# KECK GEOLOGY CONSORTIUM

# PROCEEDINGS OF THE TWENTY-FOURTH ANNUAL KECK RESEARCH SYMPOSIUM IN GEOLOGY

April 2011
Union College, Schenectady, NY

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## 2010-2011 PROJECTS

**FORMATION OF BASEMENT-INVOLVED FORELAND ARCHES: INTEGRATED STRUCTURAL AND SEISMOLOGICAL RESEARCH IN THE BIGHORN MOUNTAINS, WYOMING**
Faculty: *CHRISTINE SIDDOWAY, MEGAN ANDERSON*, Colorado College, *ERIC ERSLEV*, University of Wyoming
Students: *MOLLY CHAMBERLIN*, Texas A&M University, *ELIZABETH DALLEY*, Oberlin College, JOHN *SPENCE HORNBUCKLE III*, Washington and Lee University, *BRYAN MCATEE*, Lafayette College, *DAVID OAKLEY*, Williams College, *DREW C. THAYER*, Colorado College, *CHAD TREXLER*, Whitman College, *TRIANA N. UFRET*, University of Puerto Rico, *BRENNAN YOUNG*, Utah State University.

**EXPLORING THE PROTEROZOIC BIG SKY OROGENY IN SOUTHWEST MONTANA**
Faculty: *TEKLA A. HARMS, JOHN T. CHENEY*, Amherst College, *JOHN BRADY*, Smith College
Students: *JESSE DAVENPORT*, College of Wooster, *KRISTINA DOYLE*, Amherst College, *B. PARKER HAYNES*, University of North Carolina - Chapel Hill, *DANIELLE LERNER*, Mount Holyoke College, *CALEB O. LUCY*, Williams College, *ALIANORA WALKER*, Smith College.

**INTERDISCIPLINARY STUDIES IN THE CRITICAL ZONE, BOULDER CREEK CATCHMENT, FRONT RANGE, COLORADO**
Faculty: *DAVID P. DETHIER*, Williams College, *WILL OUIMET*. University of Connecticut
Students: *ERIN CAMP*, Amherst College, *EVAN N. DETHIER*, Williams College, *HAYLEY CORSON-RIKERT*, Wesleyan University, *KEITH M. KANTACK*, Williams College, *ELLEN M. MALEY*, Smith College, *JAMES A. MCCARTHY*, Williams College, *COREY SHIRCLIFF*, Beloit College, *KATHLEEN WARRELL*, Georgia Tech University, *CIANNA E. WYSHNYSZKY*, Amherst College.

**SEDIMENT DYNAMICS & ENVIRONMENTS IN THE LOWER CONNECTICUT RIVER**
Faculty: *SUZANNE O'CONNELL*, Wesleyan University
Students: LYNN M. GEIGER, Wellesley College, KARA JACOBACCI, University of Massachusetts (Amherst), GABRIEL ROMERO, Pomona College.

**GEOMORPHIC AND PALEOENVIRONMENTAL CHANGE IN GLACIER NATIONAL PARK, MONTANA, U.S.A.**
Faculty: *KELLY MACGREGOR*, Macalester College, *CATHERINE RIIHIMAKI*, Drew University, *AMY MYRBO*, LacCore Lab, University of Minnesota, *KRISTINA BRADY*, LacCore Lab, University of Minnesota

Students: *HANNAH BOURNE*, Wesleyan University, *JONATHAN GRIFFITH*, Union College, *JACQUELINE KUTVIRT*, Macalester College, *EMMA LOCATELLI*, Macalester College, *SARAH MATTESON*, Bryn Mawr College, *PERRY ODDO*, Franklin and Marshall College, *CLARK BRUNSON SIMCOE*, Washington and Lee University.

**GEOLOGIC, GEOMORPHIC, AND ENVIRONMENTAL CHANGE AT THE NORTHERN TERMINATION OF THE LAKE HÖVSGÖL RIFT, MONGOLIA**
Faculty: *KARL W. WEGMANN*, North Carolina State University, *TSALMAN AMGAA*, Mongolian University of Science and Technology, *KURT L. FRANKEL*, Georgia Institute of Technology, *ANDREW P. deWET*, Franklin & Marshall College, *AMGALAN BAYASAGALN*, Mongolian University of Science and Technology.
Students: *BRIANA BERKOWITZ*, Beloit College, *DAENA CHARLES*, Union College, *MELLISSA CROSS*, Colgate University, *JOHN MICHAELS*, North Carolina State University, *ERDENEBAYAR TSAGAANNARAN*, Mongolian University of Science and Technology, *BATTOGTOH DAMDINSUREN*, Mongolian University of Science and Technology, *DANIEL ROTHBERG*, Colorado College, *ESUGEI GANBOLD*, *ARANZAL ERDENE*, Mongolian University of Science and Technology, *AFSHAN SHAIKH*, Georgia Institute of Technology, *KRISTIN TADDEI*, Franklin and Marshall College, *GABRIELLE VANCE*, Whitman College, *ANDREW ZUZA*, Cornell University.

**LATE PLEISTOCENE EDIFICE FAILURE AND SECTOR COLLAPSE OF VOLCÁN BARÚ, PANAMA**
Faculty: *THOMAS GARDNER*, Trinity University, *KRISTIN MORELL*, Penn State University
Students*: SHANNON BRADY*, Union College. *LOGAN SCHUMACHER*, Pomona College, *HANNAH ZELLNER*, Trinity University.

**KECK SIERRA: MAGMA-WALLROCK INTERACTIONS IN THE SEQUOIA REGION**
Faculty: *JADE STAR LACKEY*, Pomona College, *STACI L. LOEWY*, California State University-Bakersfield
Students: *MARY BADAME*, Oberlin College, *MEGAN D'ERRICO*, Trinity University, *STANLEY HENSLEY*, California State University, Bakersfield, *JULIA HOLLAND*, Trinity University, *JESSLYN STARNES*, Denison University, *JULIANNE M. WALLAN*, Colgate University.

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# Keck Geology Consortium: Projects 2010-2011
# Short Contributions— Glacier National Park

**GEOMORPHIC AND PALEOENVIRONMENTAL CHANGE IN GLACIER NATIONAL PARK, MONTANA, U.S.A.**
Project Faculty: KELLY MACGREGOR, Macalester College, CATHERINE RIIHIMAKI, Drew University, AMY MYRBO, KRISTINA BRADY LacCore Lab, University of Minnesota

**LINKAGES BETWEEN CLIMATE CHANGE, VOLCANISM, AND DIATOM PRODUCTIVITY OVER THE PAST 12,900 YEARS IN SWIFTCURRENT LAKE, GLACIER NATIONAL PARK, MONTANA**
HANNAH BOURNE, Wesleyan University
Research Advisor: Tim Ku

**A CONTINUOUS LATE HOLOCENE RECORD OF PALEOCLIMATE CHANGE FROM GRINNELL LAKE SEDIMENT CORES, GLACIER NATIONAL PARK, MONTANA**
JONATHAN GRIFFITH, Union College
Research Advisor: Donald Rodbell

**HOLOCENE FIRE HISTORY OF THE SOUTHERN SWIFTCURRENT BASIN: A PALEOENVIRONMENTAL STUDY OF GLACIER NATIONAL PARK**
JACQUELINE KUTVIRT, Macalester College
Research Advisor: Kelly MacGregor

**VEGETATION HISTORY OF THE LATE HOLOCENE IN EAST GLACIER NATIONAL PARK, MONTANA: A PALEOENVIRONMENTAL STUDY**
EMMA LOCATELLI, Macalester College
Research Advisor: Louisa Bradtmiller

**CARBON SIGNAL IN ALPINE LAKE SEDIMENT DURING THE HOLOCENE IN GLACIER NATIONAL PARK, MONTANA**
SARAH MATTESON, Bryn Mawr College
Research Advisor: Don Barber

**GEOCHEMICAL EVIDENCE OF ANTHROPOGENIC IMPACTS ON SWIFTCURRENT LAKE, GLACIER NATIONAL PARK, MT**
PERRY ODDO, Franklin and Marshall College
Research Advisor: Christopher J. Williams

**SUBSURFACE SEISMIC REFRACTION IMAGING OF GLACIAL TILL/BEDROCK INTERFACE IN GRINNELL VALLEY, GLACIER NATIONAL PARK, MONTANA**
CLARK BRUNSON SIMCOE, Washington and Lee University
Research Advisor: Romain Meyer

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