Characteristics analysis on the 2013 summer in Mongolia

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Contents

- Climate of the Mongolia
- Climate characteristics of 2013 summer
- Notable news of the climate weather events
- Summary
Climate of Mongolia

- **Topography**

- Latitude 41°35' - 52°09'
- Longitude 87°44'E - 119°56'E
- On average, altitude is 1500m
Climate of Mongolia

- Generally climate is dry short summer and long cold winter
- Annual mean temperature varies 8 to -7°C
- Winter mean temperature varies -8 to -31°C
- Summer mean temperature varies 6 to 24°C

Base period 1961-1990
Changing temperature

During last 50 years (1961-2012) the annual mean temperature in increased by $1.8^\circ C$

Summer temperature is increasing by $1.9^\circ C$

Normalized anomalies of mean annual temperature period 1961-2012 in Mongolia (anomaly 1981-2010)

Seasonal air temperature anomalies in summer from 1961-2013 in Mongolia (June -August anomaly 1981-2010)
About 85% of total precipitation falls in warm season from April to September, of which about 50-60% falls in July and August.

Summer rainfall generally exceeds 280 mm in the mountains and is less than 50 mm in the desert areas.
Changing precipitation

Normalized anomalies of annual mean precipitation for 1961 to 2012 period

Normalized anomalies of summer mean precipitation for 1961 to 2013 period
Climate characteristics of 2013 summer

Temperature

Fig. Time series of five days running mean anomalies (unit: °C) for four regions of Mongolia from 1 June to 31 August, 2013.
Climate characteristics of 2013 summer

- **Precipitation**

<table>
<thead>
<tr>
<th>Region</th>
<th>June</th>
<th>July</th>
<th>August</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern</td>
<td>171%</td>
<td>82%</td>
<td>67%</td>
</tr>
<tr>
<td>Western</td>
<td>124%</td>
<td>105%</td>
<td>126%</td>
</tr>
<tr>
<td>Northern</td>
<td>120%</td>
<td>74%</td>
<td>169%</td>
</tr>
<tr>
<td>Eastern</td>
<td>135%</td>
<td>124%</td>
<td>184%</td>
</tr>
</tbody>
</table>
Climate characteristics of 2013 summer

Temperature

500hpa Geopotential height and anomaly in JJA of 2013, air mass is dominant westerly over Central Asian and Mongolia.

- Increasing rainfall
- Decreasing temperature

- In the 500hPa anomalies, it was less than normal over central Asia (-20hPa) and Mongolia (-10hPa).
Climate characteristics of 2013 summer

- Mean and daily Precipitation in Mongolia for 30 years

- The mean precipitation in Summer 171.2 mm
- Its 123% compared to the normal
- The daily precipitation is 113.8mm
Notable news of the climate weather events

The heavy rain with hail observed on 4 July 2013 in Tushig in Northern Mongolia was caused much losses:

- 204 household windows were broken
- 202 household the yards were burst
- 104 number livestock died
- 1420 fruits bushes damaged
- 22.7ga vegetables damaged

total estimated at $250,000
In case of June and July, the mean temperature in most part of Mongolia was lower than normal. In August, most regions of Mongolian were above the climatology and the eastern part of Mongolia was lower than normal.

From June to August 2013, the precipitation of Mongolia was 123% compared the normal. /1981-2010 base average/. The precipitation in June was more- than- normal in all regions of Mongolia.

The heavy rain with hail events occurred on 4 July 2013 in Tushig sum Of Selenge province, the northern Mongolia. This extreme event caused loss of life, disrupt normal human activities, estimated at $250,000.
Thank You

for attention