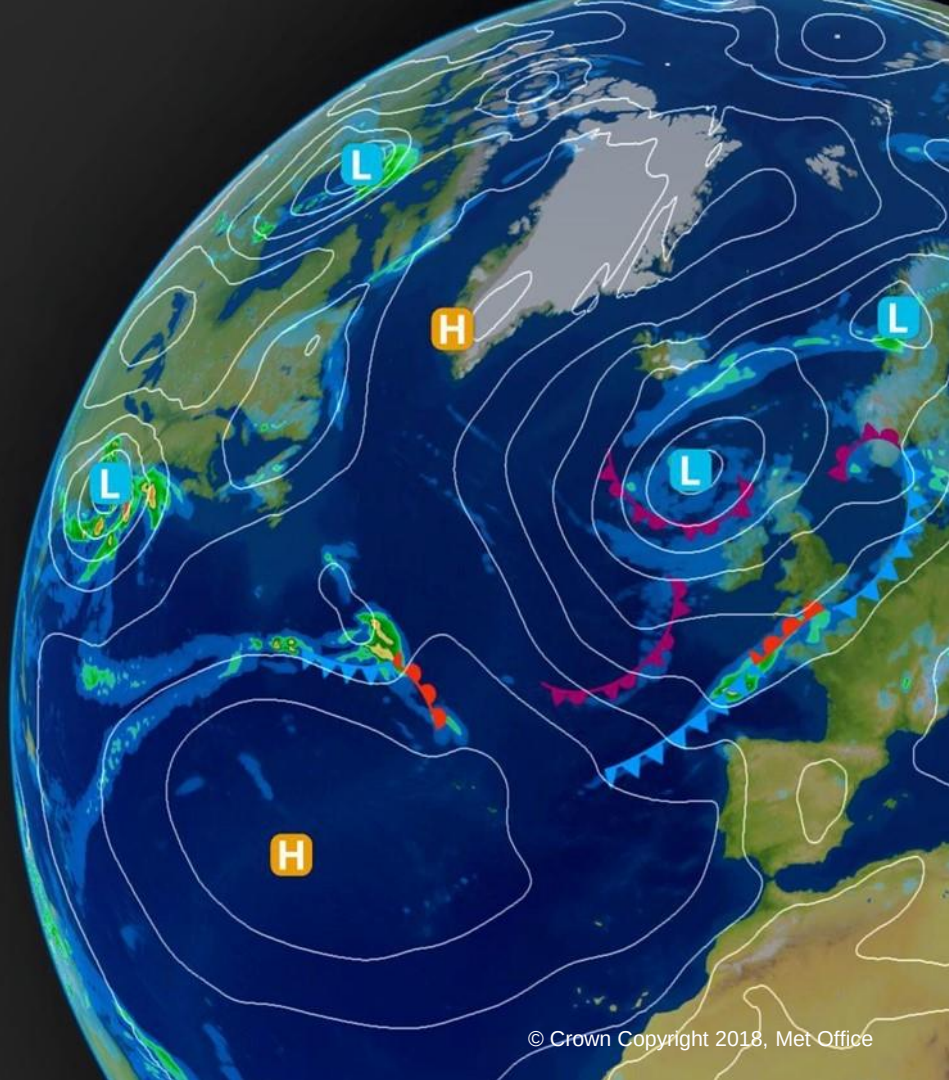
Forecasting the "Beast from the East" and Storm Emma

Ken Mylne and Rob Neal
with contributions from several scientists across the Met Office

ECMWF UEF Meeting, 5-8 June 2018



Beast started 24 Feb

a job Sign in Search UK edition

n Sport Culture Lifestyle More The Guardian

Media Society Law Scotland Wales Northern Ireland

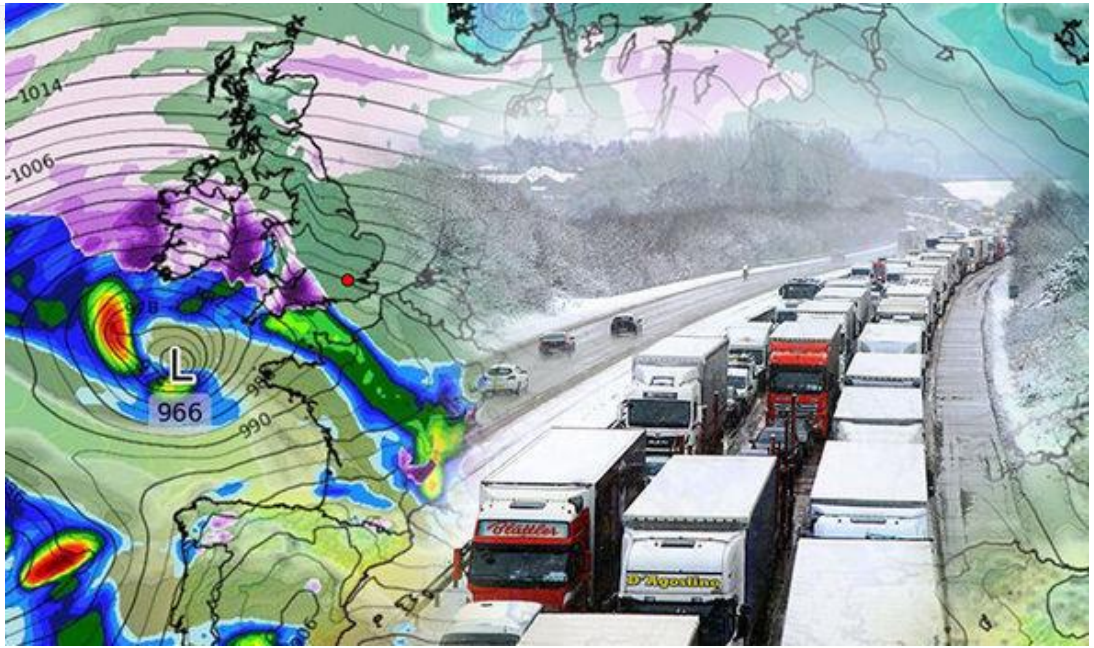
Beast from the East meets storm Emma, causing UK's worst weather in years

Snow chaos causes deaths, disrupts travel and closes schools and hospitals across the UK as Met Office issues red alert

▲ Red alerts announced as snow causes disruption across UK – video

Blizzards, strong winds, drifting snow and bitter cold have caused death and disruption as the weather system nicknamed the "Beast from the East" combined with storm Emma to create some of the most testing weather experienced in the UK for years.

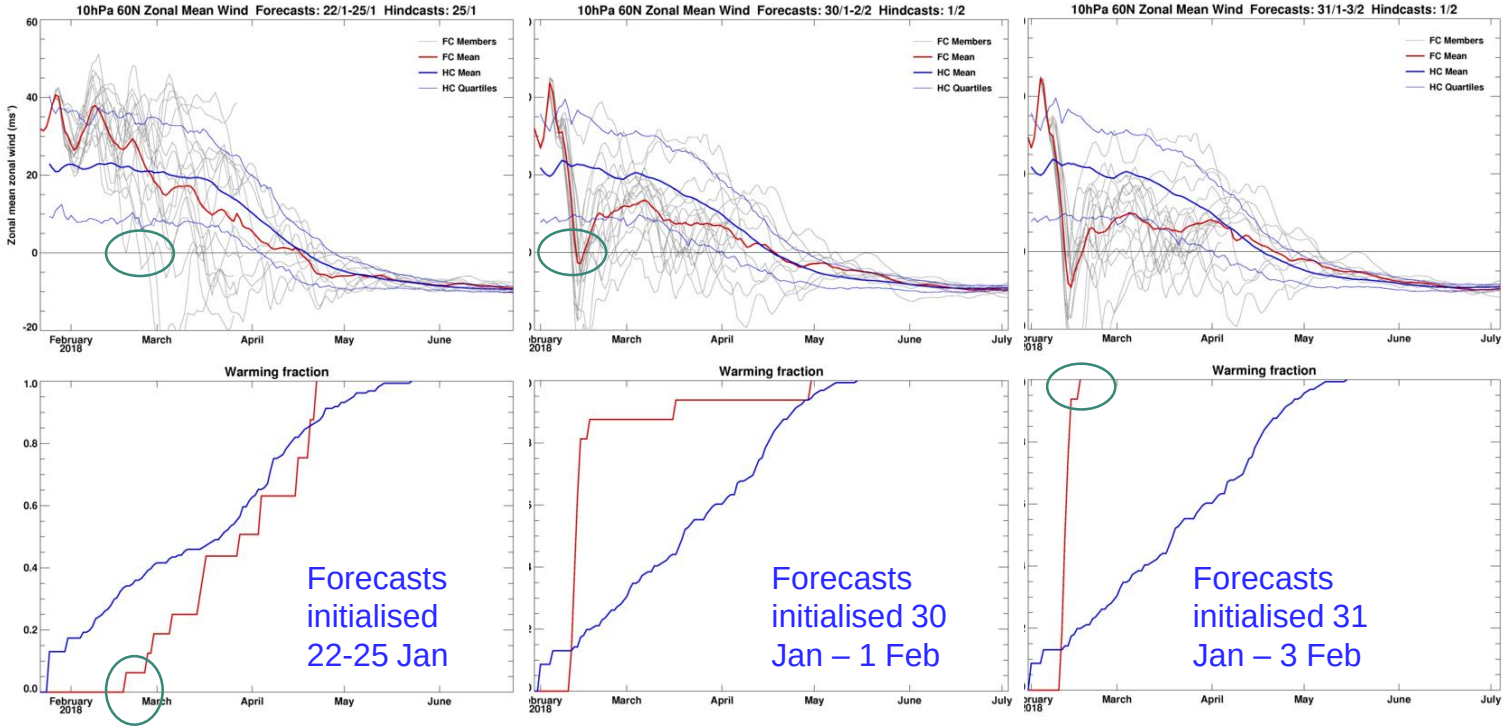
Emma reached UK on Thu 1 March



Met Office

Combination of cold easterly plus Storm Emma brought the most severe spell of winter weather to the UK for several years – including exceptional outbreak of freezing rain – very rare in the UK.

The sudden stratospheric warming
- strongly associated with cold weather in the UK (70%)

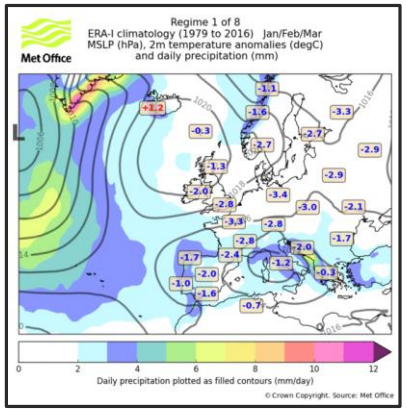


Thanks to Jeff Knight (Met Office Hadley Centre)

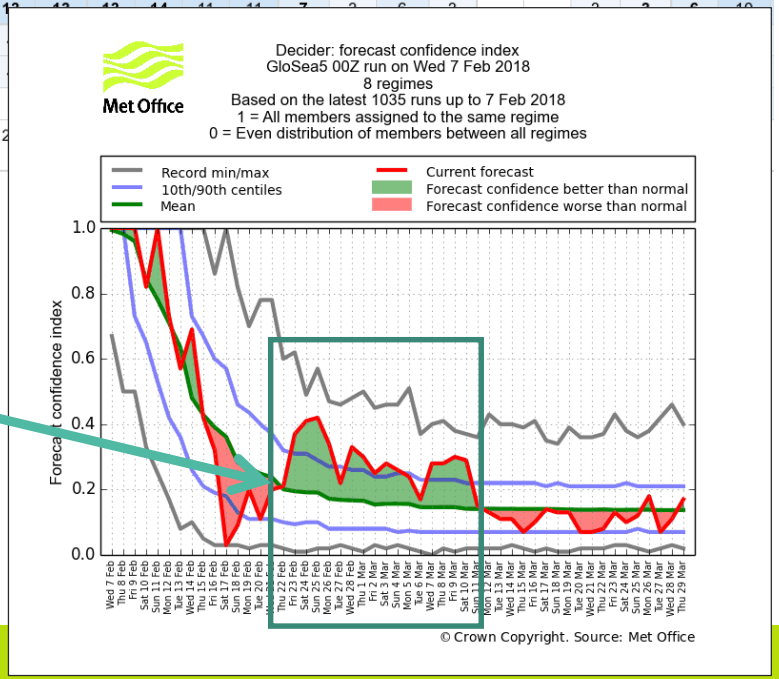
Weather regime forecasts from Decider (GloSea5, ECMWF, GEFS, MOGREPS-G)

Decider – 5 week weather regime forecast (8 regimes)
GloSea5 0000 UTC run on Wed 7 February 2018

	Wed 7 Feb	Thu 8 Feb	Fri 9 Feb	Sat 10 Feb	Sun 11 Feb	Mon 12 Feb	Tue 13 Feb	Wed 14 Feb	Thu 15 Feb	Fri 16 Feb	Sat 17 Feb	Sun 18 Feb	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb	Wed 28 Feb	Thu 1 Mar	Fri 2 Mar	Sat 3 Mar	Sun 4 Mar	Mon 5 Mar	Tue 6 Mar	Wed 7 Mar	Thu 8 Mar	Fri 9 Mar	Sat 10 Mar	Sun 11 Mar	Mon 12 Mar	Tue 13 Mar	Wed 14 Mar
Regime 1									17	25	17	19	44	38	38	30	50	60	60	54	42	58	54	43	46	43	46	41	44	34	34	33	28	19	25	23
Regime 2				88	100	75	25	67	50	42	17		6	6		5	5	5	10	13	8	8	4	11	18	21	18	16	28	28	31	25	19	14	22	10
Regime 3									25		8	13	13	6	13		5	5	5	17	21	4	8	14	7		4	6	3	25	22	25	25	33	22	23
Regime 4						25	63			17	8	13	13	6	6	5	5				8	8	13	14	14	11	11	16	9	3	3	8	11	6	6	18
Regime 5							13			8	17	13	13	13	25	30	50	20	15	8																
Regime 6											17	6		6	6	20		5	10	4															
Regime 7								33	8	8	8	19	6	13	6	5																				
Regime 8	100	100	100	13							8	19	6	13	6	5	5	5		4																
Total Members	4	4	4	8	8	8	8	12	12	12	12	16	16	16	16	20	20	20	20	24	2															



Unusually high forecast confidence for Regime 1 (shown on left) occurring from late February onwards



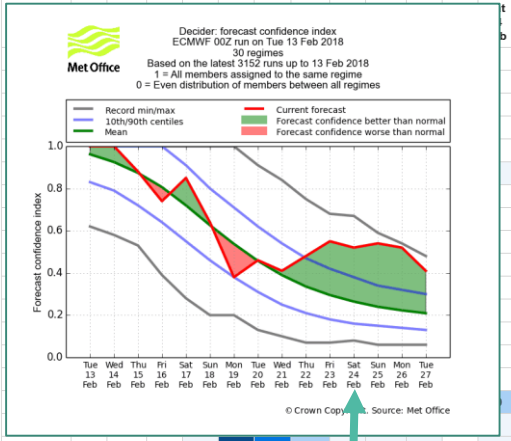
Cold outbreak started 24 Feb

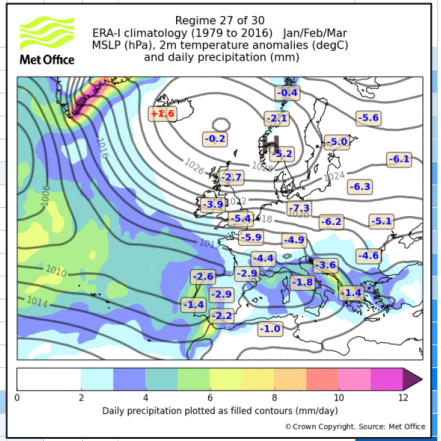
ECMWF 00Z run Tue 13 Feb 2018 (30 regimes) – Updated 09:03:25 GMT, Tue 13 Feb 2018

[Latest | Run-1 | Run-2 | Run-3 | Run-4 | Run-5 | Run-6 | Run-7 | Run-8 | Run-9 | Run-10]

INTERACTIVE TABLE: Probability of each regime occurring at each lead time (30 regimes)

Click on probabilities to show regime climatologies. Hover over probabilities to show a list of members. Bold probabilities contain the control member. Regime definitions are available by hovering over or clicking on the regime links in the first column.





Regime 18				2	**84**	**53**	20	2	2	2		2	2			Anticyclonic SWly, high over N France	5.0%
Regime 19							4	4				2	2	6	**12**	Unbiased Nly, low E of Denmark	3.9%
Regime 20			**86**									2				Cyclonic Wly, intense low near Iceland	4.5%
Regime 21	**100**	**100**														Cyclonic SWly, deep low S of Iceland	3.5%
Regime 22									2	6	6	6	2	2		Cyclonic Sly, low W of Ireland	3.5%
Regime 23				4			2								2	Unbiased Wly, windy in N	5.0%
Regime 24															2	Cyclonic Nly, low in N Sea	3.3%
Regime 25							20	12	6	2		2	10	6	12	Anticyclonic Nly, high centre Irish Sea	3.9%
Regime 26																Cyclonic NWly, low near Norway, windy	3.4%
Regime 27							4	**45**	**43**	**41**	**53**	**43**	**55**	**51**	33	Anticyclonic Ely, high in Norwegian Sea	3.8%
Regime 28									6	14	12	20	16	**20**	20	Cyclonic SEly, low SW of UK	3.8%
Regime 29															2	Cyclonic S-SWly, deep low W of Ireland	3.3%
Regime 30										2	2					Cyclonic W-SWly, deep low SE of Iceland	2.9%
Total Members	51	51	51	51	51	51	51	51	51	51	51		51	51	51	---	---

Medium-range forecast from the ECMWF (00 UTC run on 13th February (30 regimes)

Similar to the GEFS

High forecast confidence in week 2 for Pattern 27

Historic zonal trend (below) shows a jumpy/transitioning forecast from one run to the next

2) Probabilistic zonal trend over UK (30 regimes)

	Tue 13 Feb	Wed 14 Feb	Thu 15 Feb	Fri 16 Feb	Sat 17 Feb	Sun 18 Feb	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb
00Z Tue 13 Feb 2018	100%	100%	100%	100%	96%	61%	51%	59%	69%	80%	84%	84%	78%	76%	59%
12Z Mon 12 Feb 2018	100%	100%	100%	100%	100%	88%	65%	43%	39%	47%	55%	57%	67%	59%	59%
00Z Mon 12 Feb 2018	100%	100%	100%	100%	96%	92%	73%	61%	51%	41%	37%	45%	47%	49%	
12Z Sun 11 Feb 2018	100%	100%	100%	100%	100%	92%	86%	88%	73%	65%	43%	41%	45%	53%	
00Z Sun 11 Feb 2018	100%	100%	100%	100%	100%	80%	75%	75%	63%	43%	41%	43%	45%		
12Z Sat 10 Feb 2018	100%	100%	100%	100%	96%	75%	67%	57%	51%	37%	39%	45%	47%		
00Z Sat 10 Feb 2018	100%	100%	100%	100%	98%	73%	61%	55%	47%	41%	51%	49%			
12Z Fri 9 Feb 2018	100%	100%	98%	98%	84%	53%	41%	39%	--	41%	49%	49%			
00Z Fri 9 Feb 2018	100%	100%	96%	100%	90%	51%	45%	39%	39%	45%	55%				
12Z Thu 8 Feb 2018	100%	100%	94%	92%	82%	49%	47%	37%	43%	47%	51%				
00Z Thu 8 Feb 2018	100%	100%	100%	82%	71%	67%	61%	47%	41%	37%					

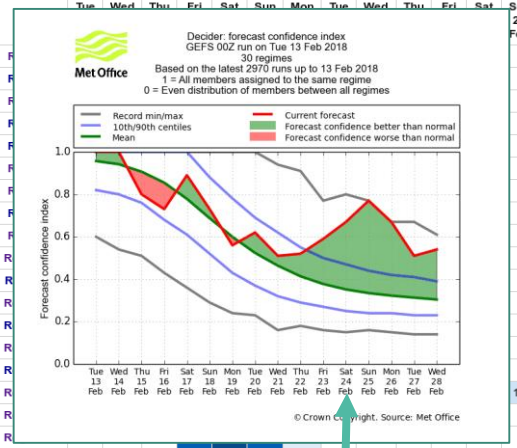
RED	Easterly conditions most likely
GREEN	Both westerly and easterly conditions unlikely
BLUE	Westerly conditions most likely
WHITE	Equal likelihood of two or three of the above tendencies occurring

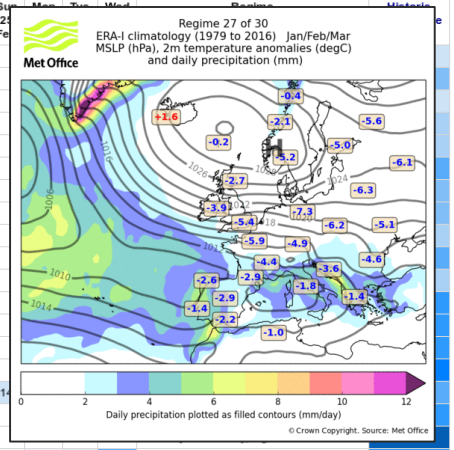
GEFS 00Z run Tue 13 Feb 2018 (30 regimes) – Updated 07:25:49 GMT, Tue 13 Feb 2018

[Latest | Run-1 | Run-2 | Run-3 | Run-4 | Run-5 | Run-6 | Run-7 | Run-8 | Run-9 | Run-10]

INTERACTIVE TABLE: Probability of each regime occurring at each lead time (30 regimes)

Click on probabilities to show regime climatologies. Hover over probabilities to show a list of members. Bold probabilities contain the control member. Regime definitions are available by hovering over or clicking on the regime links in the first column.





Regime 19								5	5					5	10	29	Unbiased Nly, low E of Denmark	3.9%
Regime 20			38								5	5					Cyclonic Wly, intense low near Iceland	4.5%
Regime 21	100	100															Cyclonic SWly, deep low S of Iceland	3.5%
Regime 22										5						5	Cyclonic Sly, low W of Ireland	3.5%
Regime 23																	Unbiased Wly, windy in N	5.0%
Regime 24																	Cyclonic Nly, low in N Sea	3.3%
Regime 25					5	24	43	5	5	10	5			5	14	10	Anticyclonic Nly, high centre Irish Sea	3.9%
Regime 26											5			5			Cyclonic NWly, low near Norway, windy	3.4%
Regime 27							24	62	48	43	48	62	76	71	43	29	Anticyclonic Ely, high in Norwegian Sea	3.8%
Regime 28										14	24	19	5	5	14	24	Cyclonic SEly, low SW of UK	3.8%
Regime 29																	Cyclonic S-SWly, deep low W of Ireland	3.3%
Regime 30																	Cyclonic W-SWly, deep low SE of Iceland	2.9%
Total Members	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	21	---	---

Medium-range forecast from the GEFS (00 UTC run on 13th February (30 regimes)

High forecast confidence in week 2 for Pattern 27

Historic zonal trend (below) shows a jumpy/transitioning forecast from one run to the next

2) Probabilistic zonal trend over UK (30 regimes)

	Tue 13 Feb	Wed 14 Feb	Thu 15 Feb	Fri 16 Feb	Sat 17 Feb	Sun 18 Feb	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb	Wed 28 Feb
00Z Tue 13 Feb 2018	100%	100%	100%	100%	95%	62%	62%	67%	71%	81%	86%	90%	95%	86%	67%	52%
18Z Mon 12 Feb 2018	100%	100%	100%	100%	95%	71%	86%	57%	67%	67%	62%	67%	81%	62%	57%	62%
12Z Mon 12 Feb 2018	100%	100%	100%	100%	86%	81%	76%	57%	52%	67%	67%	71%	76%	76%	67%	57%
06Z Mon 12 Feb 2018	100%	100%	100%	100%	81%	57%	76%	81%	52%	43%	57%	62%	57%	62%	62%	
00Z Mon 12 Feb 2018	100%	100%	100%	100%	76%	76%	76%	62%	48%	43%	--	48%	48%	62%	57%	
18Z Sun 11 Feb 2018	100%	100%	100%	100%	95%	52%	52%	52%	48%	48%	57%	71%	--	57%	52%	
12Z Sun 11 Feb 2018	100%	100%	100%	86%	86%	43%	48%	38%	43%	43%	38%	--	52%	48%	57%	
06Z Sun 11 Feb 2018	100%	100%	100%	100%	86%	57%	52%	43%	43%	38%	38%	38%	43%	43%		
00Z Sun 11 Feb 2018	100%	100%	100%	100%	52%	57%	48%	48%	43%	43%	38%	48%	48%	--		
18Z Sat 10 Feb 2018	100%	100%	100%	100%	52%	81%	67%	62%	57%	48%	43%	48%	48%	38%		
12Z Sat 10 Feb 2018	100%	100%	100%	100%	57%	71%	38%	--	--	62%	57%	62%	57%	--		

RED	Easterly conditions most likely
GREEN	Both westerly and easterly conditions unlikely
BLUE	Westerly conditions most likely
WHITE	Equal likelihood of two or three of the above tendencies occurring

Met Office

Multi-model version

MOGREPS-G
(7 days; 36 membe

GEFS
days; 21 members)

February 2018

Medium range multi model 00Z run Mon 19 Feb 2018 (30 regimes) – Updated 11:57:21 GMT, Mon 19 Feb 2018

[Latest | Run-1 | Run-2 | Run-3 | Run-4 | Run-5 | Run-6 | Run-7 | Run-8 | Run-9 | Run-10]

INTERACTIVE TABLE: Probability of each regime occurring at each lead time (30 regimes)

Click on probabilities to show regime climatologies. Hover over probabilities to show a list of members. Bold probabilities contain the control member. Regime definitions are available by hovering over or clicking on the regime links in the first column.

	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb	Wed 28 Feb	Thu 1 Mar	Fri 2 Mar	Sat 3 Mar	Sun 4 Mar	Mon 5 Mar	Regime Descriptions (UK)	Historic Occurrence J/F/M
Regime 1														3	1	Unbiased NWly	1.9%
Regime 2																Cyclonic SWly, returning Pm airmass	2.5%
Regime 3																Anticyclonic SWly, ridge over N France	1.9%
Regime 4																Unbiased Wly	2.4%
Regime 5				8									1			Unbiased Sly, high over Scandinavia	2.3%
Regime 6	100	72	21	1							1		1	1		Anticyclonic, Azores high ext.	3.0%
Regime 7															3	Cyclonic SWly, low WNW of Ireland	2.6%
Regime 8															1	Cyclonic Wly, low near Shetland	2.6%
Regime 9										1	3			3	4	Anticyclonic N-NEly, high near Iceland	2.3%
Regime 10				1											1	Anticyclonic W-SWly, slight Azores ridge	3.2%
Regime 11															3	Cyclonic, low centred over southern UK	2.4%
Regime 12				74	19	6									1	Anticyclonic Sly, high over Poland	3.9%
Regime 13											1	3	4	1	4	Anticyclonic NWly, high SW of Ireland	3.8%
Regime 14												1	1	1		Cyclonic N-NWly, low near S Sweden	3.6%
Regime 15																Unbiased SWly, very windy NW Britain	4.5%
Regime 16				14	26	62					1			6	4	Anticyclonic S-SEly, high E of Denmark	3.2%
Regime 17			79	2		16	31	10	3	3	1	1		1	1	Anticyclonic E-SEly high over Denmark	4.0%
Regime 18															3	Anticyclonic SWly, high over N France	5.0%
Regime 19										4	13	31	25	25	14	Unbiased Nly, low E of Denmark	3.9%
Regime 20																Cyclonic Wly, intense low near Iceland	4.5%
Regime 21																Cyclonic SWly, deep low S of Iceland	3.5%
Regime 22					54	1									3	Cyclonic Sly, low W of Ireland	3.5%
Regime 23																Unbiased Wly, windy in N	5.0%
Regime 24												3	6	7	7	Cyclonic Nly, low in N Sea	3.3%
Regime 25		28							3	14	13	7	11	8	3	Anticyclonic Nly, high centre Irish Sea	3.9%
Regime 26															1	Cyclonic NWly, low near Norway, windy	3.4%
Regime 27					2	14	69	90	90	61	31	19	15	8	7	Anticyclonic Ely, high in Norwegian Sea	3.8%
Regime 28						1			4	17	36	32	32	28	28	Cyclonic SEly, low SW of UK	3.8%
Regime 29												3	3	7	10	Cyclonic S-SWly, deep low W of Ireland	3.3%
Regime 30																Cyclonic W-SWly, deep low SE of Iceland	2.9%
Total Members	108	108	108	108	108	108	108	72	72	72	72	72	72	72	72	---	---

Met Office

MOGREPS-G (36 members)

	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb
00Z Mon 19 Feb 2018	100%	100%	81%	92%	86%	89%	100%
18Z Sun 18 Feb 2018	100%	100%	75%	78%	69%	83%	100%
12Z Sun 18 Feb 2018	100%	100%	75%	72%	67%	86%	100%
06Z Sun 18 Feb 2018	100%	100%	81%	75%	58%	97%	
00Z Sun 18 Feb 2018	100%	100%	86%	67%	--	92%	
18Z Sat 17 Feb 2018	100%	100%	78%	64%	58%	81%	
12Z Sat 17 Feb 2018	100%	100%	61%	64%	47%	72%	
06Z Sat 17 Feb 2018	100%	100%	--	53%	56%		
00Z Sat 17 Feb 2018	94%	100%	61%	44%	47%		
18Z Fri 16 Feb 2018	94%	97%	56%	47%	50%		
12Z Fri 16 Feb 2018	92%	97%	61%	44%	47%		

ECMWF (51 members)

	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb	Wed 28 Feb	Thu 1 Mar	Fri 2 Mar	Sat 3 Mar	Sun 4 Mar	Mon 5 Mar
00Z Mon 19 Feb 2018	100%	100%	69%	96%	90%	92%	100%	100%	96%	78%	63%	51%	55%	57%	43%
12Z Sun 18 Feb 2018	100%	100%	71%	94%	88%	59%	100%	100%	92%	84%	63%	51%	55%	49%	37%
00Z Sun 18 Feb 2018	100%	100%	51%	76%	75%	71%	98%	94%	82%	82%	71%	53%	49%	49%	
12Z Sat 17 Feb 2018	94%	100%	71%	71%	57%	49%	86%	92%	94%	86%	80%	67%	57%	41%	
00Z Sat 17 Feb 2018	94%	98%	55%	57%	45%	41%	65%	75%	73%	57%	53%	47%	49%		
12Z Fri 16 Feb 2018	98%	80%	67%	47%	49%	65%	84%	86%	75%	69%	51%	43%	41%		
00Z Fri 16 Feb 2018	94%	76%	63%	53%	57%	69%	80%	84%	82%	75%	61%	--			
12Z Thu 15 Feb 2018	82%	75%	49%	57%	47%	43%	65%	73%	71%	61%	49%	47%			
00Z Thu 15 Feb 2018	78%	75%	49%	--	--	45%	59%	59%	51%	51%	45%				
12Z Wed 14 Feb 2018	76%	69%	59%	45%	49%	59%	69%	69%	67%	67%	57%				
00Z Wed 14 Feb 2018	53%	51%	47%	51%	45%	59%	71%	73%	80%	65%					

GEFS (21 members)

	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb	Wed 28 Feb	Thu 1 Mar	Fri 2 Mar	Sat 3 Mar	Sun 4 Mar	Mon 5 Mar	Tue 6 Mar
00Z Mon 19 Feb 2018	100%	100%	100%	62%	95%	100%	100%	100%	100%	86%	86%	81%	76%	71%	67%	57%
18Z Sun 18 Feb 2018	100%	100%	100%	86%	100%	100%	100%	100%	95%	95%	76%	48%	52%	52%	38%	48%
12Z Sun 18 Feb 2018	100%	100%	100%	67%	90%	86%	100%	95%	90%	90%	90%	86%	86%	71%	71%	52%
06Z Sun 18 Feb 2018	95%	100%	100%	71%	86%	95%	100%	100%	100%	90%	95%	71%	62%	52%	57%	
00Z Sun 18 Feb 2018	100%	100%	100%	71%	76%	95%	95%	90%	86%	86%	81%	67%	57%	43%	52%	
18Z Sat 17 Feb 2018	100%	100%	76%	52%	52%	76%	90%	95%	90%	90%	86%	76%	67%	57%	--	
12Z Sat 17 Feb 2018	95%	100%	57%	57%	52%	71%	81%	86%	90%	90%	71%	67%	48%	48%	62%	
06Z Sat 17 Feb 2018	90%	90%	62%	67%	52%	62%	76%	81%	71%	76%	81%	71%	43%	48%		
00Z Sat 17 Feb 2018	81%	95%	81%	57%	43%	67%	86%	90%	86%	81%	62%	57%	48%	--		
18Z Fri 16 Feb 2018	86%	100%	57%	57%	62%	57%	48%	62%	71%	57%	48%	48%	62%	62%		
12Z Fri 16 Feb 2018	100%	95%	76%	--	52%	43%	67%	62%	62%	52%	48%	62%	57%	52%		

Multi-model zonal trend indicator
(108 members; 00 UTC run on 19th February 2018)

2) Probabilistic zonal trend over UK (30 regimes)

	Mon 19 Feb	Tue 20 Feb	Wed 21 Feb	Thu 22 Feb	Fri 23 Feb	Sat 24 Feb	Sun 25 Feb	Mon 26 Feb	Tue 27 Feb	Wed 28 Feb	Thu 1 Mar	Fri 2 Mar	Sat 3 Mar	Sun 4 Mar	Mon 5 Mar
00Z Mon 19 Feb 2018	100%	100%	79%	83%	72%	93%	100%	100%	97%	81%	69%	53%	47%	44%	40%
18Z Sun 18 Feb 2018	100%	100%	78%	73%	65%	75%	100%	100%	93%	88%	67%	50%	50%	42%	36%
12Z Sun 18 Feb 2018	100%	100%	78%	75%	66%	73%	100%	99%	92%	86%	71%	61%	51%	46%	46%
06Z Sun 18 Feb 2018	99%	100%	70%	67%	57%	84%	99%	96%	88%	85%	78%	58%	53%	50%	
00Z Sun 18 Feb 2018	100%	100%	72%	64%	56%	82%	97%	93%	83%	83%	74%	57%	51%	47%	
18Z Sat 17 Feb 2018	97%	100%	55%	64%	49%	63%	88%	93%	93%	88%	82%	69%	60%	43%	
12Z Sat 17 Feb 2018	96%	100%	55%	66%	52%	59%	85%	90%	93%	88%	78%	67%	54%	43%	
06Z Sat 17 Feb 2018	95%	97%	55%	57%	44%	44%	68%	75%	71%	60%	57%	42%	44%		
00Z Sat 17 Feb 2018	92%	98%	62%	53%	40%	46%	71%	79%	76%	64%	56%	44%	47%		
18Z Fri 16 Feb 2018	94%	90%	48%	42%	40%	56%	74%	79%	74%	65%	50%	42%	47%		
12Z Fri 16 Feb 2018	96%	89%	51%	43%	34%	56%	79%	79%	71%	64%	50%	46%	46%		

RED	Easterly conditions most likely
GREEN	Both westerly and easterly conditions unlikely
BLUE	Westerly conditions most likely
WHITE	Equal likelihood of two or three of the above tendencies occurring

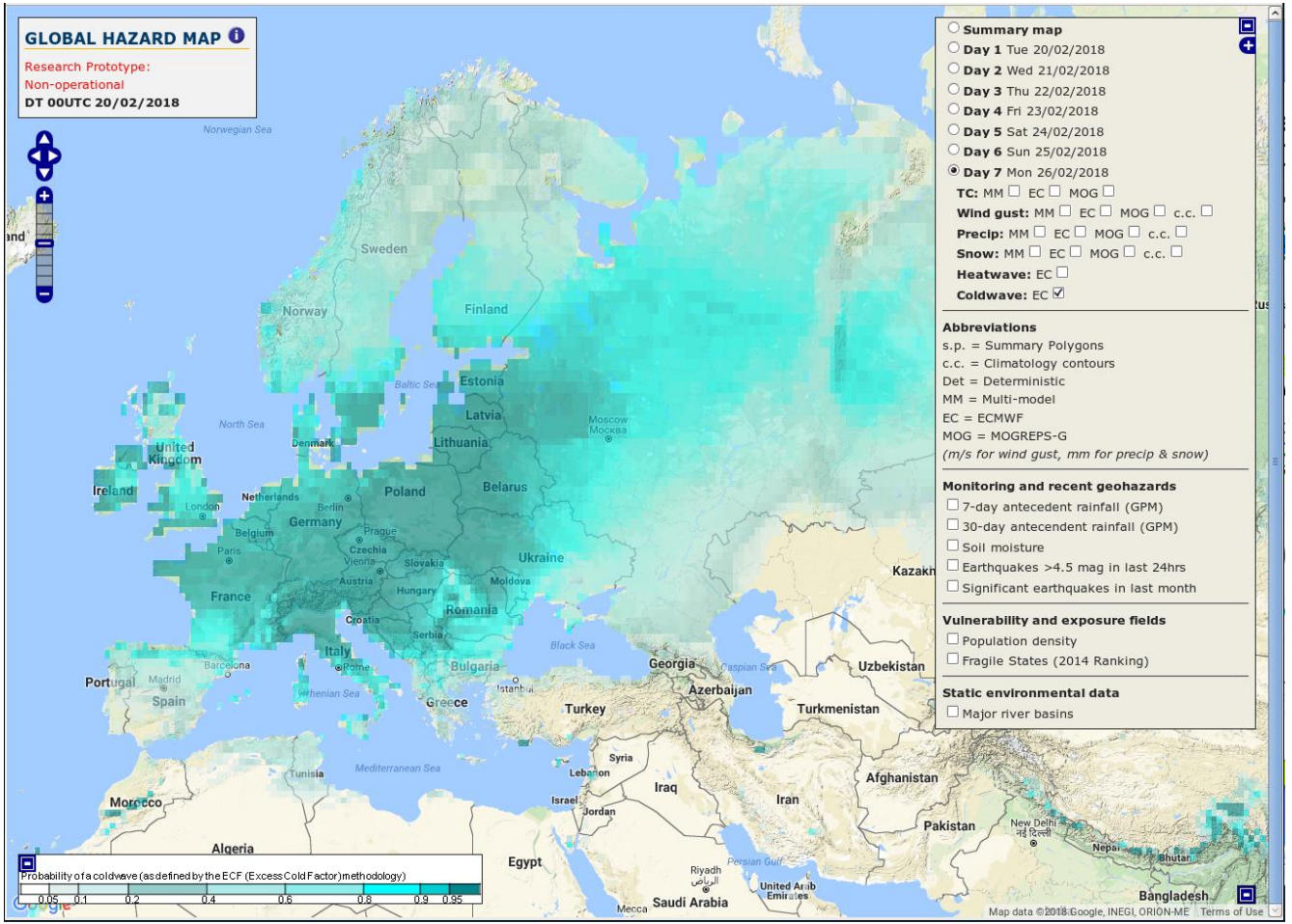
A more consistent signal is provided by the multi-model

Met Office

ECMWF 00UTC run on 20th Feb 2018

Probability of cold wave conditions at a **7 day lead time** as shown by the Met Office Global Hazard Map

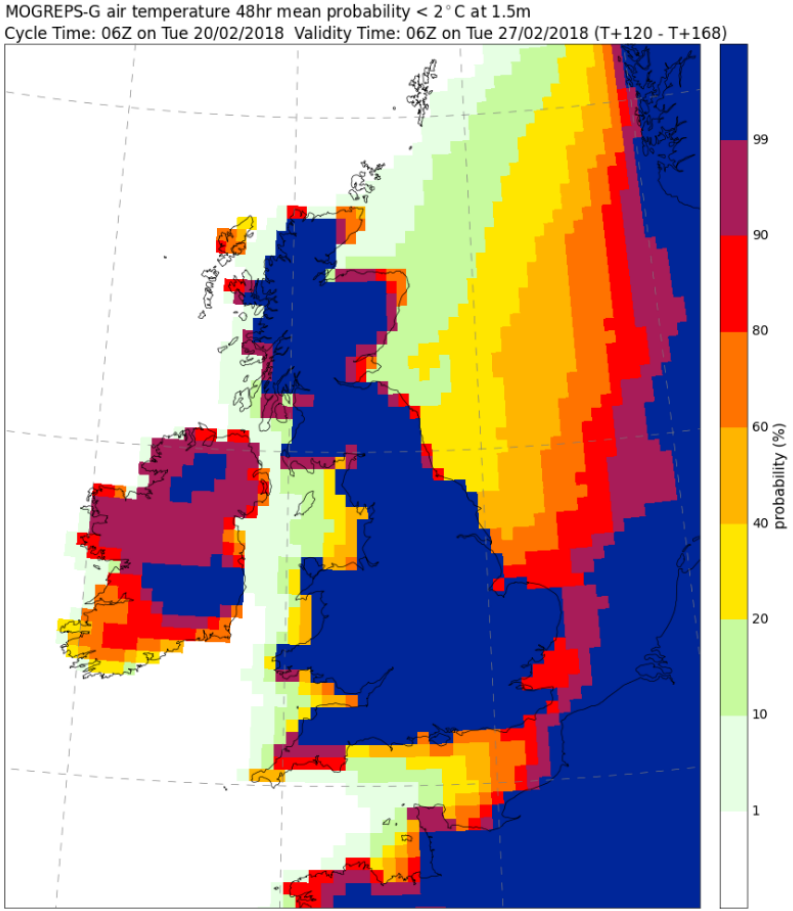
Cold weather widespread over much of Europe



Met Office

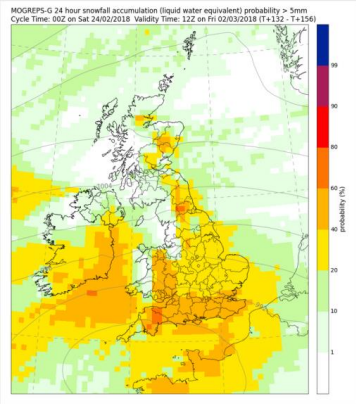
Probability 48 hour mean temperature < 2 degrees.

100% probability covers most of the UK, which is extremely unusual for a **5 to 7 day lead time**.

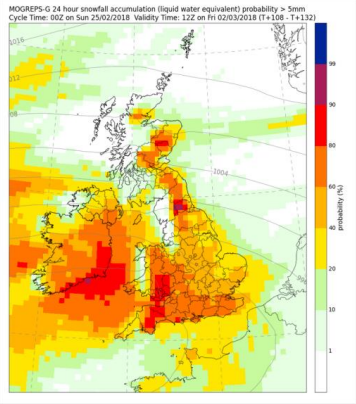


MOGREPS-G probability forecast evolution

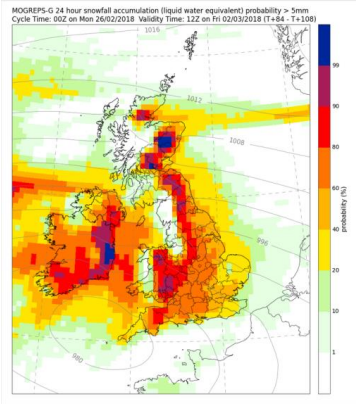
Probability 24 hour snowfall > 5 cm, valid 12:00 Thu 1st Mar to 12:00 Fri 2nd March 2018



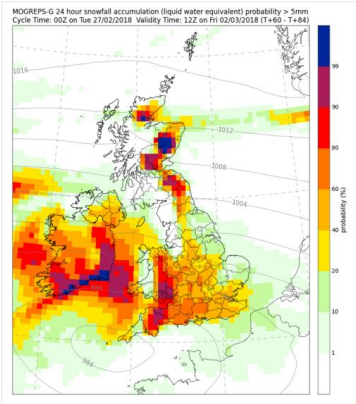
6 day forecast



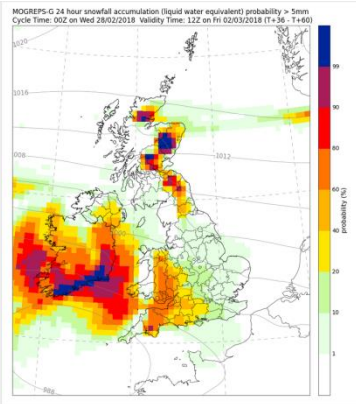
5 day forecast



4 day forecast



3 day forecast

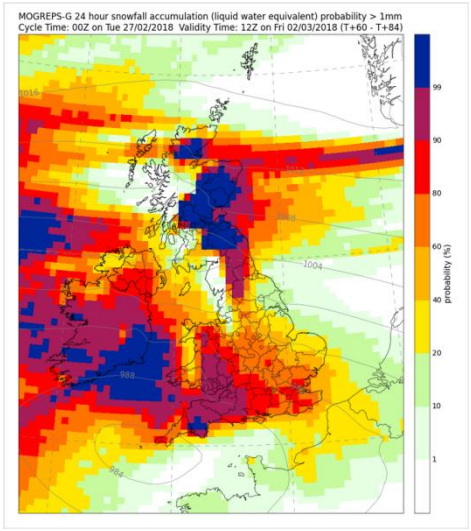


2 day forecast

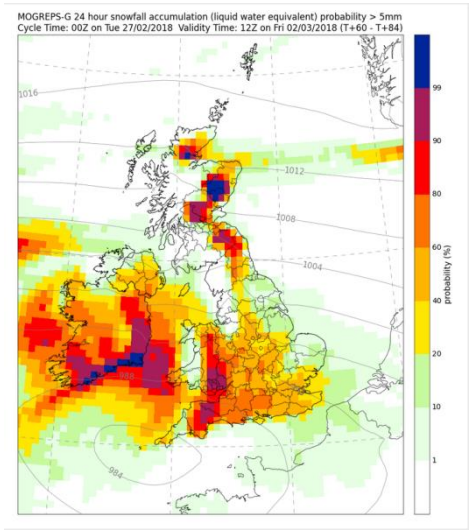
The is also a strong signal for snow in eastern Scotland and the Scottish Central Belt, as well as SW England and South Wales.

MOGREPS-G probability forecasts for different snow amounts (SW snow event)

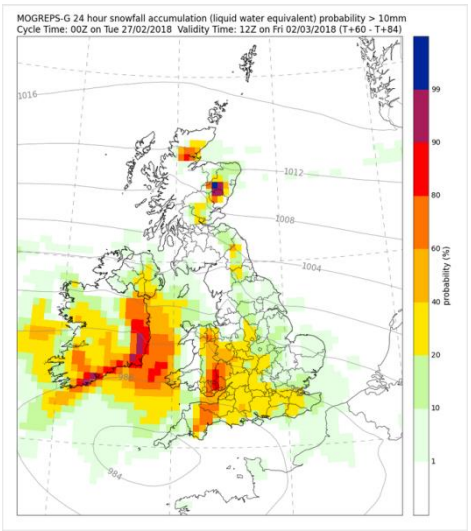
Valid 12:00 Thu 1st Mar to 12:00 Fri 2nd March 2018 – 3 day lead time



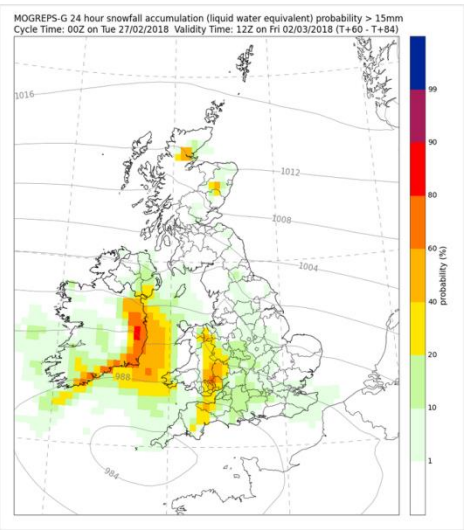
Probability > 1 cm



Probability > 5 cm



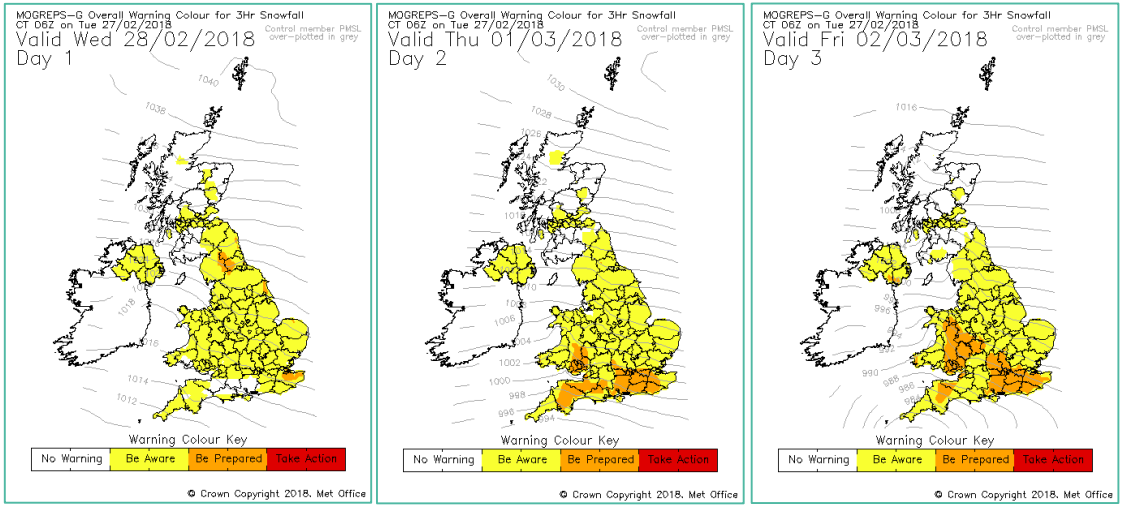
Probability > 10 cm

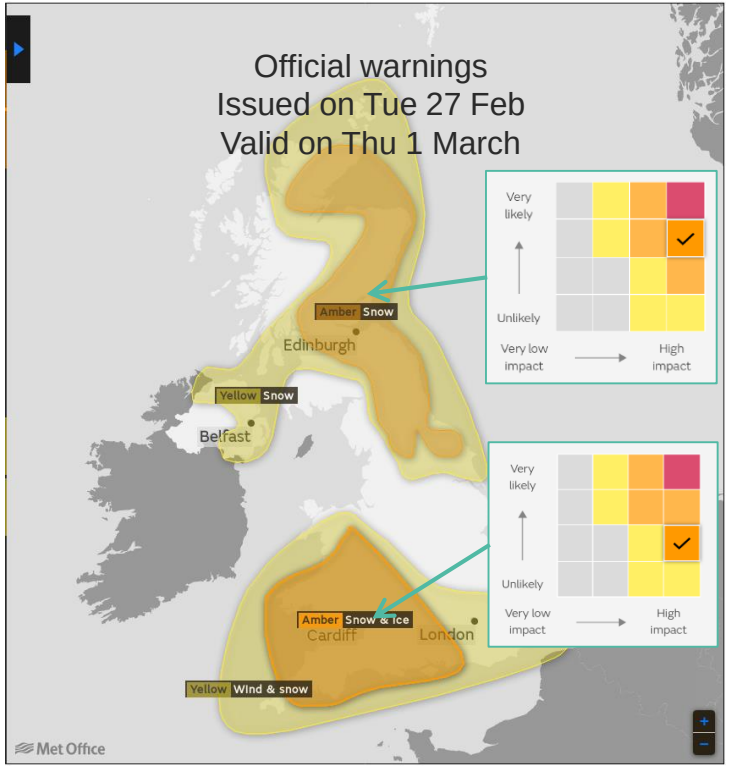


Probability > 15 cm

Viewing probabilities for several snowfall thresholds helps pinpoint the areas most at risk

MOGREPS-G first guess warnings for snow

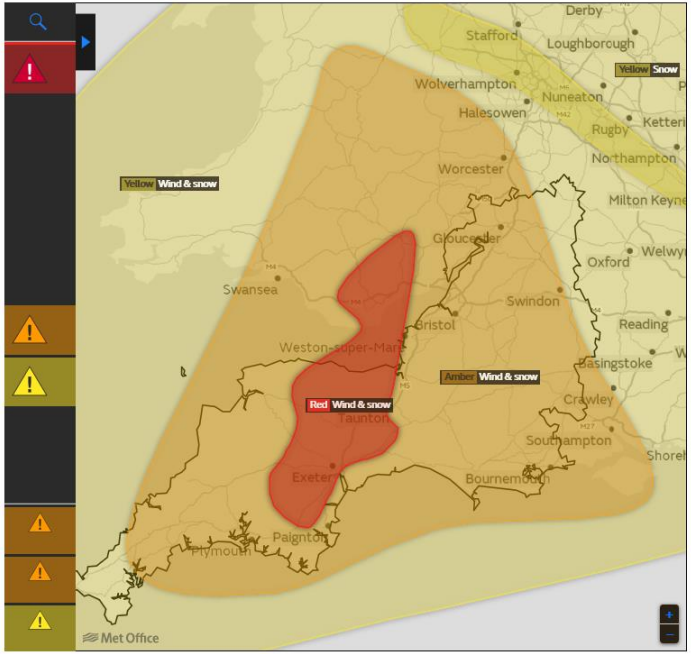




MOGREPS-G **first-guess** warnings
Issued on Tue 27 Feb and valid on
Wed 28th Feb (left), Thu 1st March (middle) and Fri 2nd March (right)

MOGREPS-G is not resolving the heaviest snow showers in the NE, but is capturing the frontal snowfall in the south much better. The UKV (1.5 km) and MOGREPS-UK (2.2 km) are able to help with the showers.

The forecaster issued warning was upgraded to Red over parts of SW England and S Wales early on Thursday morning (1st March)



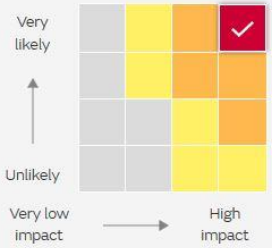
At this time there was also a Red warning in force for central Scotland for the snow showers from the East

South West England | Wales

Chief Forecaster's assessment

Widespread snow is expected to develop through Thursday afternoon and evening. Around 10-20 cm is likely to fall widely, with the potential for up to 30 to 50 cm over parts of Dartmoor, Exmoor and parts of southeast Wales. Snowfall will be accompanied by strong to gale easterly winds, leading to severe drifting of lying snow especially in upland areas. Severe cold and wind chill will compound the dangerous conditions, with very poor visibility. Towards midnight, there is a chance of snow turning to freezing rain in places, mainly across the south of the area, with widespread icy stretches making driving conditions particularly dangerous.

Warning impact matrix

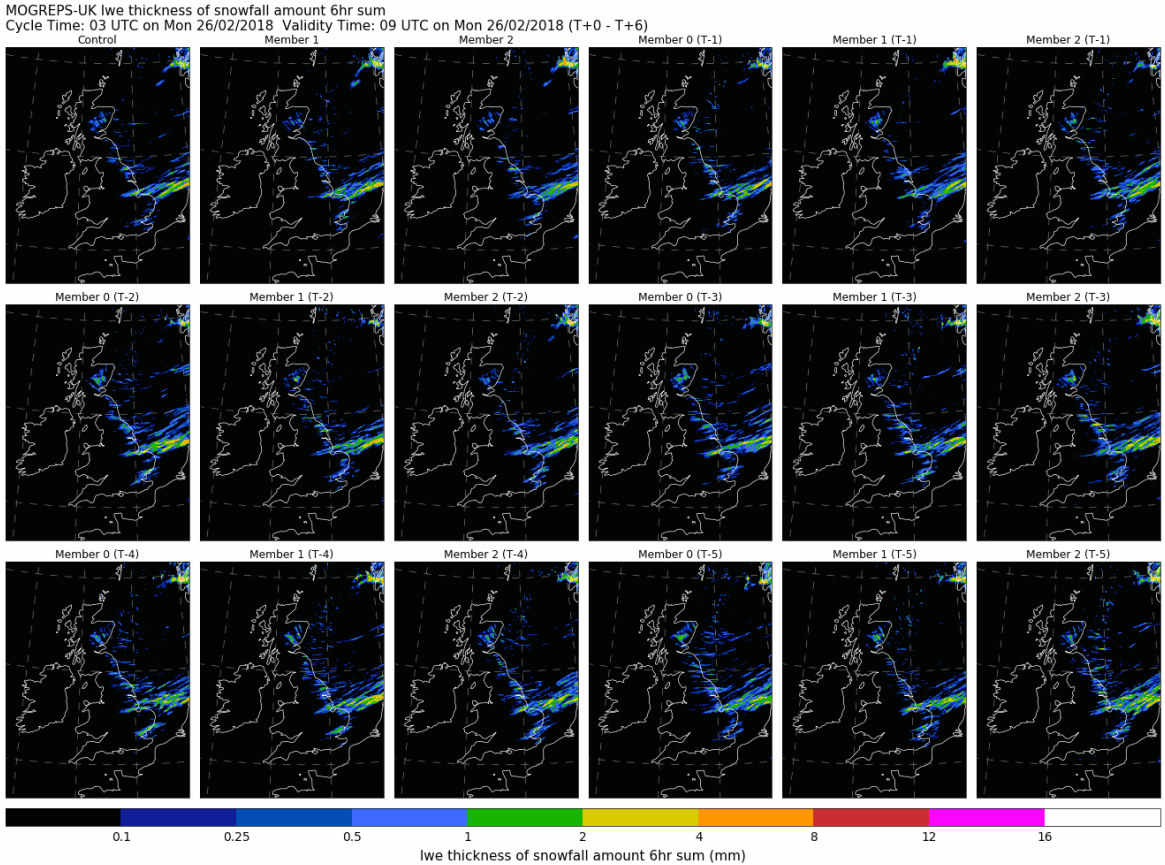


MOGREPS-UK gridded forecast products

NEW: Extended lead time and hourly cycling example

0300 UTC run on Mon 26th February

MOGREPS-UK snowfall postage stamps animation

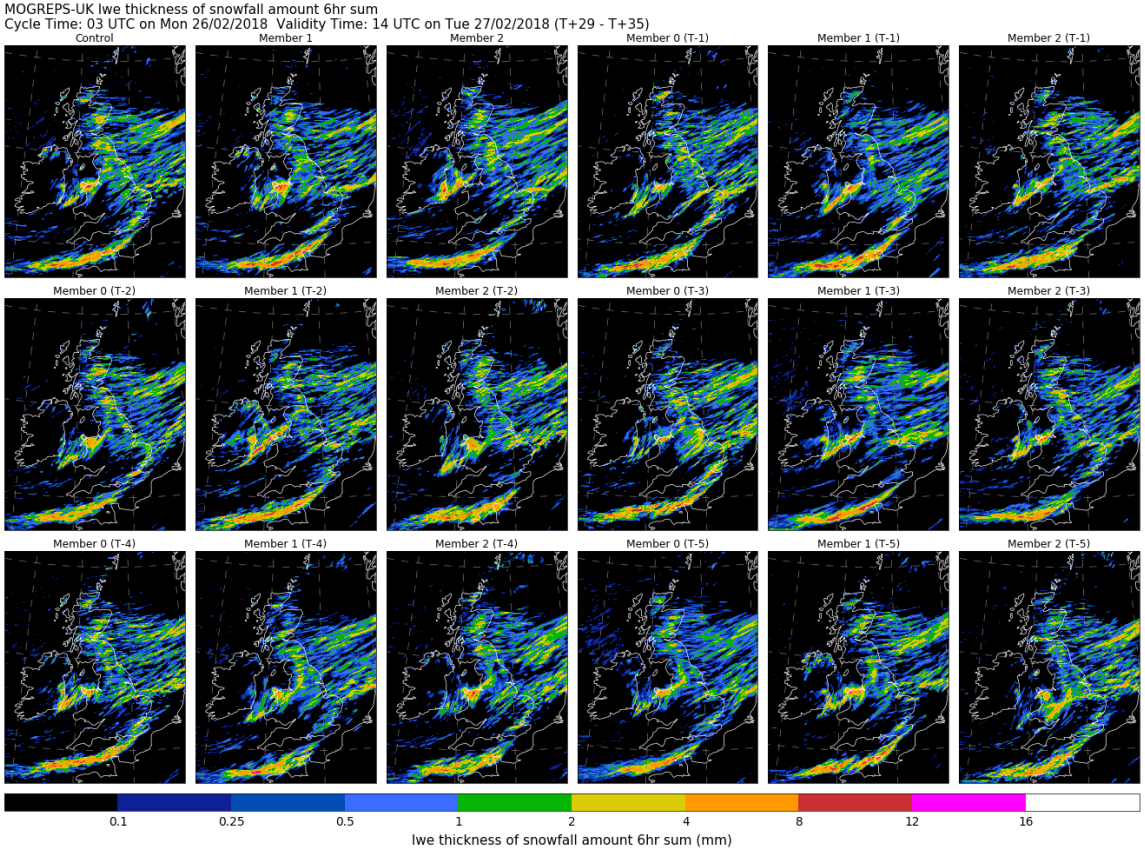


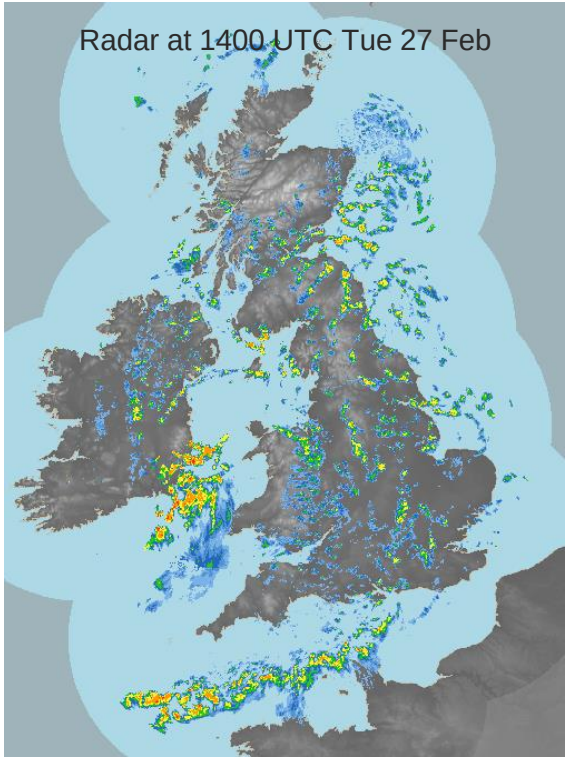
First test of product generation from extended lead time and hourly cycling.

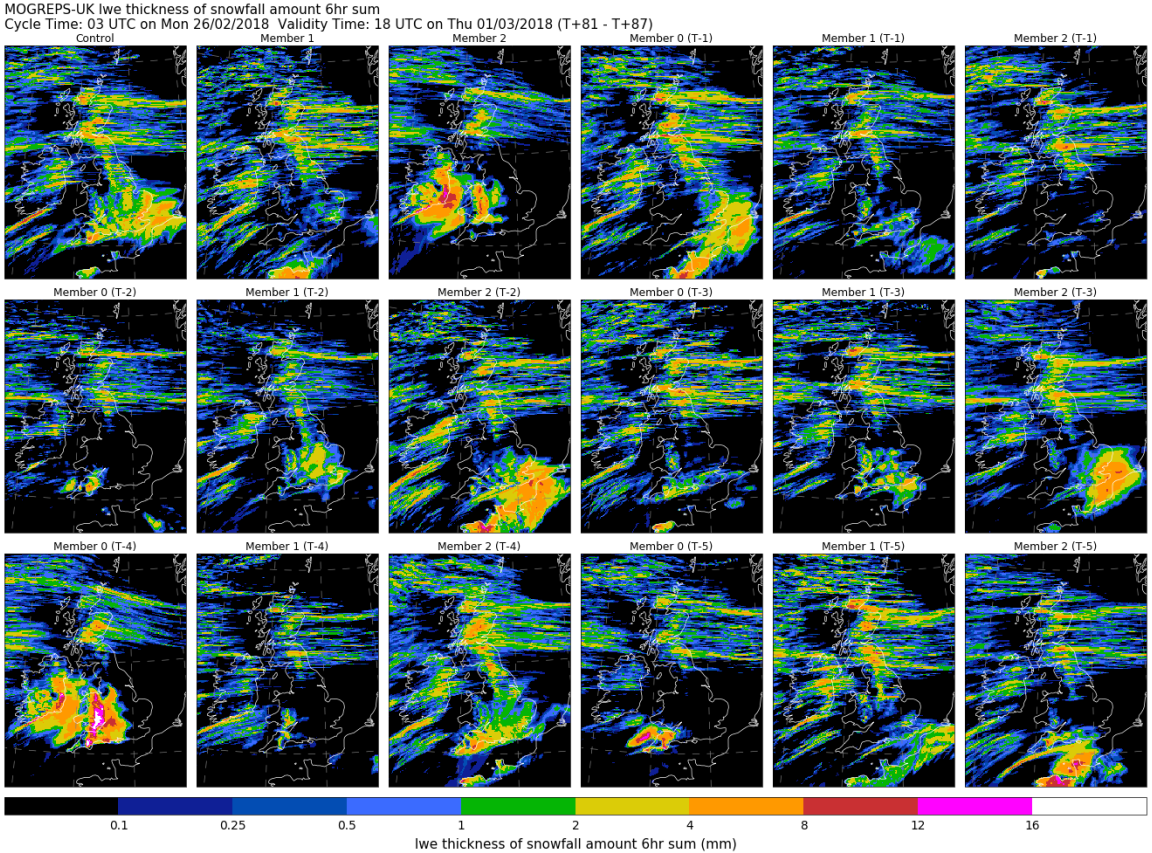
Three members run every hour and time lagged to form an 18 member ensemble.

Latest three members based on the 03 UTC cycle time, which is based on the 00 UTC MOGREPS-G boundary conditions.

T+29 to 35, Valid 1400 UTC on Tue 27th Feb







T+81 to 87
Valid Thu 1st March

Large spread in frontal snowfall positioning in the south and south west.

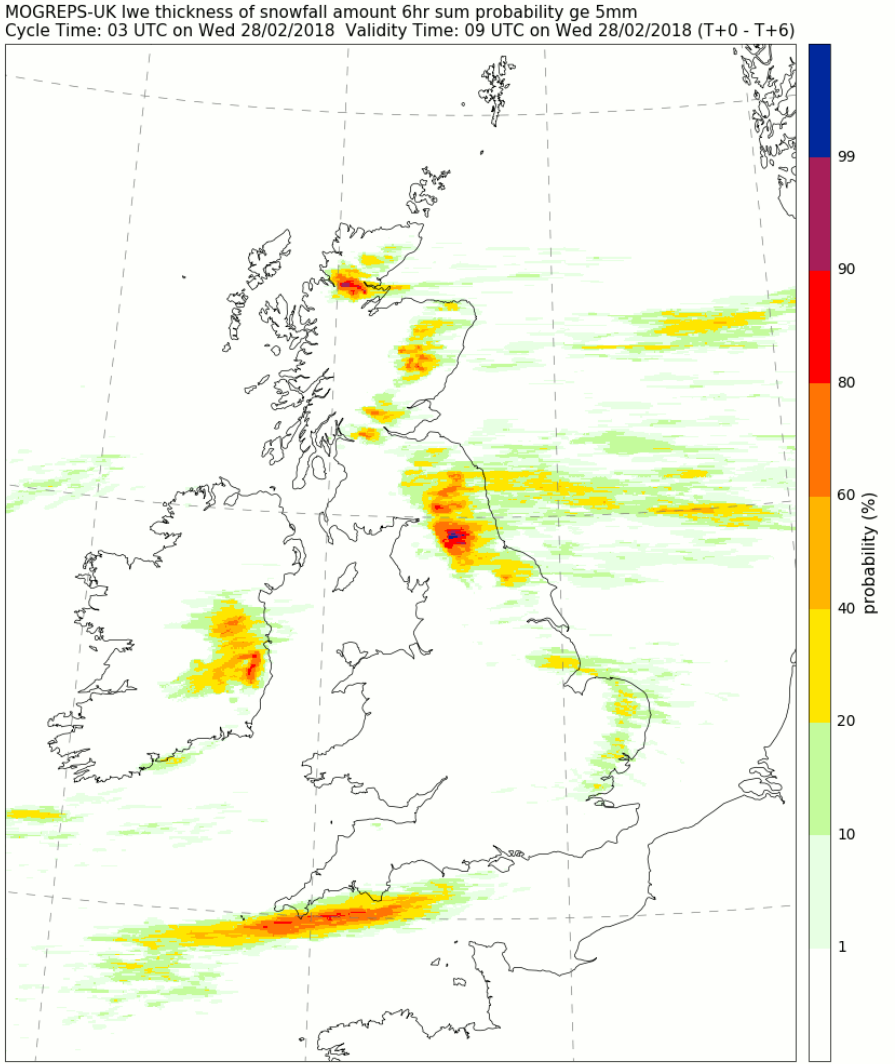
Lots of snow shower activity in the NE.

Met Office

Animation

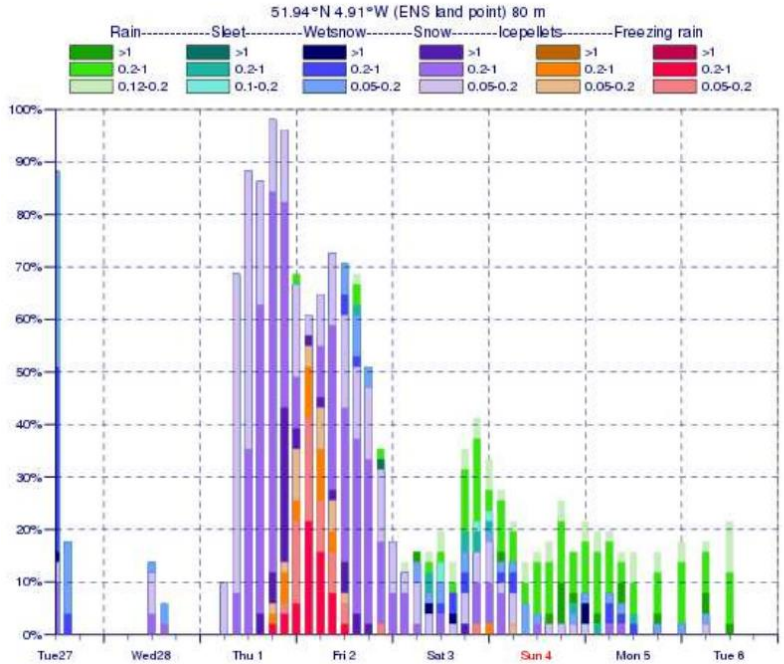
MOGREPS-UK probability 6 hour snowfall **> 5 mm**
(rainfall equivalent)
18 members
Not neighbourhood processed

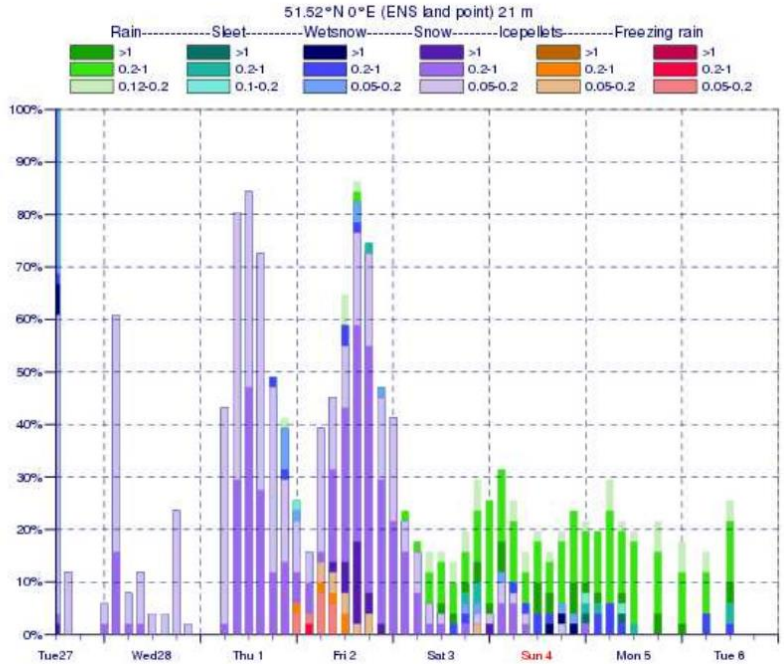
0300 UTC run on Wed 28th February



Freezing rain risk

Precipitation type likelihood – plots from the **ECMWF website**

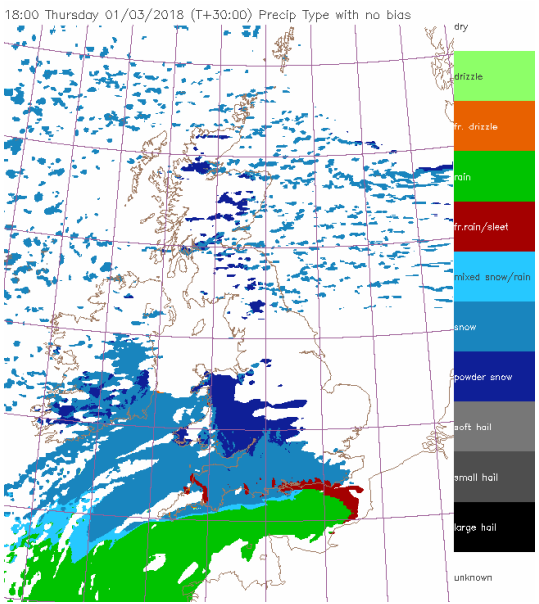




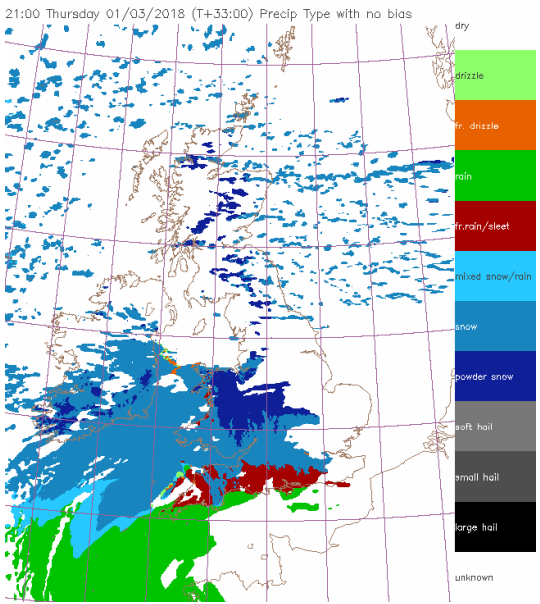
ECMWF 1200 UTC run on 27th February: Probability of precipitation type for Fishguard (left) and London (right) highlighting the significant possibility of freezing rain or ice pellets on Thursday night across parts of the SW.

UKV precipitation type (1200 UTC run on 28th February)

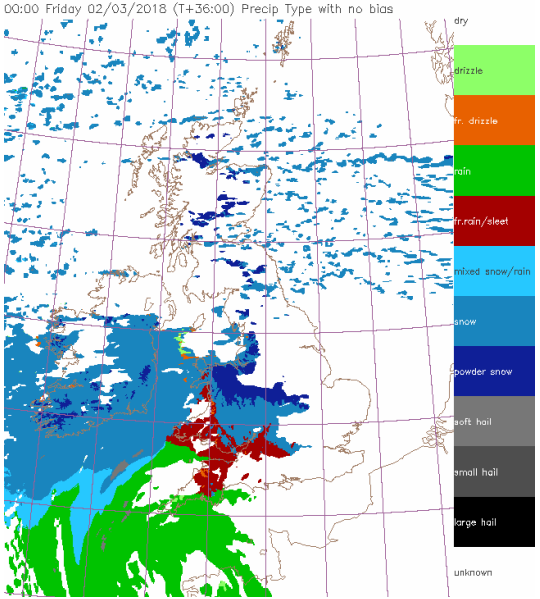
1800 UTC 1st March (T+30)



2100 UTC 1st March (T+33)



0000 UTC 2nd March (T+36)



Sleet / freezing rain shown by red shading. Snow shown by blue shading.

Met Office

Tephigram for Exeter Airport

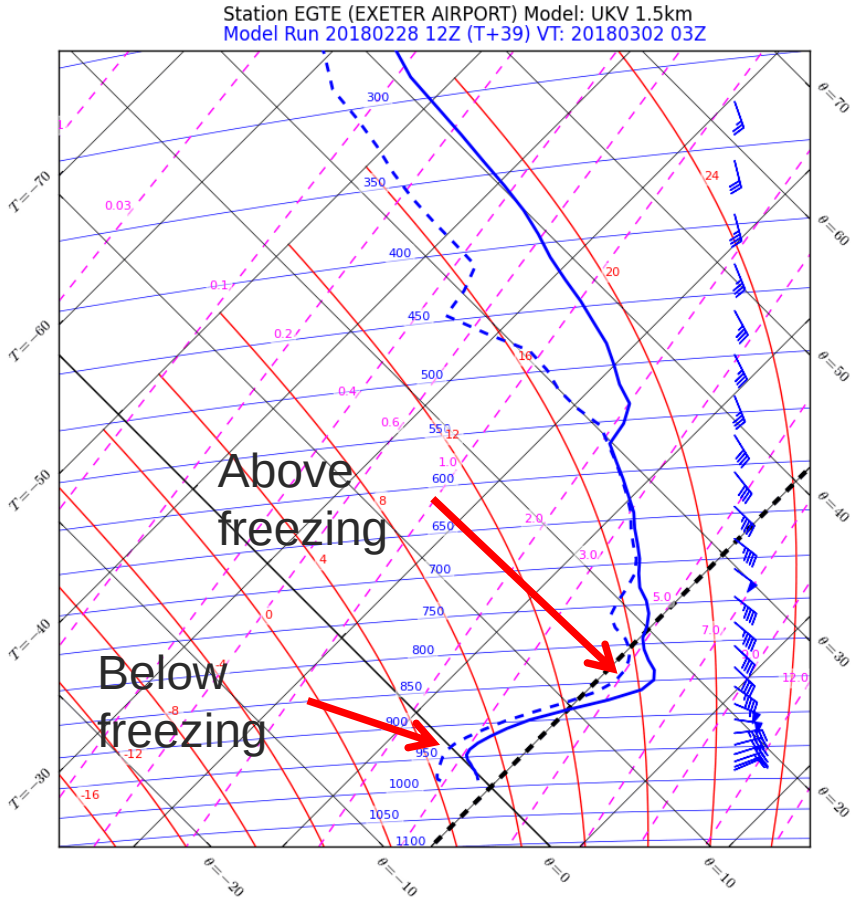
UKV T+39 hours, valid at 0300 UTC on Friday 2nd March

Possible freezing rain profile

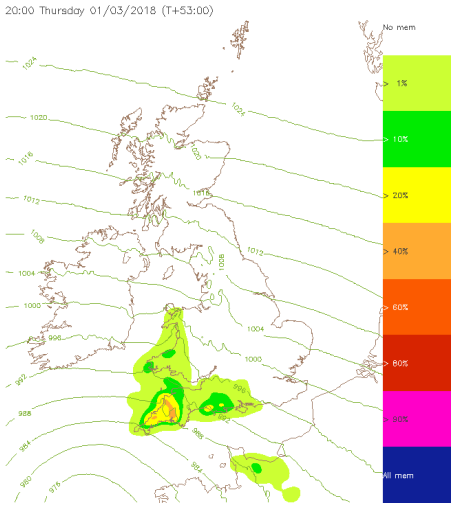
“Warm nose” - Rain falling into a freezing boundary layer

Melted snow does not have sufficient time to freeze before is reaches the ground. It freezes when it reaches the surface.

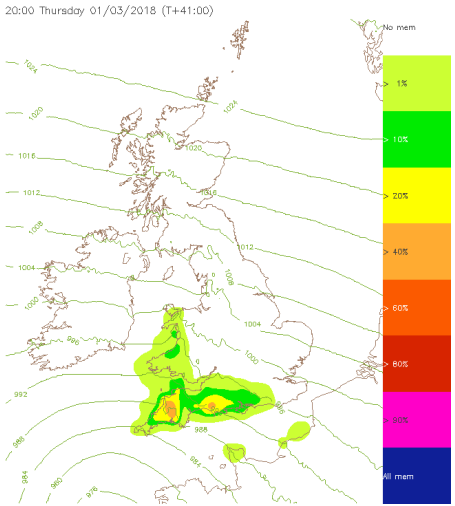
(Plot from Rachel North)



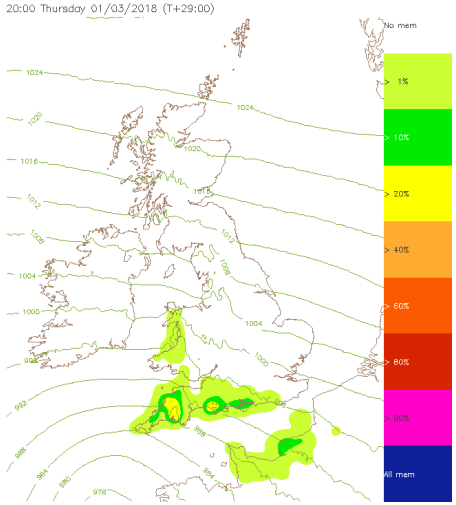
Probability of freezing rain from MOGREPS-UK
Forecast consistency (all images valid at 2000 UTC 1st March)



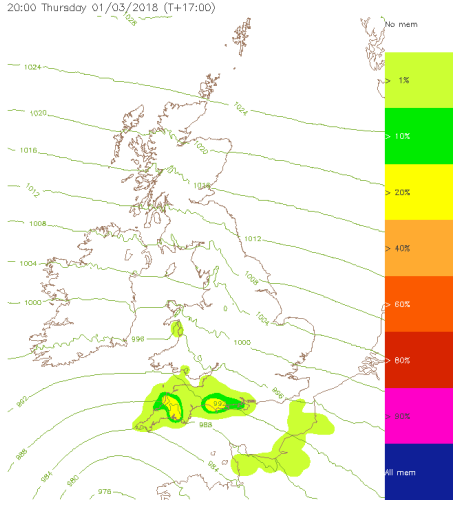
T+53 hours



T+41 hours



T+29 hours



T+17 hours

For more information please contact

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