

# PROCEEDINGS OF THE KECK GEOLOGY CONSORTIUM

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2017-2018 Projects

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**Keck Geology Consortium Member Institutions:**

*Amherst College, Beloit College, Carleton College, Colgate University, The College of Wooster, The Colorado College, Franklin & Marshall College, Macalester College, Mt Holyoke College, Oberlin College, Pomona College, Smith College, Trinity University, Union College, Washington & Lee University, Wesleyan University, Whitman College*

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**2017-2018 GATEWAY PROJECT**

**EXPLORING GEOCHRONOLOGY: DATING YOUNG LAVA FLOWS AND OLD TREES IN DECLINE**

**Faculty:** MEAGEN POLLOCK, The College of Wooster and GREG WILES, The College of Wooster  
**Students:** JOHSUA CHARLTON, The College of Wooster, ALORA CRUZ, Macalester College, MYRON MALISSE LUMMUS, Trinity University, KERENSA LOADHOLT, Oberlin College, CHRISTOPHER MESSERICH, Washington and Lee University, PA NHIA MOUA, Carleton College, SAMUEL PATZKOWSKY, Franklin and Marshall College, EMILY RANDALL, The College of Wooster, MADISON LILITH ROSEN, Mt Holyoke College, ADDISON THOMPSON, Pitzer College

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**2017-2018 ADVANCED PROJECTS**

**HAZARDS OF THE CARIBBEAN: THE HISTORY OF MAGMA CHAMBERS, ERUPTIONS, LANDSLIDES, STREAMS, AND FUMEROLES IN DOMINICA**

**Faculty:** HOLLI FREY, Union College, AMANDA SCHMIDT, Oberlin College, EROUSCILLA JOSEPH, University of West Indies Seismic Research Center, LAURA WATERS, Sonoma State University  
**Students:** JESSICA BERSSON, Whitman College, JACQUELINE BUSKOP, Wesleyan University, JUSTIN CASAUS, Sonoma State University, NOLAN EBNER, Macalester College, SARAH HICKERNELL, Union College, MARCUS HILL, Oberlin College, ANDREW HOLLYDAY, Middlebury College, TARYN ISENBURG, Mount Holyoke College, COLE JIMERSON, The College of Wooster, DEXTER KOPAS, Beloit College, ABADIE LUDLAM, Union College, CHLOE MOORE, Amherst College, MAZI-MAZTHIS C. ONYEALI, University of Colorado, Boulder, CLARISSA SMITH, Carleton College, HALEY TALBOT-WENDLANDT, KIRA TOMENCHOK, Washington & Lee University, KATHRYN VONSYDOW

**UNRAVELING ANTARCTIC ICE SHEET DYNAMICS VIEWED THROUGH A MARINE DEPTH TRANSECT NEAR THE SOUTH ORKNEY MICROCONTINENT, WEDDELL SEA (IODP)**

**Faculty:** SUZANNE O'CONNELL, Wesleyan University and JOSEPH ORTIZ, Kent State University  
**Students:** EDUARDO CENTENO, Wesleyan University, MARK LAPAN, Colgate University, FORREST W. LLOYD, Beloit College

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## **Short Contributions – Geochronology Gateway Project**

**EXPLORING GEOCHRONOLOGY: DATING YOUNG LAVA FLOWS AND OLD TREES IN DECLINE**  
MEAGEN POLLOCK and GREG WILES, The College of Wooster

**NEW COSMOGENIC AND VML DATES AND REVISED EMPLACEMENT HISTORY OF THE ICE SPRINGS VOLCANIC FIELD IN THE BLACK ROCK DESERT, UTAH**

PATZKOWSKY, Samuel<sup>1</sup>, RANDALL, Emily<sup>2</sup>, ROSEN, Madison<sup>3</sup>, THOMPSON, Addison<sup>4</sup>, MOUA, Pa Nhia<sup>5</sup>, SCHANTZ, Krysdan<sup>2</sup>, POLLOCK, Meagen<sup>2</sup>, JUDGE, Shelley<sup>2</sup>, WILLIAMS, Michael<sup>2</sup>, MATESICH, Cam<sup>2</sup>. (1) Franklin & Marshall College, Earth and Environment Department, 415 Harrisburg Ave, Lancaster, PA, 17603, (2) The College of Wooster, Department of Geology, 944 College Mall, Wooster, OH 44691, (3) Mount Holyoke College, Department of Geology, 50 College Street, South Hadley, MA, 01075, (4) Pomona College, Department of Geology, Sumner Hall, 333 N College Way, Claremont, CA 91711, (5) Carleton College, Department of Geology, One North College Street Northfield, MN 55057.

**YELLOW CEDAR RESPONSE TO CLIMATIC SHIFTS AT CEDAR LAKE: JUNEAU, ALASKA**

JOSHUA CHARLTON (The College of Wooster), ALORA CRUZ (Macalester College), KERENSA LOADHOLT (Oberlin College), MYRON LUMMUS (Trinity University), CHRISTOPHER MESSERICH (Washington and Lee University), Wiles, G., Buma, B., Krapek, J.

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## **Short Contributions – Dominica Advanced Project**

**HAZARDS IN THE CARIBBEAN: THE HISTORY OF MAGMA CHAMBERS, ERUPTIONS, LANDSLIDES, STREAMS, AND FUMEROLES IN DOMINICA**

HOLLI FREY, Union College, AMANDA SCHMIDT, Oberlin College, EROUSCILLA JOSEPH, University of West Indies Seismic Research Center, LAURA WATERS, Sonoma State University

**EXPLOSIVE TO EFFUSIVE TRANSITION IN INTERMEDIATE VOLCANISM: AN ANALYSIS OF CHANGING MAGMA SYSTEM CONDITIONS IN DOMINICA**

JESSICA BERSSON, Whitman College  
Research Advisor: Kirsten Nicolaysen (Whitman College)

**SOURCES OF VOLCANIC GASES FROM DOMINICA, LESSER ANTILLES**

JACQUELINE BUSKOP, Wesleyan University  
Research Advisors: Erouscilla (Pat) Joseph (University of the West Indies, Trinidad), Johan C. Varekamp (Wesleyan University), Timothy C. Ku (Wesleyan University), and Salvatore Inguaggiato (Istituto Nazionale di Geofisica e Vulcanologia, Palermo, Italy)

**A PETROLOGIC EVALUATION OF THE LAYOU IGNIMBRITE AND MORNE TROIS PITON LAVA DOME: HOW DO CHANGES IN PRE-ERUPTIVE CONDITIONS AFFECT ERUPTIVE BEHAVIOR?**

JUSTIN CASAUS, Sonoma State University  
Research Advisor: Laura Waters (Sonoma State University)

**A RE-EXAMINATION OF THE IGNIMBRITE AT FOND ST. JEAN, DOMINICA**

NOLAN EBNER, Macalester College  
Research Advisors: Holli Frey (Union College) and Karl Wirth (Macalester College)

**MAGMATIC ENCLAVES AND MAGMA MIXING IN MORNE MICOTRIN, DOMINICA**

SARAH HICKERNELL, Union College  
Research Advisor: Holli Frey

**UNDERSTANDING THE EFFECTS OF LARGE STORMS ON DOMINICA: AN ANALYSIS USING GIS AND REPEAT PHOTOGRAPHY**

MARCUS HILL, Oberlin College  
Research Advisor: Amanda Schmidt

**STRATIGRAPHY AND GEOCHEMISTRY OF A FOND ST. JEAN CINDER CONE, DOMINICA**

TARYN ISENBURG, Mount Holyoke College  
Research Advisors: Steve Dunn and Holli Frey

**RIVER DEVELOPMENT AND INCISION ON DOMINICA, WEST INDIES**

COLE JIMERSON, The College of Wooster  
Research Advisor: Amanda Schmidt

**AN INVESTIGATION OF THE INFLUENCES ON THE GEOCHEMISTRY OF STREAMS IN DOMINICA, LESSER ANTILLES: 2014-2017**

DEXTER KOPAS, Beloit College  
Research Advisors: Susan Swanson, Erouscilla Joseph, and Holli Frey

**DECOMPRESSION AND HEATING INDUCED AMPHIBOLE BREAKDOWN IN EFFUSIVE VOLCANISM ON DOMINICA, LESSER ANTILLES**

ABADIE LUDLAM, Union College  
Research Advisor: Holli Frey

**INVESTIGATING VOLCANIC-HYDROTHERMAL SYSTEMS IN DOMINICA, LESSER ANTILLES: TEMPORAL CHANGES IN THE CHEMICAL COMPOSITION OF HYDROTHERMAL FLUIDS FOR VOLCANIC MONITORING USING GEOTHERMOMETERS**

MAZI-MAZTHIS C. ONYEALI, University of Colorado, Boulder  
Research Advisors: Holli Frey, Erouscilla Joseph, and Lon Abbott

**INVESTIGATION OF MINERAL ALTERATION IN ANDESITE AND DACITE FROM THREE DIFFERENT VOLCANO HYDROTHERMAL SYSTEMS ON DOMINICA, LESSER ANTILLES**

CLARISSA ITZEL VILLEGAS SMITH, Carleton College  
Research Advisors: Cameron Davidson, Holli Frey, and Erouscilla Joseph

**COMPOSITION AND SHORT-TIMESCALE EROSION PATTERNS OF RIVER SEDIMENTS ON DOMINICA**

HALEY TALBOT-WENDLANDT, Ohio Wesleyan University  
Research Advisor: Bart Martin

**APPROXIMATING METEORIC <sup>10</sup>BE USING THE CONCENTRATION OF ACID-EXTRACTABLE GRAIN COATINGS: A CASE STUDY TRACING EROSION DEPTH ON DOMINICA, LESSER ANTILLES**

KIRA TOMENCHOK, Washington and Lee University  
Research Advisors: David Harbor and Amanda Schmidt

**EVIDENCE FOR COLD, HYDROUS PARENTAL MAGMAS ON DOMINICA: PETROLOGY OF THE FOUNDLAND BASALTS**

KATHRYN VONSYDOW, California State University San Bernardino  
Research Advisors: Laura Waters (Sedona College), Holli Frey (Union College), and Joan E. Fryxell (California State University San Bernardino)

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## **Short Contributions – IODP Advanced Project**

### **MULTIPLE PROXIES FOR INVESTIGATING GLACIAL HISTORY OF ANTARCTICA FROM ODP SITES 696 & 697**

SUZANNE O'CONNELL, Wesleyan University, and JOSEPH ORTIZ, Kent State University

### **DIATOMS OF THE ANTARCTIC – ENVIRONMENTAL INTERPRETATION OF THE MIDDLE PLIOCENE AT SITE 697**

EDUARDO CENTENO, Wesleyan University  
Research Advisor: Suzanne O'Connell

### **PRELIMINARY WAVELET ANALYSIS OF CIRCUM-ANTARCTIC ODP WELL LOGS AND SPLIT-CORE XRF SCANS FROM ODP SITE 697 CORES INFERS OBLIQUITY SIGNAL**

ANDREW HOLLYDAY, Middlebury College  
Research Advisors: Suzanne O'Connell, Will Amidon, and Joe Ortiz

### **ANTARCTIC WEDDELL SEA ODP SITE 696 PLEISTOCENE- PLIOCENE DIATOMS**

MARK LAPAN, Colgate University  
Research Advisor: Amy Leventer

### **ZANCLEAN (EARLY PLIOCENE) SEDIMENT RECORDS OF ICE-SHEET INSTABILITY AT ODP SITE 697 (JANE BASIN), NW WEDDELL SEA, SOUTH ORKNEY MICROCONTINENT**

FORREST W. LLOYD, Beloit College  
Research Advisors: Suzanne O'Connell (Wesleyan University) and Jim Rougvie (Beloit College)