

## REMOTE MAPPING OF 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 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. Recently, the topographic shape of alluvial fans has been used to infer relative rates of tectonic uplift and weathering.

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 images from Landsat, SPOT, ERS-1 SAR, and digital topography, the SIR-C /X-SAR images allow recognition of alluvial fan units and permit more confident correlation with similar deposits in the western U.S. Areas along the Altyn Tagh fault have been mapped in some detail using the above data. Field observations show that the units are distinguished on the basis of the same processes operating in the western U.S.

\* work performed under contract to NASA

Preferred topic area: Applications of remote sensing (arid /semiarid lands) or an appropriate SIR-C related session.

Prefer oral presentation, but would accept poster presentation

\* IGARSS 95