Global Disastrous Weather Report in August 2023

Abstract: In August 2023, extreme and persistent high-temperature heatwave conditions are expected to occur in West Asia, southern Central Asia, southern Europe, southwest North America, and eastern South America. During this period, several countries, including Spain, France, Italy, Finland, Turkey, the United States, and Brazil, will experience record-breaking daily high temperatures. In addition, temperatures in the western and southern regions of the United States are forecasted to exceed 43°C. Moreover, there have been reports of rainstorms and floods in various locations, including Bangladesh, Vietnam, Sweden, and Chile. Japan was also impacted by two consecutive typhoons, "Kanu" and "Lan En," resulting in heavy rainfall, flooding, and strong winds. Notably, "Lan En" made landfall in Japan twice, leading to a 24-hour rainfall of 513.5 mm in Zozhi Town, Birori City, marking the highest rainfall recorded since 1982.

1. Overview of important global weather

In August 2023, the global average temperature in most regions was either close to the usual levels for that period or slightly higher, as indicated in Figure 1. Notably, eastern Europe, Central Asia, eastern West Asia, northern Russia, western and southeastern North America, northern Greenland, central Oceania, and central South America experienced temperatures slightly higher by 2-3°C. In contrast, northwestern Russia and western Canada saw temperatures elevated by 4-6°C. Regions experiencing high-temperature weather, with daily maximum temperatures surpassing 38°C, included northern and southwestern Africa, West Asia, southern Central Asia, southern Europe, southwestern North America, and eastern South America. Some local areas in northern Africa and West Asia even exceeded 45°C. Of particular significance, countries such as Spain, France, Italy, Finland, Turkey, the central United States, and southeastern Brazil witnessed daily maximum temperatures that broke historical records for the same period, as illustrated in Figure 2.

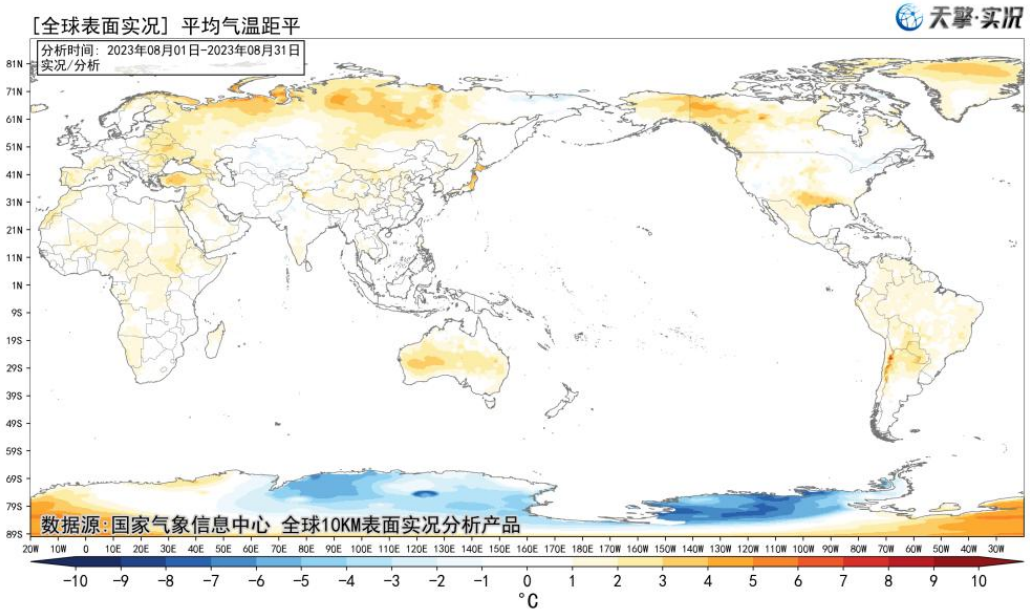

Fig.1 Global average temperature anomaly in August 2023 (unit: ℃)

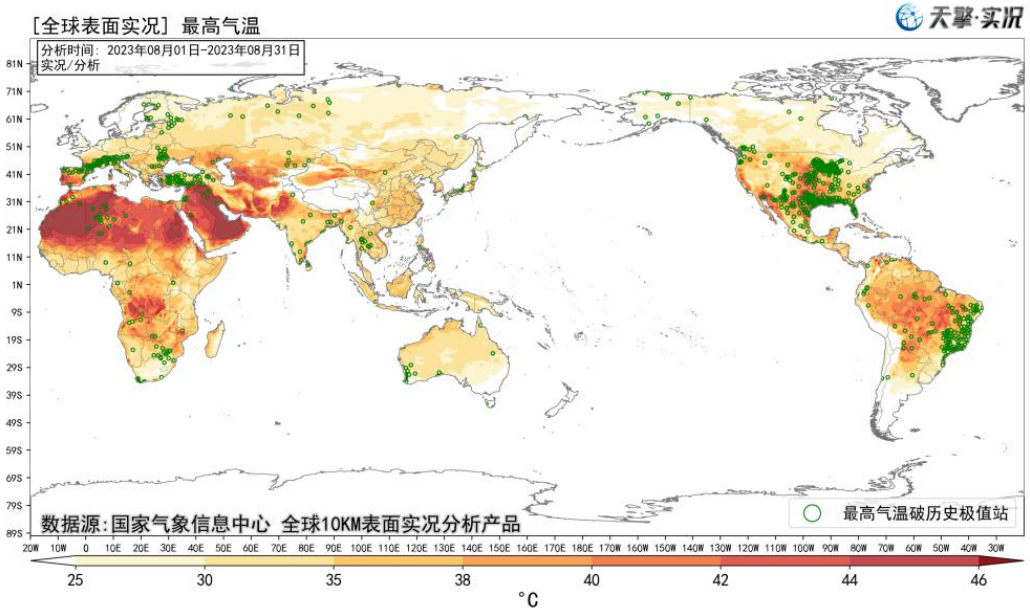

Fig.2 Distribution of Global Maximum Temperature in August 2023 (Unit: ℃) and Distribution of Sites Breaking Historical Extreme Values during the Same Period (Green Circle)

In August 2023, the cumulative precipitation levels in various regions showed notable patterns. Western and northern Europe, central Africa, eastern and southern Asia, western and southeastern North America, and northwestern South America received approximately 140-220 millimeters of rainfall. Notably, certain areas in China, including the Huanghuai River region, Northeast and Southwest China, North

Korea, South Korea, Japan, India, Pakistan, Bangladesh, Vietnam, Mexico, southeastern coastal areas of the United States, and Colombia, experienced precipitation ranging from 260-350 millimeters, with some areas even exceeding 400 millimeters, as depicted in Figure 3. Furthermore, the cumulative precipitation in the majority of the mentioned regions was 30-70% higher than the average for the same period in normal years, and in some local areas, it exceeded double the normal levels, as illustrated in Figure 4.

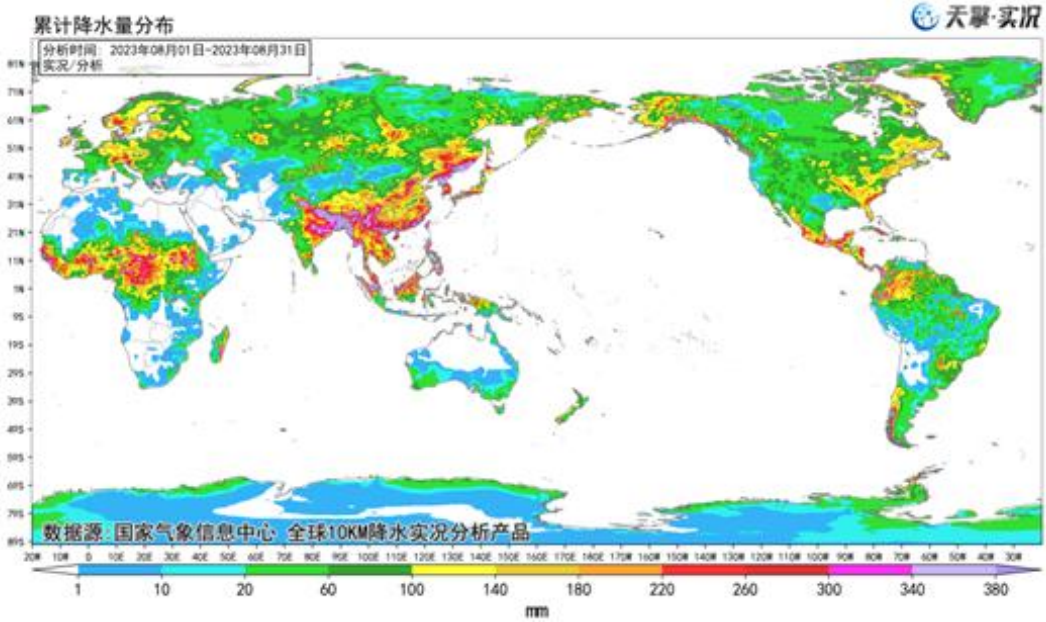

Fig.3 Global Accumulated Precipitation in August 2023 (Unit: mm)

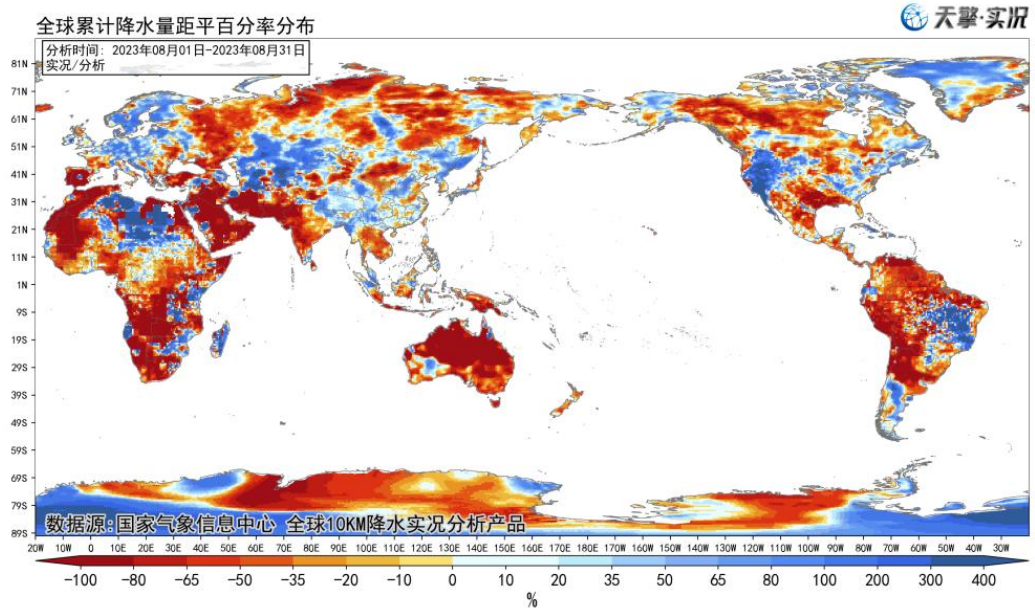

Fig.4 Global cumulative precipitation anomaly percentage in August 2023 (unit:%)