

OFFICERS OF THE SOCIETY

Past President:

Jon Harvey

President:

David Schiowitz

President-Elect:

Jeff Geslin

Treasurer:

Tom Staatz

Secretary:

Jolin Cordalis

Newsletter Editors:

Tom Ann Casey
back up Kim Gerhardt

Fieldtrip Chair:

Available! Help!

Website:

Jon Harvey

OFFICERS OF THE FOUNDATION

President:

Mary Gillam

Secretary:

Patti Phillips

Treasurer:

Ron Brogden

Directors:

Jim Fassett
OPEN! Help!

To contact an officer click:
<https://fourcornersgeologicalsociety.org>

SEPTEMBER 2021 NEWSLETTER



David Schiowitz Photo

FOUR CORNERS GEOLOGICAL SOCIETY



We Are Back!

SEPTEMBER MEETING

SPEAKER:

Dr. Carolyn Tewksbury-Christle, Fort Lewis College

TITLE:

Using the Rock Record to Explain Anomalous Seismic Velocities in Modern Subduction Zones

DATE:

Thursday, September 23rd

TIME & LOCATION

5:30 pm Social, Drinks and Lots of Appetizers - Third Floor Deck, Sitter Family Hall, Fort Lewis College
~ 6:30 pm move to Room SFH 710 for the Talk
ZOOM meeting will start at 6:30 pm.

ZOOM LINK: [Zoom Meeting Link](#)

COVID:

Meeting is at FLC: Per Fort Lewis Policy, VACCINATION IS REQUIRED TO ATTEND IN PERSON. If you are not vaccinated, please use the Zoom option.

COST:

\$20/person. Please RSVP by Tuesday, September 21st at noon if possible. PLEASE go to the website to pay and register: <https://fourcornersgeologicalsociety.org/event>
Or you can email Jon Harvey at jeharvey@fortlewis.edu
Students are free for this meeting. If you do not pay or RSVP please feel free to come to the TALK. Payment can be made at the door for those who RSVP via email.
The cost helps support the students.



Four Corners Geological Society, P.O. Box 1501, Durango, CO 81302
www.fourcornersgeologicalsociety.org

Map of Meeting Location



Our Speaker: Dr. Carolyn Tewksbury-Christle

Carolyn Tewksbury-Christle is an Assistant Professor in the Geosciences Department at Fort Lewis College in Durango, CO. She completed her B.A. with a double major in Geology and Physics at Smith College in 2007, and her M.S. in Geology with a focus on near-surface geophysics at the University of Tennessee – Knoxville in 2013. After working as an optical physicist for the U.S. Air Force from 2007-2011 and an Assistant Professor of Physics at the U.S. Air Force Academy from 2013-2016, Carolyn returned to geology to complete her doctorate at ETH Zurich with Dr. Whitney Behr. Her research combines field and structural geology with microstructural observation, geochronology, and geophysical analysis to investigate deformation along fossil subduction interface shear zones. Carolyn's work on the Condrey Mountain Window, a fossil subduction zone in the Klamath Mountains in northern California, provides key insights into the transition in seismic styles in modern subduction zones with depth.



"Talks on the Rocks" (1/2 - 1 day fieldtrip) October 16th

Dr. Gary Gianinny starts us off with a small vaccinated group (max 15) to look at depositional facies and bedforms of the Jurassic Entrada and Junction Creek (Bluff) eolian sandstones of the Durango area. Watch for updates in your email, newsletter or on our website.



Four Corners Geological Society, P.O. Box 1501, Durango, CO 81302
www.fourcornersgeologicalsociety.org

Abstract

Subduction zones play a major role in large-scale Earth processes, including seismic and volcanic hazards and mass and volatile recycling. The interface between the overriding and downgoing plates accommodates convergent motion and evolves with depth from a brittle fault capable of hosting megathrust earthquakes to a viscous aseismic interface shear zone. In the transitional zone between seismic and aseismic motion, most modern subduction zones have a 3-5 km thick low seismic velocity zone (LVZ). LVZs have anomalously high ratios of P-wave to S-wave velocities ($V_p/V_s = 1.8-2.5$) consistent with near-lithostatic pore fluid pressures in 3-4% fracture porosity. Current competing models for the LVZ argue that it could be 1) the oceanic crustal portion of the downgoing slab beneath a narrow interface shear zone or 2) the seismic signature of a 3-5 km thick interface shear zone. To differentiate between these two, we estimated the thickness and seismic signature of a fossil subduction interface shear zone in the Condrey Mountain Schist (CMS) subduction complex in northern California.

The CMS is predominantly metasediments with m- to km-scale lenses of metamafic and serpentinized ultramafic rocks, all metamorphosed to epidote blueschist facies (460°C, 1 GPa). The CMS records distributed ductile deformation with coeval brittle failure across 3+ km packages of metasedimentary rocks with intercalated metamafic and serpentinized ultramafic lenses. V_p/V_s calculated using constraints from field observations is anomalously high and comparable to modern LVZs. Comparable seismic signatures and thicknesses between the CMS interface shear zone and modern LVZs suggest that the LVZ is the seismic signature of a distributed subduction interface shear zone.



SOCIETY NEWS



SAVE THE DATE!

Oct. 21: Dr. Jeff Geslin (Adjunct Prof. FLC) Eocene basin evolution and depositional systems in the Pyrenees Mountains of Spain

Nov. 18: Dr. Joel Pederson (Utah State University): Landscape evolution in the Book Cliffs of Utah

Dec. 9: Dr. Ron Hill (EOG Chief Geoscientist): Unconventional petroleum systems in the Western US



Four Corners Geological Society, P.O. Box 1501, Durango, CO 81302
www.fourcornersgeologicalsociety.org

"PREZ SEZ" by David Schiowitz

Greetings FCGS members!

We had an outstanding end of summer picnic with great food, cold suds, a shower or two, and a spectacular raffle. Thanks to everyone who attended, helped organize, bought raffle tickets, and especially Tom Staatz for supplying all the great prizes. Once again, Devin Hencmann defended his horseshoe title as champion of the Rob Blair Memorial Horseshoe Tournament!

I am excited to host our first in-person meeting of the fall season on **Thursday, September 23rd**. Dr. Carolyn Tewksbury-Christle will be discussing subduction zones.. Dr. Tewksbury-Christle just arrived to the Four Corners and will be teaching introductory geology, field methods, and structural geology for the FLC Geosciences Department. I would like to extend a big welcome to Dr. Tewksbury-Christle from the FCGS community.



September's meeting will be in the Sitter Family Hall (the geosciences building on FLC campus). We will start the meeting at 5:30 pm with a social hour with drinks and heavy appetizers on the 3rd floor deck of the Sitter Family Hall. Views and sunset from the deck should be quite picturesque and this meeting is not to be missed. It will likely be our only social hour on the deck this fall. We thought we would try something new for this meeting and we will **not** be having a dinner buffet as we have in the past, but there will be plenty of apps. Around 6:30 pm we'll move down to SFH710 for the talk. Please RSVP for the talk here ([link to site](#)) For everyone's safety, please only attend in person if you are vaccinated. This is the FLC policy and follows health department guidelines. For those who can't attend in-person we will have a Zoom option starting around 6:30 pm (see link below). See details below.

I am excited to announce our first "Talks on the Rocks" field trip. Dr. Gary Gianniny will be leading a group on **Saturday, October 16th** to look at the depositional facies and bedforms of the Jurassic Entrada and Junction Creek (Bluff) Sandstones (eolian sandstones) of Durango. This field trip will be limited to 15 members (proof of vaccination required). Details on registration will be coming your way soon.

Finally, please, if you haven't already done so, renew your membership by going online at www.fourcornersgeologicalsociety.org. If you have any questions on your status, just email us at fcgeosociety@yahoo.com. Any members who have not renewed will soon be removed from our distribution list and will no longer receive newsletters, field trip notices and other society business.

Best Regards!!

David

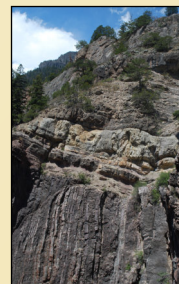
Zoom Link is:

<https://fortlewis.zoom.us/j/99257905625>



The Field Trip Committee working from 2017 to 2019 brought you:

- *The Geology of the Durango Area*. April 14, 2018
- *Upper San Juan Float Trip*. June 5-7, 2018.
- *Hike Sand Canyon with the FCGS*. October 20, 2018.
- *Fruitland Methane Seeps and Hydrology of the Durango Area*. May 11, 2019.
- *Geology of the Ouray Area*. June 1-2, 2019.
- *Hike/Train Combo at Peak Leaves: Molas Pass to Elk Park to Town*. October 5, 2019.
- *Geology & Minerals of the Harding Pegmatite Mine, Dixon N.M.* April 2020: Cancelled
- *Stratigraphy & Sedimentology of the Aeolian Cedar Mesa Sandstone* May, 2020: Cancelled



New Field Trip Committee members & Ideas are needed. Let's get out on the rocks! Contact David Schiowitz: [Link to David here](#)

NEWS FROM AROUND THE REGION

Mineral Exploration Job Opening

President & CEO for a Vancouver-based TSX-V listed explorer with a premier package of base and precious metal projects.

This is an exciting opportunity for an emerging leader to advance the Company's vision, by guiding the existing projects towards development, divesting non-core assets, and acquiring additional complementary projects that will add value, either in British Columbia or elsewhere. The ideal candidate will be a market-savvy, natural leader and skilled communicator with experience in the junior exploration sector. The incumbent will have a proven track record of capital raising, deal-making, public company administration, deposit discovery, and building shareholder value.

For more details - view the job here: <https://jobs.miningsearch.com/president-ceo/>

Sept. 10-18, Colorado Mineral and Fossil Fall Show, at the Crowne Plaza Denver Airport Convention Center, 15540 E. 40th Ave., Denver. No admission charge; see www.coloradomineralandfossilshows.com. Sept. 10-18, JG&M Expo Denver Show, at the Clarion Hotel, 200 W 48th St., Denver; open to the public, free admission. Jewelry, Gems, Minerals, Crystal, Fossils, Beads. Sept. 10-19, National Western Complex Denver Mineral, Fossil, Gem & Jewelry Show. 10 a.m. – 6 p.m. daily; no admission charge; on the north side of I-70 at Exit 275-B, Brighton Blvd. Sept. 16-19, Denver Gem & Mineral Show; 10 a.m. – 5 p.m. daily Thurs.-Sun. at the Colorado Convention Center, held as part of the “Hardrock Summit - Evolution” mineral and gemstone show. See www.denvermineralshow.com. This is the show hosted by the Denver Council of Gem and Mineral Societies, and formerly held at the Denver Merchandise Mart; it is “The original” Denver Gem and Mineral Show, with special exhibits by clubs and museums. By my count this is the 53rd (not quite annual—there was no show in 2020) Denver Show. The featured mineral this year will be Fluorite. Sept. 16-21, “Hardrock Summit 2021” gem and mineral show, Denver. This will consist of two separate shows; “Evolution”, Sept. 16-19, a gem and mineral show open to the public at the Colorado Convention Center (admission and parking fees [consider using public transportation!]), and “Sparkle and Joy”, Sept. 18-21, a gem trade show held at the Sheraton Denver Downtown Hotel, Plaza Ballroom. For more information see www.hardrocksummit.com. Oct. 1-3, Pikes Peak Gem, Mineral, & Jewelry Show, at the Norris Penrose Event Center, 1045 Lower Gold Camp Road, Colorado Springs. Sponsored by the Colorado Springs Mineralogical Society; see <https://pikespeakgemshow.com>. [This is the gem & mineral show, normally held around June 1.]



Grand Junction Geological Society September Meeting: Joint meeting with the CMU Geology Students: **September 15, 2021; 7:30 PM;** In-Person and Zoom. Weldon Lecture Hall (Room 131 in the Wubben-Science Building), CMU Campus, Grand Junction, CO

Dr. Vince Matthews, State Geologist of Colorado (Retired) “The Wonders of Colorado’s Glacial Landscape”

The manuscript of a new book on the fascinating features and landforms found in Colorado's glacial landscape is the culmination of a 3-1/2 year journey. This talk will include a potpourri of some of the more interesting glacial, periglacial, proglacial, and paraglacial features explored on jaunts around Colorado.



Four Corners Geological Society, P.O. Box 1501, Durango, CO 81302
www.fourcornersgeologicalsociety.org

NEWS FROM AROUND THE REGION

Dr. Vince Matthews retired as Director of the Colorado Geological Survey and was the State Geologist of Colorado. He taught geology at six institutions of higher education and held tenure at two. Vince is the author of the multiple award-winning book "Messages in Stone: Colorado's Colorful Geology" and has just completed the manuscript for "Land of Ice: Jaunts into Colorado's Glacial Landscape."

For those who can't or would prefer not to attend in person, the September meeting will also be conducted via Zoom. Please note that the meeting itself starts at 7:30. The Zoom meeting "room" will open at 7:00 to give people time to log in prior to the meeting.

Join Zoom Meeting:

<https://coloradomesa.zoom.us/j/94258402037?pwd=eGM1cGoyeGMxbC9qTzVGd210bFZ0UT09>

Meeting ID: 942 5840 2037; Passcode: 188092

ICARD 2021— Meeting Challenge Through Innovation September 21-23, 2021; Virtual Conference

Join us online in less than a month for the first virtual ICARD! Listen, discuss, and network with industry-leading representatives guiding global best practices regarding acid and metalliferous drainage. This conference will include live-streaming and on-demand content (including keynote lectures, panel discussions, technical presentations, and site tours) to offer multiple options for participation over the three-day event.

Day 1 will kick off with the current learnings from both industry and academia that are driving the future of AMD management, including a virtual site visit from Boliden's Garpenberg operation and a keynote from Dr. Bill Price.

Day 2 continues with a focus on proactive mine planning for closure, with a site visit delivered by Rio Tinto.

Day 3 closes the conference with an emphasis on the future of AMD management strategies. Hear from emerging research regarding the use of machine learning, exploiting microbiology for waste management, and a panel discussion addressing the barriers between the classroom and the mine site.

Not able to attend the event programming live? We are pleased to share that Virtual ICARD content will be made available to registrants within the virtual event platform for 6-months following the event dates.

Visit the event website (<https://www.icard2021.com/program/>) for the schedule of events and a listing of the confirmed speakers including representatives from industry and academia. Registration also is available through this website.

FCGS Foundation:

The Four Corners Geological Foundation is exploring new ways to support geoscience education and research. The Foundation is seeking a volunteer for an open Director Position. Contact Mary Gillam if you are interested.

Donations are gratefully accepted to support the scholarship program. Until a website link to the new Foundation account is up, please send a check to "Four Corners Geological Foundation" and mail it to: FCGS / P.O. Box 1501 / Durango / CO 81302.

THANK YOU VERY MUCH FOR YOUR SUPPORT!



Four Corners Geological Society, P.O. Box 1501, Durango, CO 81302
www.fourcornersgeologicalsociety.org



FCGS ROCKS THE PICNIC





FCGS ROCKS THE PICNIC



**Thanks go out to all the volunteers
who put on a spectacular Picnic
this year!
A Special THANK YOU to Tom
Staatz!**





FOUR CORNERS GEOLOGICAL SOCIETY

P.O. Box 1501, Durango, CO 81302

MEMBERSHIP RENEWAL or APPLICATION: June 1, 2021 to May 31, 2022



*Name: _____

*Address: _____ City: _____ State: _____ Zip: _____

*Email: _____ Phone: _____

*Employer: _____

Please Identify a Membership Category:

Active Member	\$25	Any person engaged in the practice or teaching of geology or who holds a Bachelor's Degree in geological science from a college of acceptable academic standards. Degree requirement may be waived if applicant has adequate professional experience. <i>*Highest Degree, Type and Year:</i> _____ <i>*College / University:</i> _____
Associate Member	\$25	Any person who is a graduate of a college of acceptable academic standards with major studies related to, or associated with, geology. Degree requirement may be waived if applicant has adequate professional experience. <i>*Highest Degree, Type and Year:</i> _____ <i>*College / University:</i> _____
Student Member	Free	Any undergraduate or graduate student majoring in geology at a college of acceptable academic standards. <i>*College / University:</i> _____ <i>*Year expected to graduate:</i> _____
Emeritus Member	Free	An Active Member of 65 years old or older who has been a member for 25 years including time spent in military service. <i>*Year emeritus status was awarded:</i> _____
Honorary Member	Free	An Active Member who has contributed distinguished service to the profession of geology and to the betterment of the FCGS. Determination is made by the FCGS Executive Committee. <i>*Year honorarium was awarded:</i> _____.

Other Professional Interests:

** Required information for new members. Current Members, please update.*

Please either print, complete and return this form with your check for dues made payable to: "Four Corners Geological Society" and mail to the address above or go online to fourcornersgeologicalsociety.org.

Please donate to the Foundation to support student research. Make out your check to: "Four Corners Geological Foundation" and include it in the envelope with your dues.

*Please check your interests:

- ☐ Sedimentology & stratigraphy
- ☐ Structure & tectonics
- ☐ Mineralogy, petrology, geochemistry
- ☐ Igneous geology, volcanology
- ☐ Ore geology and hard rock mining
- ☐ Other mineral extraction
- ☐ Petroleum geology
- ☐ Geophysics
- ☐ Geological engineering
- ☐ Geomorphology
- ☐ Quaternary geology
- ☐ Hydrology & water resources
- ☐ Environmental geology
- ☐ Geography / GIS
- ☐ Other interest (see box)