Flood monitoring using Sentinel-1 SAR images in Pearl River basin

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The Pearl River Basin (PRB), as the second largest basin in China and one of the densely populated areas in China, is a critical region that exposes to high flood risks. Thus, it is indispensable to monitor the flooding patterns in PRB, so as to understand the flooding mechanism and better respond to the flood hazards. Previous studies about flood monitoring in PRB were mainly conducted by using gauging data of hydrological stations. However, the flood monitoring results would be prone to deviation in the region where the hydrological stations were sparse or without hydrological stations. Moreover, previous studies mainly focused on the urban flood in metropolis in PRB, neglecting the flood extents in rural area, in which the agriculture lands were constantly inundated by flooding water body. To monitor flood more comprehensively, this study will combine hydrological data, precipitation data with Sentinel-1 images to investigate spatial patterns of flood peak and flood extents in PRB. In addition, this study will also combine flood extents with land cover map to calculate the inundated areas of cropland during flood periods. This study will be valuable for flood mitigation, flood prevention and food guarantee in PRB.