EASCOF-9

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Major high impact climate events over China in 2021

Yingxian ZHANG

Beijing Climate Center (BCC),

China Meteorological Administration (CMA)

Outline

1. Climate features
2. Disaster Loss features
3. Major high impact events

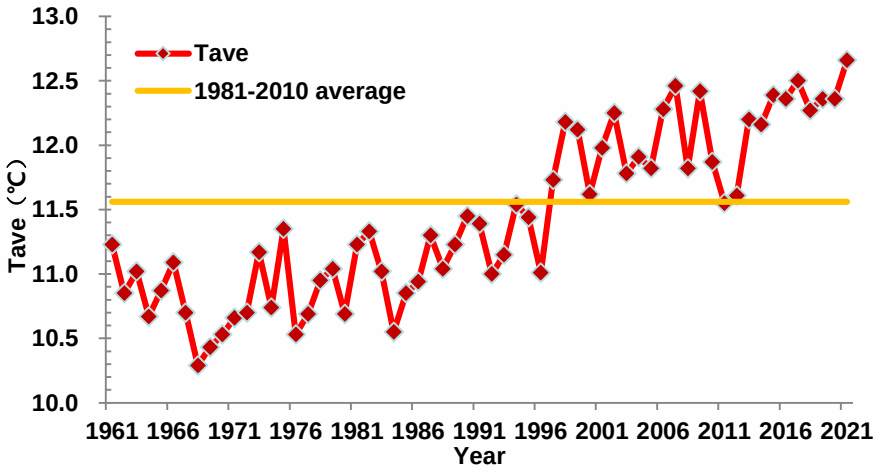


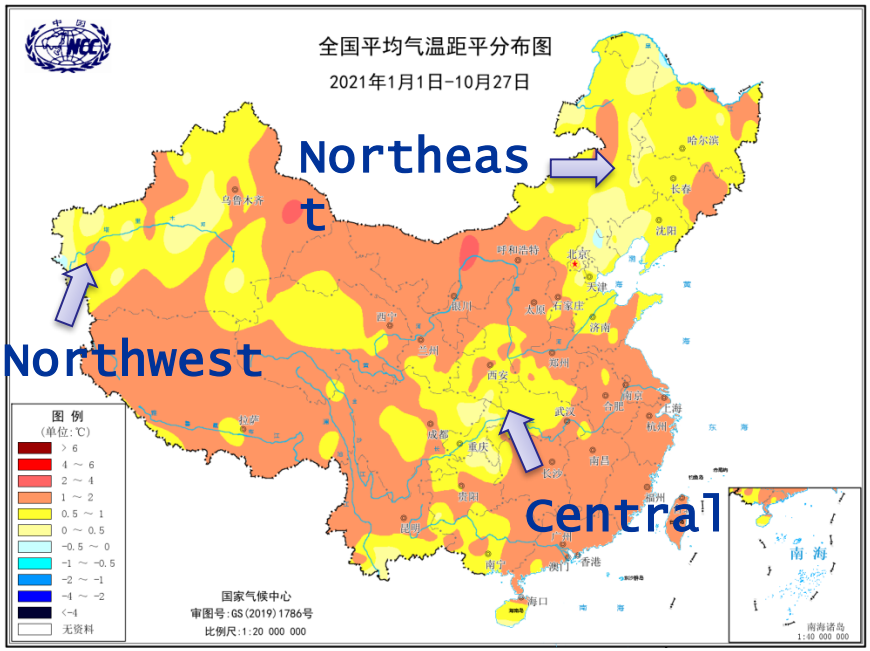


Temperature: Warm

Ave Temp anomaly(℃)

Annul Ave Temp in 1961-2021

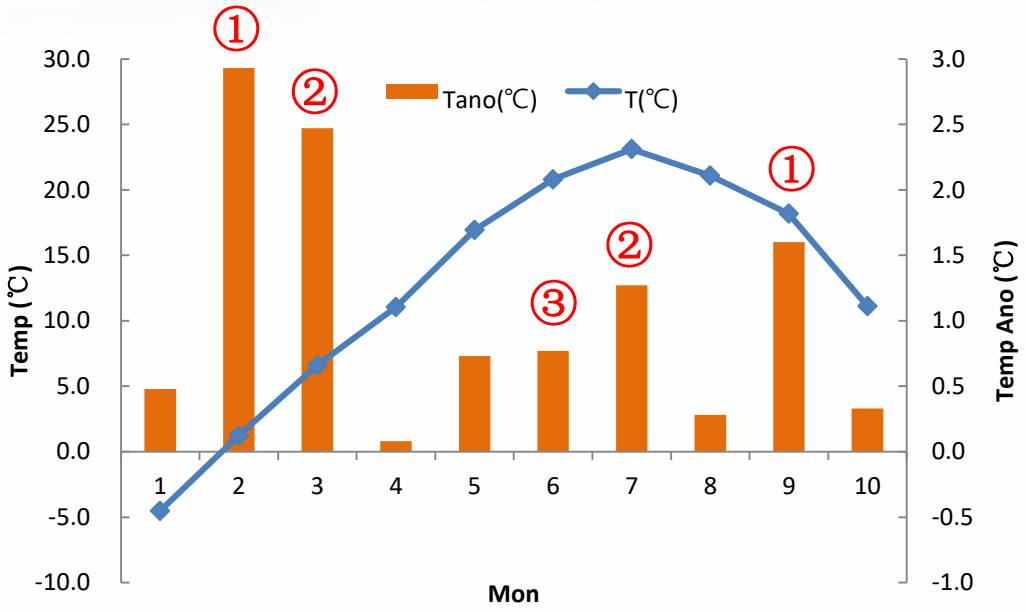




Period: from 1st Jan to 27th Oct, 2021
Normal: average over 1981-2010

- The mean temperature was 12.7℃ , 1.1℃ more than the normal , the warmest since 1961.
- Ave Temp anomaly were 1～2℃ over most regions of China except some areas of Northeast, Northwest, and central China.

Temperature: Warm

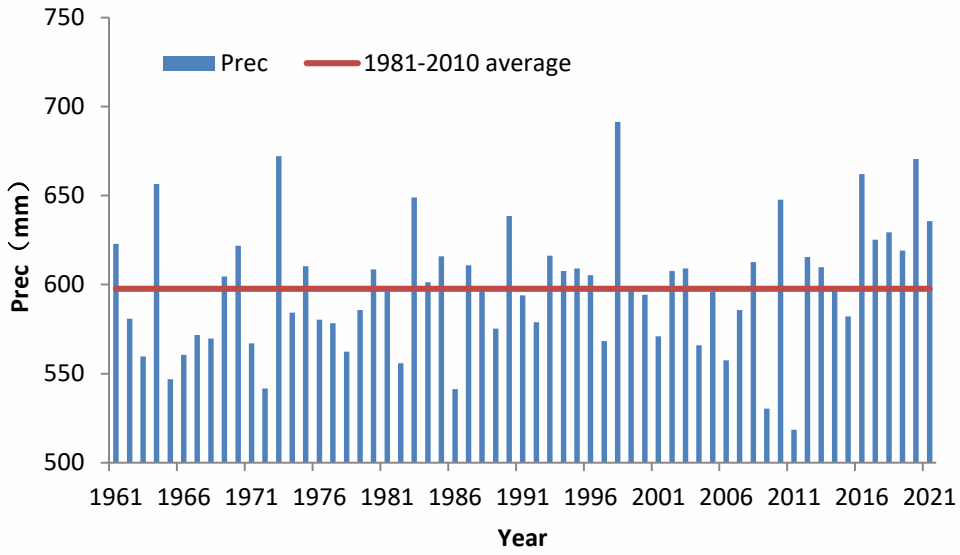


Monthly Ave Temp and anomalies (℃) over China in 2021

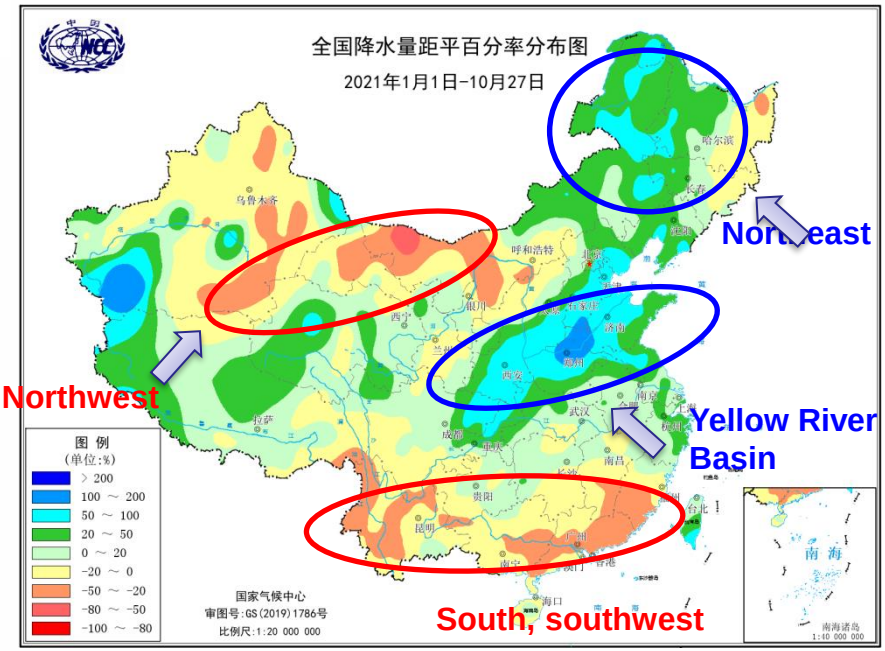
- **The mean temperatures in all months were above normal.**
- **Particularly, the temperatures in Feb, Mar, Jun, Jul, and Sep were 2.9, 2.5, 0.8, 1.3, and 1.6℃ warmer than the normal, ranking the first, second, third, second, and first since 1961 respectively.**

Precipitation: More

Prec in 1961-2021 (mm)



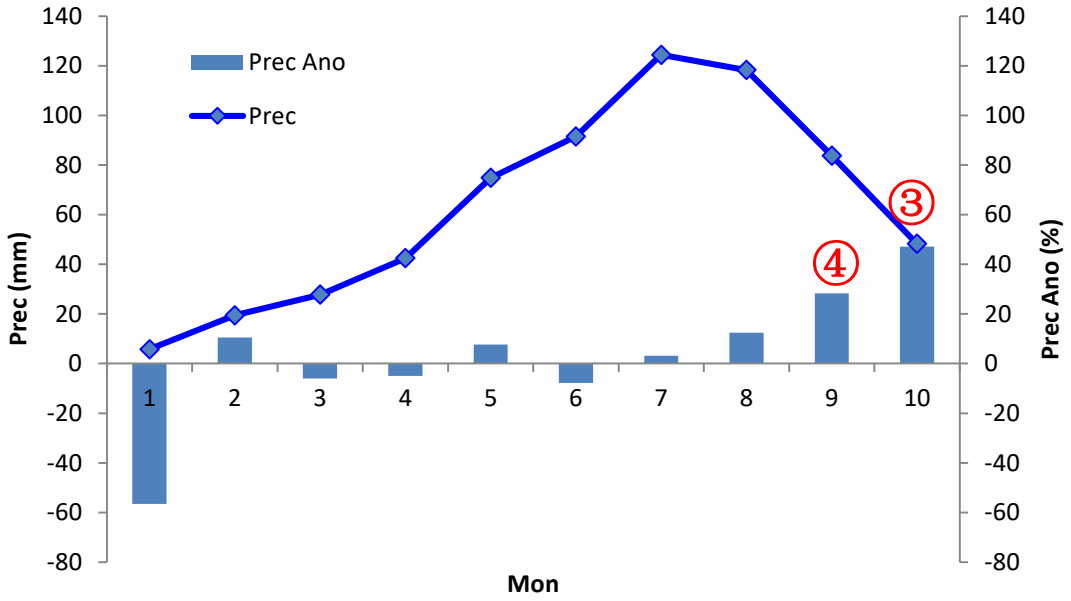
Prec Anomaly (%)



Period: from 1st Jan to 27th Oct, 2021
Normal: average over 1981-2010

- The Jan-to-Oct mean total precipitation over China was 635.6 mm , and +6.4% more than the normal (597.6 mm).
- Precipitation was more (20-200%) in Yellow River Basin and Northeast China, and less (20%-80%) in Northwest, South, and Southwest China.

Precipitation: More in autumn



Monthly prec (mm) and anomalies (%) over China in 2021

- **The precipitation was more than the normal in Feb, May, Jul, Aug, Sep, and Oct, particularly in Sep (28.4%) and Oct (47.1), ranking the fourth, and third since 1961, respectively.**

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Overall situation of loss

In the first three quarters，the natural disaster caused:

- **Affected people: 95 million (↓ 31%); Killed or missing people: 792 (↓ 14%);**
- **Houses collapsed: 157 thousand (↓ 16%);**
- **Crop affected area: 106 million hectares;**
- **Direct economic losses: 286 billion RMB (↓ 14 %)**

(compared with the same period of past 5 years)

Source: National Disaster Reduction Center of China

Serious flood disaster

In the first three quarters, 39 heavy rainfall events occurs across the country. Flooding above warning levels hit 533 rivers in 27 provinces and seven major river basins in China:

In mid-to-late Jul, Henan suffered severe rainstorm and flood disaster;

In mid Aug, extreme heavy rainfall occurred in Xi'an, Shaanxi Province;

The biggest autumn flood occurred in Hanjiang River since 2011.

The number of deaths and missings, collapsed houses and direct economic losses caused by floods disaster accounted for more than 70% of the total losses of all disasters in the first three quarters respectively.

Source: National Disaster Reduction Center of China

Outline

1. Climate features
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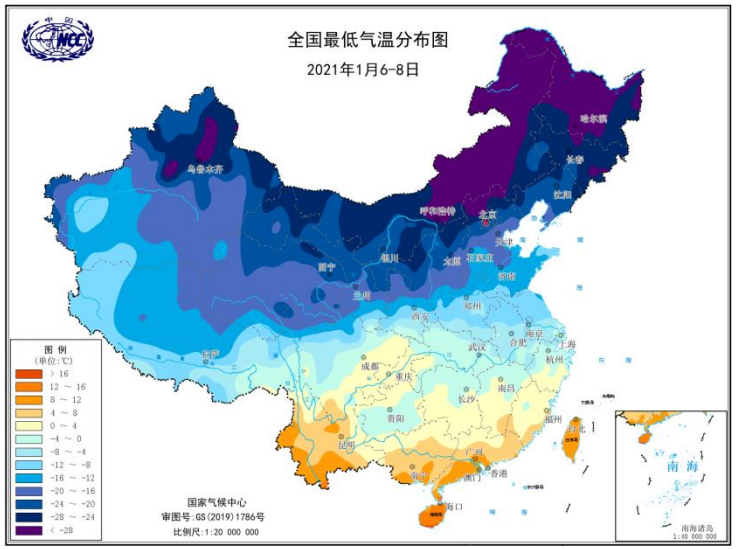
Major high impact events and features

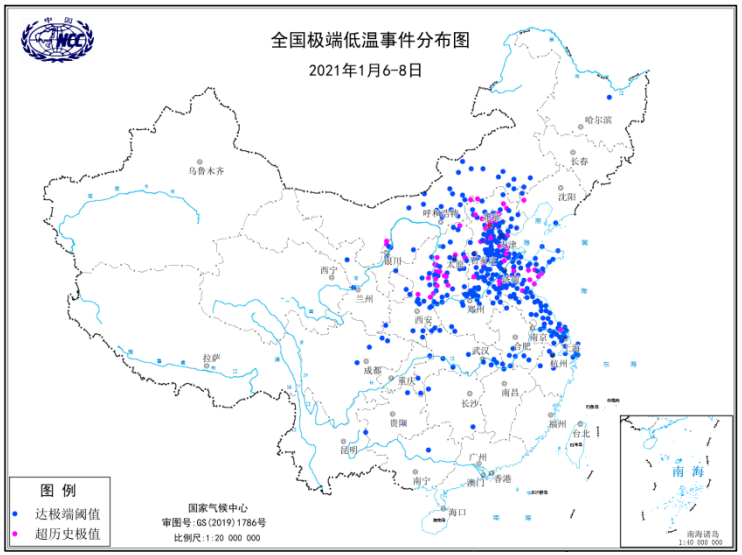
- **Cold waves: strong cold wave in early Jan.**
- **Rainstorms: northern China suffered strong rainstorms, autumn flood was serious.**
- **Landfalling TCs: less, initial landing was late, a great impact by 2106 IN-FA.**
- **High temperature events : ranking second**
- **Droughts: regional and periodic**

Cold waves: strong cold wave in early Jan.

1.6–1.8



Lowest temp

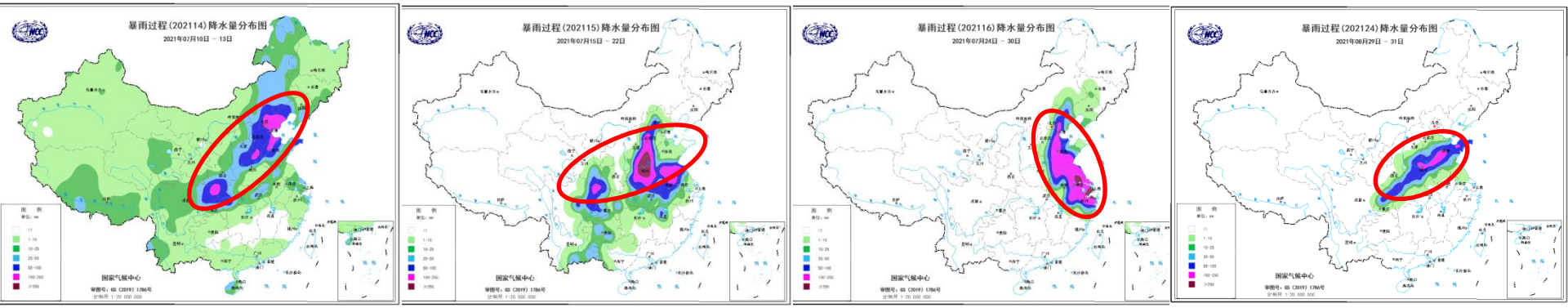


Puple stations: broke low-temp records

- On Jan 6th–8th, a strong cold intruded into China. Due to this, the lowest temperature in the region north of 25ºN dropped below 0℃, and even below –28 ℃ in Inner Mongolia and northeast China.
- Particularly, 56 stations broke their low-temperature records. Beijing observed a minimum temperature of –19.6 ℃ on Jan 7th, 2021, the coldest temperature since 1966.

Rainstorms: northern China suffered strong rainstorms

7.10–7.13	7.15–7.22	7.24–7.30	8.29–8.31



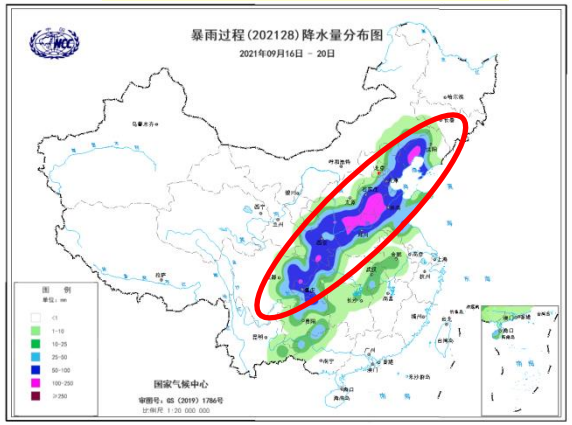
Process accumulated prep. (mm)

- From Jun to Jul, **4 strong rainstorms occurred in northern China**.
- Particularly, the maximum daily precipitation in 19 cities (counties) of Henan province broke the historical extreme values, and maximum hourly precipitation up to **201.9 mm** during the Jul 15–22 rainstorm.

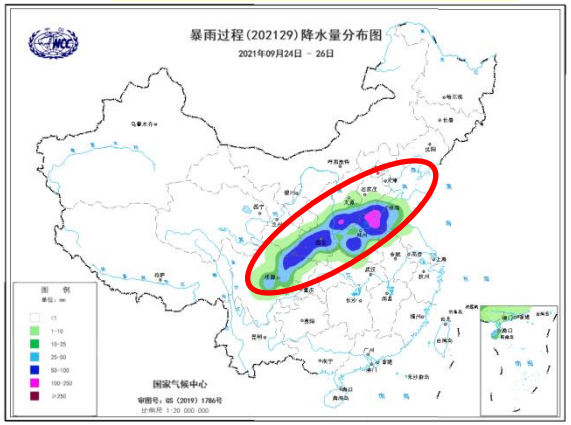
Rainstorms: autumn flood was serious

Process accumulated prep. (mm)

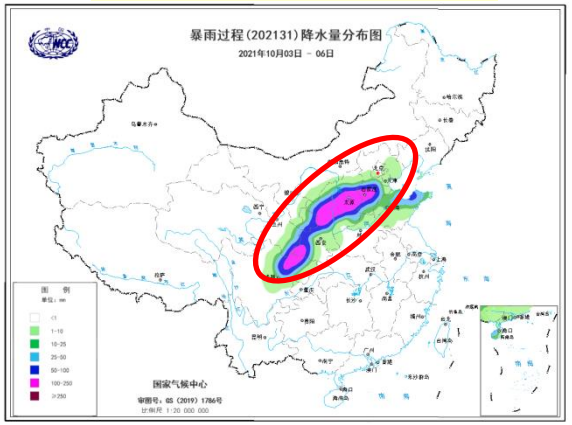
9. 16–9. 20

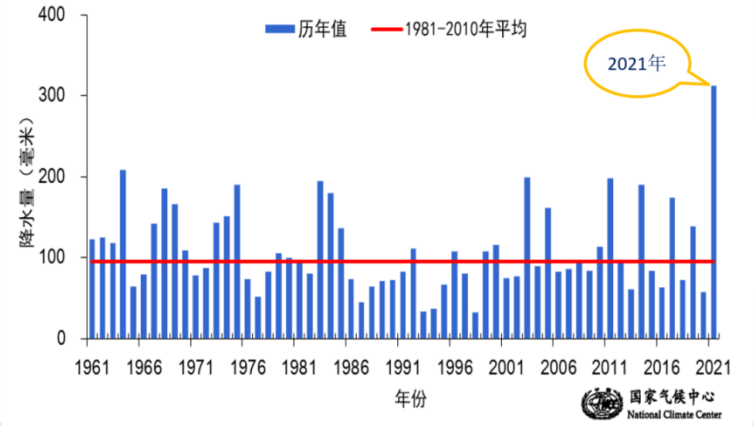


9. 24–9. 26



10. 3–10. 6



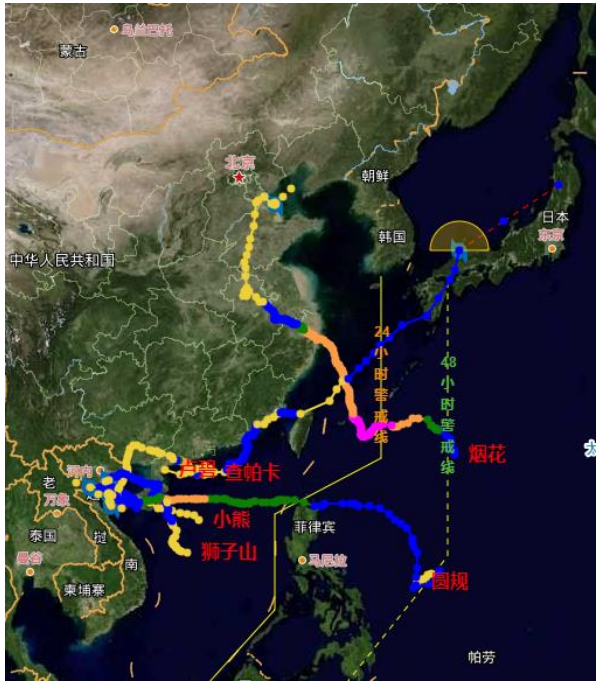


9. 1–10. 10

Accumulated prep. (mm) in Shaanxi, Shanxi, and Henan provinces

- **Since Sep, 3 strong rainstorms occurred, which has great impacts on middle reaches of the Yellow River. Particularly, daily precipitation in Zhidan (113.8 mm), and Gucheng (112.8 mm) of Shaanxi province broke their historical records.**
- **During Sep 1st to Act 10th, the accumulated precipitation in Shaanxi, Shanxi, and Henan provinces (312.1 mm) was 3.3 times more than the normal.**

Landfalling TCs: less，initial landing was late



6 landfalling TCs:

2104 KOGUMA

2106 IN-FA

2107 CEMPAKA

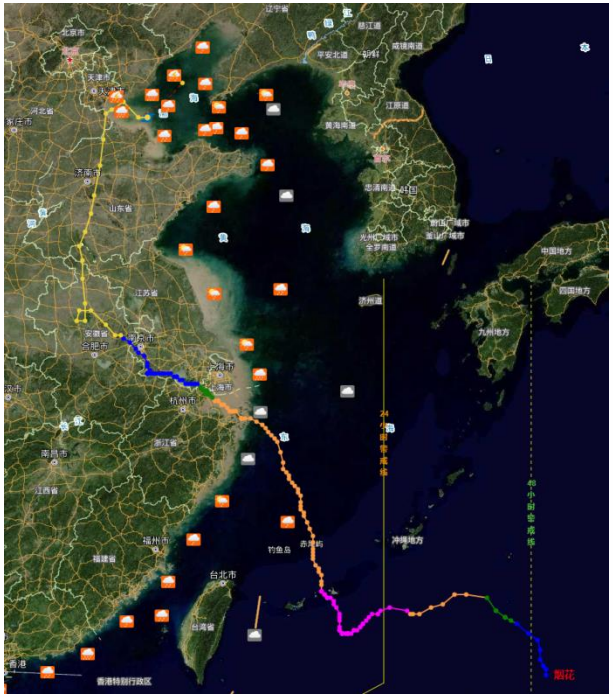
2109 LUPIT

2117 LIONROCK

2118 KOMPASU

- **Heretofore, 20 TCs generated over the WNP and SCS, 2.2 less than the normal (22.2) .**
- **6 TCs made landfall over China, 1 less than the normal (7).**
- **The first landing TC CEMPAKA in 2021 (Jul 20th) landed more than a month later than that in the normal year.**

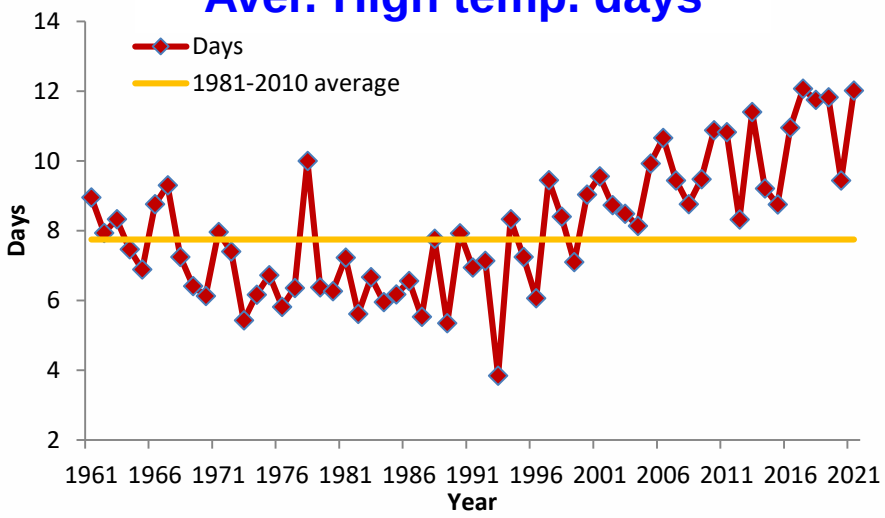
Landfalling TCs: a great impact by 2106 IN-FA



- IN-FA generated on Jul 18th, and twice landed in Zhejiang province on Jul 25th and 26th. IN-FA is the first TC that lands twice in Zhejiang since 1949.
- IN-FA has a great impact (4 million affected people, and RMB 12.9 billion direct economic losses) on China due to its slow moving speed, long detention time over land, large accumulated rainfall and wide range of influence.

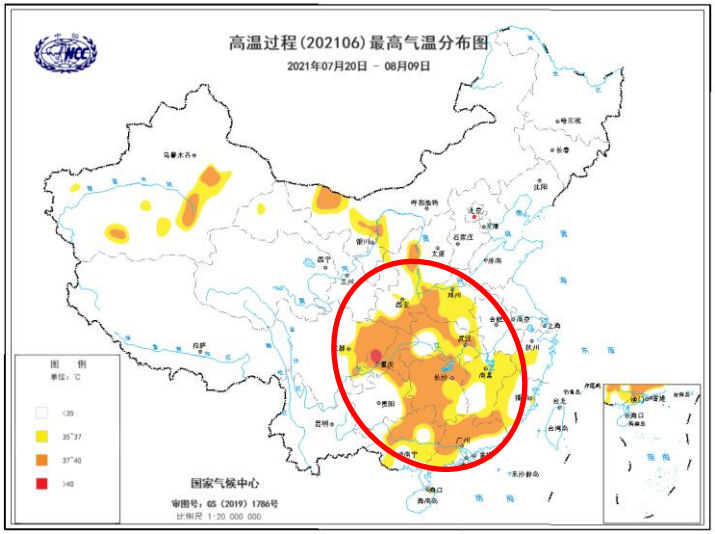
High temperature events : ranking second

Aver. High temp. days



from 1st Jan to 27th Oct

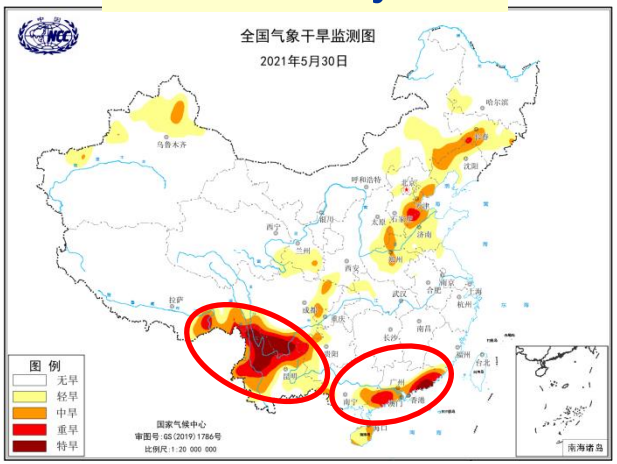
Max of daily maximum temp (7.20—8.9)



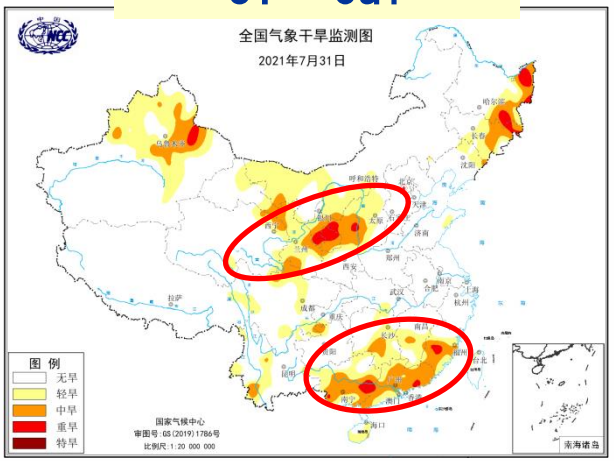
- From Jan 1st to 27th Oct, the mean high temp. days over China were 12.0 days, 4.3 days more than the normal, ranking the second since 1961.
- On Jul 20th–Aug 9th, China has experienced the longest high temp event in this year. Due to this, 42 stations broke their highest-temperature records.

Droughts: regional and periodic

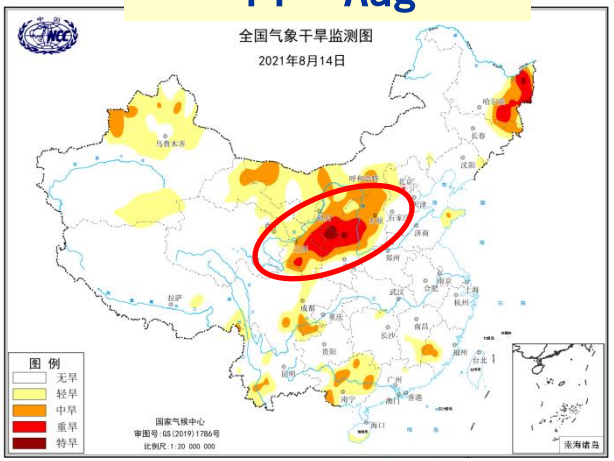
30th May



31st Jul



14th Aug



China daily meteorological drought monitoring map

- **The general influence of drought is light with obvious regional and periodic features**
- **In late May：Southwest China**
- **From late May to late Jul: South China**
- **From late Jul to mid Aug: eastern parts of Northwest China**

谢 谢

Thank you