Climate Events and Impacts over China in 2019

National Climate Center(NCC),

China Meteorological Administration(CMA)

Yizhou YIN

Outline

1、Climate Characteristics

2、Disaster Loss Characteristics
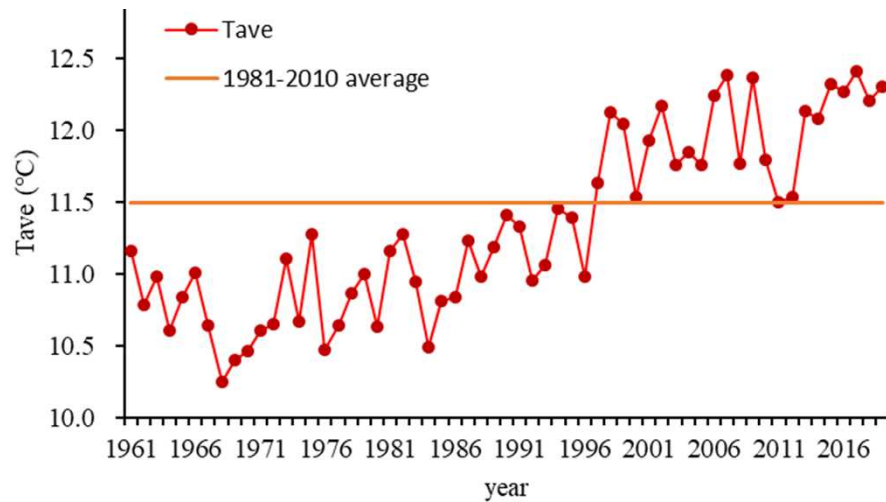
3、Major high impact events

4、Outlook

Warm: the most remarkable climate characteristic
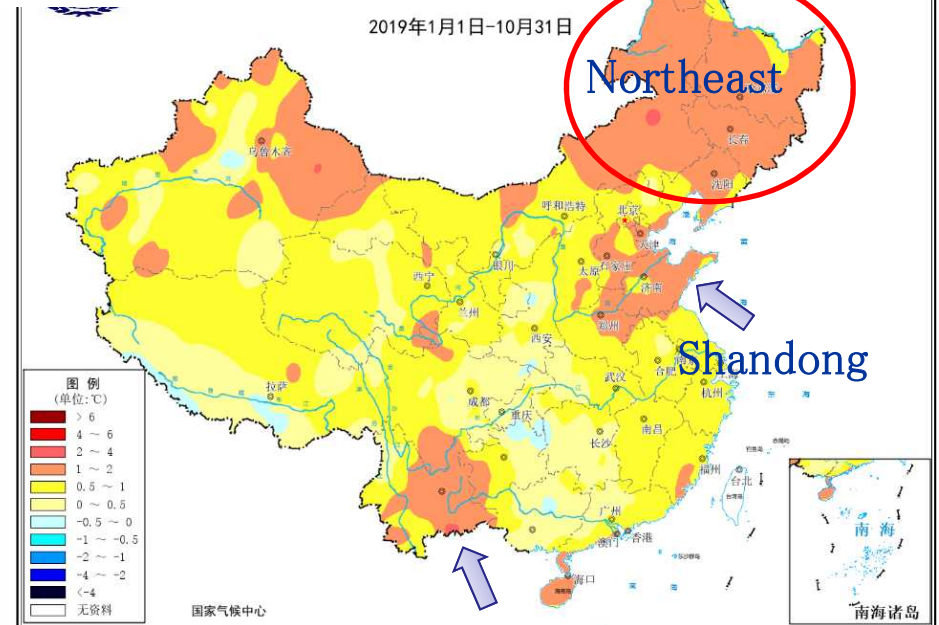
Annual change of Ave Temp (℃)

Period: from 1st Jan to 31st Oct
Normal: average of 1981-2010
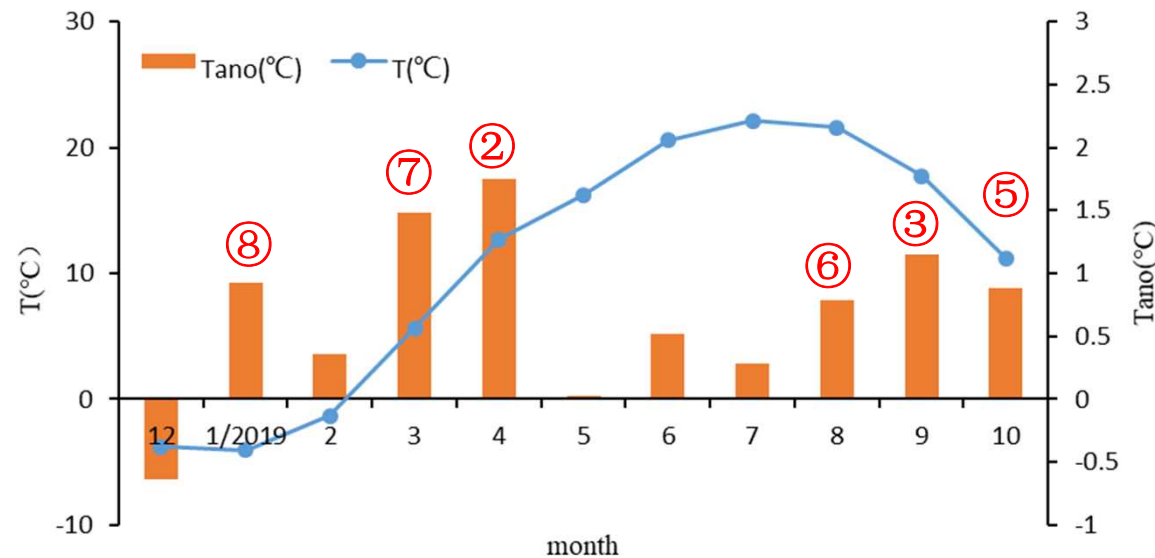
Ave Temp anomaly(℃)

Northeast

Shandong

Yunnan

■ The ave temp of China was 12.3℃, 0.8℃ more than normal, ranked fifth since 1961.

■ Northeast and Shandong, Yunnan , Hainan 1～2℃ more than normal

Warm: the most remarkable climate characteristic

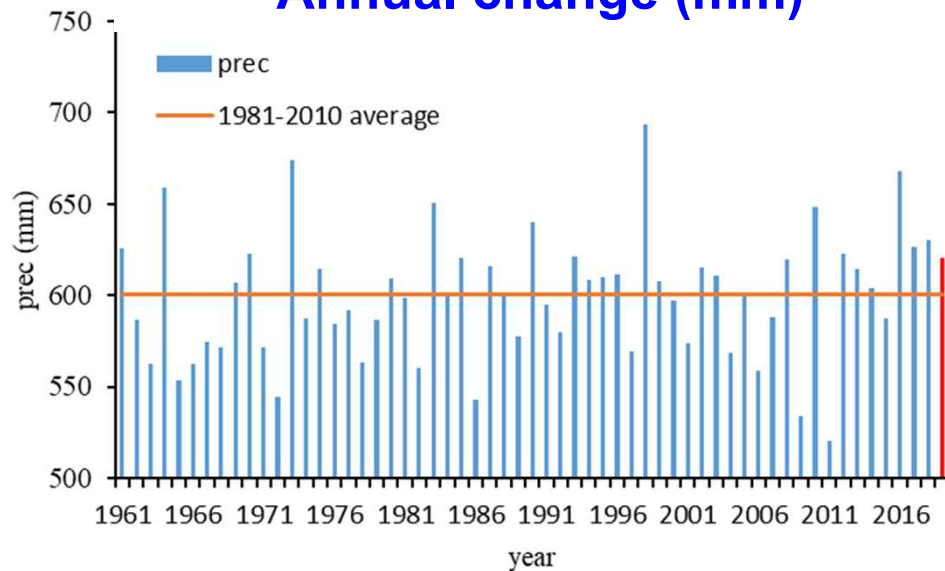**Monthly Ave Temp and its anomalies (°C) over China**

- Significantly warmer in Mar, Apr and Sep, 1.5、1.8、1.2°C warmer than the normal respectively.

- Apr ranked second, Sep ranked third······ among mean temperature since 1961.
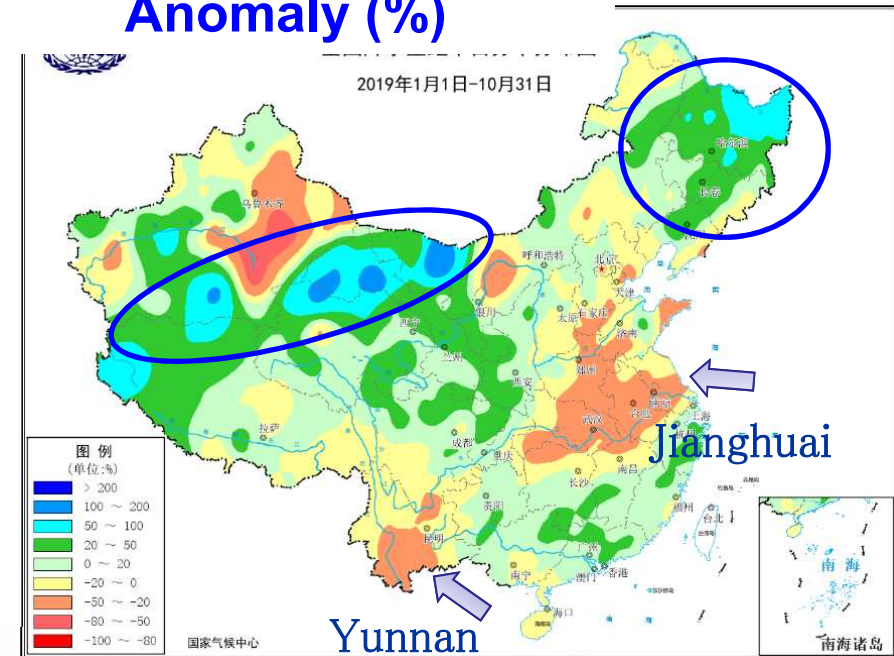
Precipitation: uneven

Annual change (mm)

Anomaly (%)

Jianghuai

Yunnan

**Ave Total prec amount
Period: from 1st Jan to 31st Oct**
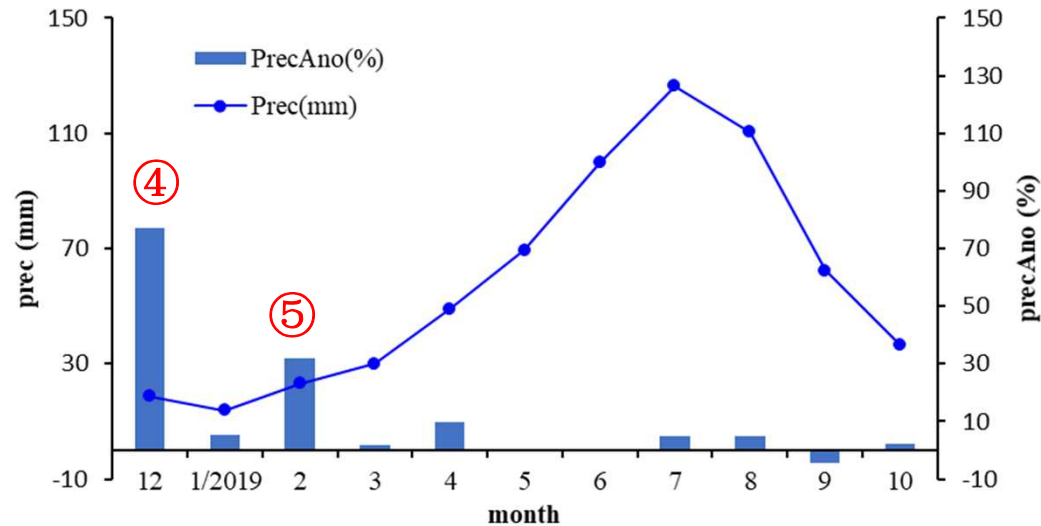
■ The average total prec amount over China was 620.6 mm, 3.2% more than the normal.

■ More (about 20%) prec in Northeast and Northwest, less (20%–80%) in Jianghuai basin and south of Yunnan

Precipitation: uneven

Monthly total prec (mm) and its anomalies (%) over China

■ Significantly more in Dec 2018 and Feb 2019, 77.0%, 31.9% more than the normal respectively.

■ And ranked forth and fifth respectively among monthly total prec since 1961.

Outline

1、 **Climate Characteristics**

2、 **Disaster Loss Characteristics**
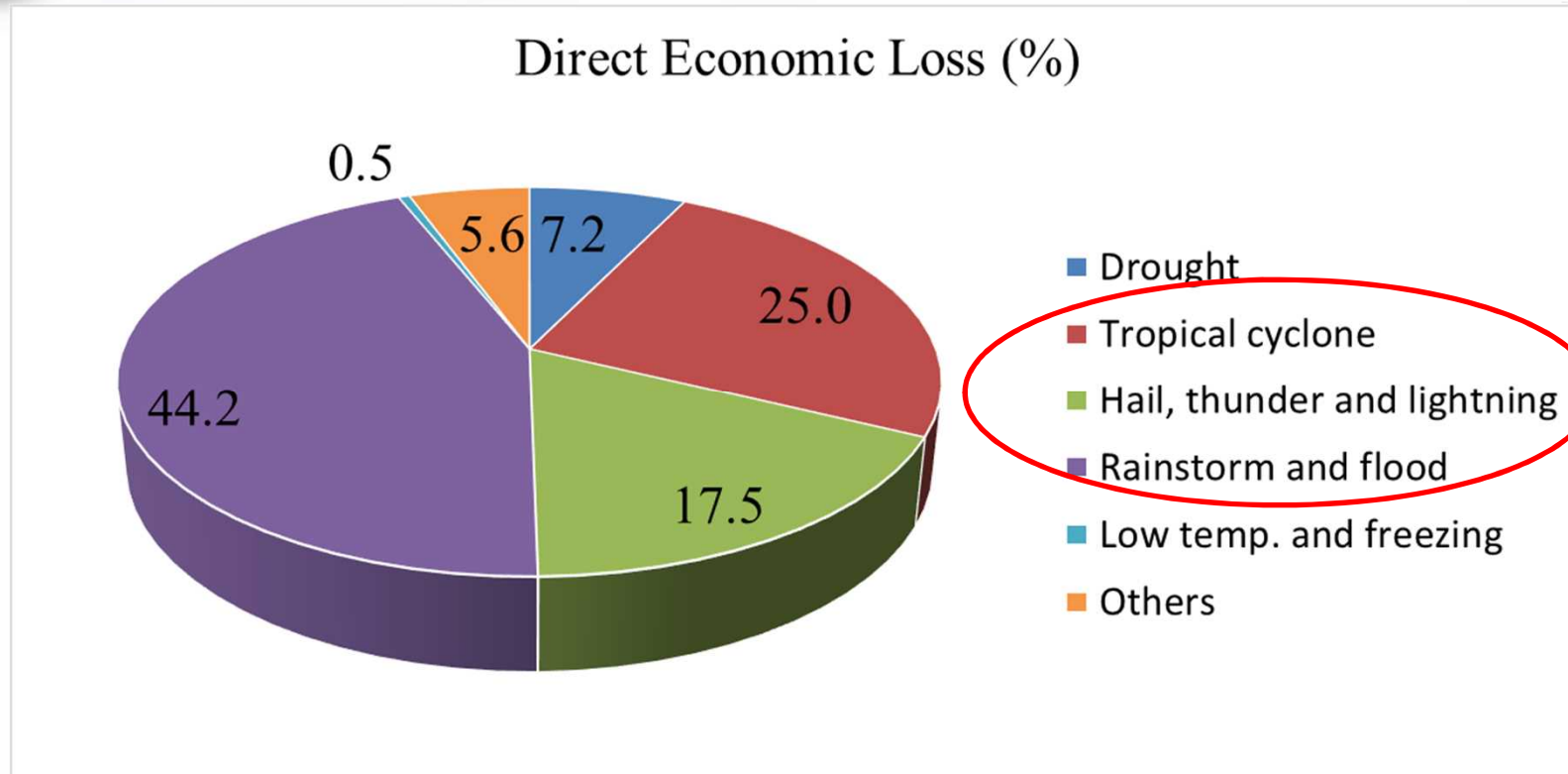
3、 **Major high impact events**

4、 **Outlook**

Overall situation of loss is light (1st Jan to 31st Oct)

- Heretofore，the natural disaster caused:
- **Affected people**: 132.563 million ;   **Killed or missing people**: 842 (↓ 27.4%)
- **Houses collapsed**: 114,000 (↓ 60.7%)
- **Crop affected area**: 18.6 million hectares;   **Crop failure area**: 2.7 million hectares
- **Direct economic losses**: 321.8 billion yuan (↓ 3%)
- **Overall situation** of loss is **light**, compared with the average of the same period in recent 5 years
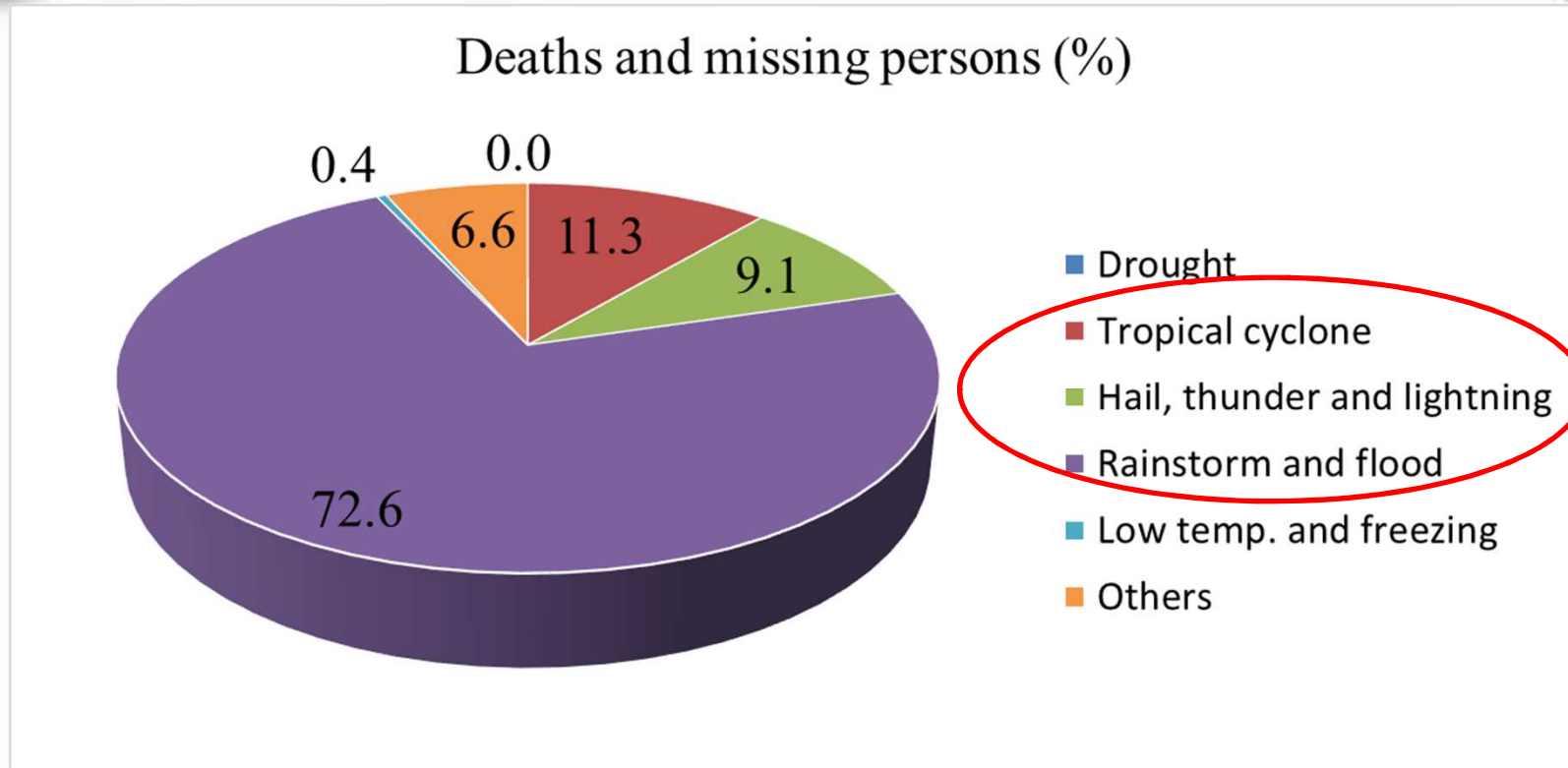
Overall situation of loss is light (1st Jan to 31st Oct)

Direct Economic Loss (%)

- Drought
- Tropical cyclone
- Hail, thunder and lightning
- Rainstorm and flood
- Low temp. and freezing
- Others

0.5
5.6 7.2
25.0
44.2
17.5

■ Of the various types of weather- and climate-related disasters, the direct economic losses caused by **Rainstorm and flood** account for 44.2% of the total loss.

Overall situation of loss is light (1st Jan to 31st Oct)

Deaths and missing persons (%)

0.4   0.0

6.6   11.3

9.1

72.6

- Drought
- Tropical cyclone
- Hail, thunder and lightning
- Rainstorm and flood
- Low temp. and freezing
- Others

■ Of the various types of weather- and climate-related disasters, the deaths and missing caused by **Rainstorm and flood** account for **72.6%** of the total loss.

Outline

1、 **Climate Characteristics**

2、 **Disaster Loss Characteristics**

3、 **Major high impact events**

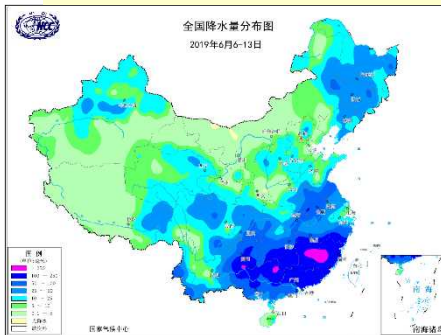4、 **Outlook**

Major high impact events and features

- Severe **rainfall process**: frequent, strong and overlapped

- Less landfall **TCs**, with serious impact by "Lekima"

- More **high temp.** days, with obvious regional feature
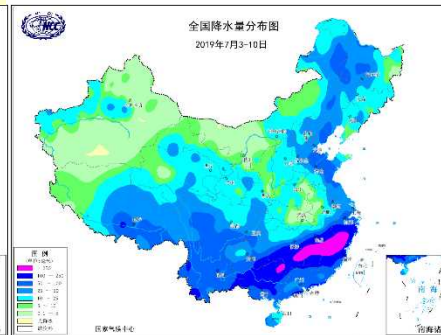
- Staged meteorological **droughts** in many regions
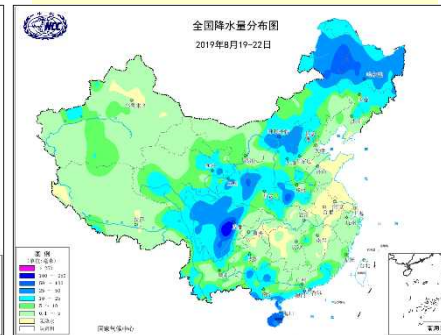
Severe rainfall process: frequent, strong and overlapped
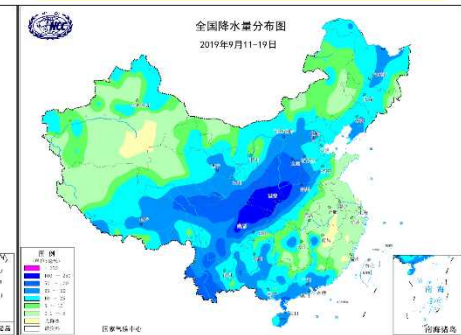
| 6th – 13th Jun | 3rd – 10th Jul | 19th – 22th Aug | 11th – 19th Sep |

Process accumulated prep. (mm)

- **Jan to Oct, 35 times of heavy rainfall processes, with the regional distributed features "more in the north and south, less in the middle"**

- **Jun to Jul, 7 times of heavy rainfall occurred continuously in southern China, and the rainfall processes were concentrated and overlapped, resulting in relatively serious floods and geological disasters in Jiangxi, Hunan, Guangxi and Guizhou.**

- **19th to 22th August, continuous heavy rainfall in the west of Sichuan basin caused flash floods, debris flow in many areas**

Less landfall TCs, with serious impact by "Lekima"


5 landing TC:

1904 Mun

1907 Wipha

1909 Lekima

1911 Bailu

1918 Mitag

- **Heretofore, 23 TCs genesis over NW Pacific Ocean and south China sea, closed to the normal (22.2)**

- **5 TCs made landfall over China, 2 less than the normal**

- **"Pabuk", the first tropical cyclone in 2019, was numbered on 1st Jan, obviously earlier than that of the normal (20th Mar.)**

# Less landfall TCs, with serious impact by "Lekima"

Accumulated prep. (mm)
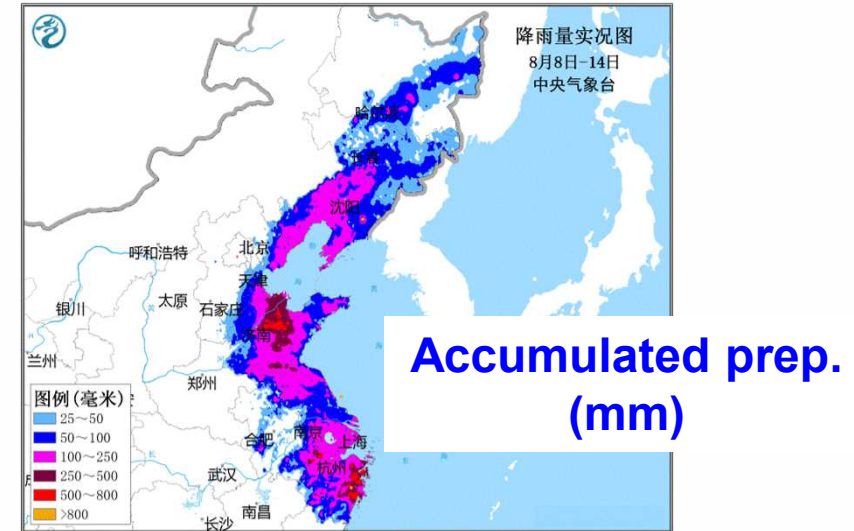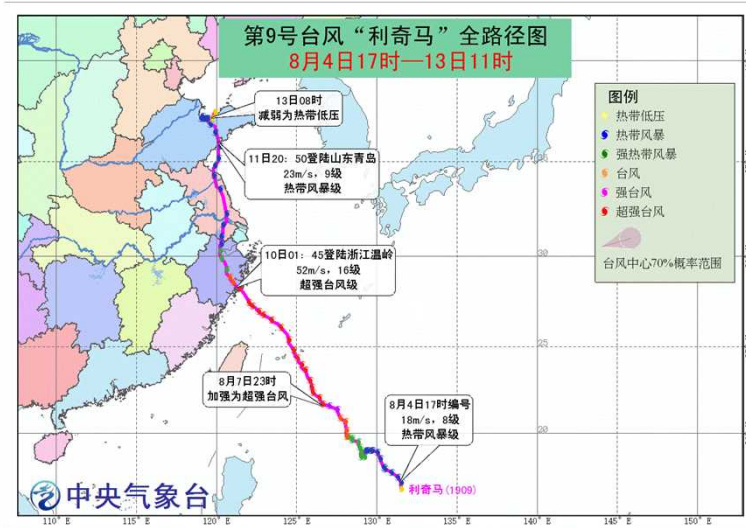
■ Lekima was the strongest typhoon that make landfall over China this year, with a landfall intensity of 52 m/s to be the fifth strongest since 1949. The duration with tropical storm or above intensity over land was 44 hours, which was the sixth longest since 1949

■ The maximum daily precipitation of 19 country stations such as LinQu (386.7 mm), Qingzhou (353.9 mm), GuangRao (347.8 mm) and Beilun (291 mm) broke the historical extreme value.

■ According to incomplete statistics from the Ministry of Emergency Management, the direct economic losses of Lekima exceeded 50 billion yuan.

More **high temp**. days, with obvious regional feature
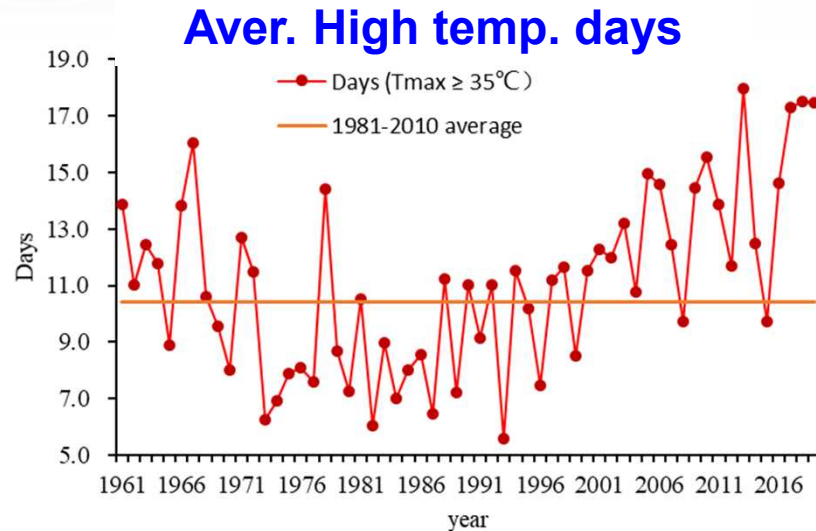
Aver. High temp. days

Extreme high temp. events

Sichuan

Jilin
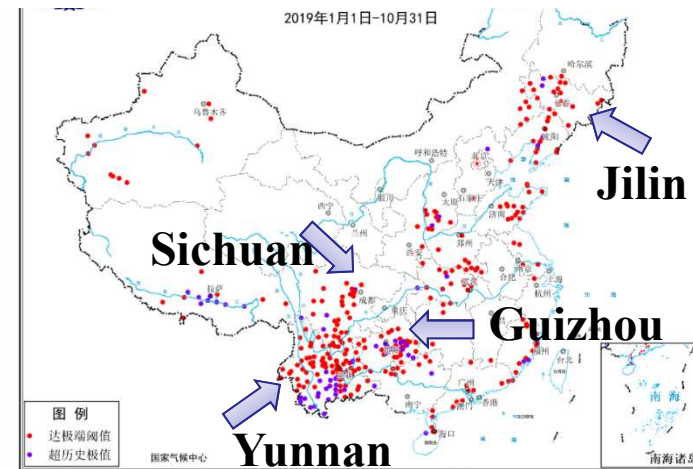
Guizhou

Yunnan

from 1ˢᵗ Jan to 31ˢᵗ Oct

- **Jan to Oct, the average high temp. days over China were 16.9, 6.5 days more than the normal, ranked third among those since 1961.**

- **The daily Tmax of 348 stations exceeded their extreme threshold, mainly in Yunnan, Sichuan, Guizhou, Jilin, 62 stations such as Yuanyang (43.7 ℃), Yuanjiang (43.1 ℃) and Xinjiang (42.7 ℃) broke the historical extreme value.**
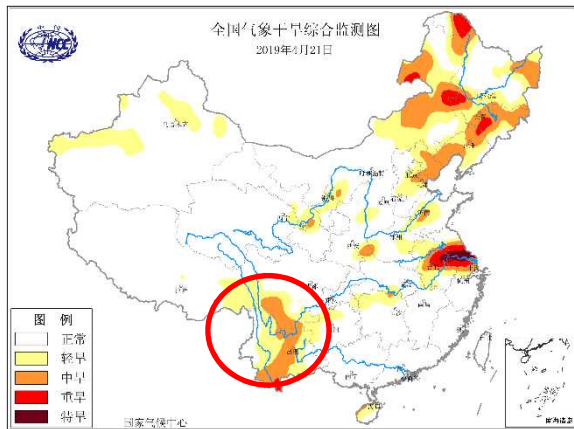
More high temp. days, with obvious regional feature
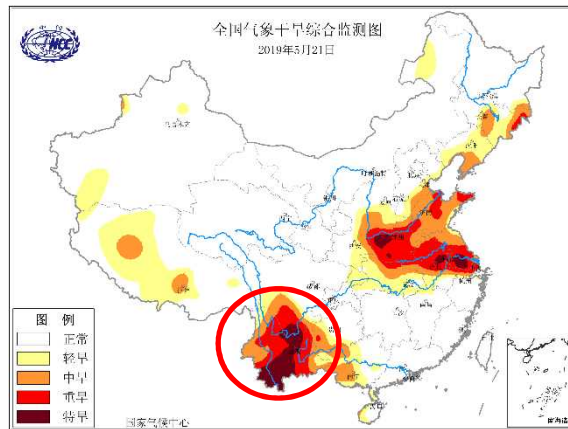

High temp days for every 10 days
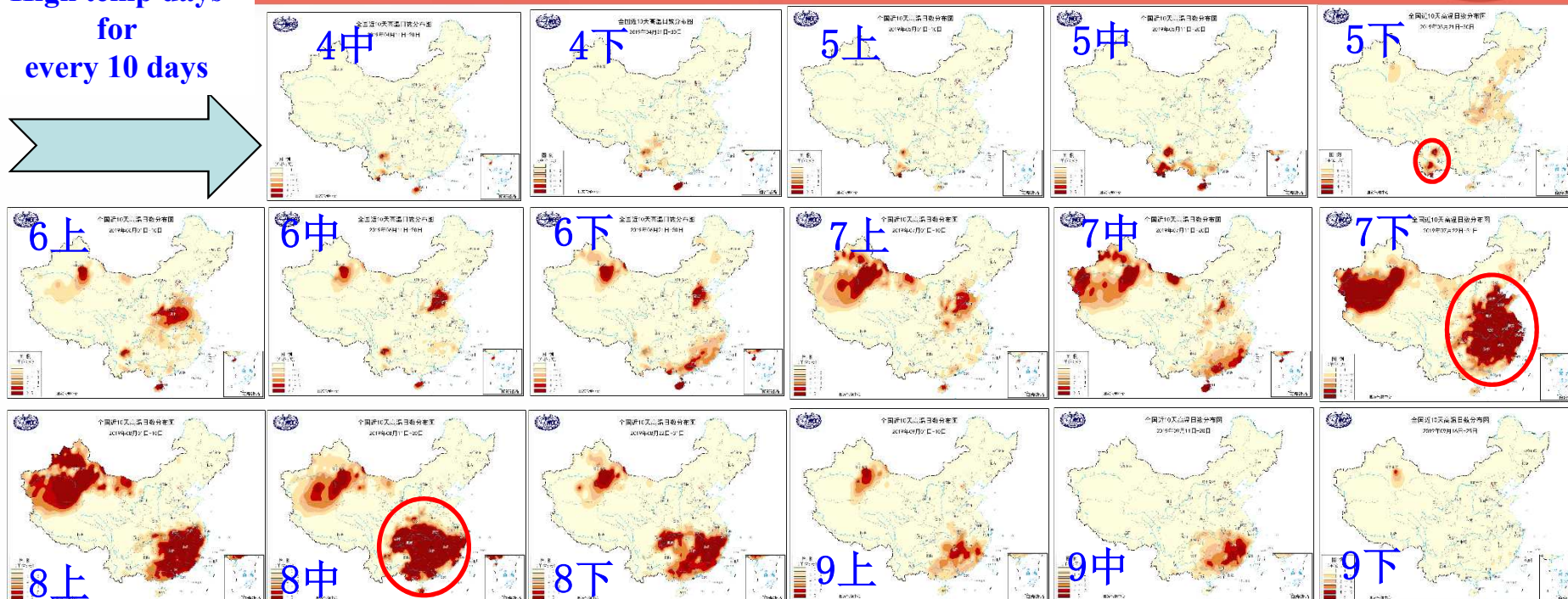
- **Middle Apr to late Jun, Yunnan, with the most high temp days and average Tmax since 1961, 24 stations reached or exceeded the historical extreme value.**

- **Jun to Jul, the region of Huabei and Huanghuai, Hainan, affected by hot wave.**

- **May to Sep, the region of Jiangnan, south China, less high temp days at the beginning (May to late Jul) and more in the later (since late Jul).**

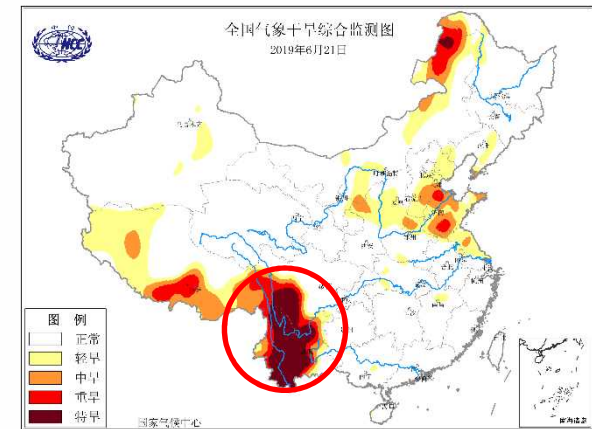# Staged meteorological droughts in many regions

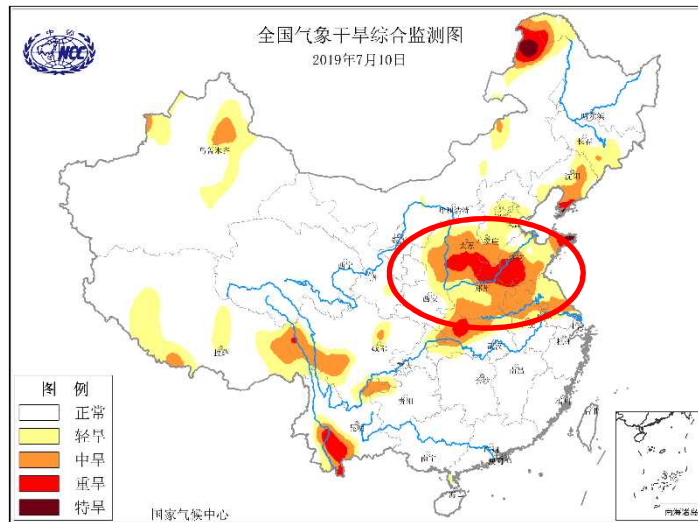Drought monitoring:21th Apr   21th May   21th Jun
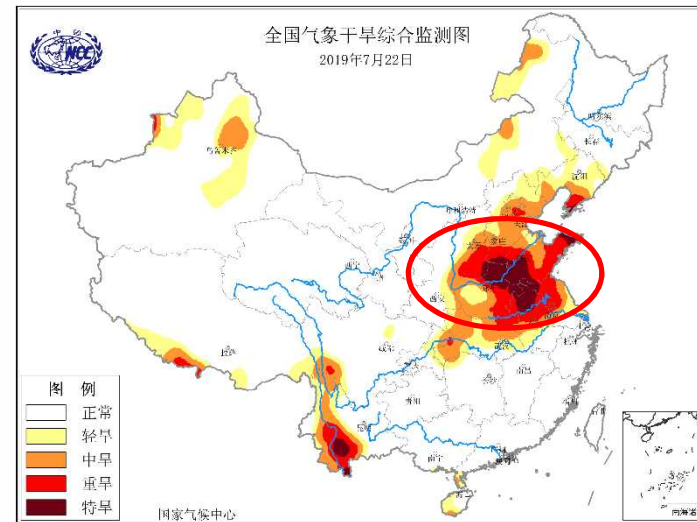

Winter and spring drought appeared in southwest China

■ **Feb to Jun**, **Yunnan and Sichuan**, the accumulated prec was 50%~80% less than the normal

■ At the peak of the drought, 824, 000 people and 566, 000 head of livestock needed drinking water in Yunnan

Staged meteorological **droughts** in many regions
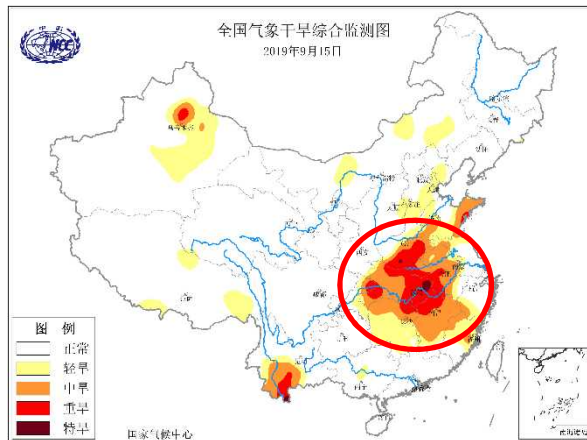
Drought monitoring: 10th Jul

22th Jul

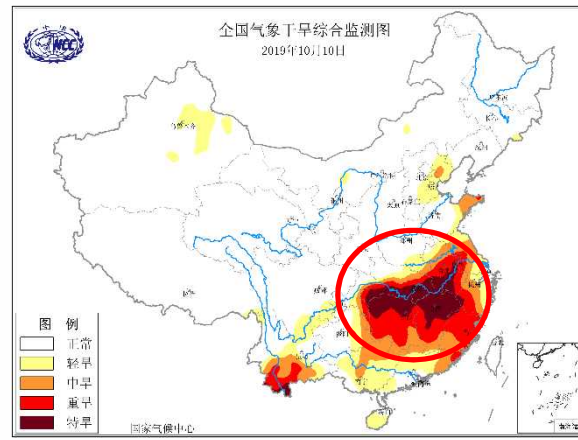Staged summer drought appeared in basin of Huanghuai

- **In Jul, east-mid of China, with continuous high temp and less rainfall, the accumulated prec was 50%~80% less than the normal**

- **At the peak of the drought, the direct economic loss in Shanxi, Hubei and other 9 provinces was 21.6 Billion Yuan**

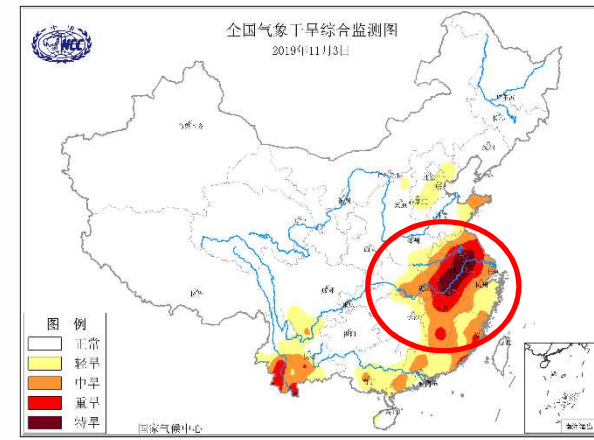# Staged meteorological **droughts** in many regions

Drought monitoring: 15th Sep   10th Oct   3rd Nov

The middle and lower reaches of the Yangtze river continue to summer-fall drought

- **In Aug, Anhui and Jiangxi, with continuous high temp and less rainfall, meteorological drought continue to develop.**

- **More than 2 million people need assistance, and agricultural production has been severely affected.**

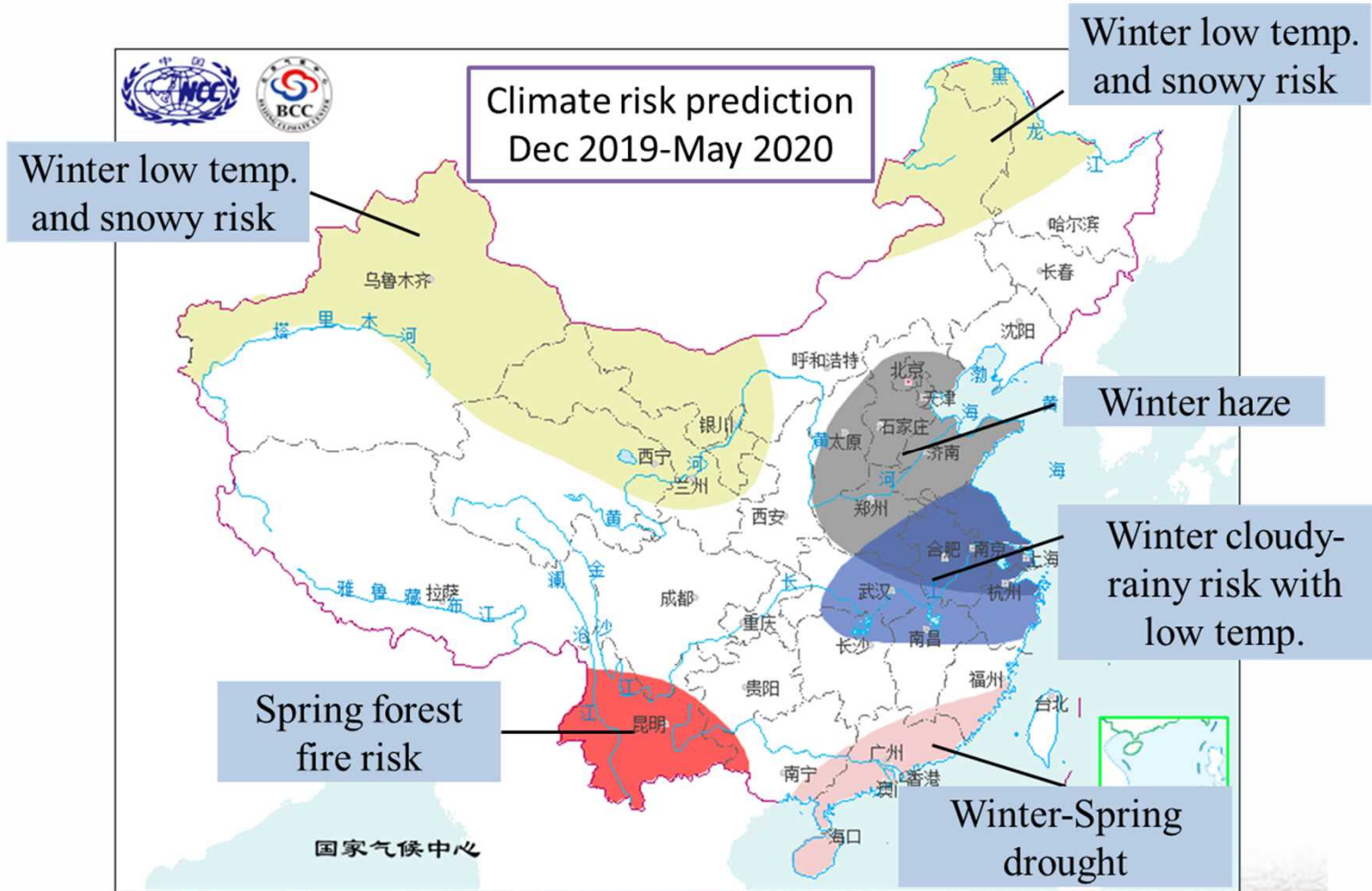# Outline

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Outlook

Climate risk prediction Dec 2019-May 2020

Winter low temp. and snowy risk

Winter low temp. and snowy risk

Winter haze

Winter cloudy-rainy risk with low temp.

Spring forest fire risk

Winter-Spring drought

谢 谢
Thank you