

Mapping Alluvial Fan Surfaces in Western China with SIR-C/X-SAR

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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 for as long as 1-2 million years. 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 alluvial fan units 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 rock types. Radars map roughness variations related to physical weathering, deposition of wind-blown dust, and stream development.

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 multispectral and French SPOT high resolution panchromatic images, the SIR-C/X-SAR images allow recognition of alluvial fan units and permit more confident correlation with similar deposits in the southwest U.S. Areas along the Altyn Tagh fault have 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.

* work performed under contract to NASA