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<https://fourcornersgeologicalsociety.org>

FOUR CORNERS GEOLOGICAL SOCIETY



October 2022

OCTOBER 2022 MEETING



SPEAKER:

Steve Cumella and Mike Boruta

TITLES:

Drone View of the Geology of the Ouray Area

DATE:

Thursday, October 20, 2022

TIME:

5:30 - 6:30 pm: HAPPY HOUR

Drinks and Food on the 3rd Floor Balcony of Sitter
Family Hall, FLC Campus

~ 6:30 pm - 8 pm: Speaker, Society business and Raffle
in SFH Room #710

LOCATION

Room 710, Sitter Family Hall (Geology Building),
Fort Lewis College with Social Hour & Food on 3rd
Floor Balcony

COVID:

Please be cognizant of the ever-present danger of this
nasty virus.

COST:

\$20/person. Please RSVP by Monday October 17 if
possible. 1) PLEASE go to the website to pay and
register: <https://fourcornersgeologicalsociety.org/event>
Or 2) email Jeff Geslin at jkgeslin@gmail.com
Some students (working on it) will be sponsored.
To sign up, contact Dr.Geslin, RSVP and get on the list.

ZOOM LINK: <https://fortlewis.zoom.us/j/93585977904>

Starts at 6:30 PM



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

Our Speakers:

Steven Cumella

Steve is a consulting geologist and received his bachelors and masters in geology from University of Texas at Austin. Steve has authored numerous publications for geological journals, given numerous presentations at geological society meetings and conventions, and led several fieldtrips. He was awarded Rocky Mountain Association of Geologists' Outstanding Scientist Award in 2005. He is past executive editor of the Mountain Geologist and was president of the Grand Junction Geological Society in 1991.

Steve has enjoyed visiting Ouray since 1979 and became a full-time resident in 2017. He and his wife Cindy enjoy hiking, camping, and puzzling over the geology in the Ouray area.



Mike Boruta

Mike Boruta sees the world from above. He is the excited passenger on the airplane with his nose pressed into the window, marveling at the details of the landscape below. He is the hiker who seeks out the trails with the best views. He envies birds and clouds and can spend hours getting lost in a map.

Since 2009 he has worked as a freelance cartographer, making recreational maps for National Geographic's Trails Illustrated, as well as fishing and mountain biking guidebook maps for Stonefly Press and Fixed Pin Publishing. But the types of maps he has always wanted to create have eluded him. These are the painterly "birdseye maps" that show the landscape as if the reader were flying above it like a bird. It is possible to digitally render these views of the landscape, but the computer struggles to communicate Earth's beauty as well as a skilled painter can. Mike is not a painter, but he has always been drawn to photography.



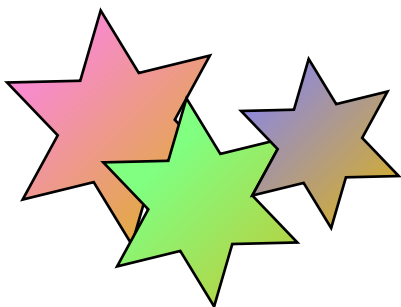
In 2013 he realized the link which allowed him to turn the birdseye view in his mind into a reality which could be shared with others. This tool was the "flying camera," also known as a "Drone," "Unmanned Aerial System," "Quadcopter," etc. For the past nine years Mike has been honing his skills with this new tool, creating aerial landscape panoramas of the place he knows best - Ouray, Colorado and its strikingly beautiful San Juan Mountains.

Mike is an FAA licensed drone pilot. Custom sized prints are available, as well as custom aerial photography and mapping services.

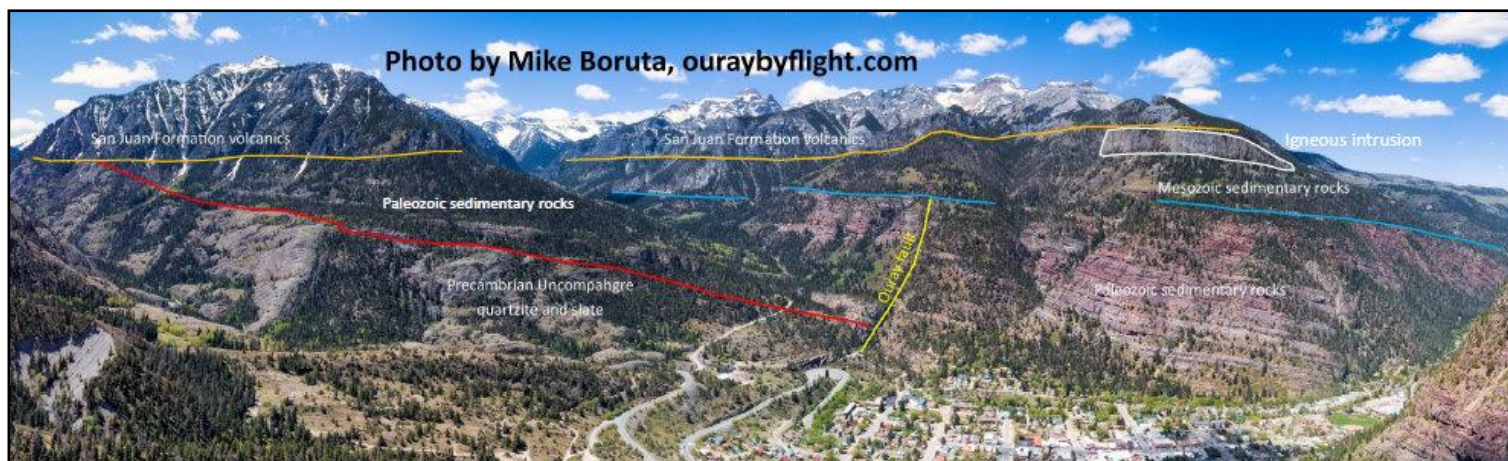
Please reach out with any questions! mike@OuraybyFlight.com



AN EXCITING VIEW OF OURAY FROM WAY UP HIGH!



WOW! How cool is this?



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Abstract:

A DRONE VIEW OF THE GEOLOGY OF THE OURAY AREA

Steven Cumella and Mike Boruta

This talk will look at Ouray's beautiful scenery and amazing geology. Mike Boruta's drone photography and videos will be used to look at features that make Ouray's landscape so distinctive. Drones allow views and perspectives not possible by other means. We will take a drone's eye view of some interesting geologic features in the Ouray area including gold and silver mines, dinosaur tracks, rock glaciers, volcanic deposits from the world's largest volcanic eruptions, and faults that record the history of past mountain building episodes. Ouray's spectacular scenery is the result of distinctive rock formations, mountain building episodes, and erosion by streams and glaciers. Mike's images help us see and understand geology's important role in creating this beautiful landscape.



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“PREZ SEZ” by Jeff Geslin

Hello FCGS members! ***This month...*** Fall has arrived and we have all sorts of good things going on. Our meeting this month will feature a presentation by Steve Cumella and Mike Boruta on “Drone View of the Geology of the Ouray Area.” The geology around Ouray is fascinating and it should be a very interest evening. We will start the meeting at 5:30 pm with a social hour on the 3rd floor deck of the Sitter Family Hall. The views and sunset should be quite picturesque and this be our last social hour on the deck this fall, so you shouldn’t miss it. This weekend is also our first fieldtrip of the year. For those of you attending, the hike from Molas Pass down to the train and the train ride back to town should be beautiful!

Your society... The FCGS always appreciates people that want to get involved. The board has discussed the need to update and redesign our website. For those of you that have had frustrating experiences using the website can understand our desire to make it better. We will be working with a website design specialist, and if you have an interest in helping to improve the FCGS online presence please let us know.

Out and about... Going back to when I was growing up in Colorado, fall has always been my favorite season. It is a wonderful time to get outside to enjoy combined views of spectacular aspen groves and amazing geology. We were riding mountain bikes in Echo Basin and had a great view of the meta-sediments and volcanic sills that make up Hesperus Mountain, the “roof” of the laccolith that defines the La Plata Mountains. It was another reminder to appreciate what we have in our own backyard. Get out and enjoy!



Best regards,

Jeff



Hesperus Mountain (left) from Echo Basin (photo courtesy Lorna Campbell)

FCGS NEWS

Kim Miskell-Gerhardt Wins RMS-AAPG Distinguished Service Award

In late July our very own Kim Gerhardt was awarded the prestigious Distinguished Service Award by the Rocky Mountain Section of the American Association of Petroleum Geologists. The award was presented to her at the President's Reception, held in the Denver Museum of Nature & Science. The award recognizes long-term beneficial service to geoscience and to RMS-AAPG

Kim has been a Director of the Rocky Mountain Section AAPG Foundation since 2011 and has been the organization's secretary since 2014. Kim has brought rigor and organization to the secretary role and has greatly improved the administration of the grant program for AAPG Student Chapters. Over the last eleven years the Foundation has awarded over \$135,000 in grants to as many as 25 different colleges and universities in the Rockies. Kim's diligence in providing contact information for schools with geoscience programs, her review of each application and her communication with the candidates have been keys to the success of this program.

Kim was General Chairman of the successful 2010 RMS-AAPG meeting in Durango. She has held most or all of the officer positions in the FCGS and is one of our key "go-to" members. Kim was co-chair of the 2019 RMS AAPG Annual meeting in Grand Junction, which was cancelled due to the pandemic.



SAVE THE DATES!



November 17, 2022: Carol Finn, USGS
December 8, 2022: TBD
January 19, 2023: TBD
February 16: Nathan Rodgers/Lauren Broes



March 23: John Singleton, Colorado State University
April 20, 2023 FLC Student Presentations
May 2023: Possible Spring Party

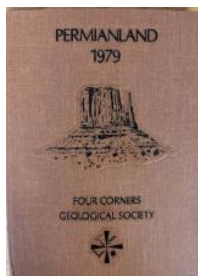


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BLOW OUT BOOK SALE & CLEARANCE

LAST CHANCE to buy these Classic Books.

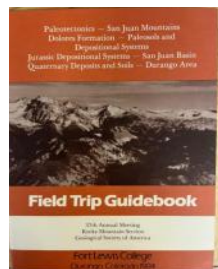
Everything goes by October 18, 2022



Permianland

1979

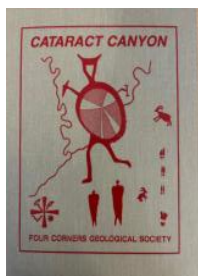
Ninth Field Conference Sept. '79
17 Technical Papers & 4-day road
log from Moab, Lisbon Valley, the
Needles, Monument Valley,
Flagstaff, to Sedona.



Durango Field Guide

1984

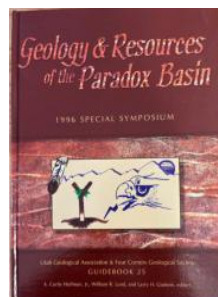
Field Trip Guidebook, GSA 37th Annual
Meeting Rocky Mtn. Section
5 Technical Papers & road logs from
Durango to Silverton & Telluride plus
Quaternary geology of Durango area.



Geology of Cataract Canyon

1987

28 Technical Papers. General
Overview, Structure-Tectonics,
Stratigraphy, Sedimentation &
Paleontology, Economic &
Groundwater Geology.



Geology and Resources of the Paradox Basin

1996 Special Field Symposium
UGA Guidebook 25

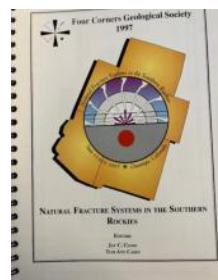
33 various Technical Papers & 3-day
road & river logs from Moab to Bluff to
Mexican Hat along the San Juan River
& back to Durango. *This is an incredible
book!*



Oil & Gas Fields of the Four Corners

1979-1983 (Vol I, II & III)

3-ring binders. General papers on
various subjects from CO2 to
helium to studies. Plus detailed
description of almost every
conventional field in the 4-corners
area to 1983.



Natural Fracture Systems in the Southern Rockies

1997

28 technical papers in a wide range of
topics from theory to practical
applications. Softbound.

We are closing our storage locker so these volumes will not longer be sold. Price includes shipping.

The Society will continue to sell the digital CD containing **all** of our publications (\$105) and the San Juan River Guidebook (\$15). Please see the website: fourcornersgeologicalsociety.org.

_____ **Permianland : \$11 (50% off)**

_____ **Cataract Canyon: \$12 (50% off)**

_____ **Oil & Gas Fields 3-vol: \$36 (40% off)**

_____ **Durango Field Guide: \$11 (50% off)**

_____ **Paradox Basin: \$42 (35% off)**

_____ **Natural Fracture Systems: \$16 (-65% off)**

_____ **All 4 of Remaining Field Guide Volumes (not the O&G vols): \$61 SPECIAL BUNDLE SALE!**

Instructions to order books: Decide what you want & email your name, address and order details to Tom Ann at: talcgeo@gmail.com or fcgeosociety@yahoo.com.

We will invoice you via our FCGS PayPal site and mail or deliver your books. Questions? Contact Tom Ann!



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NEWS FROM AROUND THE REGION

AAPG Distinguished Lecture

Oct. 27, 2022; 1:00 PM (CT)

Jacob Covault, Quantitative Clastics Laboratory, Bureau of Economic Geology, Jackson School of Geosciences, The University of Texas at Austin

Submarine-channel Evolution from Seismic Stratigraphy and Numerical Models: Patterns and Predictions Revisited

Summary:

Three-dimensional (3D) seismic-reflection surveys provide one of the most important data types for understanding subsurface depositional systems. Quantitative analysis is commonly restricted to geophysical interpretation of elastic properties of rocks in the subsurface. Wide availability of 3D seismic-reflection data and integration provide opportunities for quantitative analysis of subsurface stratigraphic sequences. Here, we integrate traditional seismic-stratigraphic interpretation with quantitative geomorphologic analysis and numerical modeling to explore new insights into submarine-channel evolution. 1) We show that submarine-channel patterns in a range of basin settings qualitatively resemble meandering rivers. 2) We mapped submarine-channel centerlines to reconstruct system migration at a level of detail similar to that of geomorphologic studies of rivers. Our results show that submarine channels migrate like freely meandering rivers unless confined by salt structures or other obstructions. 3) This result is confirmed by a simple numerical model of meandering, called meanderpy. 4) A potential consequence of submarine-channel meandering is a progressive increase in sinuosity, which decreases the channel thalweg slope through time. We evaluate the dynamic connectivity of these process-based 3D stratigraphic models using the MATLAB Reservoir Simulation Toolbox. The process-based models yield distinctively different flow behavior compared to a model that does not account for systematic submarine-channel meandering.

To register, go to https://aapg.zoom.us/webinar/register/WN_cZAeKJ_9RuSztFRuWCB7Aw

RMAG NOVEMBER LUNCH TALK

November 2, 2022; 12:00 pm - 1:00 pm; In-person and virtual

Maggiano's Little Italy, 500 16th St. Mall, #150, Denver, CO 80202

"Geothermal Systems in Sedimentary Basins"

Ben Burke, Transitional Energy

Geothermal, as its Greek word roots suggest, is Earth heat. That heat expresses itself in a variety of ways at a variety of depths in differing geologic environments. Geothermal, as a subset of the energy industry, also has different meanings in its different engineering expressions: high temperature (>150° C/302° F) power generation applications at active margin locations around the world, medium temperature (90°-150° C/194°-302° F) power generation applications a further distances from active margins, low temperature (<90° C/194° F) power generation in medium to high geothermal gradient locations regardless of tectonic environment, as well as the myriad of direct use applications in agriculture, aquaculture, industrial process, and heating, ventilation, and air conditioning.

This luncheon talk surveys the above applications of geothermal and the geoscience behind them, with a focus on the keys to geothermal systems—analogue to petroleum systems—in sedimentary basins, namely, heat source and flux, reservoir quality and flow, and the importance of geochemistry of geothermal fluids. The Williston Basin and Basin and Range areas of the United States provide examples of geothermal power generation in low temperature regions.



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FOUR CORNERS GEOLOGICAL SOCIETY

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MEMBERSHIP RENEWAL or APPLICATION: June 1, 2022 to May 31, 2023



*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. *Highest Degree, Type and Year: _____ *College / University: _____
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. *Highest Degree, Type and Year: _____ *College / University: _____
Student Member	Free	Any undergraduate or graduate student majoring in geology at a college of acceptable academic standards. *College / University: _____ *Year expected to graduate: _____
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. *Year emeritus status was awarded: _____
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. *Year honorarium was awarded: _____

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)