



*Information and Research Institute of  
Meteorology, Hydrology and Environment,  
NAMEM, MONGOLIA*

# **Review of 2016 summer climate over Mongolia**

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# Outline

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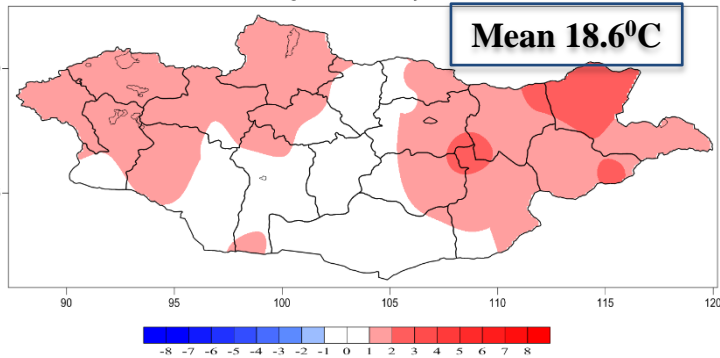
- **Temperature, Precipitation**
- **Atmospheric circulation**
- **Summary**

# Temperature

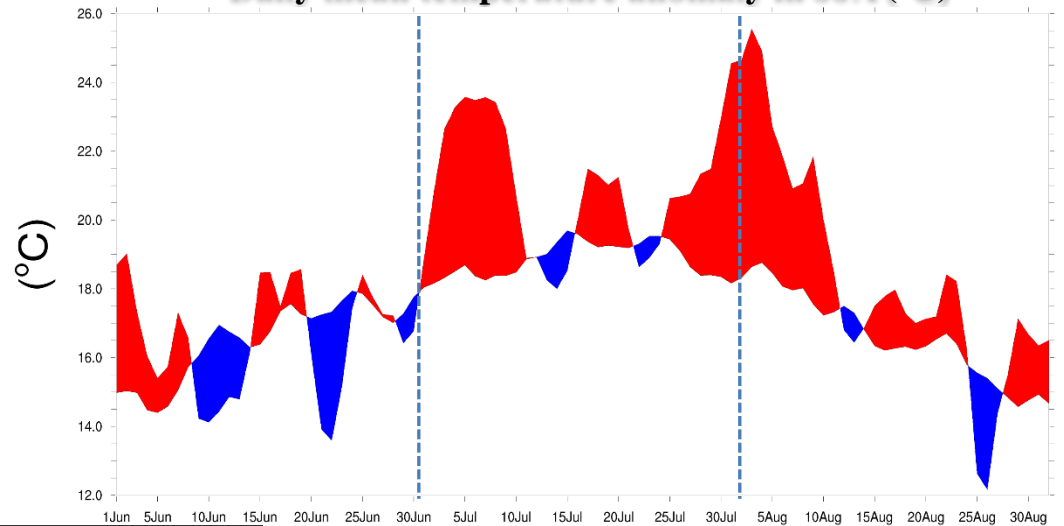
Anomaly **1.3°C**

Summer temperature anomaly of 2016

Mean **18.6°C**



Daily mean temperature anomaly in JJA (°C)



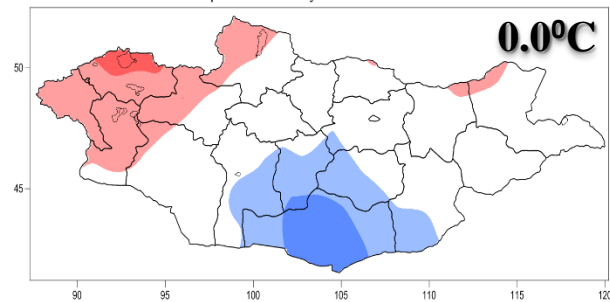
June

July

August

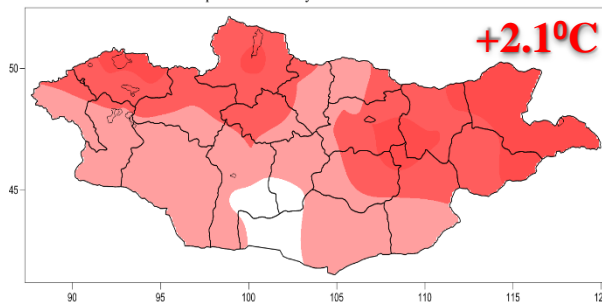
Temperature anomaly 2016-06

**0.0°C**



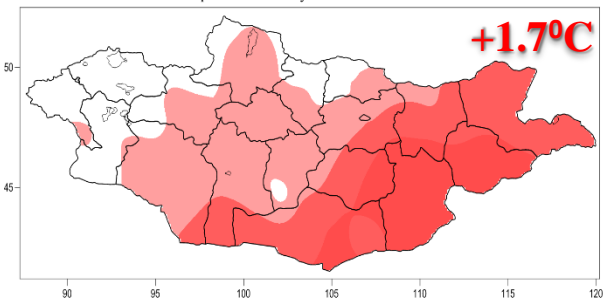
Temperature anomaly 2016-07

**+2.1°C**



Temperature anomaly 2016-08

**+1.7°C**



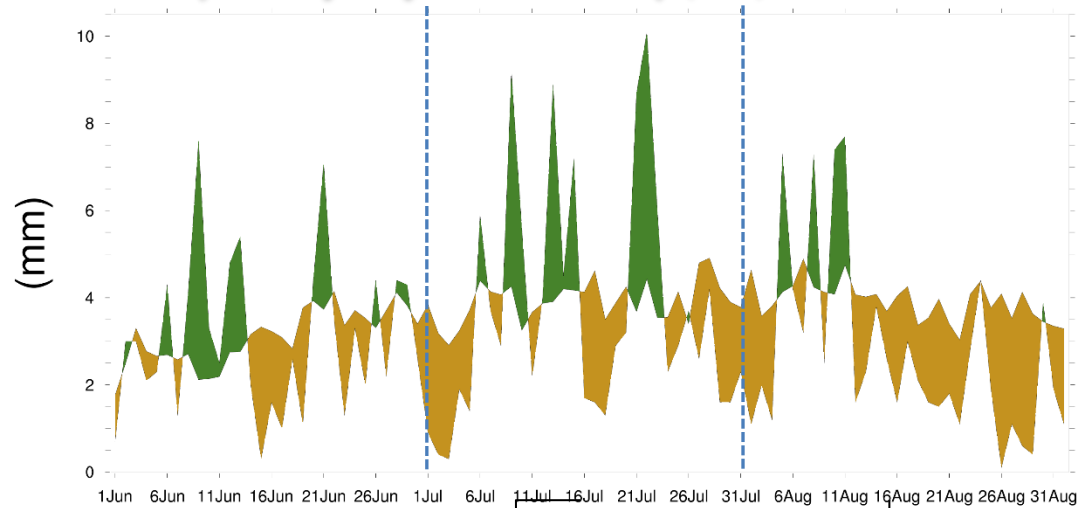
# Precipitation

Ratio 114.0%

Summer precipitation anomaly of 2016

Total 144 mm

Daily mean precipitation anomaly (mm)



June

July

August

Precipitation anomaly 2016-06

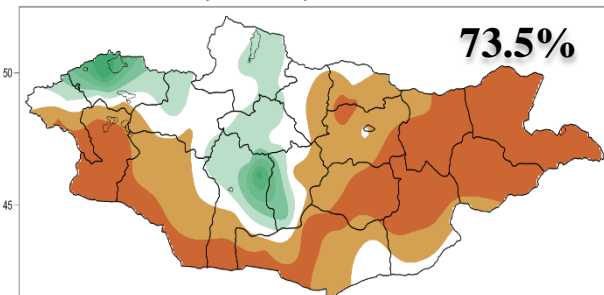
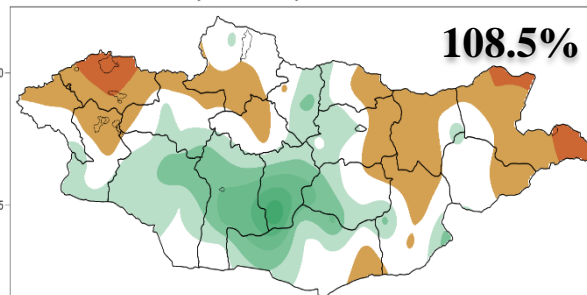
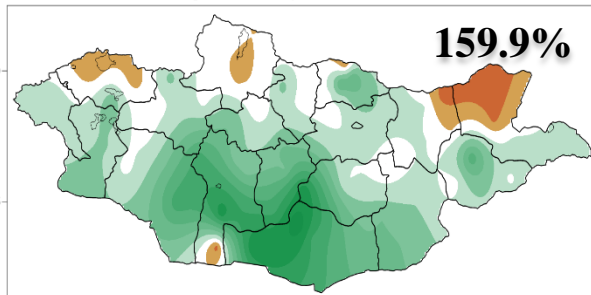
159.9%

Precipitation anomaly 2016-07

108.5%

Precipitation anomaly 2016-08

73.5%



# East Asian Summer Monsoon

The correlation coefficient between the EASM indices with summer temperature and precipitation over Mongolia. The highest temperature correlation is -0.27 in Li and Zeng , and precipitation correlation is -0.31 in Peng et al. (Davaadorj and Yoon)

Reference	Defining variable(s), Level (hPa), and regions	Correlation	
		Temperature	Precipitation
1 Y. F. Wang et al. (2001)	$v$ , 850 hPa, (20° -40° N, 110° -140° E)	0.08	0.11
2 Wu and Ni (1997)	$v$ , 850 hPa, (20° -40° N, 110° -130° E)	0.13	0.16
3 Li and Zeng (2002)	$u, v$ , 850 hPa, (10° -40° N, 110° -140° E)	-0.27	0.02
4 Wang (2002)	$u, v$ , 850 hPa, (20° -40° N, 110° -125° E)	-0.06	0.21
5 Qiao et al. (2002)	$u, v$ , 850 hPa, (20° -40° N, 110° -140° E)	-0.09	0.14
6 Wang et al. (1998)	$v$ , 850-200 hPa, (5° -15° N, 90° -130° E)	-0.08	0.04
7 He et al. (2001)	$u$ , 850-200 hPa, (0° -10° N, 100° -130° E)	-0.04	-0.02
8 Webster and Yang (2004)	$u$ , 850-200 hPa, (10° -40° N, 110° -140° E)	0.21	0.13
9 Zhao and Zhou (2005)	SLP gradient, (30° -50° N, 110° -160° E)	0.06	-0.23
10 Guo (1983)	SLP gradient, (10° -50° N, 110° -160° E)	0.06	-0.23
11 Shi and Zhu (1996)	SLP gradient, (20° -50° N, 110° -160° E)	0.10	-0.26
12 Peng et al. (2000)	$\Phi$ gradient, 500 hPa, (10° -50° N, 110° -150° E)	0.23	-0.31
13 Wang and Fan (1999)	$u$ , 850 hPa, (10° -20° N, 100° -150° E) - (25° -35° N, 100° -150° E)	0.05	-0.03
14 Zhang et al (2003)	$u$ , 850 hPa, (10° -20° N, 100° -150° E) - (25° -35° N, 100° -150° E)	0.10	-0.02
15 Lau and Yang (2000)	$u$ , 200 hPa, (40° -50° N, 110° -150° E) - (25° -35° N, 110° -150° E)	-0.18	0.18

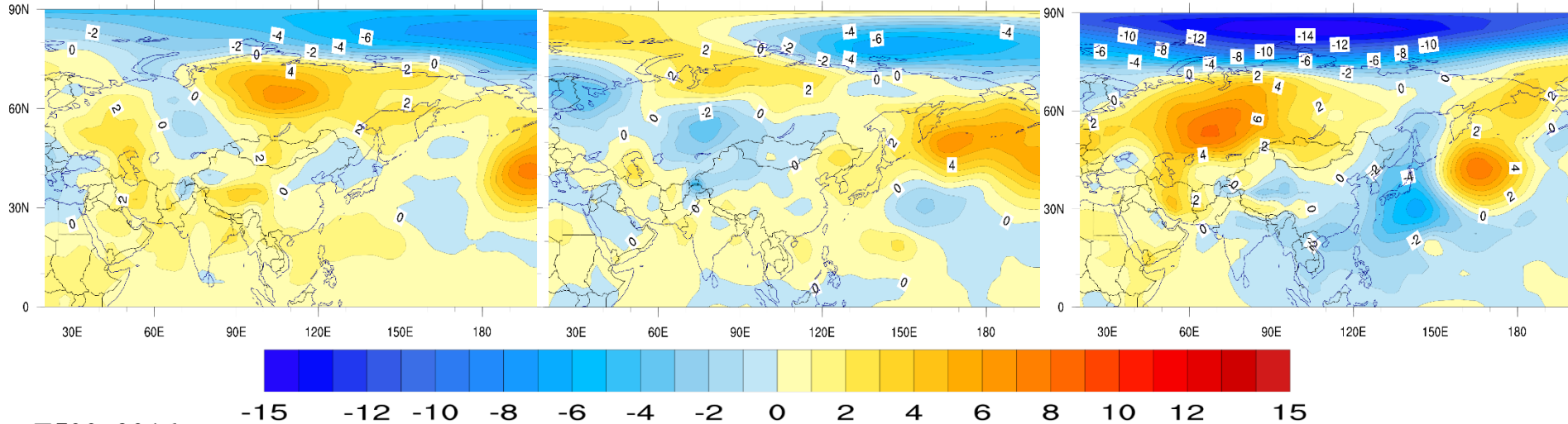
# Atmospheric circulation

SLP, 2016

June

July

August

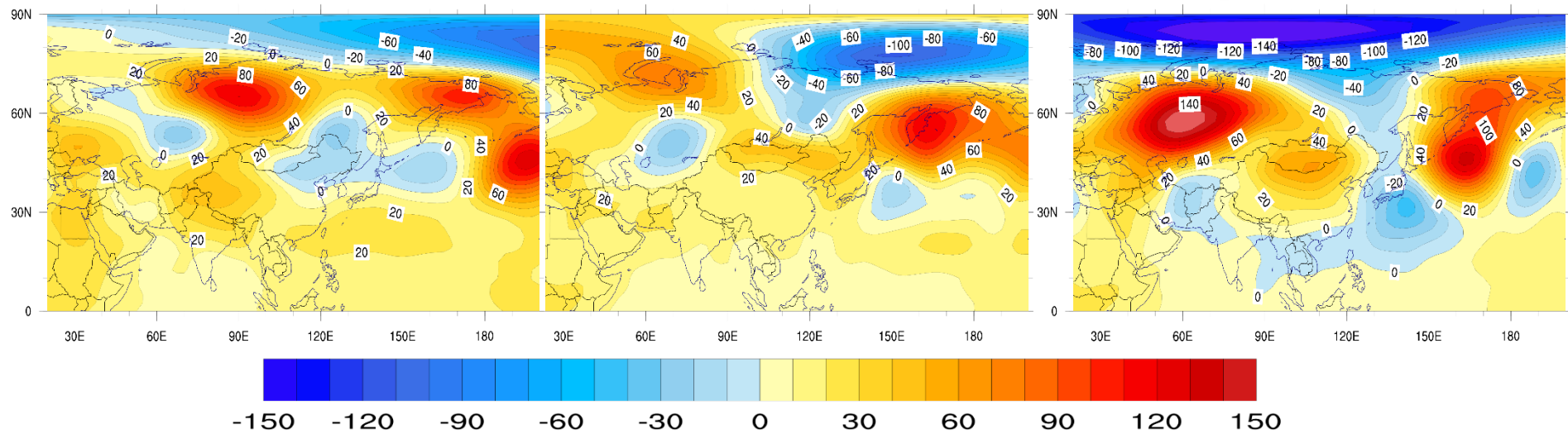


Z500, 2016

June

July

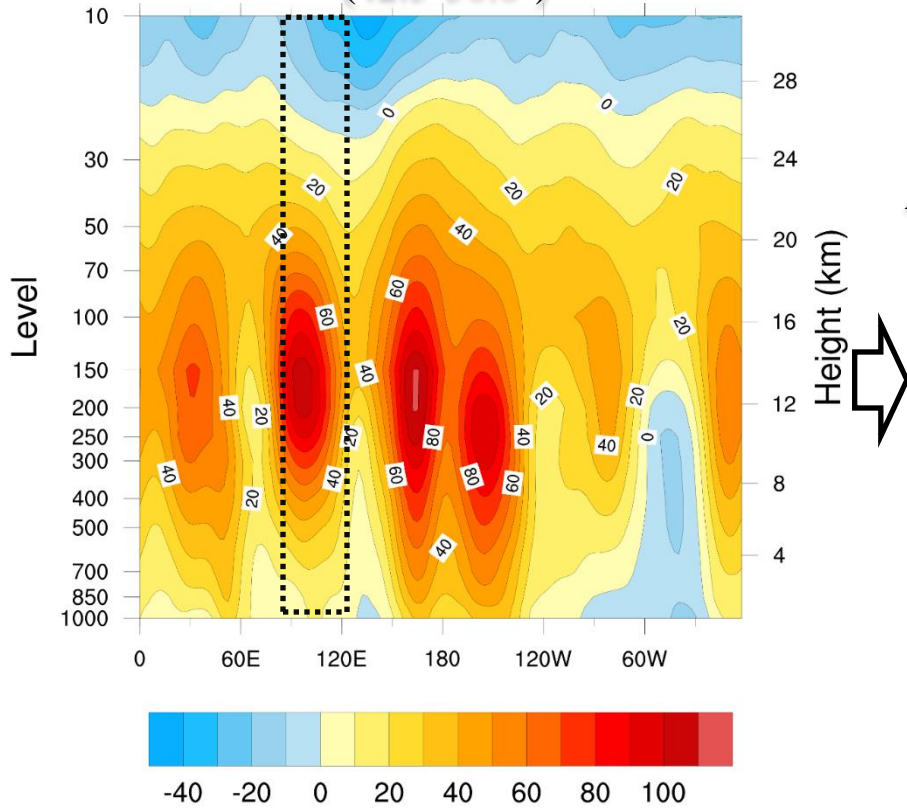
August



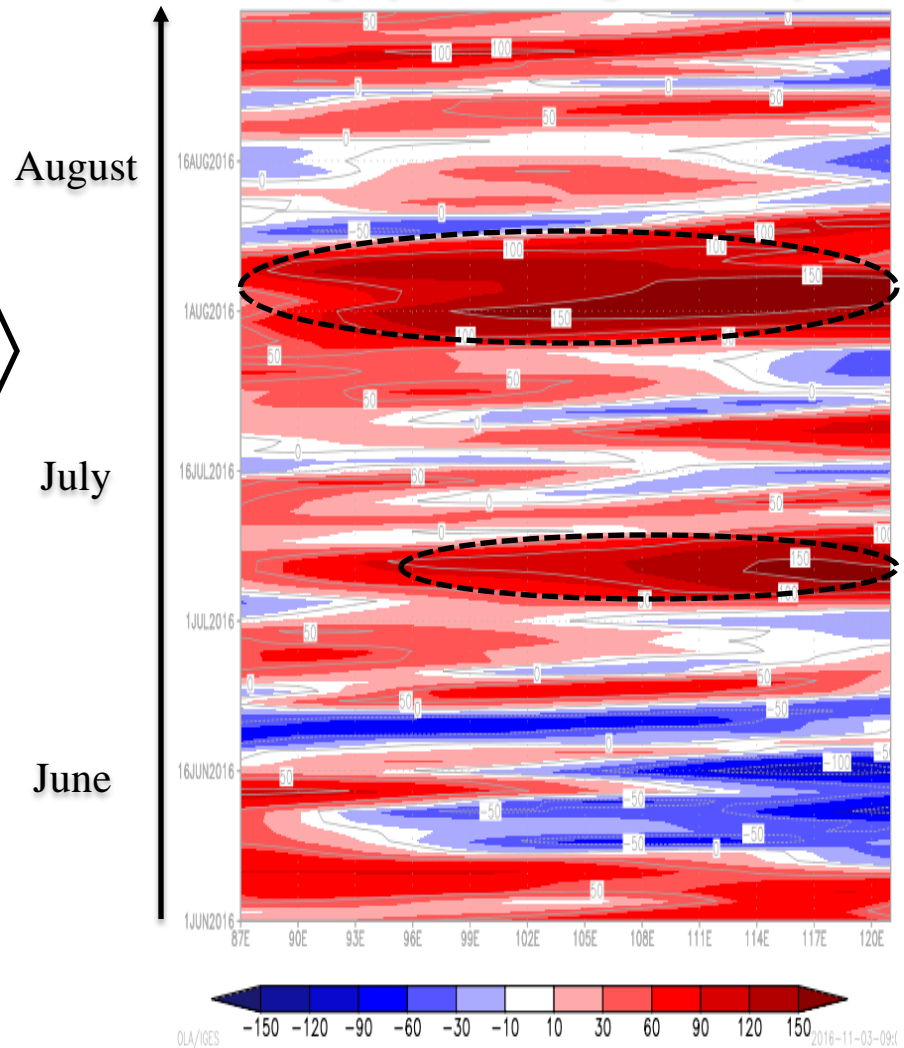


# Atmospheric circulation

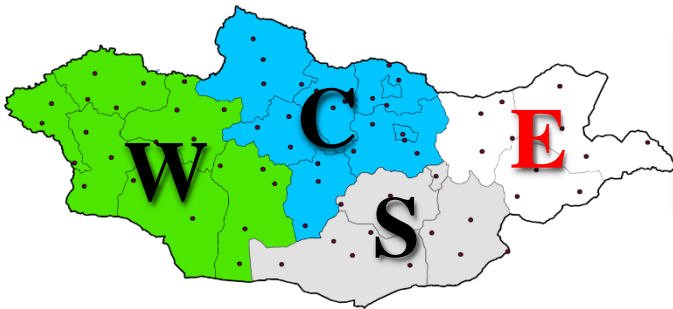
Anomaly of geopotential height in JJA  
(42.5-50.0°)



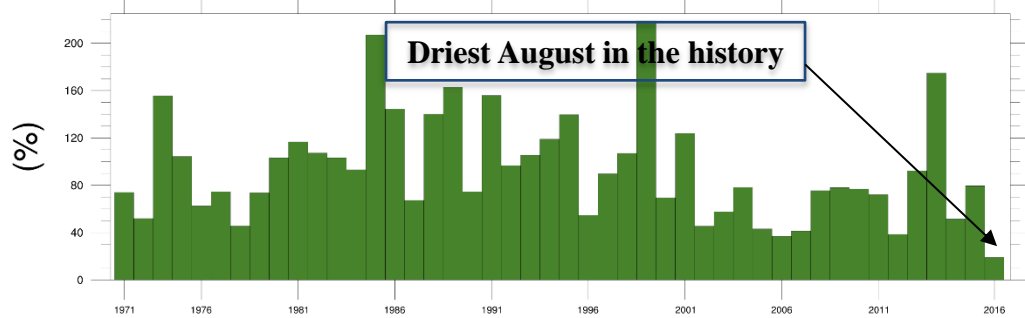
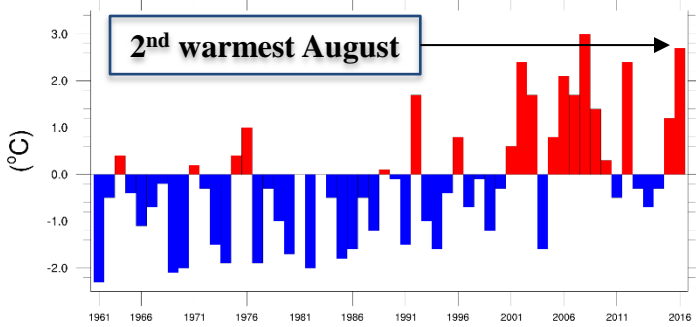
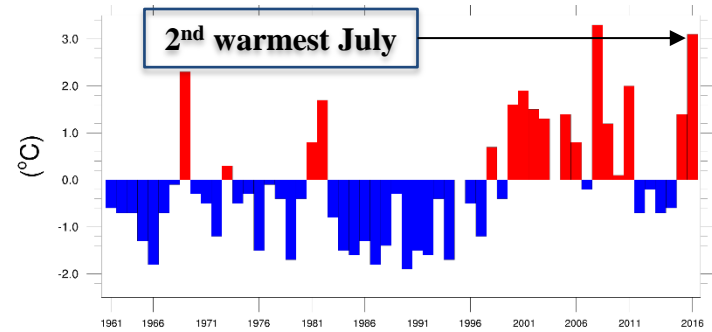
Time evolution of 500  
geopotential height anomaly



# Notable event (Dry spell in Eastern part of Mongolia)

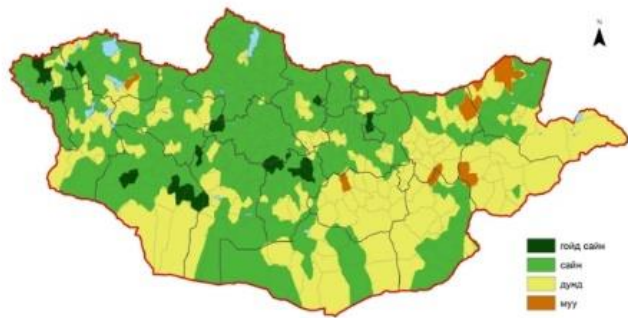


Eastern part of Mongolia included in 11 meteorological stations



19.1%

Pasture carrying capacity exceeded



3 дугаар зураг. Бэлчээрийн ургамлын ургалтын байдал (2016 оны 8 дугаар сарын 31-ний байдлаар)



# Summary

- Mongolia experienced above normal temperature and normal precipitation in 2016 summer:
- ❖ The summer mean temperature over Mongolia was 18.6°C, which was the above normal (1981-2010 average), especially western and eastern part of Mongolia. The June, July and August temperature anomalies were 0.0°C, 2.1°C and 1.7°C, respectively.
- ❖ The monthly precipitation ratio to normal were 159.9%, 108.5%, and 73.5% for the June, July and August, respectively. In the August obviously below normal precipitation.
- In the June southern part of Mongolia was the above normal precipitation. Because omega blocking observed in Eurasian continental. Cyclonic circulation was sliding southern branch of blocking.
- Heatwaves occurred 2 times in the summer. That causes damage to eastern part of Mongolia.



Thank you for your attention