

PROCEEDINGS OF THE KECK GEOLOGY CONSORTIUM

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2018-2019 Projects

Dr. Cameron Davidson and Dr. Karl Wirth, Editors
Co-Directors, Keck Geology Consortium

Marga Miller
Keck Geology Consortium Administrative Assistant
Macalester College

*Keck Geology Consortium
Macalester College
1600 Grand Ave, St. Paul, MN 55105
(651) 696-6108, Info@KeckGeology.org*

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2018-2019 Projects

Cameron Davidson Editor and Co-Director Carleton College	Keck Geology Consortium Macalester College 1600 Grand Ave. St Paul, MN 55105	Karl Wirth Editor and Co-Director Macalester College
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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

2018-2019 GATEWAY PROJECTS

LANDSCAPE AND ENVIRONMENTAL CHANGE IN GLACIER NATIONAL PARK, MONTANA, U.S.A.

Faculty: KELLY MACGREGOR, Macalester College and AMY MYRBO, LacCore/CSDCO, University of Minnesota

Students: ELIZAVETA ATALIG, Wesleyan University; ETIENNE CHENEVERT, Macalester College; ELIZABETH MOORE, Washington and Lee University; BONNIE PAGE, Franklin and Marshall College; ANNA PEARSON, Smith College; JOSHUA STEPHENSON, Macalester College; JACOB WATTS, Colgate University

USING GARNETS TO EXPLORE THE BEGINNING OF SUBDUCTION ON SANTA CATALINA ISLAND, CALIFORNIA

Faculty: ZEB PAGE, Oberlin College and JADE-STAR LACKEY, Pomona College

Students: BLAIZE ADLER-IVANBROOK, Colorado College; NATHANIEL BESS, Franklin and Marshall College; AMANI CANADA, Trinity University; JUAN ESPARZA, Tarrant County College; SARAH HAMPTON, Oberlin College; ERIC HASEGAWA, Amherst College; JAMES KARROUM, Rice University; LORENA PARAS, Smith College; PAIGE VOSS, Pomona College

2018-2019 ADVANCED PROJECTS

STRUCTURAL EVOLUTION OF A SEGMENTED NORMAL FAULT TRANSFER ZONE, SEVIER FAULT, SOUTHERN UTAH

Faculty: BEN SURPLESS, Trinity University

Students: CHARLEY HANKLA, College of Wooster; CAROLINE MCKEIGHAN, Trinity University; CURTIS SEGARRA, Trinity University; MADISON WOODLEY, Mt Holyoke College

PALEOENVIRONMENTAL ANALYSIS OF ANCIENT (PETRO)CALCIC SOIL HORIZONS: DISENTANGLING CLIMATIC, GEOMORPHIC, AND BIOLOGICAL RECORDS IN THE MOJAVE DESERT

Faculty: COLIN R. ROBINS, Claremont McKenna, Pitzer, and Scripps Colleges

Students: ETHAN CONLEY, Beloit College; KURT CRANDALL, Pitzer College; INDIA FUTTERMAN, Vassar University; PENELOPE VORSTER, Mt Holyoke College

2018-2019 ADVANCED PROJECTS – Continued

GEOLOGY OF THE CHUGACH-PRINCE WILLIAM TERRANE IN NORTHERN PRINCE WILLIAM SOUND, ALASKA

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

Students: WILL FISHER, Union College; VICTOR GARCIA, University of Texas-Austin; NICHOLAS GROSS ALMONTE, Carleton College; ALYSALA MALIK, Carleton College; CAITLIN NOSEWORTHY, College of St Norbert; MOLLIE POPE, Union College

ASSESSING VEGETATION AND FLUVIAL RESPONSES TO THE PALEOCENE-EOCENE THERMAL MAXIMUM IN THE HANNA BASIN (WYOMING, U.S.A.)

Faculty: BRADY Z. FOREMAN, Western Washington University and ELLEN CURRANO, University of Wyoming

Students: JAMES CHISHOLM, California State University, San Bernardino; KEIFER NACE, Whitman College; XAVIER NOGUEIRA, Temple University; JAKE POLSAK, Western Washington University; ANTHONY SEMERARO, Western Washington University; CHRISTINE SHONNARD, Beloit College

Short Contributions and Posters – Montana Gateway Project

LANDSCAPE AND ENVIRONMENTAL CHANGE IN GLACIER NATIONAL PARK, MONTANA, U.S.A.
KELLY MACGREGOR, Macalester College and AMY MYRBO, LacCore/CSDCO, University of Minnesota

SEDIMENT TRANSPORT AND DEPOSITION IN FISHERCAP LAKE AND THE SWIFTCURRENT VALLEY, GLACIER NATIONAL PARK, MONTANA, USA

MACGREGOR, Kelly¹, MYRBO, Amy², ABOUD, Diala¹, ATALIG, Elizaveta³, CHENEVERT, Etienne¹, MOORE, Elizabeth⁴, PAGE, Bonnie⁵, PEARSON, Anna⁶, STEPHENSON, Joshua¹ and WATTS, Jacob⁷, (1)Geology, Macalester College, 1600 Grand Avenue, St. Paul, MN 55105, (2)LacCore/CSDCO, Department of Earth Sciences, University of Minnesota, 500 Pillsbury Dr. SE, Minneapolis, MN 55455, (3)Wesleyan University, Middletown, CT 06459, (4)Washington and Lee University, Lexington, VA 24450, (5)Franklin and Marshall College, Lancaster, PA 17603, (6)Smith College, Northampton, MA 01063, (7)Colgate University, Hamilton, NY 13346

USING LAKE CORES TO ANALYZE SEDIMENT TRANSPORT AND ENVIRONMENTAL CHANGE IN SWIFTCURRENT LAKE, GLACIER NATIONAL PARK, MONTANA, USA

MYRBO, Amy¹, MACGREGOR, Kelly², ABOUD, Diala², ATALIG, Elizaveta³, CHENEVERT, Etienne², MOORE, Elizabeth⁴, PAGE, Bonnie⁵, PEARSON, Anna⁶, STEPHENSON, Joshua² and WATTS, Jacob⁷, (1)LacCore/CSDCO, Department of Earth Sciences, University of Minnesota, 500 Pillsbury Dr. SE, Minneapolis, MN 55455, (2)Geology, Macalester College, 1600 Grand Avenue, St. Paul, MN 55105, (3)Wesleyan University, Middletown, CT 06459, (4)Washington and Lee University, Lexington, VA 24450, (5)Franklin and Marshall College, Lancaster, PA 17603, (6)Smith College, Northampton, MA 01063, (7)Colgate University, Hamilton, NY 13346

Short Contributions and Posters – California Gateway Project

USING GARNETS TO EXPLORE THE BEGINNING OF SUBDUCTION ON SANTA CATALINA ISLAND, CALIFORNIA

ZEB PAGE, Oberlin College and JADE-STAR LACKEY, Pomona College

AN INVESTIGATION OF THE CATALINA GARNET-BLUESCHIST: MAJOR AND TRACE ELEMENT COMPOSITION AND ZONING IN GARNET AND LAWSONITE FROM A MULTIPLY SUBDUCTED BLOCK

ADLER-IVANBROOK, B.; HAMPTON, S. K.; ESPARZA LIMON, J. P.; LACKEY, J. S.; PAGE, F. Z.
AA(Colorado College, Colorado Springs, CO, United States b_adlerivanbrook@coloradocollege.edu), AB(Geology, Oberlin College, Oberlin, OH, United States shampton@oberlin.edu), AC(Life and Physical Sciences, Tarrant County College, Hurst, United States juan.esparza580@my.tccd.edu), AD(Pomona College, Claremont, CA, United States JadeStar.Lackey@pomona.edu), AE(Oberlin College, Oberlin, OH, United States zeb.page@oberlin.edu)

MAJOR AND TRACE ELEMENT ZONING IN GARNETS OF UNUSUAL SIZE FROM BLOCKS HOSTED BY ULTRAMAFIC MÉLANGE, SANTA CATALINA ISLAND, CALIFORNIA

CANADA, A. L.; KARROUM, J. G., II; PARAS, L.; LACKEY, J. S.; PAGE, F. Z.
AA(Trinity University, San Antonio, TX, United States amanilcanada@gmail.com), AB(Rice University, Houston, TX, United States jameskarroumii@gmail.com), AC(Smith College, Northampton, United States lparas@smith.edu), AD(Pomona College, Claremont, CA, United States JadeStar.Lackey@pomona.edu), AE(Oberlin College, Oberlin, OH, United States zeb.page@oberlin.edu)

MAJOR AND TRACE ELEMENT ANALYSIS OF GARNET CRYSTALS FROM A HORNBLENDEITE BLOCK AND RIND ON SANTA CATALINA ISLAND, CA: INSIGHTS INTO METASOMATIC PROCESSES IN SUBDUCTION MÉLANGE

BESS, N. T.; HASEGAWA, E. M.; VOSS, P. R.; LACKEY, J. S.; PAGE, F. Z.
AA(Franklin and Marshall College, Lancaster, PA, United States nbess@fandm.edu), AB(Geology, Amherst College, Amherst, MA, United States ehasegawa20@amherst.edu), AC(Geology, Pomona College, Claremont, United States prva2017@mymail.pomona.edu), AD(Pomona College, Claremont, CA, United States JadeStar.Lackey@pomona.edu), AE(Oberlin College, Oberlin, OH, United States zeb.page@oberlin.edu)

Short Contributions – Utah Advanced Project

STRUCTURAL EVOLUTION OF A SEGMENTED NORMAL FAULT TRANSFER ZONE, SEVIER FAULT, SOUTHERN UTAH

BEN SURPLESS, Trinity University

AN ANALYSIS OF FRACTURES AROUND THE SEVIER FAULT ZONE IN RED HOLLOW CANYON NEAR ORDERVILLE, UTAH

CHARLEY H. HANKLA, The College of Wooster

Research Advisor: Shelley Judge

ANALYZING DEFORMATION WITHIN A NORMAL FAULT TRANSFER ZONE USING SFM 3D MODELING

CAROLINE MCKEIGHAN, Trinity University

Research Advisor: Benjamin Surpless

GEOMECHANICAL ANALYSIS OF SEDIMENTARY LAYERING AS A STRUCTURAL CONTROL ON FAULT PROPAGATION

CURTIS SEGARRA, Trinity University

Research Advisor: Benjamin Surpless

GIS ANALYSIS OF SUBSIDIARY STRUCTURES WITHIN A MAJOR NORMAL FAULT TRANSFER ZONE

MADISON WOODLEY, Mount Holyoke College

Research Advisor: Michelle Markley

Short Contributions – Nevada Advanced Project

PALEOENVIRONMENTAL ANALYSIS OF (PETRO)CALCIC SOIL HORIZONS IN THE MOJAVE DESERT

COLIN R. ROBINS, Claremont McKenna, Pitzer, and Scripps Colleges (The Claremont Colleges Consortium)

MORPHOLOGY AND GENESIS OF PEDOGENIC OIDS IN CALCIC AND PETROCALCIC SOIL HORIZONS

ETHAN W. CONLEY, Beloit College

Research Advisor: Jim Rougvie

WHAT CAN PETROCALCIC LAMINAE TELL US ABOUT SOIL PROCESSES AND PALEOENVIRONMENTS?

KURT CRANDALL, Pitzer College

Research Advisor: Colin Robins

INTERPRETING POTENTIAL BARIUM SOURCES AT MORMON MESA, NV USING GEOCHEMICAL AND GEOMORPHOLOGICAL DATA

INDIA FUTTERMAN, Vassar College

Research Advisor: Kirsten Menking

$\delta^{13}\text{C}$ AND $\delta^{18}\text{O}$ GEOCHEMISTRY OF PEDOGENIC CARBONATES OF MORMON MESA, SOUTHEASTERN NEVADA, USA

PENELOPE VORSTER, Mount Holyoke College

Research Advisor: Steve Dunn

Short Contributions – Alaska Advanced Project

GEOLOGY OF THE CHUGACH-PRINCE WILLIAM TERRANE IN NORTHERN PRINCE WILLIAM SOUND, ALASKA

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

ZIRCON FACIES IN THE PALEOCENE-EOCENE ORCA GROUP INDICATE A PROVENANCE LINK TO THE CHUGACH TERRANE, PRINCE WILLIAM SOUND, ALASKA

WILL SPARKHAWK FISHER, Union College

Research Advisor: John Garver

CRYSTALLIZATION AGES AND GEOCHEMISTRY OF THE MINERS BAY AND CEDAR BAY PLUTONS, PRINCE WILLIAM SOUND, ALASKA

VICTOR R. GARCIA JR., The University of Texas at Austin

Research Advisor: Daniel F. Stockli

AGE AND PROVENANCE OF THE UPPER CRETACEOUS TO PALEOCENE VALDEZ GROUP OF THE CHUGACH TERRANE FROM THE RICHARDSON HIGHWAY AND NORTHERN PRINCE WILLIAM SOUND, ALASKA

NICHOLAS GROSS ALMONTE, Carleton College

Research Advisor: Cameron Davidson

U-PB DATING OF DETRITAL ZIRCON FROM TURBIDITES OF THE CHUGACH AND PRINCE WILLIAM TERRANES, ALASKA: SIGNIFICANCE OF THE CONTACT FAULT SYSTEM AS A TERRANE BOUNDARY

ALYSALA MALIK, Carleton College

Research Advisor: Cameron Davidson

AGE AND TECTONIC SETTING OF THE PALEOCENE GLACIER ISLAND VOLCANIC SEQUENCE OF THE ORCA GROUP IN PRINCE WILLIAM SOUND, ALASKA

CAITLIN NOSEWORTHY, Saint Norbert College

Research Advisor: Tim Flood

PROVENANCE OF SANDSTONE CLASTS FROM CONGLOMERATE OF THE PALEOCENE-EOCENE ORCA GROUP IN PRINCE WILLIAM SOUND, ALASKA

MOLLIE D. POPE, Union College

Research Advisor: John Garver

Short Contributions – Wyoming Advanced Project

ASSESSING VEGETATION AND FLUVIAL RESPONSES TO THE PALEOCENE-EOCENE THERMAL MAXIMUM IN THE HANNA BASIN (WYOMING, U.S.A.)

ELLEN D. CURRANO, University of Wyoming and BRADY Z. FOREMAN, Western Washington University

EVALUATION OF BULK ORGANIC CARBON ISOTOPE RECORDS FROM EARLY PALEOGENE STRATA IN THE HANNA BASIN (WYOMING, U.S.A.) SPANNING THE PALEOCENE-EOCENE THERMAL MAXIMUM

JAMES CHISHOLM, Department of Geological Sciences, California State University, San Bernardino

Research Advisor: Joan E. Fryxell

VEGETATION STRUCTURE AND LITHOLOGY RESPONSE TO THE PALEOCENE-EOCENE THERMAL MAXIMUM IN THE HANNA BASIN, WYOMING

KEIFER NACE, Whitman College

Research Advisor: Pat Spencer

PROVENANCE OF FLUVIAL AND DELTAIC SANDSTONES ACROSS THE PALEOCENE-EOCENE BOUNDARY, HANNA BASIN, WYOMING

XAVIER ROJAS NOGUEIRA, Temple University

Research Advisor: Jesse Thornburg

VARIABILITY IN VEGETATION DENSITY ACROSS LATERALLY COEVAL STRATIGRAPHIC SECTIONS WITHIN THE HANNA BASIN, WYOMING, USA

JAKE POLSAK, Western Washington University

Research Advisor: Brady Z. Foreman

PALEOCURRENT VARIABILITY IN MEANDERING AND BRAIDED RIVER SYSTEMS: MODERN CALIBRATION AND STRATIGRAPHIC CASE STUDIES SPANNING THE PALEOCENE-EOCENE THERMAL MAXIMUM

ANTHONY SEMERARO, Western Washington University

Research Advisor: Brady Z. Foreman

EARLY PALEOGENE OVERBANK DEPOSITIONAL PATTERNS IN THE HANNA BASIN AND COMPARISON WITH COEVAL STRATA IN THE BIGHORN BASIN (WYOMING, U.S.A.)

CHRISTINE SHONNARD, Beloit College

Research Advisor: Jay Zambito