Monthly water situation report

Solent and South Downs Area

Summary – March 2021

Solent and South Downs (SSD) had below average rainfall in March receiving 51% (34mm) of the long term average (LTA) (67mm). Monthly mean river flows across SSD ranged from **below normal** to **notably high**. Groundwater levels ranged from **normal** to **notably high**. Soil moisture deficits across SSD ended the month greater than the LTA. End of month reservoir stocks were above average at Ardingly Reservoir (Ouse Catchment) and slightly below average at Arlington Reservoir (Cuckmere catchment).

Rainfall

Solent and South Downs (SSD) had below average rainfall in March receiving 51% (34mm) of the LTA (67mm). Areal units in SSD received between 47% and 61% of LTA rainfall but the Sussex Coast areal unit was significantly drier than the other units with only 39% LTA.

The wettest days were the 10th and 12th of the month. On the 10th of March Duncton TBR (Western Rother Greensand) recorded 19.8 and on the 12th of March Ashington (Adur) and Storrington (Western Rother Greensand) recorded 22.4mm and 20.1mm respectively. The second half of the month was very dry with little in the way of significant rainfall. The total rainfall for the winter period (1st of December to the 31st of March) was above average with 127% (603mm) of the LTA (476mm).

Soil Moisture Deficit/Recharge

Soil moisture deficits across Solent and South Downs ended the month greater than the LTA. This means that soils are drier than average for the time of year.

River Flows

Monthly mean river flows across SSD ranged from **below normal** to **notably high**. The Itchen at Allbrook & Highbridge recorded mean monthly flows in the **notably high** range and flows on the Test at Broadlands were **above normal**. Flows recorded on the Arun at Alfoldean were **below normal**. All remaining reporting sites were in the **normal** range.

Groundwater Levels

End of month groundwater levels ranged from **normal** to **notably high**. The groundwater levels at Catherington and Preston Candover (both East Hampshire Chalk) were **notably high.** The level at Preston Candover was the 6th highest on record for March in a record going back to 1975. Beeding Hill (East Sussex Chalk), Carisbrooke Castle (Isle of Wight) and Harting Common Down (Western Rother Greensand) and Lopcombe Corner (Test Chalk) recorded **normal** groundwater levels. All remaining reporting sites recorded end of month groundwater levels in the **above normal** range.

Reservoir Storage/Water Resource Zone Stocks

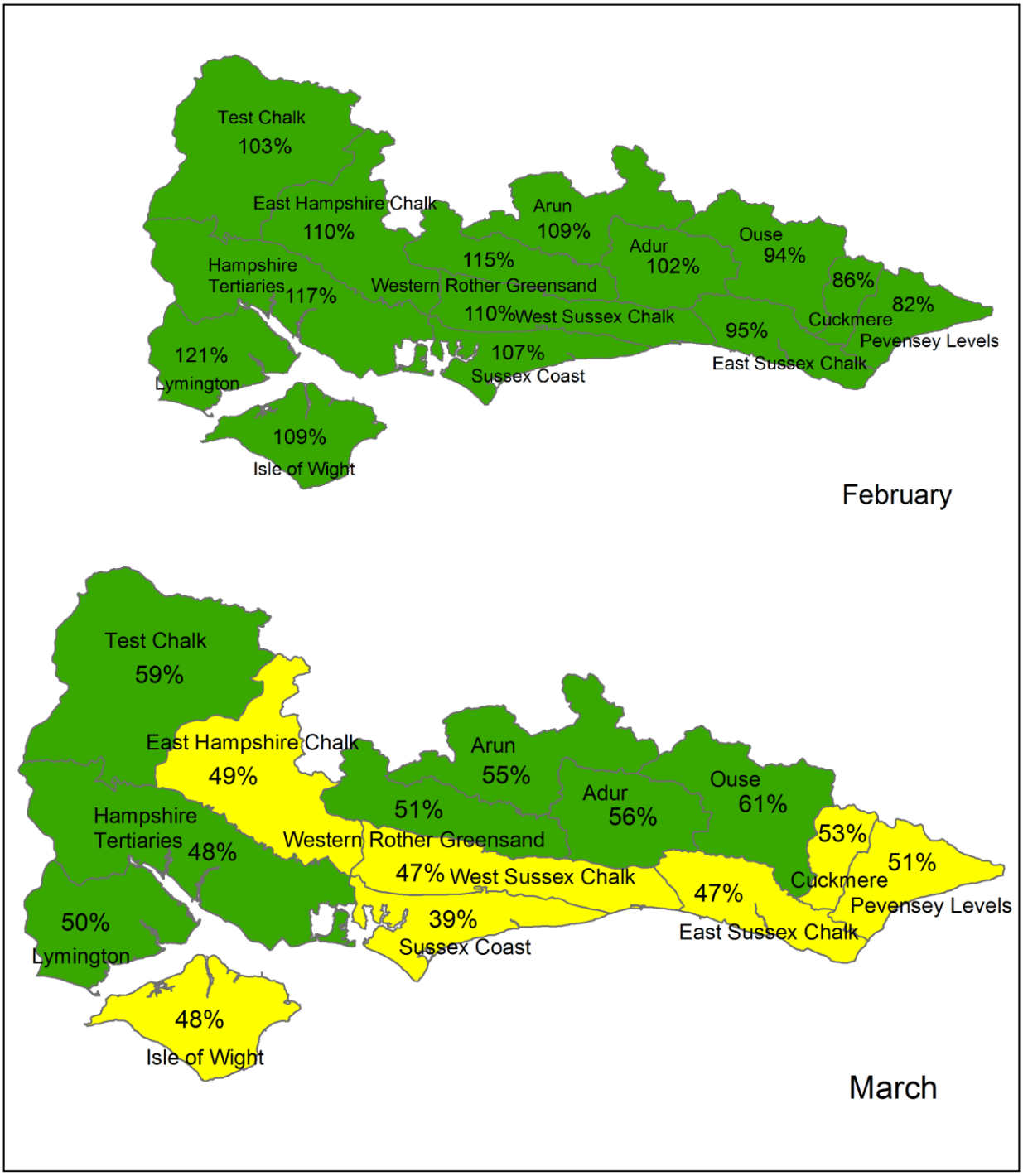
End of month reservoir stocks were above average at Ardingly Reservoir (Ouse) with 100% of total capacity (LTA 97%) and slightly below average at Arlington Reservoir (Cuckmere) with 97.4% of total capacity (LTA 99%).

Environmental Impact

During March there were three licence restrictions in force but these were lifted at the end of the month as the abstraction period ended.

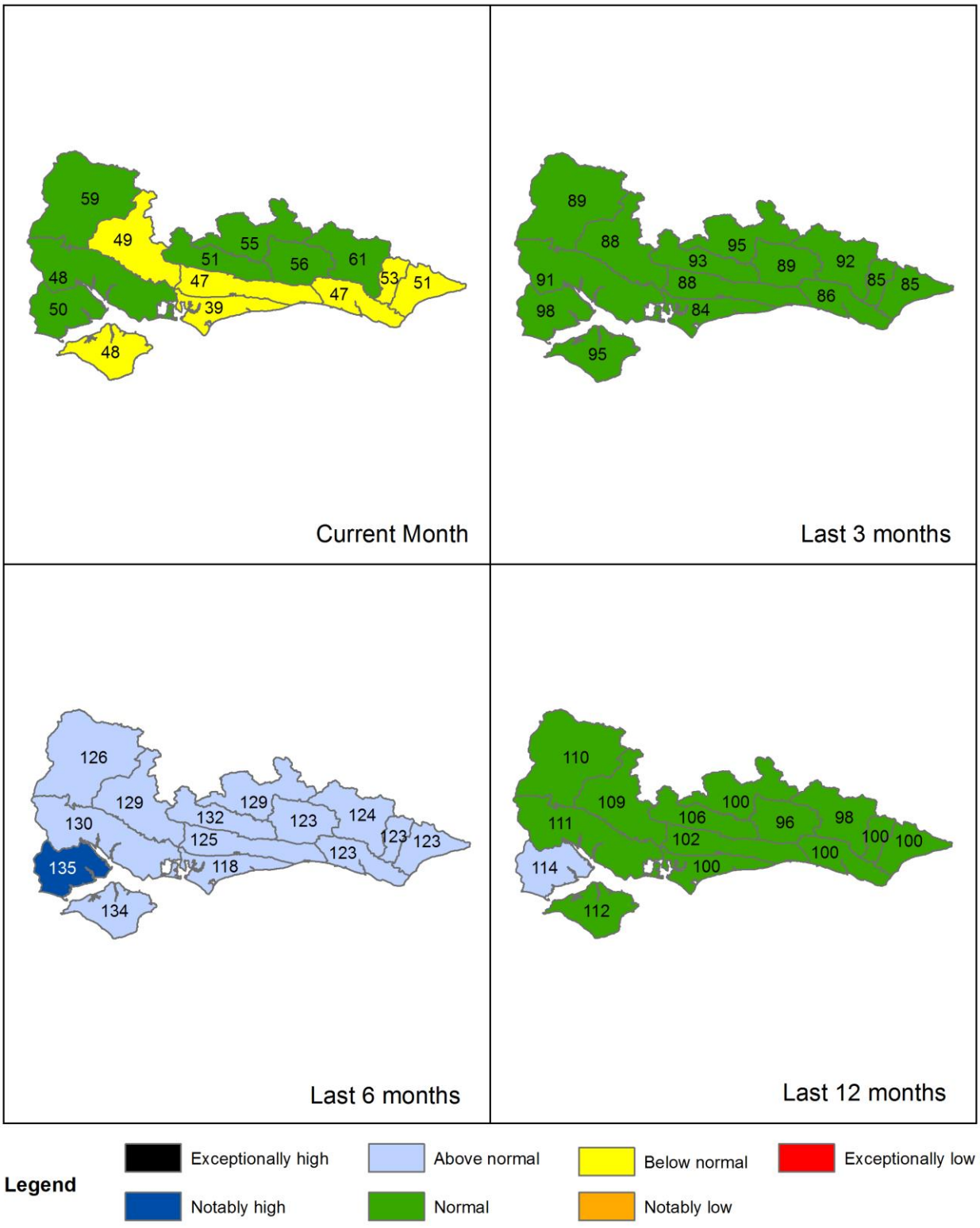
Author: HydrologySSD

Rainfall Map 1



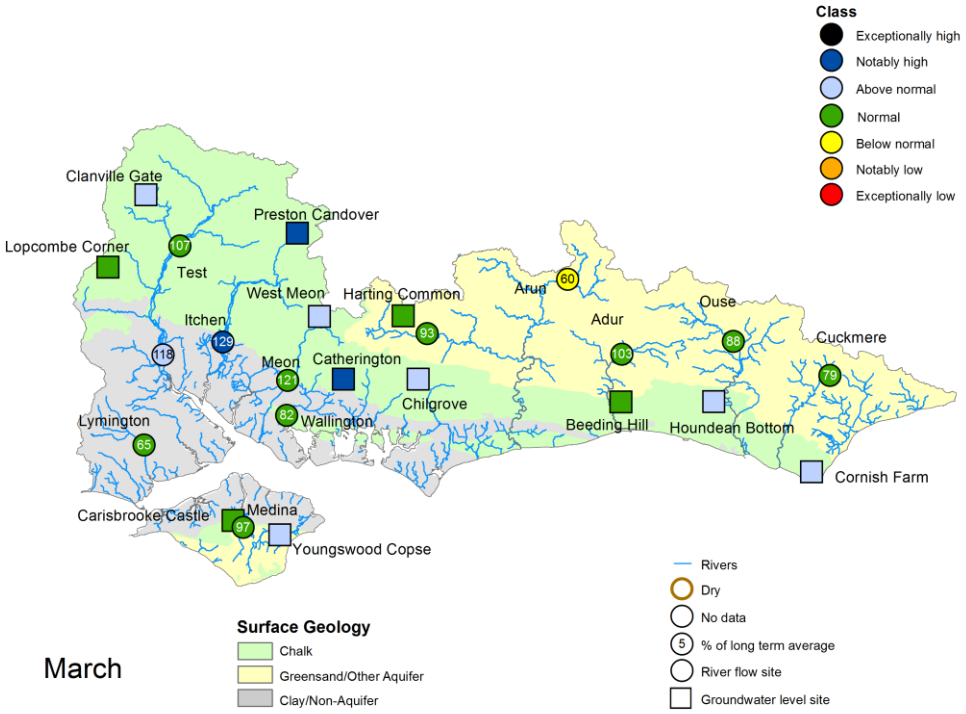
Total rainfall for hydrological areas across Solent and South Downs for the current month, classed relative to an analysis of respective historic totals. Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Includes material based on Ordnance Survey 1:50 000 maps with the permission of the controller of Her Majesty's Stationery Office © Crown copyright. All rights reserved. Environment Agency, 100026380, 2021.

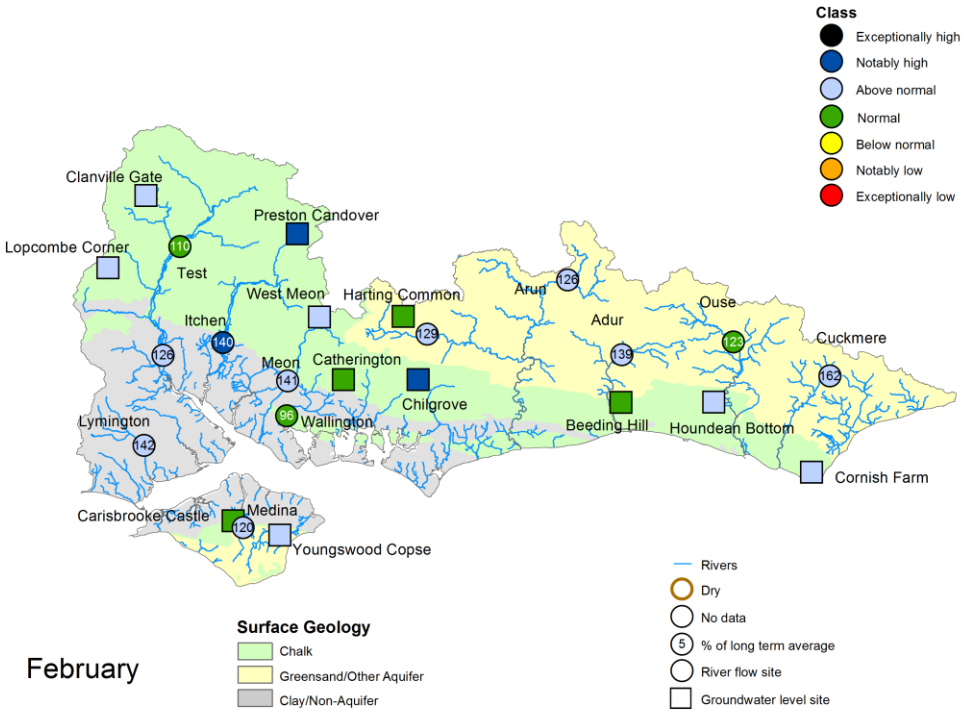
Rainfall Map 2



Total rainfall for hydrological areas across Solent and South Downs for the current month (up to 31 December), the last 3 months, the last 6 months, and the last 12 months, classed relative to an analysis of respective historic totals. Final NCIC (National Climate Information Centre) data based on the Met Office 5km gridded rainfall dataset derived from rain gauges (Source: Met Office © Crown Copyright, 2021). Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Crown copyright. All rights reserved. Environment Agency, 100026380, 2021

River Flow and Groundwater Status Map





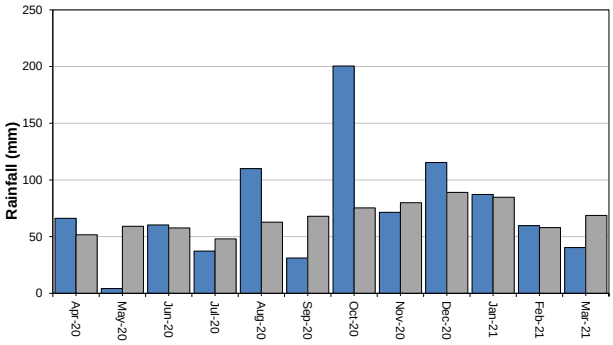
Groundwater site status based on end of month level. Surface water site status based on mean monthly flow.

West Hampshire – Page 1

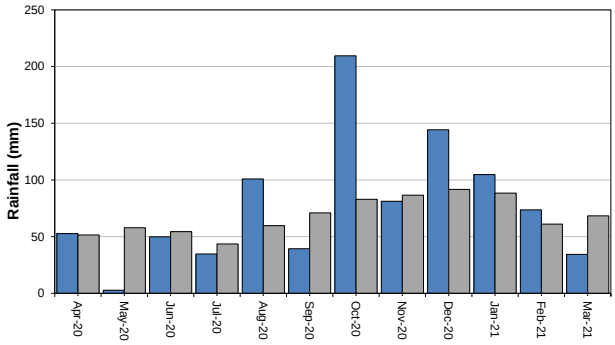
Monthly total rainfall (mm)

Long term average rainfall (mm)

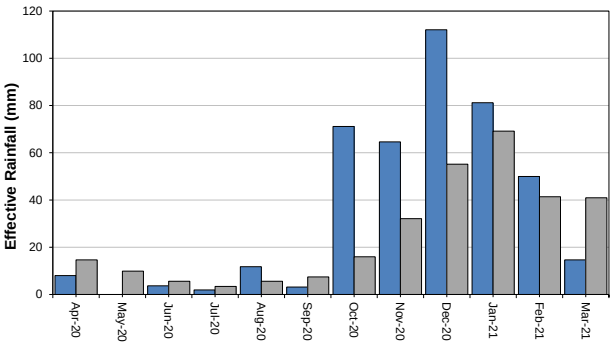
Test Chalk - Rainfall



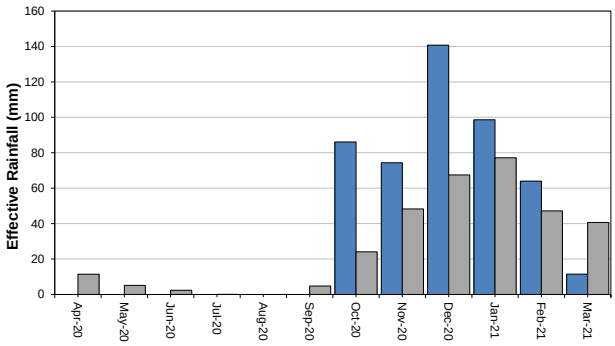
Lymington - Rainfall



Test Chalk - Effective Rainfall

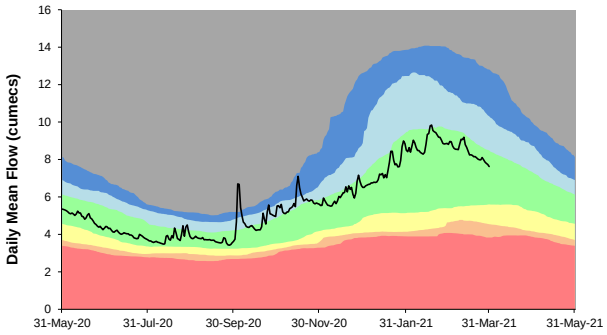


Lymington - Effective Rainfall



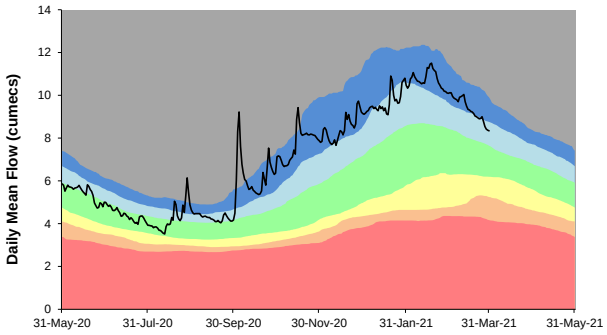
RIVER TEST AT CHILBOLTON

Ranking used data from 09/01/1989 to 31/12/2017



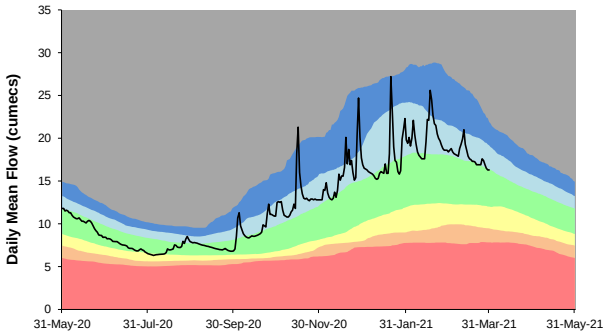
RIVER ITCHEN AT ALLBROOK GS AND HIGHBRIDGE

Ranking used data from 01/10/1958 to 31/12/2017



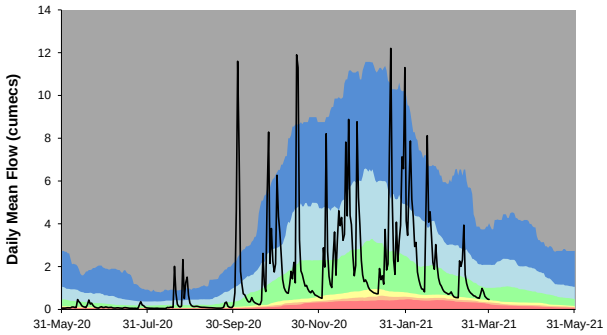
RIVER TEST AT BROADLANDS

Ranking used data from 01/10/1957 to 31/12/2017



LYMINGTON RIVER AT BROCKENHURST

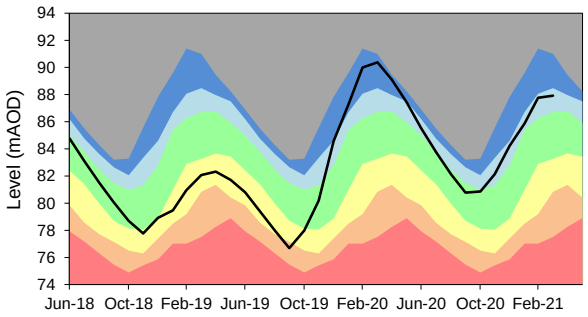
Ranking used data from 01/01/1997 to 31/12/2017



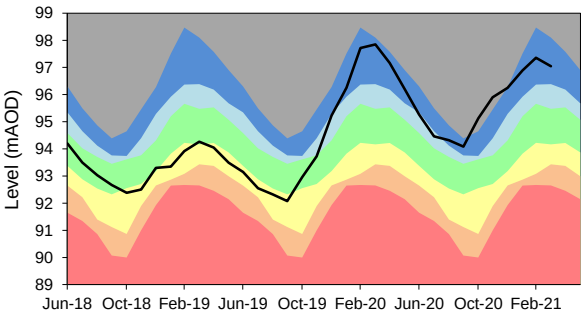
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

West Hampshire – Page 2

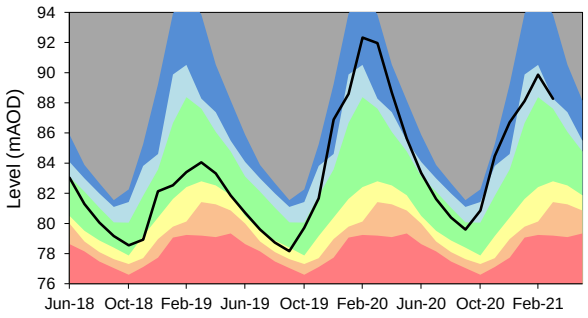
CLANVILLE GATE GWL - CHALK
Ranking derived from data for the period Mar-1963 to Dec-2017



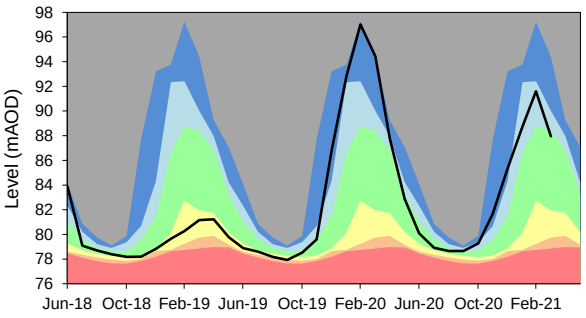
PRESTON CANDOVER GWL - CHALK
Ranking derived from data for the period Jan-1975 to Dec-2017



WEST MEON GWL - CHALK
Ranking derived from data for the period Sep-1986 to Dec-2017



LOPCOMBE CORNER GWL - CHALK
Ranking derived from data for the period Apr-1963 to Dec-2017

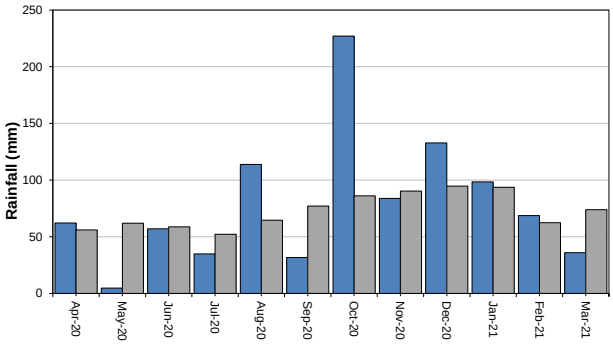


East Hampshire and Isle of Wight

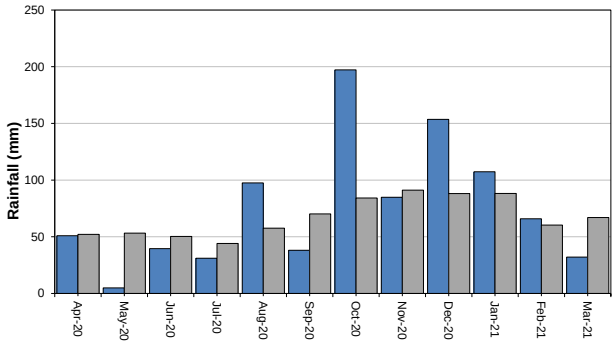
Monthly total rainfall (mm)

Long term average rainfall (mm)

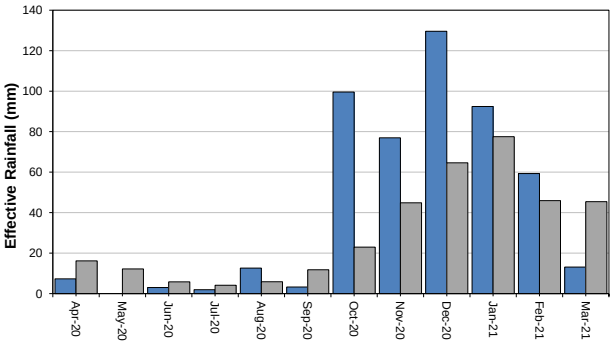
East Hampshire Chalk - Rainfall



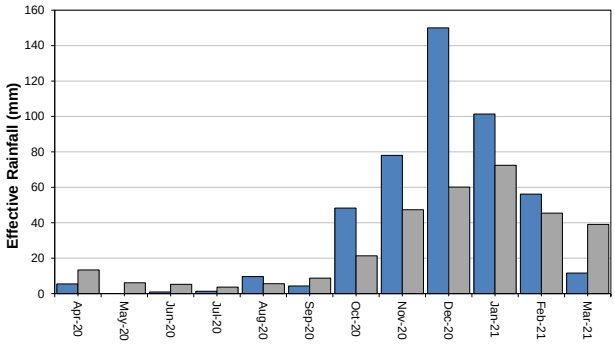
Isle of Wight - Rainfall



East Hampshire Chalk - Effective Rainfall

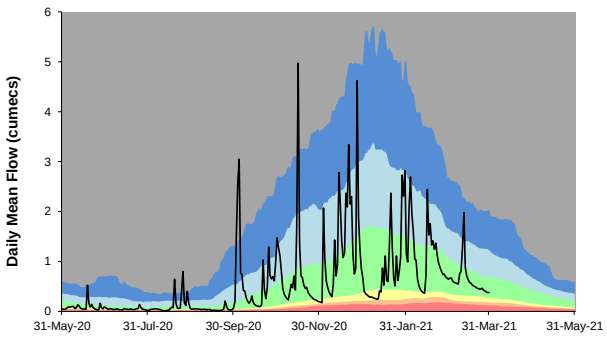


Isle of Wight - Effective Rainfall



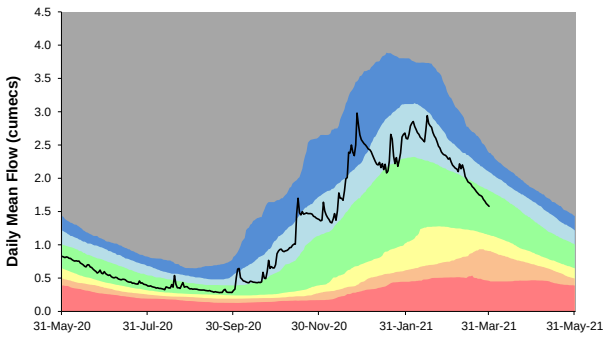
RIVER WALLINGTON AT NORTH FAREHAM

Ranking used data from 01/01/1992 to 31/12/2017



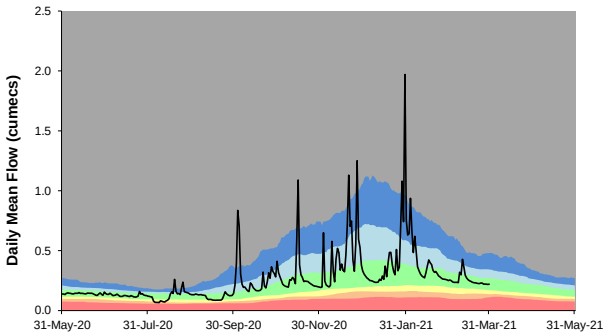
RIVER MEON AT MISLINGFORD

Ranking used data from 01/10/1958 to 31/12/2017



RIVER MEDINA AT BLACKWATER

Ranking used data from 01/05/1989 to 31/12/2017



Exceptionally high

Notably high

Above normal

Normal

Below normal

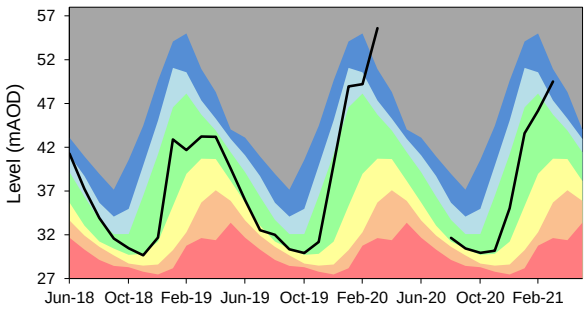
Notably low

Exceptionally low

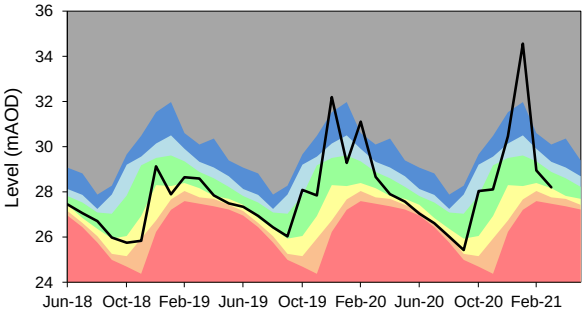
Latest data

East Hampshire and Isle of Wight – Page 2

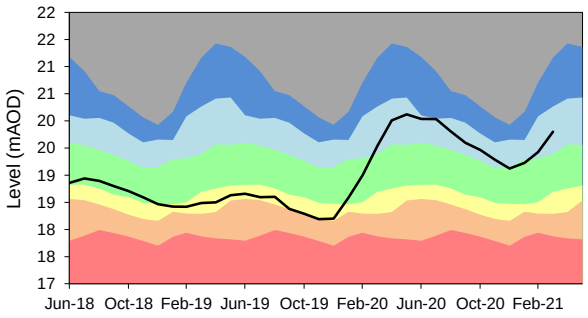
CATHERINGTON GWL - CHALK
Ranking derived from data for the period Jan-1969 to Dec-2017



CARISBROOKE CASTLE
Ranking derived from data for the period Aug-1977 to Dec-2017



YOUNGSWOOD COPSE GWL - LGS
Ranking derived from data for the period Feb-1978 to Dec-2017

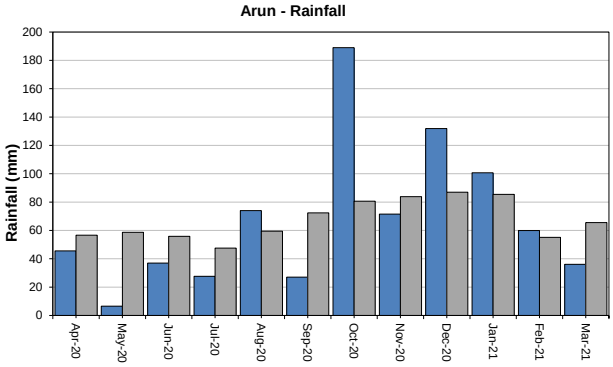


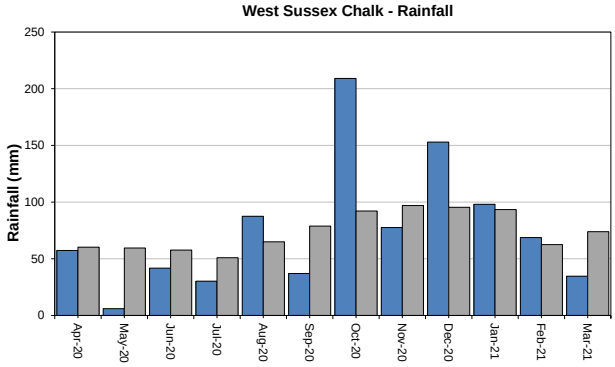
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

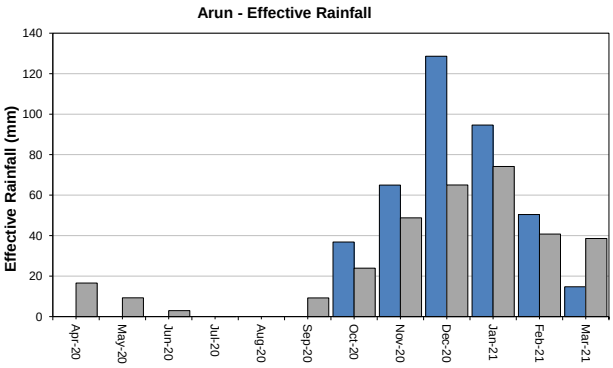
West Sussex

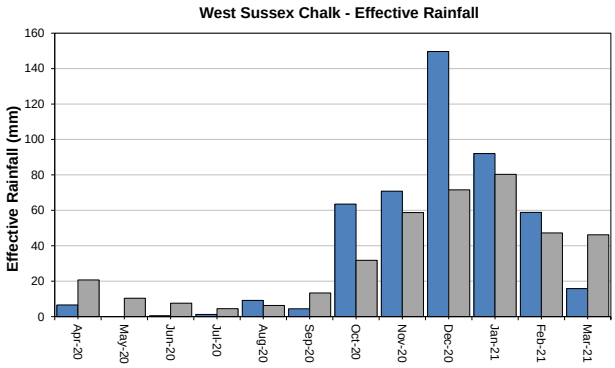
Monthly total rainfall (mm)

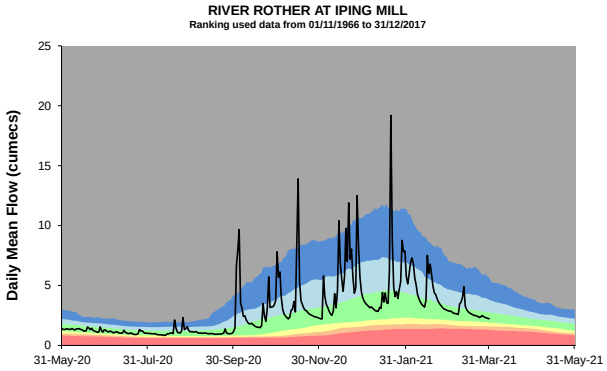
Long term average rainfall (mm)

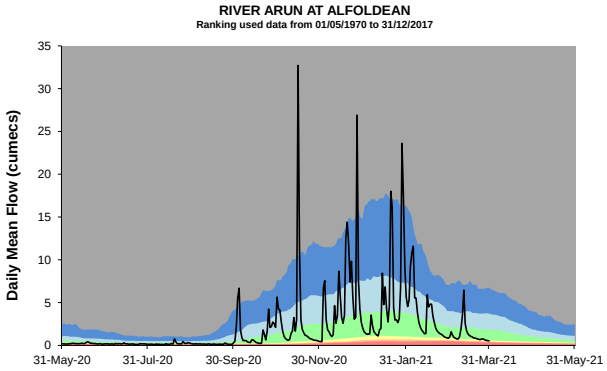


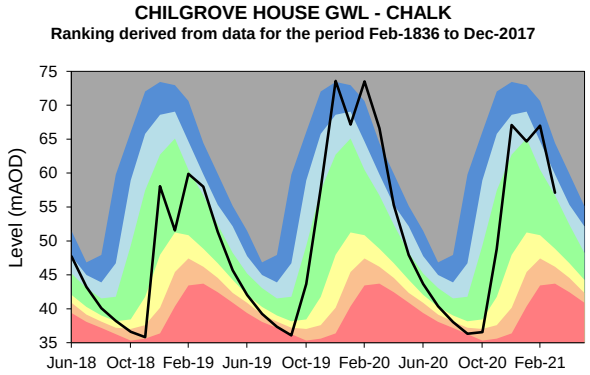


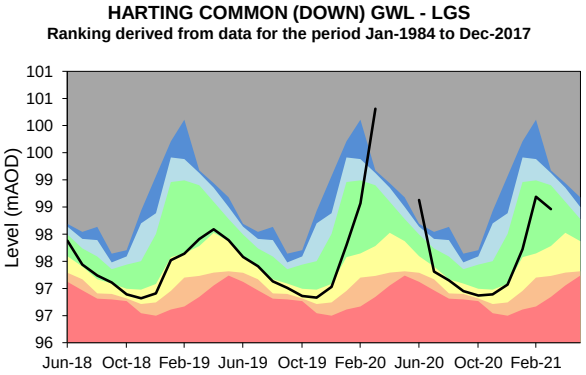










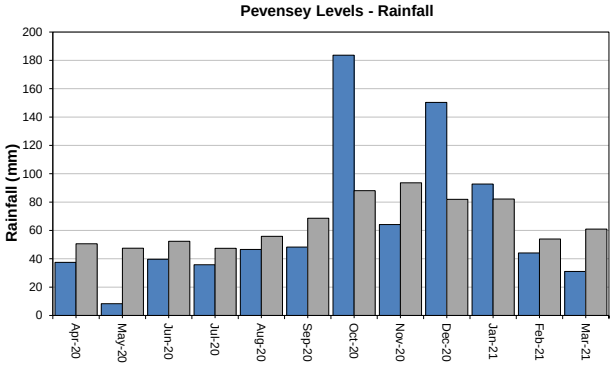


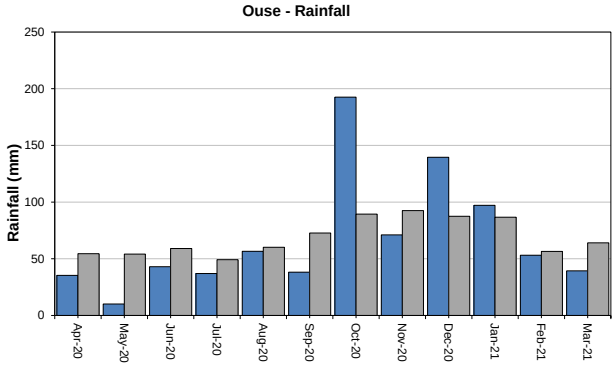
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

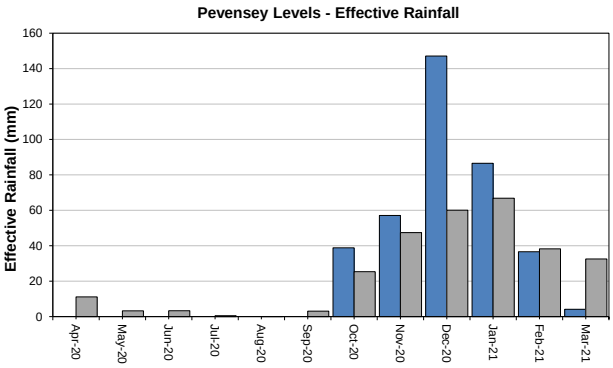
East Sussex

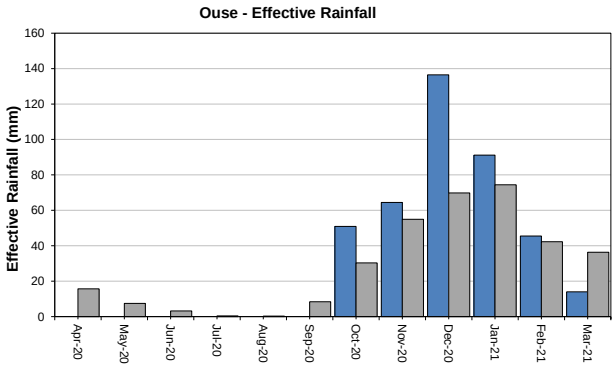
Monthly total rainfall (mm)

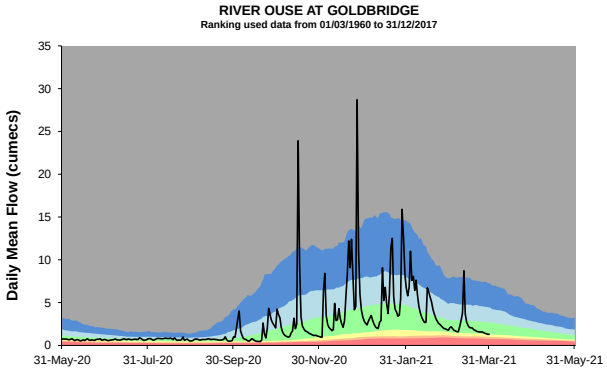
Long term average rainfall (mm)

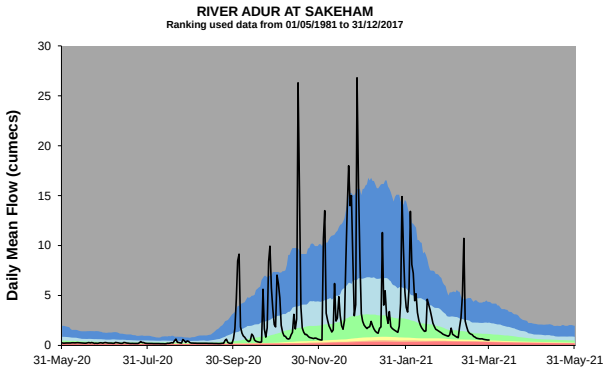


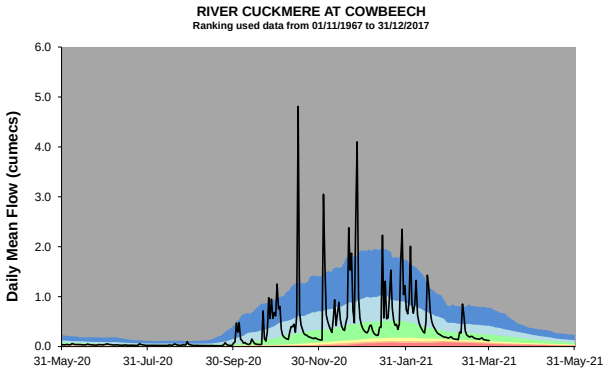












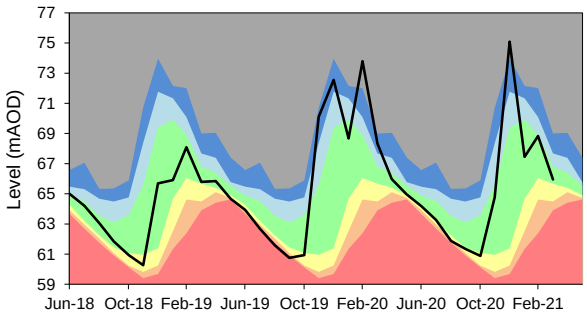
Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

East Sussex – Page 2

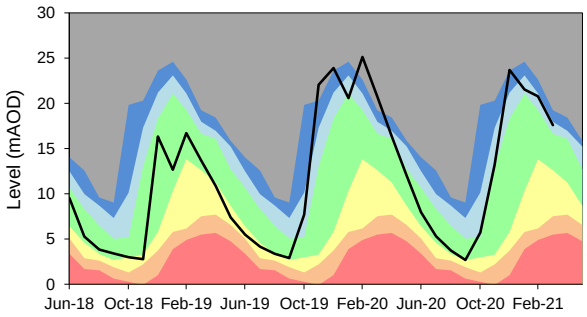
Monthly total rainfall (mm)

Long term average rainfall (mm)

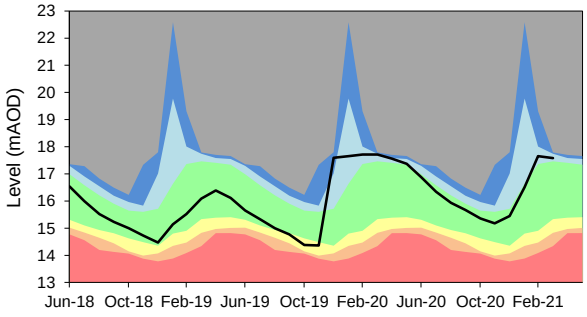
BEEDING HILL GWL - CHALK
Ranking derived from data for the period Sep-1979 to Dec-2017

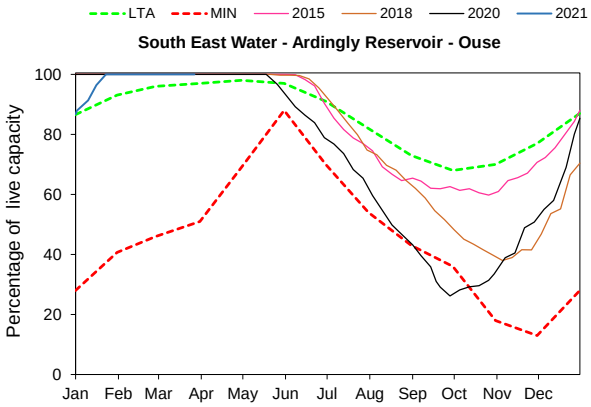


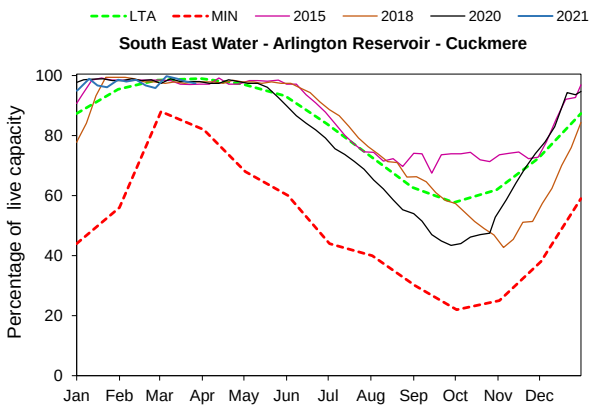
HOUNDEAN BOTTOM GWL - CHALK
Ranking derived from data for the period Jan-1977 to Dec-2017



CORNISH FARM WIGDENS GWL - CHALK
Ranking derived from data for the period Mar-1981 to Dec-2017







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

Summary of rainfall, effective rainfall and soil moisture deficits

Rainfall and effective rainfall

Area	Rainfall (mm)	LTA rainfall (mm)	% of LTA	Effective rainfall (mm)	LTA effective rainfall (mm)	% of LTA
Test Chalk	40	69	59	15	41	36
East Hampshire Chalk	36	74	49	13	45	29
West Sussex Chalk	35	74	47	16	46	34
East Sussex Chalk	31	65	47	6	37	16
Isle of Wight	32	67	48	12	39	30
Western Rother Greensand	38	76	51	19	51	36
Hampshire Tertiaries	32	67	48	10	38	26
Lymington	34	68	50	11	41	28
Sussex Coast	23	61	39	7	33	20
Arun	36	66	55	15	39	38
Adur	36	64	56	15	36	41
Ouse	39	64	61	14	36	39
Cuckmere	33	62	53	5	34	16
Pevensey Levels	31	61	51	4	33	13
Solent and South Downs	**34**	**67**	**51**	**11**	**39**	**29**

Winter rainfall and effective rainfall

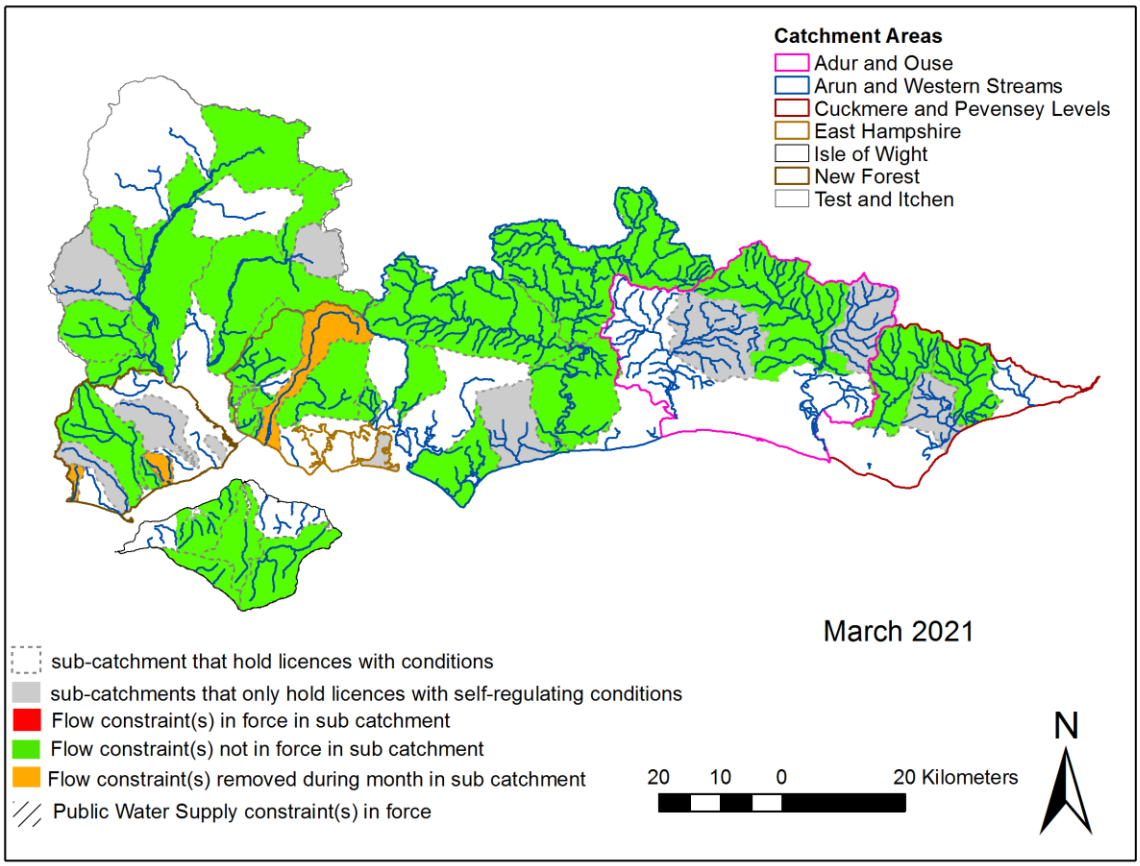
Winter totals for the period 1 October 2020 to 31 March 2021

Area	Rainfall (mm)	LTA rainfall (mm)	% of LTA	Effective rainfall (mm)	LTA effective rainfall (mm)	% of LTA
Test Chalk	575	456	126	394	255	154
East Hampshire Chalk	647	501	129	471	301	156
West Sussex Chalk	641	515	125	451	336	134
East Sussex Chalk	601	490	123	406	293	139
Isle of Wight	641	479	134	445	286	156
Western Rother Greensand	692	525	132	499	335	149
Hampshire Tertiaries	598	461	129	423	280	151
Lymington	648	479	135	475	305	156
Sussex Coast	503	425	118	310	235	132
Arun	589	458	129	390	291	134
Adur	570	464	123	372	287	129
Ouse	593	477	124	403	308	131
Cuckmere	582	472	123	389	292	134
Pevensey Levels	566	461	123	370	270	137
Solent and South Downs	**603**	**476**	**127**	**414**	**291**	**142**

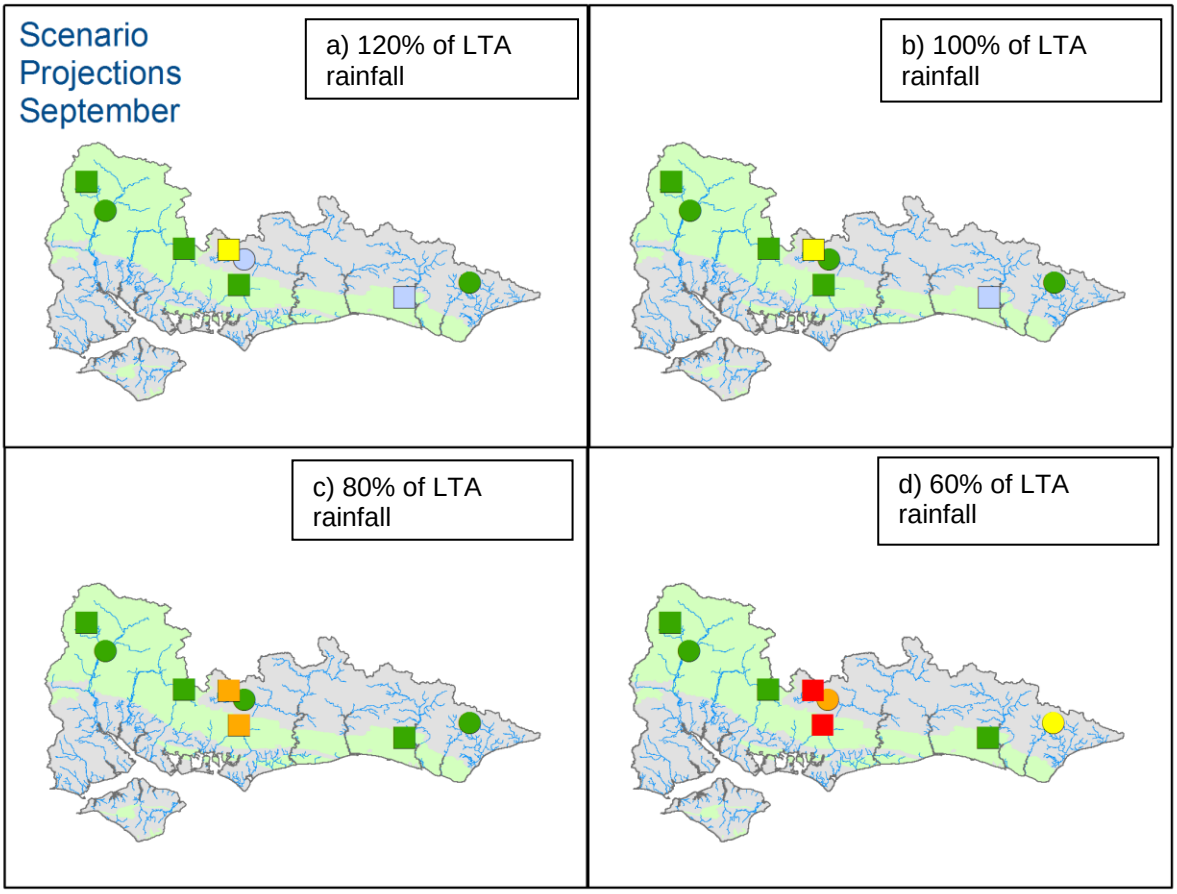
Soil Moisture Deficit

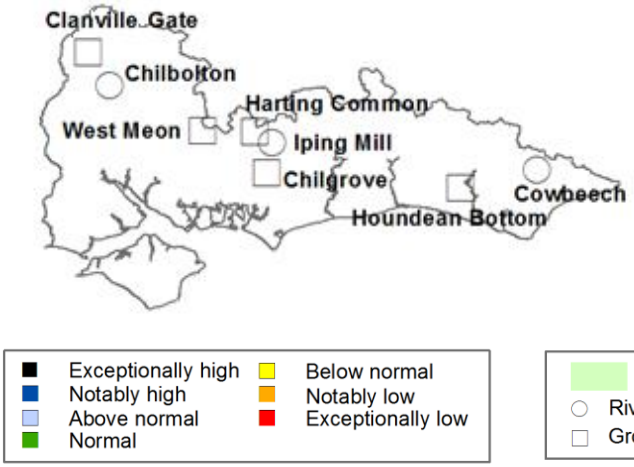
Area	End of month SMD (mm)	End of month SMD LTA (mm)
Test Chalk	13	9
East Hampshire Chalk	17	9
West Sussex Chalk	20	9
East Sussex Chalk	17	9
Isle of Wight	19	10
Western Rother Greensand	18	8
Hampshire Tertiaries	17	9
Lymington	17	9
Sussex Coast	22	9
Arun	17	8
Adur	19	9
Ouse	15	8
Cuckmere	15	9
Pevensey Levels	15	9
Solent and South Downs	**17**	**9**

Environmental Impact
Flow Constraints



Forward look- river flow and groundwater September 2021





Projected river flows at key indicator sites up until the end of September 2021. Projected groundwater levels at key indicator sites at the end of September 2021. Projections based on four scenarios: 120% (a), 100% (b), 80% (c) and 60% (d) of long term average rainfall (Source: Environment Agency). Geological map reproduced with kind permission from UK Groundwater Forum BGS © NERC Crown copyright. All rights reserved. Environment Agency 100026380 2021.

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).
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/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 1961-1990. 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 x 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 (e.g. 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).

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