

Monthly water situation report: Solent and South Downs Area

Summary - June 2024

Solent and South Downs (SSD) had well below average rainfall in June, receiving 39% (22mm) of the long term average (LTA) rainfall (55.2mm). Monthly mean river flows across SSD ranged from below normal to exceptionally high. End of month groundwater levels ranged from above normal to exceptionally high. Soils across SSD ended the month drier than the average for June. End of month reservoir stocks were above average at Ardingly Reservoir (Ouse) and were below average at Arlington Reservoir (Cuckmere).

1.1 Rainfall

SSD had well below average rainfall in June, receiving 39% (22mm) of the LTA (55.2mm).

The highest daily rainfall (22.9mm) was recorded at Poverty Bottom (East Sussex Chalk) on 14 June. Most of the rainfall was recorded in the middle of the month. The first week and the last week were almost completely dry.

Despite the very dry June the last 6 months ranks as fourth wettest on record for SSD area, since 1871. For the East Sussex Chalk and West Sussex Chalk areal rainfall units it was the second wettest.

The last 12 months were the second wettest on record for SSD area, since 1871 with the Hampshire areal rainfall units ranking first.

The last 18 months period were the wettest on record for SSD area, since 1871.

1.2 Soil moisture deficit and recharge

Soils across SSD ended the month drier than the average for June.

1.3 River flows

Monthly mean river flows across SSD ranged from below normal to exceptionally high.

Flows were below normal:

- River Arun at Alfoldean

Flows were normal:

- River Adur at Sakeham
- River Cuckmere at Cowbeech
- River Lymington at Brockenhurst

- River Ouse at Goldbridge
- River Wallington at North Fareham

Flows were above normal:

- River Rother at Iping Mill

Flows were notably high:

- River Meon at Misingford
- River Test at Broadlands
- River Test at Chilbolton

Flows were exceptionally high:

- River Itchen at Allbrook&Highbridge

The recorded data for River Medina at Blackwater were incomplete.

The monthly mean flows for June were the highest on record at Allbrook&Highbridge (Itchen), in a record starting in 1959. Flows for Chilbolton (Test) were the third highest on record for June since 1960.

1.4 Groundwater levels

End of month groundwater levels ranged from normal to exceptionally high.

Groundwater levels were normal at:

- Carisbrooke Castle (Isle of Wight)

Groundwater levels were above normal at:

- Beeding Hill (West Sussex Chalk)
- Catherington (East Hampshire Chalk)
- Harting Common (Western Rother Greensand)
- Houndean Bottom (East Sussex Chalk)

Groundwater levels were notably high at:

- Chilgrove (West Sussex Chalk)
- Cornish Farm (East Sussex Chalk)
- Lopcombe Corner (Test Chalk)

Groundwater levels were exceptionally high at:

- Clanville Gate (Test Chalk)
- Preston Candover (East Hampshire Chalk)
- West Meon (East Hampshire Chalk)
- Youngwoods Copse (Isle of Wight)

Groundwater levels for June were the second highest on record at West Meon and Youngwoods Copse since 1986 and 1978, respectively. Groundwater levels were the third highest on record at Clanville Gate and at Preston Candover since 1966 and 1975 respectively.

1.5 Reservoir stocks

End of month reservoir stocks were above average at Ardingly Reservoir (Ouse) with 96.2% of total capacity (LTA 91%) and below average at Arlington Reservoir (Cuckmere) with 81.6% of total capacity (LTA 83.95%).

1.6 Environmental impact

During June there was a reduced abstraction rates restriction on the river Meon in force and one cessation on the Loxwood Stream (Arun).

There were no Flood Alerts or Flood Warnings issued in SSD during June.

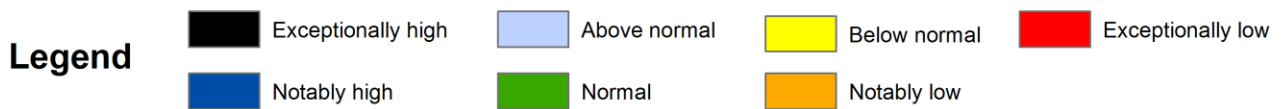
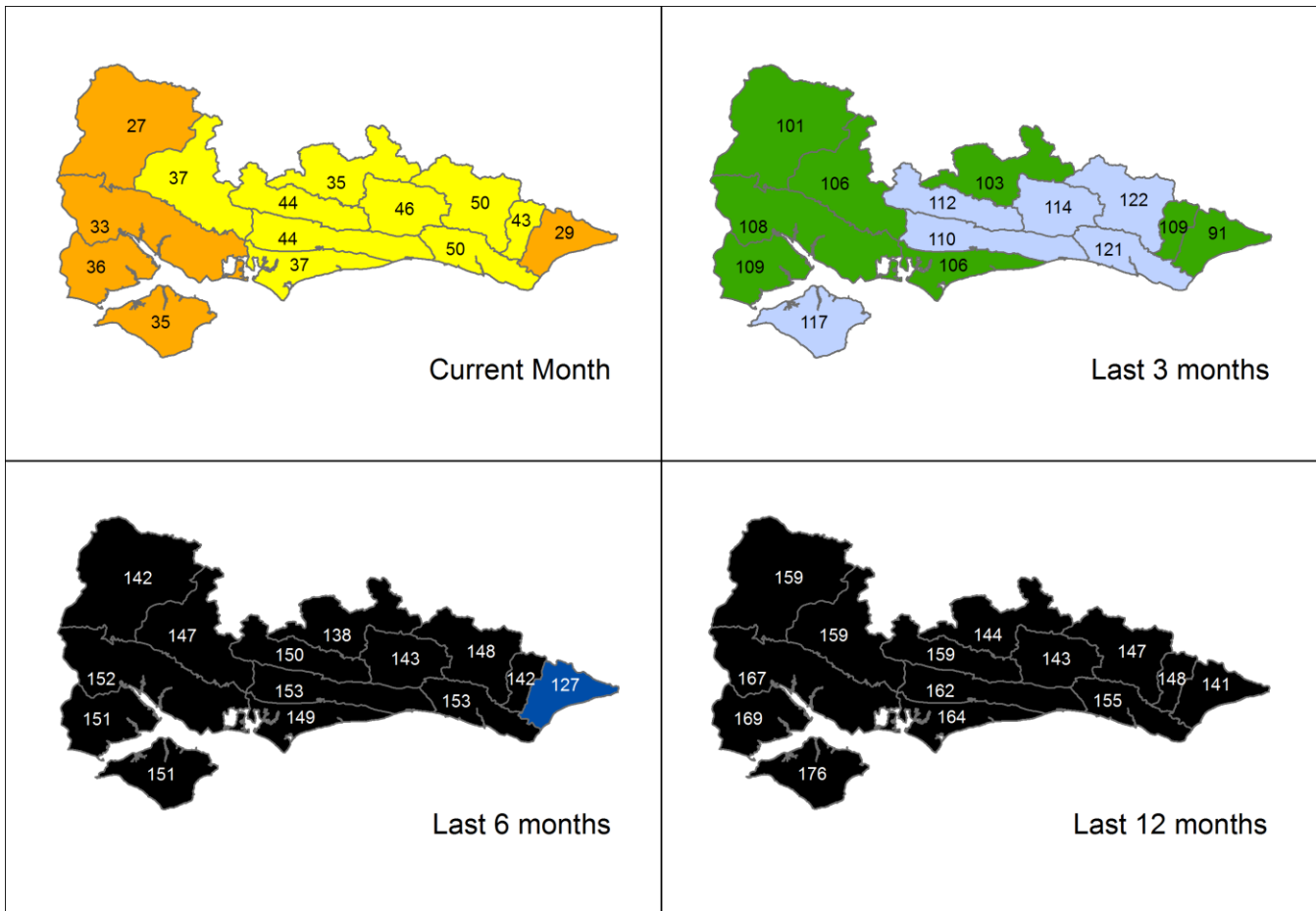
Author: HydrologySSD@environment-agency.gov.uk

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2. Rainfall

2.1 Rainfall map

Figure 2.1: Total rainfall for hydrological areas for the current month (up to 30 June 24), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Table available in the appendices with detailed information.

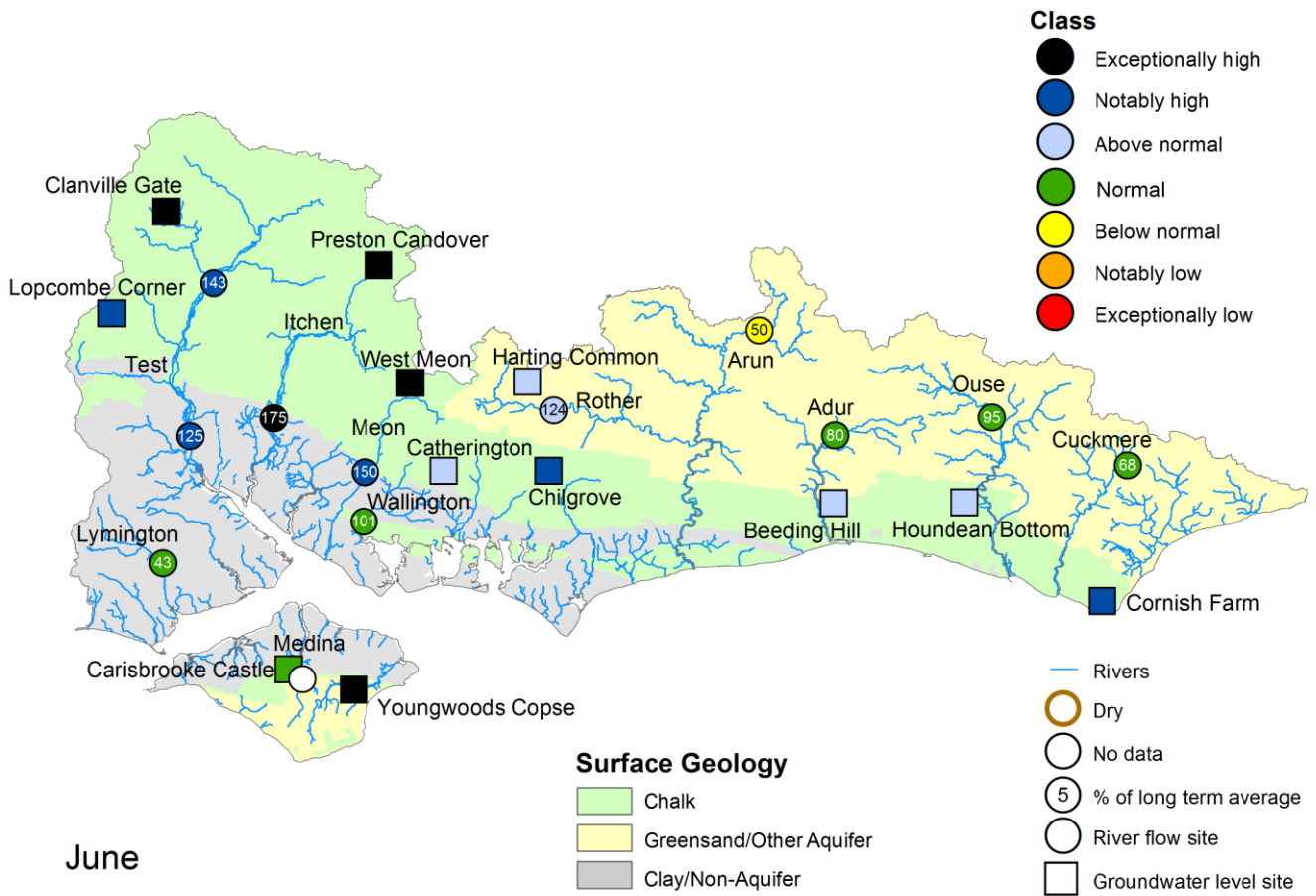


Rainfall data for 2024, extracted from Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. (Source: Environment Agency. Crown Copyright, 100024198, 2024). Rainfall data prior to 2023, extracted from Met Office HadUK 1km gridded rainfall dataset derived from registered rain gauges (Source: Met Office. Crown copyright, 2024).

3 River flows and Groundwater levels

3.1 River flows and Groundwater level map

Figure 3.1: Monthly mean river flow and groundwater levels at our indicator sites for June 2024, expressed as a percentage of the respective long term average and classed relative to an analysis of historic June monthly means. Table available in the appendices with detailed information.

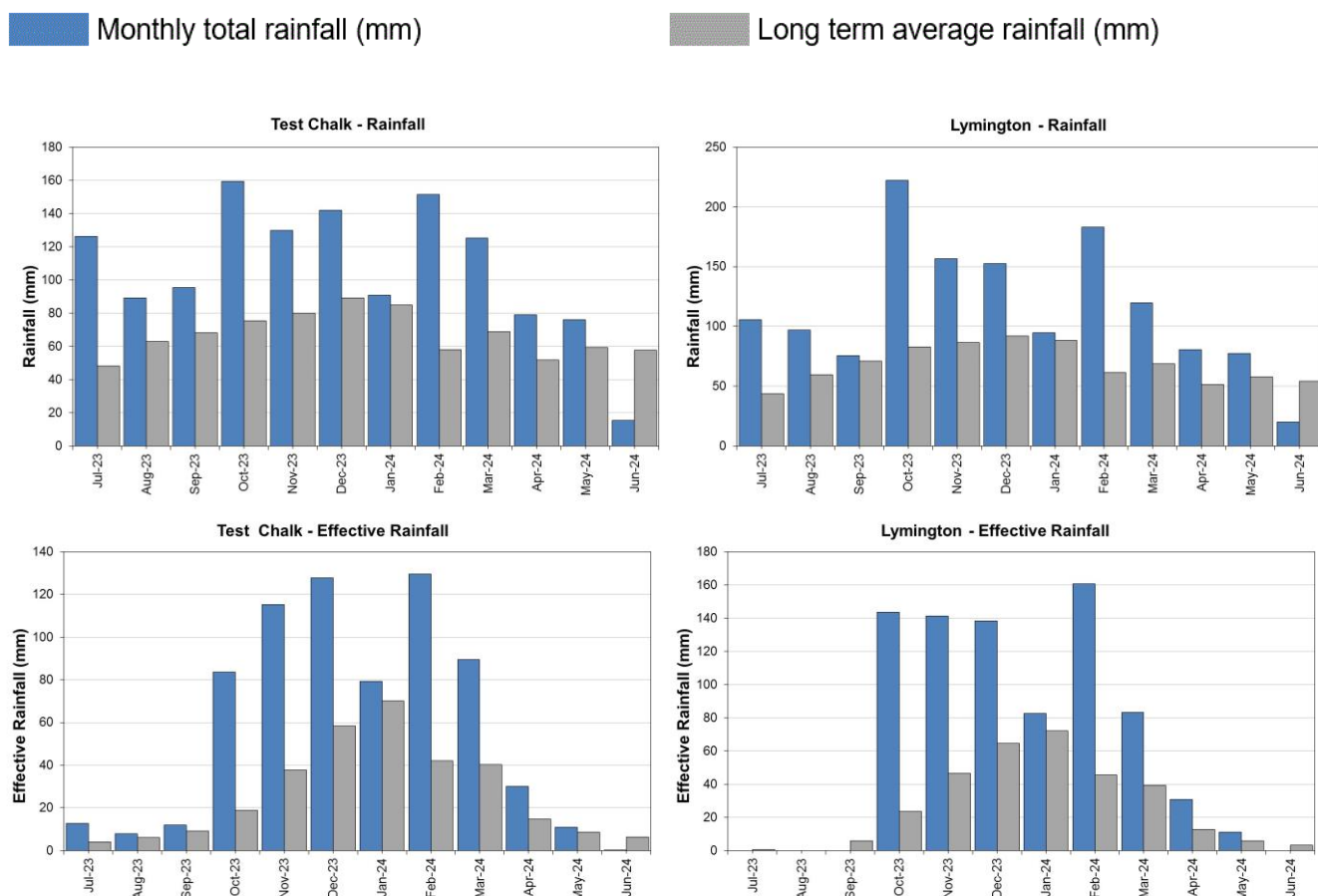


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4 West Hampshire

4.1 West Hampshire Rainfall and effective rainfall charts

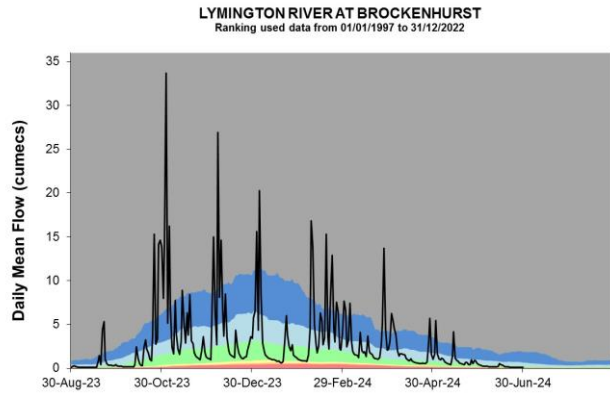
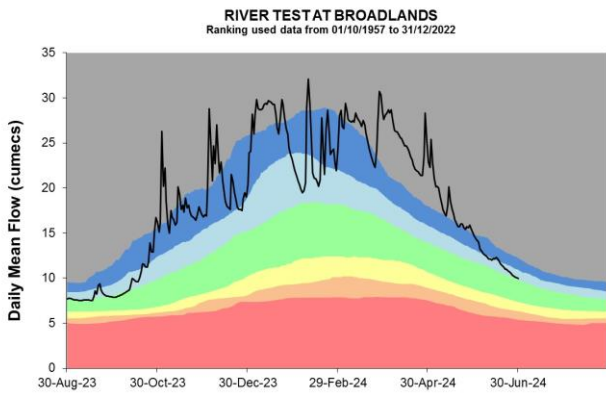
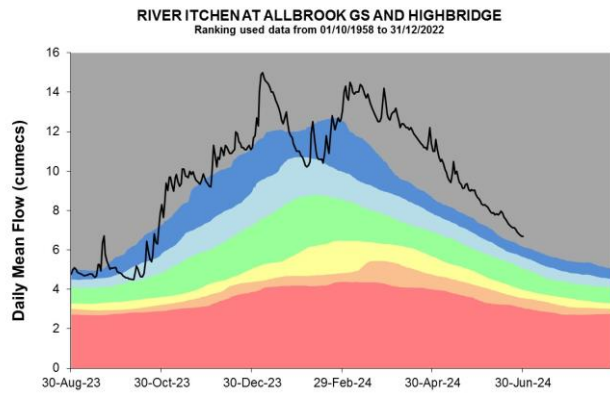
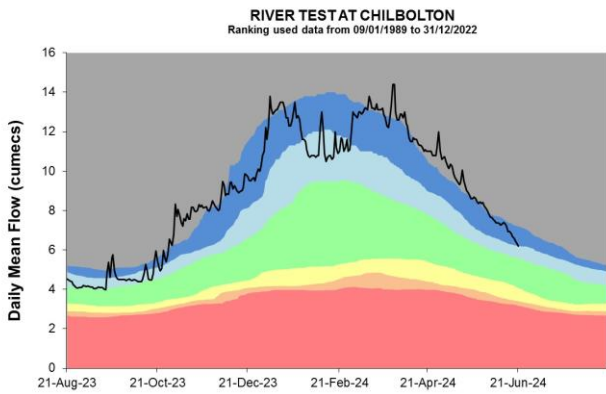
Figure 4.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



HadUK rainfall data. (Source: Met Office. Crown copyright, 2024).

4.2 West Hampshire River flow charts

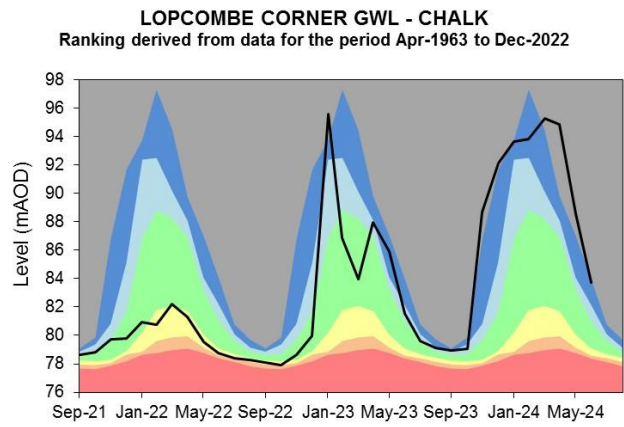
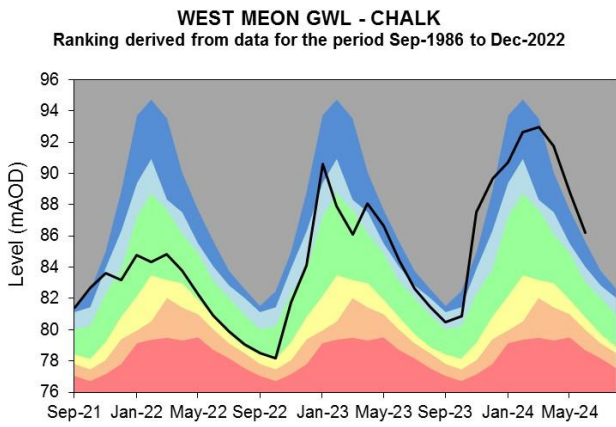
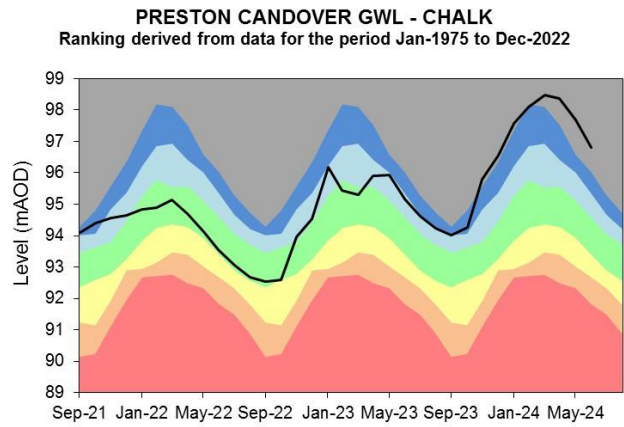
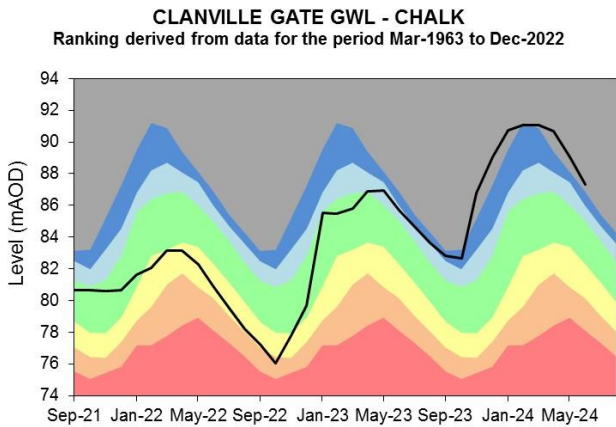
Figure 4.2: Daily mean river flow for index sites over the past year, compared to an analysis of historic daily mean flows, and long term maximum and minimum flows.



Source: Environment Agency, 2024.

4.3 West Hampshire Groundwater level charts

Figure 4.3: End of month groundwater levels at index groundwater level sites for major aquifers. 34 months compared to an analysis of historic end of month levels and long term maximum and minimum levels.

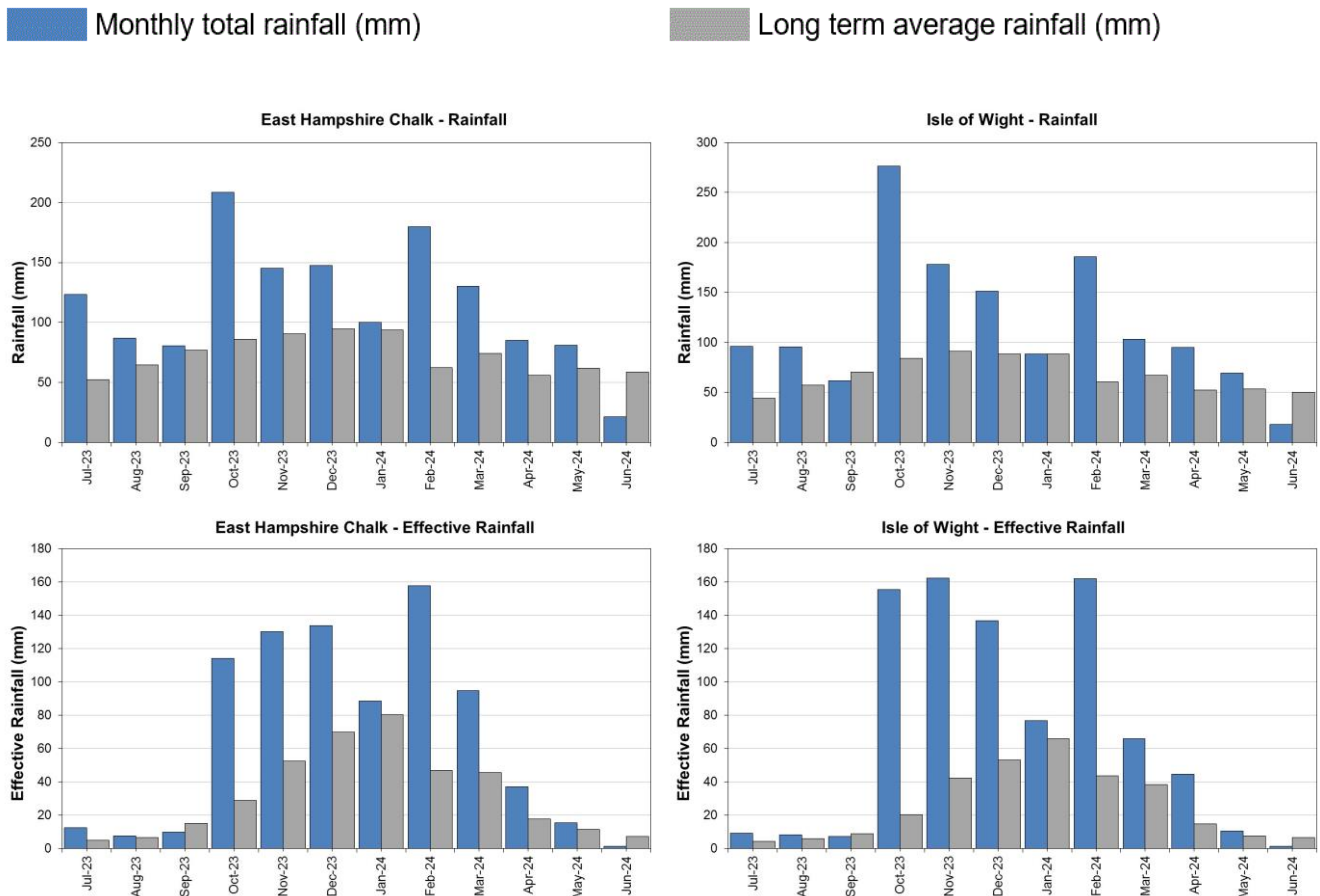


Source: Environment Agency, 2024.

5 East Hampshire and Isle of Wight

5.1 East Hampshire and Isle of Wight Rainfall and Effective rainfall charts

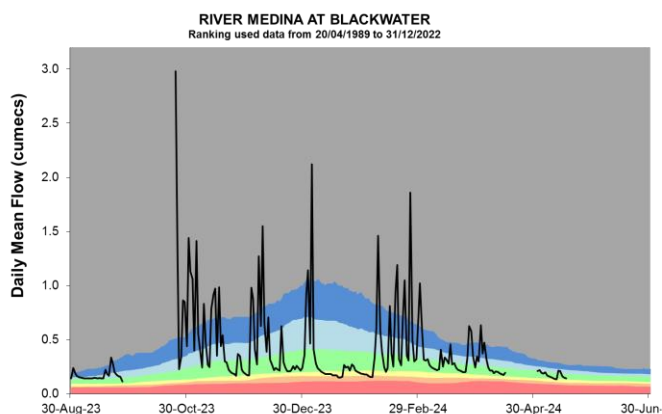
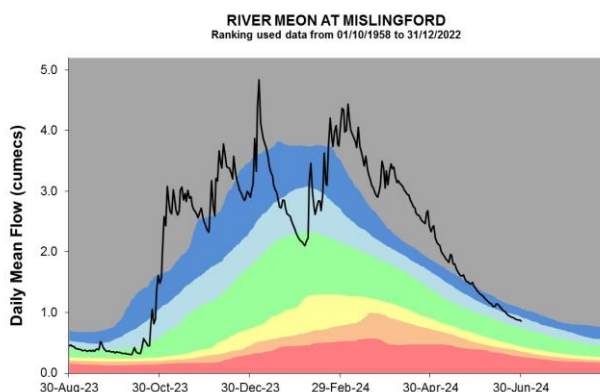
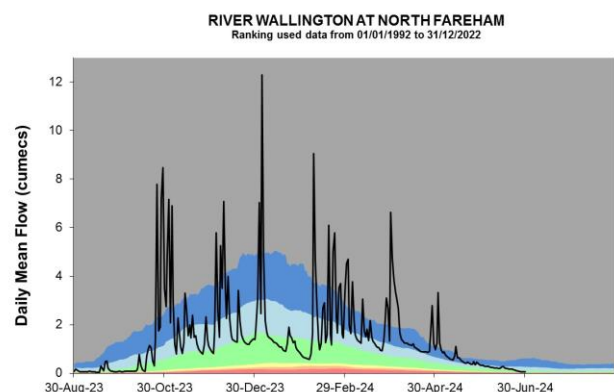
Figure 5.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



HadUK rainfall data. (Source: Met Office. Crown copyright, 2024).

5.2 East Hampshire and Isle of Wight River flow charts

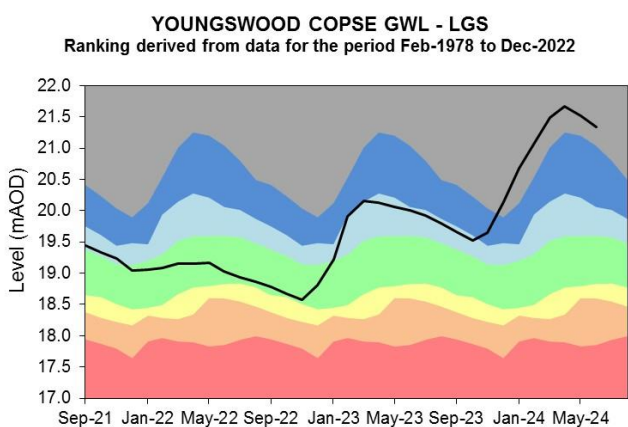
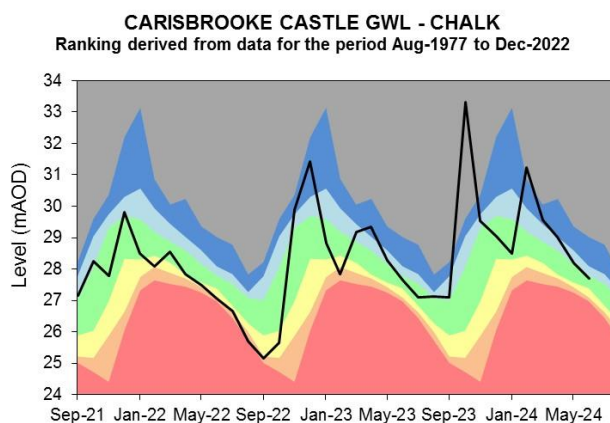
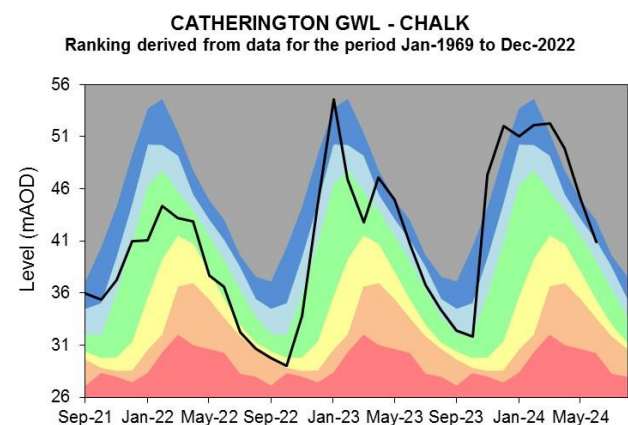
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Source: Environment Agency, 2024.

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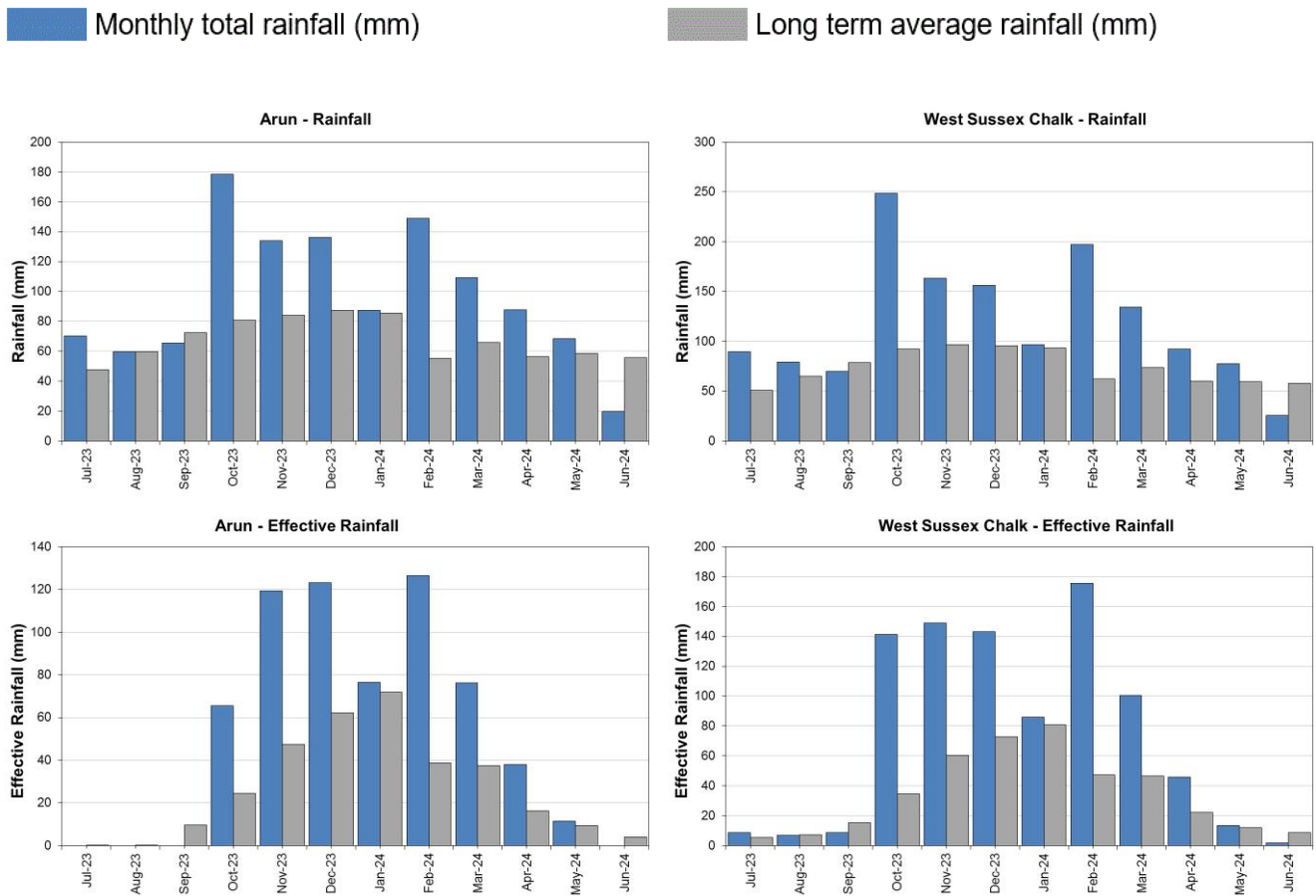


Source: Environment Agency, 2024.

6 West Sussex

6.1 West Sussex Rainfall and Effective Rainfall charts

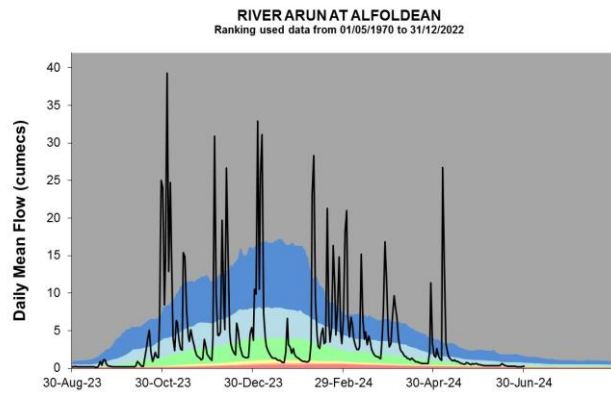
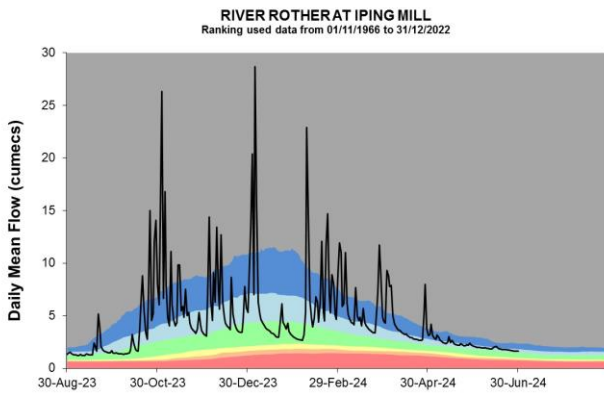
Figure 6.1: Monthly rainfall and effective rainfall totals for the past 12 months as a percentage of the 1961 to 1990 long term average.



HadUK rainfall data. (Source: Met Office. Crown copyright, 2024).

6.2 West Sussex River flow charts

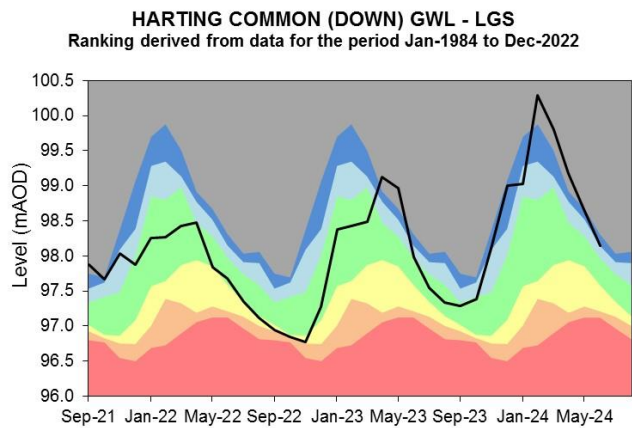
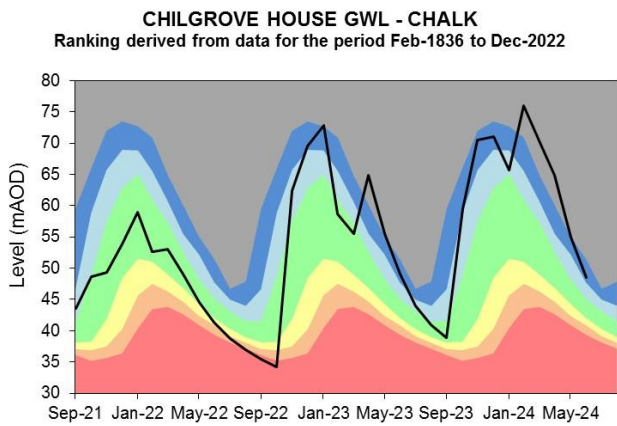
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Source: Environment Agency, 2024.

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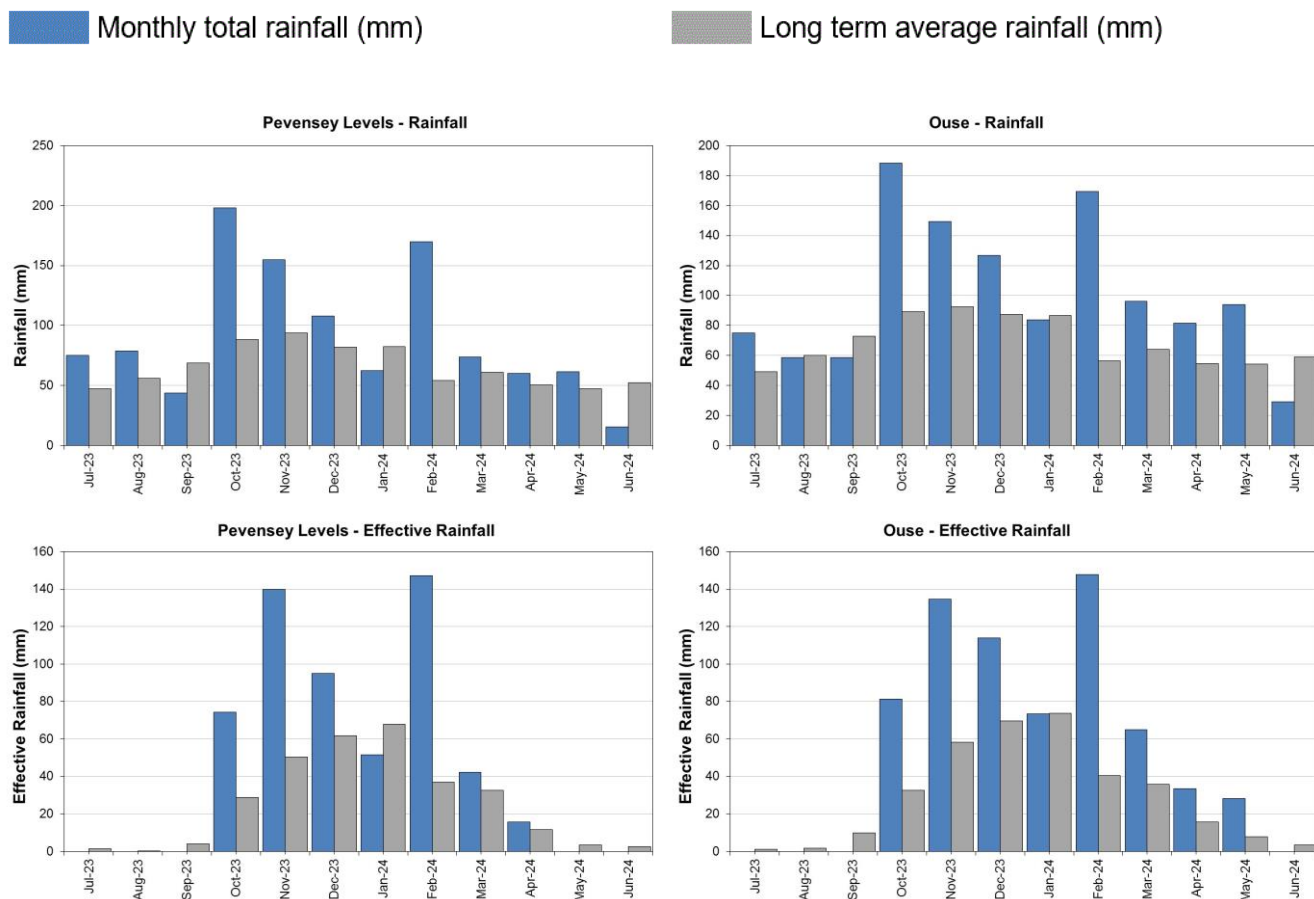


Source: Environment Agency, 2024.

7 East Sussex

7.1 East Sussex Rainfall and Effective Rainfall charts

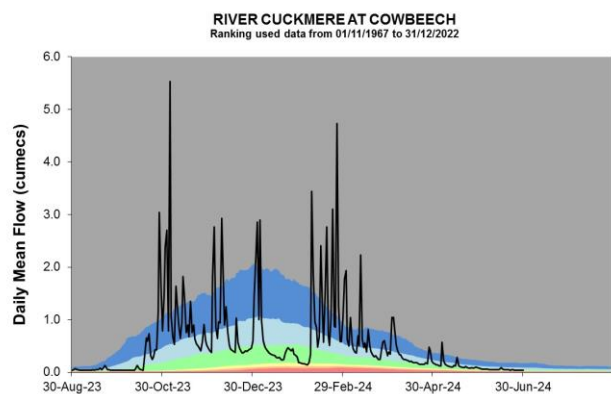
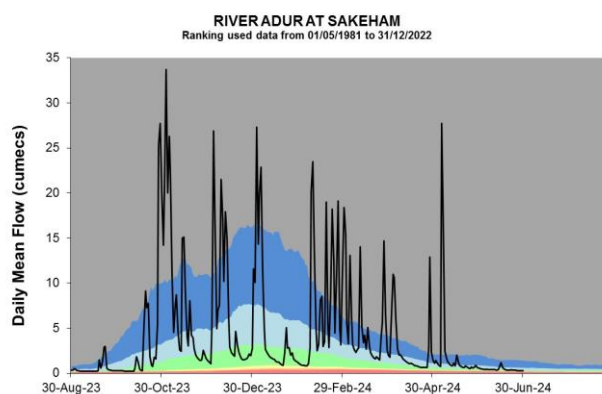
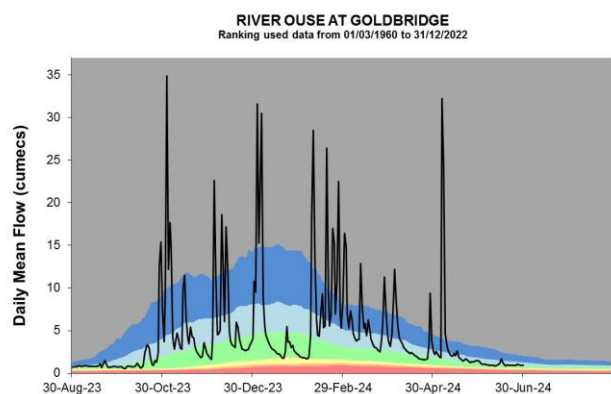
Figure 7.1: Monthly rainfall and effective rainfall totals for the past 12 months compared to the 1961 to 1990 long term average.



HadUK rainfall data. (Source: Met Office. Crown copyright, 2024).

7.2 East Sussex River flow charts

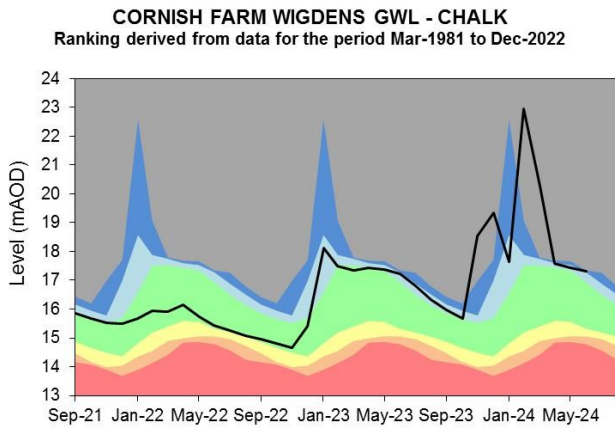
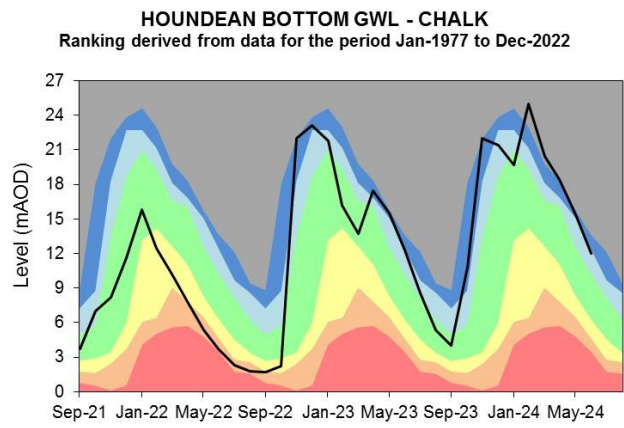
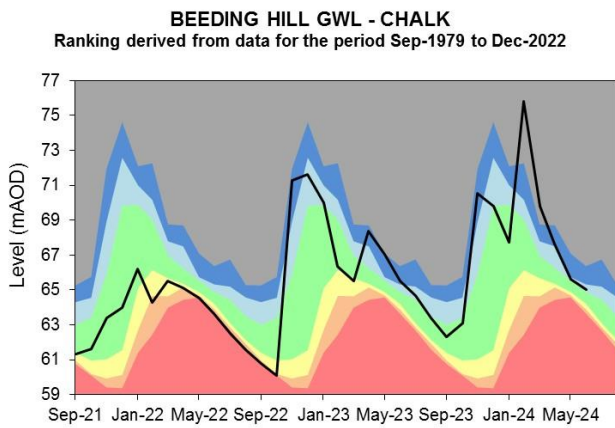
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Source: Environment Agency, 2024.

7.3 East Sussex Groundwater level charts

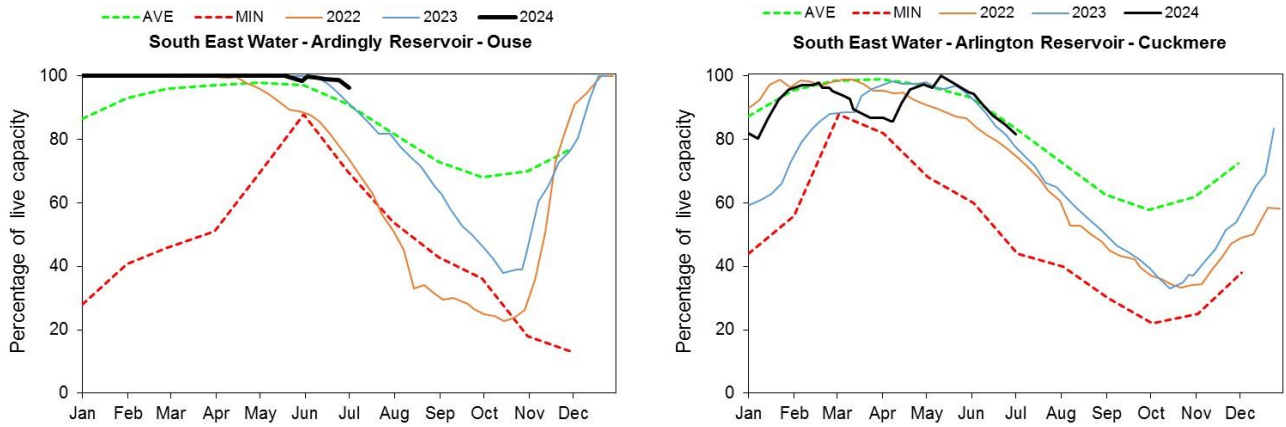
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Source: Environment Agency, 2024.

8 Reservoir stocks

Figure 8.1: End of month reservoir stocks compared to long term maximum, minimum and average stocks. Note: Historic records of individual reservoirs and reservoir groups making up the regional values vary in length.



(Source: water companies).

9 Glossary

9.1 Terminology

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).

Artesian

The condition where the groundwater level is above ground surface but is prevented from rising to this level by an overlying continuous low permeability layer, such as clay.

Artesian borehole

Borehole where the level of groundwater is above the top of the borehole and groundwater flows out of the borehole when unsealed.

Cumecs

Cubic metres per second (m^3s^{-1}).

Effective rainfall

The rainfall available to percolate into the soil or produce river flow. Expressed in depth of water (mm).

Flood alert and flood warning

Three levels of warnings may be issued by the Environment Agency. Flood alerts indicate flooding is possible. Flood warnings indicate flooding is expected. Severe flood warnings indicate severe flooding.

Groundwater

The water found in an aquifer.

Long term average (LTA)

The arithmetic mean calculated from the historic record, usually based on the period 1961 to 1990. However, the period used may vary by parameter being reported on (see figure captions for details).

mAOD

Metres above ordnance datum (mean sea level at Newlyn Cornwall).

MORECS

Met Office Rainfall and Evaporation Calculation System. Met Office service providing real time calculation of evapotranspiration, soil moisture deficit and effective rainfall on a 40 by 40 km grid.

Naturalised flow

River flow with the impacts of artificial influences removed. Artificial influences may include abstractions, discharges, transfers, augmentation and impoundments.

NCIC

National Climate Information Centre. NCIC area monthly rainfall totals are derived using the Met Office 5 km gridded dataset, which uses rain gauge observations.

Recharge

The process of increasing the water stored in the saturated zone of an aquifer. Expressed in depth of water (mm).

Reservoir gross capacity

The total capacity of a reservoir.

Reservoir live capacity

The capacity of the reservoir that is normally usable for storage to meet established reservoir operating requirements. This excludes any capacity not available for use (for example, storage held back for emergency services, operating agreements or physical restrictions). May also be referred to as 'net' or 'deployable' capacity.

Soil moisture deficit (SMD)

The difference between the amount of water actually in the soil and the amount of water the soil can hold. Expressed in depth of water (mm).

9.2 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.

10 Appendices

10.1 Rainfall, effective rainfall and soil moisture deficit table

(Source: Met Office. Crown copyright, 2024). All rights reserved. Environment Agency, 100024198, 2024

Figure 10.1: This is areal rainfall, effective rainfall (percolation or runoff) and soil moisture deficit for the hydrological areas across the SSD. There may be significant variation within each area which must be considered when interpreting these data. When additional meteorological data is available estimates are revised which will affect the period totals in section 10.2

Hydrological Area	Rainfall (mm) 30 day Total	Rainfall June as %LTA	Effective Rainfall (mm) 30 day Total	Effective Rainfall June as %LTA	Soil Moisture Deficit (SMD) Day 30	SMD End of June LTA
Test Chalk	15	27%	0	5%	80	62
East Hampshire Chalk	21	36%	1	16%	78	61
West Sussex Chalk	26	44%	2	21%	76	60
East Sussex Chalk	29	50%	2	21%	75	63
Isle of Wight	17	34%	1	19%	85	66
Western Rother Greensand	25	44%	2	23%	77	61
Hampshire Tertiaries	18	33%	0	0%	83	64
Lymington	19	36%	0	0%	79	59
Sussex Coast	18	37%	0	0%	84	68
Arun	19	35%	0	0%	80	60
Adur	26	46%	0	0%	77	59
Ouse	29	50%	0	0%	69	57
Cuckmere	25	43%	0	0%	66	58
Pevensy Levels	15	29%	0	0%	82	63
SSD Average	22	39%	1	12%	78	61

10.2 Seasonal summary table of rainfall and effective rainfall

Summer season: 01/04/2024 to 30/06/2024

Hydrological Area	Seasonal Rainfall (mm) Total	Seasonal Rainfall as % LTA	Seasonal Effective Rainfall (mm) Total	Seasonal Effective Rainfall as % LTA
Test Chalk	170	101%	41	138%
East Hampshire Chalk	188	106%	54	149%
West Sussex Chalk	195	110%	61	143%
East Sussex Chalk	198	122%	57	172%
Isle of Wight	182	117%	56	197%
Western Rother Greensand	202	112%	67	157%
Hampshire Tertiaries	173	108%	40	240%
Lymington	177	108%	42	195%
Sussex Coast	156	106%	31	177%
Arun	175	103%	50	166%
Adur	191	114%	57	196%
Ouse	205	123%	62	231%
Cuckmere	173	109%	29	134%
Pevensey Levels	137	91%	16	89%
SSD Average	180	109%	47	168%

10.3 Rainfall banding table

Hydrological area	Jun 2024 band	Apr 2024 to Jun 2024 cumulative band	Jan 2024 to Jun 2024 cumulative band	Jul 2023 to Jun 2024 cumulative band
Test Chalk	Notably low	Normal	Exceptionally high	Exceptionally high
East Hampshire Chalk	Below normal	Normal	Exceptionally high	Exceptionally high
West Sussex Chalk	Below normal	Above normal	Exceptionally high	Exceptionally high
East Sussex Chalk	Below normal	Above normal	Exceptionally high	Exceptionally high
Isle of Wight	Notably low	Above normal	Exceptionally high	Exceptionally high
Western Rother Greensand	Below normal	Above normal	Exceptionally high	Exceptionally high
Hampshire Tertiaries	Notably low	Normal	Exceptionally high	Exceptionally high
Lymington	Notably low	Normal	Exceptionally high	Exceptionally high
Sussex Coast	Below normal	Normal	Exceptionally high	Exceptionally high
Arun	Below normal	Normal	Exceptionally high	Exceptionally high
Adur	Below normal	Above normal	Exceptionally high	Exceptionally high
Ouse	Below normal	Above normal	Exceptionally high	Exceptionally high
Cuckmere	Below normal	Normal	Exceptionally high	Exceptionally high
Pevensey Levels	Notably low	Normal	Notably high	Exceptionally high

10.4 River flows table

Site name	River	Catchment	Jun 2024 band	May 2024 band
Alfoldean Gs	Arun	Arun	Below normal	Notably high
Allbrook Gs+ Highbridge	Itchen (so)	Itchen	Exceptionally high	Exceptionally high
Blackwater	Medina	Isle of Wight	No data	No data
Broadlands	Test	Test Lower	Notably high	Exceptionally high
Brockenhurst GS	Lymington	New Forest	Normal	Above normal
Chilbolton GS	Test	Test Upper	Above normal	Exceptionally high
Cowbeech Gs	Cuckmere	Cuckmere	Normal	Normal
Goldbridge Gs	Ouse [so]	Ouse Sussex	Normal	Exceptionally high
Iping Mill Gs	Rother	West Rother	Above normal	Notably high
Mislingford GS	Meon	Meon	Notably high	Exceptionally high
North Fareham GS	Wallington	Wallington	Normal	Notably high
Sakeham GS	Adur	Adur	Normal	Exceptionally high

10.5 Groundwater table

Site name	Aquifer	End of Jun 2024 band	End of May 2024 band
Houndean Bottom Gwl	Brighton Chalk Block	Above normal	Notably high
Chilgrove House Gwl	Chichester-Worthing-Portsdown Chalk	Notably high	Notably high
Carisbrooke Castle	Isle Of Wight Central Downs Chalk	Normal	Above normal
West Meon Hut Gwl	River Itchen Chalk	Exceptionally high	Exceptionally high
Clanville Gate Gwl	River Test Chalk	Exceptionally high	Exceptionally high
Lopcombe Corner Gwl	River Test Chalk	Notably high	Exceptionally high
Beeding Hill Gwl	Brighton Chalk Block	Above normal	Above normal
Catherington	River Meon Chalk	Above normal	Exceptionally high
Cornish Wigdens Gwtr	Eastbourne Chalk Block	Notably high	Above normal
Harting Common Down	Western Rother Lower Greensand	Above normal	Notably high
Preston Candover	River Itchen Chalk	Exceptionally high	Exceptionally high
Youngwoods Copse	Isle of Wight Lower Greensand	Exceptionally high	Exceptionally high

10.6 Abstraction licence flow constraints

Number of flow constraints in force between 1 to 8 June 2024	Number of flow constraints in force between 9 to 15 June 2024	Number of flow constraints in force between 16 to 22 June 2024	Number of flow constraints in force between 23 to 30 June 2024
1	2	1	2

10.7 Solent and South Downs Areal Rainfall Units Map



10.8 SSD Areal Rainfall Monthly Long Term Averages

Hydrological Area	Jan LTA mm	Feb LTA mm	Mar LTA mm	Apr LTA mm	May LTA mm	Jun LTA mm	Jul LTA mm	Aug LTA mm	Sep LTA mm	Oct LTA mm	Nov LTA mm	Dec LTA mm
Test Chalk	84.8	57.9	68.7	51.7	59.0	57.3	47.9	62.5	67.9	75.4	79.9	89.1
East Hampshire Chalk	93.8	62.5	73.9	56.2	61.9	58.7	51.7	64.6	77.0	86.2	90.5	94.8
West Sussex Chalk	93.5	62.5	73.9	60.2	59.5	57.6	50.7	64.8	78.5	92.0	97.0	95.5
East Sussex Chalk	87.1	56.9	65.1	53.5	51.5	57.4	48.9	60.3	72.7	92.9	97.9	88.7
Isle of Wight	88.2	60.4	67.0	52.3	53.2	50.2	44.1	57.4	70.2	84.3	91.2	88.1
Western Rother Greensand	99.5	64.5	75.5	60.6	62.6	57.3	50.4	65.6	78.8	90.8	94.7	99.7
Hampshire Tertiaries	86.1	59.2	67.0	50.4	56.8	52.8	44.5	58.7	69.6	78.8	83.4	88.7
Lymington	88.5	61.2	68.5	51.5	57.9	54.3	43.4	59.3	71.0	83.0	86.8	91.8
Sussex Coast	76.6	51.3	60.7	50.2	50.2	47.7	41.9	53.0	63.7	77.2	80.8	78.9
Arun	85.5	55.1	65.5	56.5	58.5	55.6	47.2	59.4	72.4	80.5	83.9	86.9
Adur	84.8	55.1	63.8	55.3	56.2	55.6	46.0	59.6	71.5	85.7	88.8	86.0
Ouse	86.6	56.4	64.0	54.4	54.0	58.6	48.7	60.0	72.5	89.1	92.9	87.6
Cuckmere	84.8	55.2	61.8	51.2	50.1	57.5	48.5	59.8	71.5	90.8	93.7	85.0
Pevensey Levels	82.2	54.0	60.9	50.6	47.5	52.2	47.3	55.6	68.5	88.1	93.6	82.0
SSD Average	87.3	58.0	66.9	53.9	55.6	55.2	47.2	60.0	71.8	85.3	89.6	88.8