

## USE OF RADAR AND OTHER REMOTE SENSING DATA FOR MAPPING ALLUVIAL FAN SURFACES IN WESTERN CHINA

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Geomorphic surfaces are the libraries of past climate change in arid continental regions. Landforms and the stage of evolution of surfaces preserve evidence of past climates as far back as the early Quaternary. Landforms such as alluvial fans are well distributed in space and time so that maps of their locations and ages help define paleoclimatic patterns and gradients within arid continental interiors.

Remote sensing techniques have been used for some time to map major aggradational units on alluvial fans in the southwestern U.S. Visible-near infrared and thermal infrared sensors map compositional changes related to rock coating development, soil formation, and the concentration of resistant lithologies. Radars map roughness variations related to physical weathering, eolian deposition, and fluvial dissection.

The first flight of the Spaceborne Radar Laboratory (SIR-C /X-SAR) has allowed new radar image data to be collected in the continental interior of western China, where little information on paleoclimates exist. Combined with Landsat Thematic Mapper and French SPOT high resolution panchromatic images, the SIR-C/X-SAR images allow recognition of more alluvial fan units and permit more confident correlation with similar deposits in the southwest US. An area along the Altyn Tagh fault has been mapped in some detail using the above image data. Field observations show that the units are distinguished on the basis of the same processes operating in the southwest U.S.