Monthly water situation report

Solent and South Downs Area

Summary – June 2020

Solent and South Downs (SSD) had average rainfall across the entire area in June, receiving 79% (44mm) of the Long Term Average (LTA) (55mm). Monthly mean river flows across SSD ranged from **notably low** to **normal**. End of month groundwater levels ranged from **notably low** to **exceptionally high**. Soil moisture deficits across Solent and South Downs ended the month greater than the long term average. End of month reservoir stocks were below average at both Ardingly Reservoir (Ouse Catchment) and Arlington Reservoir (Cuckmere catchment).

Rainfall

Solent and South Downs (SSD) had **average** rainfall across the entire area in June, receiving 79% (44mm) of the LTA (55mm). The Test Chalk areal unit in the far west had the highest monthly total with 61mm, 106% of LTA (58mm), followed by its two neighbouring areal units, Hampshire Tertiaries, which had 100% (52mm) of LTA (53mm) and East Hampshire Chalk which had 96% (56mm of LTA 59mm). The lowest rainfall was seen in central SSD with the Adur areal unit receiving 56% (31mm of 56mm LTA) and the adjacent Arun areal unit receiving 66% (37mm) of its LTA (56mm). The Pevensey Levels and East Sussex Chalk areal units recorded the 6th lowest rainfall total for Apr-June on record. The highest daily totals for the month were 20mm and 19mm which were recorded on the 19th at Bishops Sutton (East Hampshire Chalk) and on the 17th at Chiddingfold (Arun) respectively. On average, there were only 10 wet day over SSD in June.

Soil Moisture Deficit/Recharge

Soil moisture deficits across Solent and South Downs ended the month greater than the long term average; all areal units were on average 50% more than the LTA (69mm). Soils are much drier than normal.

River Flows

Monthly mean river flows across SSD ranged from **notably low** to **normal**. **Notably Low** monthly mean flows were recorded for the River Arun at Alfoldean and on the River Ouse at Goldbridge. The River Arun at Alfoldean monthly mean was the 4th lowest on record for June. **Below normal** monthly means were recorded on the River Adur at Sakeham and River Lymington at Brockenhurst. The River Adur at Sakeham recorded the 9th lowest monthly mean for June on record. All other reported sites recorded normal flows.

Groundwater Levels

End of month groundwater levels ranged from **notably low** to **exceptionally high**. Harting Common (Western Rother Greensand) levels were **exceptionally high** for June. Youngwoods Copse (Isle of Wight), Clanville Gate (Test Chalk), Preston Candover and West Meon (East Hants Chalk) levels were all **above normal.** The only site **below normal** was Beeding Hill (West Sussex Chalk) and Carisbrooke Castle (Isle of Wight) recorded levels that were **notably low** for June – this site is known to be very responsive to rainfall or lack of. All other reported sites recorded normal levels. Catherington observation borehole was not dipped this month due to Covid-19 restrictions. The most notable levels this month were recorded at Carisbrooke Castle which was the 4th lowest end of June level on record and Harting Common which was the highest June level on record.

Reservoir Storage/Water Resource Zone Stocks

End of month reservoir stocks were **below** average at Ardingly Reservoir (Ouse Catchment) with 78.9% of total capacity (LTA 91%) and also **below** average at Arlington Reservoir (Cuckmere catchment) with 79% of total capacity (LTA 84%).

Environmental Impact

No licence restrictions were in force during June. No Flood Warnings or Alerts were issued

Author: HydrologySSD

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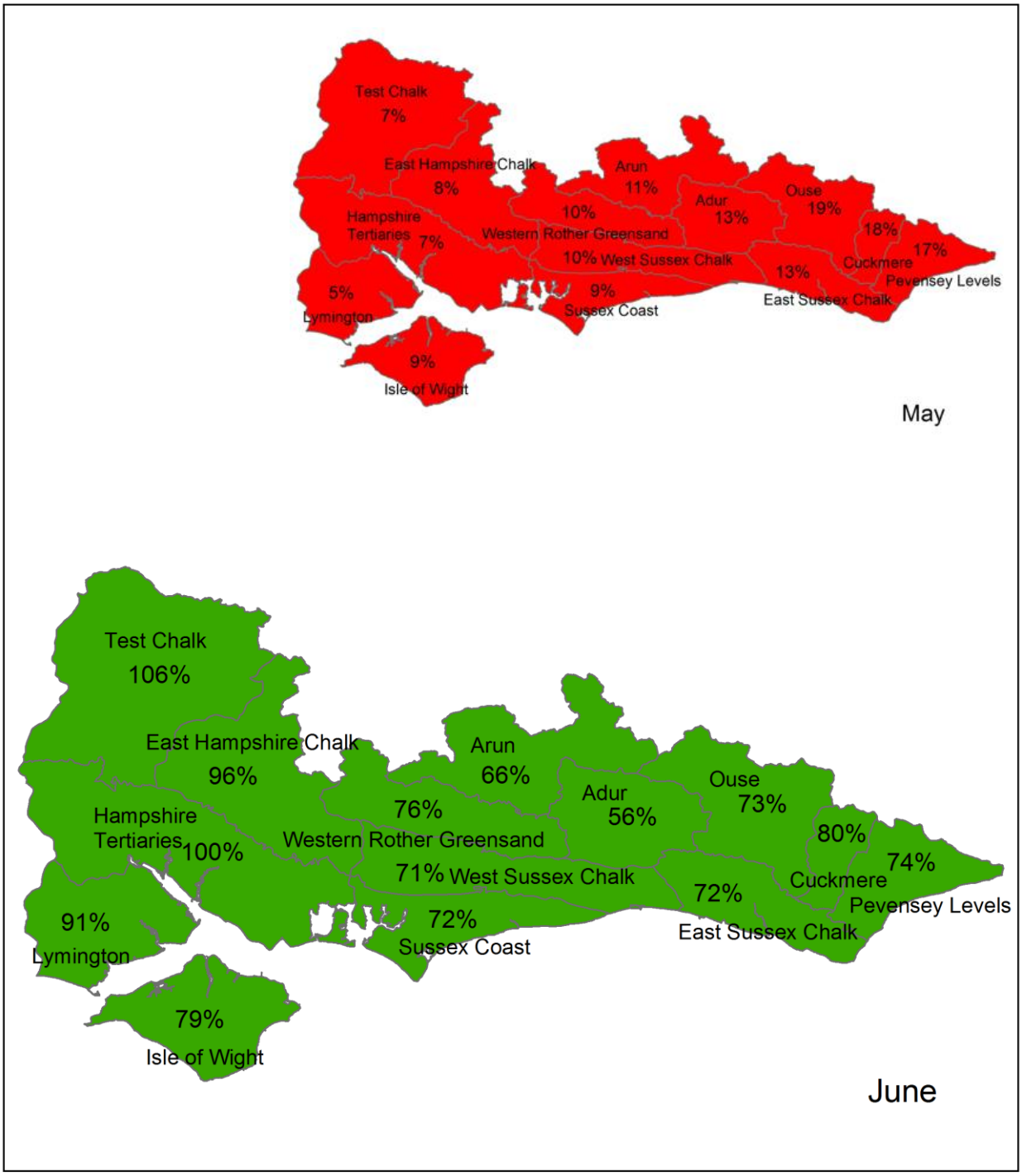
Rainfall Map 1



Legend

- Exceptionally high
- Above normal
- Below normal
- Exceptionally low
- Notably high
- Normal
- Notably low

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, 2020.

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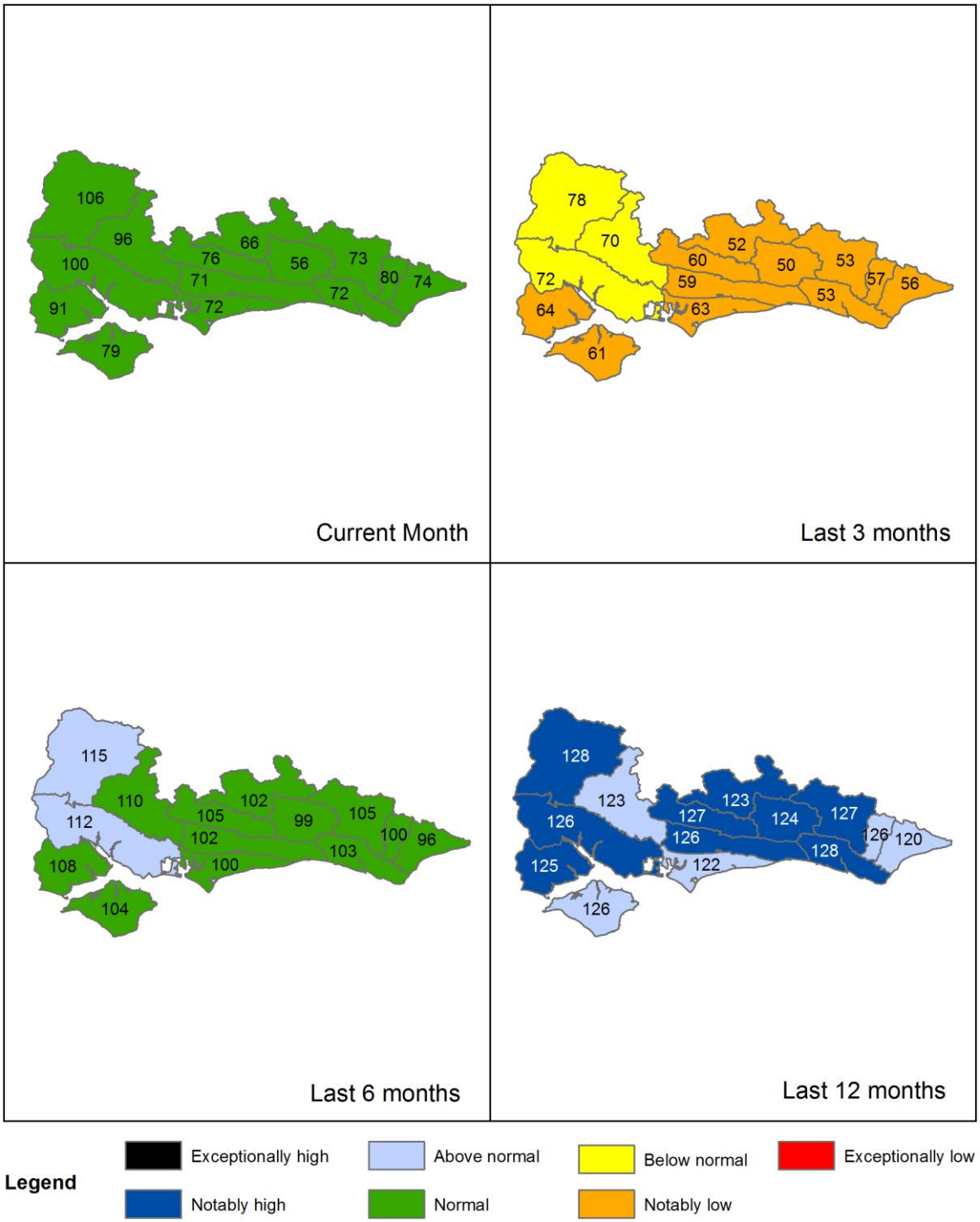
Rainfall Map 2



Total rainfall for hydrological areas across Solent and South Downs for the current month (up to 30 June), 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, 2020). 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, 2020

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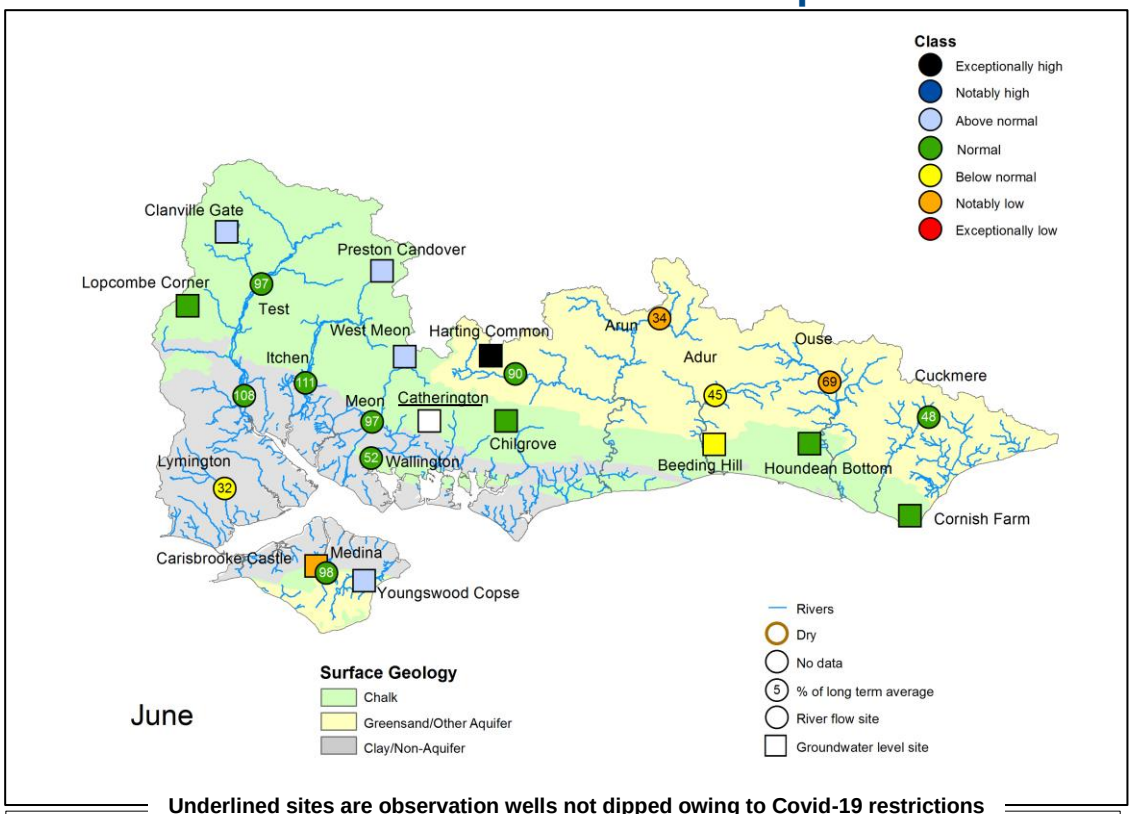
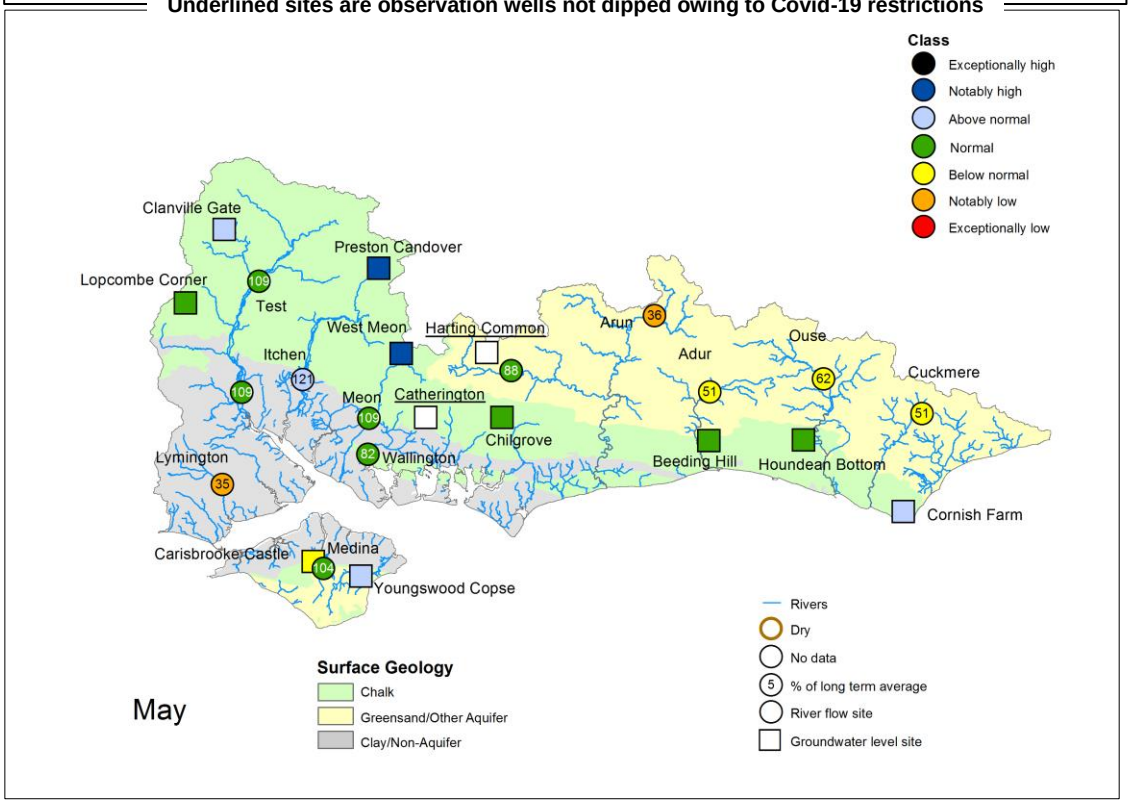
River Flow and Groundwater Status Map



Underlined sites are observation wells not dipped owing to Covid-19 restrictions



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

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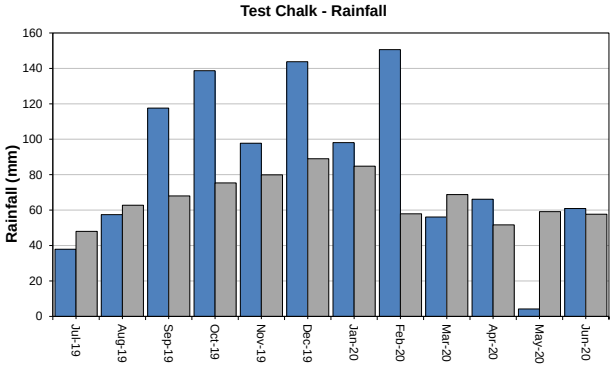
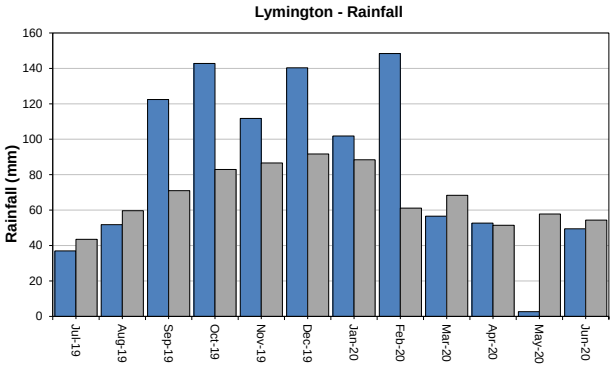
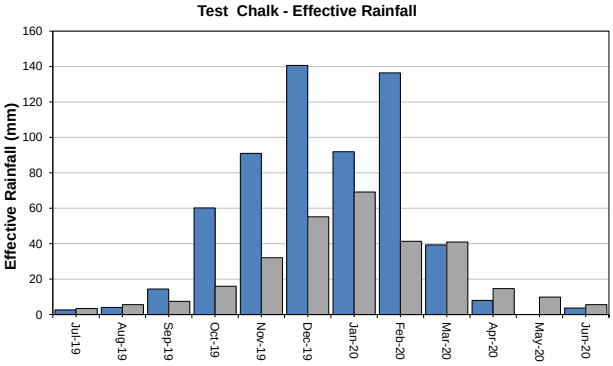
West Hampshire – Page 1

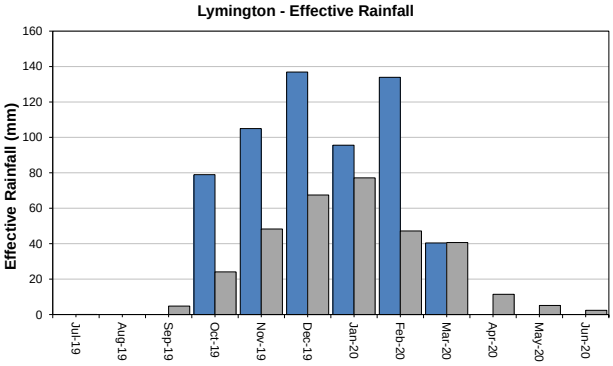
Monthly total rainfall (mm)

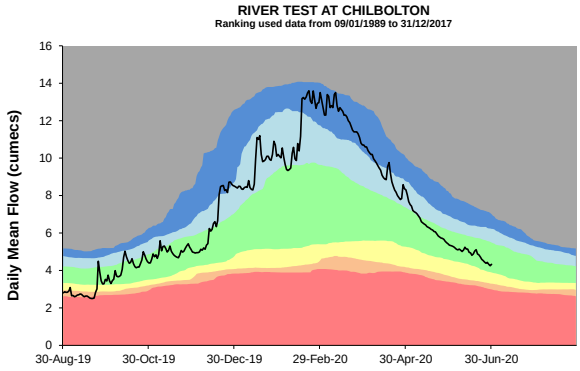
Long term average rainfall (mm)

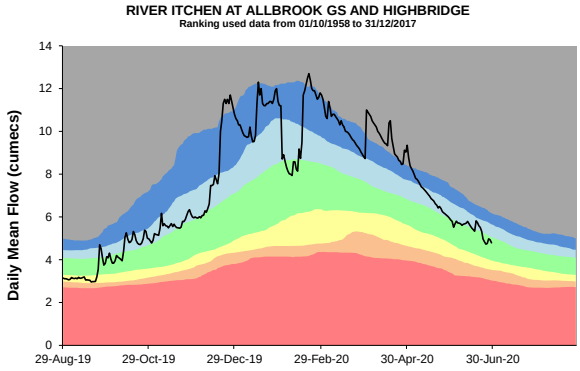


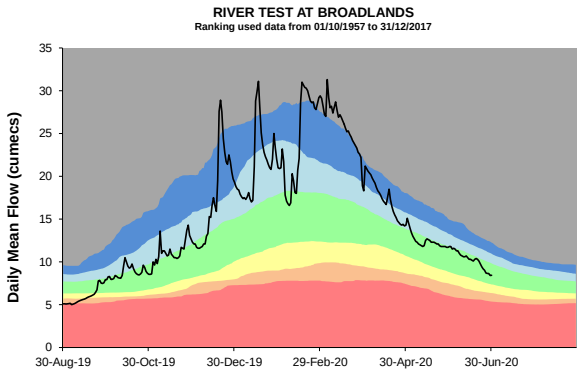


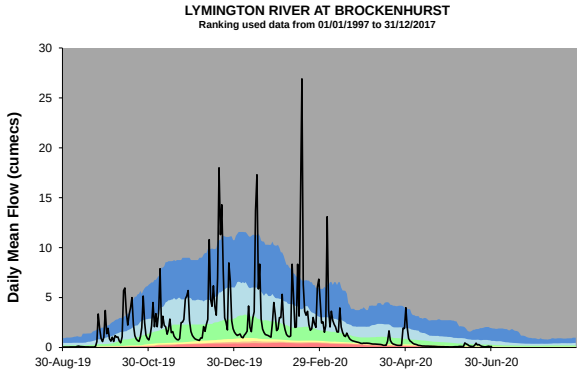












Exceptionally high
Notably high
Above normal
Normal
Below normal
Notably low
Exceptionally low
Latest data

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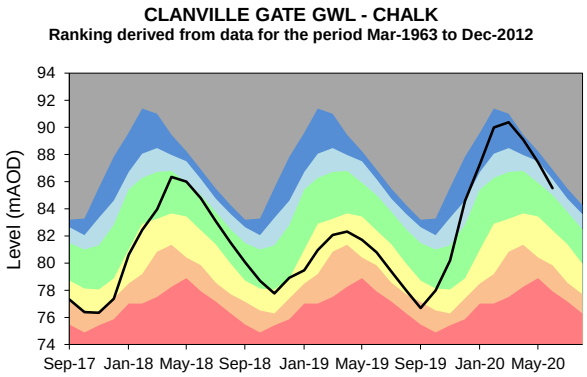
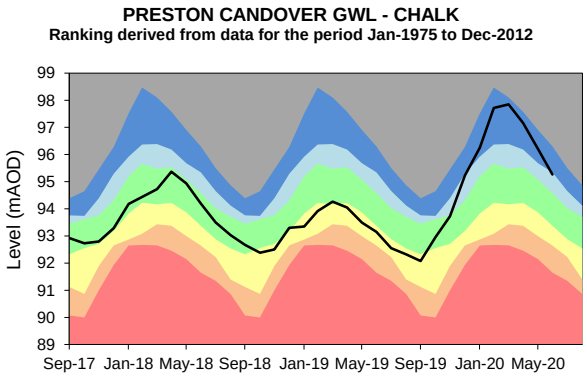
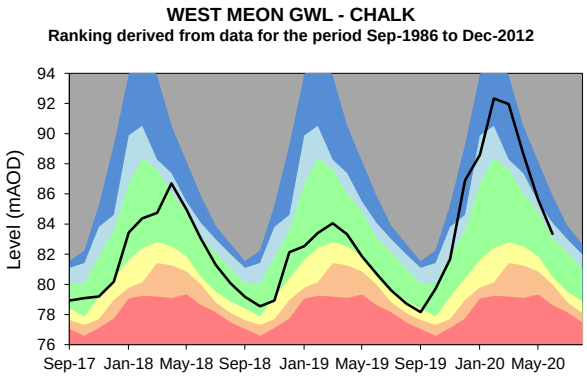
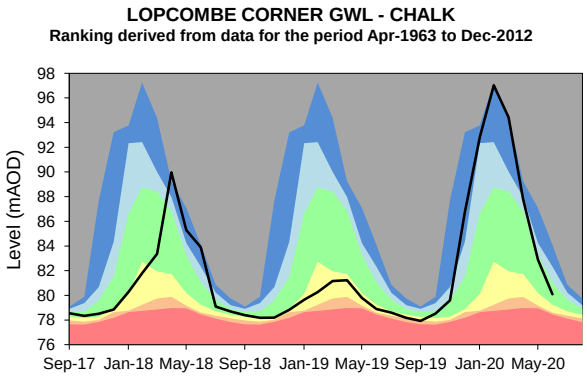
West Hampshire – Page 2









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

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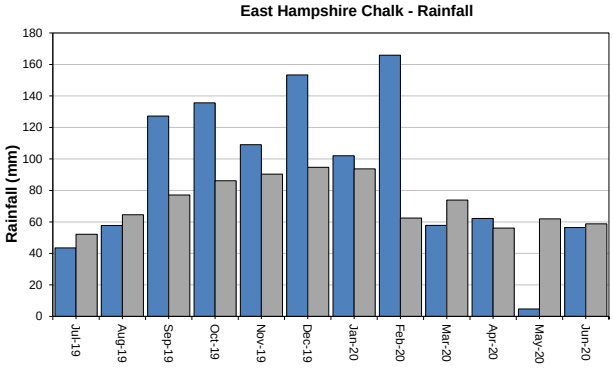
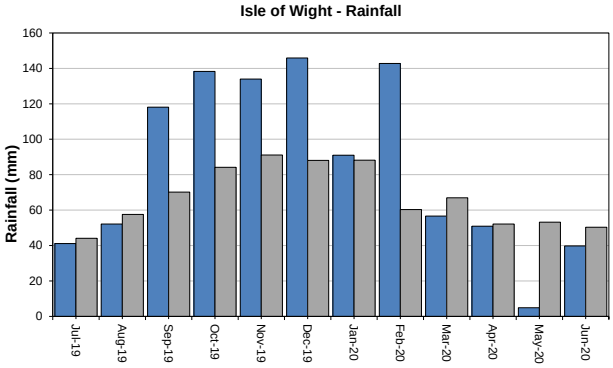
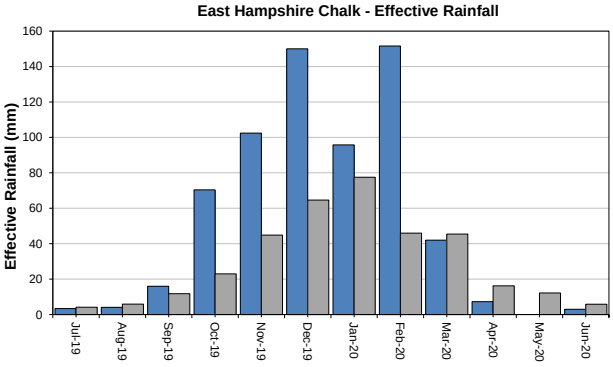
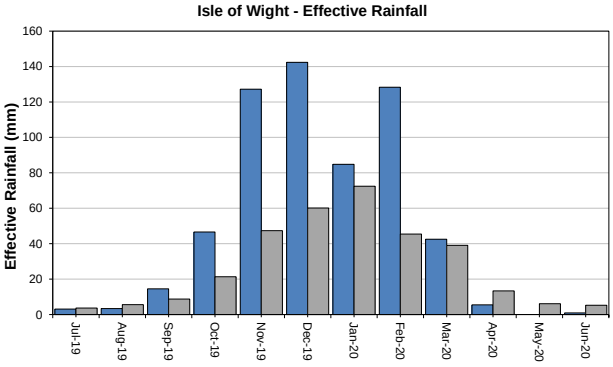
East Hampshire and Isle of Wight

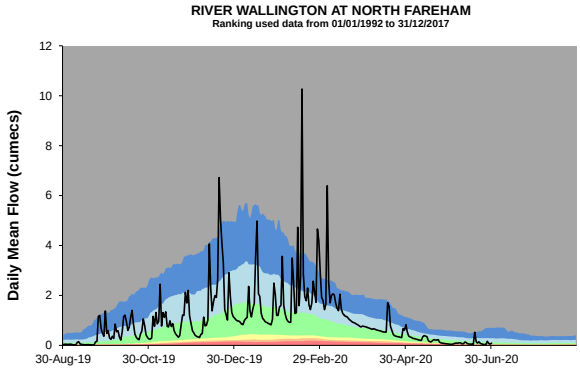
Monthly total rainfall (mm) | Long term average rainfall (mm)

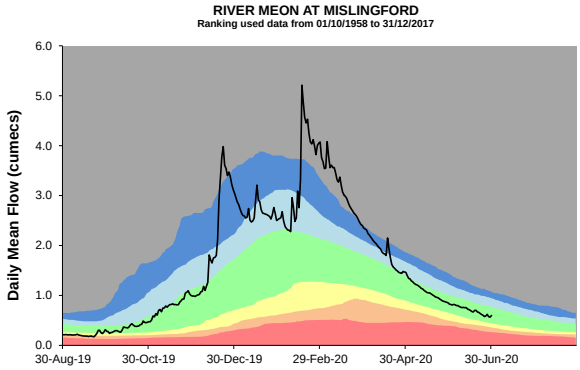


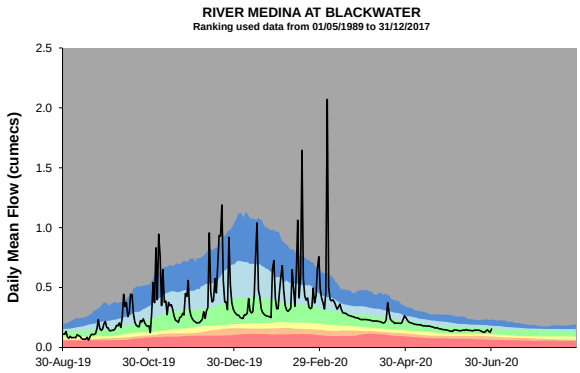












Exceptionally high | Notably high | Above normal | Normal
Below normal | Notably low | Exceptionally low | Latest data

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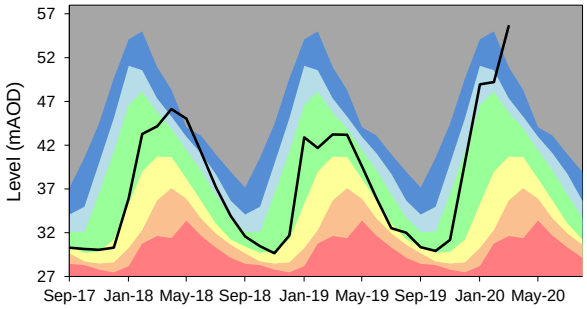
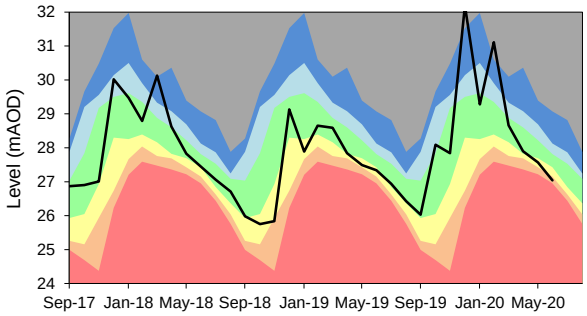
East Hampshire and Isle of Wight – Page 2

CATHERINGTON GWL - CHALK
Ranking derived from data for the period Jan-1969 to Dec-2012

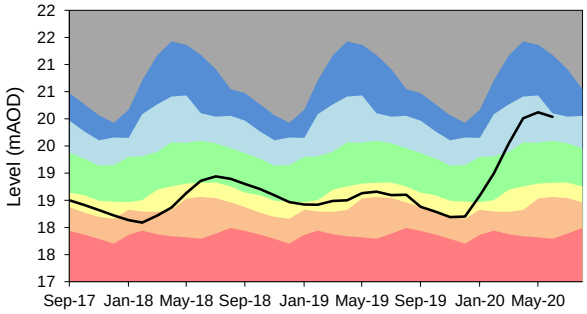


Observation well not dipped owing to Covid-19 restrictions

CARISBROOKE CASTLE GWL - CHALK
Ranking derived from data for the period Aug-1977 to Dec-2012



YOUNGSWOOD COPSE GWL - LGS
Ranking derived from data for the period Feb-1978 to Dec-2012



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

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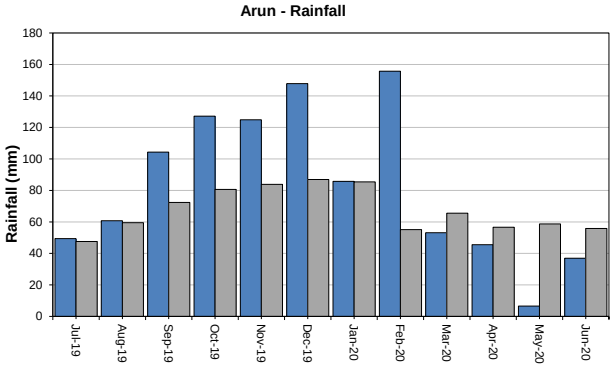
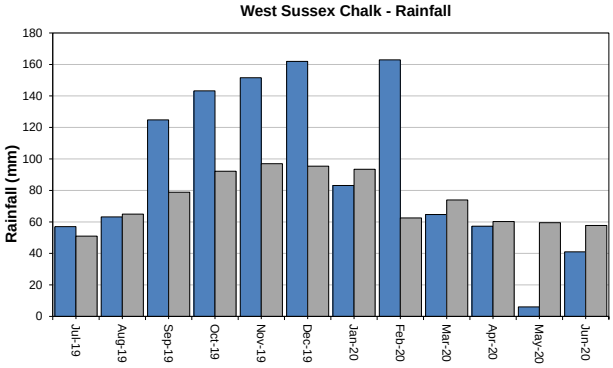
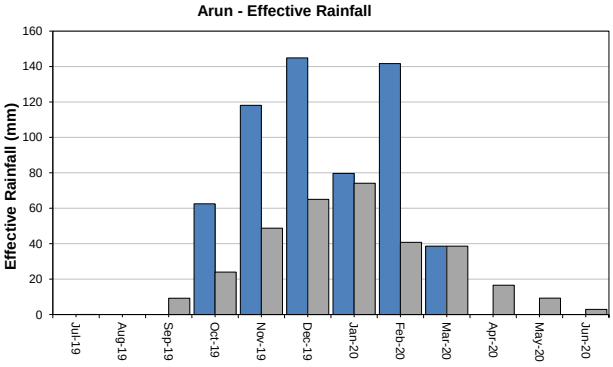
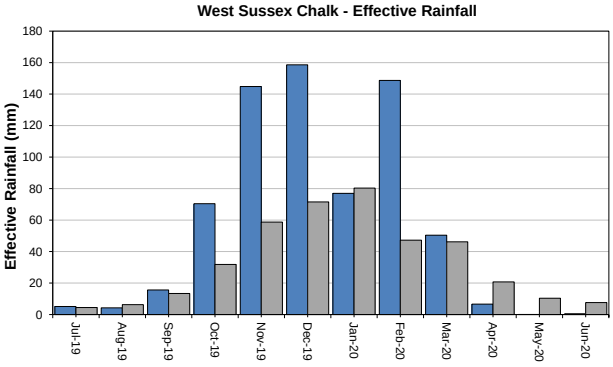
West Sussex

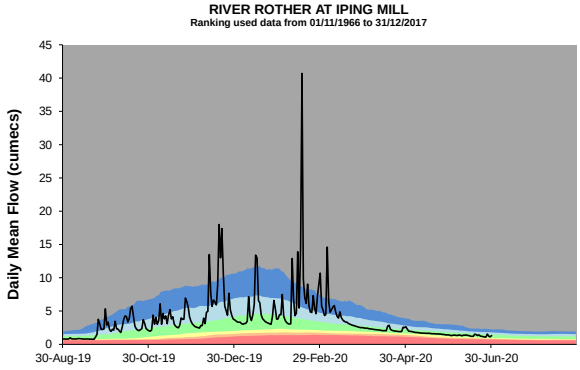
Monthly total rainfall (mm) | Long term average rainfall (mm)

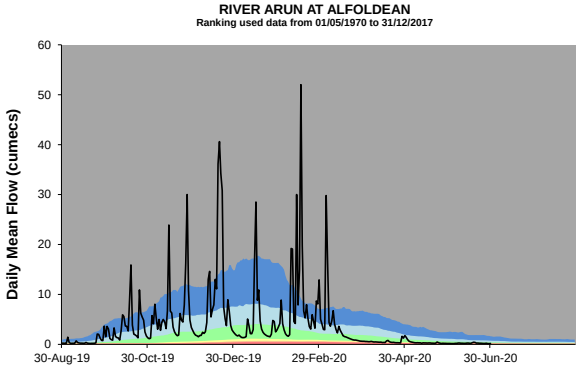


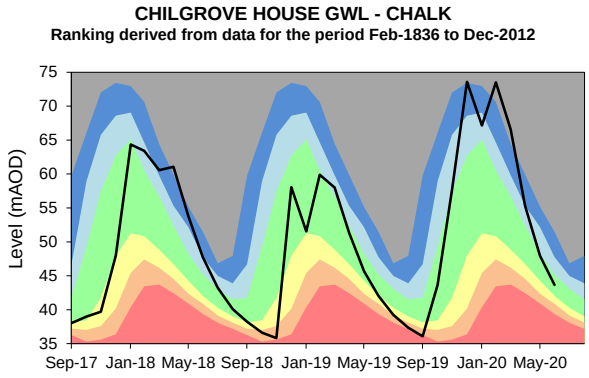


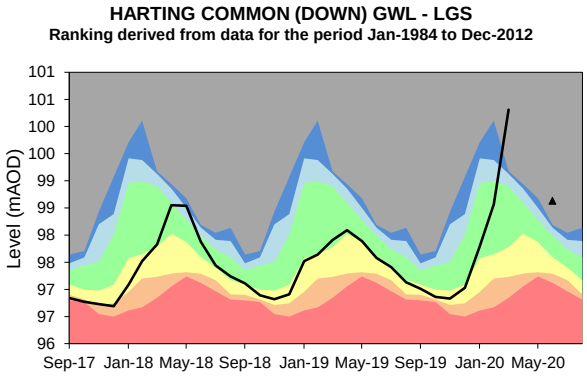












Observation well dipped for first time since March owing to Covid-19 restrictions

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

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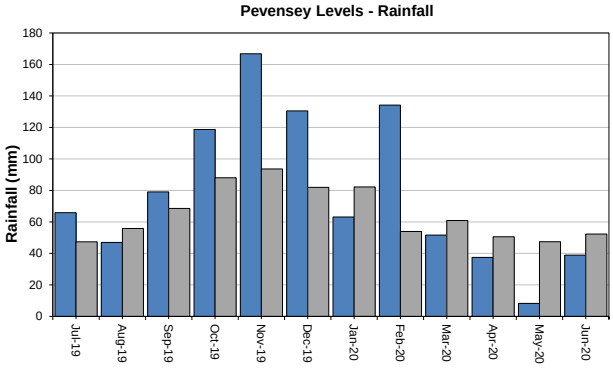
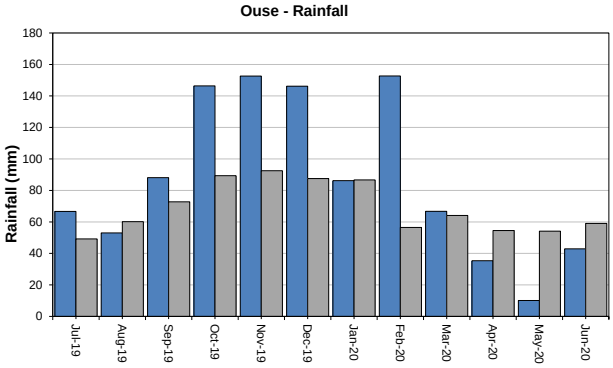
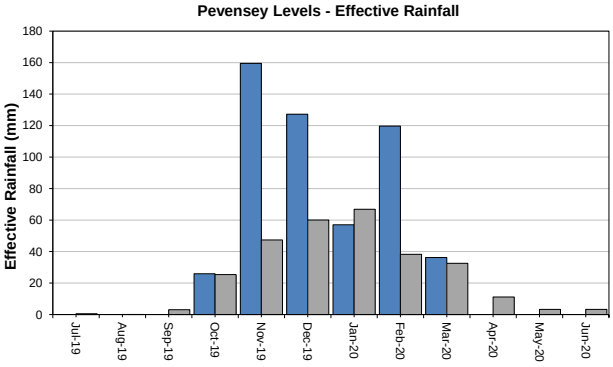
East Sussex

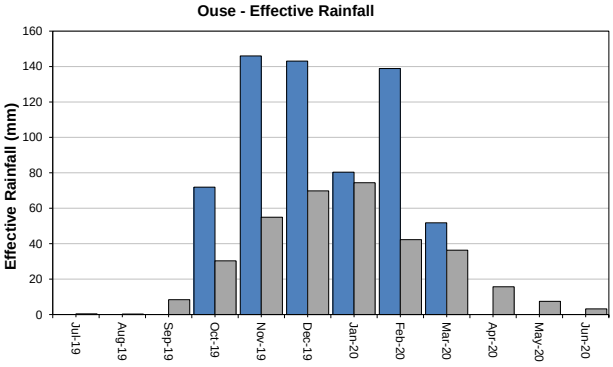
Monthly total rainfall (mm)

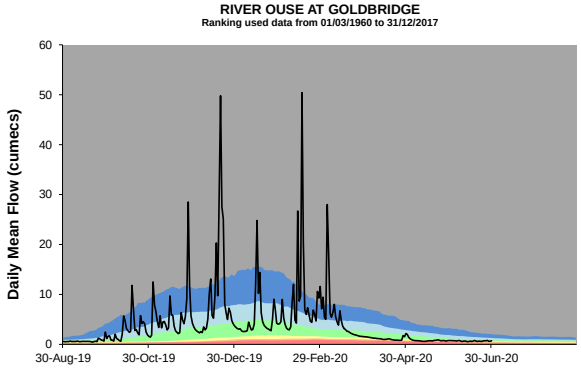
Long term average rainfall (mm)

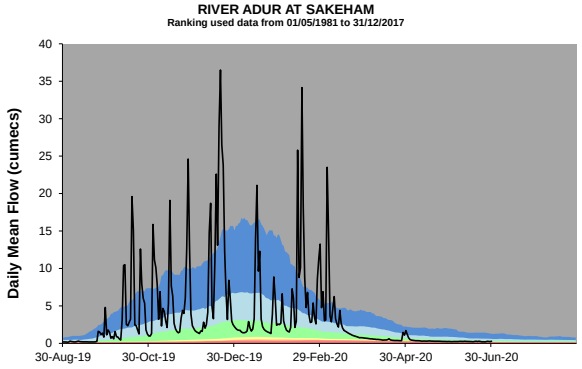


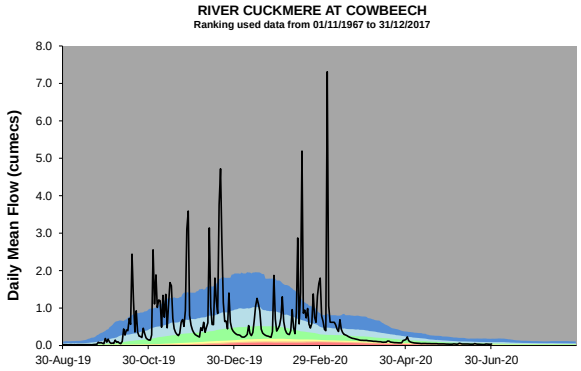












Exceptionally high | Notably high | Above normal | Normal
Below normal | Notably low | Exceptionally low | Latest data

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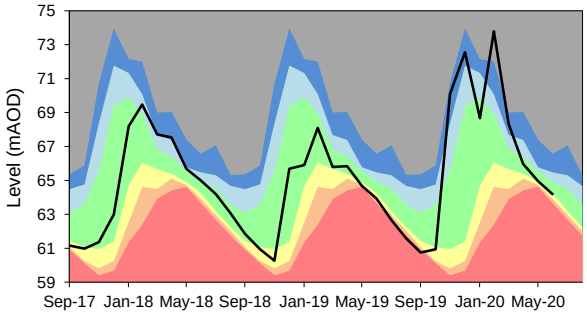
East Sussex – Page 2

Monthly total rainfall (mm)

Long term average rainfall (mm)

BEEDING HILL GWL - CHALK
Ranking derived from data for the period Sep-1979 to Dec-2012



HOUNDEAN BOTTOM GWL - CHALK
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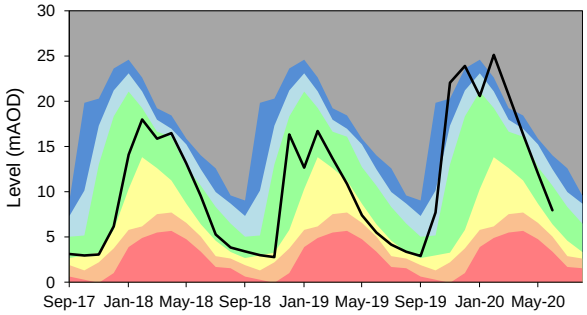
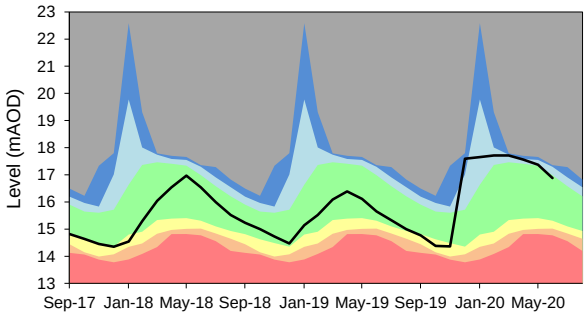
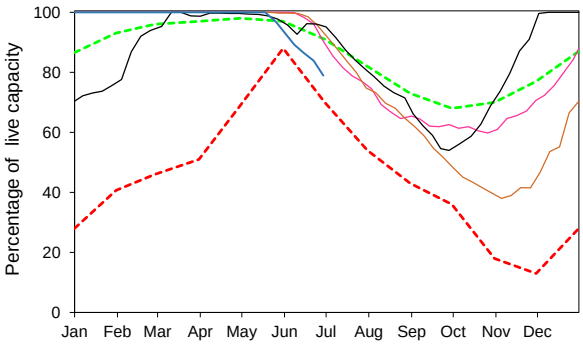


CORNISH FARM WIGDENS GWL - CHALK
Ranking derived from data for the period Mar-1981 to Dec-2012



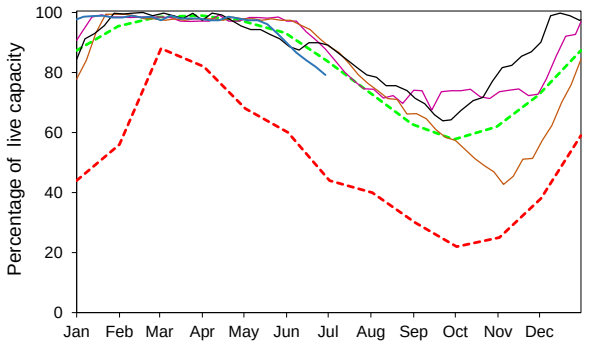
LTA MIN 2015 2018 2019 2020

South East Water - Ardingly Reservoir - Ouse



LTA MIN 2015 2018 2019 2020

South East Water - Arlington Reservoir - Cuckmere



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

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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	61	58	106	4	6	66
East Hampshire Chalk	56	59	96	3	6	51
West Sussex Chalk	41	58	71	1	8	7
East Sussex Chalk	41	58	72	1	8	10
Isle of Wight	40	50	79	1	5	17
Western Rother Greensand	44	58	76	1	8	17
Hampshire Tertiaries	52	53	100	0	1	0
Lymington	49	54	91	0	2	0
Sussex Coast	34	48	72	0	2	0
Arun	37	56	66	0	3	0
Adur	31	56	56	0	4	0
Ouse	43	59	73	0	3	0
Cuckmere	47	58	80	0	4	0
Pevensey Levels	39	52	74	0	3	0
Solent and South Downs	**44**	**55**	**79**	**1**	**5**	**16**

Summer rainfall and effective rainfall

Summer totals for the period 1 April to the 30 June 2020

Area	Rainfall (mm)	LTA rainfall (mm)	% of LTA	Effective rainfall (mm)	LTA effective rainfall (mm)	% of LTA
Test Chalk	131	168	78	12	30	38
East Hampshire Chalk	123	177	70	10	34	30
West Sussex Chalk	104	178	59	7	39	18
East Sussex Chalk	86	163	53	5	31	16
Isle of Wight	96	156	61	6	25	26
Western Rother Greensand	109	181	60	8	48	17
Hampshire Tertiaries	116	160	72	0	16	0
Lymington	105	164	64	0	19	0
Sussex Coast	93	148	63	0	18	0
Arun	89	171	52	0	29	0
Adur	84	168	50	0	28	0
Ouse	88	168	53	0	26	0
Cuckmere	91	159	57	0	22	0
Pevensey Levels	85	150	56	0	18	0
Solent and South Downs	**100**	**165**	**61**	**3**	**27**	**13**

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Soil Moisture Deficit

Area	End of month SMD (mm)	End of month SMD LTA (mm)
Test Chalk	98	66
East Hampshire Chalk	101	65
West Sussex Chalk	106	71
East Sussex Chalk	111	73
Isle of Wight	109	78
Western Rother Greensand	103	59
Hampshire Tertiaries	101	70
Lymington	104	69
Sussex Coast	108	76
Arun	107	67
Adur	109	69
Ouse	105	64
Cuckmere	108	67
Pevensey Levels	110	73
Solent and South Downs	**106**	**69**

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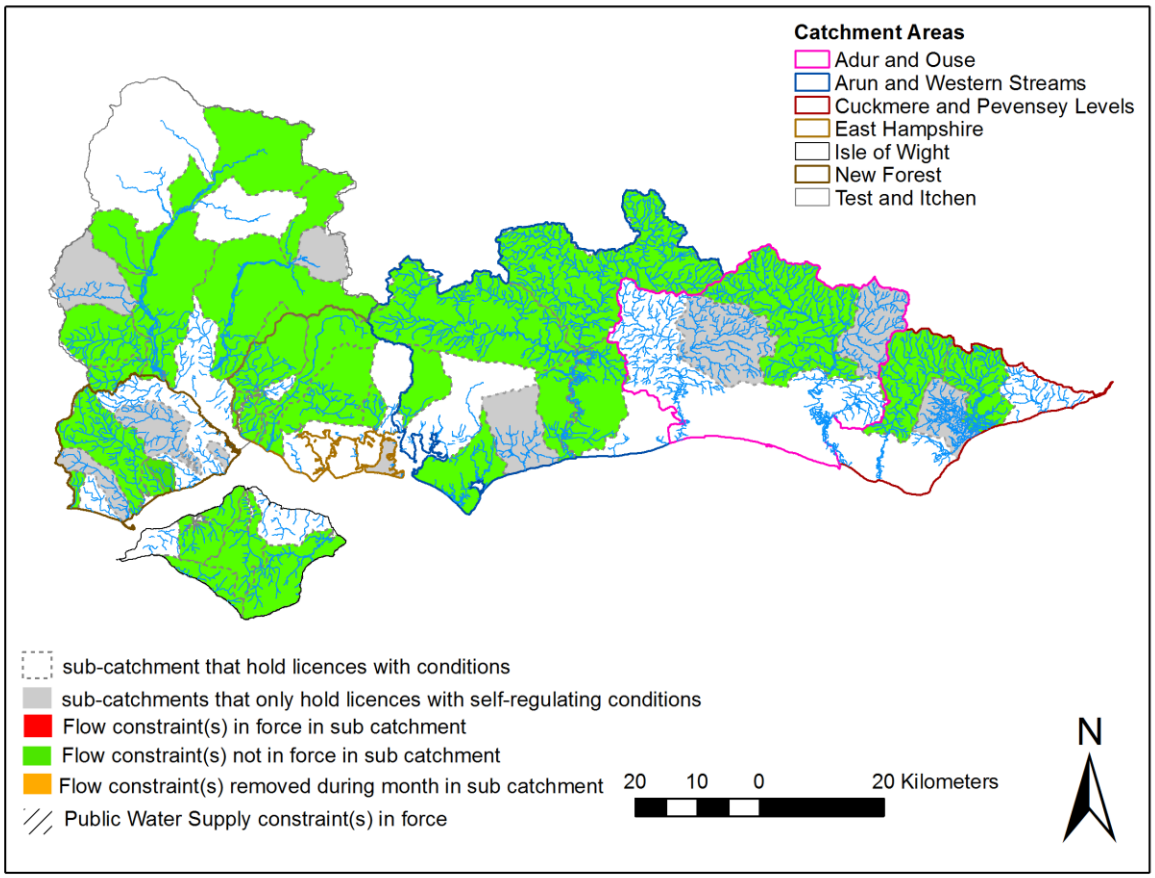
Environmental Impact
Flow Constraints



		01-Jun	02-Jun	09-Jun	16-Jun	23-Jun	30-Jun
		START	WK1	WK2	WK3	WK4	END
Catchment	No. licences with conditions currently operational in JUNE	Number at Start of the month in force	No. licences with Flow Condition in Force in JUNE	No. licences with Flow Condition in Force in JUNE	No. licences with Flow Condition in Force in JUNE	No. licences with Flow Condition in Force in JUNE	**Number at End of the month in force**
A&O	3	0	0	0	0	0	0
A&W	37	0	0	0	0	0	0
C&P	6	0	0	0	0	0	0
EH	21	0	0	0	0	0	0
IOW	17	0	0	0	0	0	0
NF	16	0	0	0	0	0	0
T&I	24	0	0	0	0	0	0
Total in SSD	124	0	0	0	0	0	0

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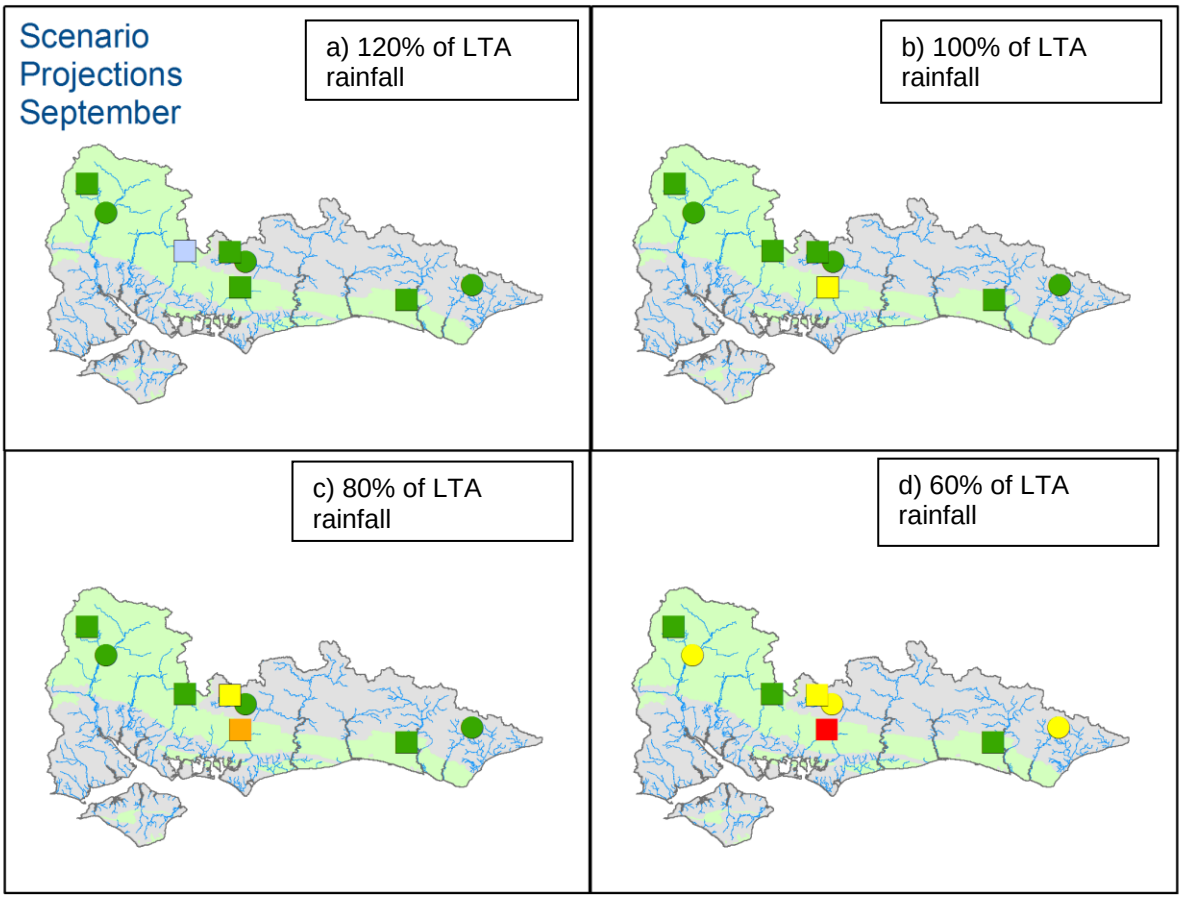
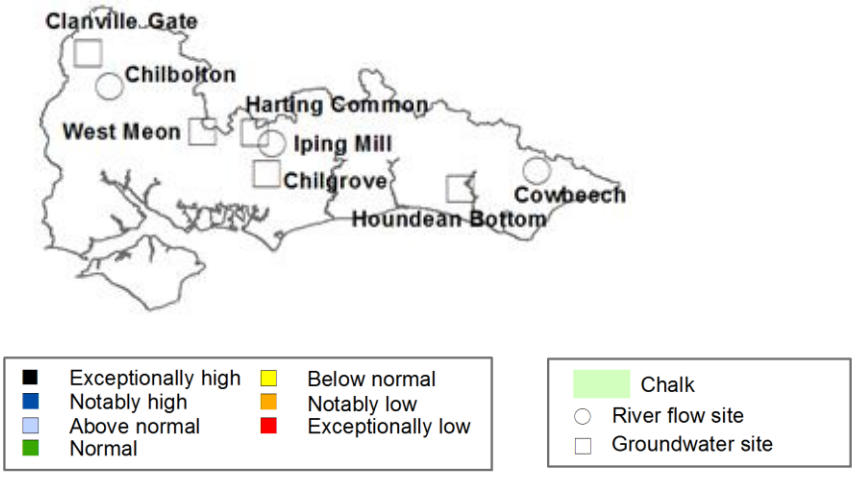
Forward look- river flow and groundwater September 2020





Projected river flows at key indicator sites up until the end of September 2020. Projected groundwater levels at key indicator sites at the end of September 2020. 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 2020.

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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).
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

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