

Cold Wave over the Eurasian Continent

6 February 2012

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1. Overview

Since mid-January 2012, the Eurasian continent, especially in the mid-latitudes, has experienced significantly lower-than-normal temperatures due to strong cold-air inflow (Figure 1). As a result, temperatures have been extremely low from the northern part of East Asia to Central Asia (in and around Mongolia and Kazakhstan) since mid-January, and in Eastern Europe (in and around Ukraine) since the end of January. The influence of cold air has extended to Central to Western Europe as well as to all over Central Asia, such as Uzbekistan and Tajikistan, since the beginning of February.

2. Climatic conditions

Table 1 summarizes weekly extreme climate events from mid-January. Figure 1 shows weekly temperature anomalies from mid-January in the Northern Hemisphere. Figure 2 shows daily temperatures at some meteorological stations in affected countries.

Table 1 Weekly extreme climate events and impacts

Period	Areas	Extreme Climatic Events and impacts
15 – 21 January	In and around Eastern Kazakhstan	Extremely low temperatures - It was reported that more than 40 people were killed in an avalanche/cold wave. (Source: UN Office for the Coordination of Humanitarian Affairs, as of 23 January)
22 – 28 January	From Mongolia to Eastern Kazakhstan	Extremely low temperatures
29 Jan. – 4 Feb.	From Mongolia to Eastern Kazakhstan	Extremely low temperatures
	Eastern Europe	Extremely low temperatures - It was reported that more than 130, 50 and 30 people were killed in Ukraine, Poland and Romania, respectively due to cold wave. (Source: National Governments, as of 5 February)

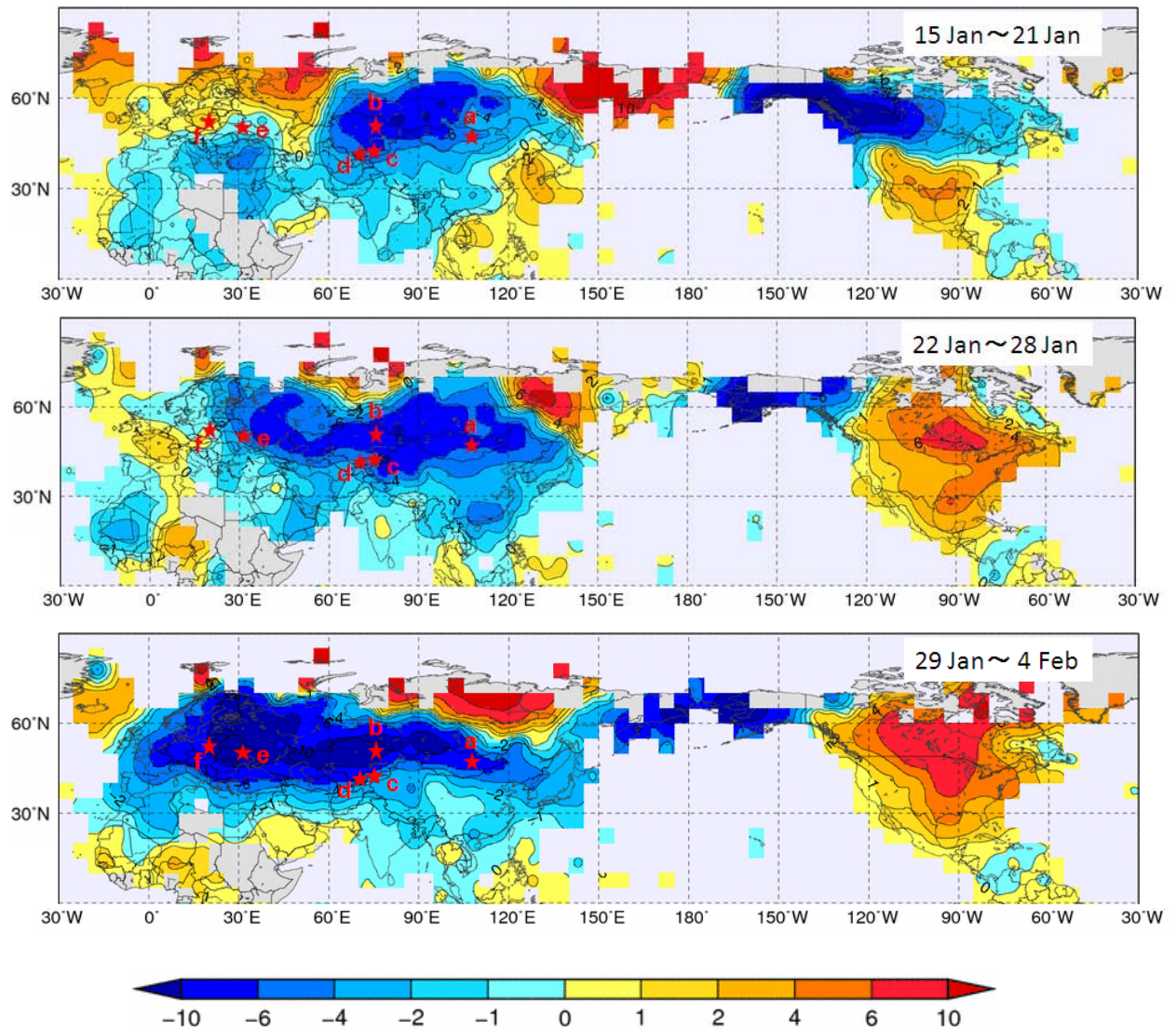


Figure 1 Weekly temperature anomalies in the Northern Hemisphere from 15 January 2012 (Unit: °C) (Based on SYNOP reports)

Daily temperature data at (a) Ulaanbaatar (Mongolia), (b) Astana (Kazakhstan), (c) Bishkek (Kyrgyzstan), (d) Tashkent (Uzbekistan), (e) Kiev (Ukraine) and (f) Warsaw (Poland) on the maps are shown in Figure 2.

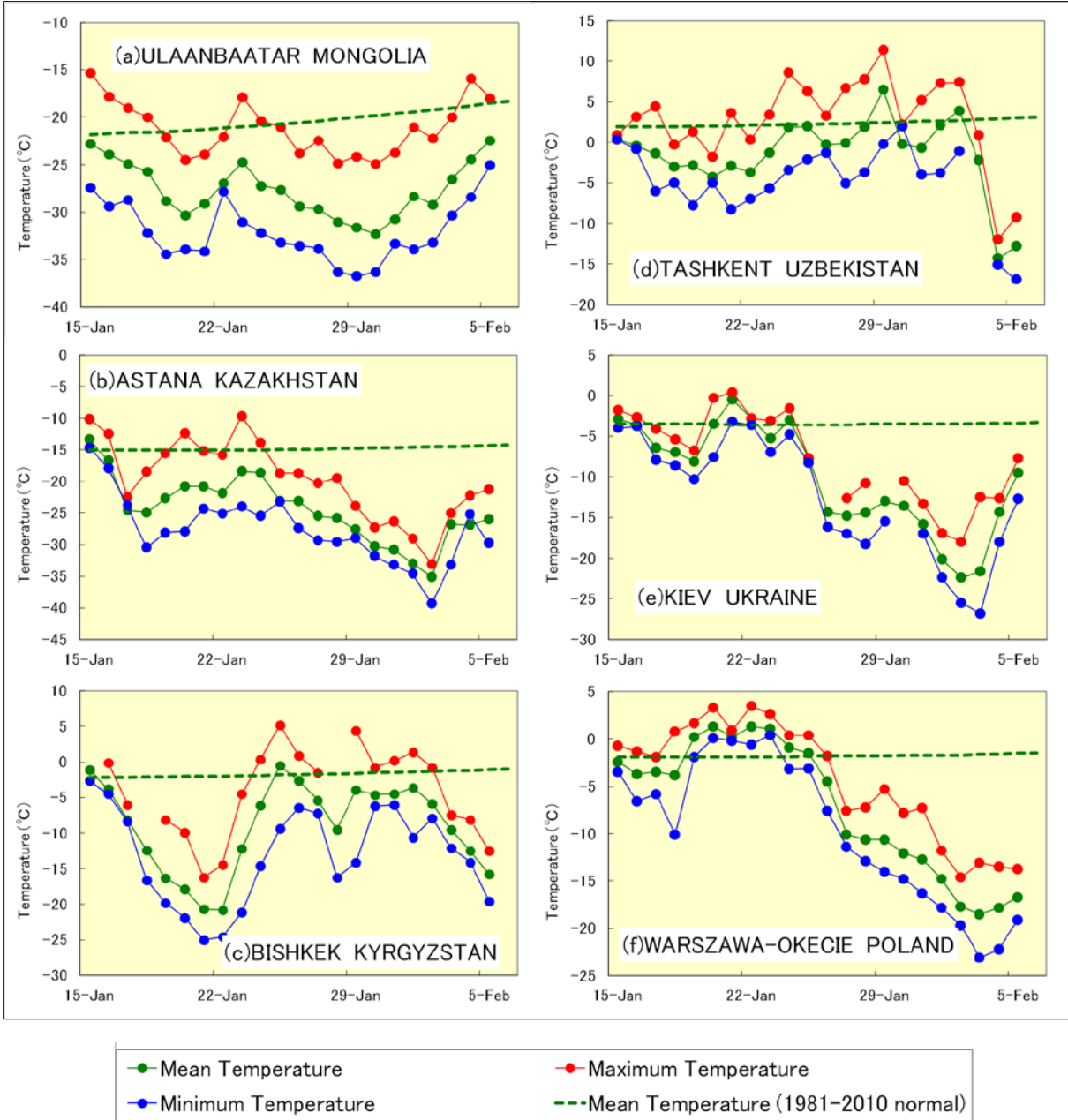


Figure 2 Daily maximum, mean and minimum temperatures (°C) at six stations from 15 January to 5 February 2012 (Based on SYNOP reports)

3. Characteristics of atmospheric circulations

In the middle of January, a high pressure system was enhanced over western Siberia, in association with the large meander of the upper-level westerly jet stream, and significantly cold air mass over central and eastern Siberia flowed into Mongolia and Kazakhstan along the periphery of the high pressure. After that, the high pressure system further developed and expanded over northwestern Russia and northern Europe. In accordance with the westward expansion of the high pressure system, cold air mass around Kazakhstan flowed westward over the southern side of the high pressure and reached eastern and central Europe in early February.

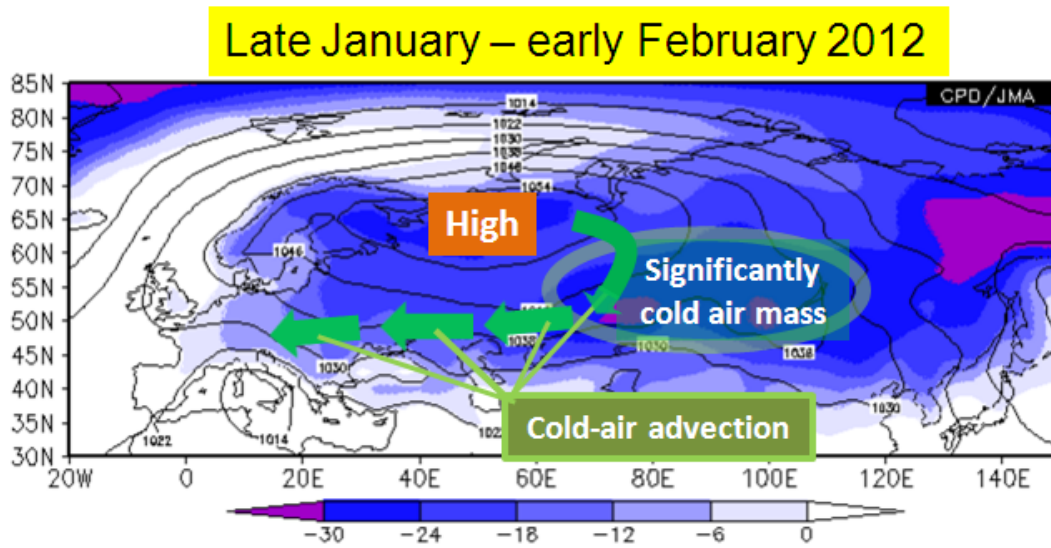


Figure 3 Sea level pressure and surface air temperature (29 January – 4 February)

The contours indicate sea level pressure (hPa), and the cold shading denotes 2 m temperature (°C).