

monthly water situation report

Thames Region, North East Area

Summary – January 2011

The low soil moisture deficit, combined with the wet periods of January, resulted in 12 flood alerts being issued in North East Area, and widespread *above normal* flows on the urban and clay rivers. Groundwater levels began the seasonal recovery, and the majority of chalk rivers increased their flowing length.

Rainfall

Although January started and ended relatively dry, the wet middle weeks led to all catchments in the Area having over 100% of the long term average rainfall. The Roding was the wettest catchment (138% of the long term average), and the Colne catchment was the least wet (120% of the long term average).

The highest daily rainfall total for the Area was recorded on 17 January 2011 at Holland Park PS (30mm), which was the highest daily rainfall total of the month, across Thames region.

Soil Moisture Deficit/Recharge

January soil moisture deficits of around zero (across the area) are very close to average for the time of year. Average effective rainfall for the Area (62mm) represents 129% of the long term average, with the Lower Lee catchment having the highest effective rainfall long term average (159%).

River Flows

River flows responded to the heavy rainfall during January. In the main, the Area's chalk rivers had *normal* river flows, while the urban and clay catchments had *above normal* river flows. The River Roding at Redbridge experienced the highest river flows, with 167% of the long term average, compared with 78% on the River Misbourne at Denham.

12 flood alerts and 0 flood warnings were issued for North East Area during January.

Groundwater Levels

Ballington Farm was the only groundwater level indicator site to end the month in the *below normal* range. Whilst Ashley Green STW (Colne), and Hixham Hall (Upper Lee) dipped into the *below normal* groundwater level range, they ended the month as the remaining indicator sites - in the *normal* range. Groundwater levels are now rising at all sites, but there are signs that the rate of rise is slow or has slowed in some cases, due to the dry end to the month and dry conditions in preceding months.

Environmental Impact

The table below shows the abstraction licence flow constraints that were in force in January, out of a winter maximum of 56:

Week Ending	3 Jan	10 Jan	17 Jan	24 Jan	31 Jan
Number of Constraints	16	1	2	6	13

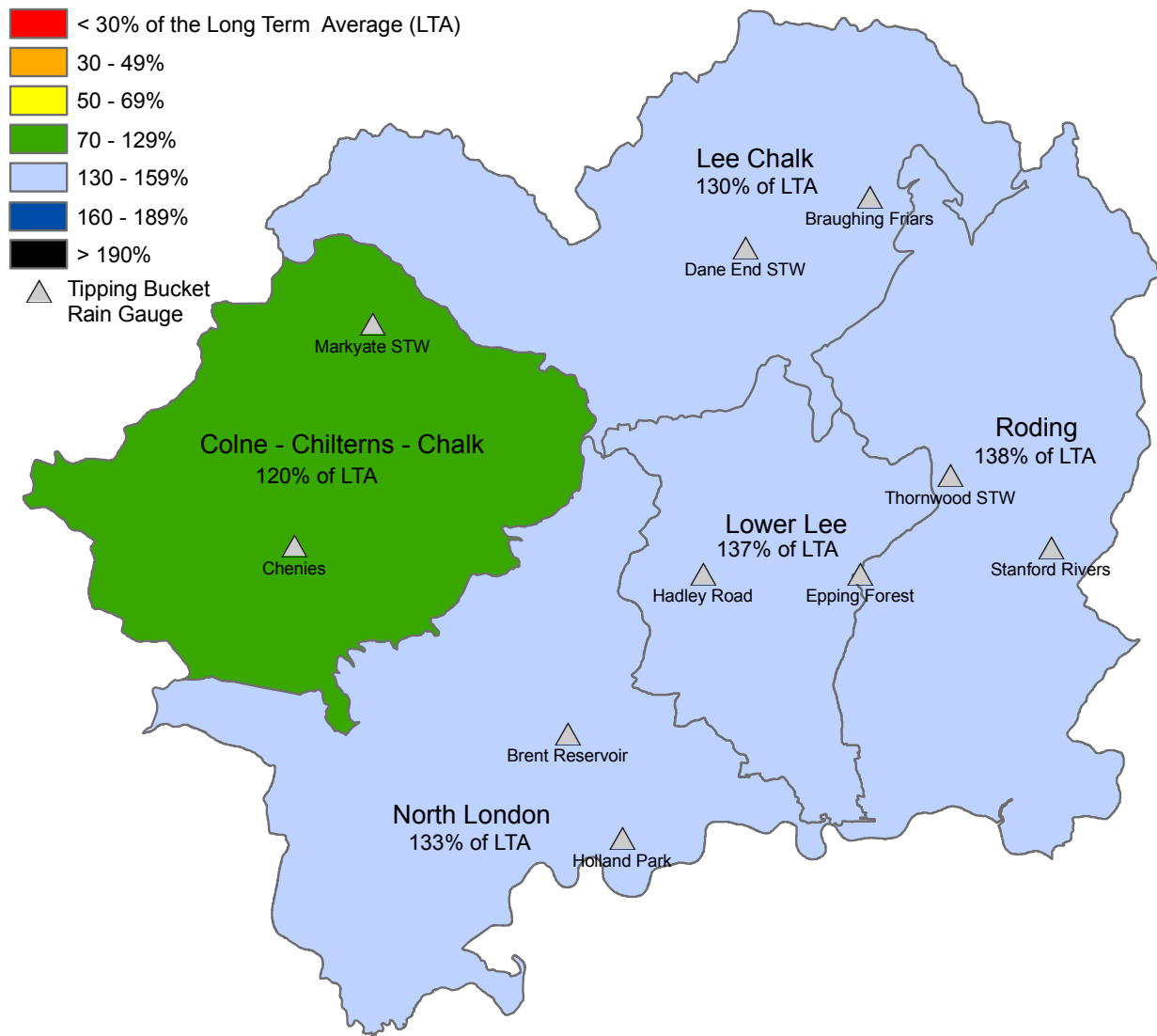
Sources

The chalk river flows reflected the wet conditions of the month. Increased flow was apparent all around the Upper Lee catchment, with improved flow right to the top of the River Stort. Parts of the River Ash (Herts) showed signs of recharge, whereas flow declined on the River Rib in a section north of Buntingford, compared with December. Increased flows were seen along many stretches of the Colne chalk rivers, with reduced flows/dry beds mainly confined to the tops of the rivers.

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Rainfall Map

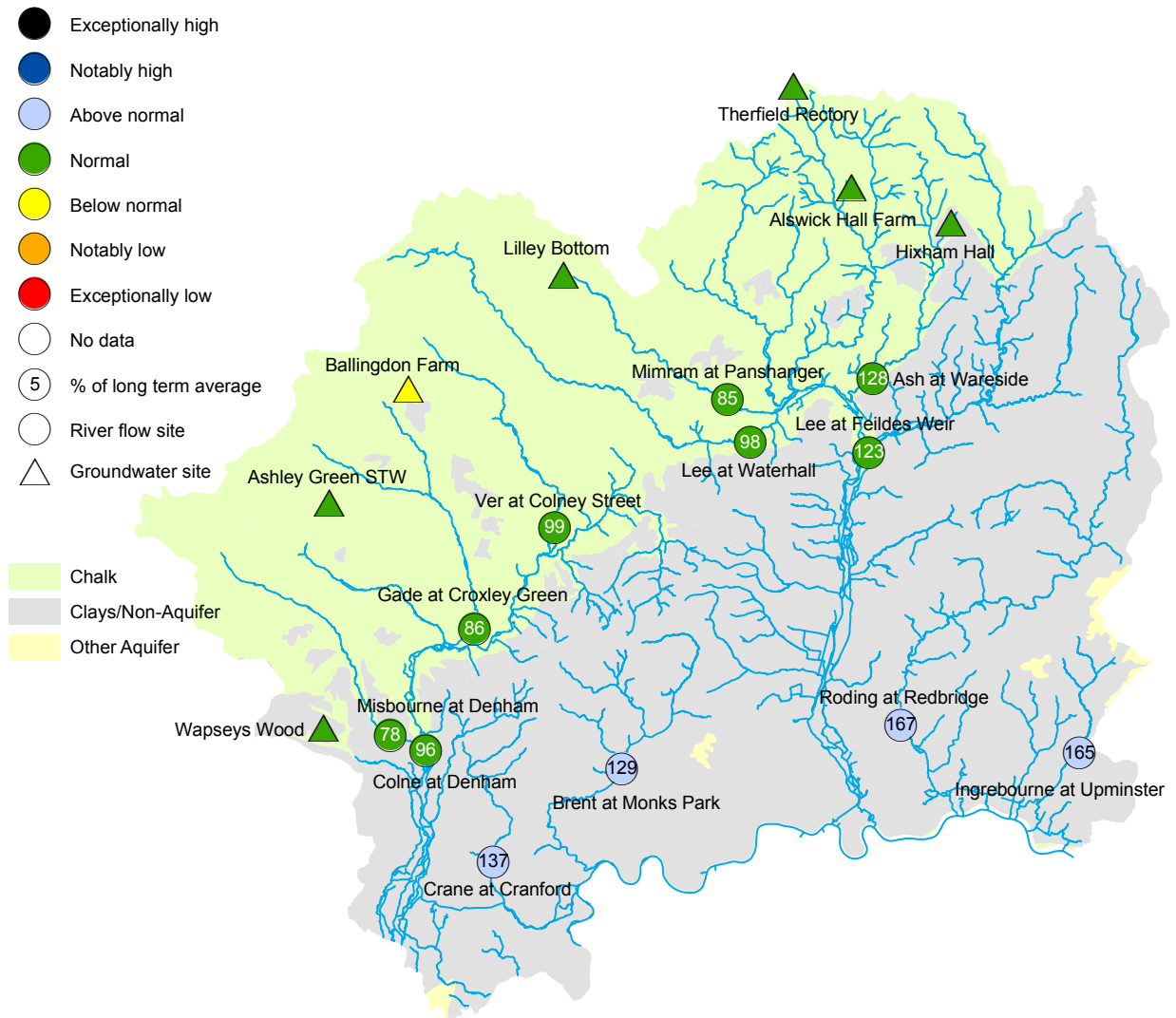


Data source: Rainfall calculated using Thames Soil Moisture Model.

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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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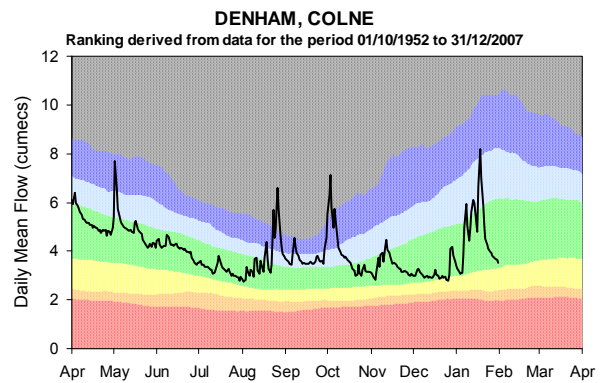
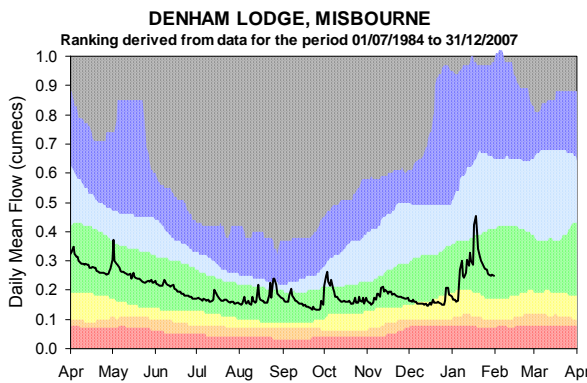
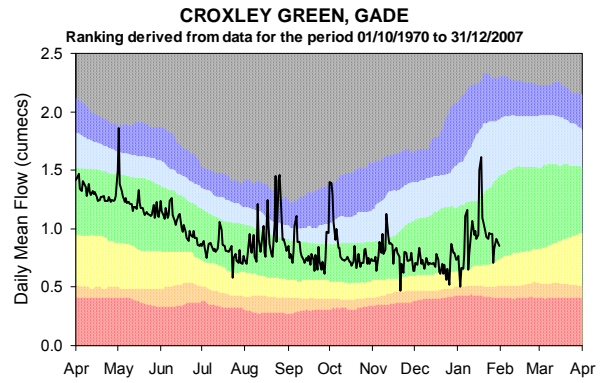
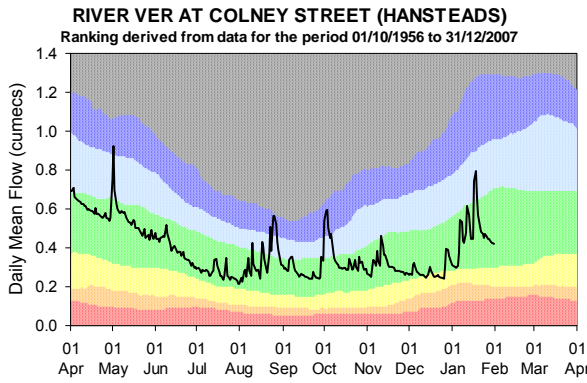
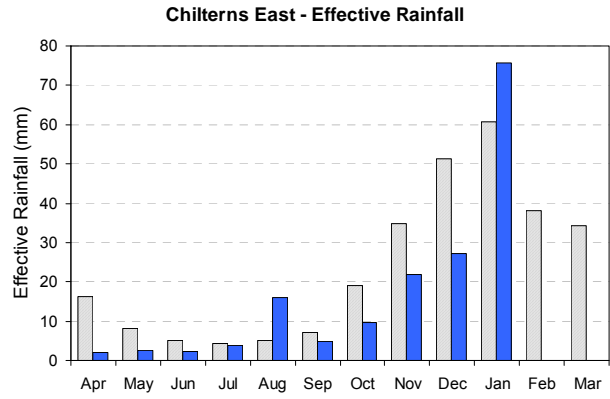
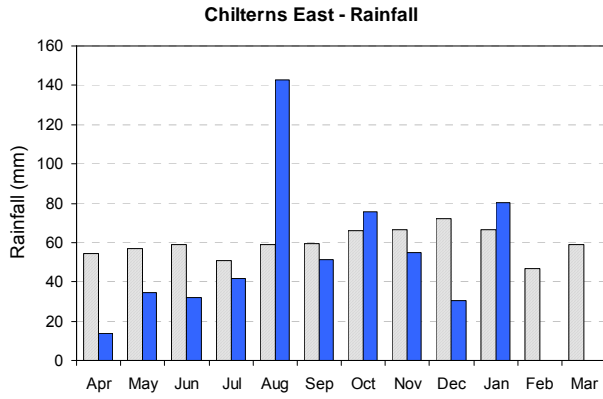
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
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
Colne



 Monthly total rainfall (mm)

 Long-term average rainfall (mm)



 Exceptionally high
 Below normal

 Notably high
 Notably low

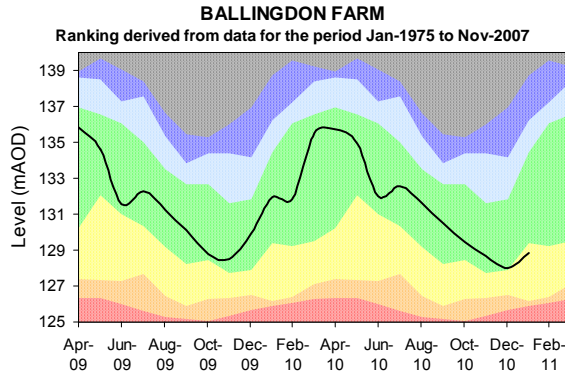
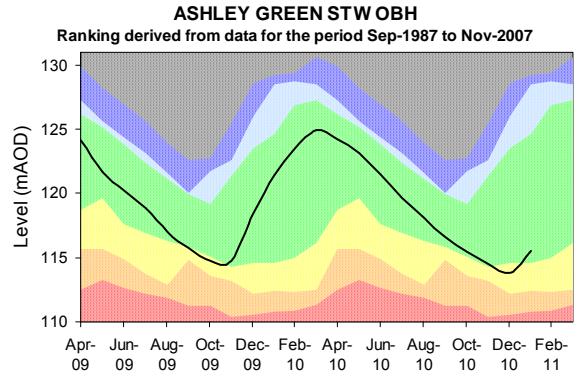
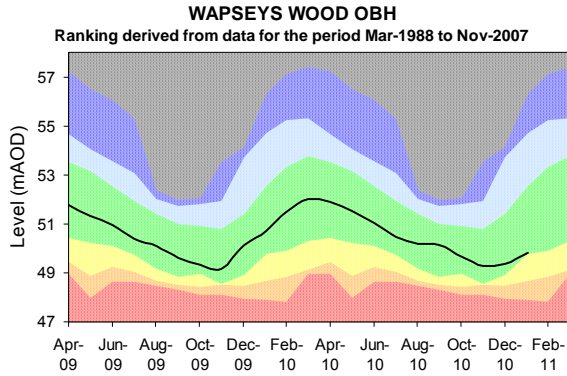
 Above normal
 Exceptionally low

 Normal
 Latest data

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Colne Groundwater



Exceptionally high
Below normal

Notably high
Notably low

Above normal
Exceptionally low

Normal
— Latest data

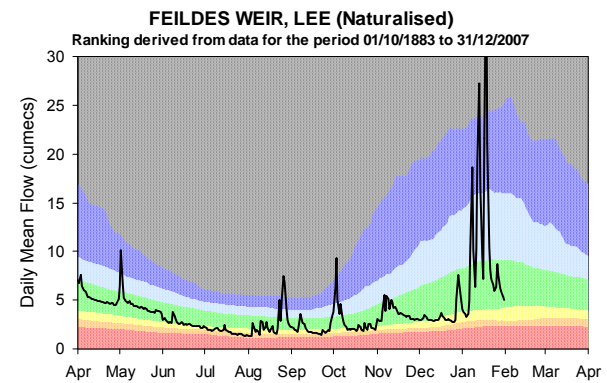
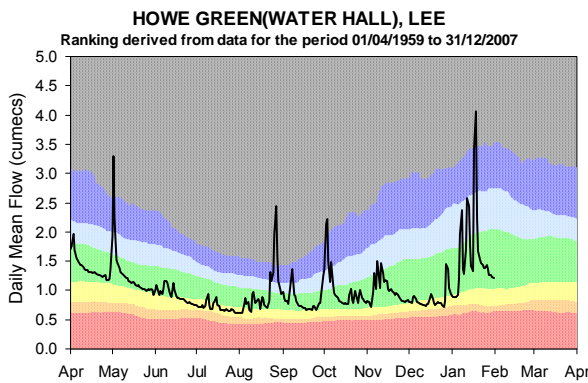
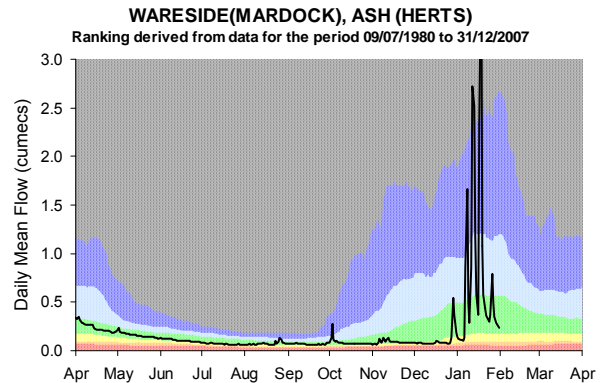
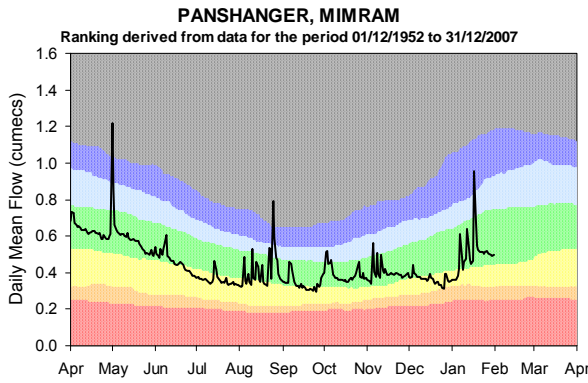
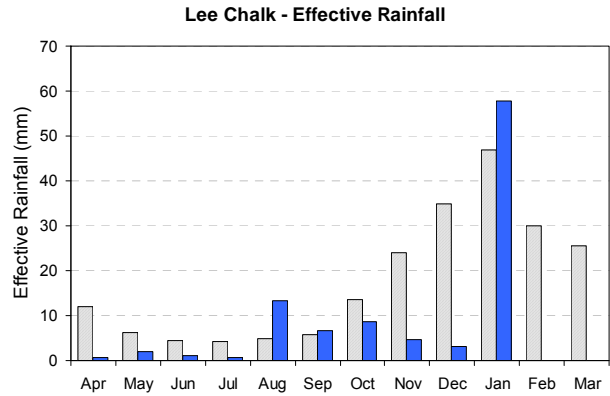
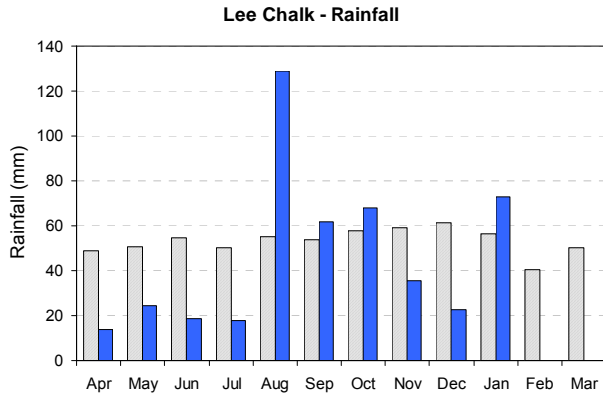
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Upper Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
Below normal

Notably high
Notably low

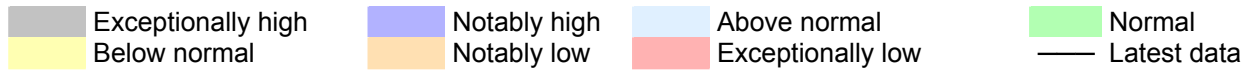
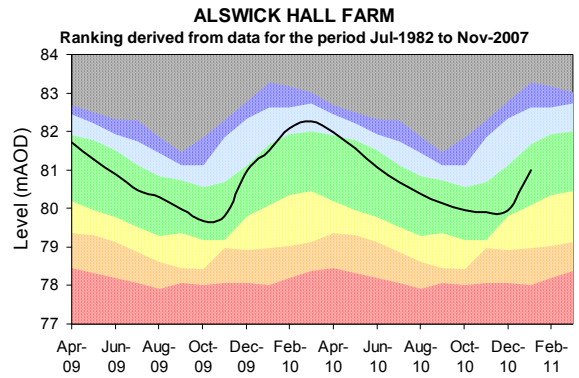
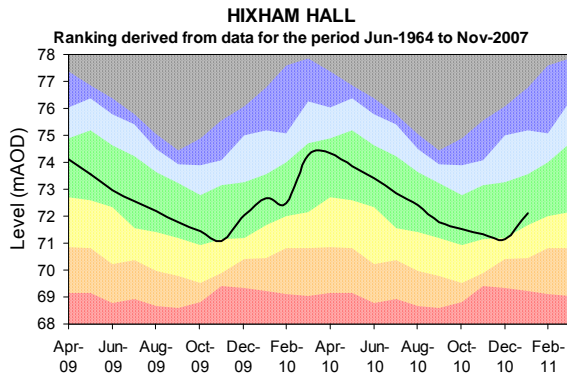
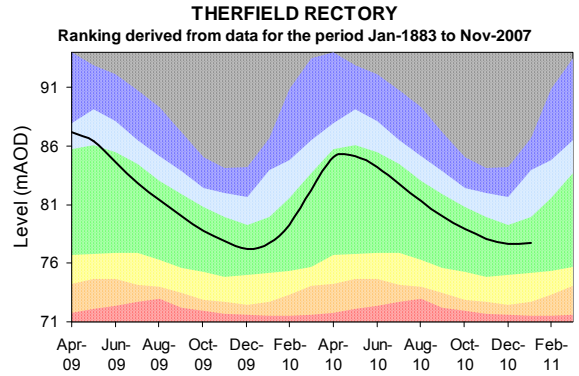
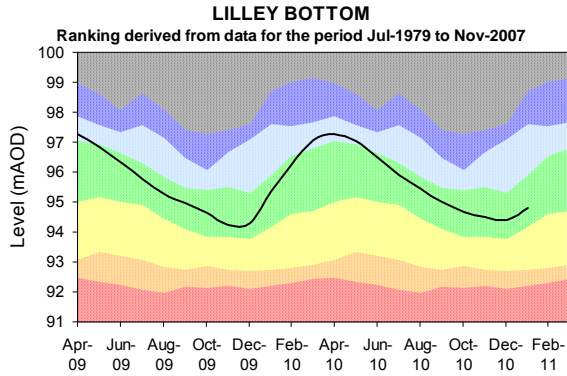
Above normal
Exceptionally low

Normal
Latest data

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Upper Lee Groundwater



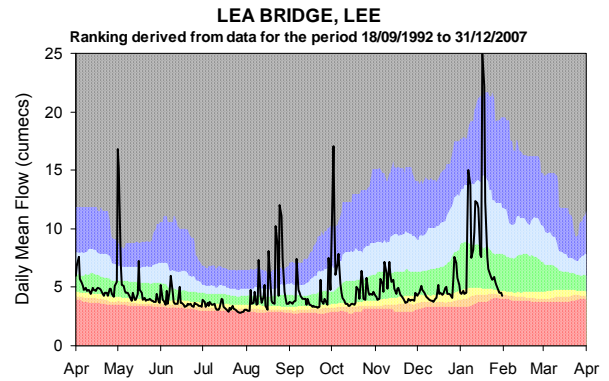
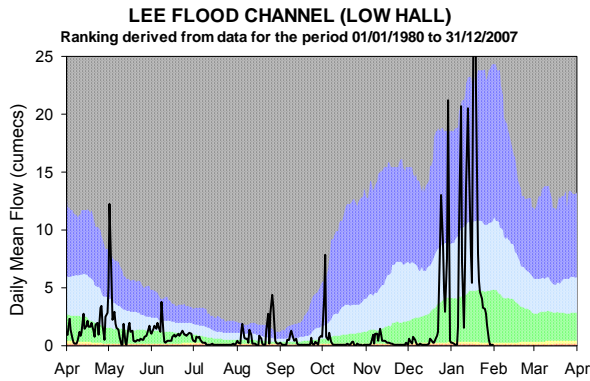
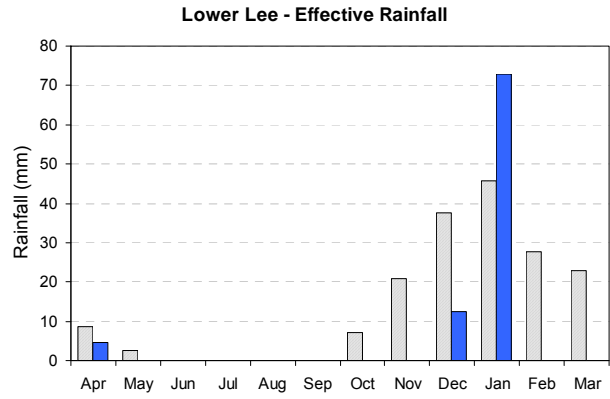
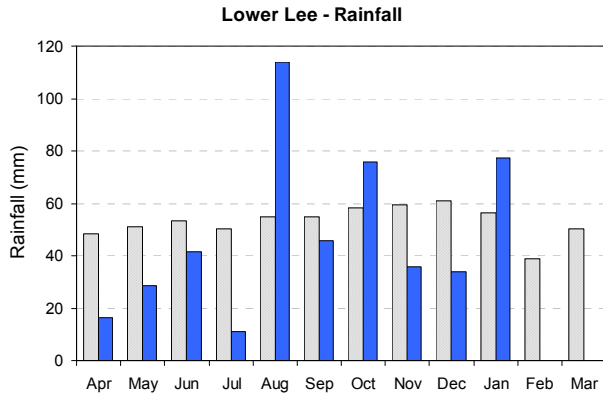
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Lower Lee

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
Below normal

Notably high
Notably low

Above normal
Exceptionally low

Normal
Latest data

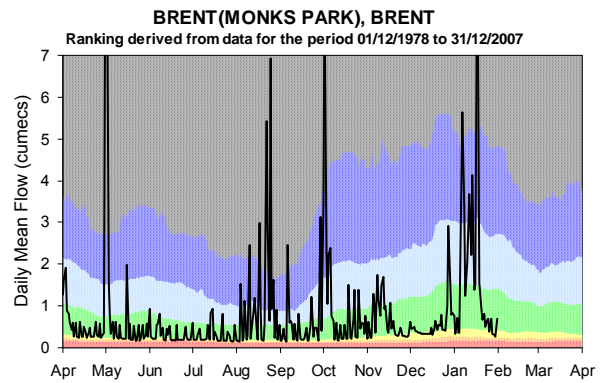
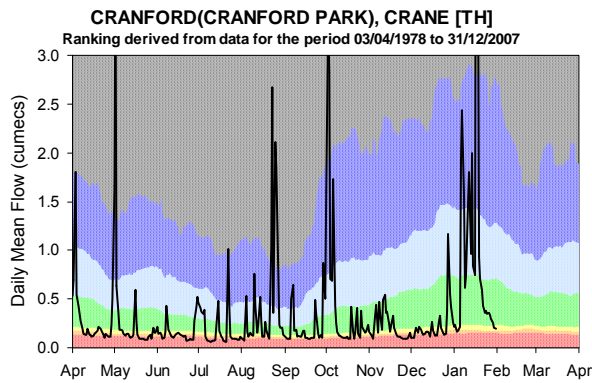
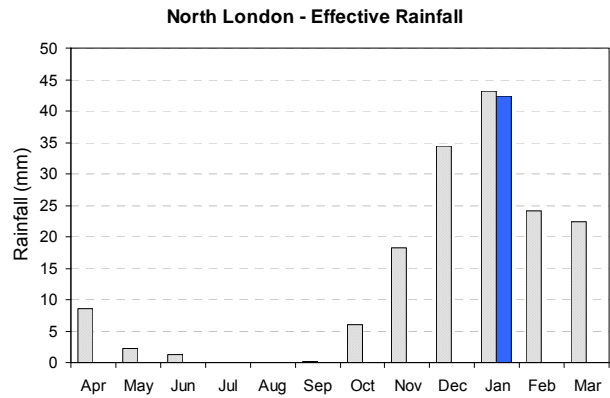
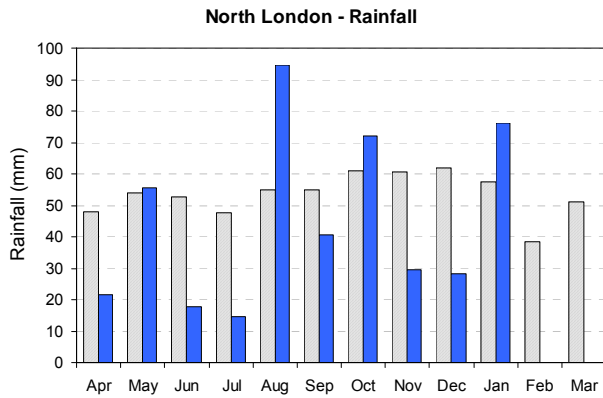
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North London

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
Below normal

Notably high
Notably low

Above normal
Exceptionally low

Normal
Latest data

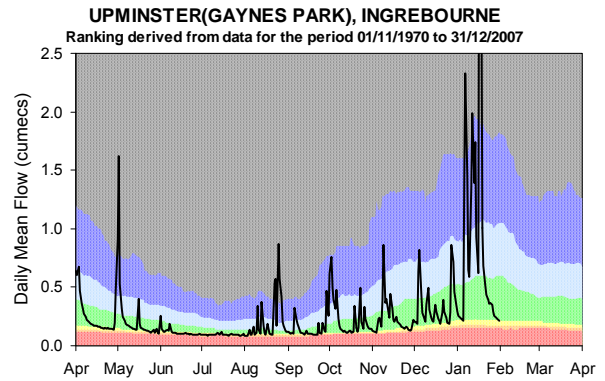
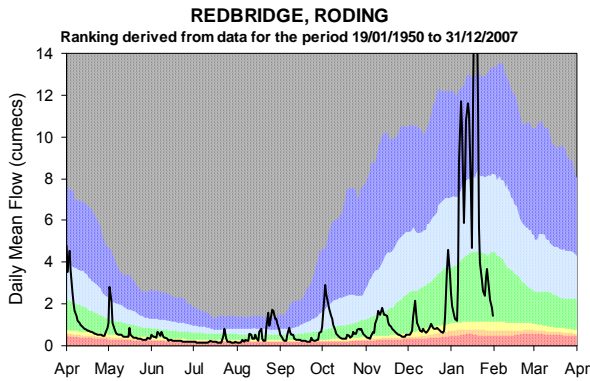
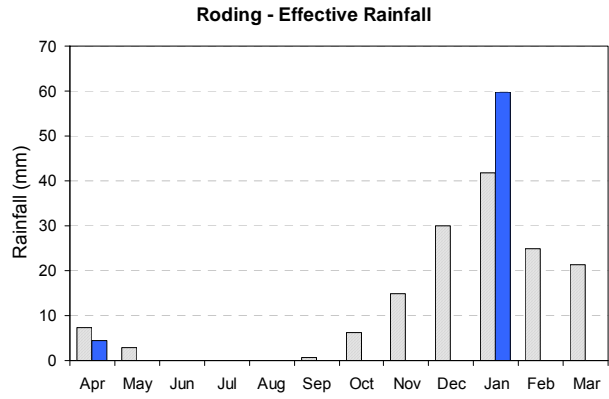
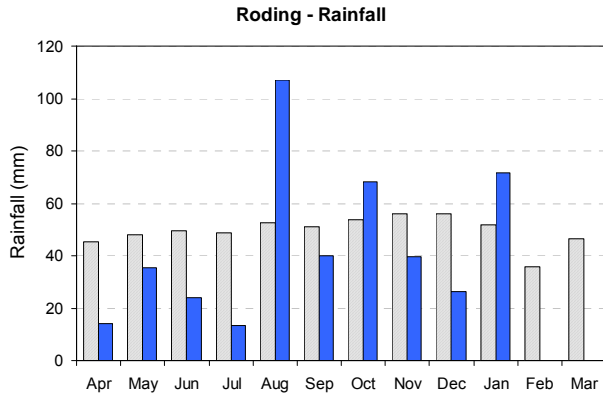
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Roding

Monthly total rainfall (mm)

Long-term average rainfall (mm)



Exceptionally high
 Below normal

Notably high
 Notably low

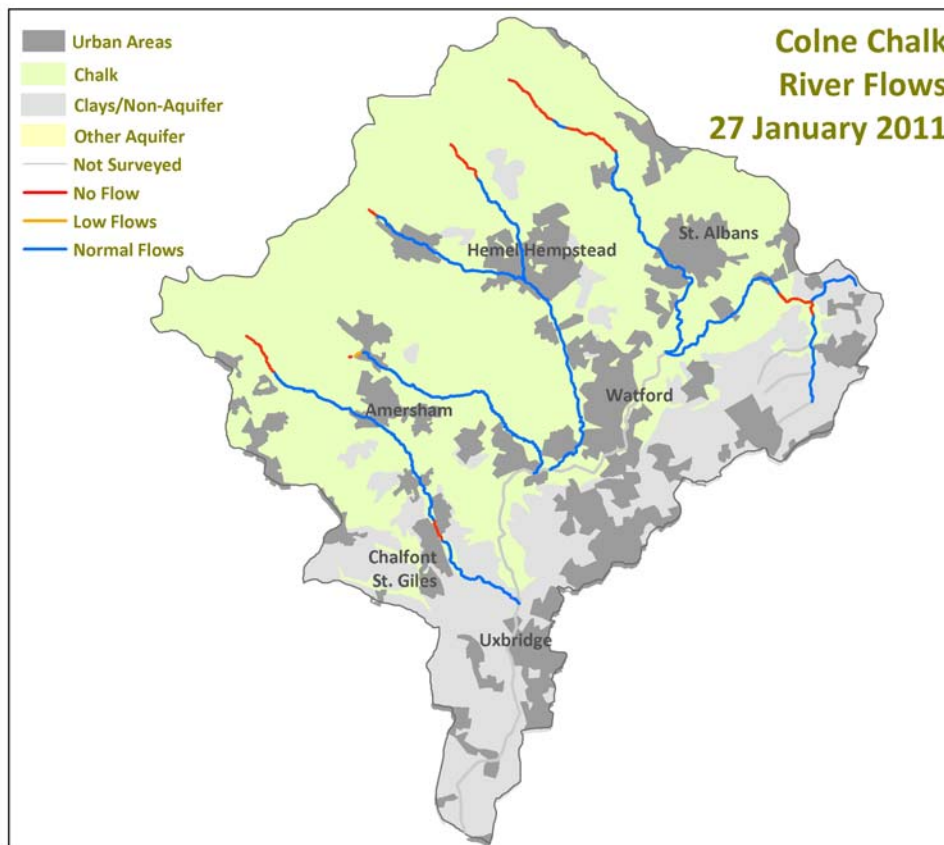
Above normal
 Exceptionally low

Normal
— Latest data

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Flows in the chalk fed rivers – January 2011



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Summary of rainfall, effective rainfall and soil moisture deficit

Rainfall and Effective Rainfall – January 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	80	67	120	76	61	125
Lee - Chalk	73	56	130	58	47	123
North London	76	57	133	42	43	98
Lower Lee	77	56	137	73	46	159
Roding Catchment	72	52	138	60	42	143
North East Area Average	76	58	131	62	48	129

Soil Moisture Deficit (SMD) - January 2011

Area	End of Month SMD (mm)	End of Month SMD LTA (mm)
Chilterns- East - Colne	1	0
Lee - Chalk	1	2
North London	1	2
Lower Lee	1	0
Roding Catchment	1	1
North East Area Average	1	1

Rainfall and Effective Rainfall – Winter total for period 1 October to 31 January 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	241	271	89	134	166	81
Lee - Chalk	200	235	85	74	119	62
North London	206	241	85	42	102	41
Lower Lee	223	235	95	85	111	77
Roding Catchment	205	218	94	60	93	65
North East Area Average	215	240	90	79	118	67

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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).