

Multiple Scales Variations of Precipitation in Yuarmou Dry-hot Valley in the Past 50 Years

ZHANG Bit², LEI Jinrong¹, LIU Gangcai¹, AI Nanshan³, QN Fachao³, LIU Zuhai²

(1. Institute of Mountain Hazards and Environment, CAS, Chengdu 610041, China;

2. School of Land and Resources, China West Normal University, Nanchong 637002, China;

3. School of Architecture and Environment, Sichuan University, Chengdu 610065)

Abstract: The water resource is a main limited factor of ecosystem in the Yuarmou Dry-hot Valley; the precipitation change has important influence on the agricultural development and ecosystem restoration. Based on the multiscale transformation of Morlet wavelet to the precipitation of the Yuarmou Dry-hot Valley in the recent 50 years, the result shows: annual and seasonal precipitation tend to increase in fluctuation and the growth trend is obvious in summer; the variability of precipitation in the dry season is notably higher than in rainy season; annual and seasonal precipitation have the characteristics of multiscale fluctuation at diverse time scale, and the precipitation in Summer and Autumn is of great importance to annual variation; the summer precipitation has a rapid switch in high and low flow, and other seasons are slow in comparison. Under the conditions of global climatic change, the multiscale variations of precipitation are related to the coverage changes. According to the multiscale changes, short term precipitation tends to decrease, which will affect productions of anti-seasonal vegetables and dry farming adversely.

Key words: precipitation; multiple scale; Dry-hot Valley; wavelet transformation

中国西部地区地学、生命与环境科学留德校友研讨会

由德意志学术交流中心驻北京办事处 (DAAD) 资助、中国科学院成都山地灾害与环境研究所和国际生态安全保护组织成都代表处支持, 2010年 7月 9~10日在中科院成都山地所举行了中国西部地区地学、生命与环境科学 DAAD留德校友研讨会。会议的议题是冰川、水资源和生态环境——在全球变暖的大趋势下, 如何面对生态环境的变化? 怎样评估冰川和水资源这些与人类生活密切相关的资源? 如何预测预报极端天气和气候反常造成的气象和地质灾害以保护人民的生命财产安全?

近 30位校友和有关专家学者参会, 他们分别来自新、甘、陕、滇、湘、粤、川等省区。会上, 著名冰川学家、欧亚科学院院士谢自楚教授作了“冰川与环境”, 程根伟研究员作了“河流的梯级开发及其对环境的影响”, 尹光彩博士作了“酸雨与森林的影响”的学术报告。

与会者对报告进行了热烈讨论, 提出了及时进行生态调查、提高预测预报自然灾害的准确性和采取预防措施的必要性和迫切性, 探讨了在不同省区建设生态安全保护示范区的可行性及其影响。与会者认为, 保护生态安全已是人类必须面对的现实问题, 必须立即行动起来, 从我做起, 不以事小而不为, 要以纳百川终成大海的博大胸怀, 做保护生态安全的先锋。

(中科院成都山地所科技处)