

Monthly water situation report

Solent and South Downs Area

Summary – December 2020

Solent and South Downs (SSD) had above average rainfall for December receiving 158% (140mm) of the LTA (89mm). Monthly mean river flows across SSD ranged from **normal** to **notably high**. Groundwater levels ranged from **below normal** to **exceptionally high**. Soil moisture deficits across SSD ended the month at zero. End of month reservoir stocks were **average** at Ardingly Reservoir (Ouse Catchment) and **above average** at Arlington Reservoir (Cuckmere catchment).

Rainfall

Solent and South Downs (SSD) had **above average** rainfall in December receiving 158% (140mm) of the LTA (89mm). The highest monthly rainfall fell along the southern coast of SSD. Pevensey Levels areal unit received the highest monthly total with 150mm, 183% of LTA (82mm), closely followed by East Sussex Chalk and Isle of Wight units which received 174% of LTA. The least rainfall was received by Test Chalk unit with 130% of LTA (89mm). The highest daily rainfall total of 47mm was recorded on the 3rd December at Cowes raingauge (Isle of Wight) while the 22nd recorded the second highest of 40mm at Powdermill, Hastings and Pevensey (Pevensey Levels). There were 18 wet days in December but 60% of the monthly rainfall total fell over the 3rd, 20-22nd and 26th (Storm Bella). Half of the annual LTA rainfall (821mm) fell during October to December for SSD (412mm).

Soil Moisture Deficit/Recharge

Soil moisture deficits across Solent and South Downs ended the month at zero and as a result soils were **wetter** than normal for the time of the year.

River Flows

Monthly mean river flows across SSD ranged narrowly from **normal** to **notably high**. Flows on the River Test at Chilbolton and River Wallington at North Fareham were in the **normal** range. The River Medina at Blackwater, River Lymington at Brockenhurst, and Rive Ouse at Goldbridge recorded flows in the **above normal** range. The remaining seven reporting sites were in the **notably high** range. The River Cuckmere at Cowbeech and River Adur at Sakeham both recorded the 5th highest December monthly flow, with River Medina at Blackwater and Western Rother at Iping Mill recording the 6th highest. In response to the rainfall on the 27th November all Sussex sites and the River Medina at Blackwater recorded **exceptionally high** daily mean flows. The River Cuckmere at Cowbeech and River Adur at Sakeham recorded their 10th highest December daily mean flows on the 27th.

Groundwater Levels

End of month groundwater levels ranged from **below normal** to **exceptionally high**. Beeding Hill (West Sussex Chalk) and Houndean Bottom (Ouse) ended the month in the **exceptionally high** category. Beeding Hill ended the month at 75.1mAOD which represents the highest December level on its 41 year record. Groundwater levels at Preston Candover (East Hampshire Chalk), Lopcombe Corner (Test Chalk), West Meon (East Hampshire Chalk) and Carisbrooke Castle (Isle of Wight) were **notably high**. Clanville Gate (Test Chalk) and Chilgrove (West Sussex Chalk) ended with levels **above normal**. Harting Common (Western Rother Greensand) recorded levels in the **below normal** category. All remaining reporting sites recorded **normal** end of month levels.

Reservoir Storage/Water Resource Zone Stocks

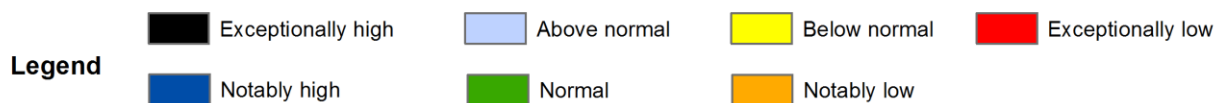
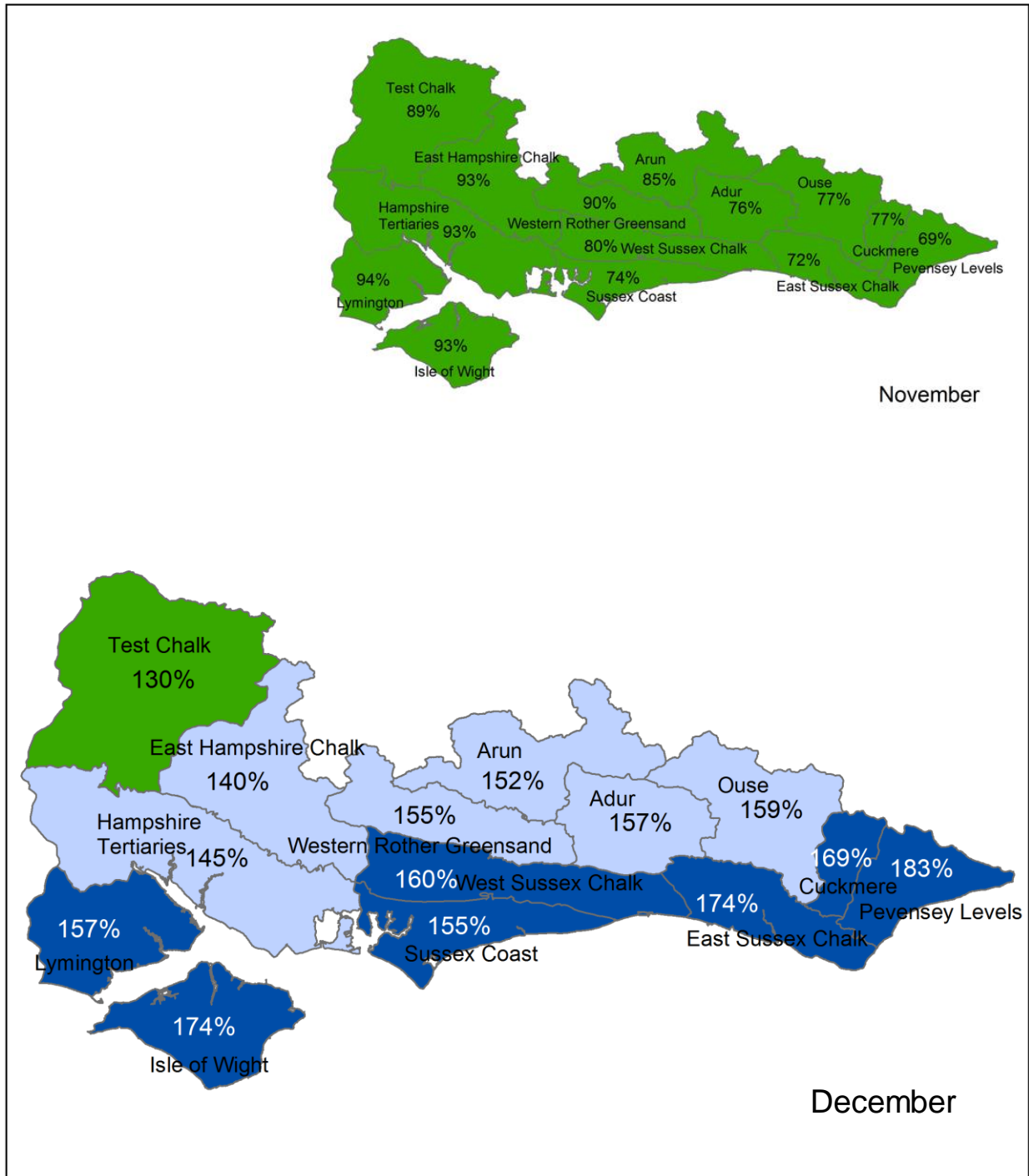
End of month reservoir stocks were **average** at Ardingly Reservoir (Ouse) with 88% of total capacity (LTA 87%) and **above average** at Arlington Reservoir (Cuckmere) with 95% of total capacity (LTA 87%).

Environmental Impact

During December there were a total of 7 licences with restrictions in force, 3 of which were Public Water Supply licences. All were lifted by the end of the month. There were 29 fluvial Flood Alerts and 9 Flood Warning issued in December. Storm Bella caused 6 of the flood warnings and 13 flood alerts over the 26-27th December.

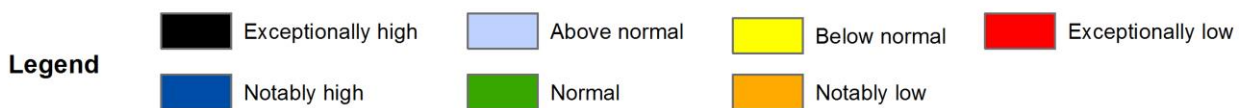
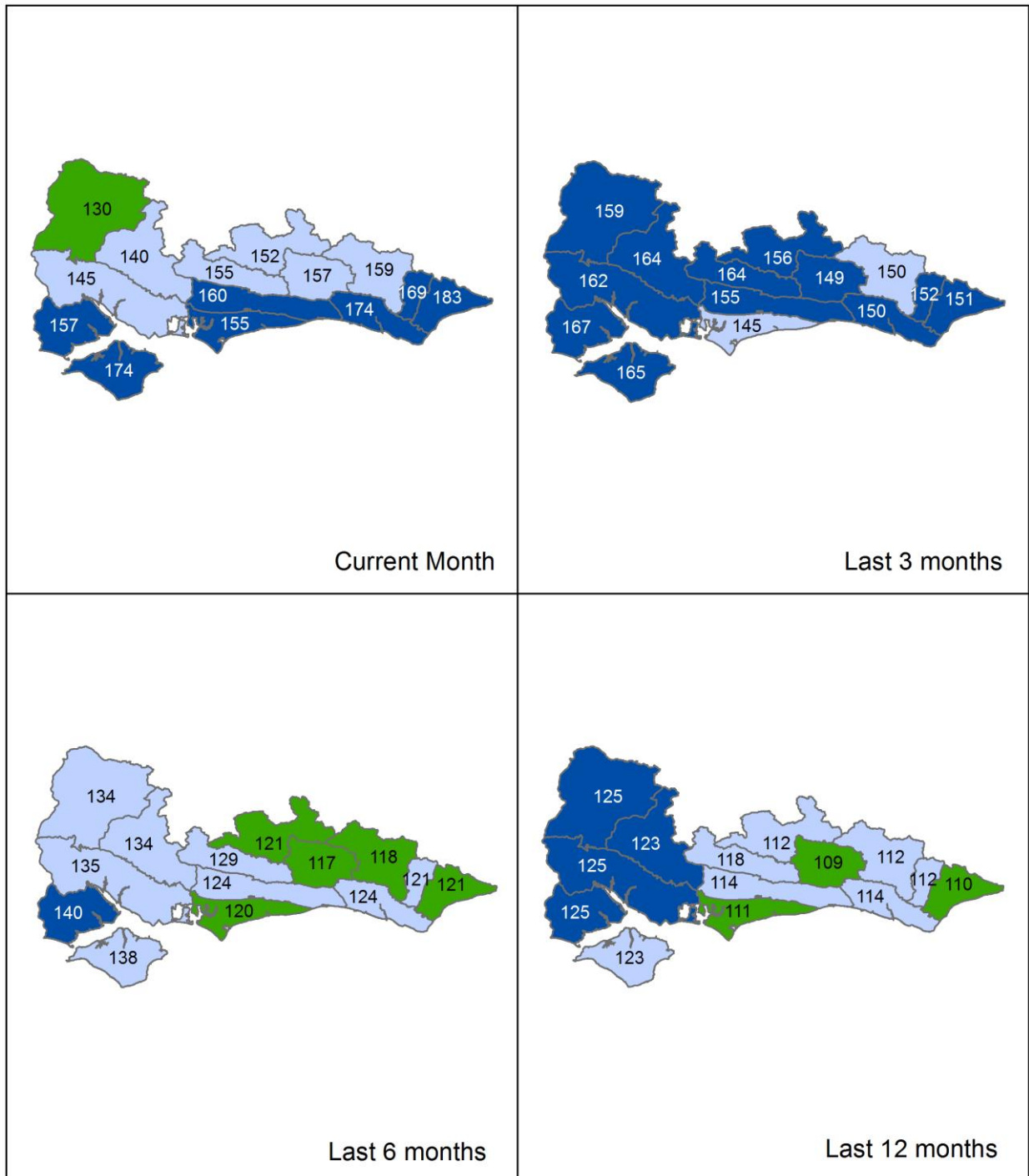
Author: [HydrologySSD](#)

Rainfall Map 1



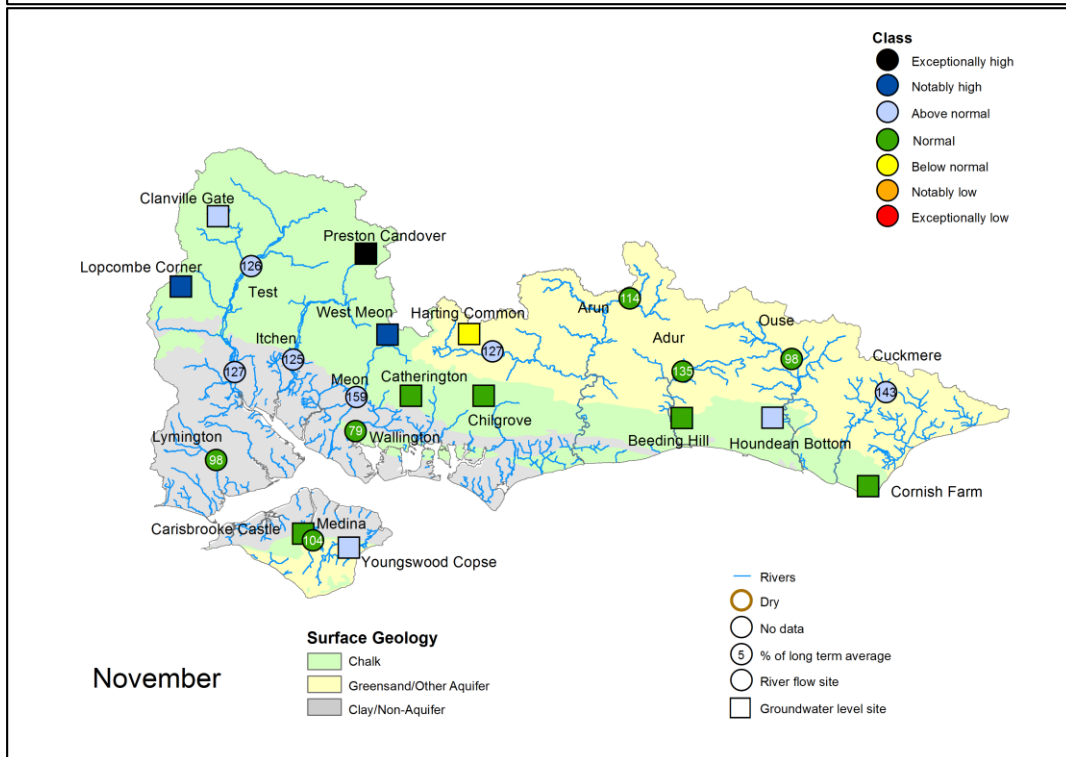
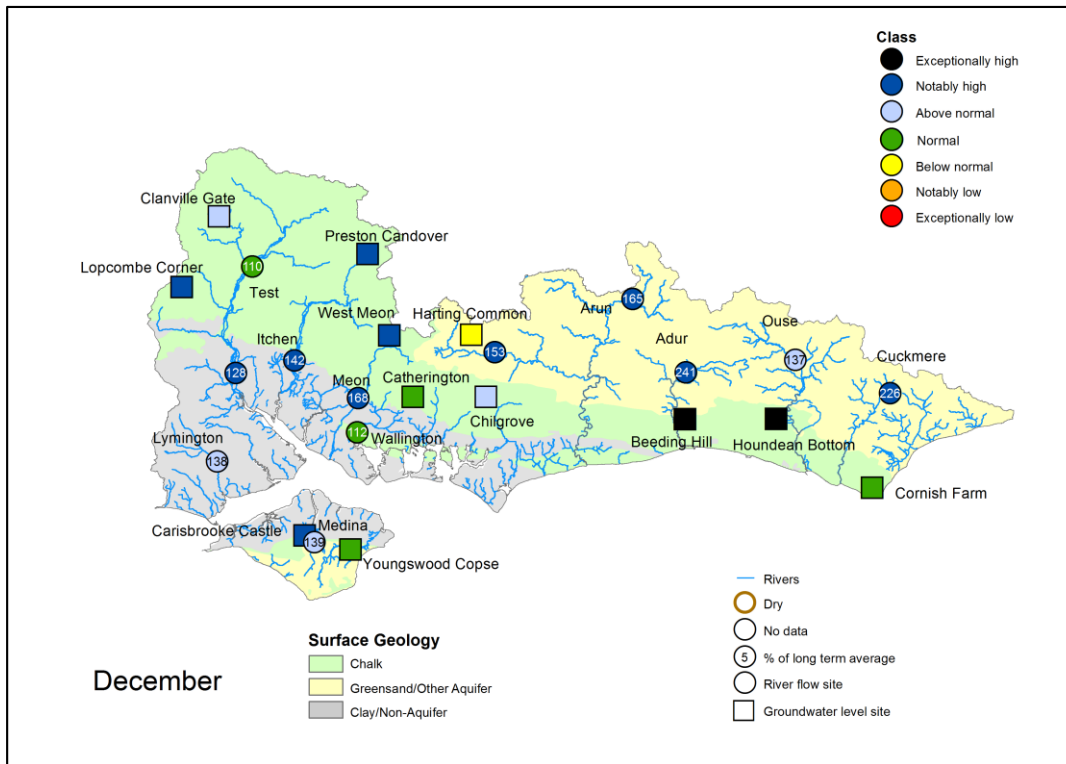
Total rainfall for hydrological areas across Solent and South Downs for the current month, classed relative to an analysis of respective historic totals. Provisional data based on Environment Agency 1km gridded rainfall dataset derived from Environment Agency intensity rain gauges. Includes material 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.

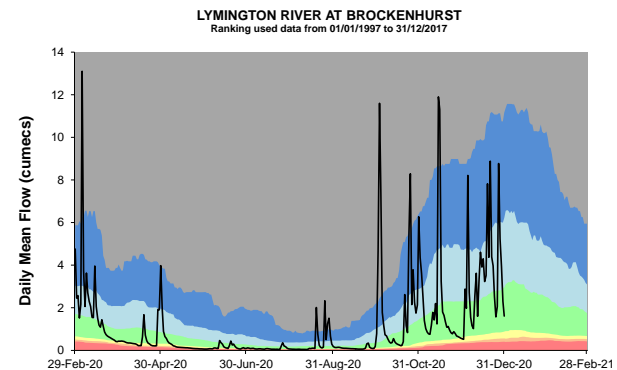
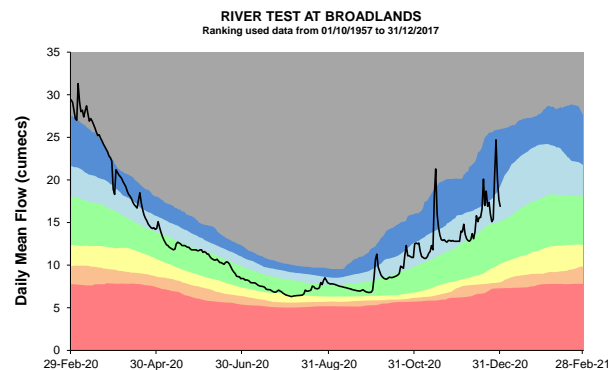
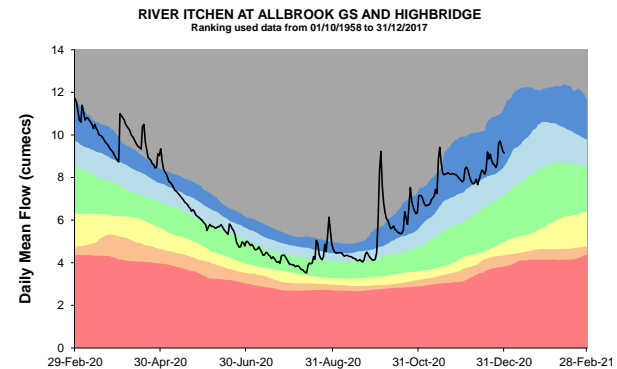
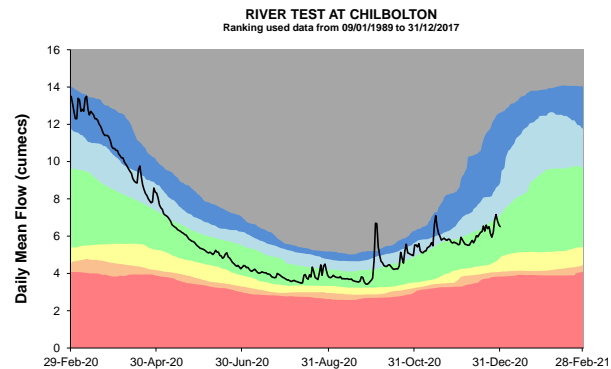
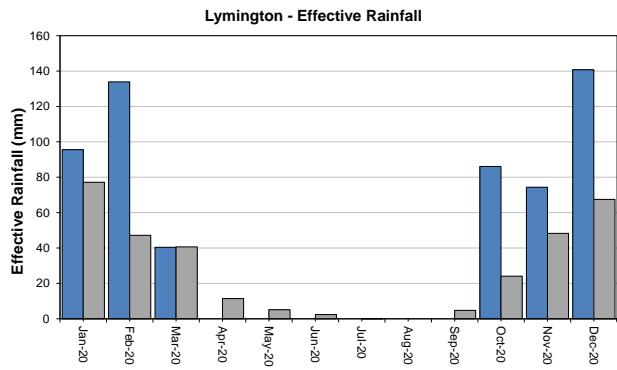
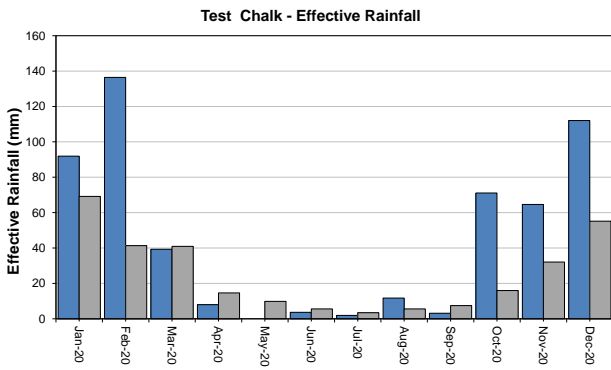
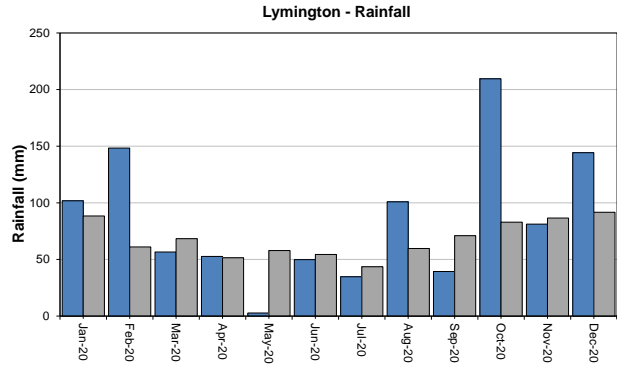
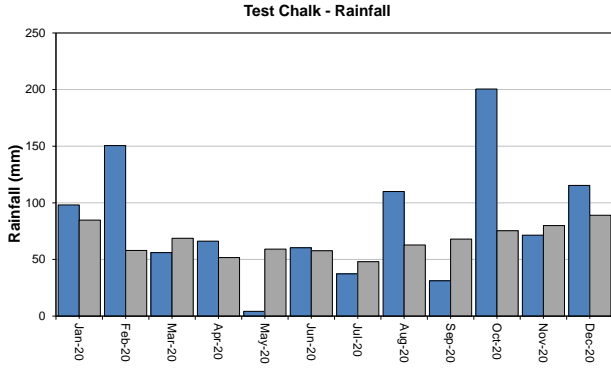
Some features of this map are based on digital spatial data licensed from the Centre for Ecology and Hydrology, © CEH. Includes material based on Ordnance Survey 1:50 000 maps with the permission of the controller of Her Majesty's Stationery Office © Crown copyright. All rights reserved. Environment Agency, 100026380, 2021

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West Hampshire – Page 1

Monthly total rainfall (mm)

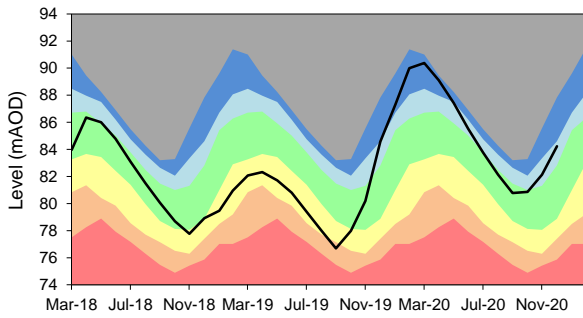
Long term average rainfall (mm)



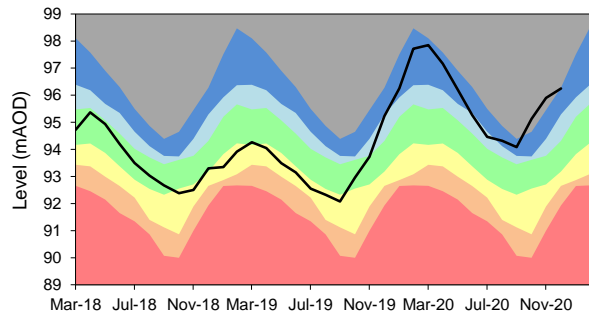
Exceptionally high
 Below normal
 Notably high
 Notably low
 Above normal
 Exceptionally low
 Normal
 Latest data

West Hampshire – Page 2

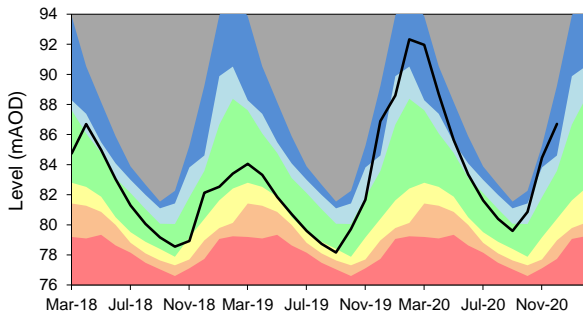
CLANVILLE GATE GWL - CHALK
 Ranking derived from data for the period Mar-1963 to Dec-2017



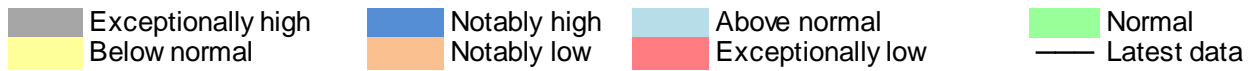
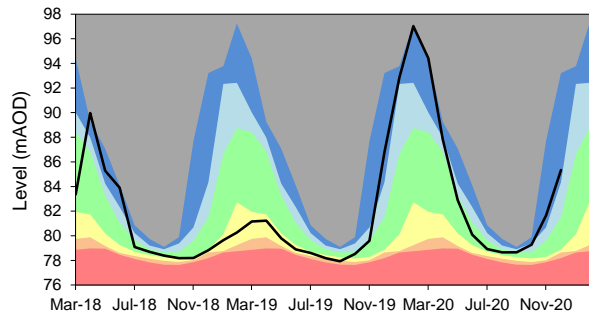
PRESTON CANDOVER GWL - CHALK
 Ranking derived from data for the period Jan-1975 to Dec-2017



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



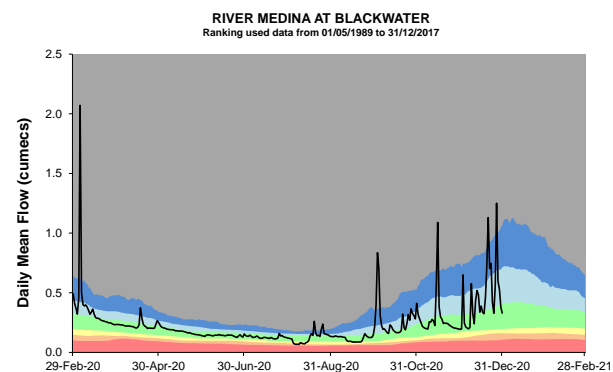
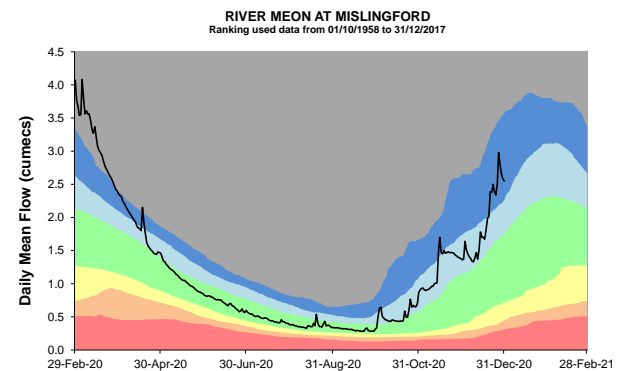
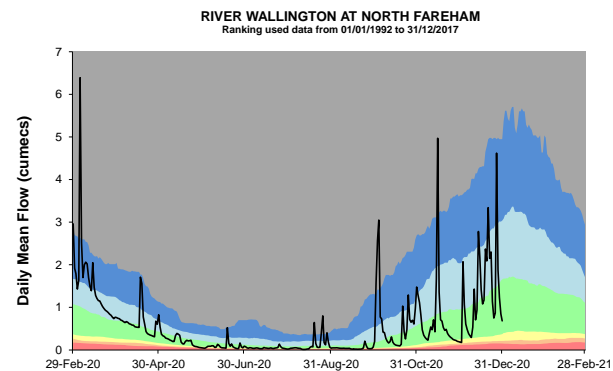
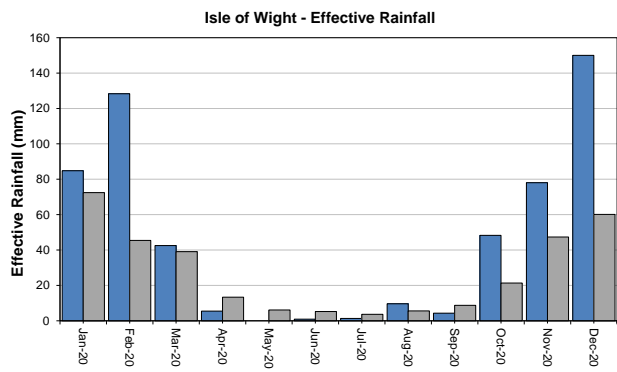
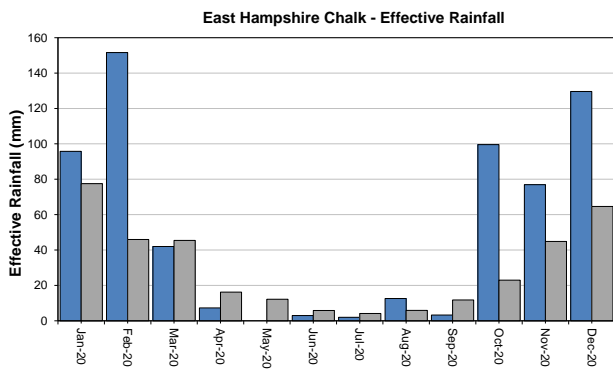
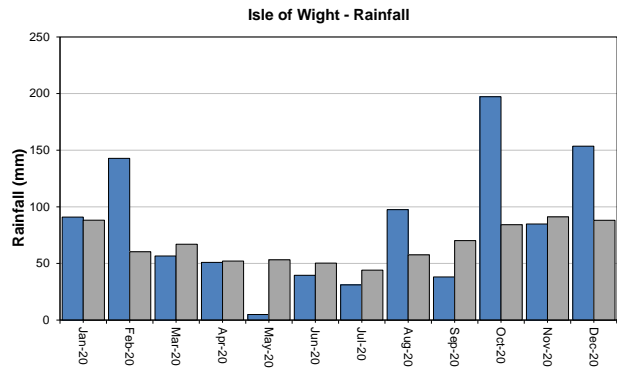
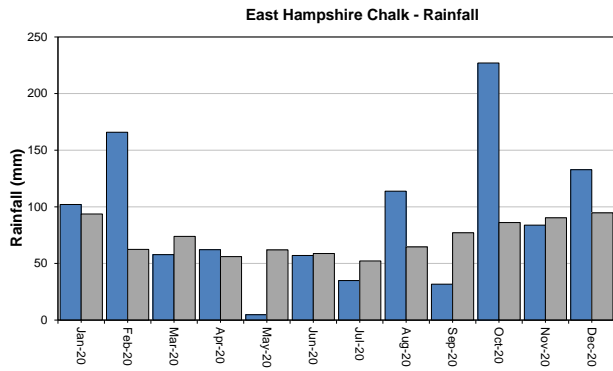
LOPCOMBE CORNER GWL - CHALK
 Ranking derived from data for the period Apr-1963 to Dec-2017



East Hampshire and Isle of Wight

Monthly total rainfall (mm)

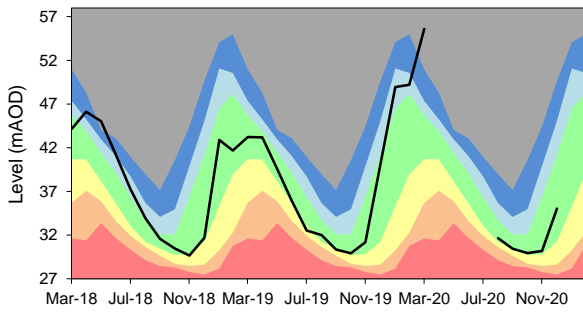
Long term average rainfall (mm)



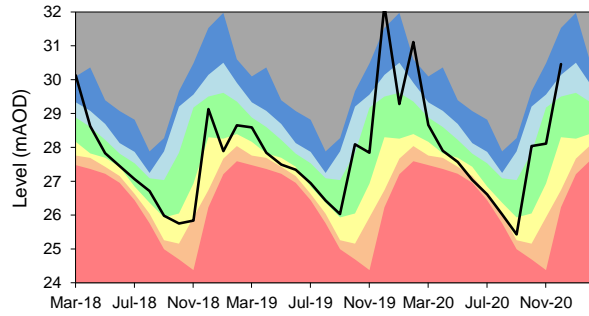
Exceptionally high
 Below normal
 Notably high
 Notably low
 Above normal
 Exceptionally low
 Normal
 Latest data

East Hampshire and Isle of Wight – Page 2

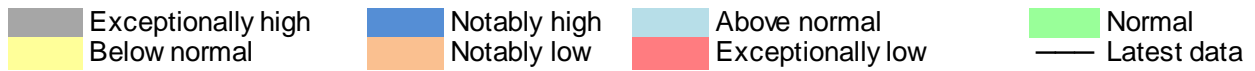
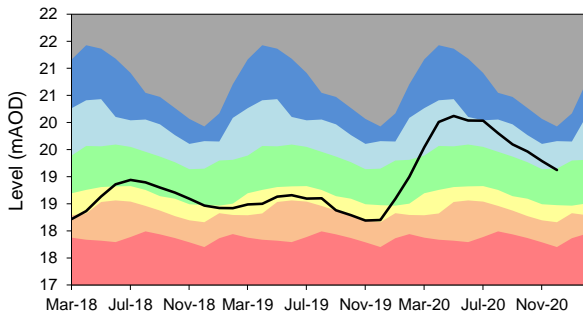
CATHERINGTON GWL - CHALK
 Ranking derived from data for the period Jan-1969 to Dec-2017



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



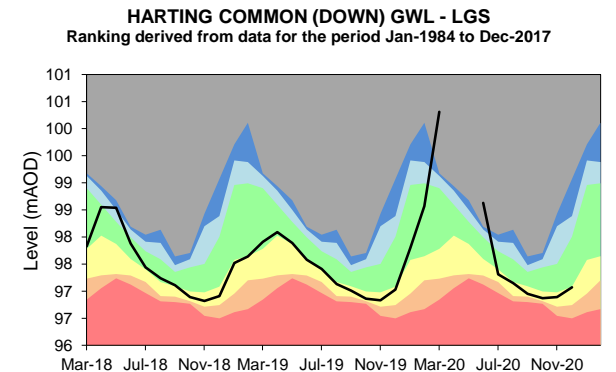
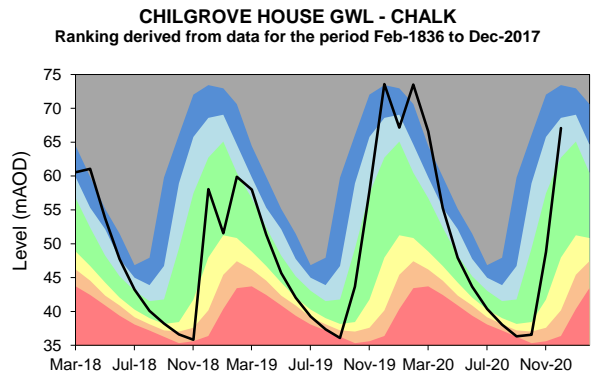
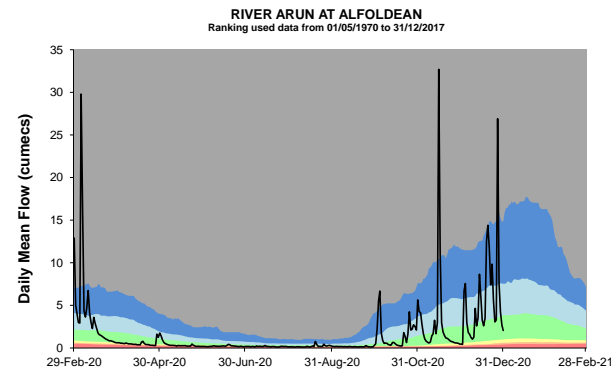
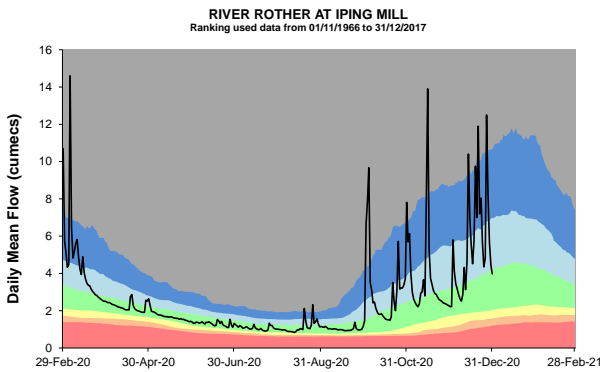
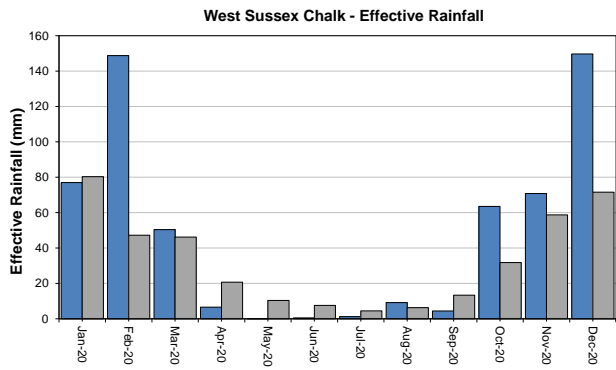
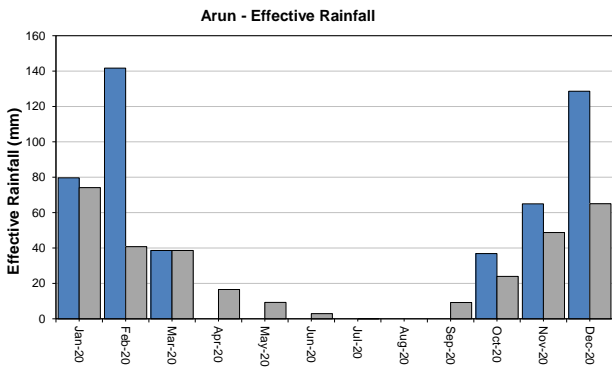
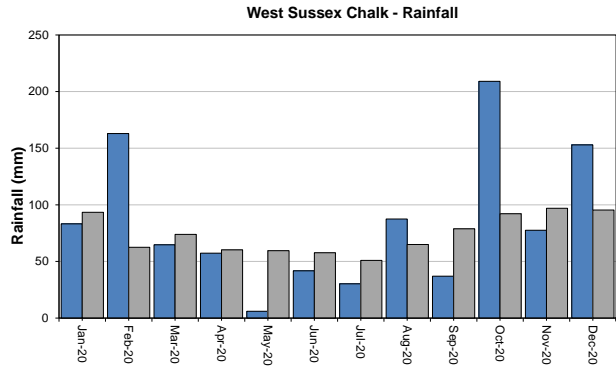
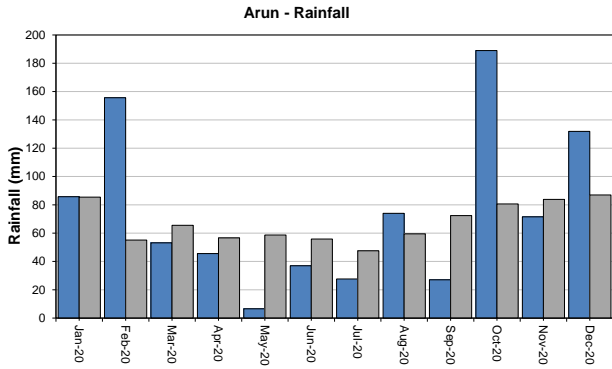
YOUNGWOOD COPSE GWL - LGS
 Ranking derived from data for the period Feb-1978 to Dec-2017



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

customer service line
03708 506 506

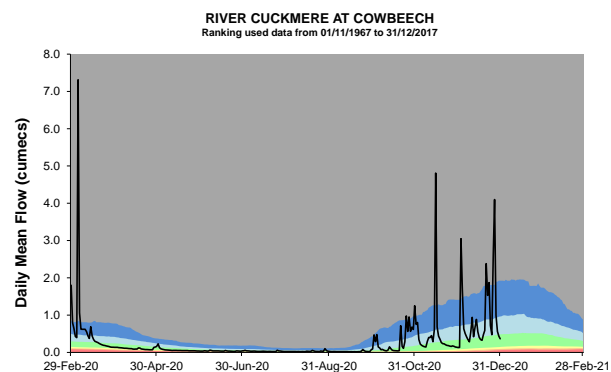
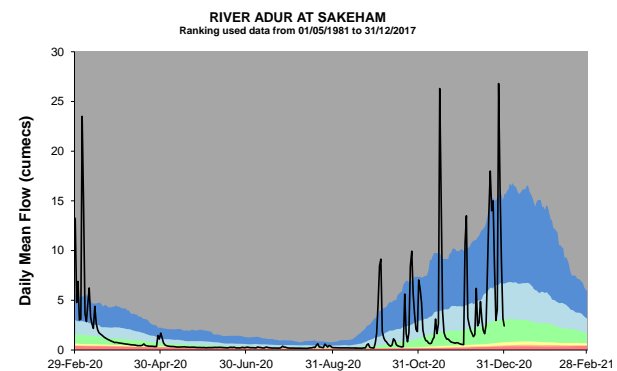
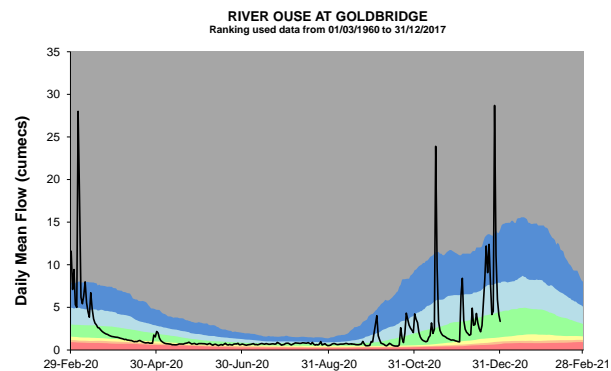
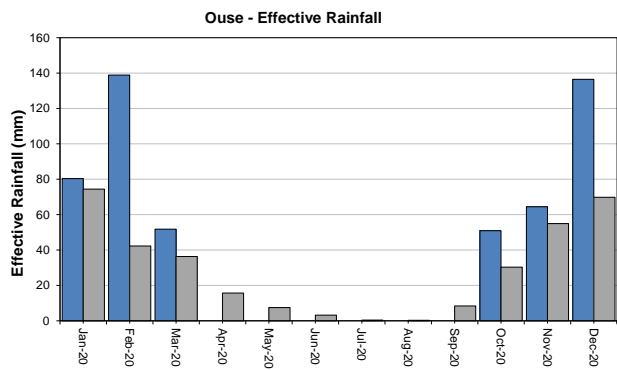
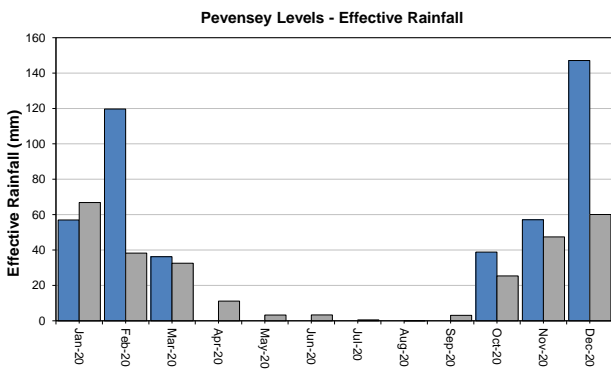
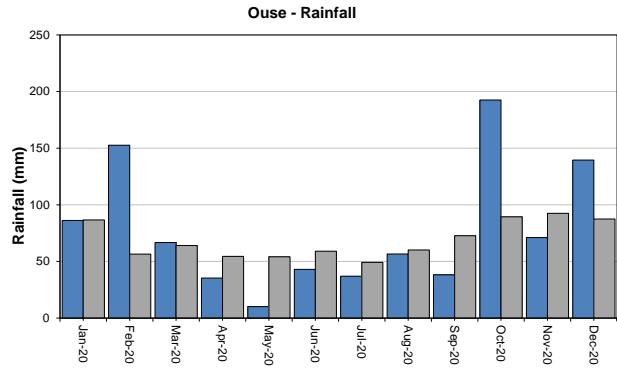
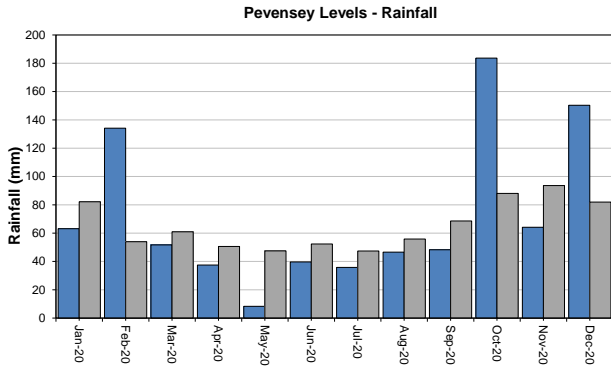
incident hotline
0800 80 70 60

floodline
0345 988 1188

East Sussex

Monthly total rainfall (mm)

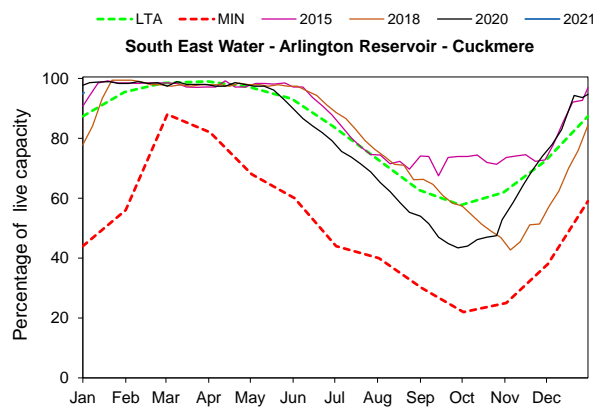
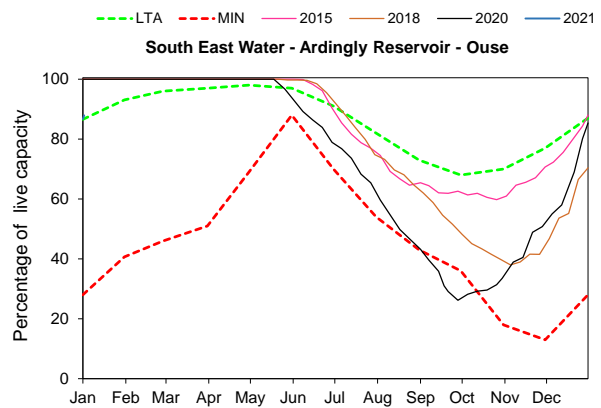
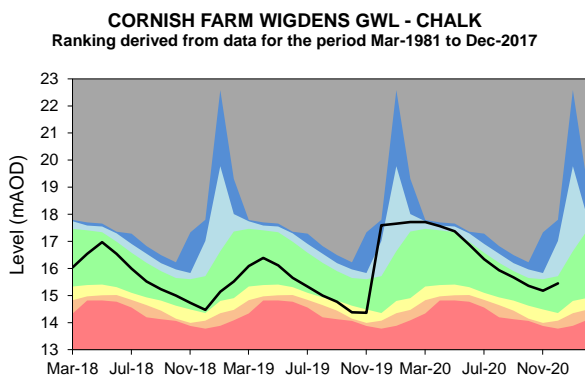
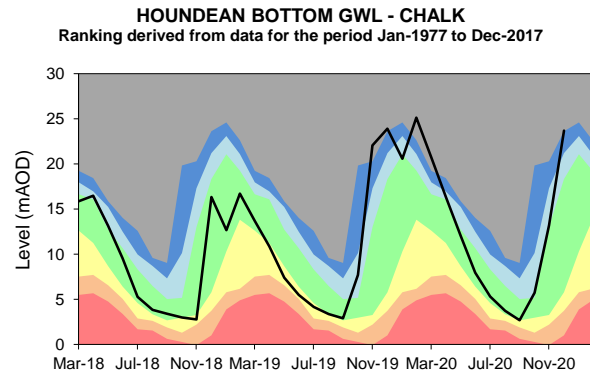
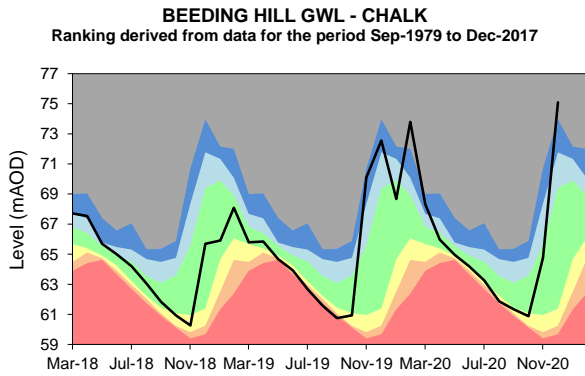
Long term average rainfall (mm)



East Sussex – Page 2

Monthly total rainfall (mm)

Long term average rainfall (mm)



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	115	89	130	112	55	203
East Hampshire Chalk	133	95	140	130	65	201
West Sussex Chalk	153	95	160	150	72	209
East Sussex Chalk	155	89	174	151	62	243
Isle of Wight	154	88	174	150	60	249
Western Rother Greensand	155	100	155	152	69	219
Hampshire Tertiaries	128	88	145	125	64	195
Lymington	144	92	157	141	67	209
Sussex Coast	123	79	155	119	51	235
Arun	132	87	152	129	65	198
Adur	135	86	157	132	63	210
Ouse	140	88	159	136	70	196
Cuckmere	144	85	169	141	66	212
Pevensy Levels	150	82	183	147	60	245
Solent and South Downs	140	89	158	137	63	215

Winter rainfall and effective rainfall

Winter totals for the period 1 October to the 31st December 2020

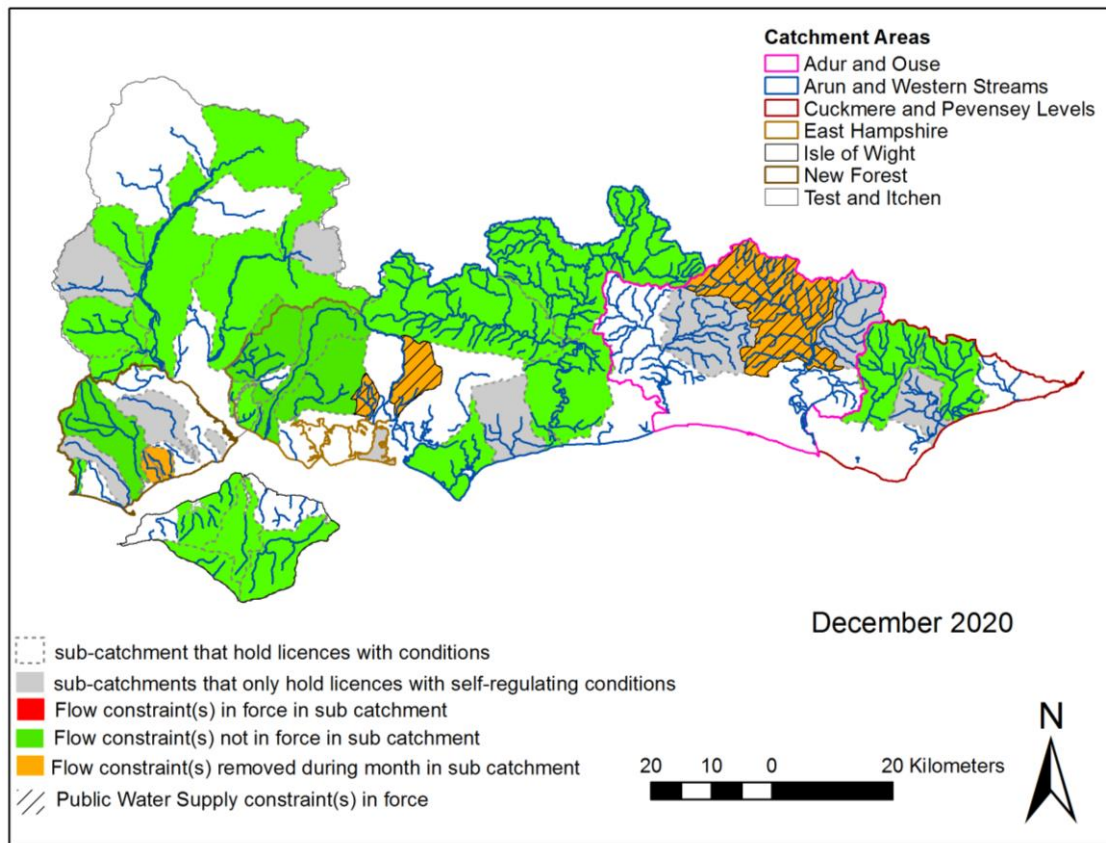
Area	Rainfall (mm)	LTA rainfall (mm)	% of LTA	Effective rainfall (mm)	LTA effective rainfall (mm)	% of LTA
Test Chalk	387	244	159	248	103	240
East Hampshire Chalk	444	271	164	306	132	231
West Sussex Chalk	440	285	154	284	162	175
East Sussex Chalk	421	280	150	266	145	183
Isle of Wight	436	263	165	276	129	214
Western Rother Greensand	469	285	164	312	148	212
Hampshire Tertiaries	405	250	162	269	125	215
Lymington	435	261	167	301	140	215
Sussex Coast	345	237	145	184	104	177
Arun	392	251	156	231	138	167
Adur	389	261	149	226	139	163
Ouse	403	269	150	252	155	162
Cuckmere	410	270	152	258	146	177
Pevensy Levels	398	264	151	243	133	183
Solent and South Downs	412	264	156	261	136	193

Soil Moisture Deficit

Area	End of month SMD (mm)	End of month SMD LTA (mm)
Test Chalk	0	6
East Hampshire Chalk	0	3
West Sussex Chalk	0	2
East Sussex Chalk	0	4
Isle of Wight	0	5
Western Rother Greensand	0	2
Hampshire Tertiaries	0	3
Lymington	0	1
Sussex Coast	0	4
Arun	0	1
Adur	0	2
Ouse	0	1
Cuckmere	0	1
Pevensy Levels	0	1
Solent and South Downs	0	3

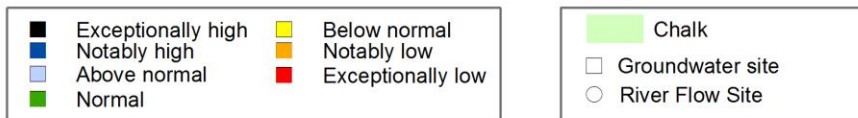
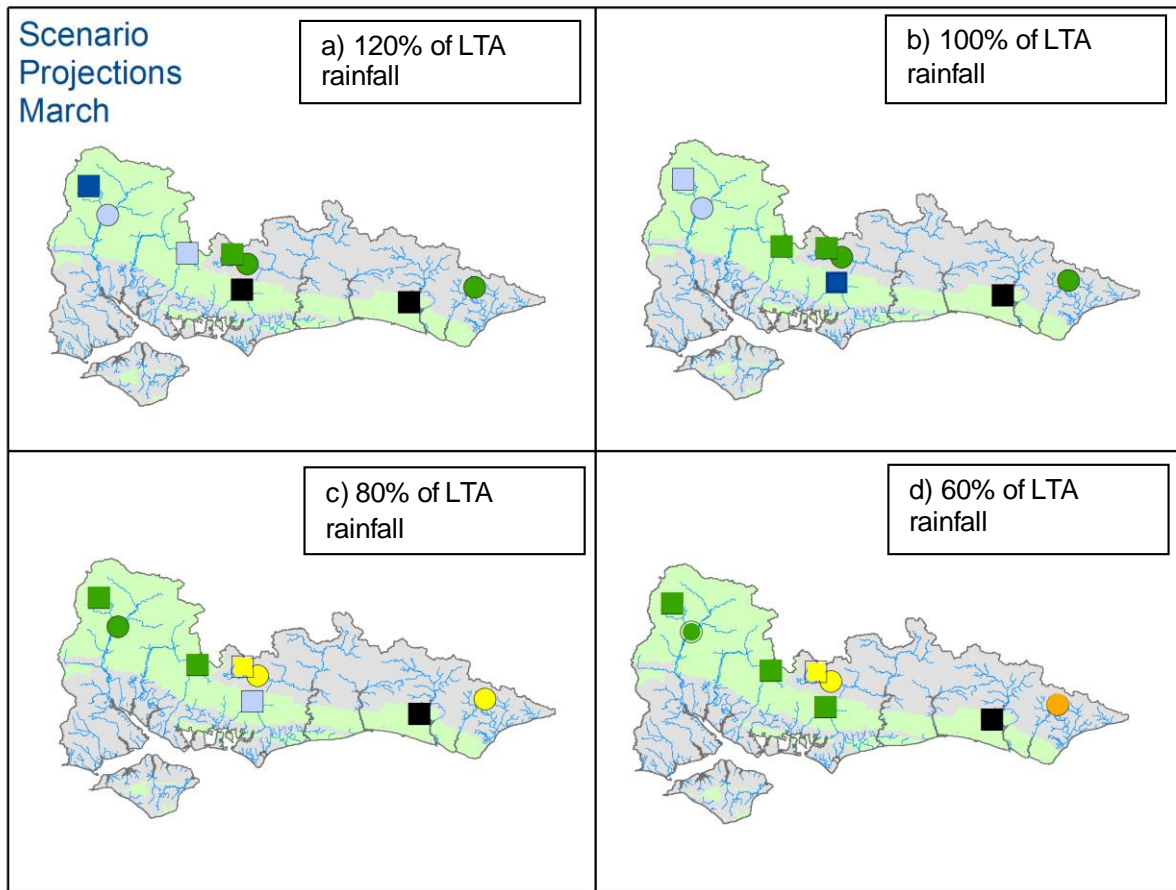
Environmental Impact

Flow Constraints



Catchment	No. licences with conditions currently operational in DEC	START	WK1	WK2	WK3	WK4	WK4	END
		Number at Start of the month in force	No. licences with condition in Force in DEC	No. licences with Flow Condition in Force in Dec	No. licences with Flow Condition in Force in Dec	No. licences with Flow Condition in Force in Dec	No. licences with Flow Condition in Force in Dec	Number at End of the month in force
Adur & Ouse	7	0	1	0	0	0	0	0
Arun & Western	36	1	1	1	1	0	0	0
Cuckmere & Pevensy	7	0	0	0	0	0	0	0
East Hampshire	11	1	2	1	1	0	0	0
IOW	29	0	0	0	0	0	0	0
New Forest	9	1	2	0	0	0	0	0
Test & Itchen	28	0	0	0	0	0	0	0
Total in SSD	127	4	7	2	2	0	0	0

Forward look- river flow and groundwater March 2021



Projected river flows at key indicator sites up until the end of March 2021. Projected groundwater levels at key indicator sites at the end of March 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

Aquifer

Areal average rainfall

Artesian

Artesian borehole

Cumecs

Effective rainfall

Flood Alert/Flood Warning

Groundwater

Long term average (LTA)

mAOD

MORECS

Naturalised flow

NCIC

Recharge

Reservoir gross capacity

Reservoir live capacity

Soil moisture deficit (SMD)

Definition

A geological formation able to store and transmit water.

The estimated average depth of rainfall over a defined area. Expressed in depth of water (mm).

The 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.

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

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

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

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.

The water found in an aquifer.

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).

Metres Above Ordnance Datum (mean sea level at Newlyn Cornwall).

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.

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

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

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

The total capacity of a reservoir.

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.

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

Notably high

Above normal

Normal

Below normal

Notably low

Exceptionally low

Value likely to fall within this band 5% of the time

Value likely to fall within this band 8% of the time

Value likely to fall within this band 15% of the time

Value likely to fall within this band 44% of the time

Value likely to fall within this band 15% of the time

Value likely to fall within this band 8% of the time

Value likely to fall within this band 5% of the time