Global Disastrous Weather Report in September 2023

Abstract: In September 2023, Extreme and continuous heat wave hit Europe and North America. Heavy rains and floods hit Africa, Western Europe, Mexico and Brazil. The storm “Daniel” had landfall on Libya, resulting heavy rains, flash floods and dam collapses that killed more than 5,000 people. The Typhoon “SAOLA” and “HAIKUI” had successively affected the Philippines, with torrential rains triggering floods and landslides, affecting more than 418,000 people.

I. Overview of global weather

1. Temperature

In September 2023, except for the Far East and Western Asia, the average temperature in most other parts of the world is higher or close to the average temperature in the same period of the year (Fig.1), with most of Europe, northern and eastern Canada, the central and southern United States, north-central South America, and southwestern Australia 2~3 ℃ higher, and parts of western Europe, central Europe, eastern Europe, northeastern Canada, and north-central and southern United States 4~6 ℃. In Germany, Italy, France, Romania, the United States, Canada, Mexico, Brazil and other countries, the daily maximum temperature exceeded the historical period or the historical extreme value (Fig.2).

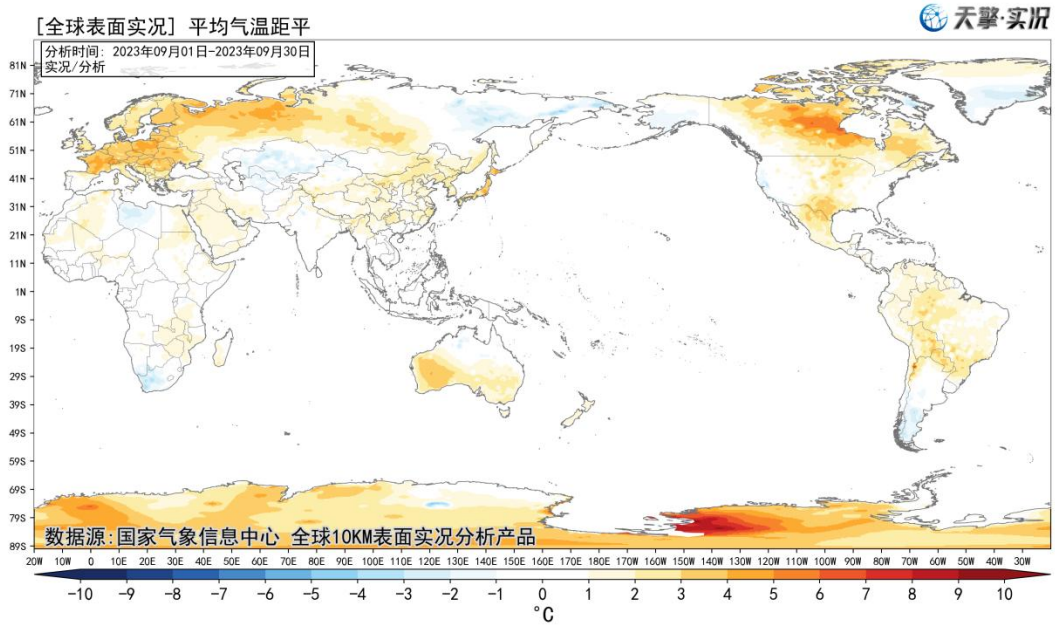

Fig. 1 Global mean temperature anomaly in September 2023.

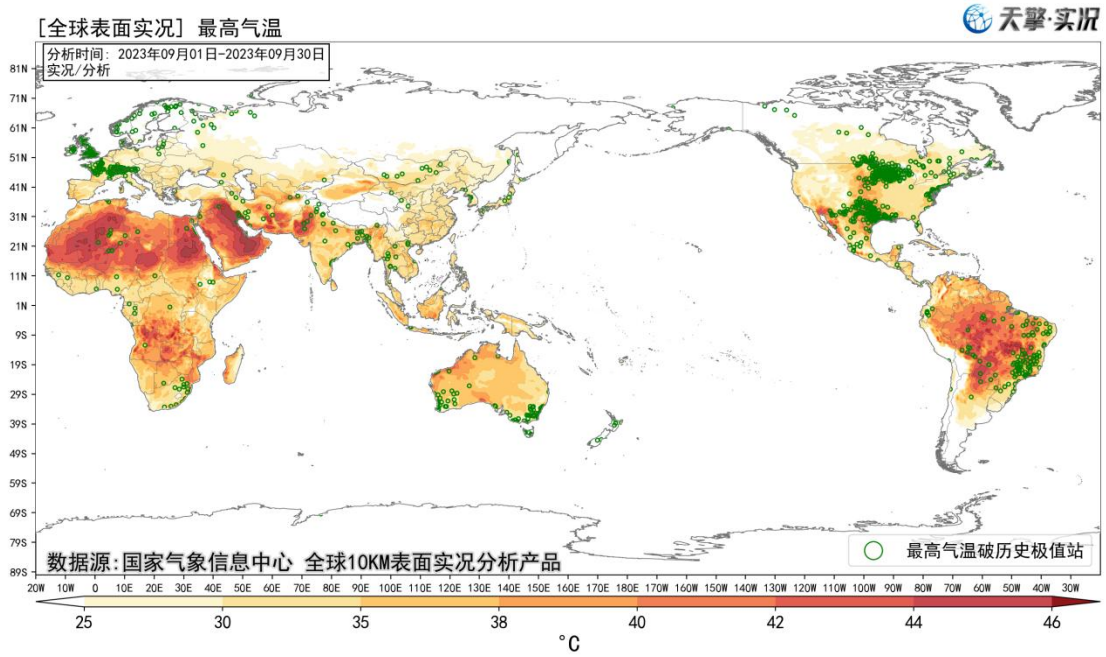

Fig.2 Global maximum temperature (unit: ℃) and stations with historical extremity record broken (green pads)

2. Precipitations

In September 2023, the monthly total precipitation reached 140~300 mm in the Far East of Asia, South Asia, Southeast Asia, the northwest coast of

North America and the eastern part of South America, 340~380 mm in central India, Indochina Peninsula, Philippine Islands, South China coast, southern Brazil, within which some local precipitation beyond 400 mm (Fig.3). The total precipitation above was 30-70% more than normal, in some places 2 times more than normal (Figure 4).

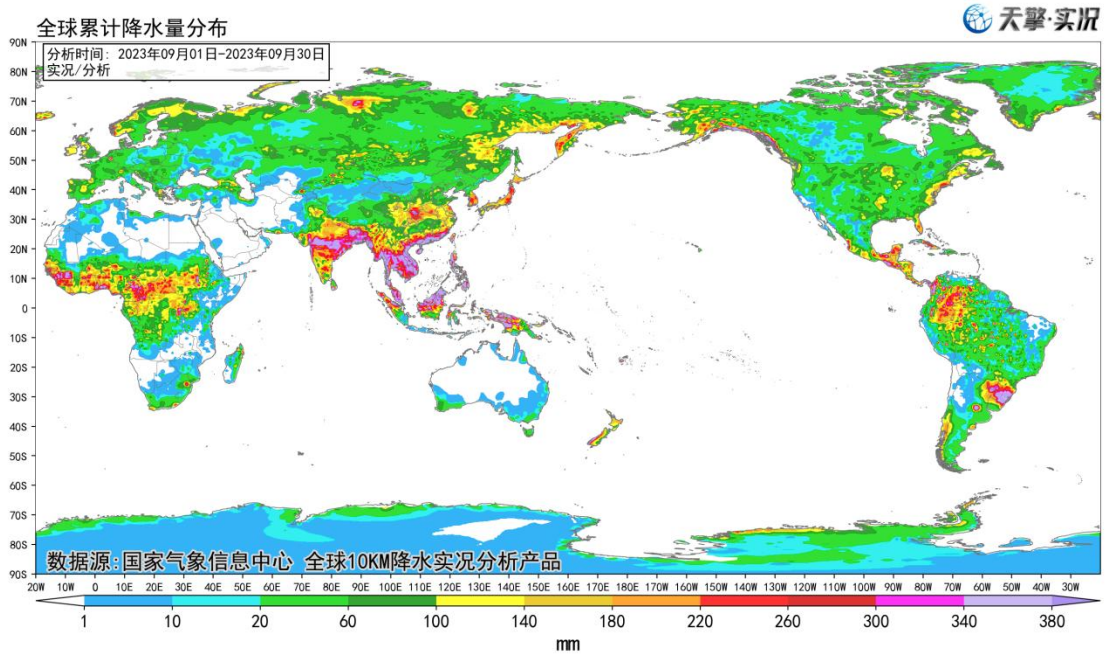

Fig.3 Global total precipitation (unit: mm)

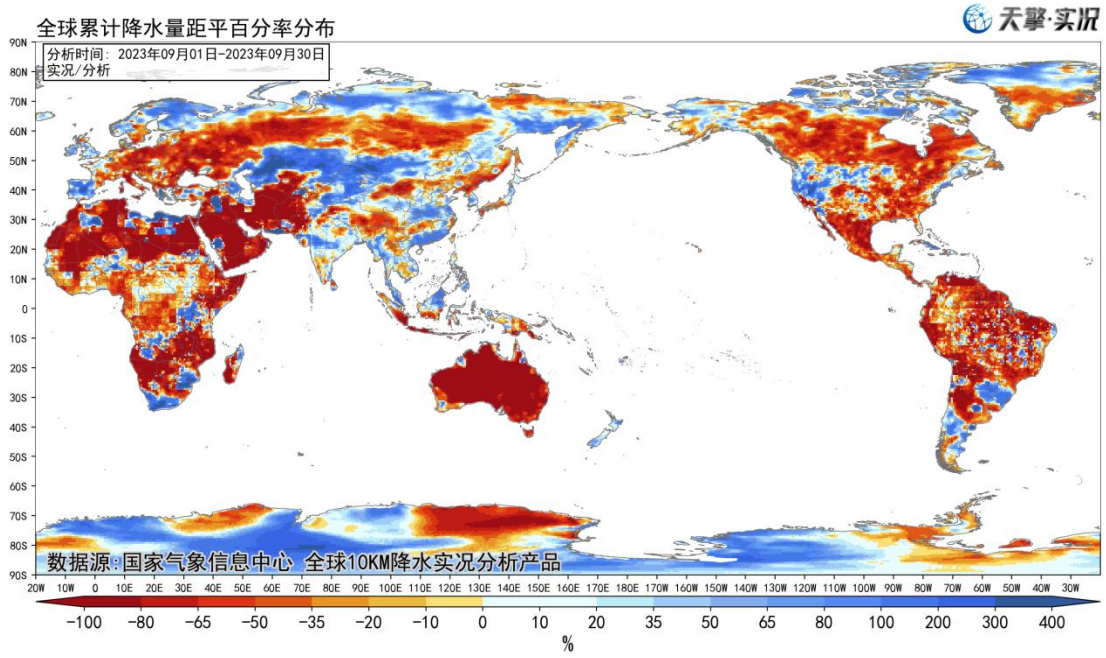

Fig.4 Global total precipitation percentage deviation (unit: %)