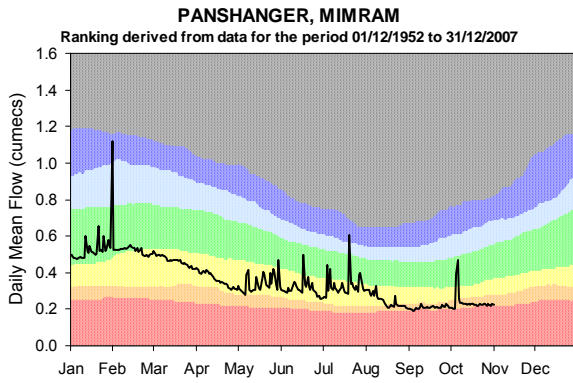
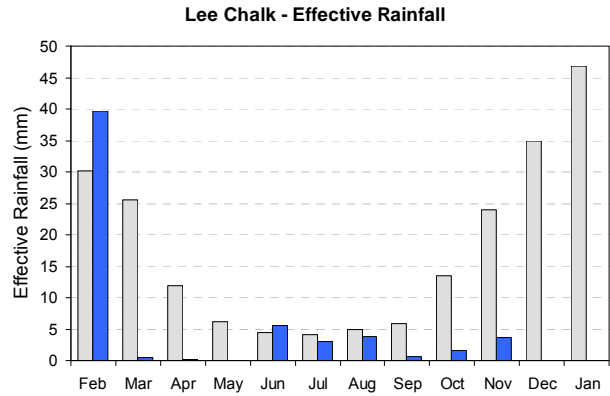
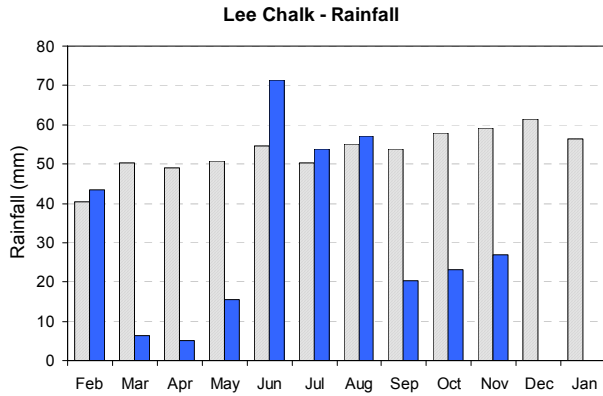
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Upper Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
Below normal

Notably high
Notably low

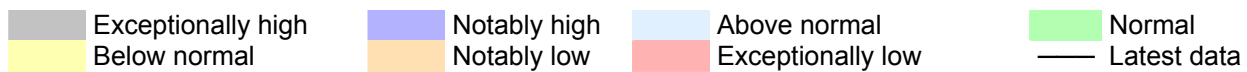
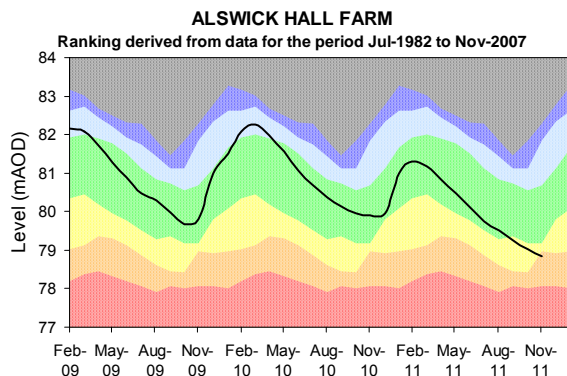
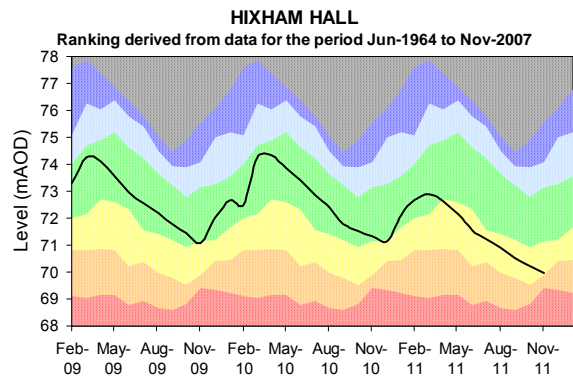
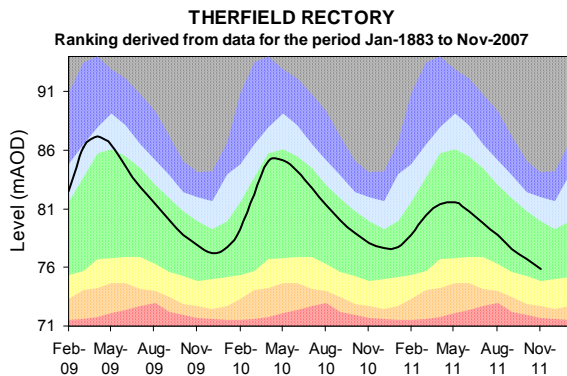
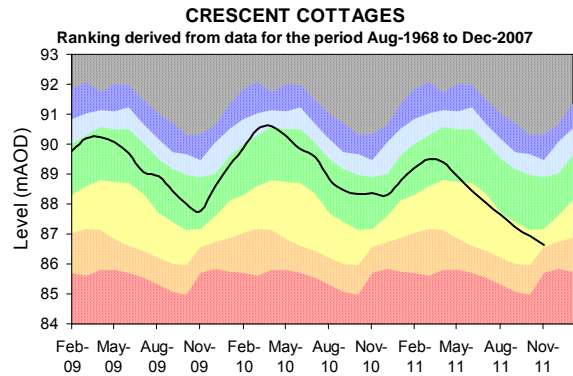
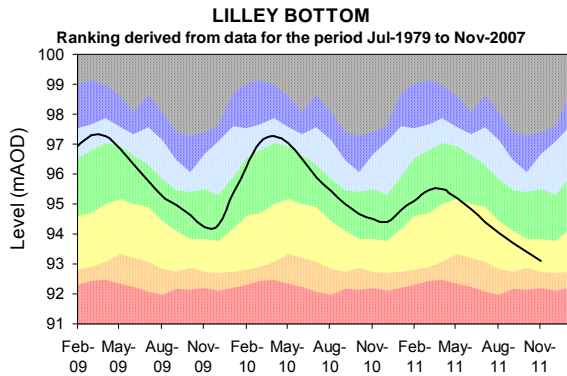
Above normal
Exceptionally low

Normal
Latest data

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Upper Lee Groundwater



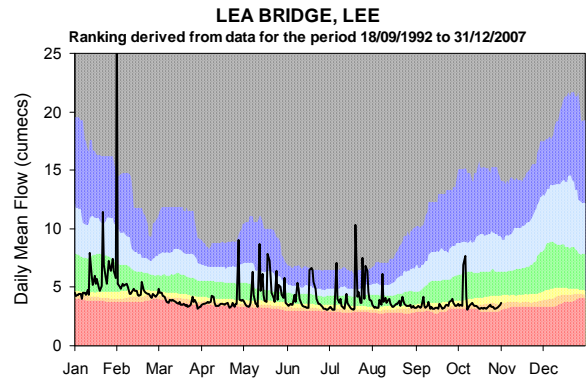
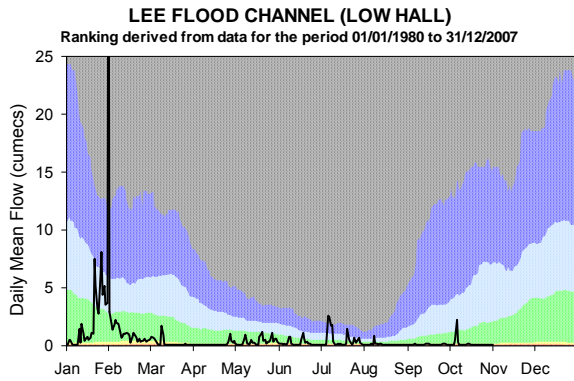
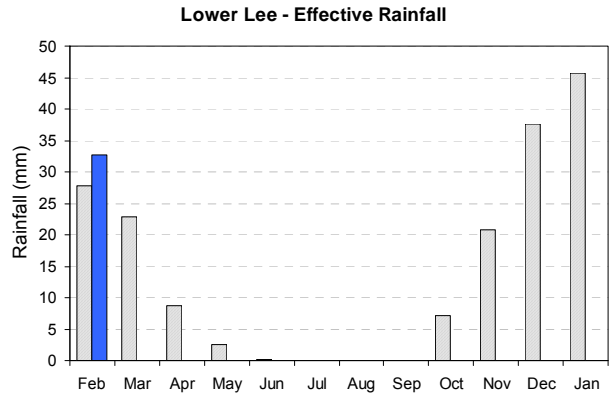
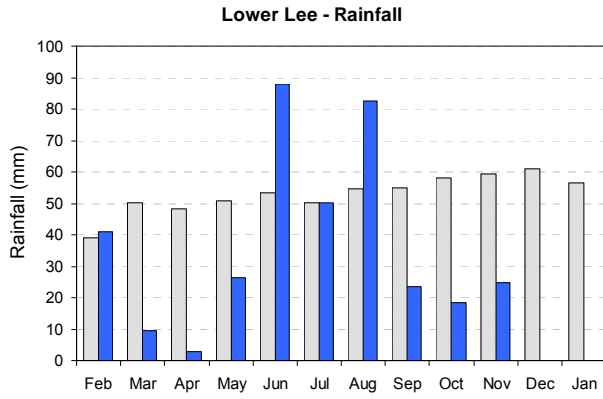
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Lower Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
Below normal

Notably high
Notably low

Above normal
Exceptionally low

Normal
Latest data

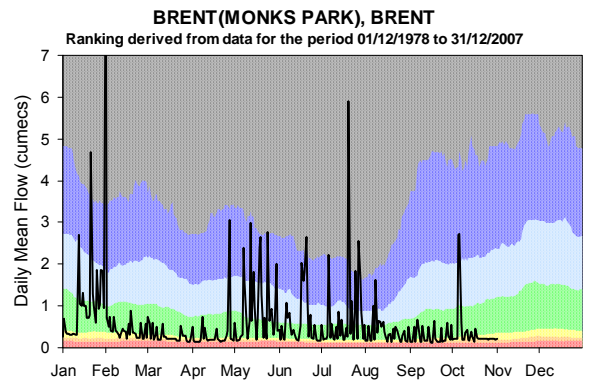
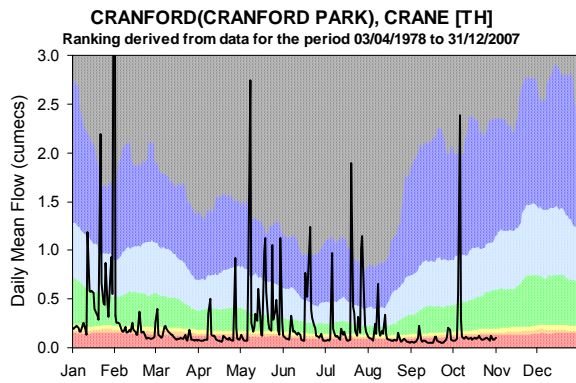
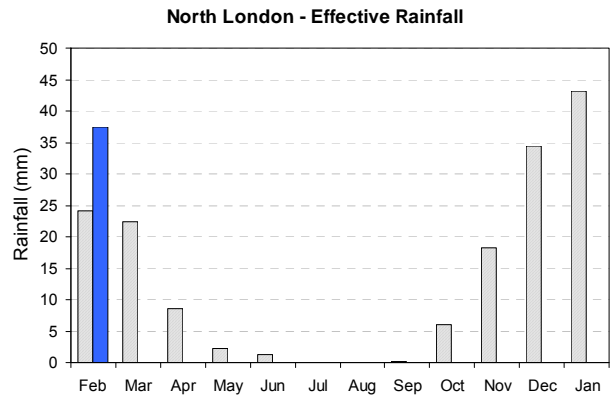
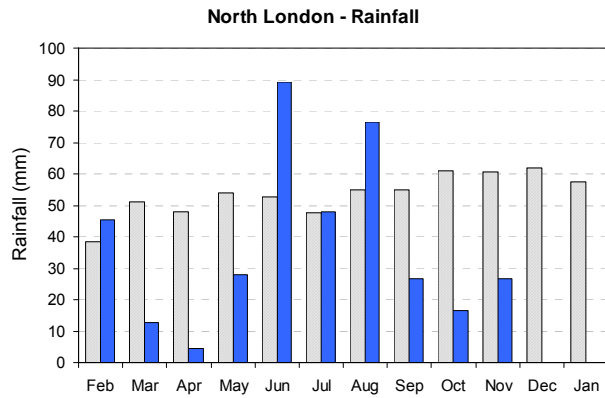
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North London

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
 Below normal

Notably high
 Notably low

Above normal
 Exceptionally low

Normal
 Latest data

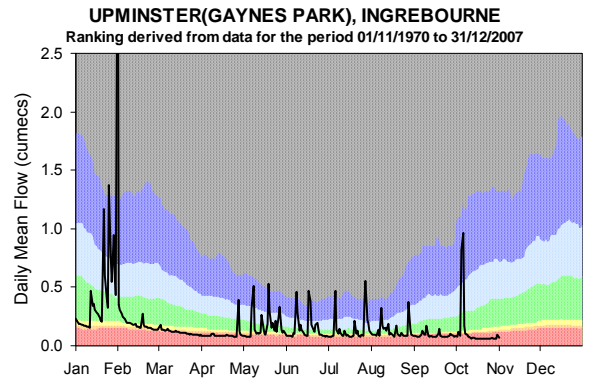
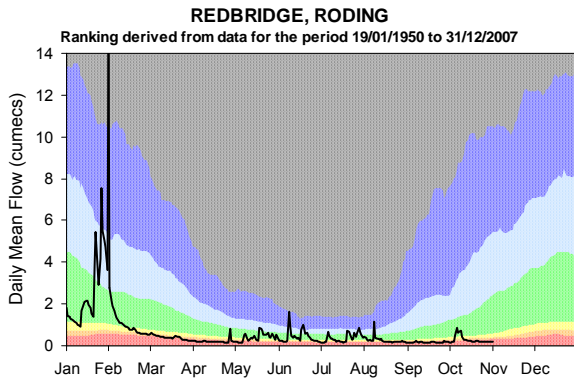
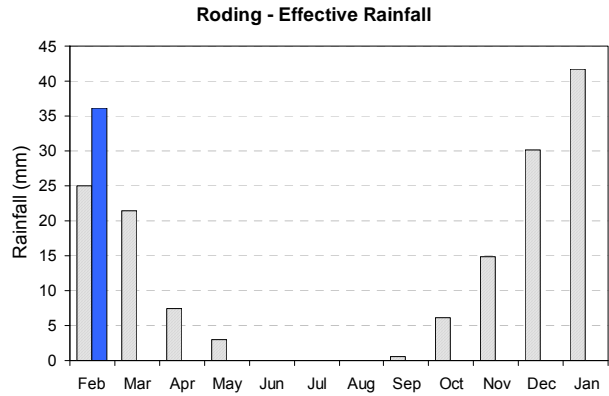
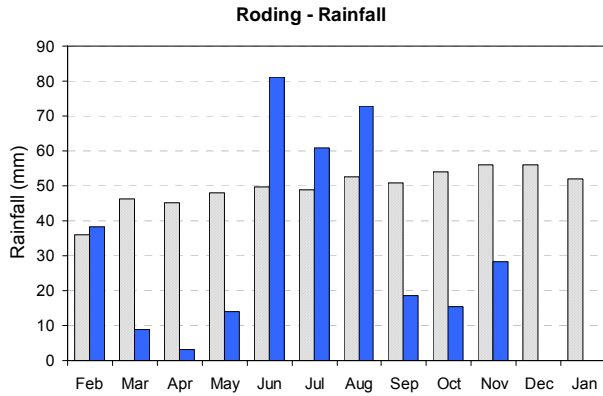
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Roding

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
 Below normal

Notably high
 Notably low

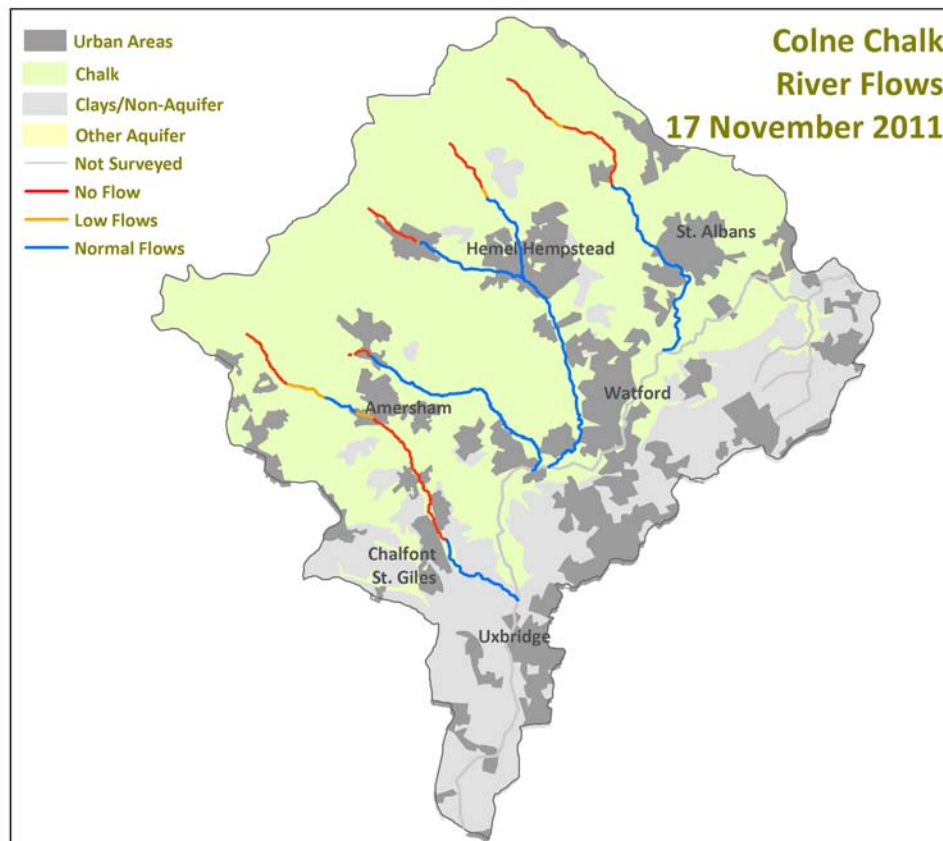
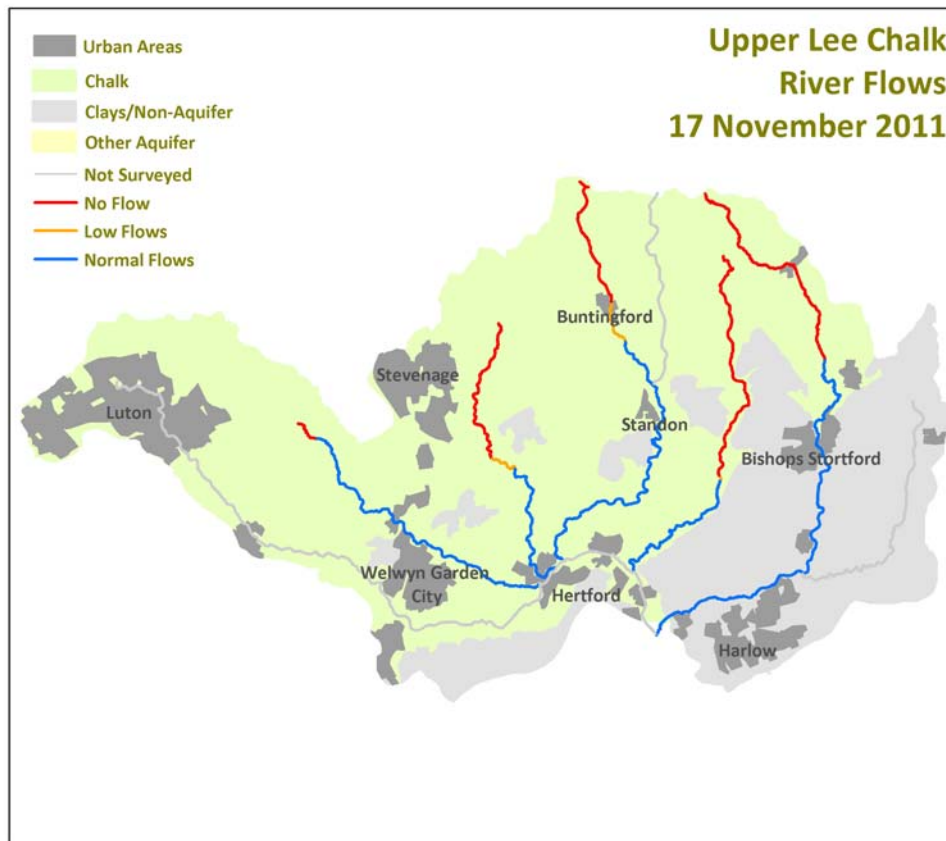
Above normal
 Exceptionally low

Normal
— Latest data

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Flows in the chalk fed rivers – November 2011



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Summary of rainfall, effective rainfall and soil moisture deficit

Rainfall and Effective Rainfall – November 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	29	67	44	4	35	11
Lee - Chalk	27	59	45	4	24	17
North London	27	61	44	0	18	0
Lower Lee	25	59	41	0	21	0
Roding Catchment	28	56	50	0	15	0
North East Thames Area Average	27	60	45	2	23	7

Soil Moisture Deficit (SMD) - November 2011

Area	End of Month SMD (mm)	End of Month SMD LTA (mm)
Chilterns- East - Colne	112	23
Lee - Chalk	138	32
North London	128	30
Lower Lee	132	27
Roding Catchment	128	30
North East Thames Area Average	128	28

Rainfall and Effective Rainfall – Winter total for period 1 October 2011 to 30 November 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	47	133	35	5	54	9
Lee - Chalk	50	117	43	5	38	13
North London	43	122	35	0	24	0
Lower Lee	43	118	36	0	28	0
Roding Catchment	44	110	40	0	21	0
North East Thames Area Average	45	120	38	2	33	6

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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).