CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
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Project Number
S0601

Project Title
Slip-Rate Determination of the Great Kavir Fault in Northeast Iran

Abstract

Objectives/Goals
The Great Kavir-Doruneh fault in northeast Iran is a poorly studied left lateral strike-slip fault. In order to calculate slip-rates for this fault I needed offset features with known ages and offset magnitudes.

Methods/Materials
I therefore used a 3D visualization software to look at satellite imagery and map the fault trace and locate offset features like alluvial fans and stream channels. I then compared these alluvial fan surfaces to surfaces that have been dated in southern Iran by Regard et al. (2005) and assigned ages for the surfaces mapped along the Great Kavir-Doruneh fault. The length of a given feature offset was divided by the feature age estimate to determine the slip-rate for that part of the fault.

Results
For most of the areas mapped, the slip-rate ranged from less than 2 mm/yr to 6 mm/yr.

Conclusions/Discussion
This low slip-rate determination is consistent with the low GPS rate determined across this fault and the fact that it has not produced a large earthquake in living memory. An important result of this study is the identification of critical field localities where detailed surface mapping and isotopic dating techniques can be applied so that a well constrained slip-rate determination can be made.

Summary Statement
Determine the slip-rate of the Great Kavir Fault by using satellite images.

Help Received
Used lab equipment at the California Institute of Technology under the supervision of Dr. Bernard Guest.