MCSs in the Middle Reaches of the Yangtze River Basin: Features, Circulation Regimes and Pre-convective Environments

Yanan Fu [a], Jianhua Sun [a], Shenming Fu [a], Yuanchun Zhang [a], Zheng Ma [b]

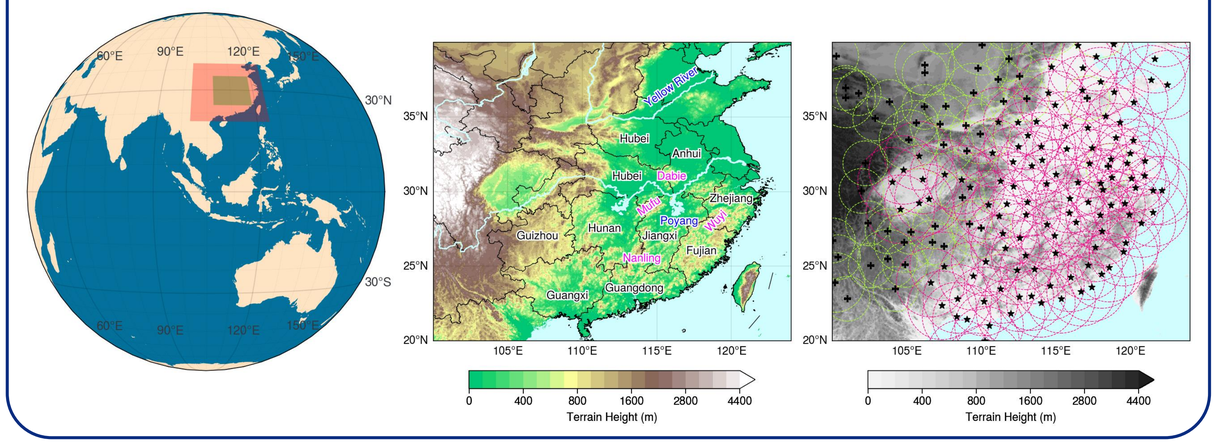
[a] Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China
[b] Institute for Meteorological Satellite Studies, University of Wisconsin-Madison, Madison, WI, USA

MOTIVATION

Motivation

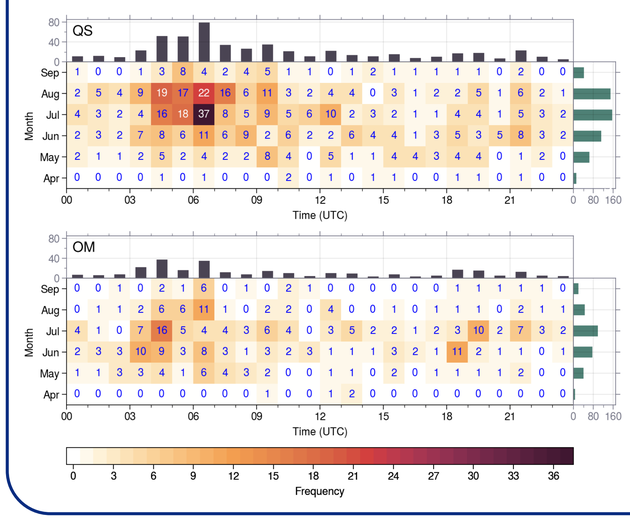
- Mesoscale convective systems (MCSs) are considered to be a vital component of the climate system and determine a large proportion of the water and energy budgets on Earth. In China, MCSs are known occur to frequently over the middle reaches of the Yangtze River basin, causing high rainfall accumulation and posing a great threat to life and property in this region.
- Accurate forecasting of MCSs over the middle reaches of the Yangtze River basin is particularly challenging, as the convection initiation and subsequent organization into MCSs over this region is strongly influenced by the complex underlying surfaces. Improved forecasting requires a better understanding of the circulation regimes and pre-convective environments favorable to MCS, as well as the precipitation distribution underneath the cold cloud shields.

Focusing Area

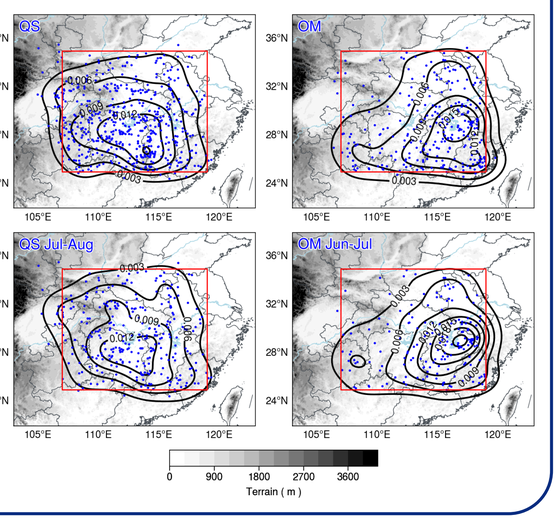


MCS INITIATION

Seasonal Variation & Diurnal Cycle



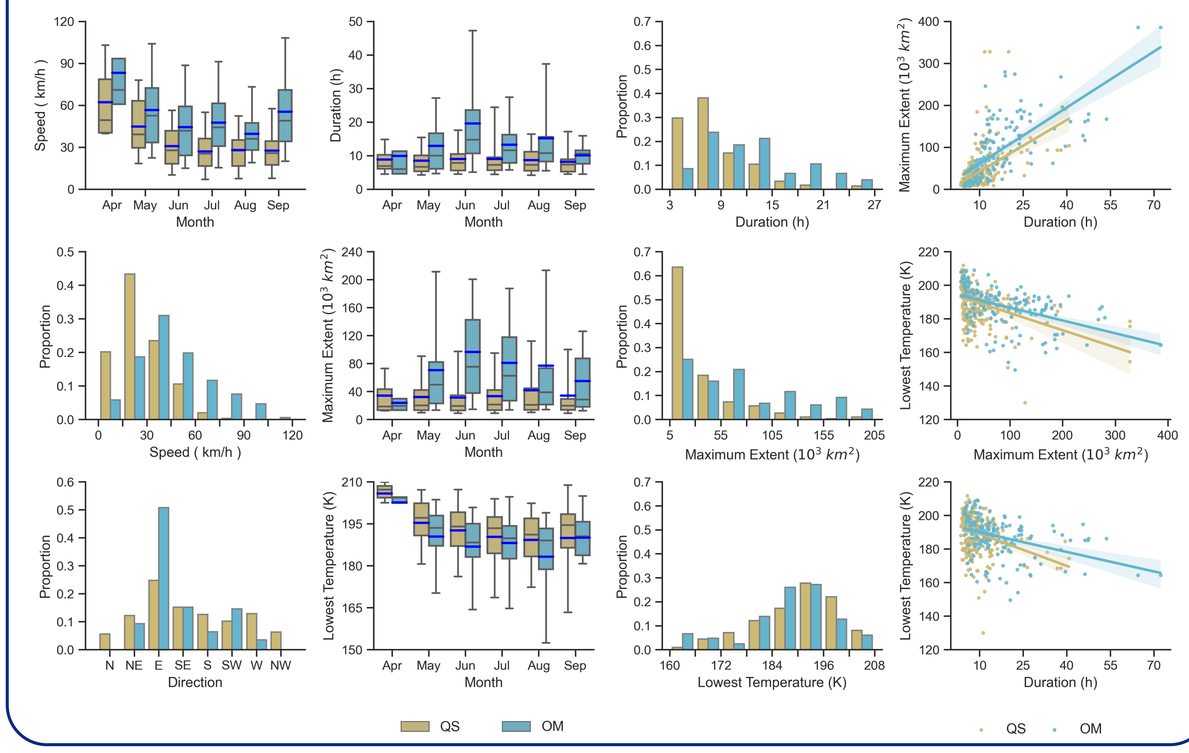
Geographical Distribution



MOVEMENT & FEATURES

Movement

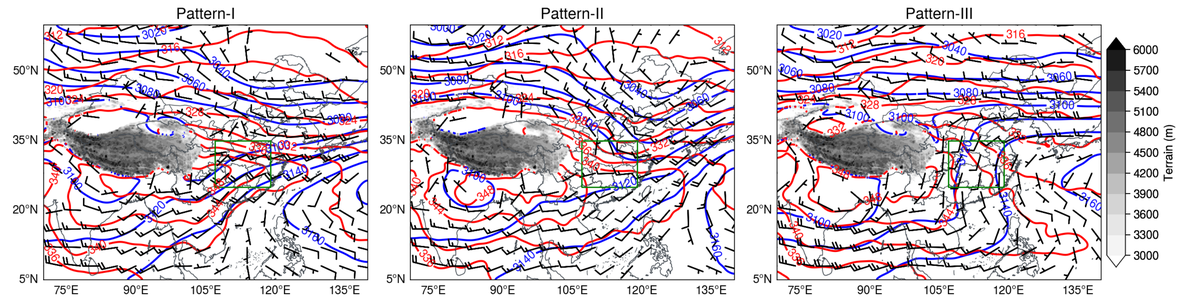
Duration, Max Extent & Lowest Temperature



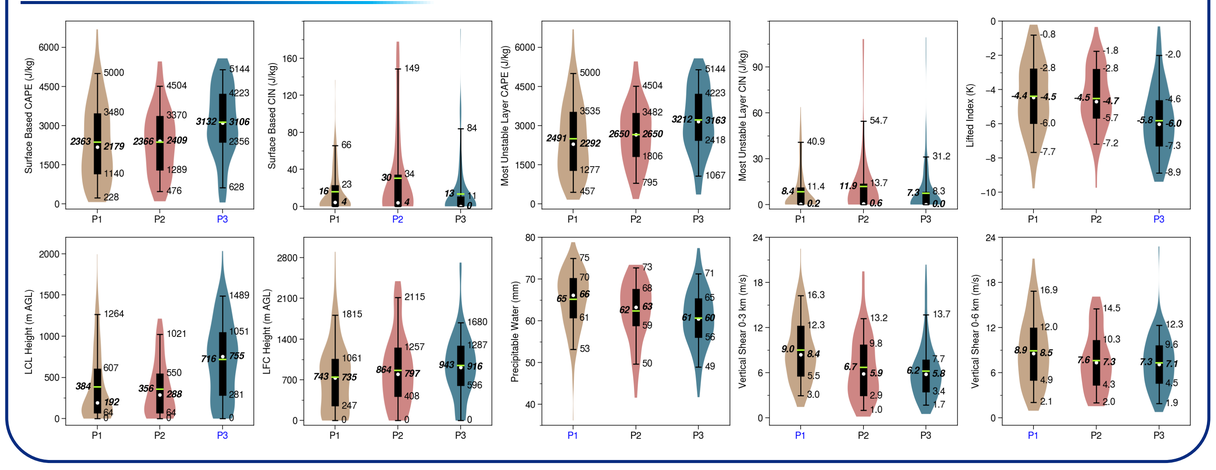
fuyanan@mail.iap.ac.cn
sjh@mail.iap.ac.cn

CIRCULATION REGIMES

Circulation Regimes



Pre-convective Environments



PRECIPITATION DISTRIBUTION

CCS Frequency

CG Flash Distribution

Stratiform Precip Distribution

Convective Precip Distribution