

Interactive comment on “Recent climate change affecting rainstorm occurrences? A case study in East China” by M. Domroes and D. Schaefer

Anonymous Referee #3

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General comments: Climate change should be considered at least 30 years. It is better to use longer time data period, i.e. 50 years, and extend to the whole summer monsoon season from April to August. May be it is possible to do an analysis on the strength and location of the climate subtropical high system.

specific comments:

"Rainstorm analyses were done for the annual and summer occurrences of rainstorms. No other season needed to be examined as summer (June; July; August, JJA) represents the predominant rainy season (Domroes and Peng, 1988). "

I understand the main summer monsoon precipitation occurs in JJA, but it is better to study the whole monsoon season (from April to August). In Southern China, especially

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in the region near the South China Sea, the monsoon precipitation starts early, about 30% of annual precipitation in April and May.

Discussion part

P295: Evidently a remarkable decrease of the annual total and summer total of precipitation can be seen from south to north over China (east of 105 E longitude) and accordingly also the length of the wet season decreases; synchronously, also the occurrences of rainstorms and their recent trend decrease.

This is not accurate. The warmer sea surface temperature and a cool continent may lead to a weaker summer monsoon and less monsoon precipitation in whole monsoon region but spatially in a very different trend. The weak summer monsoon makes the rain belt keeps staying a longer time in the subtropical region where we can see the increase rainstorm trend in this paper. The southern China wet season could be increase.

Page 295-296: "Within the climate change scenario it is also argued that the occurrences of rain-storms would increase as a consequence of global warming. Such possible relationship seems, at the present state of knowledge, difficult to be proved by the present study"

It is better to check if the warmer SST and cooling continent contrast leads to a weak summer monsoon and less precipitation in the whole monsoon region. The weak monsoon could directly lead to the drought trend for Northern China; and monsoon precipitation belt stays in the Eastern China longer and leads to a flooding trend.

China summer monsoon precipitation occurs associated with the location and strength of the subtropical high system, precipitation and rain storms occur near the north side of the high pressure system where southwest monsoon with moist convergence there. Warmer SST could strengthen the Hadley circulation and therefore make the subtropical high stronger. A stronger high system control the southern China, rain belt may

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stay a longer time near the Yangtze River where it brings more precipitation there, while because the high system controls the southern China, it leads to the drought trend in the region between 25N and 28N in Fig.8.

Interactive comment on Clim. Past Discuss., 4, 289, 2008.

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4, S87–S89, 2008

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