HLWYM HEmails

From: Donald Hooper
Sent: Wednesday, January 14, 2004 1:52 PM
To: rensch@acsu.buffalo.edu
Subject: question again about volcanic soil work

Dear Chris Renschler,

I thought I better try emailing you again since I recently found out that some of the "replies" using our main institute "cnwra" address failed.

As you may recall, the problem we are interested in is the remobilization of volcanic material. 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?] Infiltration rates need to be better understood. Also, for example, the hard, relatively impervious desert substrate is quite a bit different from a fresh, porous tephra covering.

One possibility to support the lack of erosion data is to conduct analog studies (of soils) as needed to constrain model parameters. This could include physical models. 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. We also have money budgeted for travel (e.g., a trip to Buffalo?).

There is certainly the possibility of collaboration, but we need to get most of this done over the next few months (plus, any money for physical models needs to be spent soon). So, thanks for your time and please let me know what you think (either email or phone is fine).

Sincerely,

Don Hooper

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14jan04

Hearing Identifier: HLW_YuccaMountain_Hold_EX
Email Number: 1406

Mail Envelope Properties (3DF2506A7257014AAC5857E5E852DEAC05E12C4592)

Subject: question again about volcanic soil work
Sent Date: 1/14/2004 1:52:07 PM
Received Date: 1/14/2004 1:52:00 PM
From: Donald Hooper

Created By: dhooper@cnwra.swri.edu

Recipients:
"rensch@acsu.buffalo.edu" <rensch@acsu.buffalo.edu>
Tracking Status: None

Post Office: HQCLSTR02.nrc.gov

Files	**Size**	**Date & Time**
MESSAGE	2754	1/14/2004 1:52:00 PM

Options
Priority: Standard
Return Notification: No
Reply Requested: No
Sensitivity: Normal
Expiration Date:
Recipients Received: