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InSAR-based recognition of active faults and their effects on the geo-disasters in southeastern Tibet, China

Sen Wang, Xiyong Wu, and Yong Ren

Department of Geological Engineering, Faculty of Geosciences and Environmental Engineering, Southwest Jiaotong University, Chengdu, China (wsadam@163.com)

Base on the TS-InSAR and multi-period data of Sentinel-1A, the millimeter surface deformation is acquired, and united with remote sensing interpretation and geological setting analysis, the classification, deformation features and development distribution of the geo-disasters are revealed: (1) Two kinds of deformation hazards, slope deformation and glacier migration, are developed along the active fault. (2) Modern glacier widely distributed above 4200 m have characteristics of large-sized and high motion transmissibility. (3) Creep landslides along the Jinshajiang fault are basically N-S distribution, shows the domination of the active fault on the development of geo-hazards. (4) By comparing the distribution of slow-moving slopes of large deformation rates with geological disaster points obtained by remote sensing interpretation, it is found that there is a strong consistency between them, which verifies the validity of InSAR technology in identifying geological disaster of creep slopes. (5) The creep slopes where the deformation rate is greater than 2mm/yr are defined as unstable slopes. By discussing the correlation between unstable slopes and fault, we found that the slopes around active fault have larger deformation rate, and the closer the distance is, the larger the value is.