

# monthly water situation report

## South East Region, West Thames Area

### Summary – February 2012

February was another dry month with below average rainfall for West Thames Area. Rainfall has been below average in 12 of the 17 months since October 2010, resulting in the second driest corresponding October to February period since records began in 1920. Mean February river flows were exceptionally or notably low for the time of year at 14 of our 15 indicator sites and groundwater levels at the end of February were notably or exceptionally low at 9 of our 11 indicator sites. On the 20th February the south east of England officially moved into drought status.

### Rainfall

February was another dry month with 42% of the long-term average monthly rainfall. About half of this fell as snow on the 4th which melted gradually over three days. The five months from October to February had two-thirds of their usual rainfall making this the second consecutive winter with below average rainfall. The 17 months since October 2010 have been the second driest corresponding period for West Thames Area since records began in 1920; only 1922 was drier. On the 20th February the south east of England officially moved into drought status.

### Soil Moisture Deficit/Recharge

Significant soil moisture deficits remained in the Berkshire Downs, Chilterns, Ock and Thame catchments at the end of February. This is very unusual for the time of year, when winter rainfall has usually wetted up the soil, allowing groundwater recharge. The dry soils mean that effective rainfall from October to February was just 17% of the long term average for this period. This is compounding the effects of last winter, when the six months from October to March saw only 51% of the usual winter recharge.

### River Flows

Mean monthly river flows in February were notably low at seven of our indicator sites, exceptionally low at another seven and below normal at one, the River Wye. On most rivers, status deteriorated from January to February, most notably on the River Wey and the River Loddon, where flows had previously been sustained by slightly higher rainfall and groundwater levels. The lowest mean February flow since 1976 was recorded on two groundwater-fed rivers - the River Coln at Bibury and the River Kennet at Theale - and on two rivers dependent on regular rainfall - the River Cherwell at Banbury and the River Evenlode at Cassington.

### Groundwater Levels

Groundwater levels in the Chalk at the end of February were notably low at three sites (Rockley, Gibbet Cottages and Tile Barn Farm) and exceptionally low at Stonor Park where the level was below the current detection limit. In the Oolitic limestone of the Cotswolds, the groundwater level was below normal at Ampney Crucis and exceptionally low at Jackaments Bottom and Fringford.

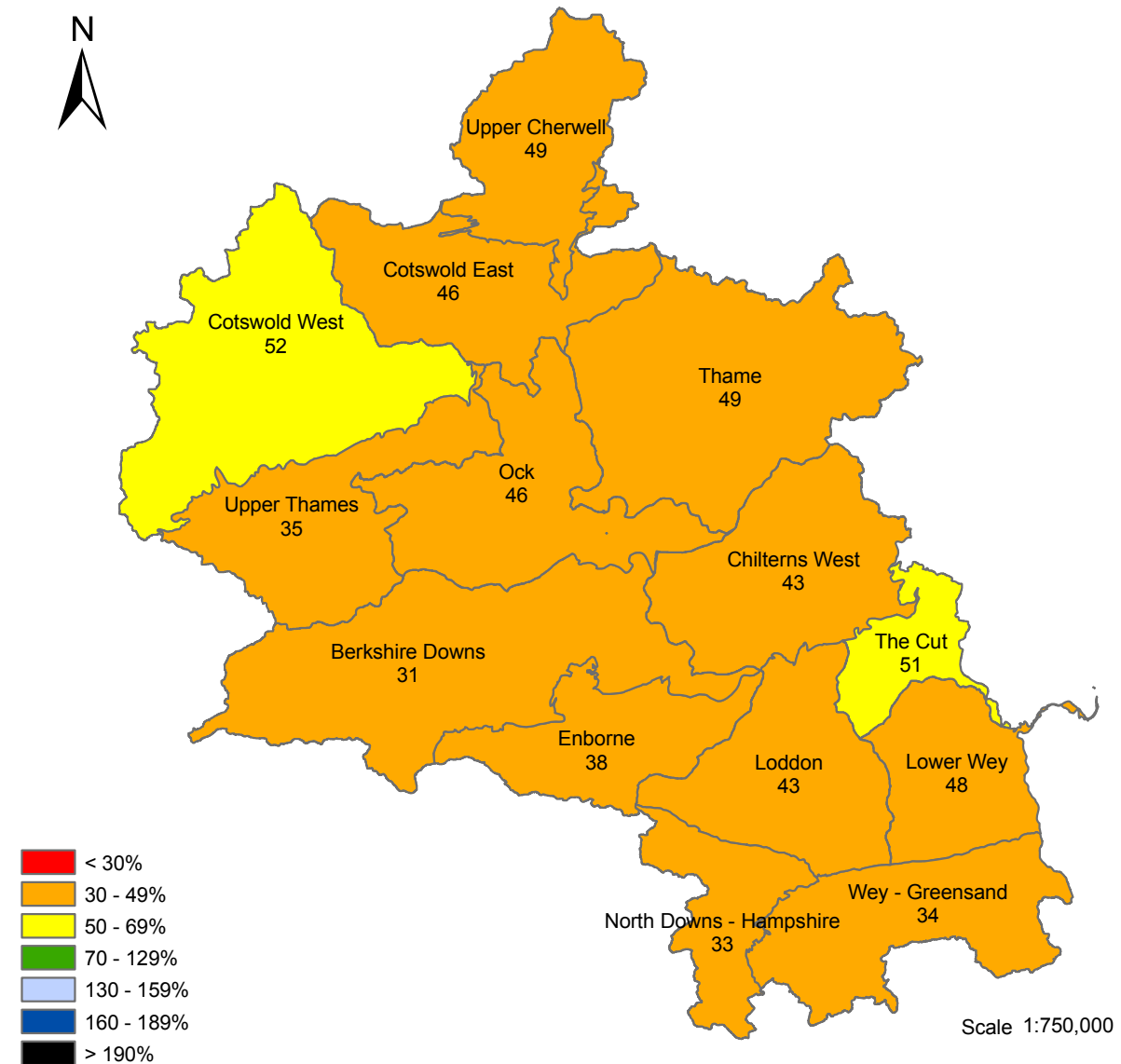
### Environmental Impact

There were 23 flow constraints on abstraction licences in force at the end of February.

Author: [Catherine Sefton](#) Contact details: 01491 828424

# Water Resources Situation (1)

## Rainfall



February rainfall totals as a percentage of the 1961-90 February Long term Average (LTA). Data based on the Thames Soil Moisture Model, except for the Enborne and the Cut, which use NCIC (National Climate Information Centre) data (Source: Met Office © Crown Copyright).

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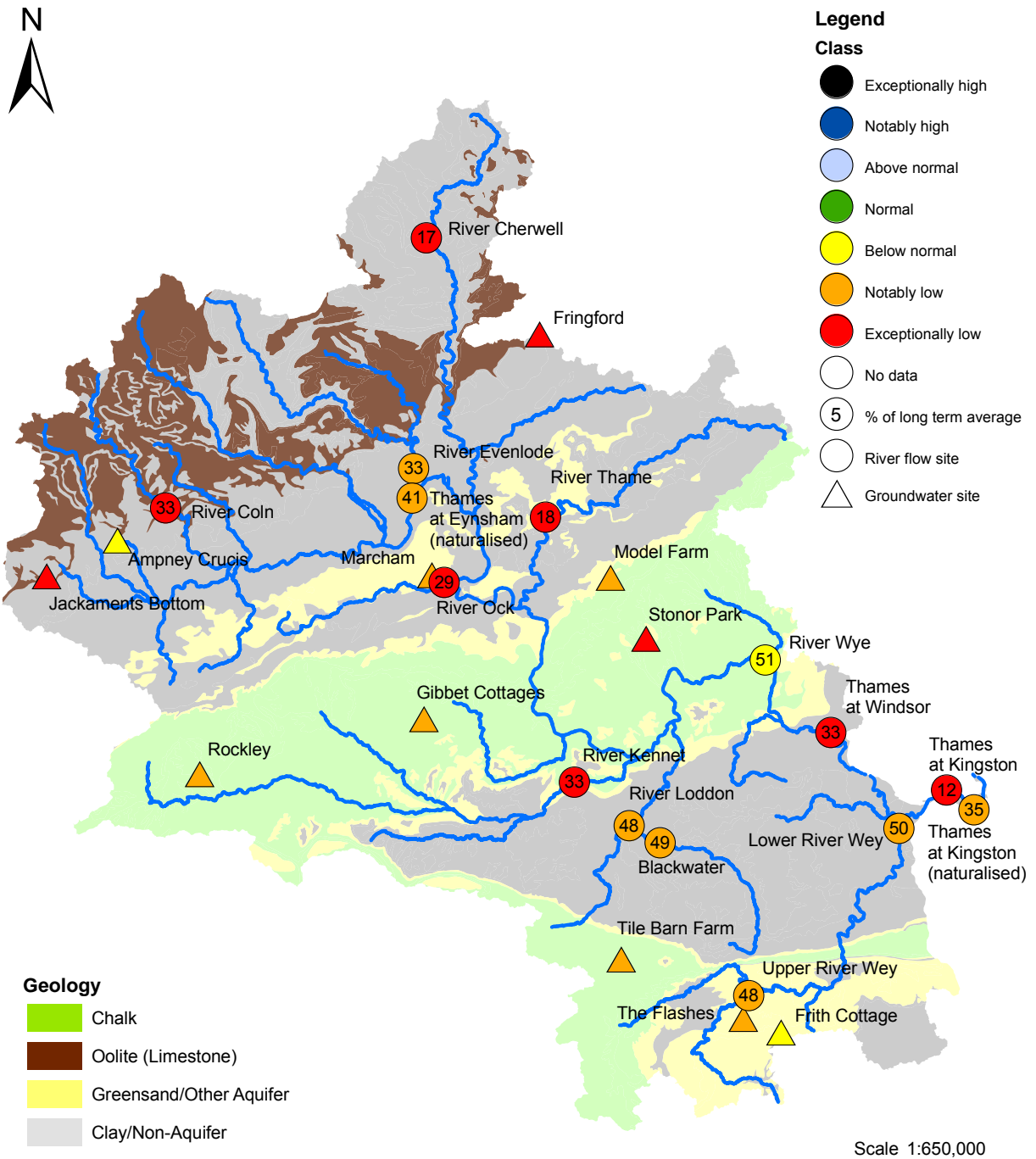
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# Water Resources Situation (2)

## River flow and groundwater level



Monthly mean river flow for February 2012, expressed as a percentage of the February long term average and classed relative to analysis of historic February monthly means (Source: Environment Agency). Groundwater levels at the end of February classed relative to an analysis of historic February groundwater levels (Source: Environment Agency). Geological map reproduced with kind permission from the UK Groundwater Forum, BGS © NERC.

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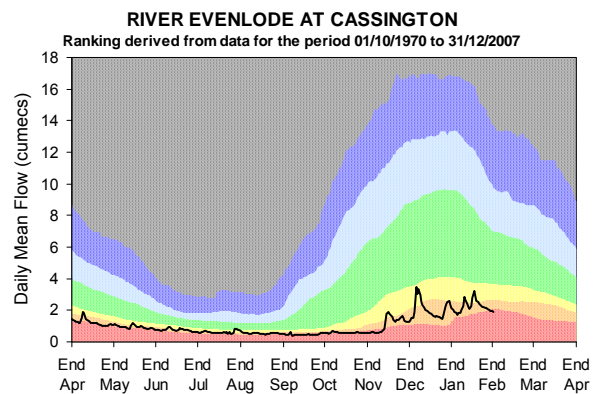
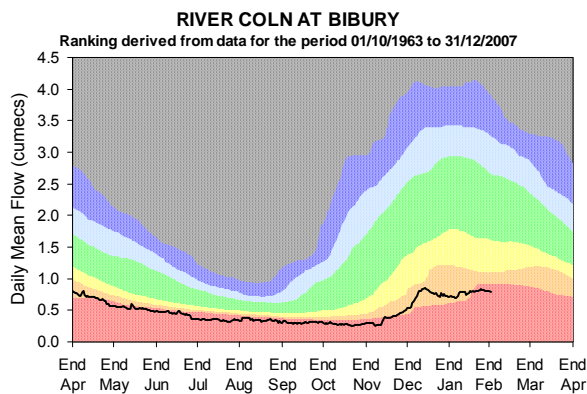
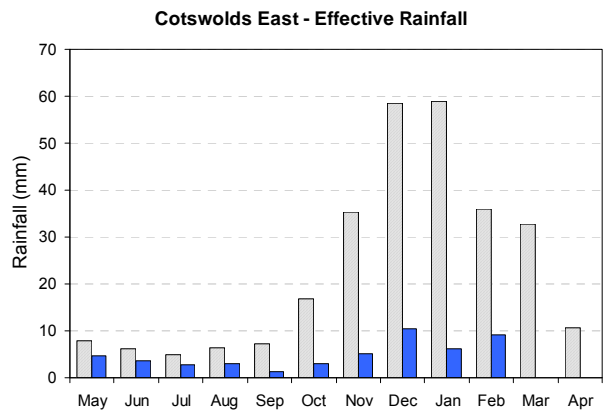
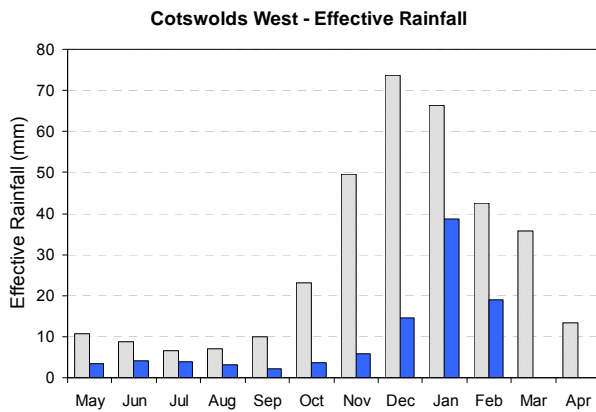
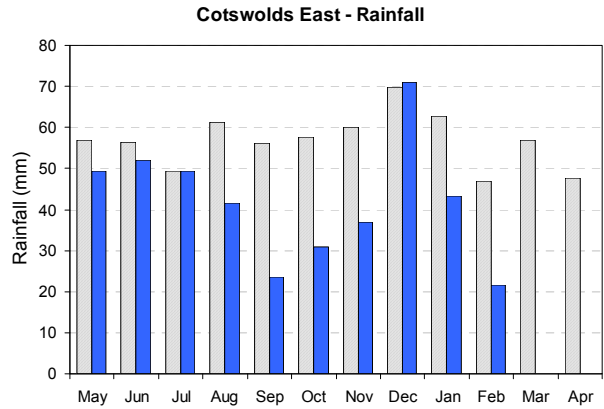
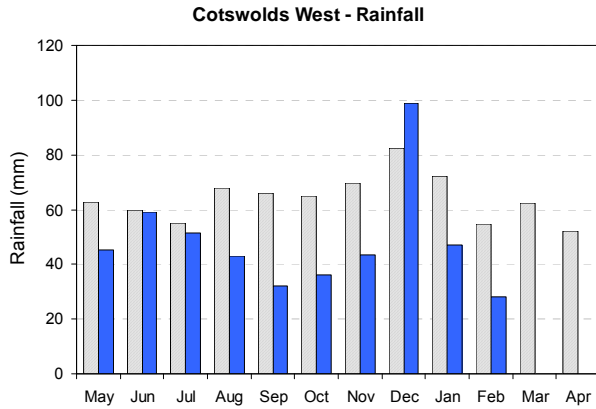
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# Rainfall, effective rainfall and river flow (1)

## Cotswold West and River Coln

## Cotswold East and River Evenlode



### Rainfall and effective rainfall plots

Monthly total rainfall (mm)

Long-term average rainfall (mm)

### River flow plots

Exceptionally high  
Below normal

Notably high  
Notably low

Above normal  
Exceptionally low

Normal  
Latest data

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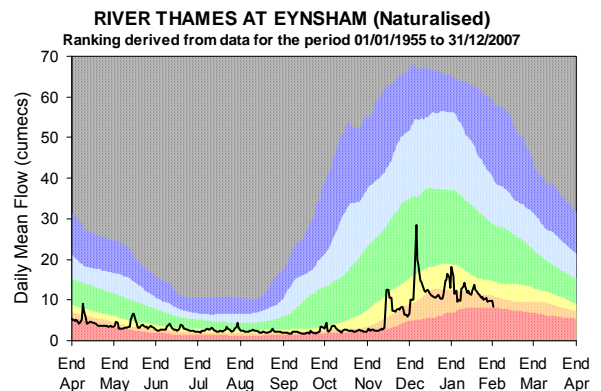
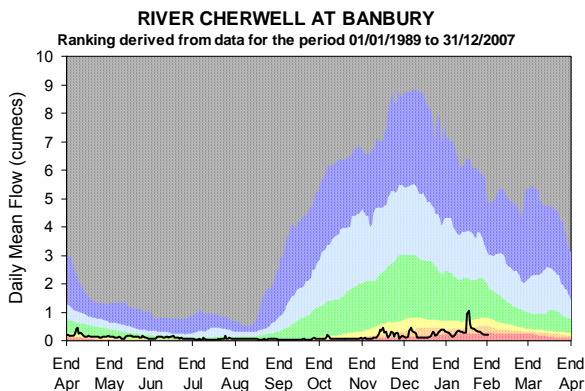
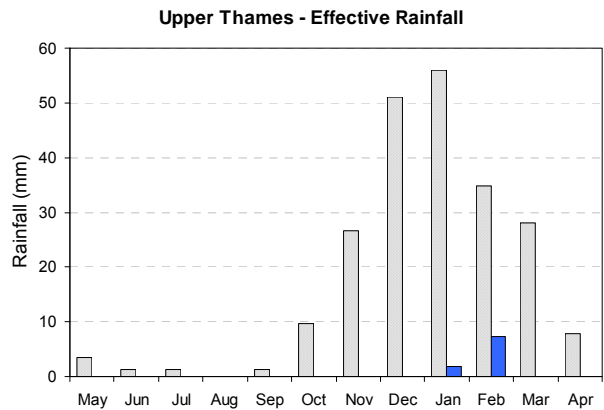
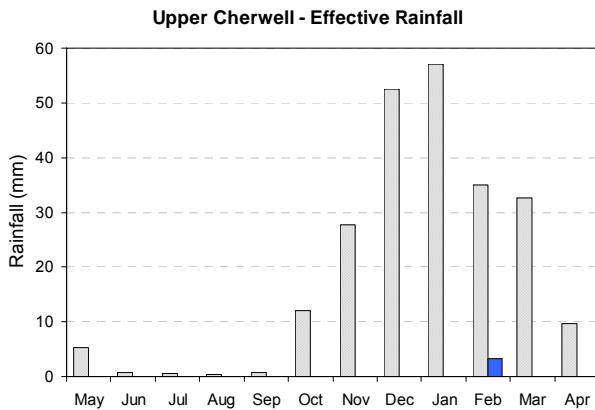
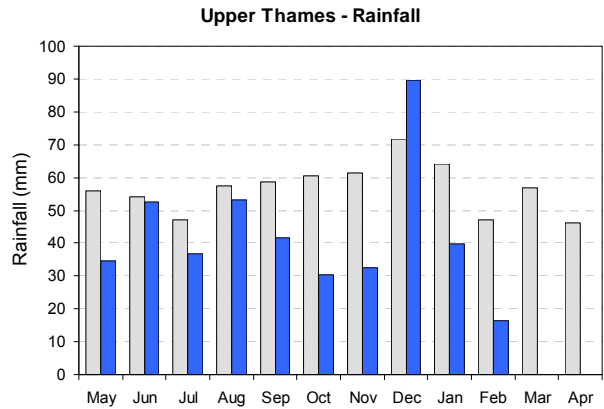
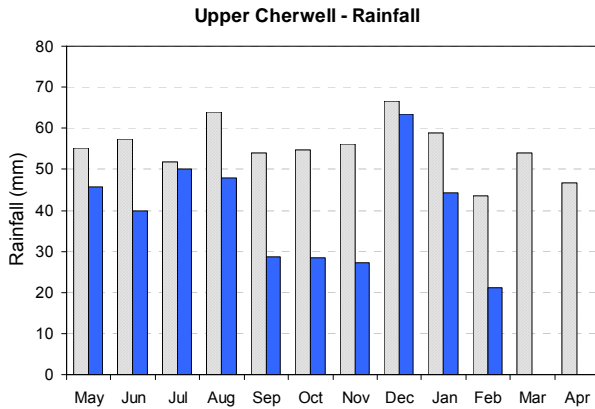
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# Rainfall, effective rainfall and river flow (2)

## Cherwell catchment and River Cherwell

## Upper Thames catchment and upper River Thames



### Rainfall and effective rainfall plots

Monthly total rainfall (mm)

Long-term average rainfall (mm)

### River flow plots

Exceptionally high

Notably high

Above normal

Normal

Below normal

Notably low

Exceptionally low

Latest data

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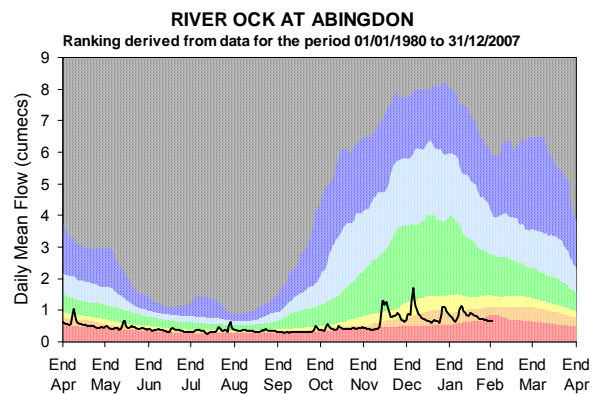
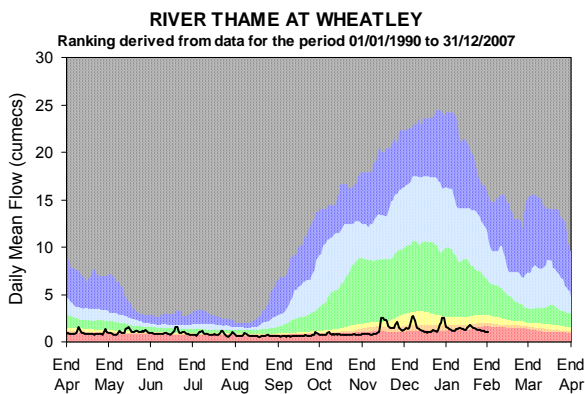
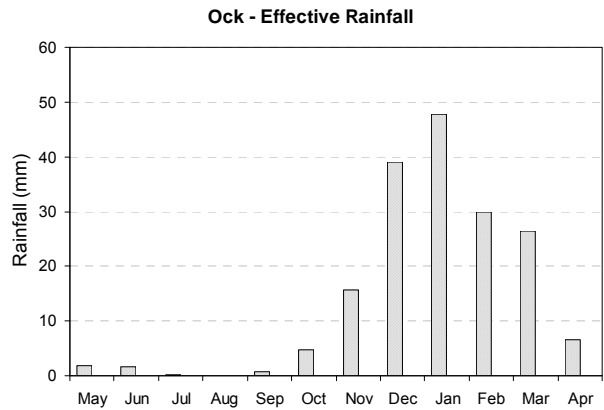
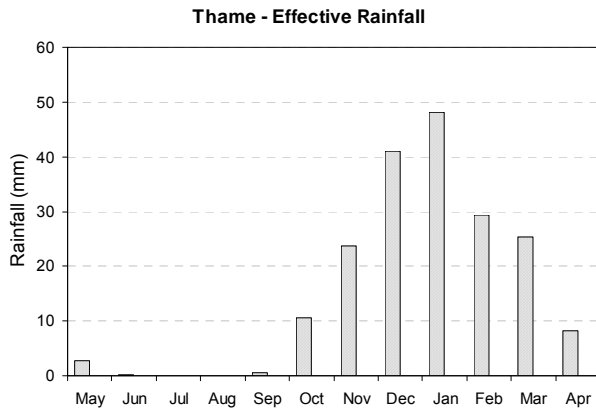
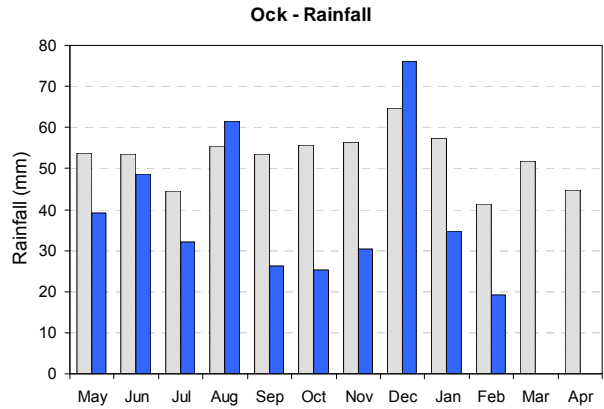
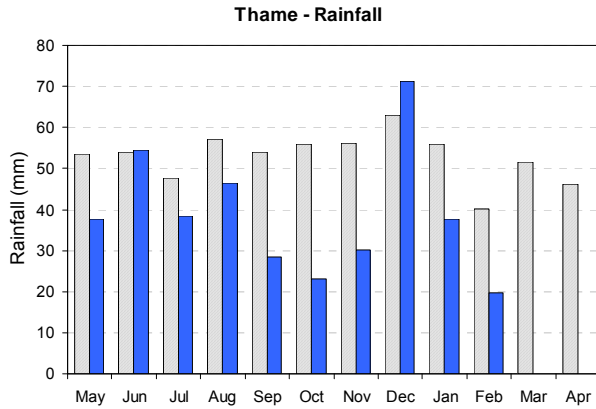
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# Rainfall, effective rainfall and river flow (3)

## Thame catchment and River Thame

## Ock catchment and River Ock



### Rainfall and effective rainfall plots

Blue bar: Monthly total rainfall (mm)

Grey bar: Long-term average rainfall (mm)

### River flow plots

Grey area: Exceptionally high  
Yellow area: Below normal

Blue area: Notably high  
Orange area: Notably low

Light blue area: Above normal  
Red area: Exceptionally low

Green area: Normal  
Black line: Latest data

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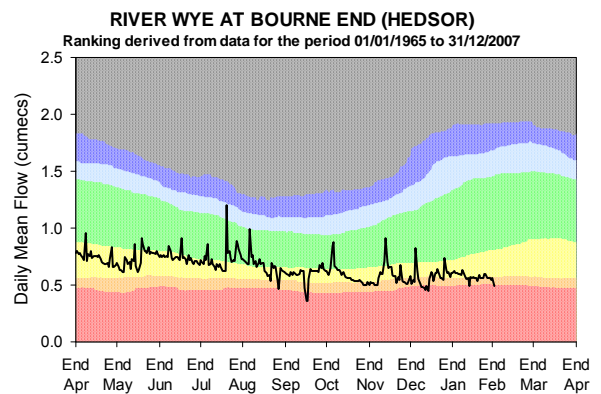
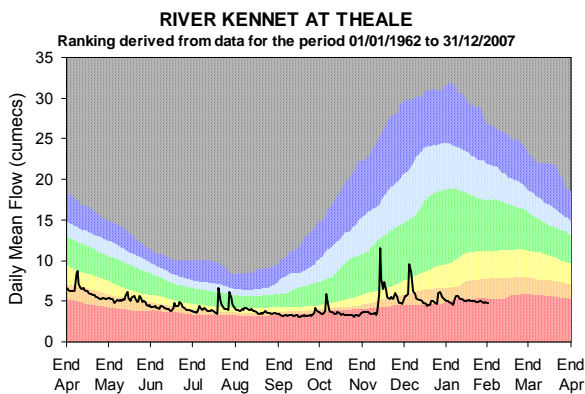
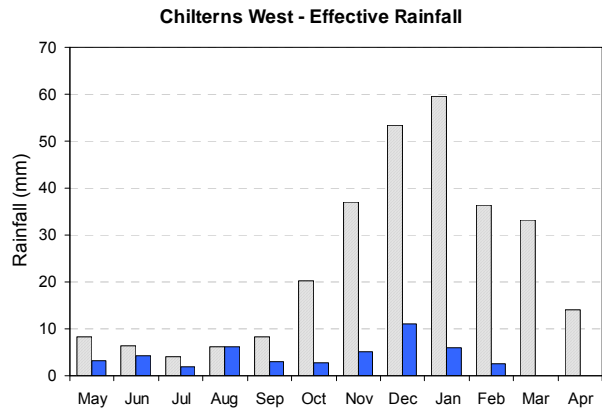
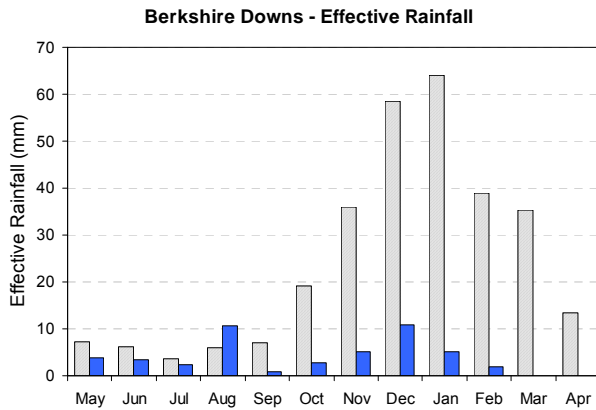
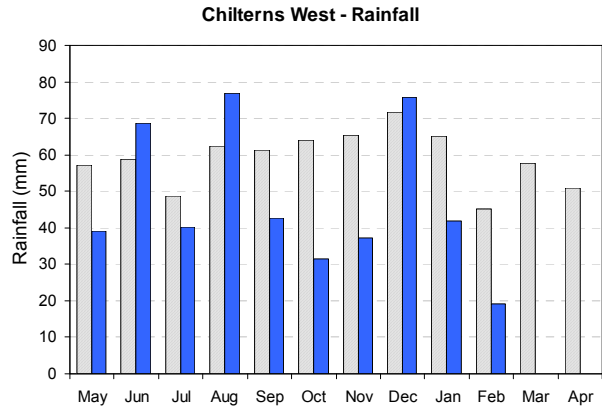
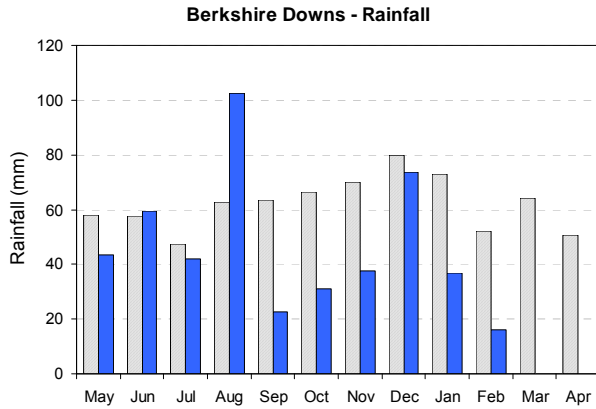
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# Rainfall, effective rainfall and river flow (4)

## Berkshire Downs and River Kennet

## Chilterns West and River Wye



### Rainfall and effective rainfall plots

Blue bar: Monthly total rainfall (mm)

Grey bar: Long-term average rainfall (mm)

### River flow plots

Grey area: Exceptionally high

Blue area: Notably high

Light blue area: Above normal

Green area: Normal

Yellow area: Below normal

Orange area: Notably low

Red area: Exceptionally low

Black line: Latest data

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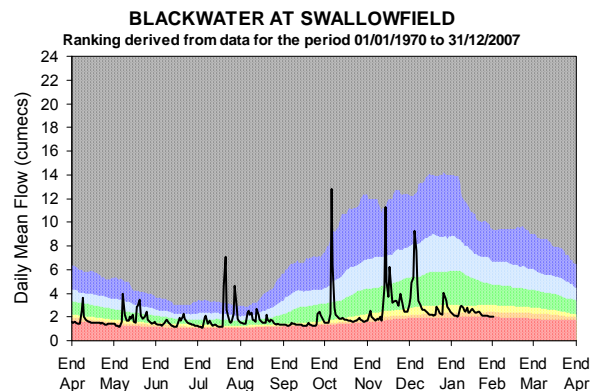
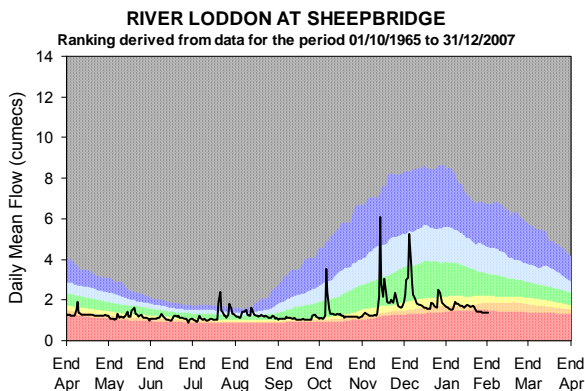
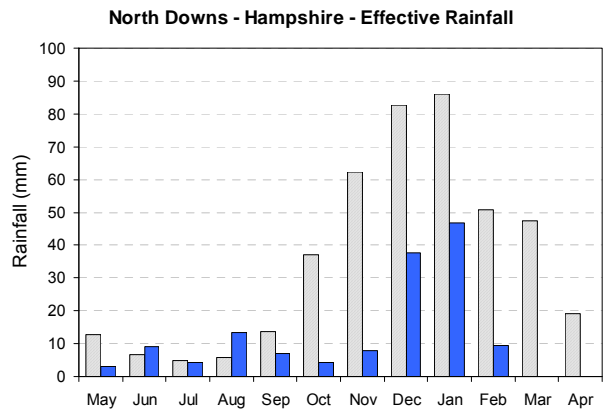
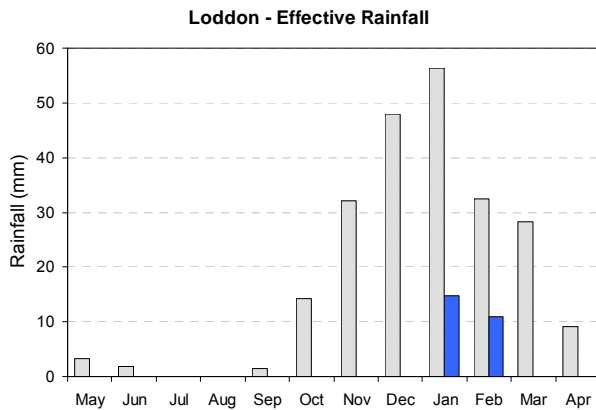
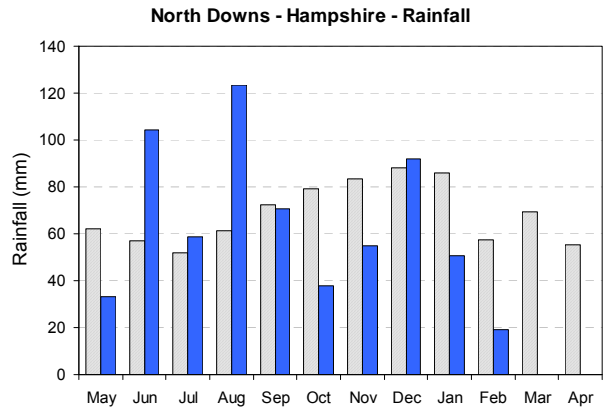
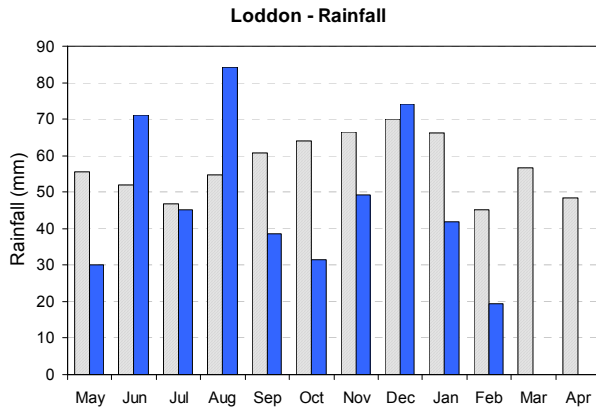
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# Rainfall, effective rainfall and river flow (5)

## Loddon catchment and River Loddon

## North Downs (Hampshire) and Blackwater



### Rainfall and effective rainfall plots

Monthly total rainfall (mm)

Long-term average rainfall (mm)

### River flow plots

Exceptionally high

Notably high

Above normal

Normal

Below normal

Notably low

Exceptionally low

Latest data

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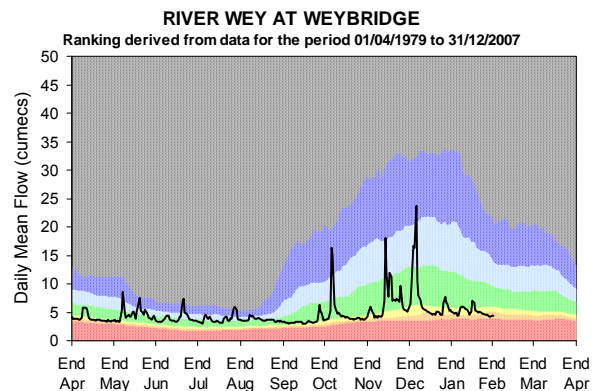
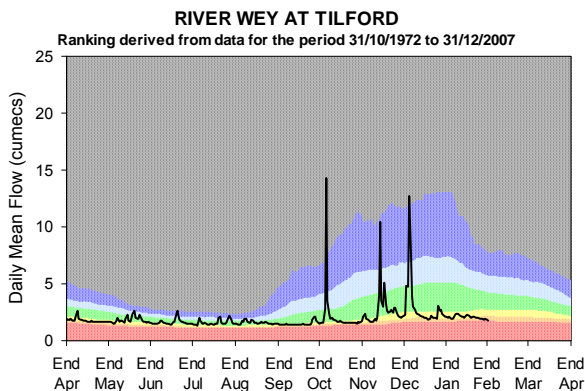
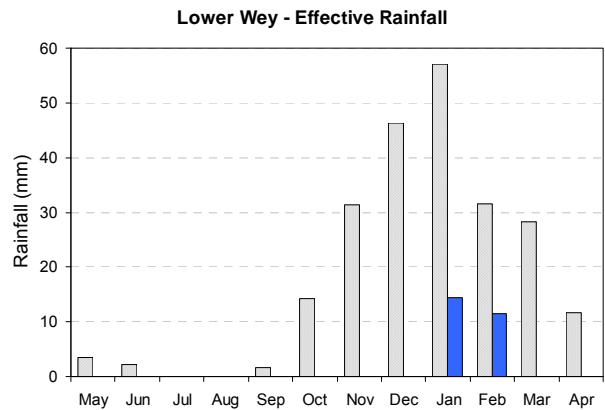
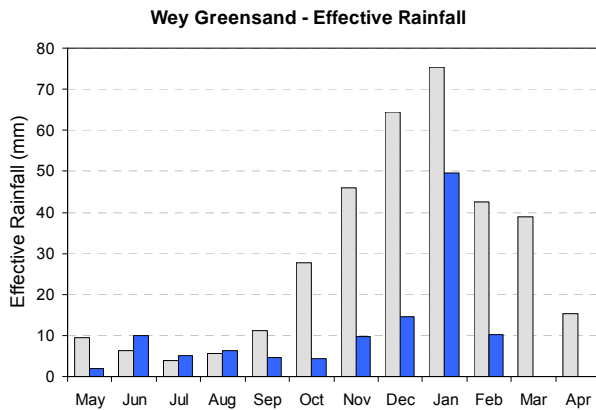
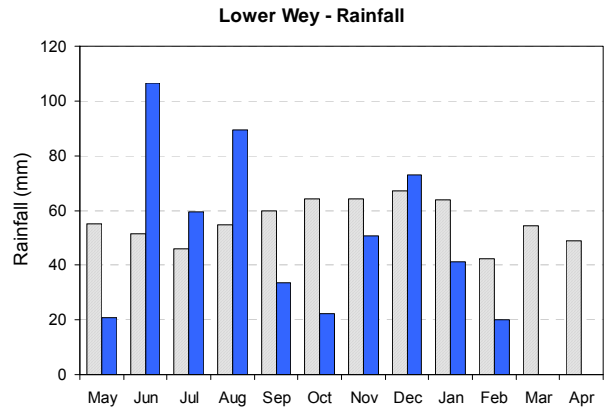
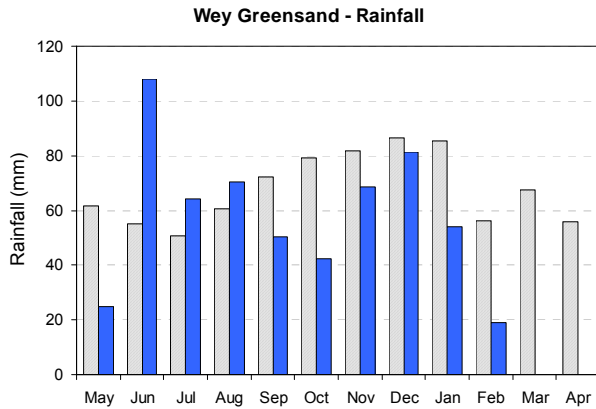
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# Rainfall, effective rainfall and river flow (6)

## Wey (Greensand) and upper River Wey

## Lower Wey catchment and lower River Wey



### Rainfall and effective rainfall plots

Monthly total rainfall (mm)

Long-term average rainfall (mm)

### River flow plots

Exceptionally high

Notably high

Above normal

Normal

Below normal

Notably low

Exceptionally low

Latest data

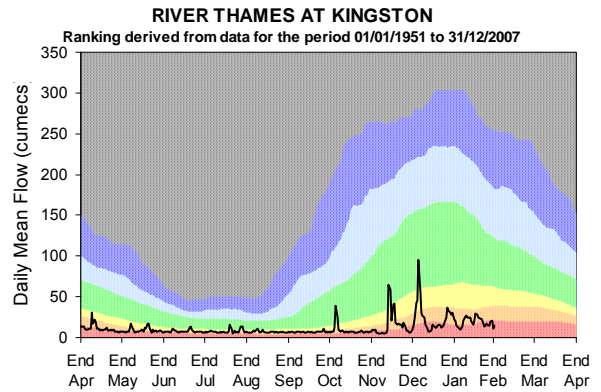
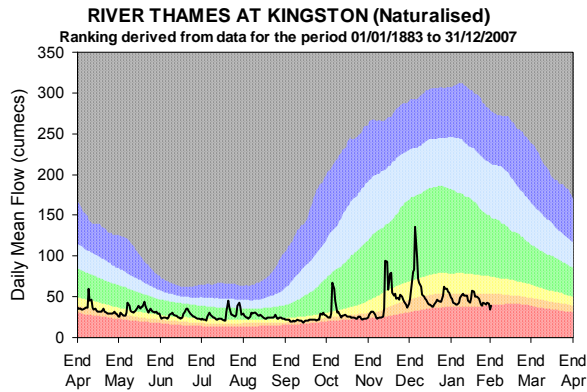
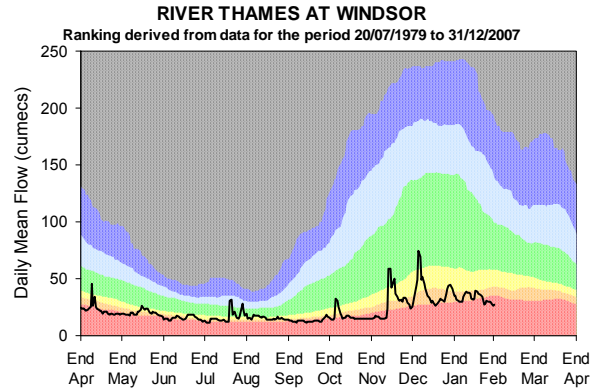
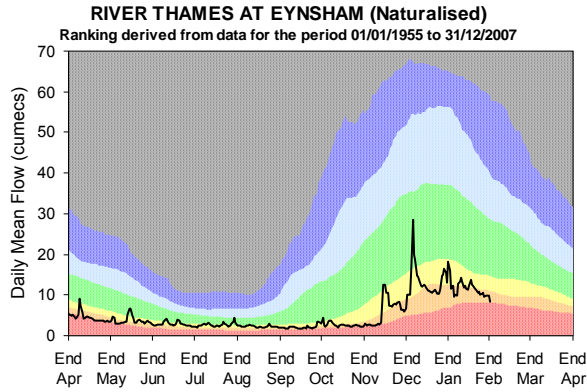
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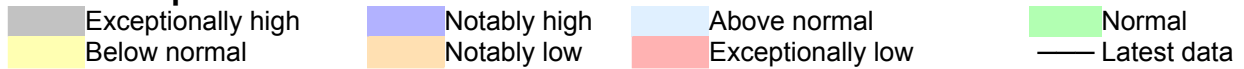
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# River Thames



## River flow plots



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

### Rainfall and effective rainfall

Area	Rainfall (mm)	LTA rainfall (mm)	% of LTA	Effective rainfall (mm)	LTA effective rainfall (mm)	% of LTA
Cotswolds West	28	55	52	19	42	45
Cotswolds East	22	47	46	9	36	25
Berkshire Downs	16	52	31	2	39	5
Chilterns West	19	45	43	2	36	6
Upper Thames	16	47	35	7	35	20
Cherwell	21	44	49	3	35	9
Ock	19	41	46	0	30	0
Thame	19	40	49	0	29	0
North Downs (Hampshire)	19	57	33	10	51	20
Wey (Greensand)	19	56	34	10	43	23
Loddon	19	45	43	11	32	34
Lower Wey	20	42	48	12	32	38
<b>West Thames Area</b>	<b>20</b>	<b>48</b>	<b>42</b>	<b>7</b>	<b>37</b>	<b>19</b>

This is a first estimate of areal rainfall, effective rainfall and soil moisture deficit for key catchments. There may be significant variation within each area. Climate data is from the Thames Soil Moisture Model, NCIC and MORECS. Effective rainfall and SMD figures are not available for all catchments.

### Soil moisture deficit

Area	End of month SMD (mm)	End of month SMD LTA (mm)
Cotswolds West	5	3
Cotswolds East	6	3
Berkshire Downs	21	3
Chilterns West	20	2
Upper Thames	6	4
Cherwell	3	2
Ock	32	4
Thame	18	2
North Downs (Hampshire)	4	2
Wey (Greensand)	5	3
Loddon	6	3
Lower Wey	6	3
<b>West Thames Area</b>	<b>11</b>	<b>3</b>

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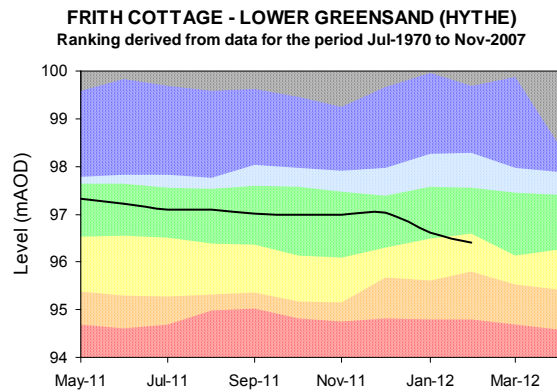
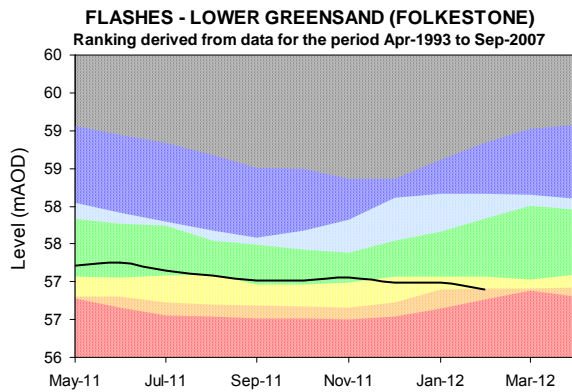
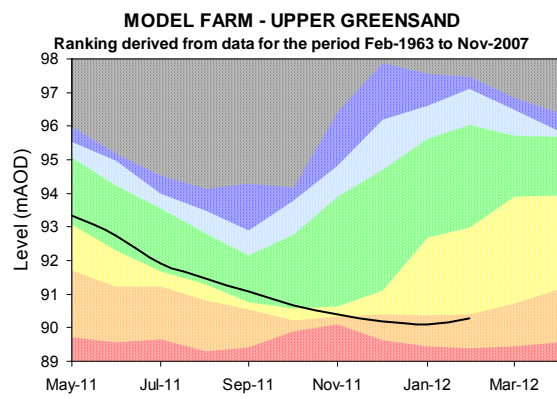
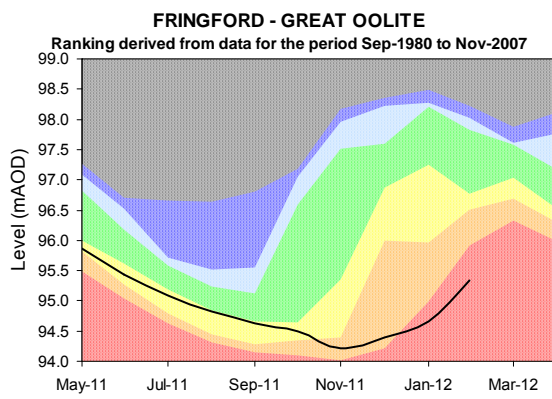
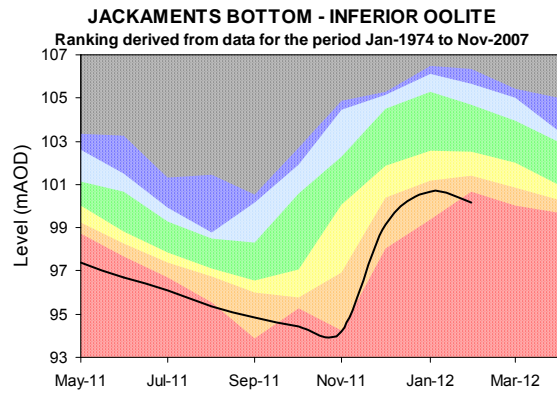
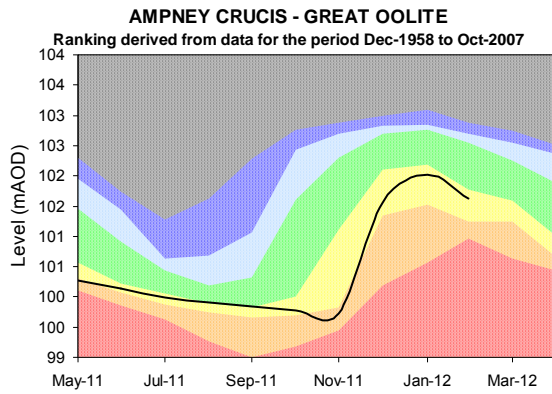
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## Winter rainfall and effective rainfall

Winter totals for the period 1 October 2011 to the 29 February 2012

Area	Rainfall (mm)	LTA rainfall (mm)	% Of LTA	Effective rainfall (mm)	LTA effective rainfall (mm)	% Of LTA
Cotswolds West	254	344	74	82	255	32
Cotswolds East	203	297	68	34	206	17
Berkshire Downs	196	342	57	26	217	12
Chilterns West	205	311	66	27	207	13
Upper Thames	209	305	69	9	178	5
Cherwell	185	280	66	3	184	2
Ock	186	276	67	0	137	0
Thame	182	271	67	0	153	0
North Downs (Hampshire)	255	394	65	106	319	33
Wey (Greensand)	265	389	68	89	256	35
Loddon	216	312	69	26	183	14
Lower Wey	207	302	69	26	181	14
<b>West Thames average</b>	<b>214</b>	<b>319</b>	<b>67</b>	<b>36</b>	<b>206</b>	<b>17</b>

# Groundwater Levels

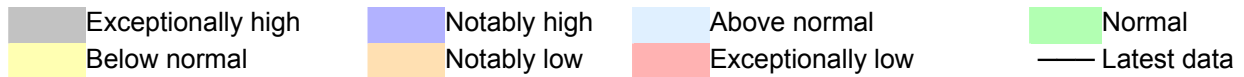
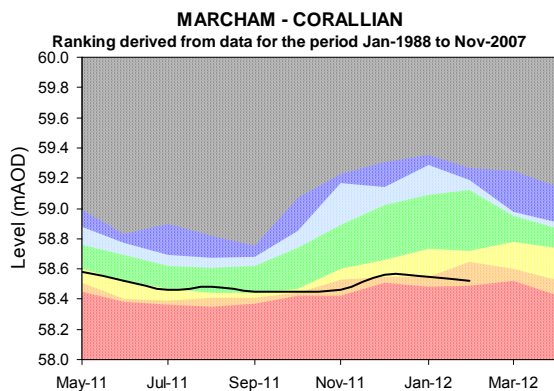
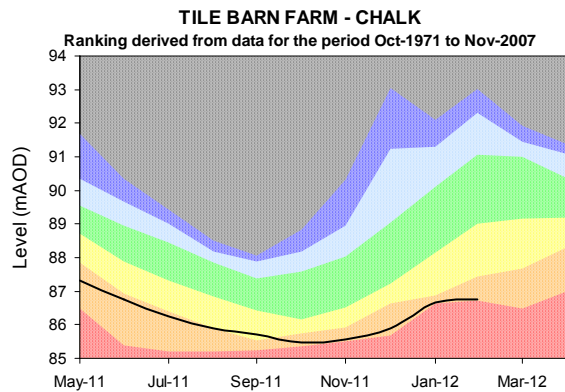
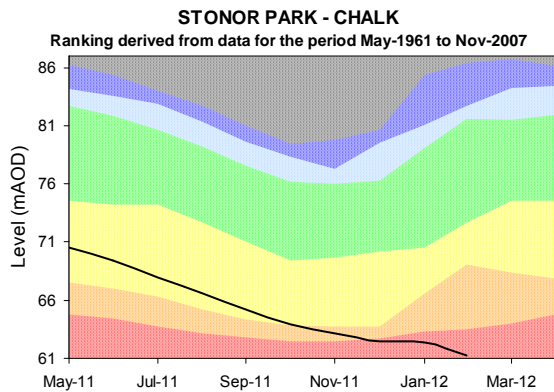
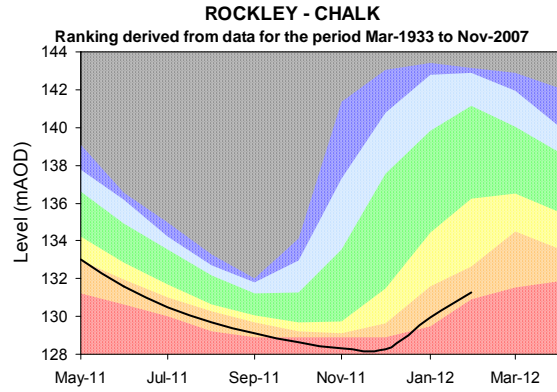
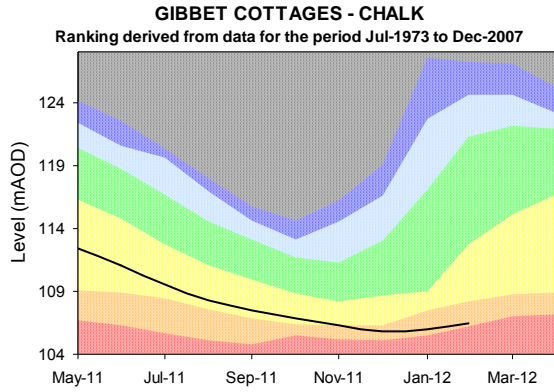


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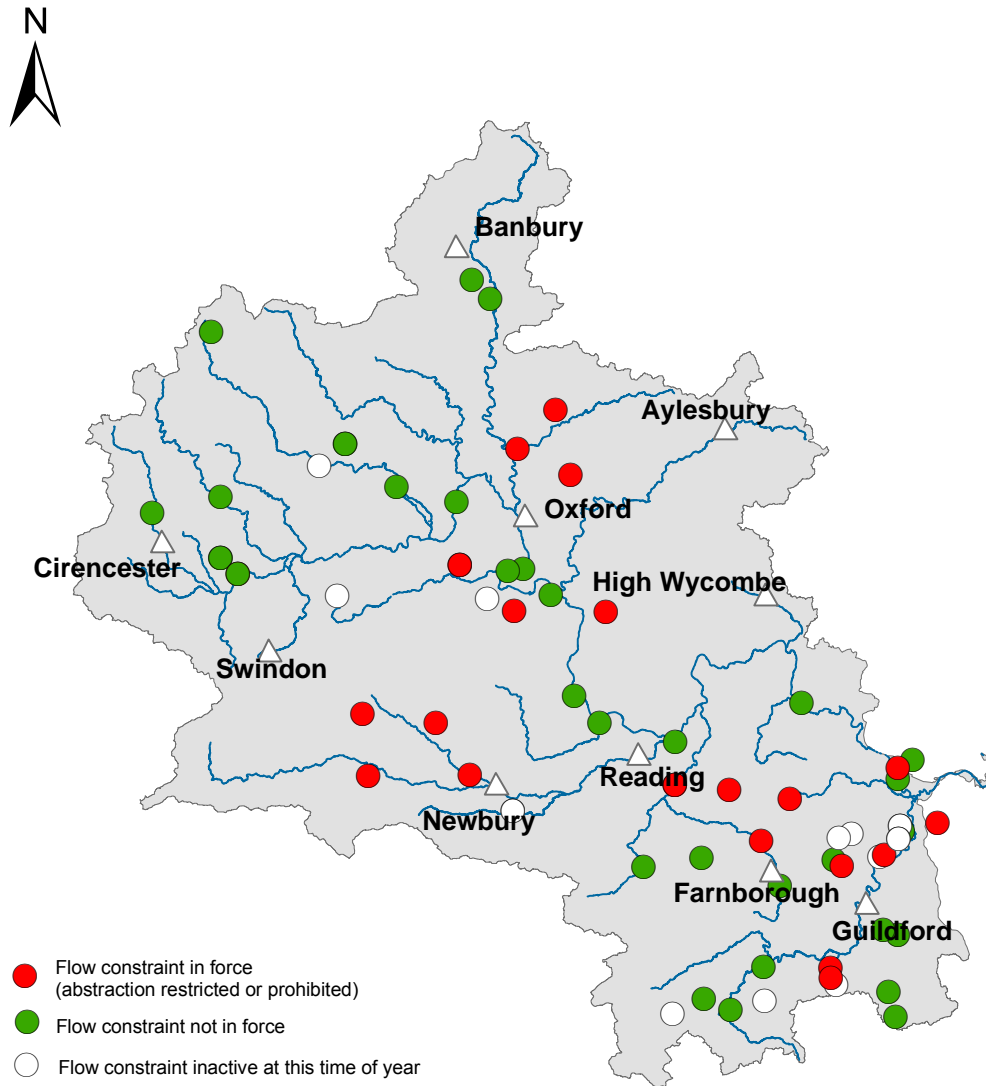
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# Environmental Impact

## End of month flow constraints



Scale 1:750,000

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## Summary of flow constraints

Week ending	Flow constraint situation
5 February 2012	<p>Coln at Bibury, Thames Water Utilities (2)</p> <p>Ray at Islip, RSPB</p> <p>Ray at Islip, Topbreed Ltd</p> <p>Ock at Abingdon, Frilford Heath Golf Club Ltd</p> <p>Thame at Wheatley, The Woodperry Trust</p> <p>Dun at Hungerford, The Country Food and Dining Company Ltd</p> <p>Lambourn at Shaw, Sandtrend Ltd</p> <p>Lambourn at Shaw, Kingwood House Stables</p> <p>Lambourn at Shaw, West Berkshire Golf Club</p> <p>Thames at Kingston, Clean Linen Services Ltd</p> <p>Thames at Kingston, Farm Partnership</p> <p>Thames at Kingston, Moreton C Cullimore (Gravels) Ltd</p> <p>Thames at Kingston, Air Products Chemicals (Teeside) Ltd</p> <p>Wey at Weybridge, Milford Golf Club</p> <p>Thames at Kingston, Burhill Estates Co Ltd</p> <p>Thames at Kingston, Worplesdon Golf Club</p> <p>Thames at Kingston, Berkshire Golf Club Ltd</p> <p>Thames at Kingston, Hall Hunter Partnership</p> <p>Groundwater level at Hambledon, West Surrey Golf Club Co Ltd</p>
12 February 2012	<p>Coln at Bibury, Thames Water Utilities (2)</p> <p>Ray at Islip, RSPB</p> <p>Ray at Islip, Topbreed Ltd</p> <p>Thame at Wheatley, The Woodperry Trust</p> <p>Ewelme Stream and Ewelme, M.C. Edwards</p> <p>Dun at Hungerford, The Country Food and Dining Company Ltd</p> <p>Lambourn at Shaw, Sandtrend Ltd</p> <p>Lambourn at Shaw, Kingwood House Stables</p> <p>Lambourn at Shaw, West Berkshire Golf Club</p> <p>Thames at Kingston, Clean Linen Services Ltd</p> <p>Thames at Kingston, Burhill Golf and Leisure Ltd</p> <p>Thames at Kingston, Moreton C Cullimore (Gravels) Ltd</p> <p>Thames at Kingston, Air Products Chemicals (Teeside) Ltd</p> <p>Wey at Weybridge, Milford Golf Club</p> <p>Thames at Kingston, Worplesdon Golf Club</p> <p>Thames at Kingston, Farley Farms</p> <p>Thames at Kingston, Berkshire Golf Club Ltd</p> <p>Thames at Kingston, Burhill Estates Co Ltd</p> <p>Thames at Kingston, Hall Hunter Partnership</p>
19 February 2012	<p>Thame at Wheatley, The Woodperry Trust</p> <p>Ewelme Stream and Ewelme, M.C. Edwards</p> <p>Dun at Hungerford, The Country Food and Dining Company Ltd</p> <p>Lambourn at Shaw, Sandtrend Ltd</p> <p>Lambourn at Shaw, Kingwood House Stables</p> <p>Lambourn at Shaw, West Berkshire Golf Club</p> <p>Wey at Weybridge, Milford Golf Club</p> <p>Groundwater level at Hambledon, Godalming Angling Society</p> <p>Groundwater level at Hambledon, West Surrey Golf Club Co Ltd</p>
26 February 2012	<p>Ray at Islip, RSPB</p> <p>Ray at Islip, Topbreed Ltd</p> <p>Ock at Abingdon, Frilford Heath Golf Club Ltd</p> <p>Ock at Abingdon, Frilford Heath Golf Club Ltd</p> <p>Thame at Wheatley, The Woodperry Trust</p> <p>Ewelme Stream and Ewelme, M.C. Edwards</p>

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Dun at Hungerford, The Country Food and Dining Company Ltd  
Lambourn at Shaw, Sandtrend Ltd  
Lambourn at Shaw, Kingwood House Stables  
Lambourn at Shaw, West Berkshire Golf Club  
Thames at Kingston, Notcutts Garden Centre  
Thames at Kingston, Clean Linen Services Ltd  
Thames at Kingston, Burhill Golf and Leisure Ltd  
Thames at Kingston, Moreton C Cullimore (Gravels) Ltd  
Thames at Kingston, Air Products Chemicals (Teeside) Ltd  
Wey at Weybridge, Milford Golf Club  
Thames at Kingston, Worplesdon Golf Club  
Loddon at Twyford, Farley Farms  
Thames at Kingston, Farley Farms  
Thames at Kingston, Berkshire Golf Club Ltd  
Thames at Kingston, Burhill Estates Co Ltd  
Thames at Kingston, Hall Hunter Partnership  
Groundwater level at Hambledon, Godalming Angling Society

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## 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).
<b>Categories</b>	
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
<b>Units</b>	
cumecs	Cubic metres per second ( $m^3 s^{-1}$ )
mAOD	Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).