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云南2009年秋季特大旱灾大气环流特征分析

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Title: Characteristic analysis of atmospheric circulation for extreme heavy drought in Yunnan Province in autumn of 2009

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摘要: 利用云南省30个气象站的逐月降水资料以及1961-2009年NCEP/NCAR月平均资料,分析了云南2009年秋季特大旱灾时降水变化特征以及同期的环流特征。从水汽输送特征、西风带异常以及副热带高压等3个方面分析了环流特征。分析结果表明:2009年秋季云南降水是减少的;同期来自孟加拉湾地区、南海地区暖湿水汽减弱,来自内蒙古地区南下的冷空气与由孟加拉湾、中南半岛北部北上暖空气相互作用减弱;云南2009年9-11月份辐合上升水汽输送通量减弱,净获得水汽减少;2009年9-10月份西风带纬向环流增强,而11月经向环流较强,但内蒙古西部、宁夏、四川等地区700~500hPa经向风场减弱;2009年9和10月份副高偏西偏强,云南在副高控制下,辐合上升水汽减少;11月份副高西伸至孟加拉湾地区,偏南风只存在于北纬17.5°以北的孟加拉湾地区,这削弱了孟加拉湾地区向我国西南地区输送的水汽量。综合上述分析,笔者认为水汽通量异常、西风环流异常、西太平洋副热带高压偏西偏强是影响云南2009年秋季降水的重要因素。

Abstract: Based on monthly precipitation data of the 30 stations in Province Yunnan and the NCEP/NCAR reanalysis data from 1961 to 2009, the rainfall anomaly and the atmospheric circulation features in

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autumn 2009 were analyzed. The atmospheric circulation features were analyzed with water vapor flux features, Westerly wind anomalies and subtropical high. The results show that the rainfall in Yunnan Province is reduced in autumn 2009. At the same period, warm moisture flux from the Bay of Bengal region and the South China Sea decreased. The interaction between cold moisture flux from Inner Mongolia and warm moisture flux from the Bay of Bengal and North Indochina was weakened. Autumn moisture convergence reduced in Yunnan Province in 2009. Zonal westerly circulation enhanced in September and October in 2009, and in November, meridional westerly circulation become stronger, but the 700-500hPa meridional wind vector over the western Inner Mongolia, Ningxia, Sichuan weakened. The west Pacific subtropical high became stronger and moved west in September and October 2009, Yunnan was under the control of the west Pacific subtropical high, this made water vapor convergence reduced; in November 2009, the west Pacific subtropical high stretched toward the Bay of Bengal region, southerly wind only exists over the north Bay of Bengal region to the north of 17.5° N, this made Southwest China moisture flux from the Bay of Bengal weakened. Based on the above analysis, authors think water vapor flux anomaly, westerly circulation anomaly and the west Pacific subtropical high being stronger and moving west are important factors affecting the autumn rainfall in Yunnan.

参考文献/REFERENCES

- [1] Bhamle H, Mooley DA. Large-Scale Droughts/Floods and Monsoon Circulation[J]. Monthly Weather Review, 1980, 108: 1197-1211
- [2] Trenberth, Kevin E, Branstator, Grant W, Arkin, Phillip A. Origins of the 1988 North American Drought[J]. Science, 1988, 242: 1640-1645
- [3] Filippo G, Linda O M, Christine S, et al. A regional model study of the importance of local versus remote controls of the 1988 drought and the 1993 flood over the central United States[J]. Journal of Climate, 1996, 9: 1150-1162
- [4] Siegfried D, Schubert, Max J, Suarez, et al. Causes of Long-Term Drought in the U.S. Great Plains[J]. Journal of Climate, 2004, 17: 485-503
- [5] Michelle Hallack-Alegria, David W, Watkins Jr. Annual and warm season drought intensity-duration-frequency analysis for Sonora, Mexico[J]. Journal of Climate, 2007, 20: 1897-1909
- [6] Richard Seager. The Turn of the Century North American Drought: Global Context, Dynamics, and Past Analogs[J]. Journal of Climate, 2007, 20: 5527-5552.
- [7] Ricardo G-H, Daniel P, Ricardo M T, et al. The outstanding 2004/05 drought in the Iberian Peninsula: Associated atmospheric circulation[J]. Journal of Hydrometeorology, 2007, 8: 483-498
- [8] 陶诗言, 徐淑英. 夏季江淮流域持久性旱涝现象的环流特征[J]. 气象学报, 1962, 32(1): 1-101
- [9] 高由禧, 徐淑英. 东亚季风的若干基本问题[M]. 北京: 科学出版社, 1962
- [10] 陶诗言, 朱福康. 夏季亚洲南部100毫巴流型的变化及其与太平洋副热带高压进退的关系[J]. 气象学报, 1964, 34(4): 385-395
- [11] Huang Ronghui, Wu Yifang. The influence of ENSO on the summer climate change in China and its