monthly water situation report

South East Region, North East Thames Area

Summary – June 2011

A dry start to the month gave way to heavy downpours. River flows responded to the rainfall but dropped away towards the end of the month. Groundwater levels ended the month at their lowest June levels since the dry years of 2005-2007.

Rainfall

A dry start to the month gave way to heavy downpours. Unsettled conditions continued during the month. June ended with a very warm spell which was broken by heavy thundery showers. Notable rainfall fell on the 5th, 10th,12th, 15th, 17th,24th and the 28th. The largest daily rainfall total of 23mm was recorded on the 5th at Holland Park P.S. in North London. Due to these heavy rainfall events, North East Thames Area recorded 140% of the Long Term Average (LTA) rainfall for June. North London was the wettest part of North East Thames with 85mm of rain or 162% of its June LTA rainfall. The recent wet weather did little to compensate for the dry start to the year. The seasonal rainfall total for the summer remains significantly below average. North East Thames received only 62% of its summer (April – June) LTA rainfall.

Soil Moisture Deficit/Recharge

The Soil Moisture Deficit (SMD) remained above average by the end of June. North East Thames Area's end of month SMD increased by 10mm during the month to 104mm. The chalk areas received average or above recharge, but were too small to impact groundwater levels.

River Flows

The heavy rainfall showers resulted in sharp rises in river flows throughout June but these quickly dropped back to lower levels. This caused raised monthly mean flows at many of our sites. The flow indicator site on the Brent recorded *above normal* flows, while our sites on the Colne, Mimram and Roding were *below normal* for June. Our indicator sites on the Ash and the Lee at Waterhall were both *notably low.* By the end of June, the rainfall runoff had passed through the system and nearly all rivers had returned to lower than normal flows. The majority of our river flow indicator sites recorded their lowest June monthly mean flow since the dry years of 2005-2007.

Groundwater Levels

Levels continued to decline at all of our groundwater indicator sites during June. The majority of our indicator sites were *below normal* levels for June, with only Therfield Rectory and Alswick Hall Farm remaining at *normal* levels. Groundwater levels across the North East Thames Area ended the month at their lowest June level since the dry years of 2005-2007.

Environmental Impact

The table below shows the abstraction licence flow constraints that were in force in June, out of a Summer maximum of 29:

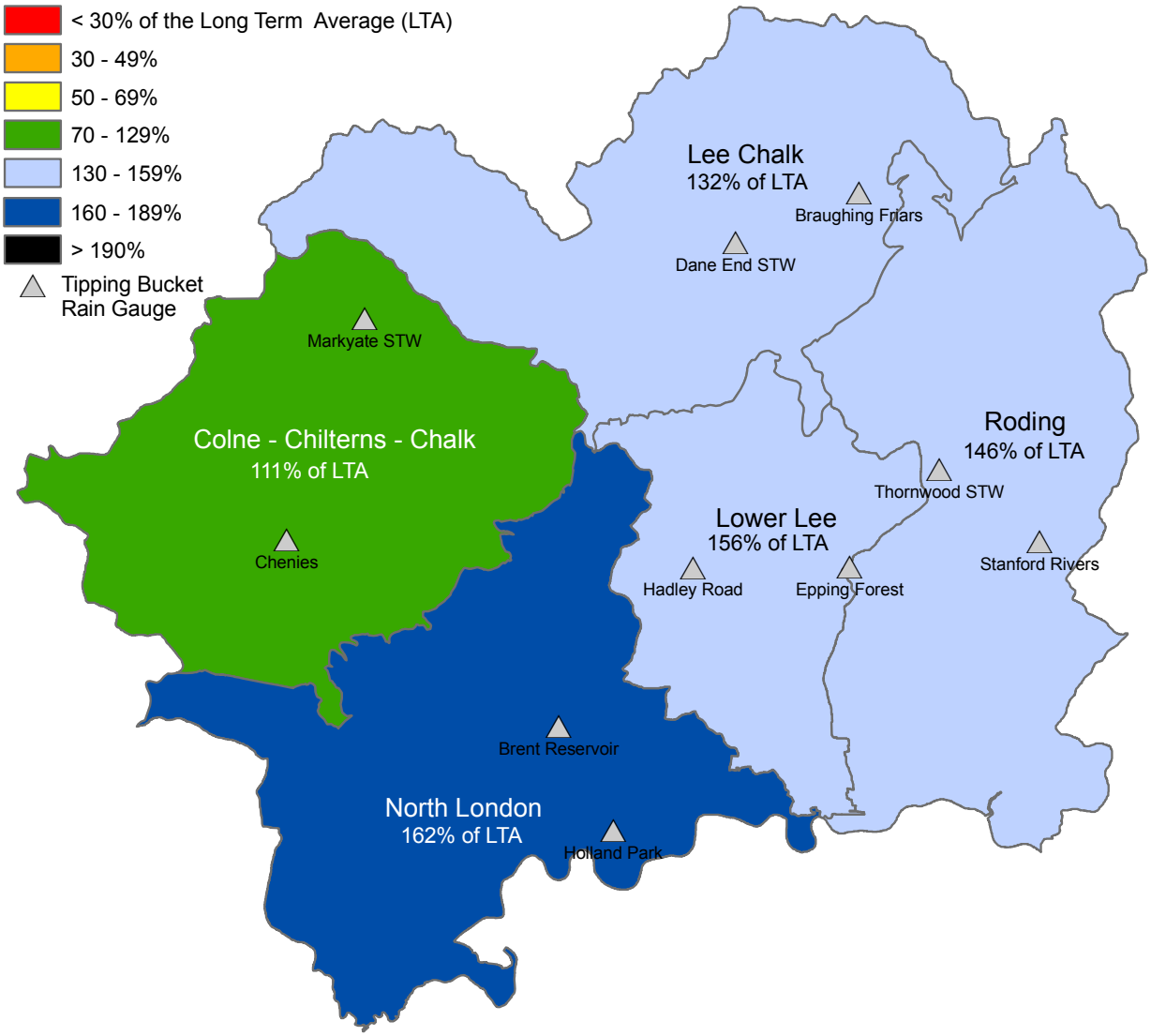
Week Commencing	6 June	13 June	20 June	27 June
Number of Constraints	9	6	2	8

Sources

With the drop in groundwater levels, river sources have continued to migrate downstream on many chalk rivers. Flows have decreased on the River Beane, while sources have moved notably downstream on the River Ash, River Stort and the River Bulbourne. The River Misbourne has maintained its flow from its current source at Deep Mill Lane to its confluence with the River Colne.

Author: Geoff Angell Contact details: 01707 632513

Rainfall Map



Data source: Rainfall calculated using Thames Soil Moisture Model.

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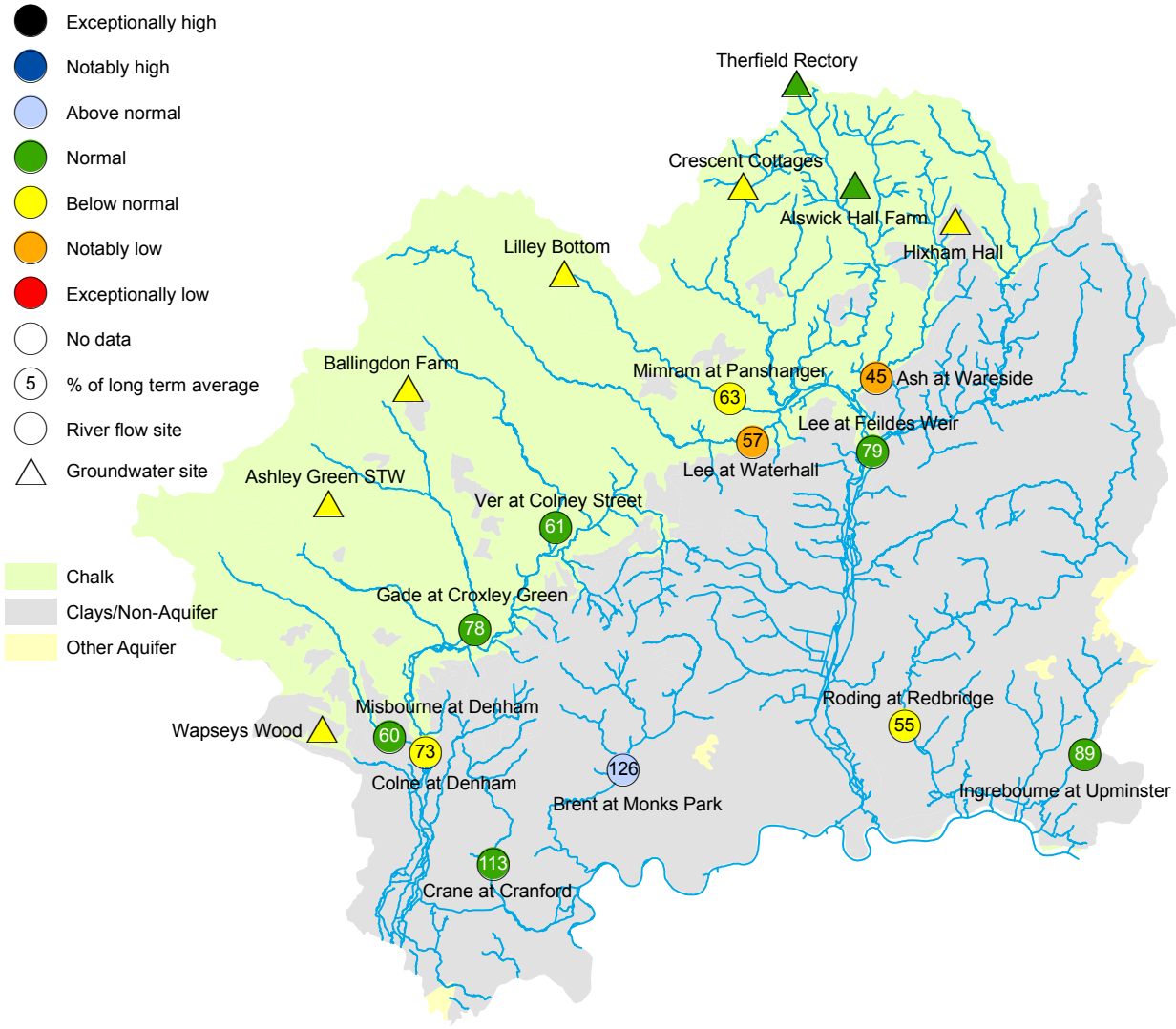
River Flow and Groundwater Map

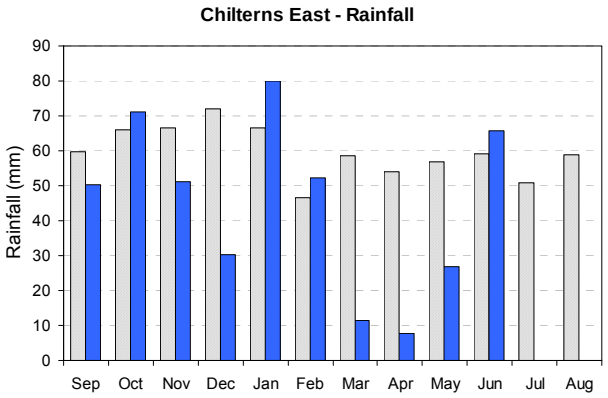


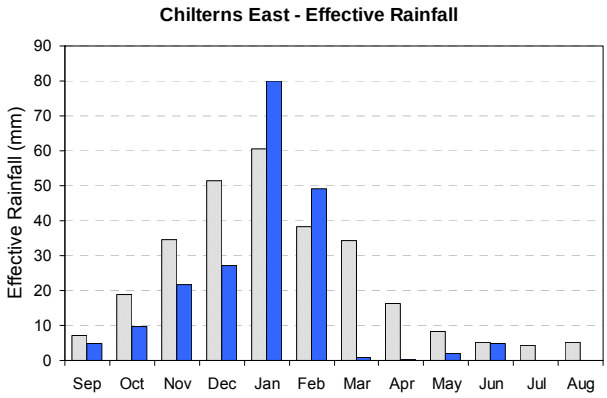
Groundwater site status based on end of month level. Surface water site status based on mean monthly flow.

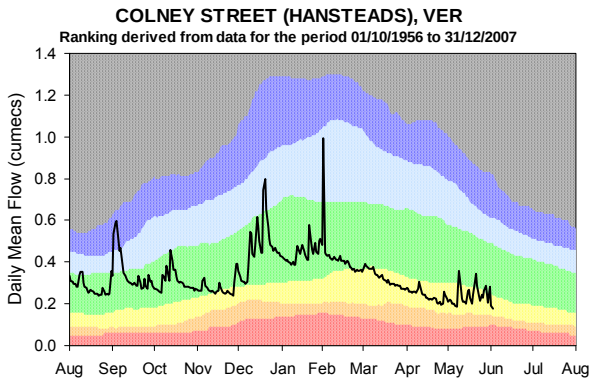
Colne

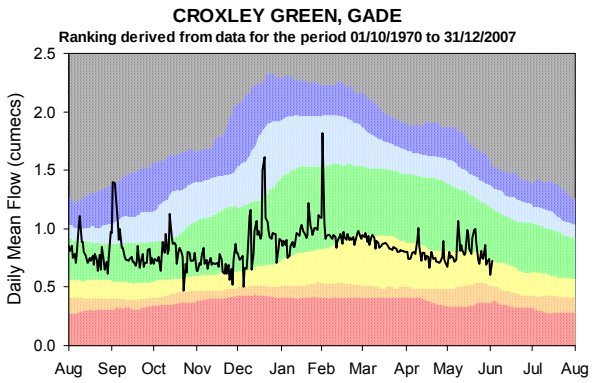
Monthly total rainfall (mm)

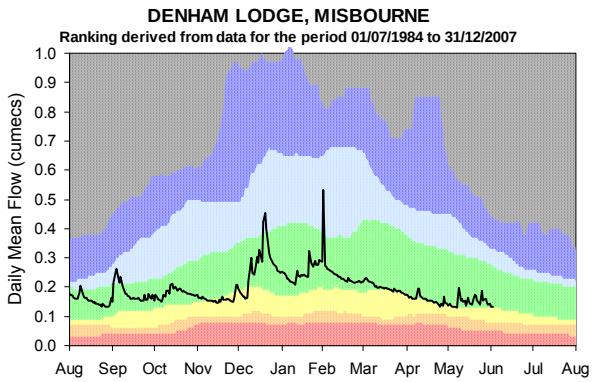
Long-term average rainfall (mm)

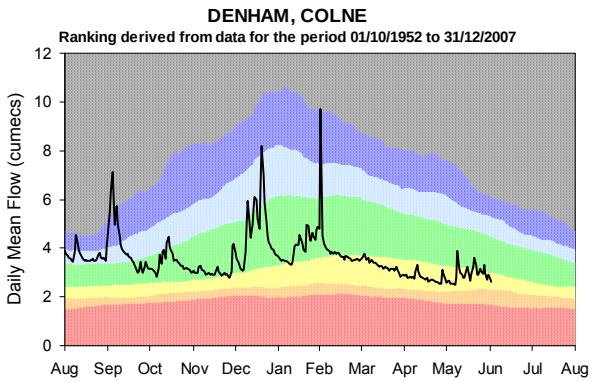






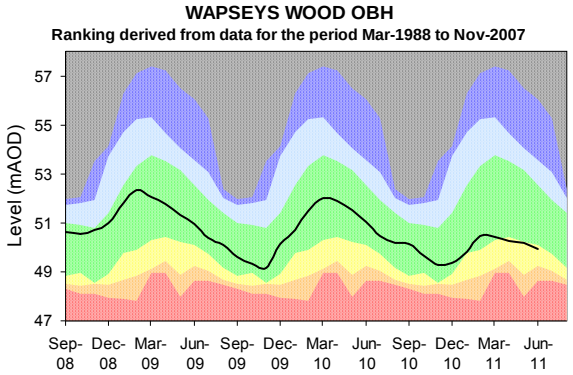


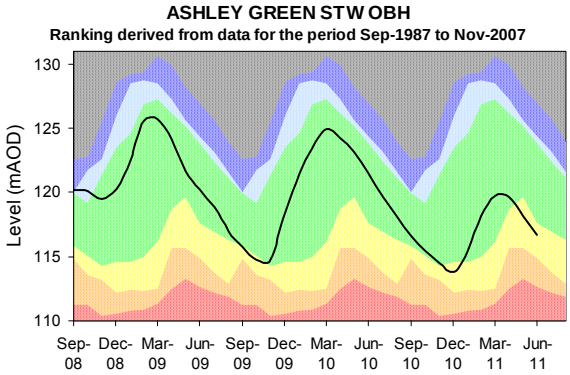


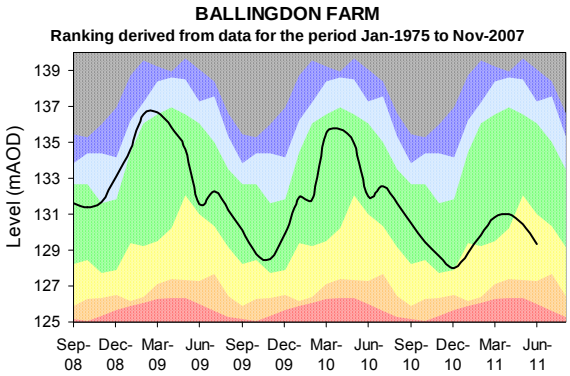


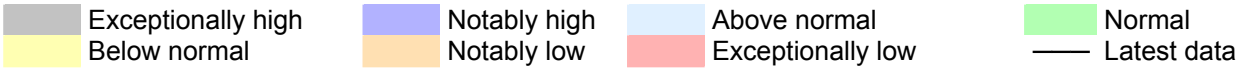
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Colne Groundwater





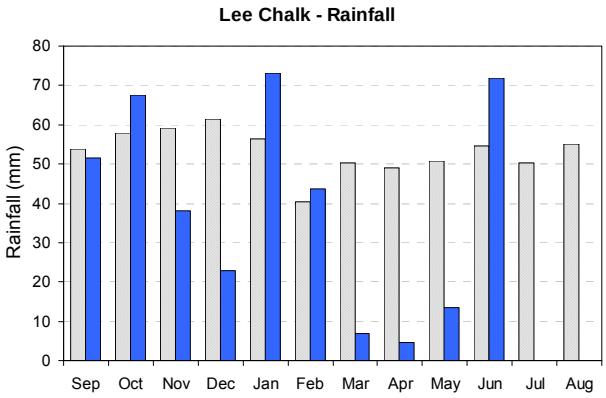


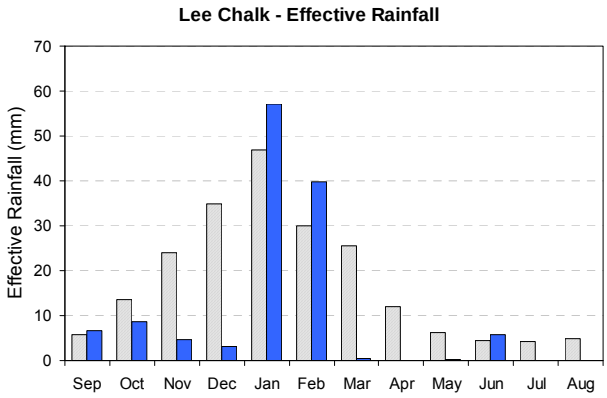


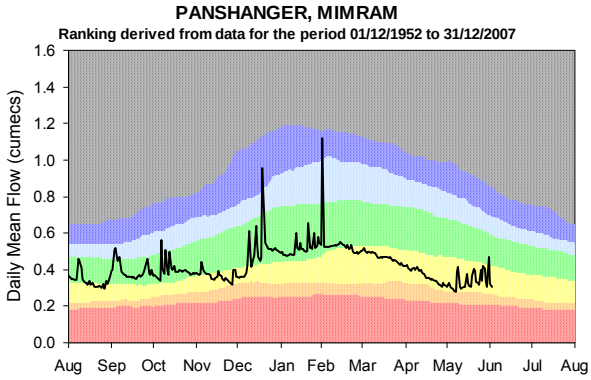
Upper Lee

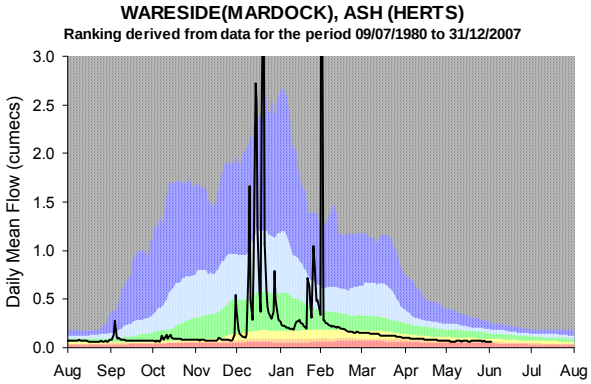
Monthly total rainfall (mm)

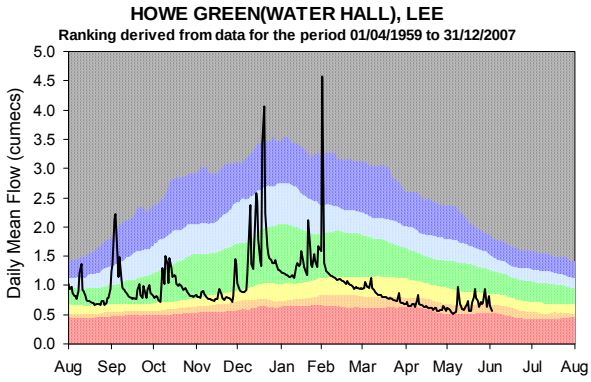
Long-term average rainfall (mm)

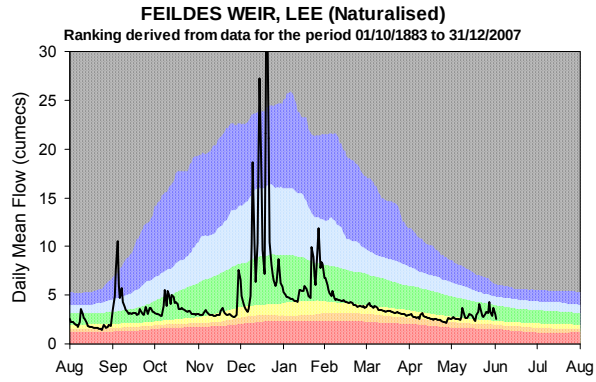










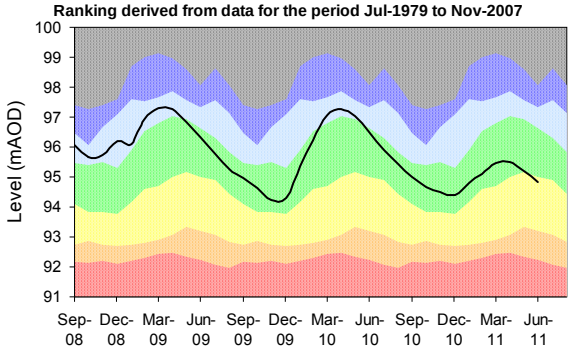


Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Upper Lee Groundwater

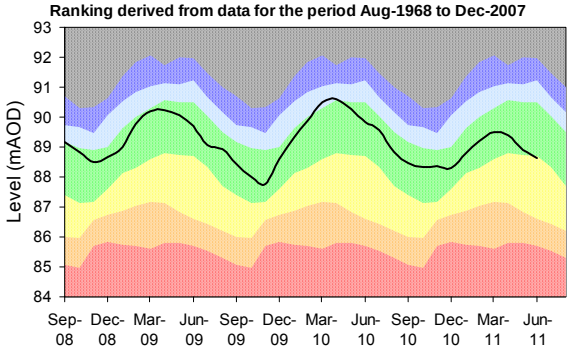
LILLEY BOTTOM

Ranking derived from data for the period Jul-1979 to Nov-2007



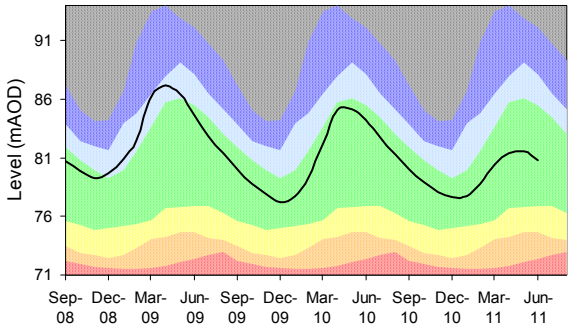
CRESCENT COTTAGES

Ranking derived from data for the period Aug-1968 to Dec-2007



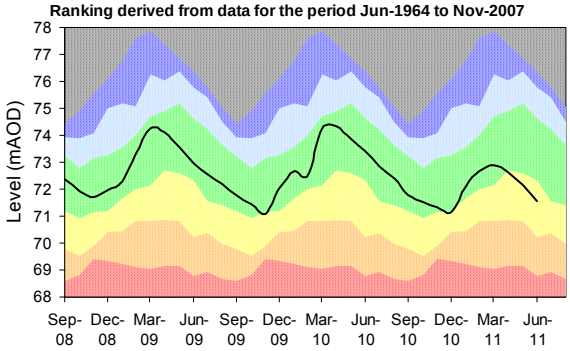
THERFIELD RECTORY

Ranking derived from data for the period Jan-1883 to Nov-2007



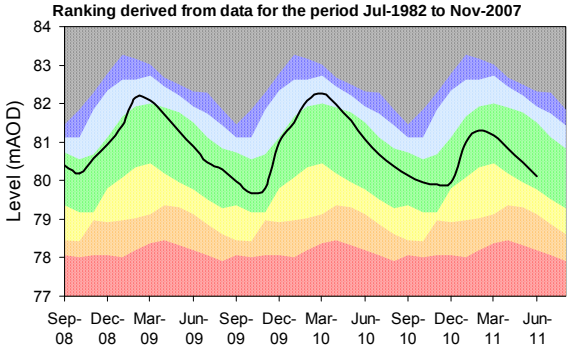
HIXHAM HALL

Ranking derived from data for the period Jun-1964 to Nov-2007



ALSWICK HALL FARM

Ranking derived from data for the period Jul-1982 to Nov-2007



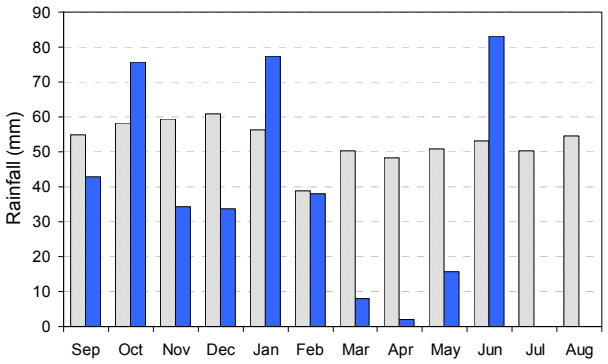
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Lower Lee

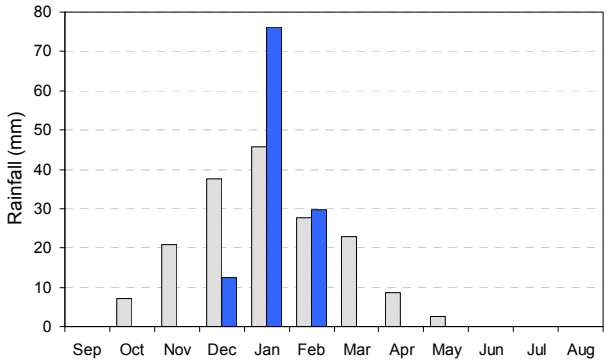
Monthly total rainfall (mm)

Long-term average rainfall (mm)

Lower Lee - Rainfall

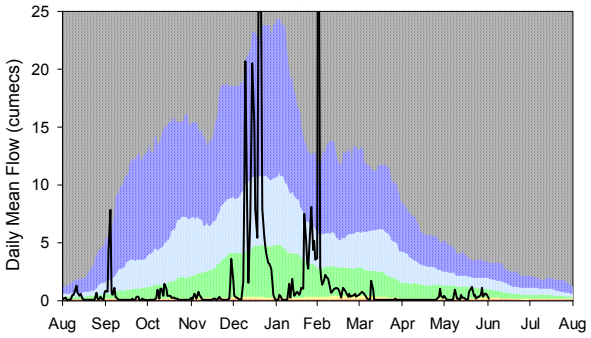


Lower Lee - Effective Rainfall



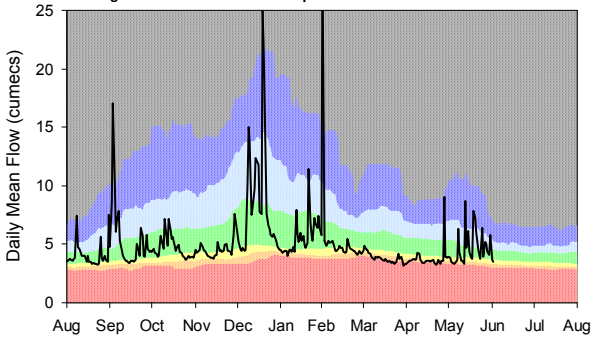
LEE FLOOD CHANNEL (LOW HALL)

Ranking derived from data for the period 01/01/1980 to 31/12/2007



LEA BRIDGE, LEE

Ranking derived from data for the period 18/09/1992 to 31/12/2007



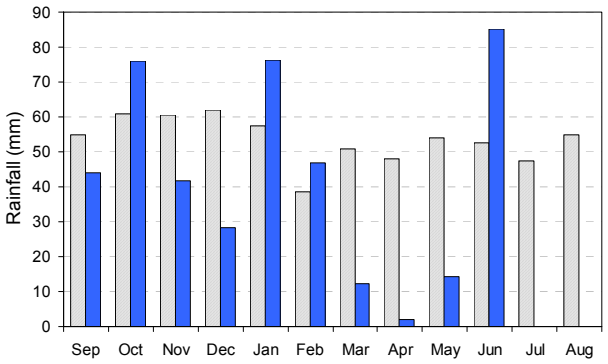
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

North London

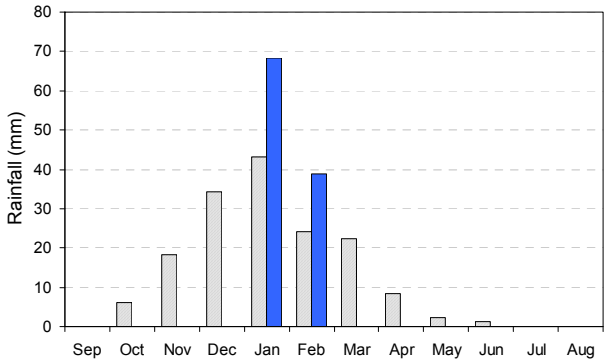
Monthly total rainfall (mm)

Long-term average rainfall (mm)

North London - Rainfall

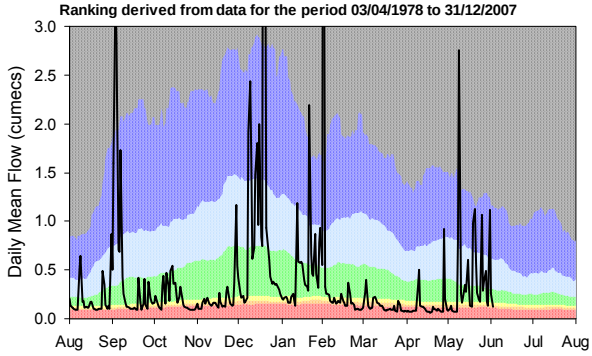


North London - Effective Rainfall



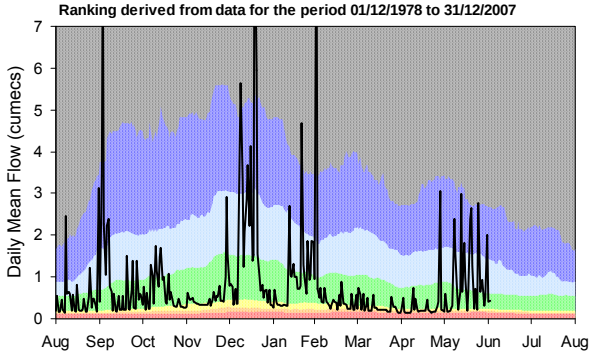
CRANFORD(CRANFORD PARK), CRANE [TH]

Ranking derived from data for the period 03/04/1978 to 31/12/2007



BRENT(MONKS PARK), BRENT

Ranking derived from data for the period 01/12/1978 to 31/12/2007



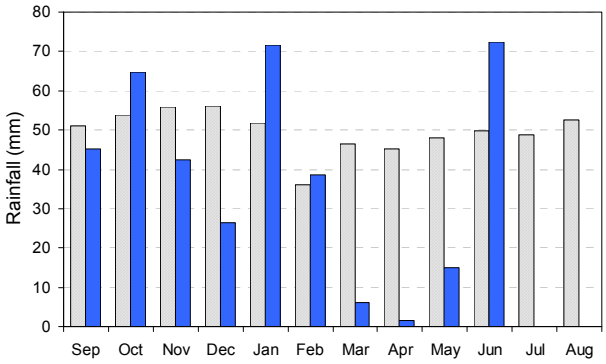
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Roding

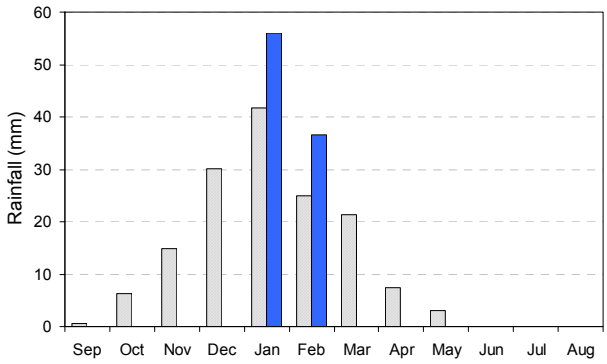
Monthly total rainfall (mm)

Long-term average rainfall (mm)

Roding - Rainfall

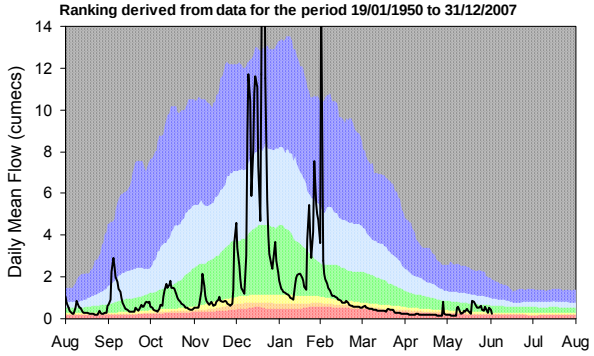


Roding - Effective Rainfall



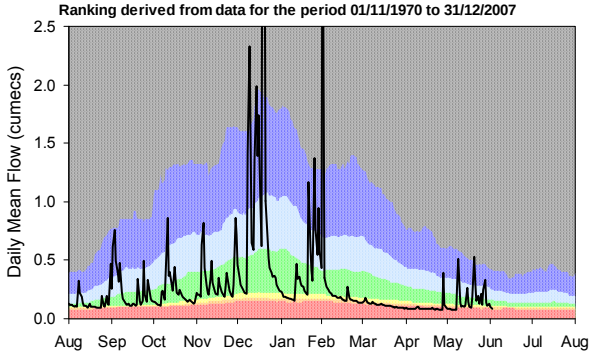
REDBRIDGE, RODING

Ranking derived from data for the period 19/01/1950 to 31/12/2007



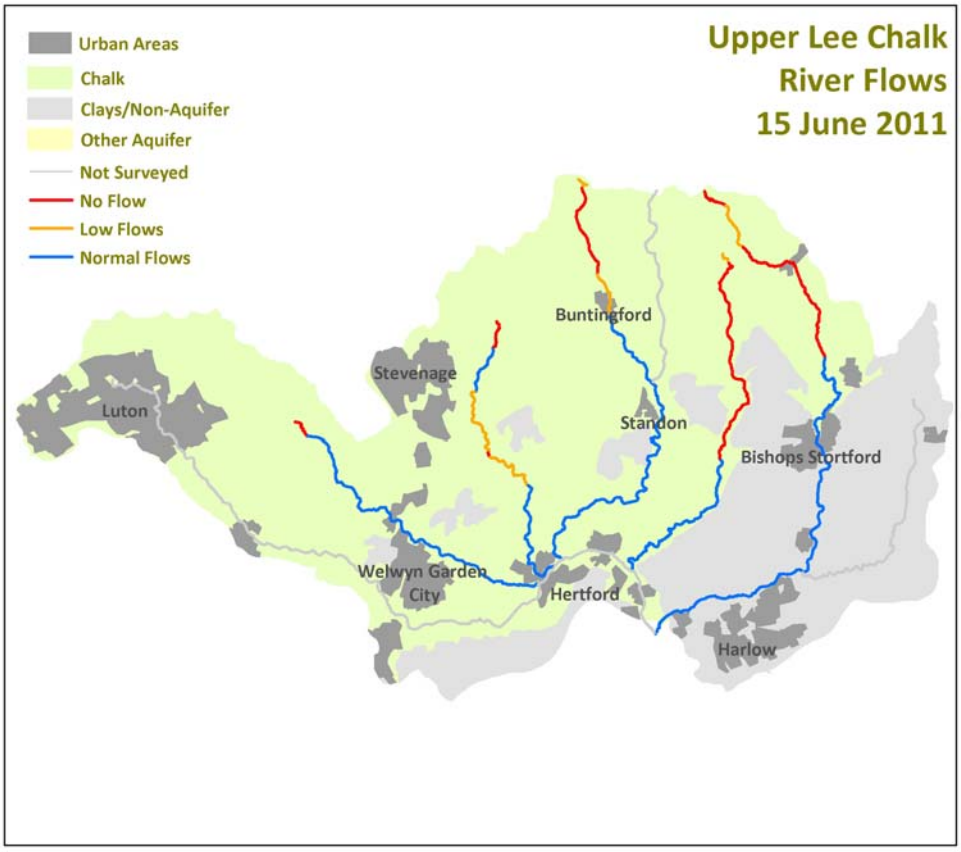
UPMINSTER(GAYNES PARK), INGREBOURNE

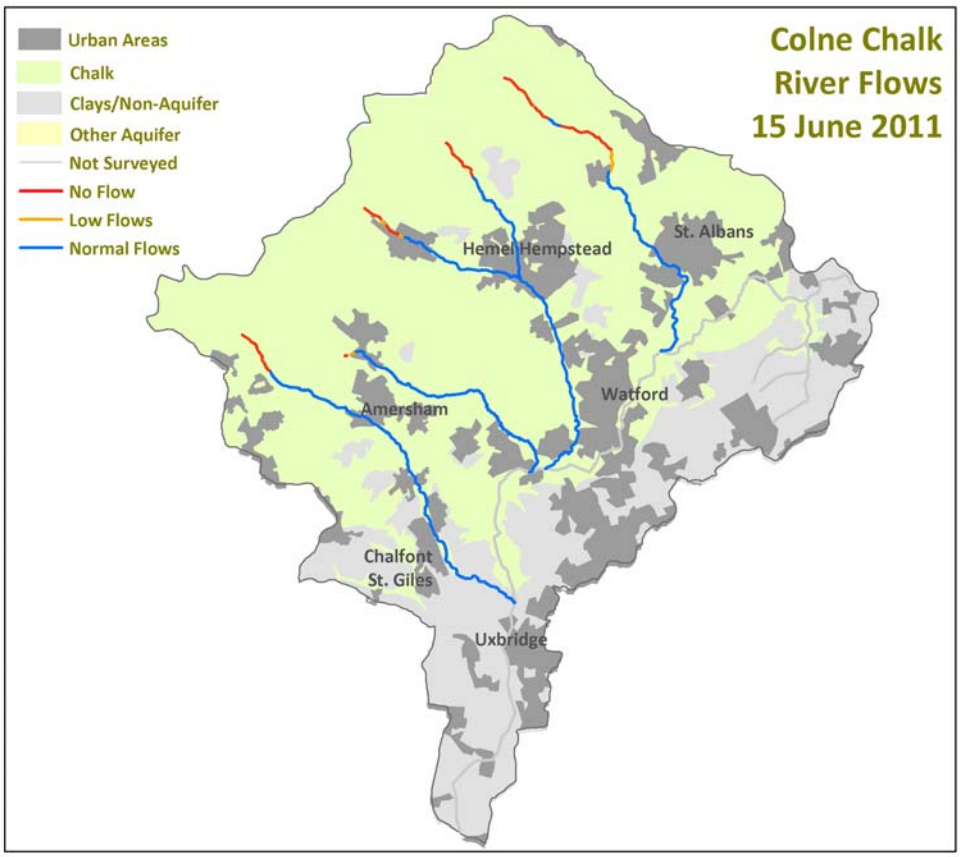
Ranking derived from data for the period 01/11/1970 to 31/12/2007



Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

Flows in the chalk fed rivers – June 2011





Summary of rainfall, effective rainfall and soil moisture deficit

Rainfall and Effective Rainfall – June 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	66	59	111	5	5	100
Lee - Chalk	72	54	132	6	4	150
North London	85	53	162	0	1	0
Lower Lee	83	53	156	0	0	-
Roding Catchment	72	50	146	0	0	-
North East Thames Area Average	76	54	140	2	2	110

Soil Moisture Deficit (SMD) - June 2011

Area	End of Month SMD (mm)	End of Month SMD LTA (mm)
Chilterns- East - Colne	101	77
Lee - Chalk	104	81
North London	105	84
Lower Lee	104	83
Roding Catchment	104	83
North East Thames Area Average	104	82

Rainfall and Effective Rainfall – Summer total for period 1 April to 30 June 2011

Area	Rainfall (mm)			Effective Rainfall (mm)		
	Total (mm)	LTA (mm)	% of LTA	Total (mm)	LTA (mm)	% of LTA
Chilterns- East - Colne	100	170	59	7	30	23
Lee - Chalk	90	154	58	6	22	27
North London	101	155	65	0	12	0
Lower Lee	101	152	66	0	11	0
Roding Catchment	89	143	62	0	10	0
North East Thames Area Average	96	155	62	3	17	15

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 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).