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Contrasting Spring and Summer Large-Scale Environments Associated with Mesoscale Convective Systems over the U.S. Great Plains

Abstract

SOM(self-organizing map) analysis with input observational data shows four types of synoptically favorable environments for spring MCSs and two types each of synoptically favorable and unfavorable environments for summer MCSs.In spring,frontal system and Great Plain low-level jet(GPLLJ) are the important features to creat favorable environment,they provide lifting mechanism and anomalous moisture.In summer two types of favorable environments still caused by frontal system and low-level jet(GPLLJ) and the two synoptically unfavorable environments feature enhanced upper-level ridges.

Some MCSs features shows that frontal MCSs has longer mature time in spring,and MCSs in favorable environment also has longer mature time than unfavorable environments in Summer.In both seasons, MCS precipitation amount, area, and rate are much larger in the frontal-related MCSs than in nonfrontal MCSs.

Keyword

SOM analysis

Reference.

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