

Brief Post-Analysis of the South Korea Summer in 2019



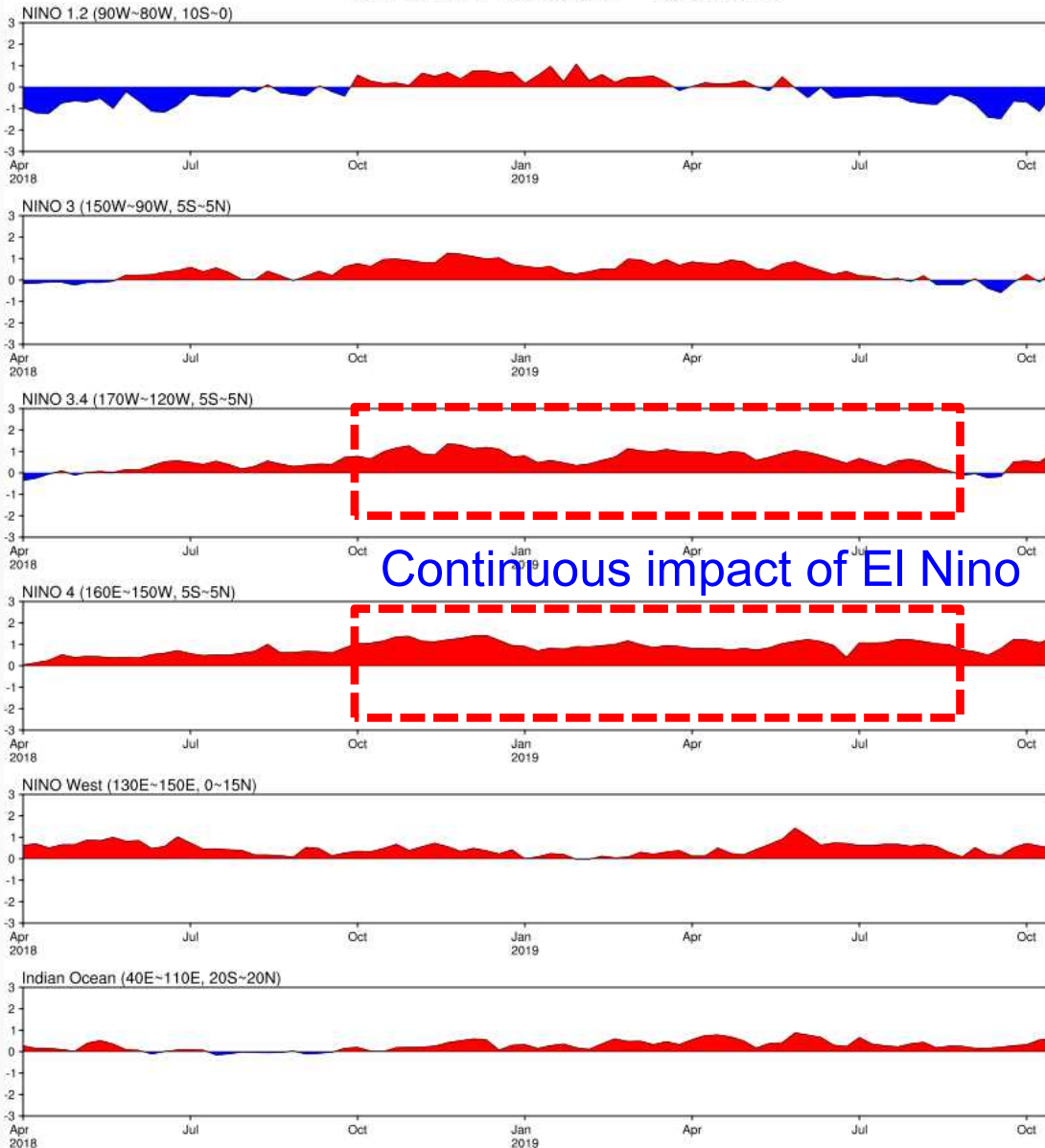
CHOI Chulwoon, CHOI Jeonghee, KIM Miju, KIM Dongjoon
Climate Prediction Division, KMA



Impacts of Atmos. & Ocean on Korea

SST & ENSO during this summer

Weekly El Nino Index
Last Week : 13Oct2019 ~ 19Oct2019

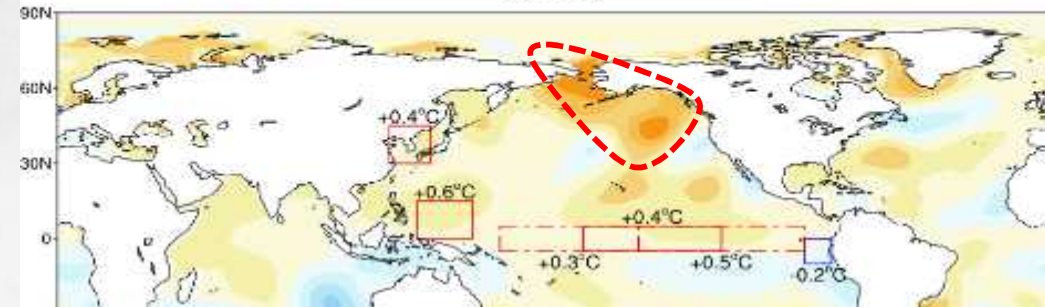


Continuous impact of El Nino

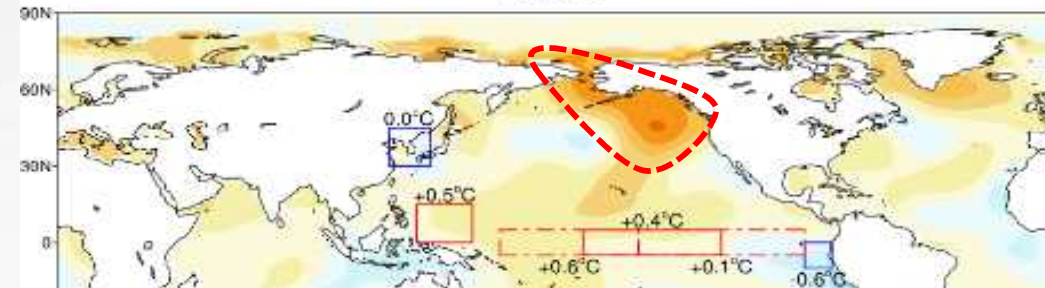
LINE: SST MEAN-CLIM
DATA : OISSTv2, CLIM : OISSTv2(1981~2010)
Updated on 20191024



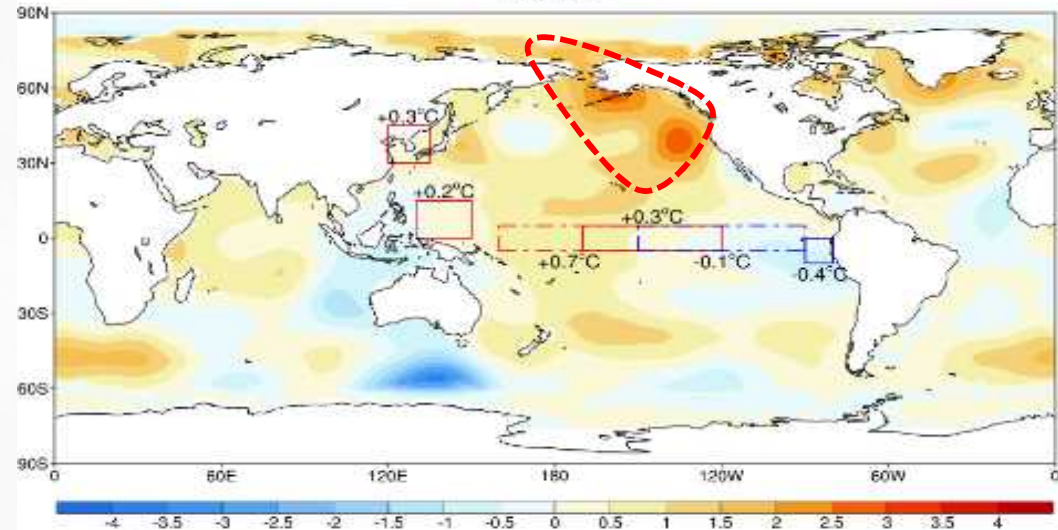
SST Monthly Anomaly (ERSSTv4)
Jun2019



SST Monthly Anomaly (ERSSTv4)
Jul2019



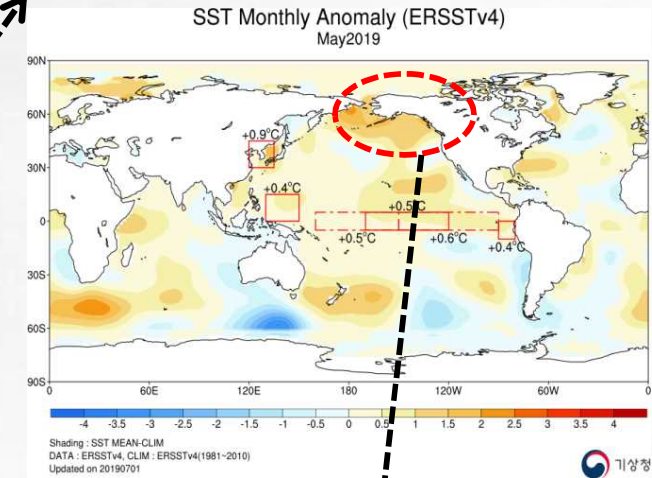
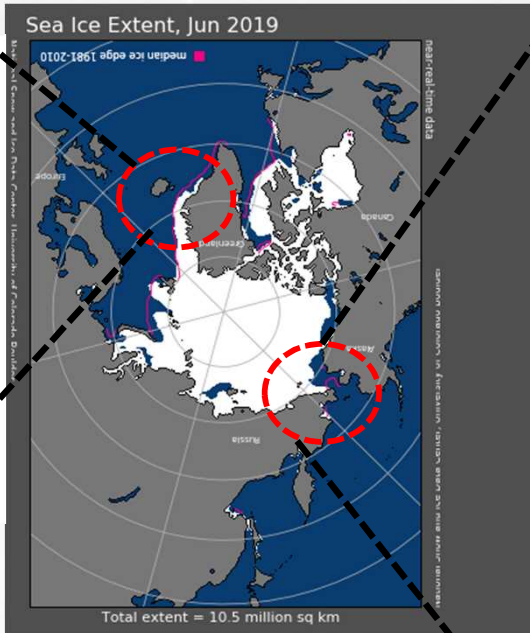
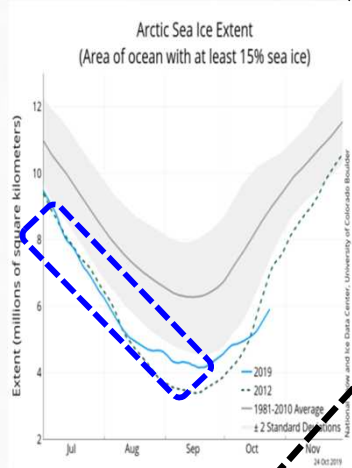
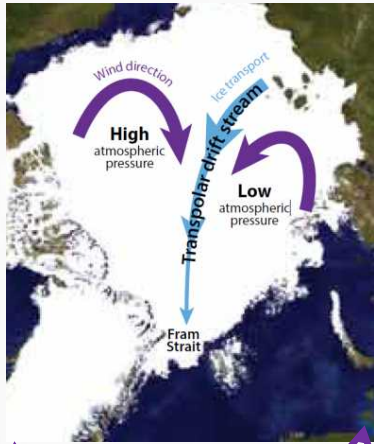
SST Monthly Anomaly (ERSSTv4)
Aug2019



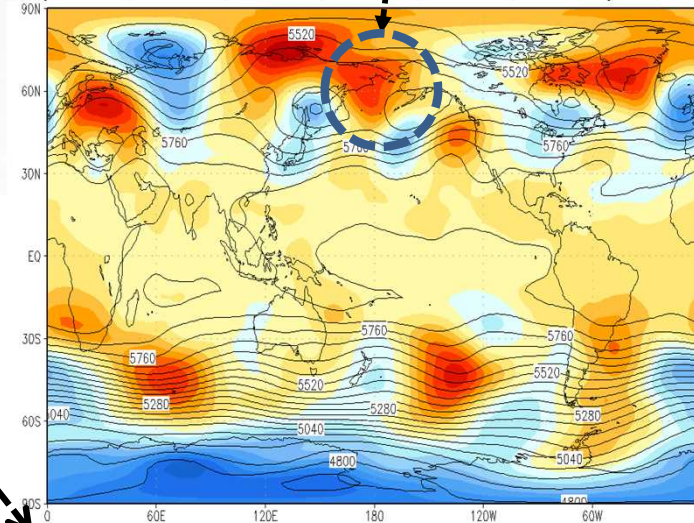
Shading : SST MEAN CLIM
DATA : ERSSTv4, CLIM : ERSSTv4(1981~2010)
Updated on 20191016



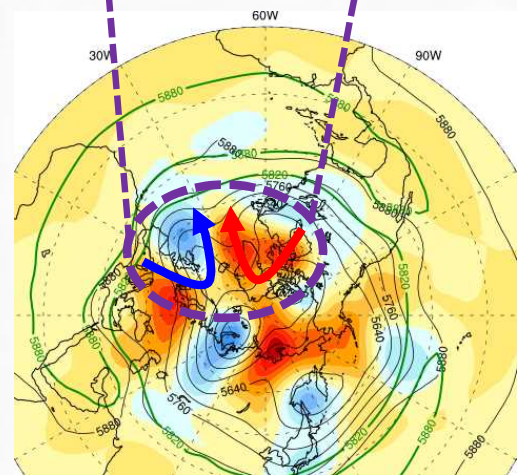
Some partial impact of arctic area



The cases over climate norm in Bering Sea
(1997, 2004, 2005, 2015, 2016, 2017)



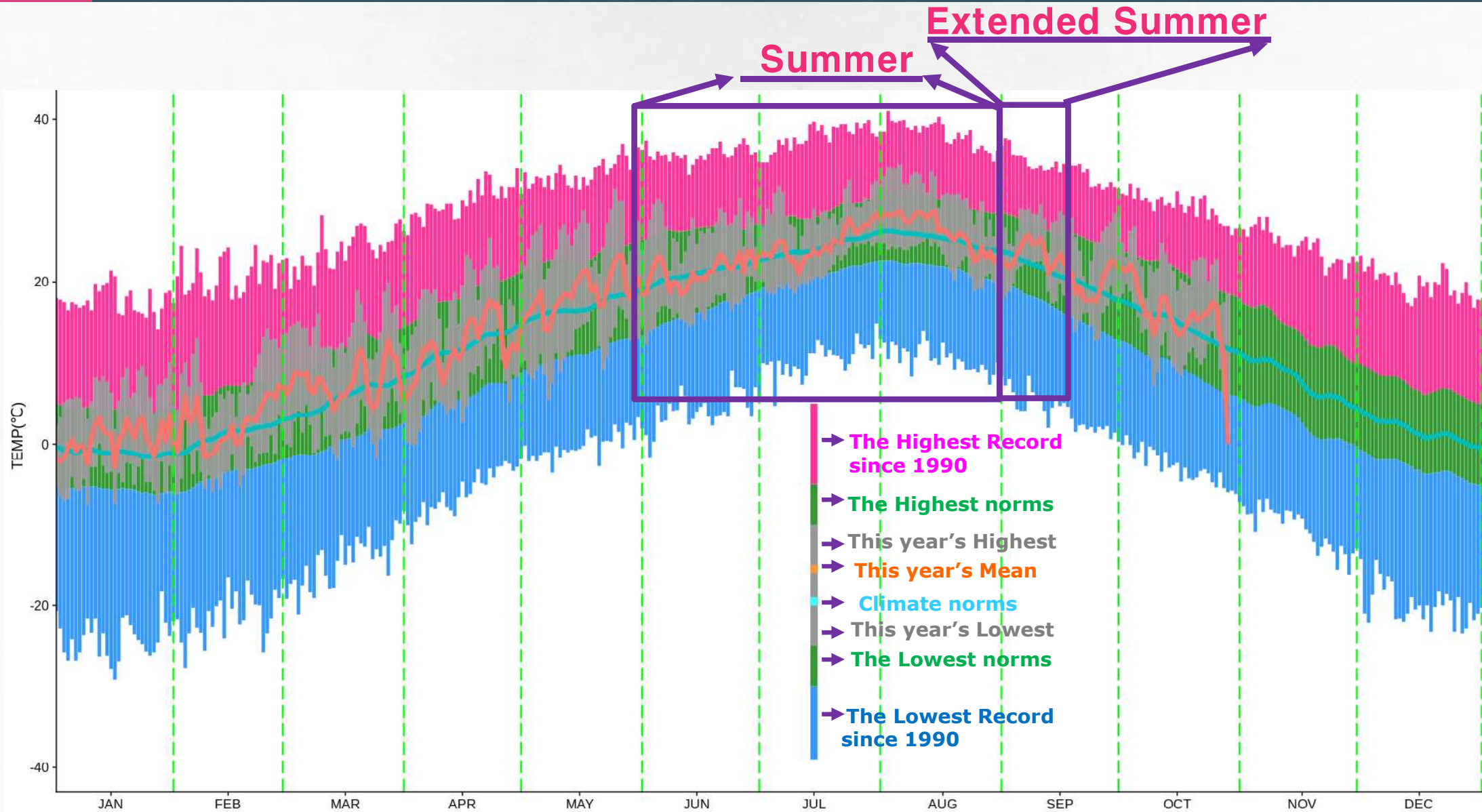
- ✓ Warming Bering Sea
- High anomaly
- Blocking highs of Bering-Laptev area
- ✓ Outflowing sea ice in Green land
- Enhance to reduce sea ice
- Eurasia wave impact





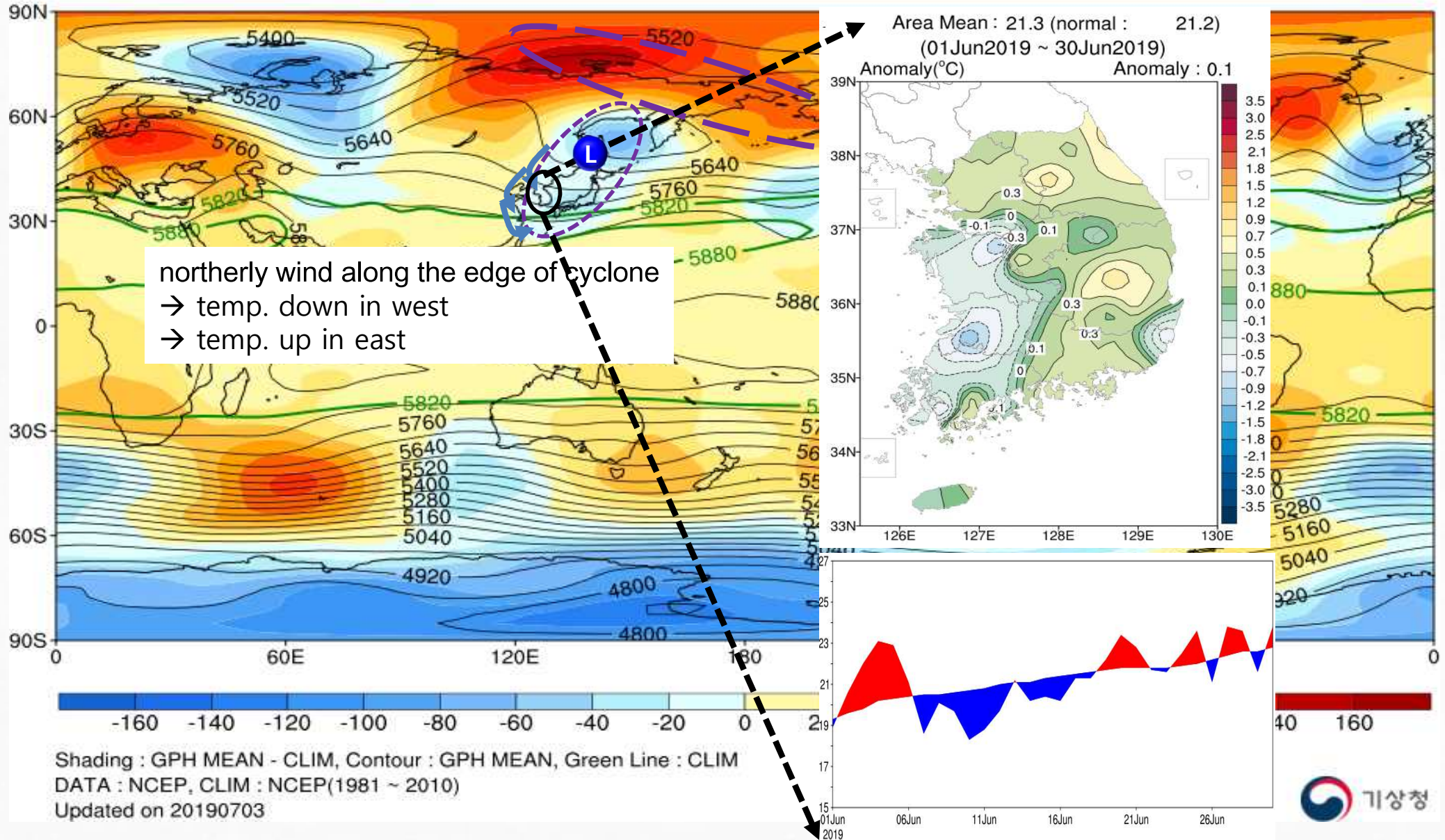
Main Feature of Mean Temp. this summer

Climatological Temp. Feature in the South Korea



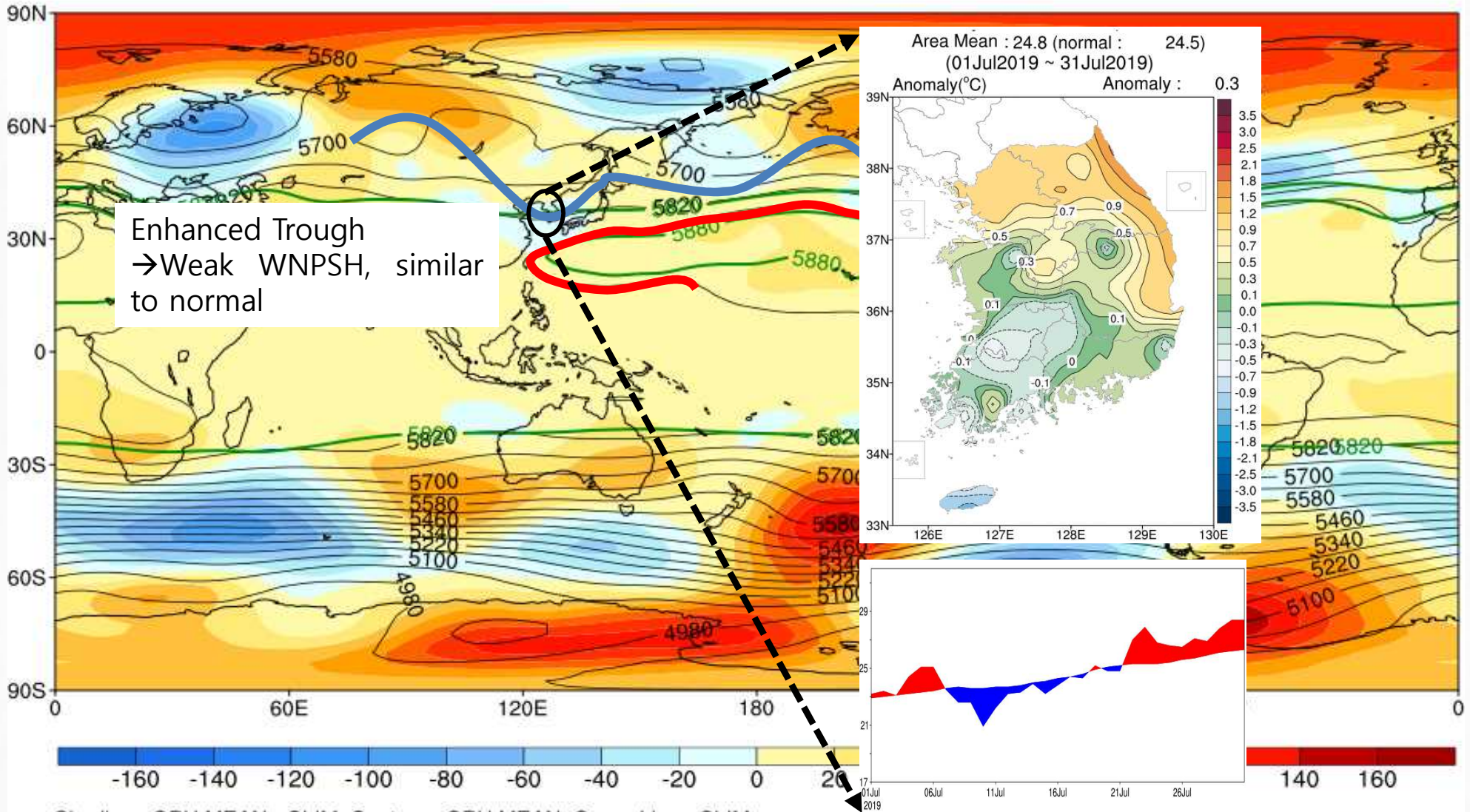
Monthly Mean Temperature in June

500hPa GPH Mean
01Jun2019 ~ 30Jun2019



Monthly Mean Temperature in July

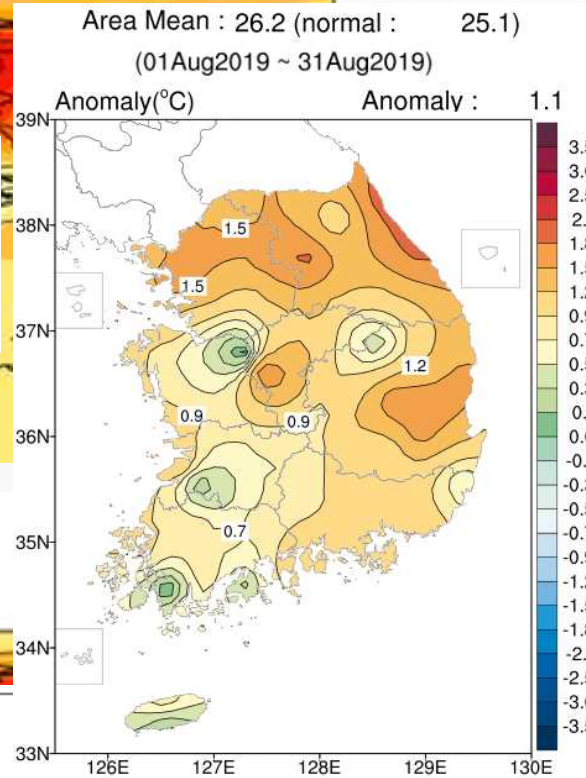
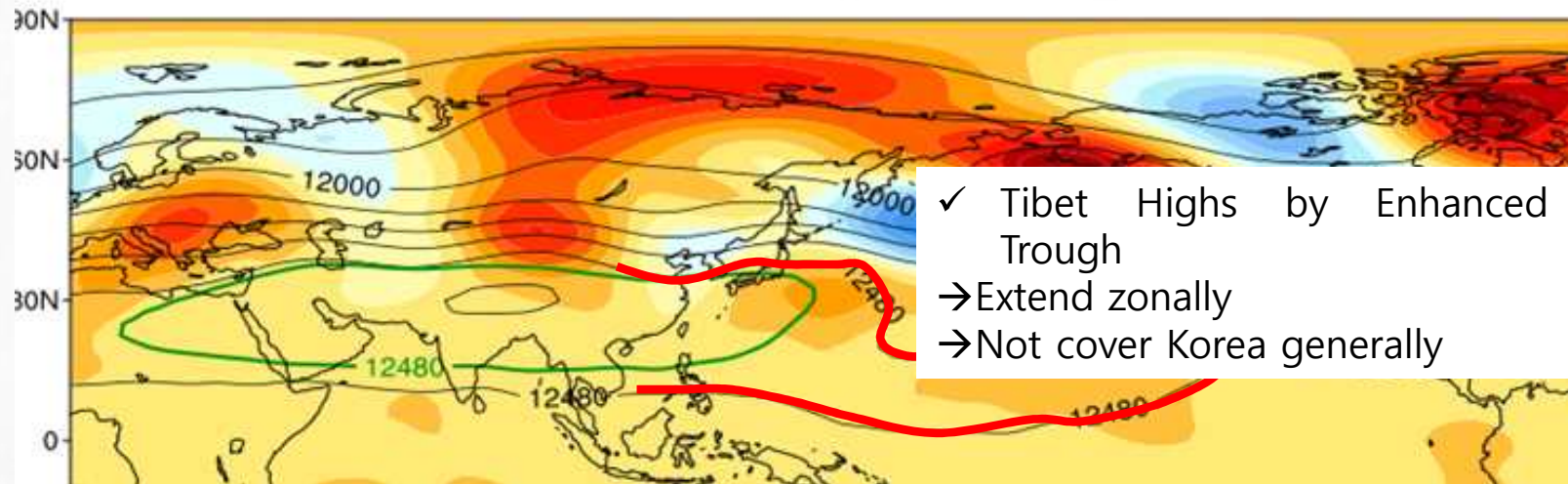
500hPa GPH Mean 01Jul2019 ~ 30Jul2019



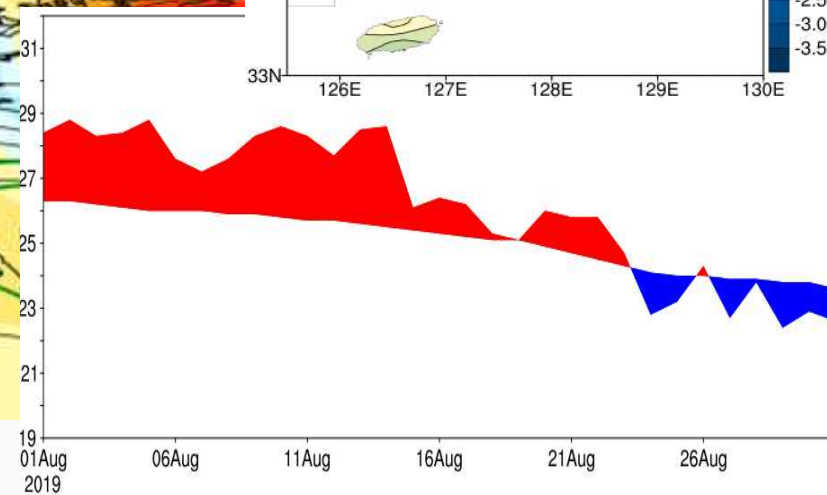
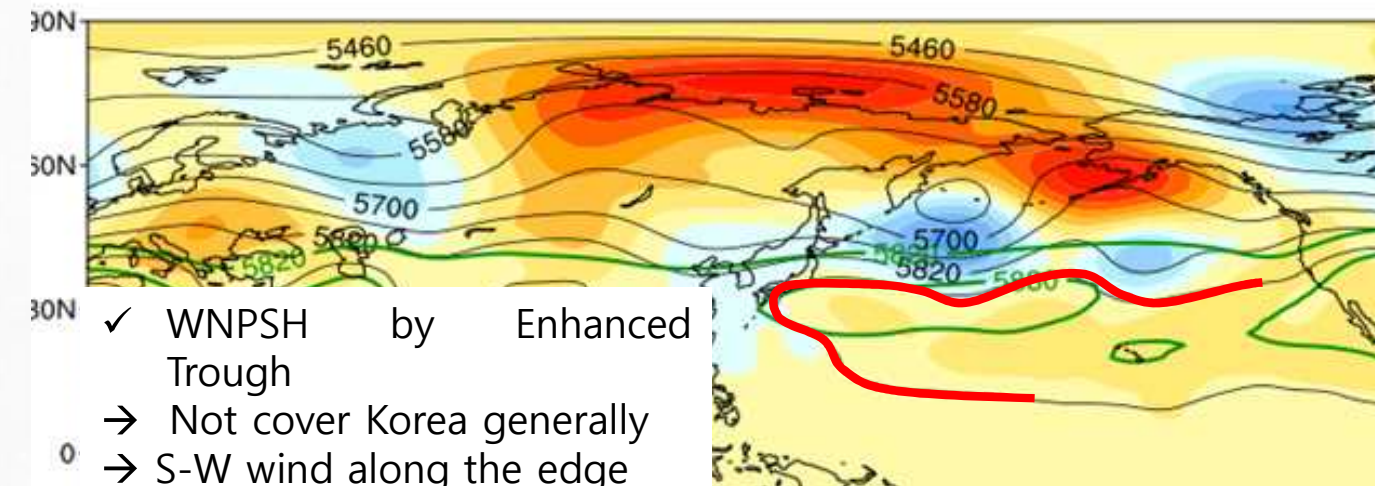
Shading : GPH MEAN - CLIM, Contour : GPH MEAN, Green Line : CLIM
DATA : NCEP, CLIM : NCEP(1981 ~ 2010)
Updated on 20190802

Monthly Mean Temperature in August

200hPa GPH Mean
01Aug2019 ~ 31Aug2019



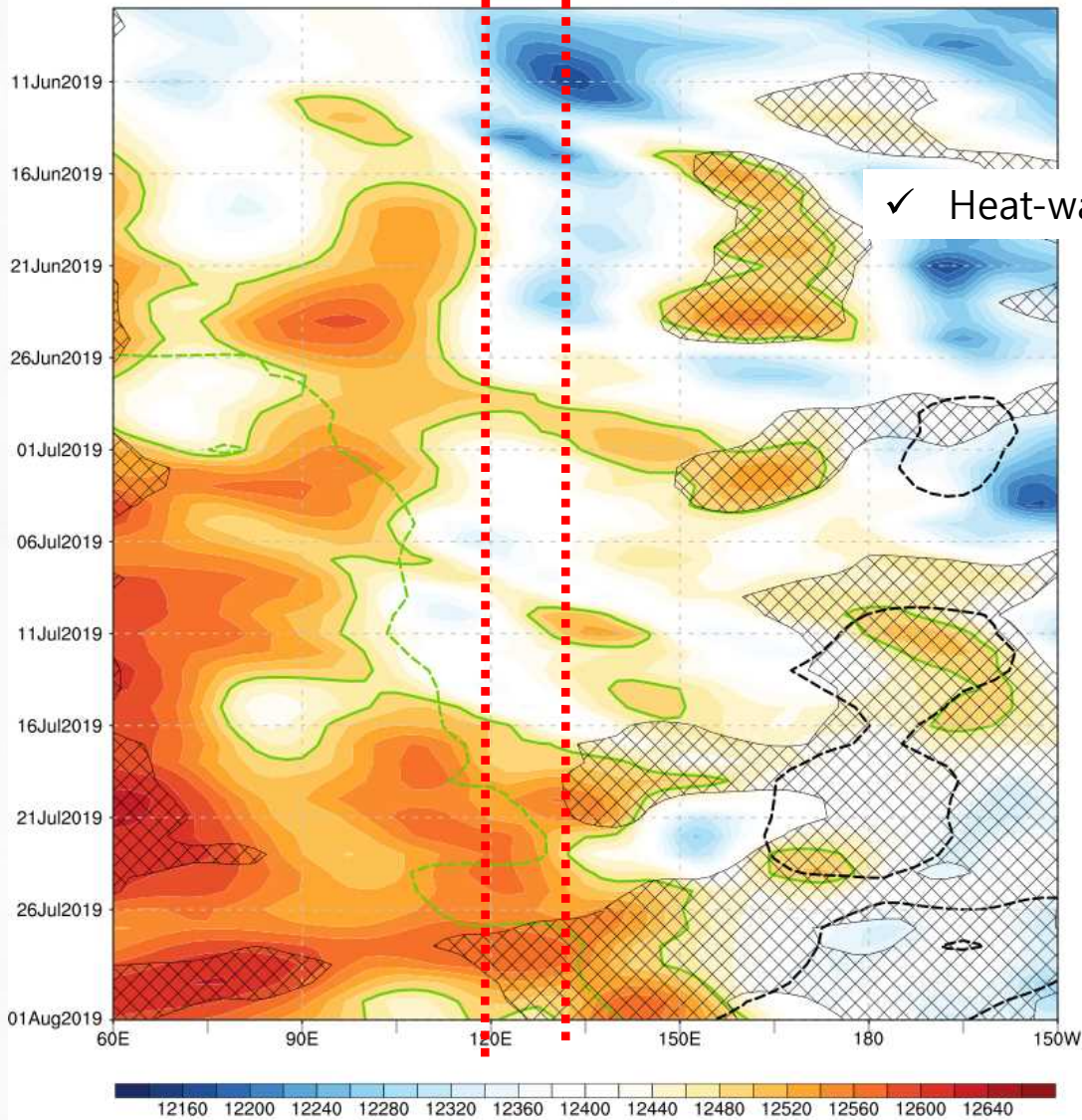
500hPa GPH Mean
01Aug2019 ~ 31Aug2019



- ✓ WNPSH by Enhanced Trough
- Not cover Korea generally
- S-W wind along the edge
- ✓ S-E wind impact by Typhoons

Status of Tibetan Highs & WNPH this summer

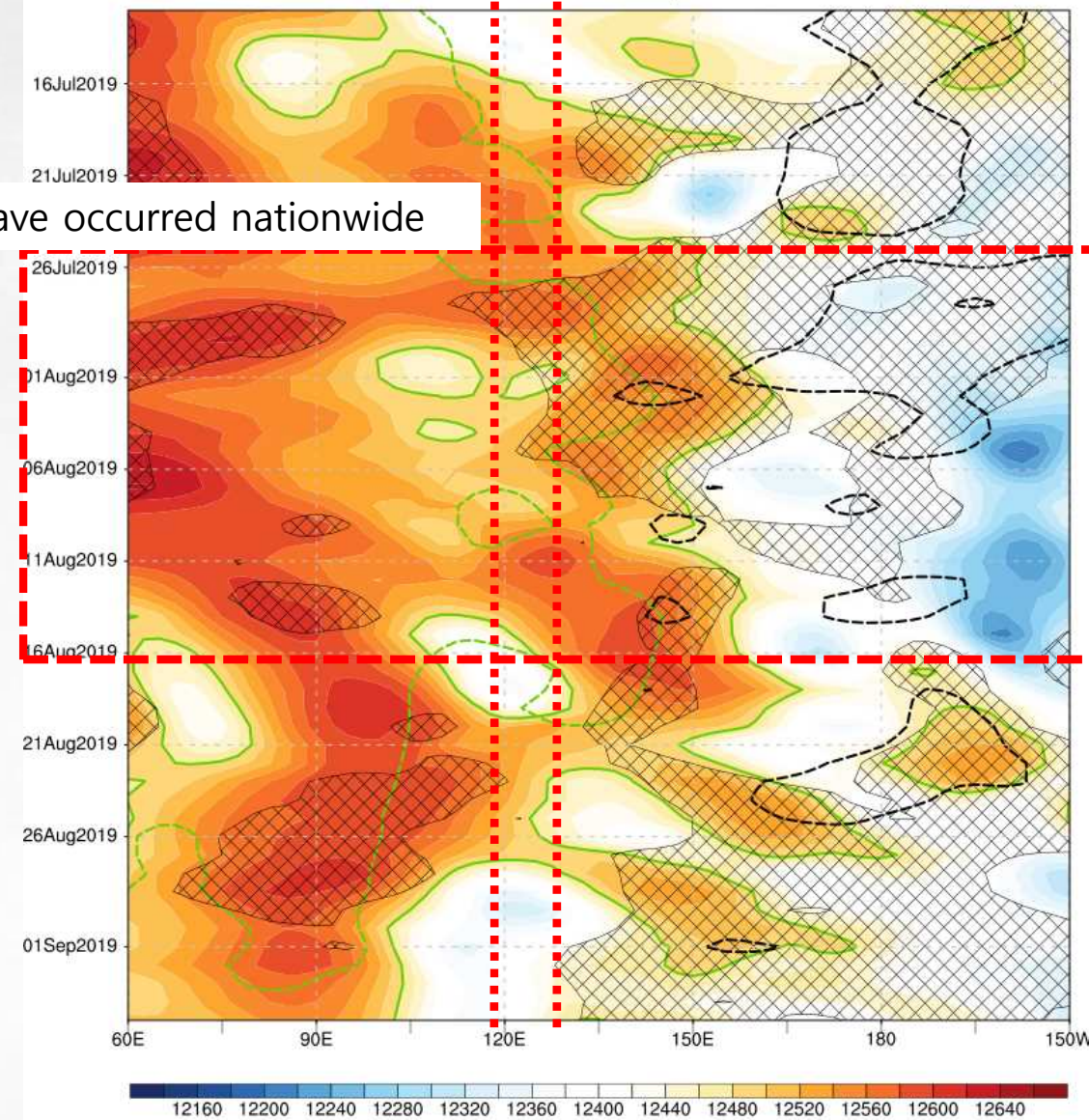
Tibetan High & North Pacific High (25N~40N)
07Jun2019 ~ 01Aug2019



Shading : Tibetan High MEAN(200hPa), Green Line : MEAN 12480gpm, Green Dotted Line : CLIM 12480gpm
Black Line : North Pacific High(500hPa) MEAN 5880gpm, Black Dotted Line : CLIM 5880gpm
DATA : NCEP, CLIM : NCEP(1981 ~ 2010)
Updated on 20190827



Tibetan High & North Pacific High (25N~40N)
12Jul2019 ~ 05Sep2019

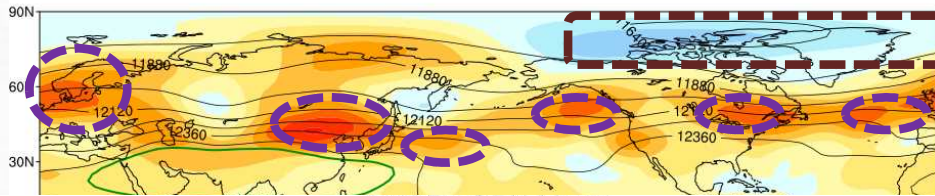


Shading : Tibetan High MEAN(200hPa), Green Line : MEAN 12480gpm, Green Dotted Line : CLIM 12480gpm
Black Line : North Pacific High(500hPa) MEAN 5880gpm, Black Dotted Line : CLIM 5880gpm
DATA : NCEP, CLIM : NCEP(1981 ~ 2010)
Updated on 20190908

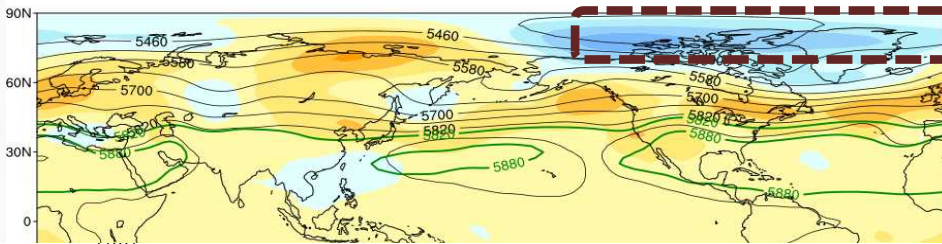


Comparison between 2018 and 2019

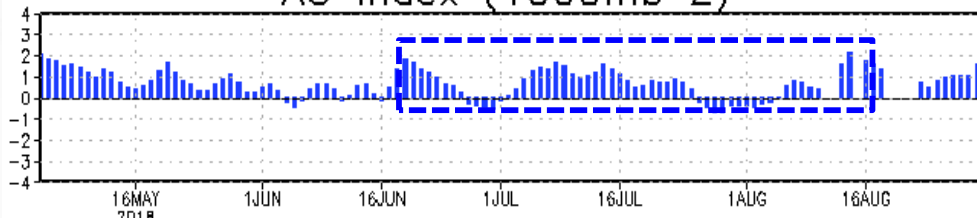
200hPa GPH Mean
01Jun2018 ~ 31Aug2018



500hPa GPH Mean
01Jun2018 ~ 31Aug2018



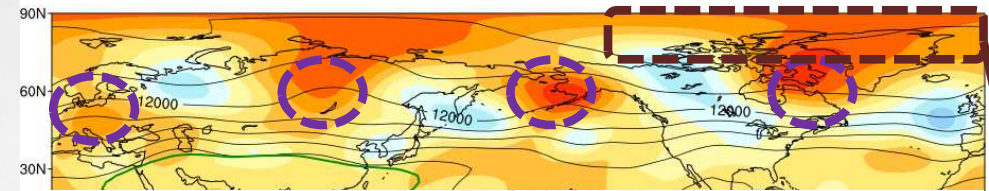
AO index (1000mb Z)



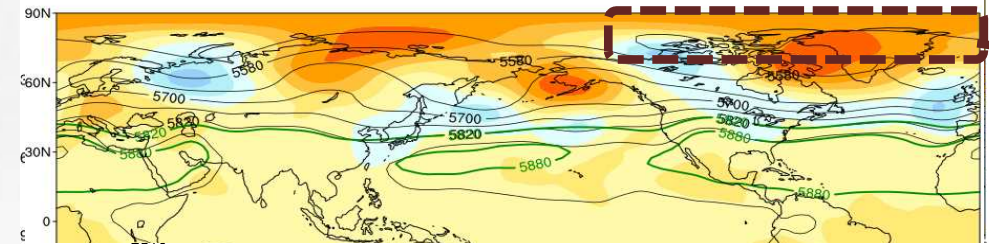
Shading : GPH MEAN - CLIM, Contour : GPH MEAN, Green Line : CLIM
DATA : NCEP, CLIM : NCEP(1981 ~ 2010)
Updated on 20190215



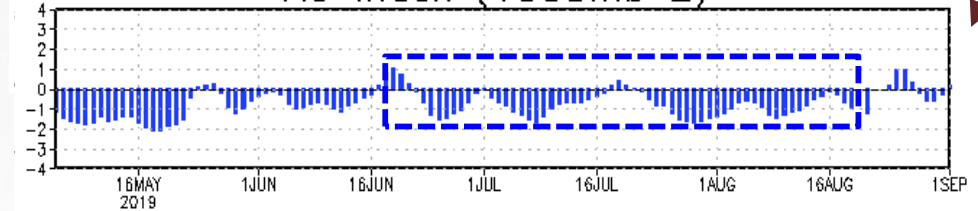
200hPa GPH Mean
01Jun2019 ~ 31Aug2019



500hPa GPH Mean
01Jun2019 ~ 31Aug2019



AO index (1000mb Z)



Shading : GPH MEAN - CLIM, Contour : GPH MEAN, Green Line : CLIM
DATA : NCEP, CLIM : NCEP(1981 ~ 2010)
Updated on 20190903



Summer in 2018

CGT-like High anomaly attributes

Dual impact of Tibetan(12480 gph) & WNSPH(5880 gph)

Mostly (+)AO

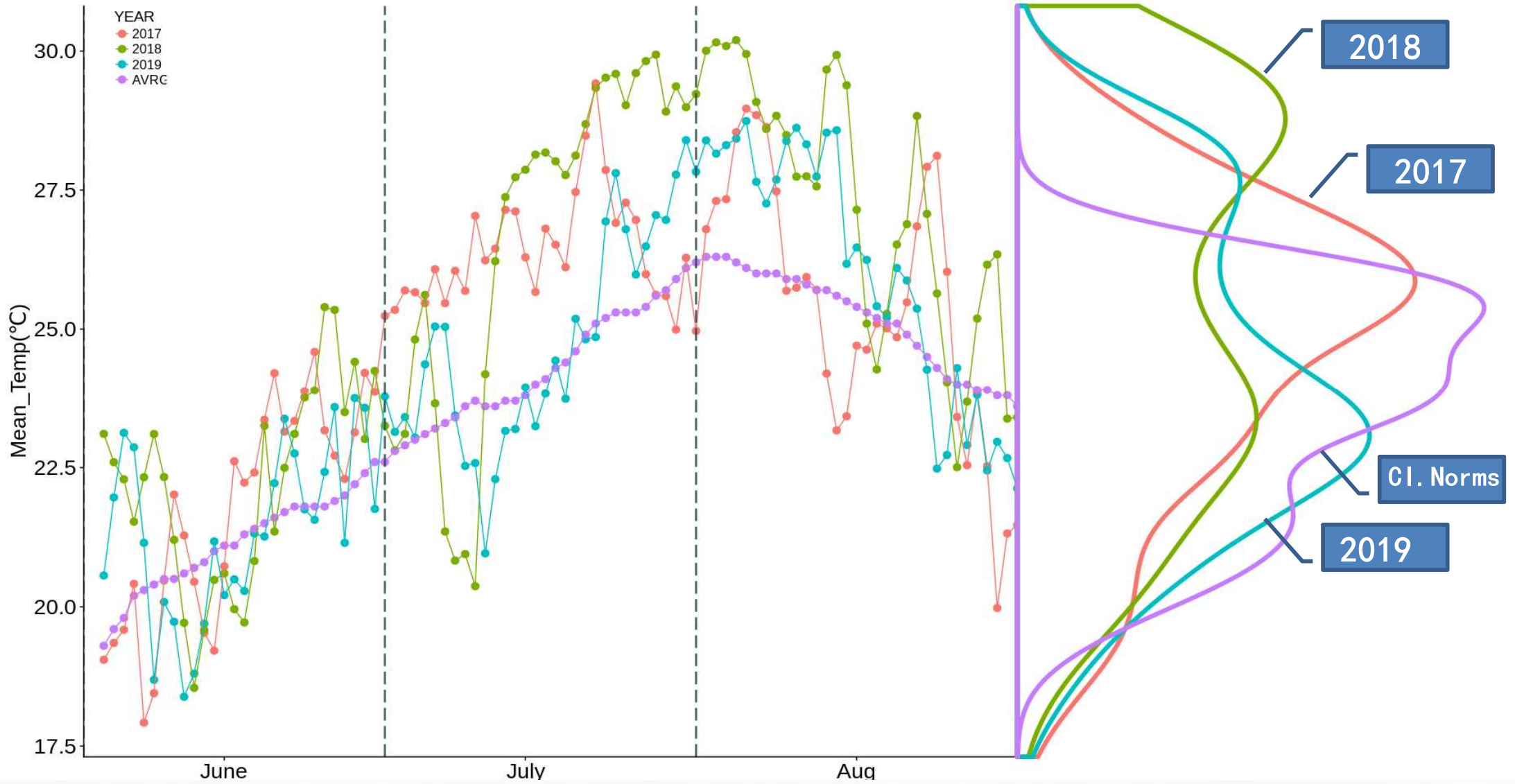
Summer in 2019

Wave shaped Highs and Lows pattern

Not strong WNSPH

Continuous (-)AO

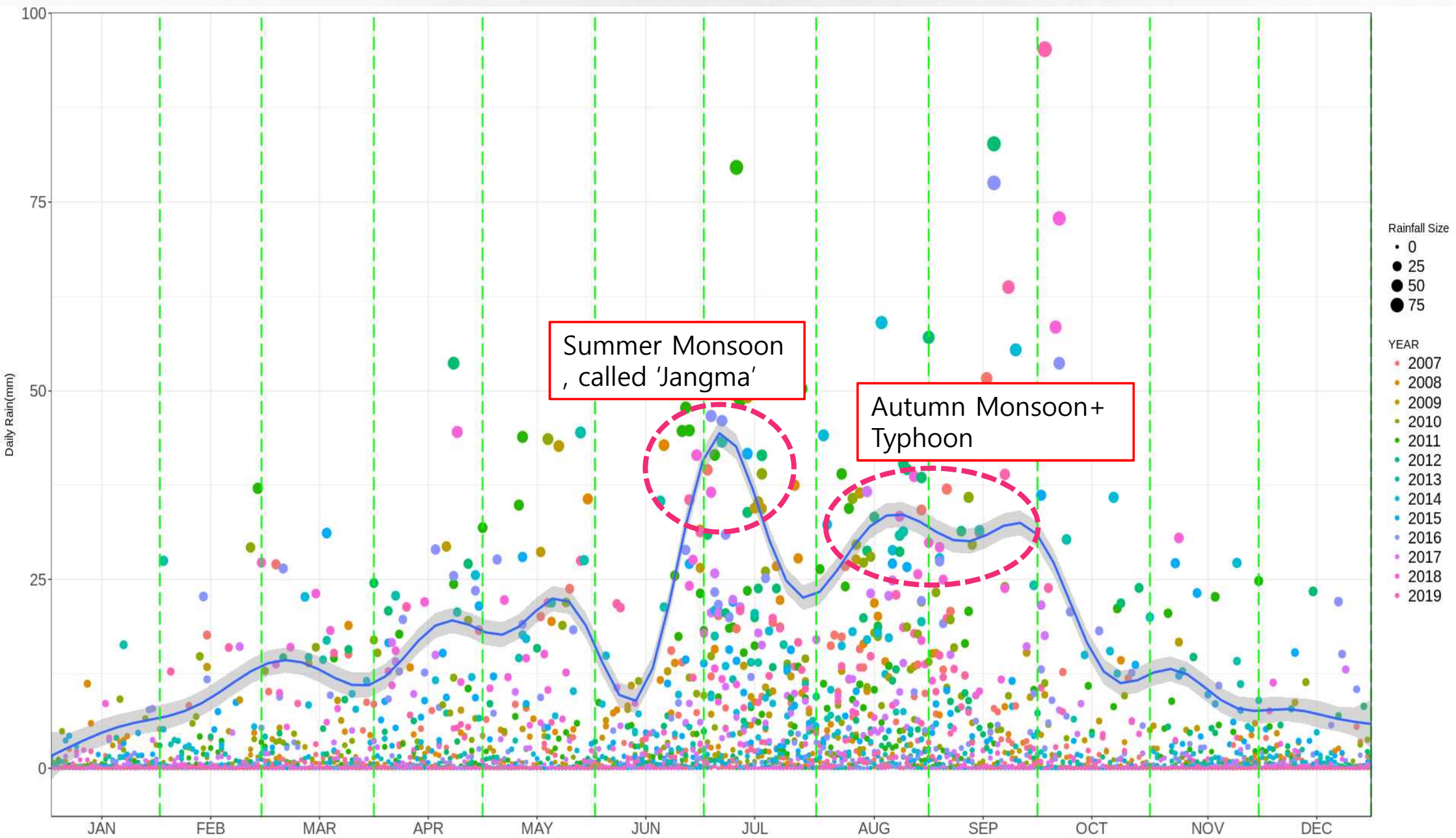
Comparison among 2017, 2018 and 2019





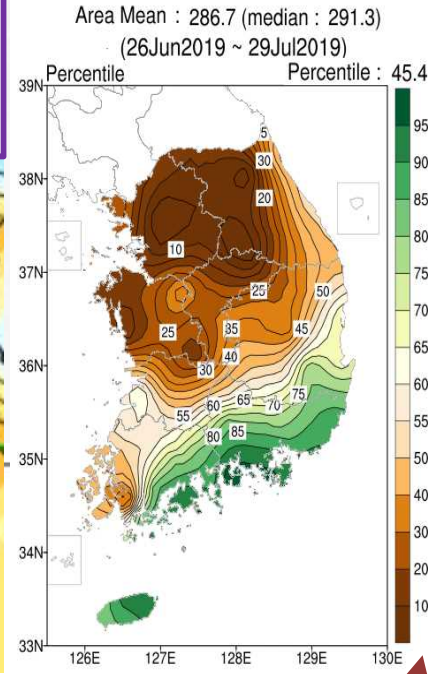
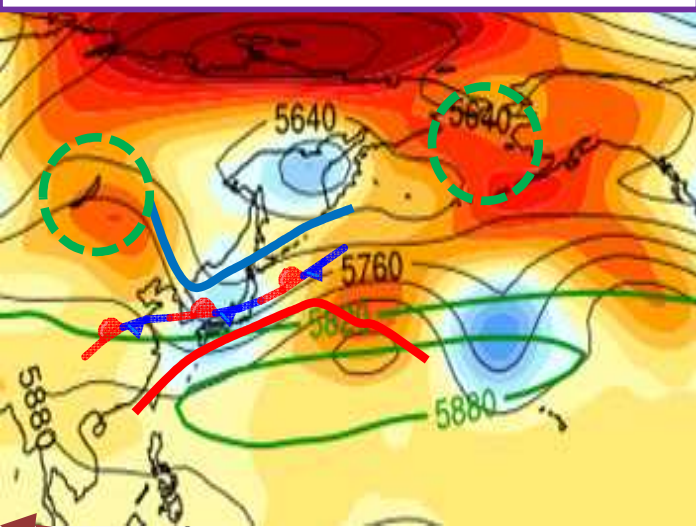
Main Feature of Precip. this summer

Climatological Precip. Feature in the Korea Peninsula

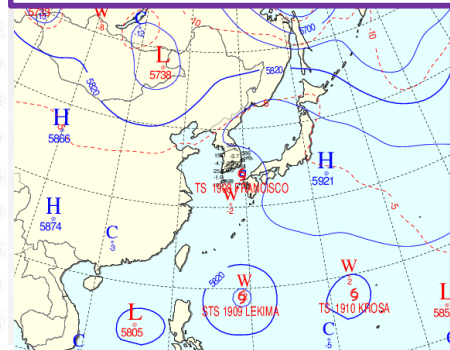


Two kinds of monsoon, Four Impact Typhoons

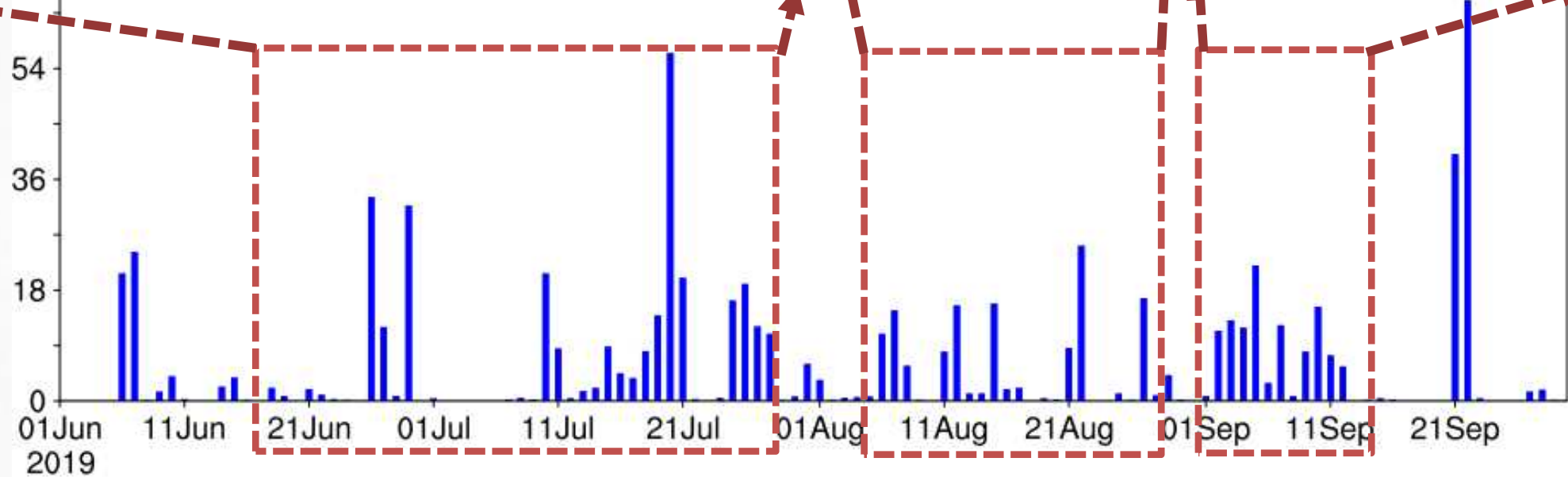
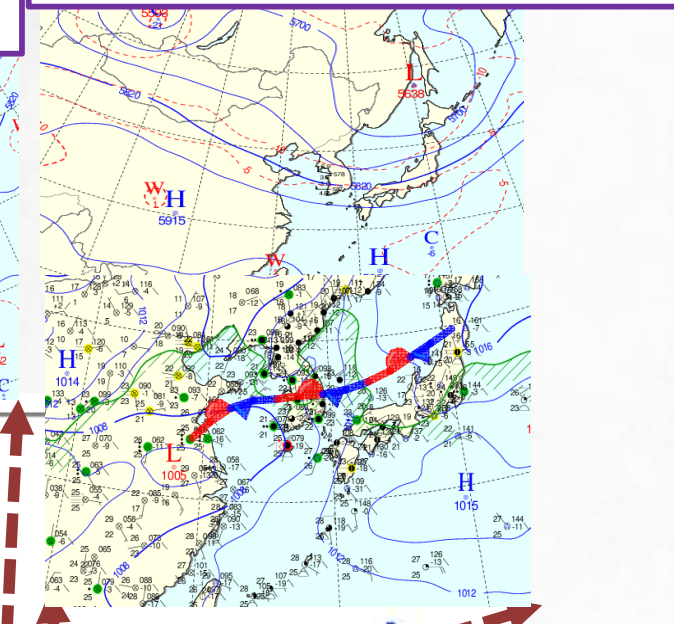
Enhanced Trough Between Baykal & Bering Sea ridges
 → The 1st monsoon's retarding northing



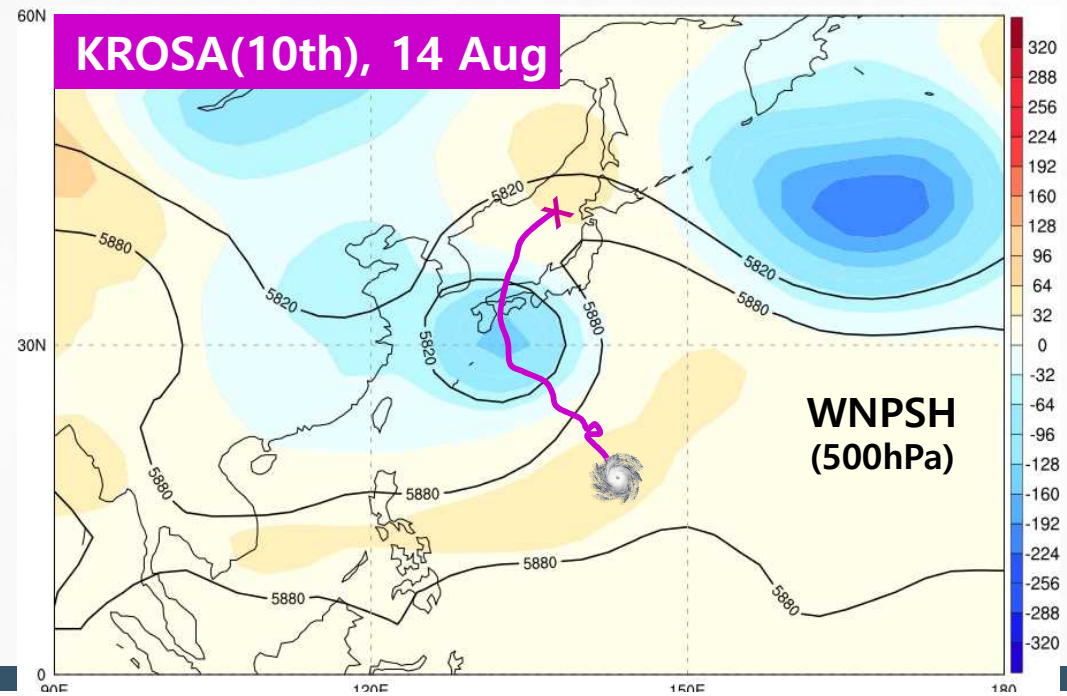
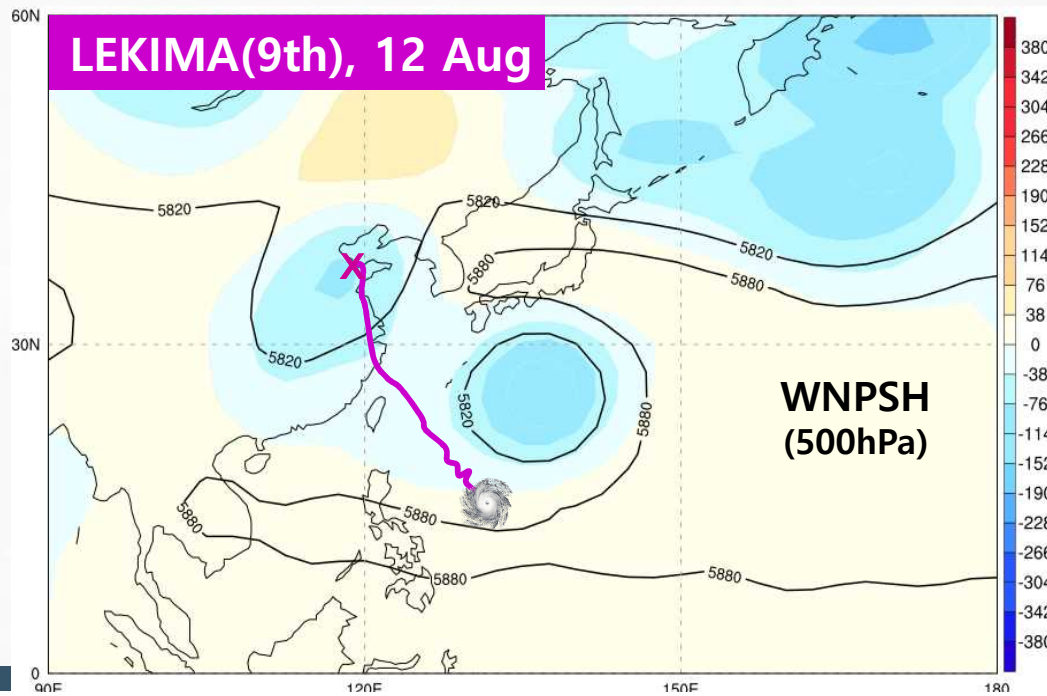
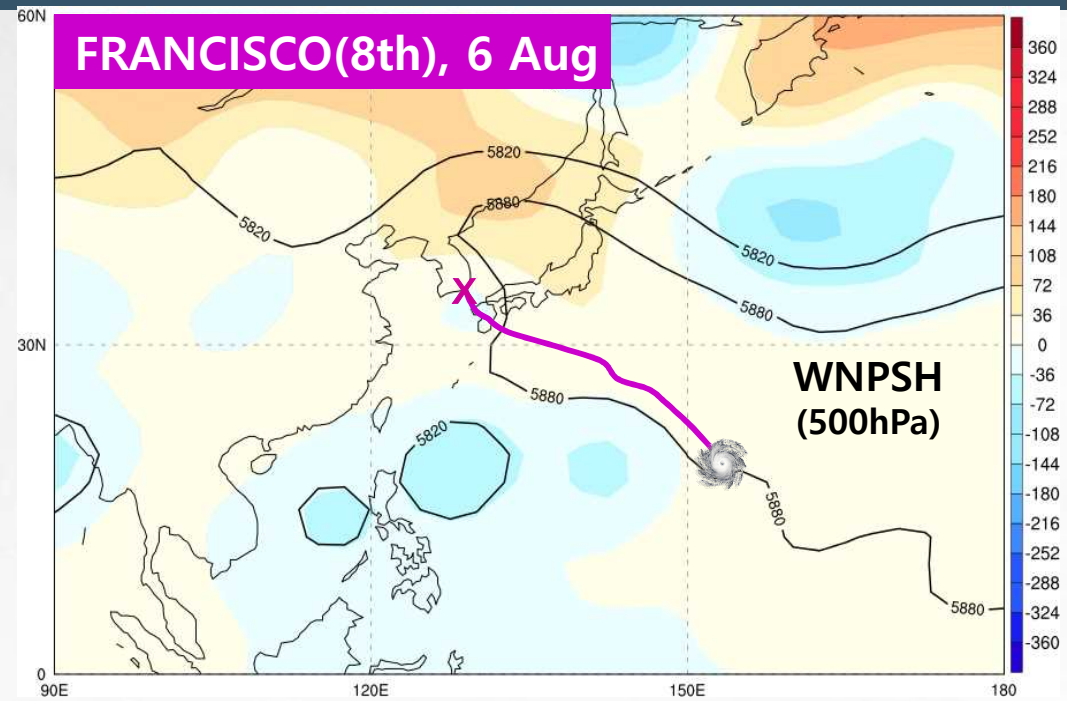
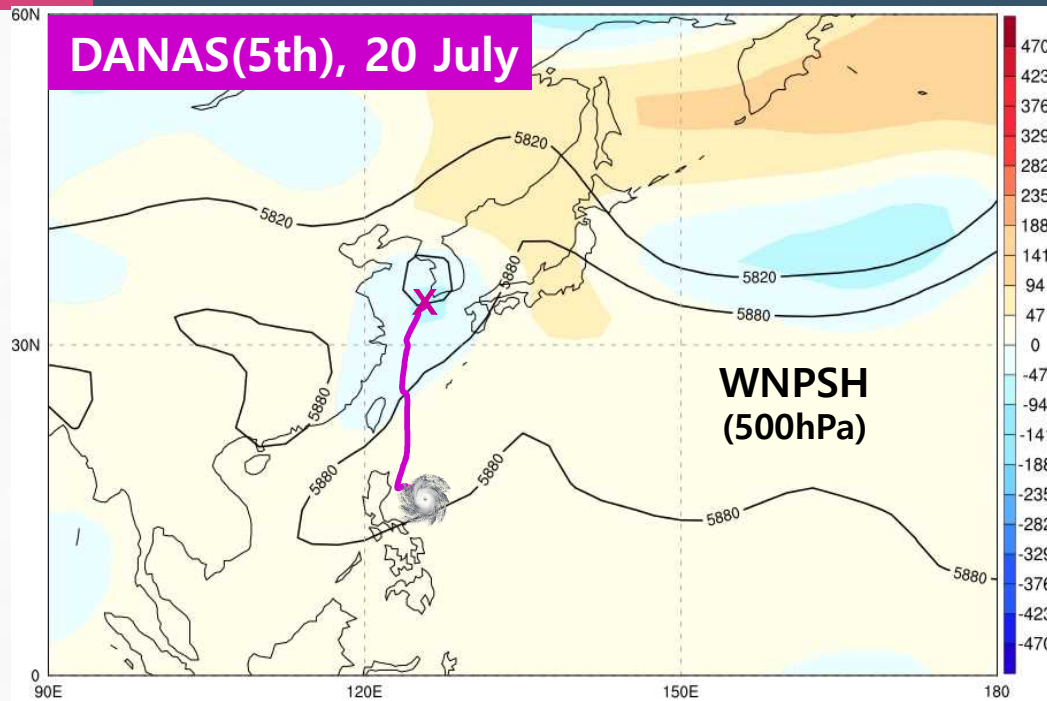
Impact of Typhoons on the Kor. peninsula



The 2nd monsoon (stationary front)

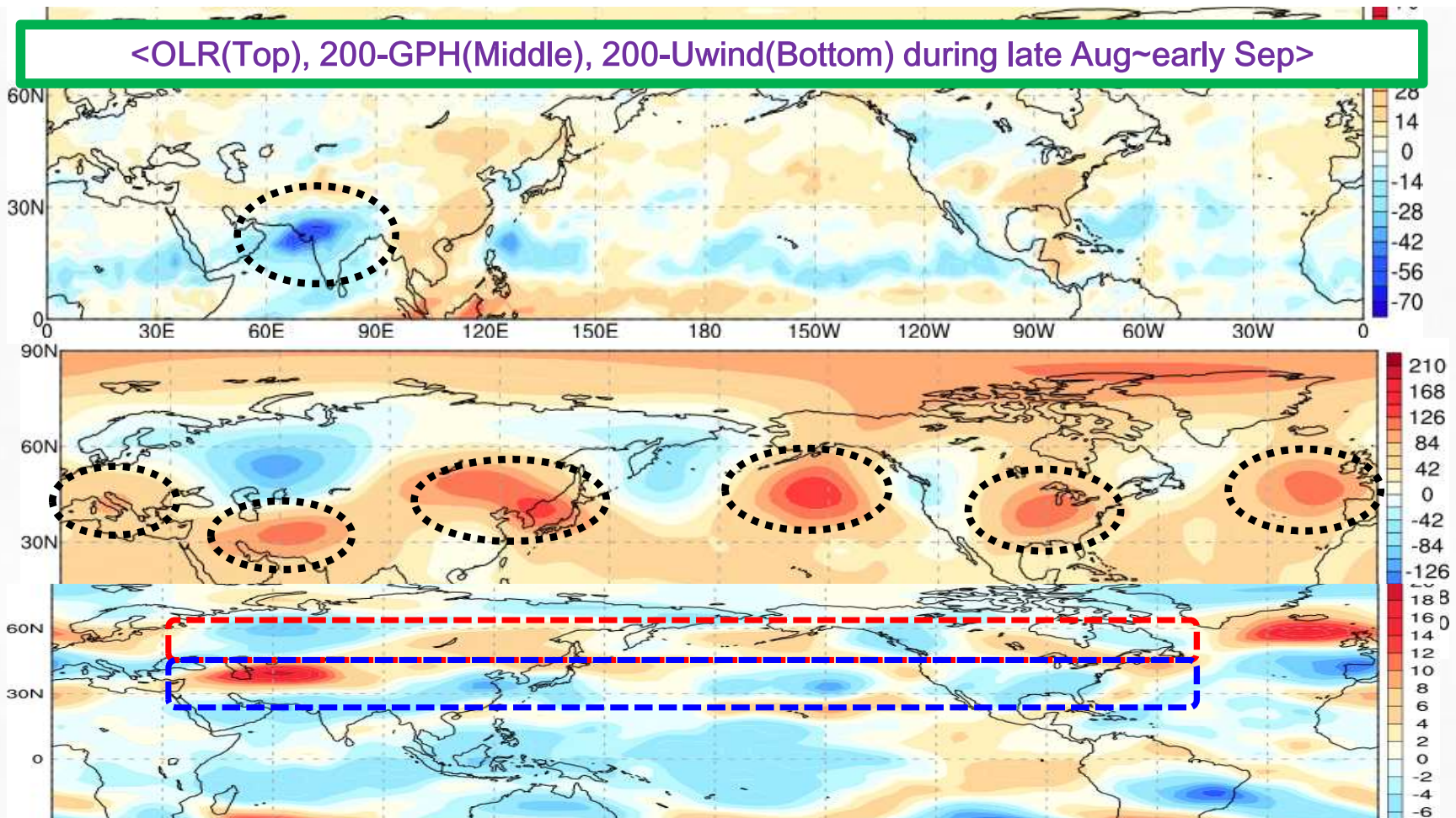


Impact Typhoon during this summer



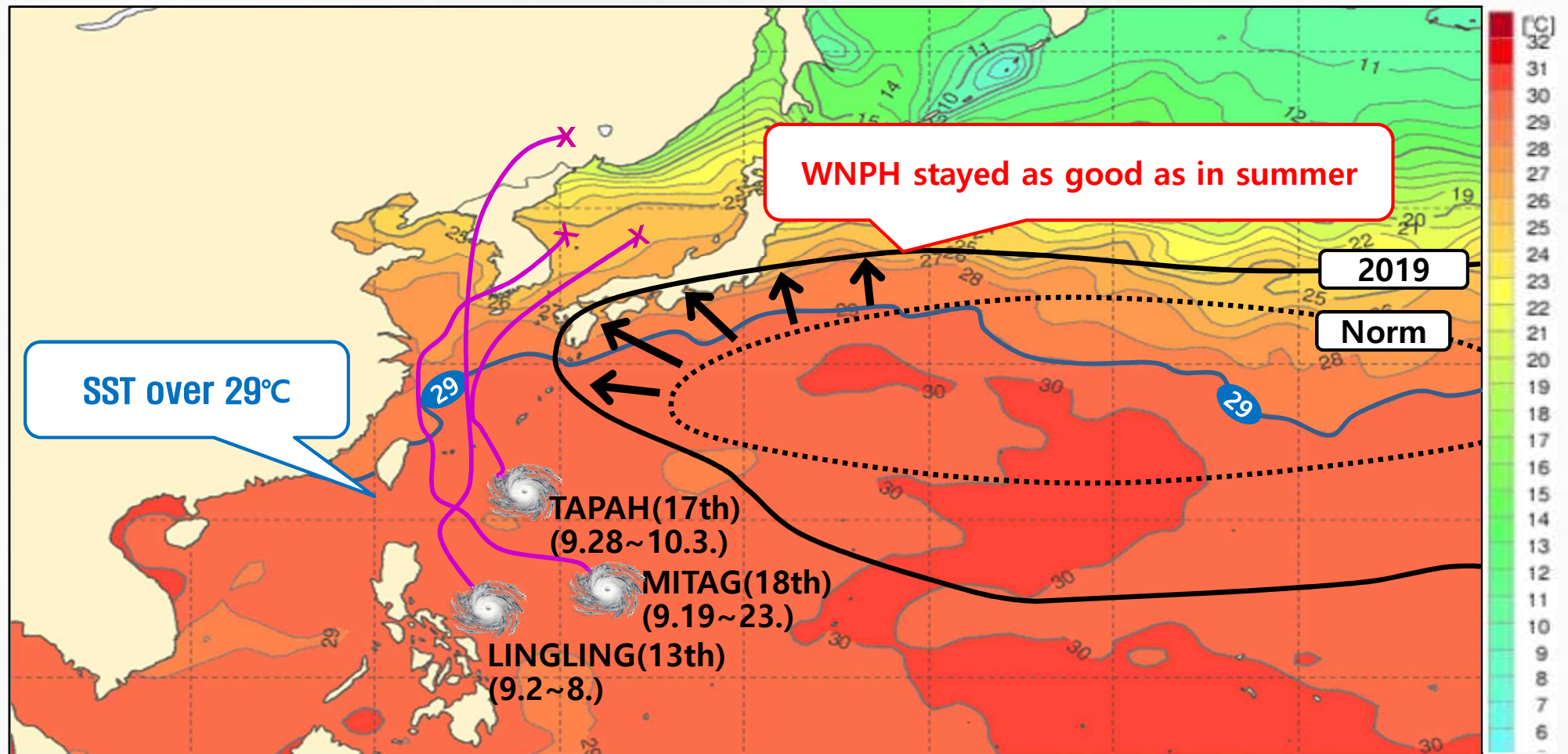
September : Extended Summer

- CGT-like pattern occurred by forcing divergence in India
- geographically phase-locked patterns appears zonally, associated with weak westerly Jet(12km above)
- **Barotropic Highs(WNPSH) remains in the near South-East Sea of Korea**

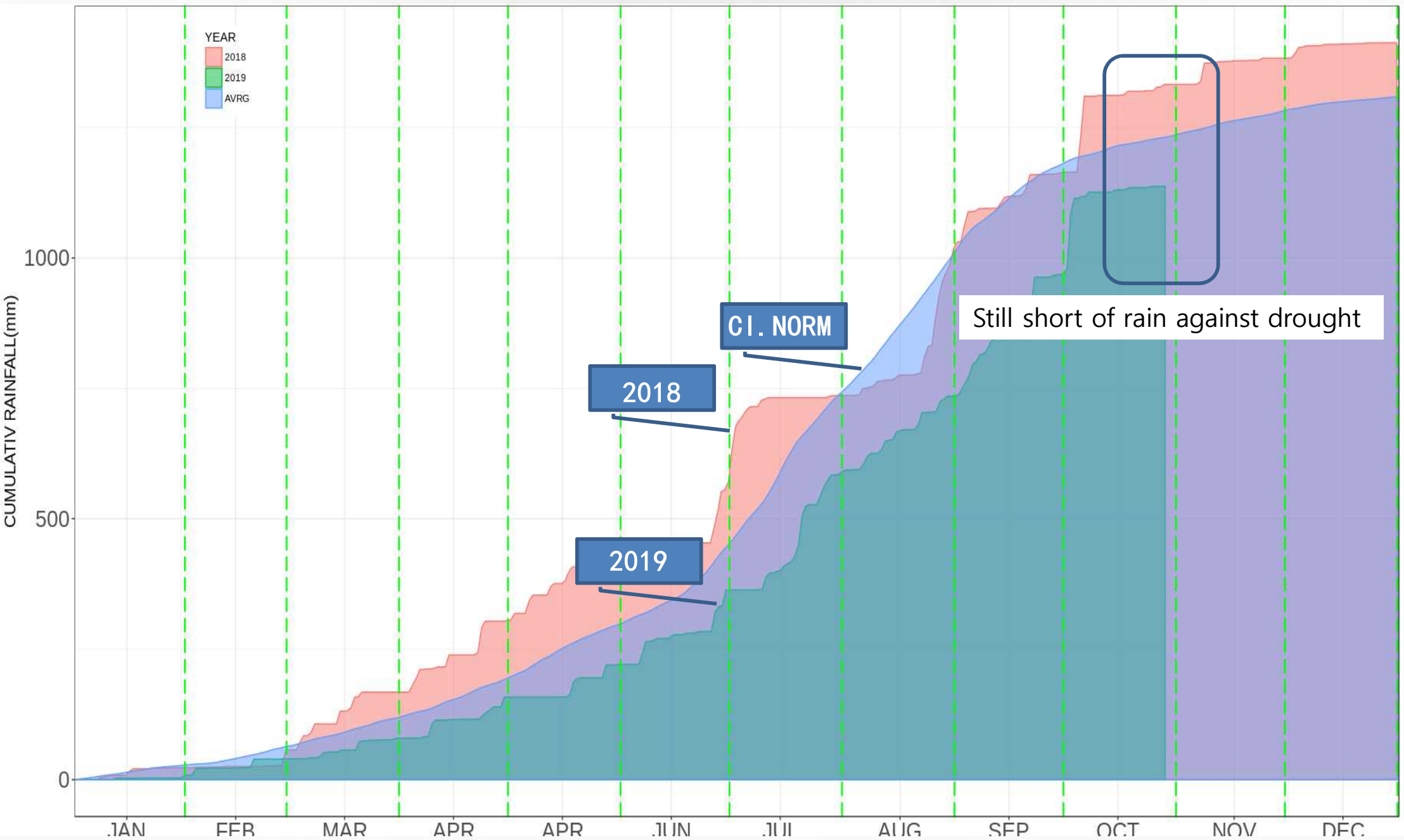


Impact Typhoons Increase Unprecedentedly

- High SST, **over 29°C**, remains in the south.
- **Not Declining WNPSH** paved the way on which Typhoon affected Korea.



Cumulative Rainfall, up to now



E N D