

# Global Disastrous Weather Report in January 2023

**Abstract:** In January 2023, the temperature in the northern Hemisphere fluctuated greatly. In the first ten days, the temperature in many places of Europe was abnormally high. In the second and third ten days, some cold waves with heavy rain and snow happened in some places of Eurasia and North America and the minimum temperature in Siberia broke the record with reaching  $-73^{\circ}\text{C}$ . In western and southern Europe, southeastern Central Asia, northwestern South Asia, Southeast Asia, western coastal and eastern North America, central and northern South America, northern and eastern Australia, Madagascar and other places, the monthly cumulative precipitation is 50% to 1 times more than the historical average of the same period, and even 2 times more in some local regions. Three tropical cyclones were generated in this month and both the generated and landed were fewer than the historical average of the same period.

## 1. Overview of global weather

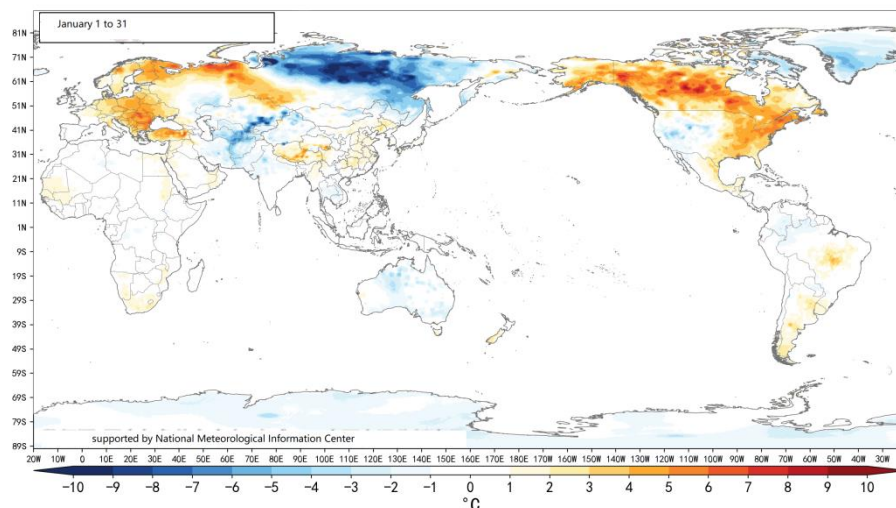


Fig.1 Monthly 2m temperature anomaly in January 2023 (unit:  $^{\circ}\text{C}$ )

In January 2023, the average temperature in western and southern Europe, eastern and northern North America, central and southern South America and some other places was  $2\sim 5^{\circ}\text{C}$  higher than the historical average of the same period with  $6\sim 8^{\circ}\text{C}$  higher in some local areas. The average temperature in Eastern Europe, Central Asia, Siberia, the Far East, the western United States, Australia and some other places was  $2\sim 4^{\circ}\text{C}$  lower than the normal with even  $6\sim 10^{\circ}\text{C}$  lower in some local regions (Fig. 1). Some stations in the above regions broke the historical extreme value of the minimum temperature in January.

In January 2023, the accumulative precipitation in western and southern Europe, southeastern Central Asia, northwestern South Asia, Southeast Asia, western coastal and eastern North America, central and northern South America, northern and eastern Australia, Madagascar and other places reached 100~250 mm and even more than 300 mm in some National Meteorological Center, National Satellite Meteorological Center, National Meteorological Information Center of CMA

local regions with 50% to 2 times more than the historical average of the same period. While the accumulated precipitation in Eastern Europe, Northeast Asia, eastern and southern South Asia, central and northern North America, western Australia and other places was 50~90% less than the normal level (Fig. 2).

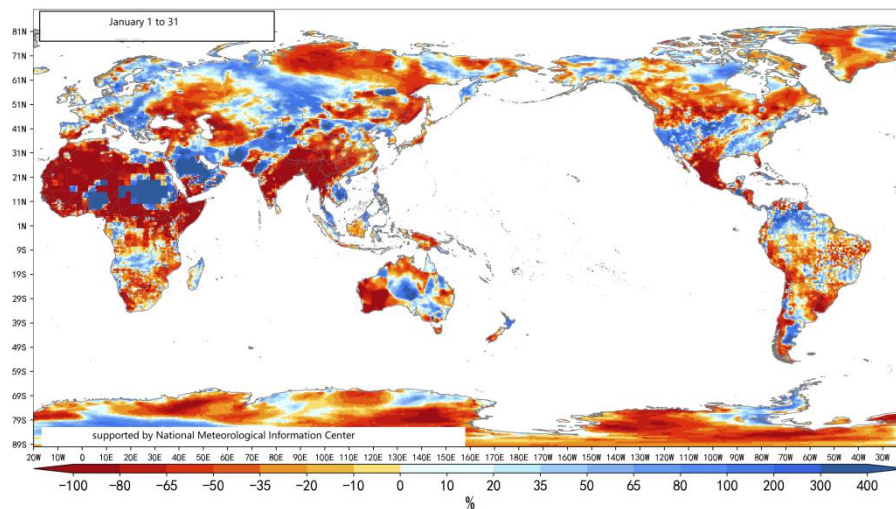


Fig.2 Monthly total accumulated precipitation percentage anomaly in January 2023 (unit:%)

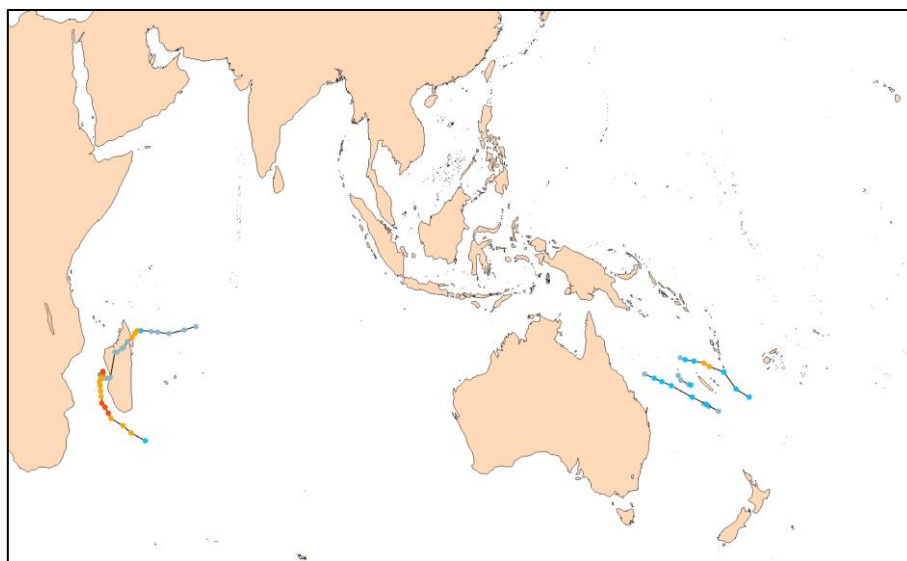


Fig.3 Global tropical cyclones in January 2023

## 2. Severe weather

In January 2023, disastrous weather mainly included cold waves with lower temperature, snowstorms, heavy rains with floods, typhoons and so on. The temperature in many places of Europe was abnormally high in the beginning of this month. In the middle and late of this month, Russia, Central Asia, East Asia, the United States and other places experienced some cold waves with heavy rain and snow, and the minimum temperature in Siberia reached  $-73^{\circ}\text{C}$ , breaking the northern Hemisphere's record. Torrential rain or sustained heavy rainfall happened in Southeast Asia, northern Australia, New Zealand, Brazil and some other places, National Meteorological Center, National Satellite Meteorological Center, National Meteorological Information Center of CMA

which caused floods, landslides and some other secondary disasters.

Severe Tropical Cyclone “Cherneso” has made landfall in Madagascar and moved very slowly, causing prolonged heavy rainfall, damaging winds and some other secondary disasters (Fig. 3). From January 19th to 29th, most parts of Madagascar experienced accumulative precipitation of more than 100mm, and some regions reached more than 300mm with a maximum of 510 mm and 405mm in northwest and southeast Madagascar (Fig. 4). It caused flash floods, landslides, flooded roads and destroyed tens of thousands of homes. The death toll in Madagascar had climbed to 33 with another 20 missing and more than 50,000 people affected by statistics of February 1st.

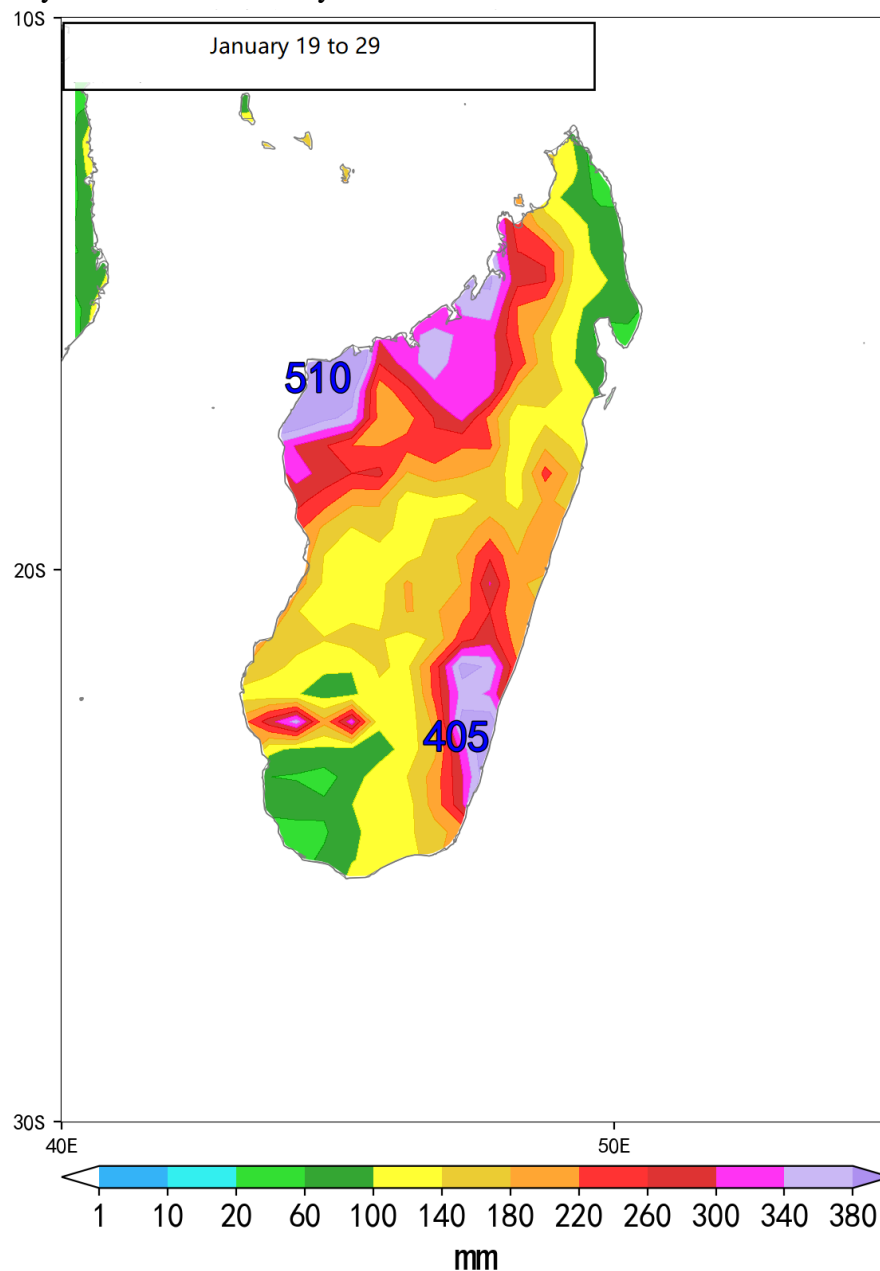


Fig.4 Accumulated precipitation from January 19th to 29th in Madagascar (unit: mm)

### 3. Outlook

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It is predicted that in the next two weeks, cold air forces are expected to be strong in North America, Eastern Europe and Central Asia, and some places of the above mentioned will be affected by cold waves. The temperature in eastern Europe, Siberia, Central Asia, West Asia, northern and western North America, South and North will be 2~3°C lower than the historical average of the same period with even 4~5 °C lower in Canada, western United States and some other places. The temperature in western and southern Europe, East Asia and South Asia will be 1~3 °C higher than the normal level. The regions with more precipitation are mainly located in southern and Western Europe, southeastern Central Asia, Western Asia, Southeast Asia, Japan, the eastern United States, the West coast of Canada, central and northern South America, northern Australia, New Zealand, central and southern Africa and some other places. Obvious snow weather will take place in Western Asia, northern and southeastern Central Asia, Japan and the Great Lakes where the heavy snow or snowstorm will probably happen. In addition, we still need to pay attention to the generation and development of typhoons in the southern Indian Ocean and other ocean areas.

Editor: Xie Jin, Yang Shunan, Huang Wei, Li Xiaolan, Lv Xinyan