



**Association of Environmental &  
Engineering Geologists  
San Francisco Bay Area Chapter  
&  
San Francisco Geo-Institute**



Announcing our **November 2, 2021** Meeting



**Jahns Distinguished Lecturer**

**Cheryl Hapke, PhD**  
Integral Consulting and University of South  
Florida St Petersburg

**“When Mountains Move Roads: Science,  
Engineering, and Management along the Big  
Sur Coast”**

**MEETING DETAILS**

**Virtual Meeting Place**

Online with Teams  
A link will be sent the day  
before the meeting

**Date and Time**

**TUESDAY, November 2, 2021**  
12:00 pm – 1pm

**Cost:** FREE ([optional donation towards our Student Scholarship](#))

**Reservations:** Spaces are limited, RSVP in advance!  
Please fill out the [online form](#) by **12 PM, MONDAY November 1, 2021.**

**Thank you for your RSVP! See you on **Tuesday, November 2, 2021!****

## **When Mountains Move Roads: Science, Engineering, and Management along the Big Sur Coast**

Along the Big Sur coastline in central California, the Coast Range descends steeply into the Pacific Ocean, creating one of the most extreme coastal slopes in the coterminous United States. Weak rocks and steep topography provide ideal conditions for frequent large landslides that potentially contribute a substantial portion of material to the littoral sediment budget. Little was known about the sediment budget in this area, including the amount, rate and frequency of sediment input to the system from coastal landslides. Adjacent to the Big Sur coastline is the Monterey Bay National Marine Sanctuary (MBNMS), a protected area of coastal waters and home to a variety of aquatic species.

The California Department of Transportation (Caltrans) needed solutions to the difficulties they face with keeping slide-prone coastal Highway 1 open and safe while minimizing impacts to the MBNMS below the road. As a contribution to developing a highway management plan, and in order to advance the fundamental understanding of landslide and coastal processes along this stretch of coastline, a technique was developed to quantify the historical volume of sediment that enters the littoral system from coastal slope failures.

The technique uses aerial photography and digital photogrammetry to produce 3-dimensional stereo models from which digital terrain models (DTMs) are extracted. The sediment yield varies significantly along the coastline, from as low as 1,000 m<sup>3</sup>/km/yr to nearly 47,000 m<sup>3</sup>/km/yr. This variation is largely attributed to differing lithologies of the slope forming materials.

### **Speaker Bio:**

**Dr. Cheryl Hapke** is a coastal geologist with more than 25 years of experience studying coastal evolution and coastal change processes in a variety of geomorphic settings. She received her Ph.D. from the University of California Santa Cruz, a Master's from the University of Maryland, and her B.S. in Geology from the University of Pittsburgh. Dr. Hapke worked for several decades with the U.S. Geological Survey as a research scientist, and now is a senior consultant in coastal resiliency with Integral Consulting. She also has an appointment as a research professor at the University of South Florida, College of Marine Science. Her current research focuses on coastal vulnerability and sea-level rise adaptation, developing new tools and approaches to evolve the science of coastal hazards. She has authored over 80 peer-reviewed papers, book chapters, and technical reports, and served as a subject matter expert on coastal change hazards to local, state, and federal agencies, and international groups.