Geophysical Research Abstracts
Vol. 17, EGU2015-14014-1, 2015
EGU General Assembly 2015

Changes in Precipitation Amount, Frequency and Persistency and their Impacts on Eco-system in Northern China

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In northern China, one day and short duration precipitation (less than 5 days)events account for more than 95% of total precipitation days. Increase or decrease trend in number of precipitation days mainly attributes to the change in one day events and short duration events. At the same time, durations of the longest consecutive dry days plays a very important impact on eco-system since change in that precipitation extreme index strongly relates to the change in drought persistency.

During the past 50 years, northern China has experienced dramatic warming at a rate much greater than that in the lower latitude regions. Further, precipitation total has increased in Northwest China, especially in northern Xinjiang, but has reduced in most parts of Northeast China. Under such climate change background, precipitation frequency and persistency also have changed with more frequent precipitation events in northern Xinjiang but less frequent precipitation in NE China. Meanwhile, number of dry days and the longest duration of dry days have increased in NE China but reduced in northern Xinjiang. Such types of precipitation structural changes are found to be related to the vegetation coverage, forest fire potential or even occurrence of dust storms in northern China. The increase frequency and amount in precipitation plus the warmer climate condition seem to be beneficial for vegetation coverage recovery, while decrease in precipitation amount and frequency as well as the prolonged dry days are likely related to the increase risk of forest fire danger in NE China.

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