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近48年来广东春旱的变化(PDF)

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Title: Variation of spring drought in Guangdong Province in recent 48 years

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摘要: 为了更好地做好广东省春旱的短期气候预测,用EOF分析、小波分析和相关分析等方法,对近48年(1957-2004年)来广东受害较大的春旱(2-5月)的变化规律及其成因进行了研究。结果表明,广东春季降水具有明显的2-3年和4年左右的年际变化以及36年左右的年代际变化。春旱主要发生在1960-1971年和1994-2004年,20世纪90年代以来严重春旱的发生呈增多趋势。1976/1977年之后,阶段性的冷与涝、暖与旱相对应,而其之前的这一相关性则不好。广东春季降水的异常主要与极涡、西太平洋副热带高压的强弱、亚洲大陆及其以北的500 hPa环流异常有关。异常春旱年500 hPa同期环流场上极涡较强,偏向鄂霍次克海,亚洲大陆及其以北为明显的正高度距平,冷空气的活动偏强,副高偏东偏弱。850 hPa流场上广东到南海盛行偏北气流,不利于降水的产生。异常涝年的情况则基本相反。

Abstract: For best doing the short-range climate forecast of the spring drought happening in Guangdong, using EOF, wavelet transform

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and correlation analysis, the variation characteristics and cause of spring drought that have high-impact on Guangdong in recent 48 years(1957-2004) are studied. The results show that the spring rainfall in Guangdong exhibits significant interannual variation of about 2-3 years and 4 years period, and interdecadal variation of 36 years period. The spring drought happened mainly from 1960 to 1971, and from 1994 to 2004. The serious spring drought has an increasing trend since 1990s. There was a good staged correspondence between cold and flooding as well as between warm and drought after 1976/1977, and the relationship is not good before that time. The anomaly of precipitation in Guangdong has close relationship with the intensity of polar vortex in north hemisphere, subtropical high in Northwest Pacific, and the 500hPa circulation anomalies in Asia and north of Asia. In anomalous spring drought year, the polar vortex is strong and leans toward Okhotsk, and positive height anomalies is significant in Asian and north of Asia at 500 hPa, the cold air is strong in Guangdong, and north wind prevails from Guangdong to South China Sea(SCS) at 850hPa during the same period. All these reasons do not benefit to rainfall. The situation is contrary in flooding year.

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