

Studies on arid meteorology in Northwest China

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Introduction

Institute of Arid Meteorology (IAM), China Meteorological Administration (CMA), is one of the national specialized research institutes in studying basic meteorological system and serving for the public, with primary focuses on aridity monitoring, prediction and warning, proper utilization of water resources, sand-dust storm research and prediction and so on. In this presentation, some key research activities conducted by IAM in studying arid meteorology and its potential applications for hydrometeorology will be discussed.

Studies on arid meteorology monitoring and relevant fields

- 1 Drought monitoring in arid and semi-arid regions:
 - (1) Based on the Palmer Drought Severity Model of America, some modifications such as the calculation of potential evapotranspiration have been made in order to for better arid monitoring in northwest China. Figure 1 is an example of results from April 2005.

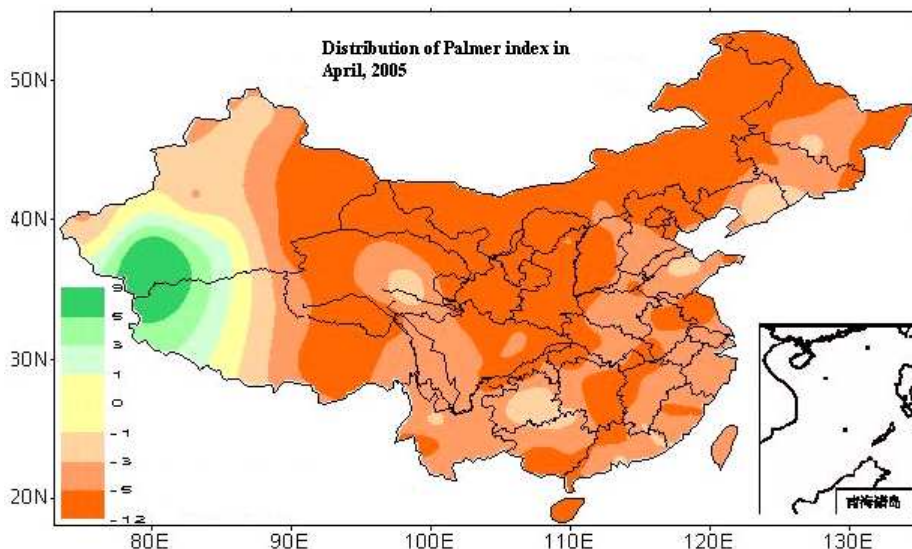


Fig. 1 Distribution of Palmer index in China in April, 2005.

- (2) A drought index based on runoff monitoring has been established in typical irrigation agriculture regions in China such as Hexi Corridor.
- (3) A system has been developed to collect a large amount of information such as Palmer drought index and runoff index, precipitation anomaly, NDVI and soil moisture condition. Results are then further analyzed and published every ten days in an arid

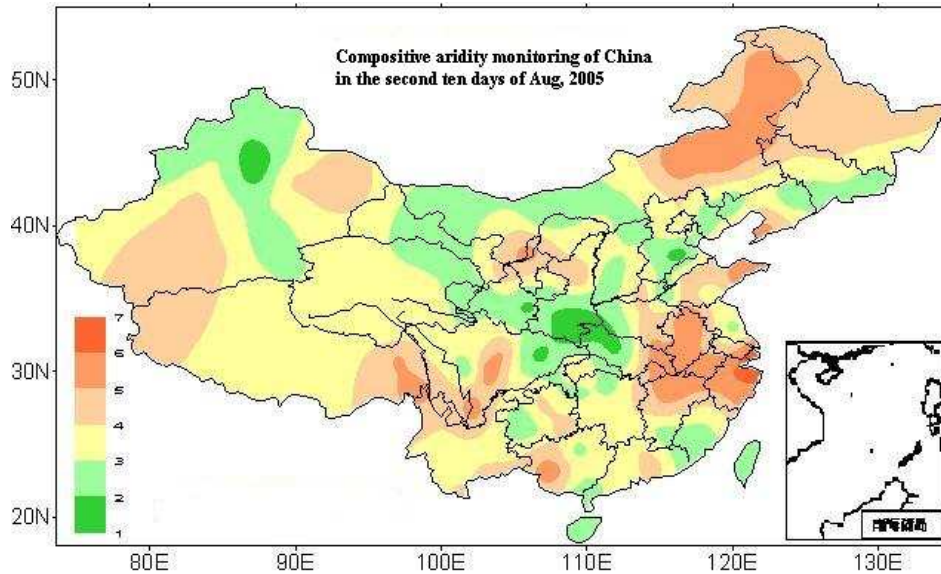


Fig. 2 Composive aridity monitoring of China in the second ten days of Aug, 2005 (1 extreme wet, 4 normal and 7 extreme dry).

- 1 A statistical prediction system of runoff of upriver Yellow River and inland river in Hexi Corridor are being developed for potentially predicting runoff at monthly, seasonal and even annual time scales.
- 1 Monitoring vegetation coverage, reservoir area, snow cover by means of satellite remote sensing data.
- 1 A sand-dust storm monitoring operational system has been built in IAM by using remote sensing data (*Han T, Li Yaohui et al, 2005*).
- 1 Some studies for the retrieval of land-surface parameters from EOS/MODIS data have been conducted. Such information is to be used in regional climate modeling for arid and semi-arid environment simulations and predictions in northwest China.
 - (1) Land cover classification/landuse in northwest China with MODIS imagery (*Han T, Li Yaohui et al, 2005*).
 - (2) NDVI and surface albedo in arid region in Northwest China.
 - (3) Collaborations with Australia BMRC on studying the impacts of land-use in China on local and regional climate have been established.

References

- Han T, Li Yaohui, Han Hui, Zhang Yongzhong and Wang Yujie, 2005. Automatic detection of dust storm in the northwest China using decision tree classifier based on MODIS visible bands data. *2005 IGARSS Proceedings*.
- Han T, Li Yaohui, Han Hui, Zhang Yongzhong and Wang Yujie, 2005. Land cover classification in western Loess Plateau of China with MODIS imagery. *2005 IGARSS Proceedings*.