9:35 – 9:45 a.m., MH
Sara McIntyre
Faculty sponsor: Sharon Oberst

Title: Awkward Accounts of My Everyday Life

Abstract: This modern dance piece was inspired by observations of social interactions around campus. Short segments of funny and awkward social interactions tell the story of the choreographer's everyday life.

9:45 – 10 a.m., MH
Kaitlin Bauld, Chenise Crockett, Emily Echtenkamp, Moemi Kaneko, Alyssa Root, Hannah Swanson and Ermine Todd
Faculty sponsor: Darryl Thomas

Title: Sweet Dreams

Abstract: Sweet Dreams is a dance piece created by guest artist, Joel Schnee, for the WOU dance program. Mr. Schnee visited WOU in October of 2011, auditioned and selected dancers to perform his work. When asked about the piece, Mr. Schnee responded that it is about "a man's dreams..... the images are mixed sweet and sour.....the conclusion is in the memory of dreamer and the audience."

EARTH SCIENCE

Session chair: Steve Taylor
Session title: Earth Science Program for Undergraduate Research
Location: Werner University Center (WUC)

Posters

Kara Fisher, Cristina Francisco, Riccilee Keller, William Vreeland, Steve Taylor and Jeffrey Templeton

Faculty sponsors: Steve Taylor and Jeffrey Templeton

Title: Earth Science Program for Undergraduate Research

Abstract: This theme session presents the results of independent work from four students in the Earth science program during the 2011-12 academic year. Research topics include aspects of petrographic analysis and magma composition at Newberry Volcano, watershed analysis, applications of geographic information systems, geomorphic mapping, and salmonid population studies. Student titles in this theme session include: Kara Fisher, Earth science major (B.S.), *Examining Petrologic Linkages Between Dacitic Ash-Flow Tuffs at Newberry Volcano Through Textural and Compositional Analysis of Plagioclase Phenocrysts* [faculty mentor: Jeff Templeton]; Cristina Francisco, Earth science major (B.S.), *Geologic Setting of the Upper Nehalem Watershed: Framework for Geomorphic Analysis and Habitat Assessment* [faculty mentor: Steve Taylor]; Riccilee Keller, Earth science major (B.S.), *Lidar-Based Slope Models as a Guide for Geomorphic Mapping: A Case Study in the Upper Nehalem Watershed, Ore.* [faculty mentor: Steve Taylor]; and Bill Vreeland, B.S. Earth science, *Georeferencing Rapid Bio-Assessment Survey Data: GIS Applications in the Upper Nehalem Watershed, Oregon* [faculty mentor: Steve Taylor].

11:30 a.m – 1:30 p.m., WUC Willamette Room
Cristina Francisco
Faculty sponsor: Steve Taylor

Title: Geologic Setting of the Upper Nehalem Watershed: Framework for Geomorphic Analysis and Habitat Assessment

11:30 a.m – 1:30 p.m., WUC Willamette Room
William Vreeland
Faculty sponsor: Steve Taylor

Title: Georeferencing Rapid Bio-Assessment Survey Data: GIS Applications in the Upper Nehalem Watershed, Ore

11:30 a.m – 1:30 p.m., WUC Willamette Room
Riccilee Keller
Faculty sponsor: Steve Taylor

Title: Lidar-Based Slope Models as a Guide for Geomorphic Mapping: A Case Study in the Upper Nehalem Watershed, Ore.

11:30 a.m – 1:30 p.m., WUC Willamette Room
Kara Fisher
Faculty sponsor: Jeffrey Templeton

Title: Examining Petrologic Linkages between Dacitic Ash-Flow Tuffs at Newberry Volcano through Textural and Compositional Analysis of Plagioclase Phenocrysts

EARTH SCIENCE

Session chair: Jeffrey Templeton
Session title: Case Studies in Volcano Monitoring and Hazards Mitigation
Location: Health and Wellness Center (HWC)

Presentations

1 – 1:10 p.m., HWC 105
Faculty presenter: Jeffrey Templeton

Title: Session Overview: Case Studies in Volcano Monitoring and Hazards Mitigation

1:10 – 1:30 p.m., HWC 105
Sarah Petersen
Faculty sponsor: Jeffrey Templeton

Title: Mapping and Modeling Volcanic Hazards at Mount Vesuvius

Abstract: With its long history of explosive eruptions and a large population living on its flanks, Mount Vesuvius is considered one of the most dangerous volcanoes in the world. In particular, pyroclastic flows are one of the most significant hazards at Vesuvius. Computer modeling programs are used to map the areas around Mount Vesuvius where people and property are at greatest risk from future eruptions. Comprehensive studies of the ancient volcanic deposits, eruptive history, geomorphology, and geography of the surrounding region are combined with computer modeling to develop hazard maps for the volcano. These strategies have been successfully applied to different volcanoes around the world.

1:30 – 1:50 p.m., HWC 105
Jacob Cruser
Faculty sponsor: Jeffrey Templeton

Title: Mapping Lahar Inundation Zones

Abstract: Lahars are a potentially destructive result of explosive volcanic eruptions, and in the Pacific Northwest of the United States, a number of communities are built upon ancient deposits. Because individual lahars can be of varying size depending on the volume of peak discharge, hazard mapping has employed both extrapolation techniques and mathematical approaches. As a test of the strategies from previous studies at other volcanoes, a map was developed to predict lahar paths likely to occur in the event of an eruption at Mt. Hood in Oregon. This new map was compared to professional maps to evaluate accuracy. The more information available about these hazards, the more practical it will be for authorities to mitigate their effects, protecting communities and their inhabitants.

1:50 – 2:10 p.m., HWC 105
Trevor J. Brown
Faculty sponsor: Jeffrey Templeton

Title: Lava Flow Hazards and Simulation Studies

Abstract: It is estimated that at least 10 percent of the world's population lives next to active volcanoes or ones that are a known risk. In particular, lava flows present numerous hazards to these communities. One method to understand lava flows and their hazards is through the use of computer-based flow simulation models. Programs, such as MAGFLOW and SCIARA, incorporate cellular automata modeling to predict flow behavior during an eruption and help identify areas that are at risk from inundation. Simulation modeling tools have been deployed successfully at Mt. Etna, a heavily populated volcano in Sicily, Italy. The recent lava flows at Etna have been extensively studied. The extent of information gathered from Mt. Etna makes it a prime candidate for studying the effects and hazards of lava flows using simulation techniques.

Break: 2:10 – 2:20 p.m.

2:20 – 2:40 p.m., HWC 105
Ken Buckingham
Faculty sponsor: Jeffrey Templeton

Title: Volcanic Ash Fallout Zone Prediction and Mitigation

Abstract: Volcanic ash is a dense, abrasive, and chemically corrosive material that can have far reaching impacts on populations due to wind distribution. Ash from explosive volcanic eruptions can cause power outages, water contamination, crop destruction, dangerous road conditions, aviation hazards, structural damage, and mental and physical health problems for inhabitants. Because of the limited understanding of the long-term effects of volcanic ash on people, mitigation is limited to preventing the short term impacts. As such, the most commonly accepted strategy is to cleanup ash immediately after an eruption. Using estimated wind speed and direction, along with the projected column height and volume, researchers use programs such as ASHFALL and FALL3D to calculate the likely fallout zone, thus allowing planning for the rapid cleanup after an eruption.

2:40 – 3 p.m., HWC 105
Joe Toliver
Faculty sponsor: Jeffrey Templeton

Title: Seismic Activity as an Eruption Forecaster

Abstract: Using seismic activity to forecast volcanic eruptions is one of the oldest techniques used by geologists in hazard mitigation. As early as the 19th century, Mt. Vesuvius was monitored using seismicity. Through the years, significant improvements have been made in technology and methods used to monitor the seismic activity of a volcanic setting, specifically in relation to magma movement. Seismicity precedes nearly all eruptions and can occur in any type of volcanic setting. As magma moves within a volcano, swarms of numerous small-scale earthquakes are recorded at a seismograph station. Considered by many to be the greatest indicator of an imminent eruption, seismic activity can give warning of a potential explosion up to days in advance. Implementation of monitoring techniques has allowed geologists to successfully forecast an impressive number of volcanic eruptions in multiple locations, greatly mitigating damage that may have otherwise occurred.

3 – 3:20 p.m., HWC 105
Riccilee Keller
Faculty sponsor: Jeffrey Templeton

Title: Remote Sensing Techniques used for Studying Volcanic Deformation

Abstract: Surface deformation related to volcanic activity can be detected, measured, and modeled using various remote sensing applications such as EDMs, GPS, and InSAR. Understanding methodologies associated with acquiring data related to changes in Earth's surface is imperative for making

interpretations regarding possible sources. Analysis of data acquired using different remote sensing methods allows precise measurements to be obtained. Changes in surface elevation provide data that can be used to create interpretive maps and models. Comparison of maps, like interferograms and DEMs, provides a visual component for analyzing surface deformation. EDMs, GPS, tilt-leveling, and InSAR are widely used around the world for monitoring patterns of surface discontinuities. These techniques have been deployed successfully at volcanoes such as Three Sisters, Medicine Lake, and Mt. Etna to constrain periods of deformation over time and to monitor volcanic activity.

3:20 – 3:40 p.m., HWC 105
Kara Fisher
Faculty sponsor: Jeffrey Templeton

Title: Monitoring Volcanic Gases: Insights into Predicting Future Eruptions

Abstract: Numerous studies at volcanoes worldwide have demonstrated a correlation between volcanic gas composition and eruptive activity. While quite hazardous to obtain at an erupting volcano, gas compositions, in particular CO2/SO2, are used to assess magma degassing processes and to evaluate the possibility of an eruption. In light of recent advances in technology, volcanic gas compositions can be measured from safe distances using FT-IR spectrometry. This technique employs an infrared heat source, such as a hot lava dome or heated ground, to detect certain volcanic gases. When first introduced, FT-IR spectrometry could only distinguish HCl and SO2 within gas plumes, but this technique has been expanded to include HF, CO, CO2, SiF4, and H2O. The ability to identify a wider range of gas components allows for broader implementation of analytical techniques to predict future volcanic eruptions.

Break: 3:40 – 3:50 p.m.

3:50 – 4:10 p.m., HWC 105
Brandon Ginos
Faculty sponsor: Jeffrey Templeton

Title: The Influence of Volcanic Eruptions on Global Climate

Abstract: Explosive volcanic eruptions eject large quantities of gas, aerosols and other fine-grained particulate matter into the atmosphere. In particular, the release of sulfur dioxide (SO2) can have a dramatic influence on the global climate. Based on computer-based techniques such as the Community Climate System Model 3 (CCSM3), the effects of SO2 on the climate are two-fold. First, changes in temperature occur locally and at a global scale. Analyses of ice cores show that large-scale eruptions appear to have initiated global cooling events. Secondly, the emission of great quantities of sulfur into the atmosphere influences ocean currents. Notably, the likelihood of an El Nino Southern Oscillation (ENSO) event occurring after a large explosive eruption is greatly increased. This research demonstrates the significant impact that volcanic eruptions have on global climate.

4:10 – 4:30 p.m., HWC 105
Spencer Helwig
Faculty sponsor: Jeffrey Templeton

Title: Warning Systems, Evacuation, and Emergency Response to Volcanic Hazards

Abstract: During volcanic eruptions, timely and effective warning systems can help save lives. Communication between three main groups, geologists, local authorities, and citizens, is essential to provide relevant safety information in a timely manner. Through effective communication and planning of evacuation routes, the safety and health of thousands can be secured. People who live closer to frequent volcano hazards are more receptive to warnings and have better knowledge of evacuation plans, because they trust that the warnings need to be taken seriously. Scheduled evacuation drills are occasionally performed near active volcanoes, and these drills have lead to a more streamlined process of evacuation. Numerous volcanic hazards are present in the Pacific Northwest, such as lahars, pyroclastic flows, earthquakes, and ash fall. For this reason, citizens of the Pacific Northwest should be aware of volcanic hazard warning systems and evacuation routes.

4:30 – 4:50 p.m., HWC 105
Craig Johnson
Faculty sponsor: Jeffrey Templeton

Title: Volcanic Hazard Assessment of Nuclear Facilities

Abstract: In 2011, a massive earthquake and tsunami left Japan's Fukushima Nuclear Facility nonoperational and spawned one of the worst meltdowns since the inception of nuclear power. This event demonstrated that even nuclear facilities are not immune to the destructive power of natural disasters. With new nuclear plants planned in countries along the 'ring of fire' such as Indonesia and the Philippines, increasing attention is being paid to volcanic hazards as a threat to power plants and other nuclear facilities. In the United States, the proposed long-term, high-level nuclear waste repository at Yucca Mountain in Nevada has raised concern about volcanism in the field of nuclear waste management. In response to growing interest and concern regarding volcanic hazards, the International Atomic Energy Agency recently released a 97-page guide that examines these risks and provides guidelines for future nuclear site planning and potential hazard mitigation.

ENGLISH, WRITING AND LINGUISTICS

Session chair: Katherine Schmidt
Session title: English, Writing and Linguistics
Location: Hamersly Library (HL)

Symposium

8:30 – 9 a.m., HL 107
Phi Kappa Phi Writing Award Winners (TBA)
Faculty sponsor: Christine Harvey Horning