

CONTROLLING OFFICER'S REPLY

(Question Serial No. 2330)

Head: (168) Hong Kong Observatory

Subhead (No. & title): ()

Programme: (3) Time Standard and Geophysical Services

Controlling Officer: Director of the Hong Kong Observatory (SHUN Chi Ming)

Director of Bureau: Secretary for Commerce and Economic Development

Question:

Please set out in tabular form the occurrence of frost, icing and snow in Hong Kong recorded by the Hong Kong Observatory (HKO) in the past 4 years, with information on the location, time slot and temperature, as well as the cause of the extreme weather conditions.

Please set out in tabular form the number and duration of display of warnings on extreme hot and cold conditions issued by HKO each month in the past 4 years. Are the extreme weather conditions related to global warming in recent years?

Asked by: Hon CHAN Chi-chuen (Member Question No. 101)

Reply:

According to the records of the Hong Kong Observatory (HKO), the date, location and the lowest temperature at that region or adjacent region in Hong Kong for the frost and icing events between January 2012 and February 2016 are shown in Annex A. No snow events were observed during the period. The cause and favourable atmospheric conditions for the formation of snow, icing and frost are summarised in Annex B.

The number and duration of Very Hot Weather Warnings and Cold Weather Warnings issued by HKO between January 2012 and February 2016 are tabulated in Annex C. Under the influence of global warming and local urbanisation, the average temperature in Hong Kong demonstrates a long-term rising trend. A warming climate favours the occurrence of high temperature events. The annual number of very hot days in Hong Kong exhibits a long-term increasing trend while the annual number of cold days exhibits a long-term decreasing trend, despite year-to-year variations.

- End -

Information on the date, location and minimum temperature at that region or adjacent region in Hong Kong for the frost and icing events between January 2012 and February 2016

Date/Month/Year	Special Winter Weather Phenomena	Location	Minimum Temperature at That Region or Adjacent Region on That Day (degree Celsius)
28/12/2013	Frost	Ta Kwu Ling	2.7
29/12/2013	Frost	Ta Kwu Ling	1.9
		Tai Po	5.3
		Yuen Long *#	7.1
30/12/2013	Frost	Ta Kwu Ling	2.3
22/1/2014	Frost	Ta Kwu Ling	3.1
		Fanling *	7.1
23/1/2014	Frost	Shatin Racecourse	6.0
10/2/2014	Frost	King's Park	7.5
10/2/2014	Icing	Tai Mo Shan	-1.6
14/2/2014	Icing	Tai Mo Shan	-1.5
22/1/2016	Frost	Ta Kwu Ling	8.1
23/1/2016	Frost	Tai Mo Shan	-3.2
24/1/2016	Icing	Tai Mo Shan	-6.0
		Kam Tin	1.9
		Tsuen Wan	1.0
		Kwai Tsing	2.8
		Ma On Shan *	2.9
		Fanling *	2.2
		Ta Kwu Ling	1.7
		Sai Kung	2.8
		The Peak	-1.0
		Tate's Cairn	-2.4
		Sham Tseng *	2.3
		Yuen Long #	2.0
		Tuen Mun	2.3
		Tai Po	2.8
25/1/2016	Icing	King's Park	3.5
26/1/2016	Frost	Tai Mo Shan	0.9
8/2/2016	Frost	Ta Kwu Ling	1.8

* There were no temperature observations at these regions. The figures were the minimum temperatures of the respective adjacent regions on that day.

Yuen Long Park Weather Station started operation in March 2015.

Remark: Relevant frost and icing records were reported by the public, media and voluntary observers.

Cause and favourable atmospheric conditions for the formation of snow, icing and frost

Special winter weather phenomena	Cause and favourable atmospheric conditions
Snow	Tiny ice crystals stuck together to become snowflakes with fluffy appearance, formed when tiny super-cooled cloud droplets freeze at temperatures well below the freezing point of water, usually only attainable high up in the atmosphere. Generally speaking, for snowfall, usually the layer of air from where snow is formed to the ground has to be at or below zero degree Celsius all the way, so that the snowflakes do not melt into rain before reaching the ground.
Icing	Transparent or translucent solid ice, formed when liquid water is exposed to ambient air with temperature at or below the freezing point of water. In most past cases in Hong Kong, icing was reported on very cold days on hill tops with zero or sub-zero temperatures.
Frost	Small ice crystals formed directly from deposition of water vapour in the ambient air onto cold surfaces at or below the freezing point of water without going through the liquid state. In Hong Kong, frost usually occurs when there is no rain and the weather is dry. Winds are usually from north to northeast with strength varying from light to moderate. The state of sky may vary from clear to overcast.

Number and duration of Very Hot Weather Warning and Cold Weather Warning issued by HKO between January 2012 and February 2016 (if the warning spans across two months, the whole warning duration will be counted in the month in which the warning was issued)

Year	Month	Very Hot Weather Warning			Cold Weather Warning		
		Number of issuance	Duration		Number of issuance	Duration	
			Hour	Minute		Hour	Minute
2012	1	0	0	0	3	246	45
	2	0	0	0	3	239	5
	3	0	0	0	1	88	0
	4	0	0	0	0	0	0
	5	0	0	0	0	0	0
	6	3	73	45	0	0	0
	7	6	285	25	0	0	0
	8	8	278	35	0	0	0
	9	2	62	45	0	0	0
	10	0	0	0	0	0	0
	11	0	0	0	0	0	0
	12	0	0	0	3	151	50
2013	1	0	0	0	2	85	5
	2	0	0	0	1	41	25
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	1	85	30	0	0	0
	6	3	128	0	0	0	0
	7	4	161	30	0	0	0
	8	3	221	30	0	0	0
	9	1	46	0	0	0	0
	10	0	0	0	0	0	0
	11	0	0	0	1	19	25
	12	0	0	0	2	356	10

Year	Month	Very Hot Weather Warning			Cold Weather Warning		
		Number of issuance	Duration		Number of issuance	Duration	
			Hour	Minute		Hour	Minute
2014	1	0	0	0	3	174	40
	2	0	0	0	2	242	15
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	4	111	35	0	0	0
	6	5	75	15	0	0	0
	7	7	414	20	0	0	0
	8	8	109	15	0	0	0
	9	7	131	5	0	0	0
	10	0	0	0	0	0	0
	11	0	0	0	0	0	0
	12	0	0	0	6	241	10
2015	1	0	0	0	1	92	0
	2	0	0	0	1	63	25
	3	0	0	0	0	0	0
	4	0	0	0	0	0	0
	5	2	36	0	0	0	0
	6	5	374	15	0	0	0
	7	3	135	50	0	0	0
	8	9	303	55	0	0	0
	9	2	14	20	0	0	0
	10	0	0	0	0	0	0
	11	0	0	0	0	0	0
	12	0	0	0	1	66	25
2016	1	0	0	0	3	356	35
	2	0	0	0	2	141	50