

PROCEEDINGS OF THE TWENTY-EIGHTH ANNUAL KECK RESEARCH SYMPOSIUM IN GEOLOGY

April 2015
Union College, Schenectady, NY

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**KECK GEOLOGY CONSORTIUM
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Oberlin College, Pomona College, Smith College, Trinity University, Union College,
Washington & Lee University, Wesleyan University, Whitman College, Williams College**

2014-2015 PROJECTS

RESILIENCE OF ENDANGERED ACROPORA SP. CORALS IN BELIZE. WHY IS CORAL GARDENS REEF THRIVING?:

Faculty: LISA GREER, Washington & Lee University, HALARD LESCINSKY, Otterbein University, KARL WIRTH, Macalester College

Students: ZEBULON MARTIN, Otterbein University, JAMES BUSCH, Washington & Lee University, SHANNON DILLON, Colgate University, SARAH HOLMES, Beloit College, GABRIELA GARCIA, Oberlin College, SARAH BENDER, The College of Wooster, ERIN PEELING, Pennsylvania State University, GREGORY MAK, Trinity University, THOMAS HEROLD, The College of Wooster, ADELE IRWIN, Washington & Lee University, ILLIAN DECORTE, Macalester College

TECTONIC EVOLUTION OF THE CHUGACH-PRINCE WILLIAM TERRANE, SOUTH CENTRAL ALASKA:

Faculty: CAM DAVIDSON, Carleton College, JOHN GARVER Union College

Students: KAITLYN SUAREZ, Union College, WILLIAM GRIMM, Carleton College, RANIER LEMPERT, Amherst College, ELAINE YOUNG, Ohio Wesleyan University, FRANK MOLINEK, Carleton College, EILEEN ALEJOS, Union College

EXPLORING THE PROTEROZOIC BIG SKY OROGENY IN SW MONTANA: METASUPRACRUSTAL ROCKS OF THE RUBY RANGE

Faculty: TEKLA HARMS, Amherst College, JULIE BALDWIN, University of Montana

Students: BRIANNA BERG, University of Montana, AMAR MUKUNDA, Amherst College, REBECCA BLAND, Mt. Holyoke College, JACOB HUGHES, Western Kentucky University, LUIS RODRIGUEZ, Universidad de Puerto Rico-Mayaguez, MARIAH ARMENTA, University of Arizona, CLEMENTINE HAMELIN, Smith College

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GEOMORPHOLOGIC AND PALEOENVIRONMENTAL CHANGE IN GLACIER NATIONAL PARK, MONTANA:

Faculty: KELLY MACGREGOR, Macalester College, AMY MYRBO, LabCore, University of Minnesota

Students: ERIC STEPHENS, Macalester College, KARLY CLIPPINGER, Beloit College, ASHLEIGH, COVARRUBIAS, California State University-San Bernardino, GRAYSON CARLILE, Whitman College, MADISON ANDRES, Colorado College, EMILY DIENER, Macalester College

ANTARCTIC PLIOCENE AND LOWER PLEISTOCENE (GELASIAN) PALEOCLIMATE RECONSTRUCTED FROM OCEAN DRILLING PROGRAM WEDDELL SEA CORES:

Faculty: SUZANNE O'CONNELL, Wesleyan University

Students: JAMES HALL, Wesleyan University, CASSANDRE STIRPE, Vassar College, HALI ENGLERT, Macalester College

HOLOCENE CLIMATIC CHANGE AND ACTIVE TECTONICS IN THE PERUVIAN ANDES: IMPACTS ON GLACIERS AND LAKES:

Faculty: DON RODBELL & DAVID GILLIKIN, Union College

Students: NICHOLAS WEIDHAAS, Union College, ALIA PAYNE, Macalester College, JULIE DANIELS, Northern Illinois University

GEOLOGICAL HAZARDS, CLIMATE CHANGE, AND HUMAN/ECOSYSTEMS RESILIENCE IN THE ISLANDS OF THE FOUR MOUNTAINS, ALASKA

Faculty: KIRSTEN NICOLAYSEN, Whitman College

Students: LYDIA LOOPESKO, Whitman College, ANNE FULTON, Pomona College, THOMAS BARTLETT, Colgate University

CALIBRATING NATURAL BASALTIC LAVA FLOWS WITH LARGE-SCALE LAVA EXPERIMENTS:

Faculty: JEFF KARSON, Syracuse University, RICK HAZLETT, Pomona College

Students: MARY BROMFIELD, Syracuse University, NICHOLAS BROWNE, Pomona College, NELL DAVIS, Williams College, KELSA WARNER, The University of the South, CHRISTOPHER PELLAND, Lafayette College, WILLA ROWEN, Oberlin College

FIRE AND CATASTROPHIC FLOODING, FOURMILE CATCHMENT, FRONT RANGE, COLORADO:

Faculty: DAVID DETHIER, Williams College, WILLIAM B. OUMET, University of Connecticut, WILLIAM KASTE, The College of William and Mary

Students: GREGORY HARRIS, University of Connecticut, EDWARD ABRAHAMS, The College of William & Mary, CHARLES KAUFMAN, Carleton College, VICTOR MAJOR, Williams College, RACHEL SAMUELS, Washington & Lee University, MANEH KOTIKIAN, Mt. Holyoke College, WILL WICHERSKI, Williams College

SOPHOMORE PROJECT: AQUATIC BIOGEOCHEMISTRY: TRACKING POLLUTION IN RIVER SYSTEMS

Faculty: ANOUK VERHEYDEN-GILLIKIN, Union College

Students: CELINA BRIEVA, Mt. Holyoke College, SARA GUTIERREZ, University of California-Berkeley, ALESIA HUNTER, Beloit College, ANNY KELLY SAINVIL, Smith College, LARENZ STOREY, Union College, ANGEL TATE, Oberlin College

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Keck Geology Consortium: Projects 2014-2015
Short Contributions— Belize Reef Project

MULTI-LEVEL CHARACTERIZATION OF ACROPORID CORAL POPULATIONS AT CORAL GARDENS, BELIZE: A REFUGIA IDENTIFIED

LISA GREER, Washington & Lee University, HALARD LESCINSKY, Otterbein University, KARL WIRTH, Macalester College

ARE THREESpot DAMSELFISH HELPING OR HURTING THE POSSIBLE RESURGENCE OF ACROPORA CORALS?

ZEBULON MARTIN, Otterbein University
Research Advisor: Dr. Halard Lescinsky, Otterbein University

GEOEYE-1 IMAGERY CLASSIFICATION: AN ACCURATE METHOD FOR IDENTIFYING POPULATIONS OF *ACROPORA* SPP. CORALS PRIOR TO A FIELD STUDY

JAMES BUSCH, Washington & Lee University
Research Advisor: Lisa Greer, Washington & Lee University

MORPHOMETRIC AND TAPHONOMIC ANALYSIS OF *ACROPORA PROLIFERA* AT CORAL GARDENS, BELIZE

SHANNON DILLON, Colgate University
Research Advisor: Constance M. Soja, Colgate University

***ACROPORA CERVICORNIS* RUBBLE AND FOSSIL FRAMEWORK AT CORAL GARDENS, BELIZE: INVESTIGATING ENVIRONMENTAL CONDITIONS AND SAMPLING STRATEGIES USING STABLE ISOTOPE GEOCHEMISTRY**

SARAH HOLMES, Beloit College
Research Advisor: Carl Mendelson, Beloit College

QUANTIFYING THE MICRO- AND MACRO- BORING COMMUNITIES IN CORAL GARDENS, BELIZE

GABRIELA GARCIA, Oberlin College
Research Advisor: Dennis K. Hubbard, Oberlin College

GRAZER DYNAMICS ON AN ACROPORID PATCH REEF SYSTEM AND THEIR IMPLICATIONS FOR THE CARBONATE BUDGET AT CORAL GARDENS, BELIZE

SARAH K. BENDER, The College of Wooster
Research Advisor: Mark Wilson, The College of Wooster

***ACROPORA CERVICORNIS* CARBONATE PRODUCTION AT CORAL GARDENS, BELIZE: PREDICTING FUTURE REEF STABILITY**

ERIN PEELING, The Pennsylvania State University
Research Advisor: Tim Bralower, The Pennsylvania State University

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USING SEDIMENTS AND SUBSTRATES TO INTERPRET REGIONAL HYDRODYNAMICS AND ECOLOGY OF CORAL GARDENS, BELIZE

GREGORY MAK, Trinity University

Research Advisor: Daniel J. Lehrmann, Trinity University

GROWTH PATTERNS OF ACROPORA CERVICORNIS AFFECTED BY CURRENTS AT CORAL GARDENS, BELIZE

THOMAS R. HEROLD, The College of Wooster

Research Advisor: Shelley Judge, The College of Wooster

INVESTIGATIONS OF RESILIENT ACROPORA COMMUNITIES IN BELIZE: RELATIVE AGING AND INTRASPECIFIC DIVERSITY CALCULATIONS OF SPECIES USING MICROSATELLITE MARKERS AND SOMATIC MUTATIONS

ADELE IRWIN, Washington and Lee University

Research Advisor: Lisa Greer, Washington & Lee University

RECORD OF ENVIRONMENTAL CHANGE IN CARRIBEAN CORAL REEFS: SCLEROCHRONOLOGY AND GEOCHEMISTRY OF *O. FAVEOLATA* AS A PALEOCLIMATE PROXY AT CORAL GARDENS AND ROCKY POINT, BELIZE.

ILIAN A. DECORTE, Macalester College

Research Advisor: Karl R. Wirth, Macalester College

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Keck Geology Consortium: Projects 2014-2015
Short Contributions—Tectonics of Prince William Terrane, AK Project

TECTONIC EVOLUTION OF THE PRINCE WILLIAM TERRANE IN RESURRECTION BAY AND EASTERN PRINCE WILLIAM SOUND, ALASKA

CAMERON DAVIDSON, Carleton College
JOHN I. GARVER, Union College

ANNEALING RADIATION DAMAGE IN PRECAMBRIAN ZIRCON IN WHALE BAY, ALASKA AND LABORATORY EXPERIMENT

KAITLYN SUAREZ, Union College
Research Advisor: John I. Garver

PROVENANCE OF THE CHUGACH-PRINCE WILLIAM TERRANE, ALASKA, FOCUSING ON THE PALEOGENE ORCA GROUP, USING U-PB DATING OF DETRITAL ZIRCONS

WILLIAM E. GRIMM, Carleton College
Research Advisor: Cameron Davidson

MAGMA MIXING OVER A SLAB WINDOW: GEOCHEMISTRY AND PETROLOGY OF THE SHEEP BAY AND MCKINLEY PEAK PLUTONS, PRINCE WILLIAM SOUND, ALASKA

RAINER LEMPERT, Amherst College
Research Advisor: Peter Crowley

TECTONIC EVOLUTION OF THE CHUGACH-PRINCE WILLIAM TERRANE: GEOCHEMISTRY OF THE ORCA GROUP VOLCANIC ROCKS IN EASTERN PRINCE WILLIAM SOUND, ALASKA

ELAINE K. YOUNG, Ohio Wesleyan University
Research Advisor: Karen Fryer

DETRITAL ZIRCON U/PB AGES AND PROVENANCE STUDY OF THE PALEOCENE TO MIOCENE TOFINO BASIN SEDIMENTARY SEQUENCE, OLYMPIC PENINSULA, WASHINGTON

FRANK R. MOLINEK III, Carleton College
Research Advisor: Cameron Davidson, John Garver

ZIRCON FISSION TRACK AGES OF THE ORCA GROUP ON HINCHINBROOK ISLAND, ALASKA

EILEEN ALEXANDRA ALEJOS, Union College
Research Advisor: John I. Garver

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Keck Geology Consortium: Projects 2014-2015
Short Contributions—Tectonics of the Ruby Range, MT Project

**EXPLORING THE PRECAMBRIAN GEOLOGIC EVOLUTION OF THE RUBY RANGE IN
SOUTHWEST MONTANA**

TEKLA HARMS, Amherst College
JULIE BALDWIN, University of Montana

**PETROLOGY, GEOCHEMISTRY, AND THERMOBAROMETRY OF AMPHIBOLITES IN THE RUBY
RANGE, SOUTHWEST MONTANA**

BRIANNA BERG, University of Montana
Research Advisor: Julie Baldwin

**MONAZITE OCCURRENCE IN GARNET BEARING SCHIST AND GNEISS FROM THE RUBY
RANGE, SOUTHWEST MONTANA**

AMAR MUKUNDA, Amherst College
Research Advisor: Tekla Harms

**CALCITE-GRAPHITE STABLE ISOTOPE THERMOMETRY IN MARBLES OF THE RUBY RANGE,
SW MONTANA**

REBECCA BLAND, Mount Holyoke College
Research Advisor: Steven R. Dunn

**GEO-THERMOBAROMETRY AND PETROGRAPHIC INTERPRETATIONS OF CHRISTENSEN
RANCH METAMORPHOSED BANDED IRON FORMATION FROM THE RUBY RANGE, MONTANA**

JACOB HUGHES, Western Kentucky University
Research Advisor: Dr. Andrew Wulff

**PETROGRAPHY AND MINERALOGY OF ULTRAMAFIC PODS IN THE RUBY RANGE WITH
SPECIAL ATTENTION TO IDENTIFYING ACCESSORY MINERAL PHASES, INCLUDING ZIRCON**

LUIS G. RODRIGUEZ, University of Puerto Rico-Mayaguez
AARON CAVOSIE, Curtin University Australia, University of Puerto Rico-Mayaguez

**INVESTIGATING THE TIMING OF MELT-PRODUCING HIGH GRADE METAMORPHISM IN THE
RUBY RANGE, SOUTHWESTERN MONTANA THROUGH ZIRCON U-PB GEOCHRONOLOGY**

MARIAH ARMENTA, University of Arizona
Research Advisor: George Gehrels

**PETROGRAPHY, GEO-THERMOBAROMETRY, AND METAMORPHIC HISTORY OF METAPELITES
FROM THE CENTRAL RUBY RANGE, SOUTHWEST MONTANA**

CLÉMENTINE HAMELIN, Smith College
Research Advisor: John B. Brady

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Keck Geology Consortium: Projects 2014-2015
Short Contributions— Environmental Change in Glacier National Park,
MT Project

GEOMORPHOLOGIC AND PALEOENVIRONMENTAL CHANGE IN GLACIER NATIONAL PARK, MONTANA:

KELLY MACGREGOR, Macalester College
AMY MYRBO, LabCore, University of Minnesota

MAJOR AND TRACE ELEMENT CHEMISTRY AND MINERALOGY OF BELT GROUP ROCKS, GRINNELL VALLEY, GLACIER NATIONAL PARK, MONTANA: IMPLICATIONS FOR LAKE CORE SEDIMENTS AS GEOMORPHIC TRACERS

ERIC STEPHENS, Macalester College
Research Advisor: Kelly MacGregor

DOLOMITE ABUNDANCE IN LAKE JOSEPHINE SEDIMENTS, GLACIER NATIONAL PARK, MONTANA: A PROXY FOR GLACIAL EXTENT?

KARLY CLIPPINGER, Beloit College
Research Advisor: Carl Mendelson

MINERALOGICAL AND CHEMICAL COMPOSITION OF SEDIMENT FROM LOWER GRINNELL LAKE, GLACIER NATIONAL PARK, MONTANA

ASHLEIGH COVARRUBIAS, California State University, San Bernardino
Research Advisor: Joan Fryxell

ADVANCE AND RETREAT OF GRINNELL GLACIER DURING THE LAST GLACIAL MAXIMUM, YOUNGER DRYAS, AND EARLY HOLOCENE AS RECORDED IN LAKE JOSEPHINE SEDIMENTS, GLACIER NATIONAL PARK, MONTANA

GRAYSON CARLILE, Whitman College
Research Advisors: Nick Bader and Bob Carson

FIRE FREQUENCY IN THE LAST MILLENNIUM IN THE GRINNELL GLACIER AND SWIFTCURRENT LAKE DRAINAGE BASINS, GLACIER NATIONAL PARK, MONTANA

MADISON ANDRES, Colorado College
Research Advisor: Eric Leonard

INORGANIC CARBON IN ALPINE LAKES AS A PROXY FOR GLACIER DYNAMICS DURING THE LATE HOLOCENE, GLACIER NATIONAL PARK, MONTANA

EMILY DIENER, Macalester College
Research Advisor: Kelly MacGregor

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**Keck Geology Consortium: Projects 2014-2015
Short Contributions—Paleoclimate Reconstruction From
Weddell Sea ODP Cores Project**

**ANTARCTIC PLIOCENE AND LOWER PLEISTOCENE (GELASIAN) PALEOCLIMATE
RECONSTRUCTED FROM OCEAN DRILLING PROGRAM WEDDELL SEA CORES:**

Faculty: SUZANNE O'CONNELL, Wesleyan University

**XRF DERIVED CYCLICITY IN PLIOCENE AND PLEISTOCENE SEDIMENTS FROM ODP SITE 693,
DRONNING MAUD LAND ANTARCTICA**

JAMES HALL, Wesleyan University

Research Advisor: Suzanne OConnell

**PLEISTOCENE FORAMINIFERA ASSEMBLAGES AS A PROXY FOR TEMPERATURE IN THE
WEDDELL SEA, ODP SITE 693A**

CASSANDRE STIRPE, Vassar College

Research Advisors: Suzanne O'Connell, Kirsten Menking

**PROVENANCE OF WEDDELL SEA DROPSTONES: PETROGRAPHIC AND GEOCHEMICAL
EVIDENCE**

HALI ENGLERT, Macalester College

Research Advisors: Karl Wirth and Suzanne O'Connell

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**Keck Geology Consortium: Projects 2014-2015
Short Contributions—Paleoclimate Change from
Peruvian Lake Deposits Project**

**HOLOCENE CLIMATIC CHANGE AND ACTIVE TECTONICS IN THE PERUVIAN ANDES:
IMPACTS ON GLACIERS AND LAKES**

DON RODBELL, Union College
DAVID GILLIKIN, Union College

**BIOGEOCHEMISTRY AND SEDIMENT TRANSPORT THROUGH A TROPICAL ANDEAN
PATERNOSTER LAKE SYSTEM: A MODERN CALIBRATION PROXY FOR LIMNOLOGICALLY-
BASED PALEOCLIMATE RECONSTRUCTIONS**

NICHOLAS WEIDHAAS, Union College
Research Advisors: Donald Rodbell and David Gillikin

GLACIAL VARIABILITY IN THE PERUVIAN ANDES AS RECORDED IN LAKE SEDIMENTS

ALIA PAYNE, Macalester College
Research Advisors: Kelly MacGregor, Macalester College

**HOLOCENE CLIMATE VARIABILITY IN THE PERUVIAN ANDES RECORDED IN PROGLACIAL
LAKE SEDIMENTS FROM LAGUNA PEROLCOCHA IN THE QUILCAYHUANCA VALLEY**

JULIE DANIELS, Northern Illinois University
Research Advisor: Nathan Stansell

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Keck Geology Consortium: Projects 2014-2015
Short Contributions— Volcanic Hazards and Human Interaction, AK Project

GEOLOGICAL HAZARDS, CLIMATE CHANGE, AND HUMAN/ECOSYSTEMS RESILIENCE IN THE ISLANDS OF THE FOUR MOUNTAINS, ALASKA

KIRSTEN NICOLAYSEN, Whitman College

ARCHAEOLOGICAL SITE STRATIGRAPHY AS A RECORD OF HUMAN RESILIENCE IN THE ISLANDS OF FOUR MOUNTAINS, ALASKA

LYDIA LOOPESKO, Whitman College

Research Advisors: Kirsten Nicolaysen, Whitman College; Virginia Hatfield, University of Kansas

SILICIC LAVAS OF MT. TANA AND THE ISLANDS OF THE FOUR MOUNTAINS, AK

ANNE FULTON, Pomona College

Research Advisor: Jade Star Lackey

GEOCHEMICAL INVESTIGATION OF LITHIC TOOLS AND FLAKES FROM THE ISLANDS OF FOUR MOUNTAINS, AK: DETERMINING SOURCES LOCATIONS AND INFERRING DISTRIBUTION METHODS

TOM BARTLETT, Colgate University

Research Advisor: Martin Wong

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Keck Geology Consortium: Projects 2014-2015
Short Contributions—Experimental Basalt Lava Flows Project

CALIBRATING NATURAL BASALTIC LAVA FLOWS WITH LARGE-SCALE LAVA EXPERIMENTS:

JEFF KARSON, Syracuse University

RICK HAZLETT, Pomona College

COMPARISON OF NATURAL AND EXPERIMENTAL BASALT AS AN INVESTIGATION OF PAHOEHOE-‘A’A TRANSITIONAL SURFACE TEXTURES

MARY BROMFIELD, Syracuse University

Research Advisor: Jeffrey Karson

SIZE OF PERCHED LAVA PONDS AS A PRODUCT OF VOLUMETRIC FLUX

NICHOLAS C. BROWNE, Pomona College

Research Advisors: Jeffrey A. Karson, Richard W. Hazlett, Eric B. Grosfils

COMPARISON OF ICELANDIC ROOTLESS CONES WITH EXPERIMENTAL LAVA FEATURES

NELL DAVIS, Williams College

Research Advisor: Bud Wobus

VARIATION IN BREAKOUT MECHANISMS IN EXPERIMENTAL PAHOEHOE FLOWS

KELSA A. WARNER, The University of the South

Research Advisor: Donald B. Potter, Jr.

EXPERIMENTAL MODELING AND ANALYSIS OF THE EFFECT OF LAVA TUBE MORPHOLOGY ON MOLTEN, BASALTIC MATERIAL TRANSPORT

CHRISTOPHER G. PELLAND, Lafayette College

Research Advisor: Dr. Lawrence Malinconico

COMPARING THE ANISOTROPY OF MAGNETIC SUSCEPTIBILITY OF NATURAL AND EXPERIMENTAL LAVA FLOWS

WILLA ROWAN, Oberlin College

Research Advisor: Andrew Horst

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Keck Geology Consortium: Projects 2014-2015
Short Contributions— Fire and Catastrophic Flooding, CO Project

FIRE AND CATASTROPHIC FLOODING, FOURMILE CATCHMENT, FRONT RANGE, COLORADO:

DAVID DETHIER, Williams College
WILLIAM. B. OUMET, University of Connecticut
WILLIAM KASTE, The College of William and Mary

INVESTIGATING THE USE OF POLYCYCLIC AROMATIC HYDROCARBONS (PAHS) AS PROXIES FOR HOLOCENE FOREST FIRES ON THE COLORADO FRONT RANGE

GREGORY HARRIS, University of Connecticut
Research Advisors: Michael Hren, University of Connecticut, Will Ouimet, University of Connecticut

POST-FIRE HILLSLOPE ASPECT CONTROLS ON EROSIONAL PROCESSES TRACED BY FALLOUT RADIONUCLIDES IN FOURMILE CANYON, COLORADO

EDWARD ABRAHAMS, College of William and Mary
Research Advisor: Jim Kaste

BURN SEVERITY EFFECTS ON HILL-SLOPE SOIL CHARACTERISTICS AND LOCAL VARIATION FOUR YEARS AFTER THE FOURMILE FIRE, BOULDER COUNTY, CO

OMAR KAUFMAN, Carleton College
Research Advisor: Mary Savina

CONNECTING SURFICIAL GEOLOGY AND HYDROLOGIC FLUX IN LEAKY, SNOWMELT-DOMINATED CATCHMENTS, NIWOT RIDGE, CO

VICTOR W. MAJOR, Williams College
Research Advisor: David P. Dethier

CHARACTERIZATION OF LEGACY MINE WASTE CONTRIBUTIONS TO FOURMILE CANYON, COLORADO

RACHEL SAMUELS, Washington and Lee
Research Advisors: Dave Harbor and Paul Low

RECONSTRUCTING THE HOLOCENE AND ANTHROPOCENE STRATIGRAPHIC HISTORY OF FOURMILE CANYON

MANEH KOTIKIAN, Mount Holyoke College
Research Advisor: Alan Werner
MANEH KOTIKIAN, Mt. Holyoke College

ANALYZING GEOMORPHIC EFFECTS OF THE SEPTEMBER 2013 FLOOD IN FOURMILE CANYON, COLORADO, USING LIDAR AND FIELD STUDIES

WILL WICHERSKI, Williams College Department of Geosciences
Research Advisor: David P. Dethier

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Keck Geology Consortium: Project 2014-2015
Short Contributions—Aquatic Biogeochemistry *Sophomore* Project

SOPHOMORE PROJECT: AQUATIC BIOGEOCHEMISTRY: TRACKING POLLUTION IN RIVER SYSTEMS

Faculty: ANOUK GILLIKIN-VEREYDEN, Union College

Students: CELINA BRIEVA, Mt. Holyoke College, SARA GUTIERREZ, University of California-Berkeley, ALESIA HUNTER, Beloit College, ANNY KELLY SAINVIL, Smith College, LARENZ STOREY, Union College, ANGEL TATE, Oberlin College

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