HLWYM HEmails

From: Donald Hooper
Sent: Tuesday, October 28, 2003 8:33 PM
To: rensch@acsu.buffalo.edu
Subject: more on erosion models

Dear Chris Renschler,

My apologies for taking awhile to get back to you. The paragraph below is a summary of one project that we are doing here at Southwest Research Institute under a Nuclear Regulatory Commission contract to assess the geological setting at Yucca Mountain, Nevada (site of the proposed high-level nuclear waste repository). I cannot work with Michael Sheridan on this project because he has been contracted by Dept. of Energy. Therefore:

Following a potential volcanic eruption, tephra deposits can be eroded from surrounding hillsides, transported by infrequent rainfall events, and deposited in the alluvial fan of the Fortymile Wash drainage system (Nevada). Few data or models are available to evaluate these remobilization processes. Ongoing work on long-term remobilization of potential tephra-fall deposits initially focused on understanding recent sediment redistribution processes in the Fortymile Wash drainage system. Staff conducted literature reviews for Fortymile Wash and other arid to semiarid drainage systems to determine a range of potential rates for erosion of hillslope deposits, transport in dryland channel systems, and associated changes in sediment storage processes. Using these relationships, staff began constructing (as an analog) a simplified mass-balance model to evaluate remobilization of tephra from the 1943–1952 eruption of Parícutin volcano, Mexico. This model will help focus and prioritize additional investigations of remobilization processes. [Basically, how rapidly will this hypothetical tephra erode and then end up kilometers downstream in the alluvial fan?]

As I'm sure you know, there is very little data regarding sediment transport in arid ephemeral streams. Therefore, one possibility to support the lack of erosion data is to conduct analog studies (of soils) as needed to constrain model parameters. I was just hired in July and much of this work has to be done by the end of 2004, so we are pressed for time. Is this a job for GeoWEPP? I do have a conceptual model in development, but I am always open to suggestions.

As far as the possibilities of collaboration, we are being limited by time constraints. Perhaps you have some suggestions to make as one end of the spectrum, but we can also hire short-term consultants. The problem with the latter is again time as well as passing CoI (conflict of interest). Publications go along with working here, but there are internal reviews.

Finally, several colleagues will be at the Yucca Mtn. session at the GSA annual meeting in Seattle next week. I won't be at that meeting, but I'll be at the American Geophysical Union meeting in San Francisco, Dec. 8-12. So, thanks for your time and let me know what you think (either email or phone is fine).

Sincerely,

Don Hooper

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