



The Colorado Professional Geologist



American Institute of Professional Geologists—Colorado Section
Colorado Section email: Colorado-aipg@outlook.com

Geology News, Events, Book Review and More



Planina Jama, Slovenia

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of the
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The Board usually meets the first Tuesday of each month at 7:00 AM; all members are invited to attend. Please contact a Board Member to confirm time and location.

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Call for Articles

The Colorado Section of AIPG newsletter welcomes submission of technical or informational articles for publication. Articles may be submitted via e-mail to the editor at:

*summitdatasvcs@msn.com
(Microsoft Word format is preferred.)*

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Contact James at 303-278-4456
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Change of email:

Change of email notices and other contact information changes for the CPG should be sent directly to:

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(The National Office maintains the address list for all.)

Letters, articles, announcements, ads, etc. must be received by the Editor by the **end of the fourth full week of the month preceding publication**. Letters, articles, ads, announcements, etc. accepted on a space available basis. Submission of articles, etc. via e-mail is the preferred method. Copy can be accepted in most PC formats, but DOC or DOCX are preferred. Call or e-mail James Russell for details on submission of copy or advertising at 303-815-3901, summitdatasvcs@msn.com.

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The opinions expressed are those of the authors and not the Colorado Section officers unless clearly stated otherwise.

President's Message

Hello fellow Colorado Section members! I want to take this opportunity to introduce myself as President of the Colorado Section for 2021. I am incredibly excited to continue my involvement with the Executive Committee this year. I started my involvement with the Executive Committee back in 2013 when I helped found the student chapter at MSU Denver, and I have learned so much from each person I have served with over the years. The most important aspect of my involvement, though, has been getting to know my fellow AIPG members (we have the best group of members here in Colorado!) and building my network. In 2020, I was also involved with the AIPG National Executive Committee as the Young Professional (now Early Career Professional, ECP) representative; I will continue supporting that role as Past-ECP for 2021 on the national level.

I genuinely hope we can start planning in-person events in the coming months. You probably noticed you have yet to receive the Section annual dinner invitation, which typically would have taken place this month. This year would have been held in conjunction with the student mentoring session, an essential focus for AIPG. The Executive Committee will be working on a delayed event to occur as soon as Colorado regulations allow for large gatherings to be held safely. In the meantime, we have adjusted to a new "normal" by holding our meetings online. The Section has invested in a Zoom account and will be hosting all meetings for the foreseeable future on the online platform. My hopes are the online meetings will enable participation from a wider geographic area and better representation from members across the entire state while making it easier for busy parents, students, and professionals alike to squeeze the meeting into their hectic schedules.

We have several new faces on the Executive Committee this year:

Myself as President

President-Elect: Andrew Jones

Treasurer: Celine Gill

Secretary: Ryan Rodney

Newsletter Editor: Jim Russell

Chair of the Legislative and Regulatory Committee: Danielle McDowell

Advisors: Tom Harp, Joe Brinton, Stephanie Ashley, and Deb Gomez

The Section also has a new lobbyist taking over after Betsy Murray's retirement in 2020: Kathleen Curry

Editor's Remarks

James Russell

Well, we made it to 2021. COVID is still active but the vaccine is now being delivered and given to first responders. Maybe by late spring we will begin to feel life is slowly returning to some semblance of normalcy. The pandemic has changed our way of working forever. Many office bound employees have learned to work from home. How successful that will be won't be known for a while. Many of us who have spent a great deal of time in the field doing geology may find that our work life hasn't changed significantly. On the other hand home life may never be the same.

In this issue there will be an introduction of the new Executive Committee of the Colorado section. The section will be in good hands with Jessica Davey in charge. Also in this newsletter is a list of other geology related seminars and activities, a short book review of 'Underworld' by Robert MacFarlane, and photos and a description of caving in the Balkans (Slovenia) that complements the book.

Send in Your Articles!



AIPG Purposes

The purposes of the Institute shall include:

- advance the geological sciences and the profession of geology;
- establish qualifications for professional geologists;
- certify the qualifications of specific individual Member geologists to the public;
- promote high standards of ethical conduct among its Members and Adjuncts, and within the profession of geology; and represent, and advocate for, the geological profession before government and the general public.

What AIPG does . . .

- Professional Certification - Certifies geologists based on their Competence, Integrity, and Ethics.
- Categories of Membership - Certified Professional Geologist, Professional, Young Professional, Associate, and Student.

Ombudsman - Intervenes with regulatory boards and agencies on behalf of individual geologists, at the geologist's request. Information also is disseminated in cooperation with the Association of State Boards of Geologists.

Geo Events and Other Useful Links

Important References!

[Colorado Professional Geologist](#) digital files all the way back to 1993 are posted to the CO AIPG dropbox site: **Thank you David Abbott** for creating and preserving this valuable record of AIPG Colorado ideas.

AND

[Field Trip Files](#) from 1974

Job Opening: Project Geologist

Westwater Resources, Inc., a well-funded U.S.-based battery-grade graphite development company, is seeking to fill a contract position Project Geologist for its forthcoming core drilling program at its central Alabama graphite project. The planned drilling program will be comprised of 70 to 100 shallow angle and vertical core holes (less than 200 feet in length) within and adjoining a currently defined mineral resource hosted in graphitic schist and other target areas adjoining the known resource. It is expected that the 2021 drilling program will be 4 to 6 months in duration.

The position responsibilities will include core logging, supervision of sampling of core (including the inclusion of QA/QC samples), transmittal of samples to the analytical laboratory, recording of relevant data, supervision of drilling and dirt work contractors, mapping and rock chip sampling and reporting of project progress to the Company's Denver-based management. Field technician support will be provided by the Company. Interested candidates should hold a degree in geology, have several years of drilling project supervision (experience with core drilling is essential), be proficient in the geology of metamorphic rocks, and have excellent written and spoken communication skills. Interested candidates should submit a copy of their C. V., references, and salary requirements to:

jobs@westwaterresources.net. No telephone calls please. Information about the Company is available on our website: www.westwaterresources.net/home.

Geo Events and Other Useful Links (Continued)

Job Opening: Mine Surveyor

POSTED November 20, 2020

LOCATION: Colorado

COMPENSATION: DOE Market Competitive

RELOCATION: Regional/Local Candidates Preferred

Our client, a Vancouver-based silver company with multiple operating mines is seeking a Mine Surveyor immediately. This position will report to Senior Engineer and be responsible for all underground and surface survey work.

This position is responsible for the calculated mathematical measurements that are involved in the safe creation and maintenance of mining sites. Topological measurements obtained aboveground and underground are used by the surveyor to produce detailed mappings of mining locations.

For more info on this opportunity such as responsibilities and qualifications, go to <https://www.miningsearch.com/surveyor/>

Contact: Lindsey Schultz, Corporate VP; 480-659-5847; lschultz@miningsearch.com

CEMS January Webinar

Tuesday, January 12; 11:45 AM-1 PM

Presentation: “Overview of ITRC’s Vapor Intrusion Mitigation Training Team Work Products”

Presented by: AMatt Williams (Michigan Environment, Great Lakes, & Ecology – EGLE) VI Mitigation Specialist for the State of Wisconsin and Team Co-Leader for the ITRC Vapor Intrusion Mitigation Training (VIMT) Team and Steve Brauner (Environmental Works Inc.) – Principal Engineer and Co-Program Advisor for the ITRC VIMT Team.

Summary:

Since May 2019, the Interstate Technology and Regulatory Council (ITRC) Vapor Intrusion Mitigation Training (VIMT) Team has been working on materials and training to address needs of regulatory program personnel regarding sites with known or potential VI impacts. This information is also useful to practitioners (i.e., environmental consultants or engineers), responsible parties, public and tribal stakeholders, and attorneys that are involved with buildings that require mitigation to address vapor intrusion. The VIMT team is comprised of more than 230 professionals from both the public and private sectors, and is scheduled to publish 10 fact sheets, 16 technology information sheets, and 4 checklists in late December 2020.

This presentation provides an overview on the contents and an introduction on how to access and use the work products produced by the VIMT Team. The need for training materials focused on vapor intrusion mitigation were developed based on feedback received following publication of ITRC’s 2007 Vapor Intrusion Pathway and 2014 Petroleum Vapor Intrusion guidance documents. We look forward to providing this overview and engaging in discussion, questions, and answers with the members of the Colorado Environmental Management Society.

To get more info or to register, go to <https://coems.org/events/cems-luncheon-webinar-overview-of-itrcs-vapor-intrusion-mitigation-training-team-work-products-january-12-2021/>

Geo Events and Other Useful Links (Continued)

RMAG January Online Lunch Talk

January 13, 2021; 12:00 pm - 1:00 pm

Location: Online via RingCentral Meetings

Luncheon Speakers: Stephen Nalley, Deputy Administrator of the U.S. Energy Information Administration (EIA)

Talk Title: "The Future of Energy in 2021"

ABSTRACT:

Stephen Nalley will present an overview of EIA's January 2021 Short-Term Energy Outlook (STEO), which is scheduled to be released on January 12, 2021. STEO is EIA's monthly forecast of U.S. energy supply, consumption, prices, and energy-related CO2 emissions with a 13-24 month forecast horizon. EIA also forecasts global petroleum supply, consumption, and crude oil prices in the STEO. The January STEO will provide EIA's expanded outlook and a forecast through 2022 for the first time.

Free, but open only to RMAG members.

To register, join, or get more info, go to <https://www.rmag.org/index.php?cid=0&src=events&srctype=detail&refno=132&category=RMAG%20Luncheons&curlid=354>

EMCD January Online Meeting

Thursday, January 14th, 2021 at 6:30 p.m.

We will have the pleasure of a presentation by Diego M. Medina, who will speak on: "A Review of the Treatment of Copper Bearing Silver Gold Ores and Concentrates"

Globally, copper, silver, and gold ore body grades have been dropping, and the mineralogy surrounding them has become more diversified and complex. The cyanidation process for gold production has remained dominant for over 130 years because of its selectivity and feasibility in the mining industry. For this reason, the industry has been adjusting its methods for the extraction of gold, by utilizing more efficient processes and technologies. Often, gold may be found in conjunction with copper and silver in ores and concentrates. Hence, the application of cyanide to these types of ores can present some difficulty, as the diversity of minerals found within these ores can cause the application of cyanidation to become more complicated. This paper outlines the practices, processes, and reagents proposed for the effective treatment of these ores. The primary purpose of this review paper is to present the hydrometallurgical processes that currently exist in the mining industry for the treatment of silver, copper, and gold ores, as well as concentrate treatments. In addition, this paper aims to present the most important challenges that the industry currently faces, so that future processes that are both more efficient and feasible may be established.

We will use the following zoom link:

Join from PC, Mac, Linux, iOS or Android: <https://mines.zoom.us/j/99684895724>

Or iPhone one-tap: 13462487799,99684895724# or 16699006833,99684895724#

Or Telephone: Dial: +1 346 248 7799 (US Toll) or +1 669 900 6833 (US Toll) Meeting ID: 996 8489 5724 International numbers available: <https://mines.zoom.us/j/99684895724>

(Continued on next page)

Geo Events and Other Useful Links (Continued)

Or a H.323/SIP room system: H.323: 162.255.37.11 (US West) or 162.255.36.11 (US East) Meeting ID: 996 8489 5724
SIP: 99684895724@zoomcrc.com

CSM SEG Lunch & Learn

Jan. 14, 2021

Topics in Geoscience Ethics: Geoethics & Sustainable Natural Resources and Replacing and Reusing Old Mines, David M. Abbott, Jr.

Time: Jan 14, 2021 04:00 PM Mountain Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android: <https://mines.zoom.us/j/92123505753>

Or iPhone one-tap: 12532158782,92123505753# or 13462487799,92123505753#

Or Telephone:

Dial: +1 253 215 8782 (US Toll) or +1 346 248 7799 (US Toll)

Meeting ID: 921 2350 5753

International numbers available: <https://mines.zoom.us/j/92123505753>

Or a H.323/SIP room system:

H.323: 162.255.37.11 (US West) or 162.255.36.11 (US East)

Meeting ID: 921 2350 5753

SIP: 92123505753@zoomcrc.com

Members in Transition Virtual Talk

January 14, 2021; 12 pm-1 pm (MST)

Rocky Mountain Members in Transition (MiT) is a joint effort of members of AAPG, SPE, WOGA, COGA, DWLS, and RMAG in the Rocky Mountain region to help association members in the midst of a career transition. Webinars are free and open to all. Dr. Rasoul Sorkhabi, University of Utah, "Post-Corona Oil Industry: Emerging Divides and Place of Geoscience". (Continued on next page)

Dr. Sorkhabi will discuss how the oil industry is evolving in financially tight environments, the challenges of U.S. shale plays, and the role of geoscientists moving into the future. His talk will include the need for technologies to reduce carbon emissions, and how Europe is leading in the move away from oil and the importance of social license to operate.

Register at <https://www.rmag.org/index.php?cid=0&src=events&srctype=detail&refno=133&category=Special%20Events&curlid=351>

Geo Events and Other Useful Links (Continued)

Best Practices for NEPA Documentation: Decision Files, FOIAs, and Administrative Records

January 14, 2021; 1:00 pm to 2:00 pm EST. (11 am to 12 pm MDT)

Microsoft Teams Meeting

Record keeping is an integral component of a successful NEPA Project. This training will introduce best practices for building and maintaining a thorough record, beginning on day one of a project continuing through project completion. Learn the benefits of having an organized and comprehensive project record, how decision files are used to respond to Freedom of Information Act (FOIA) requests, and how agency solicitors use project records to build administrative records. This training will also cover types of project documentation needed and best practices for compiling and maintaining that documentation.

This training will be presented by Meredith Griffin, J.D. from Galileo Project.

To register, go to https://forms.office.com/Pages/ResponsePage.aspx?id=Q4Oz0bDTD06vK8-vP2EpLING-kMOUaXIBs4UYFuG2u_NUNVBYM0RZUTg0UDM3U0lCS0dGT0hDQ0UySiQIQCN0PWcu

TIBCO Spotfire for Oil & Gas Professionals – Beginner’s Course

by The Petroleum Technology Transfer Council (PTTC)

Tue, Jan 19, 2021, 8:00 AM – Wed, Jan 20, 2021, 3:30 PM MST

This hands-on course will introduce TIBCO Spotfire features relevant for oil and gas professionals. Participants will learn the fundamentals of importing data, creating visualizations, calculating custom properties, and exporting results by building a simple production database and interactive bubble map of the Niobrara Formation in the DJ Basin. By the end of the course, participants will be able to create: (1) Rate-Time and Cum-Time bar, scatter, and line charts; (2) summary tables by well, operator, township, and county; (3) IP and Cum Volume bubble maps with GOR indicators; and (5) rules-of-thumb for exporting quick, readable visualizations for Microsoft PowerPoint.

Online Event. To register or get more info, go to https://www.eventbrite.com/e/tibco-spotfire-for-oil-gas-professionals-beginners-course-tickets-132311143191?aff=odeimcmailchimp&mc_cid=e757c52aed&mc_eid=c8827b406b

2021 Nevada Water Resources Association Annual Conference

NWRA is excited to announce that our entire 2021 Annual Conference will be held VIRTUALLY. This was not an easy decision, and the NWRA Board and Executive Consultant worked together to assess the pros and cons of pivoting to a virtual meeting. But, together, we found ways to be flexible and inventive in how we stay connected. Even with this new 'virtual' format, you will still receive the same quality content, information, and insights that you've come to expect from our annual conference.

January 19-21, 2021

The 2021 Student Poster Competition will be held January 19-21, 2021. Each student is scheduled to provide their poster presentation in a pre-recorded video followed immediately by live Q&A with the student. The presentations will also be available on demand throughout the week and a “meet to talk” link will be provided for each student. (Continued on next page)

Geo Events and Other Useful Links (Continued)

January 25-29, 2021

The Annual Conference Program with panel sessions, technical sessions, poster presentations, Keynote presentations, awards, networking socials, sponsors & exhibitors showcase, and much more will take place January 25-29, 2021.

To register or get more info, go to <http://www.nvwra.org/2021-ac-week>

GSN Elko Chapter January Talk

January 21, 2021; 7:00 PM Pacific Time; Online Talk

“Geologic Setting, Host Rocks, and Contrasting Mineralization; New Insights from Detailed Underground Mapping of the Fire Creek Mine”

Luke J. Schranz, Center for Research in Economic Geology, University of Nevada, Reno

ABSTRACT:

The Fire Creek mine located 5 miles (8km) northwest of the town Crescent Valley in Lander County, Nevada produces high-grade gold and silver ore from a series of north-northwest striking high angle veins and faults along the western margin of the northern Nevada rift (NNR). This shallow-formed, low-sulfidation epithermal deposit hosted in Miocene volcanic rocks, intrusions, and volcanoclastic sediments occurs in a similar structural setting as the Miocene Mule Canyon low-sulfidation epithermal gold and silver deposit located 9.5 miles (15.3km) north-northwest of Fire Creek along the same structural trend.

The majority of production at Fire Creek has focused on high-grade, electrum-bearing quartz \pm carbonate \pm adularia veins (Type I ore) hosted in a Miocene basaltic andesite hypabyssal intrusive rock locally known as Tertiary equigranular basalt (Tbeq). However, the most recent development and mining has focused on ore associated with intense argillic alteration, fault gouge, and abundant sulfides. This refractory ore known as Type II ore is primarily hosted along faults, and to a lesser extent subvertical dike margins and subhorizontal vesicular flow tops. Mineralization here, north of the high-grade Type I veins is hosted in basaltic andesite flows, tuffaceous sediments, and autobreccias in a sequence of rocks similar to the Tmc “Mule Canyon Sequence” of the Mule Canyon Mine.

Detailed underground mapping and cross sections have revealed striking similarities between mineralization and host rocks at Mule Canyon and Type II ore and rocks which host it at Fire Creek. At Mule Canyon, both high-grade electrum-bearing banded quartz \pm carbonate \pm adularia veins, and disseminated ores were mined, the latter containing gold in As-rich rims of iron sulfide grains. Mineralization at Mule Canyon, some of which occurs along dike contacts, is primarily hosted in Tmc which consists of Miocene volcanoclastic strata and basalt flows.

This presentation will examine similarities and differences between the rocks which host the primarily non-refractory Type I ore and the refractory Type II ore at Fire Creek through a series of detailed maps and cross sections defining lithology, structure, alteration, and mineralization through the area where ore transitions from Type I to Type II. Petrography and geochemistry of host rocks will be discussed as well as a brief characterization of the two ore types including recently acquired electron microprobe analyses of sulfides and electrum. (Continued on next page)

Geo Events and Other Useful Links (Continued)

Join Zoom Meeting: <https://us02web.zoom.us/j/84423797106?pwd=REpQYjZ3RzdVbGRIRkRuT1d2WHhGdz09>

Meeting ID: 844 2379 7106

Passcode: Schranz

One tap mobile

+12532158782,,84423797106#,,,,*9446507# US (Tacoma)

+13462487799,,84423797106#,,,,*9446507# US (Houston)

Dial by your location

+1 253 215 8782 US (Tacoma)

+1 346 248 7799 US (Houston)

+1 669 900 6833 US (San Jose)

+1 301 715 8592 US (Washington D.C)

+1 312 626 6799 US (Chicago)

+1 929 436 2866 US (New York)

Meeting ID: 844 2379 7106

Passcode: 9446507

Find your local number: <https://us02web.zoom.us/u/kWTPimi36>

RMAG Short Course: Clastics: Exploration & Development for Sandstone Reservoirs

January 20-21, 2021; 9:00 am - 12:00 pm; Online

Clastics Module 1: Most common mistakes while tackling clastic reservoirs and how to avoid them
In this introductory module, we will cover some common pitfalls and patterns in data-misinterpretation observed over the past decade in basins across the globe. These errors can lead to miscalculations in reservoir volumes, quality, thickness, and distribution. Another category is data misuse. Two hours of lecture-time will be devoted to subsurface case-studies from eolian, fluvial, shallow-marine, and deepwater clastics.

Another hour will be spent on exercises and participants will work on maps, log-based cross-sections, screenshots of geomodels and interpreted seismic lines.

Clastics Module 2: Clastic sequence stratigraphy

This module focuses on sequence stratigraphy from an oil and gas perspective. Using logs and core, participants will learn to predict reservoir distribution. The module focuses on both shallow and deep marine depositional systems and how reservoir and source rocks are deposited along a shelf-to-basin profile with varying relative sea-level stands.

Topics to be covered: depositional sequences, sequence boundaries, maximum flooding surfaces, ravinement surfaces, systems tracts, parasequence types and their stacking patterns, reservoir and source rocks distribution changes with changes in sediment supply, accommodation, tectonics and eustatic sea-level change.

Cost: \$150/RMAG Member; \$185 non-members

To register or get more info, go to <https://www.rmag.org/index.php?src=events&srctype=detail&refno=135&category=Workshops%20%26%20Courses>

Geo Events and Other Useful Links (Continued)

National Ground Water Association University

Our one-stop shop of online education is available now at [NGWA.org/University](https://www.ngwa.org/University). Announced at Groundwater Week 2020, this virtual tool is the perfect place to earn continuing education credits, train a new employee, or learn more about water well maintenance.

NGWA understands that with the complexities in personal life and job demands you need a place where you can dictate the pace of your learning. Whether you need continuing education for licensing and certification, or just want to learn a new skill, you've come to the right place.

For all the available offerings, go to <https://www.pathlms.com/ngwa>

Earth Science New Map Presentations on YouTube

“Earth Science: New Map” is a forum to discuss the progress, problems, and prospects in Earth Science community, education, research and employment.

Six sessions were hosted in 2020. I am delighted to inform you that all these presentations are now available at the YouTube Channel "Earth Science New Map". Please visit the website, watch the recordings, and “like” or subscribe to get updates.

Gratitude to the distinguished scientists who kindly gave presentations in 2020 as well as participants from the US, Europe and Asia.

See Earth Science: New Map at this link: https://www.youtube.com/channel/UCuUh_ZRxpIeB3dnkvd0l_Q/videos

TIBCO Spotfire for Oil & Gas Professionals – Intermediate Course

by The Petroleum Technology Transfer Council (PTTC)

Tue, Feb 2, 2021, 8:00 AM – Wed, Feb 3, 2021, 3:30 PM MST

This hands-on course will introduce existing TIBCO Spotfire users to more advanced features relevant for oil and gas professionals. Participants will learn how to connect to SQL databases; create data connections and sources within their Spotfire library; scrub and extract data sets via data transformations and regular expressions; and use marking, filtering, text areas, hierarchies, and binned columns to create more dynamic visualizations. In addition, attendees will learn how to use TERR data functions for enhanced mapping capabilities and simple decline curve analysis.

Online Event. To register or get more info, go to https://www.eventbrite.com/e/o-tibco-spotfire-for-oil-gas-professionals-intermediate-course-tickets-132312286611?aff=odeimcmailchimp&mc_cid=627482f370&mc_eid=c8827b406b

Introduction to Helium Exploration & Production

by The Petroleum Technology Transfer Council (PTTC)

Tue, February 23, 2021; 8:00 AM – 3:30 PM MST; Online

This course will introduce oil and gas professional to the fundamentals of helium exploration and production in the United States. Attendees will learn about helium generation, migration, and trapping; testing for helium enrichment, mineral leasing in helium reservoirs, and helium gas separation and processing. (Continued on next page)

Geo Events and Other Useful Links (Continued)

To register, go to https://www.eventbrite.com/e/introduction-to-helium-exploration-production-tickets-131545747873?aff=odeimcmailchimp&mc_cid=627482f370&mc_eid=c8827b406b

AAPG Carbon Capture, Utilization, and Storage Conference

An Emerging Field for Petroleum Geologists
23–24 March 2021

Plan now to attend AAPG's Carbon Capture, Utilization, and Storage (CCUS) Conference in Sugar Land, Texas, at the Sugar Land Marriott Town Square. Themed “An Emerging Field for Petroleum Geologists,” the conference will highlight current CCUS work and tackle related challenges including subsurface storage in saline reservoirs, storage associated with CO₂ enhanced oil recovery, reservoir monitoring and risk assessment, case studies, industry applications, economics, incentives, policies and regulations, and more.

Speakers will represent research institutions, universities, and industry. The work presented at the conference will demonstrate the ongoing need for skilled petroleum geologists and engineers to help define the future of carbon management.

To get more info, go to <https://ccus.aapg.org/about/about-ccus>

BOOK REVIEW

Carol Russell

”*Underland* - a deep time journey” by Robert MacFarlane

Robert Macfarlane, a Cambridge English professor, is the celebrated author of books about the intersections of the human and the natural realms and about man’s almost incidental place in the world when seen from the perspective of geological time. In *Underland*, he provides an epic travelogue of the Earth’s underworlds as they exist in myth, literature, memory, and the land itself: Geology from a different perspective. *Underland* is a story of journeys into the deep darkness of the earth in search of knowledge. Robert MacFarlane’s book is divided into three sections: 1) Britain, 2) Europe, and 3) Northern Europe which includes Greenland. The section on Britain included the Mendips south of Bath. Jim and I know the area well because of the Charterhouse Roman lead mine.

What caught my eye was the section on the Slovenian Highlands. Most geologists are familiar with the term karst from either a geomorphology or hydrology class but very few have actually been to the famous Slovenian region which gave us the geologic name. My cousins living in Slovenia arranged for us to visit the famous cave region and experience a wonderful wild cave on our last trip to see them. **See below.**

Caving in Slovenia

A Nontechnical Trip to a Karst Cavern

Carol Russell

Early in my geological career my Hydrology professor said, “One concept you must relearn in my class is that an aquifer is not an underground river. There is no such thing.” He was Wrong.

In our quest to learn about what lies beneath the surface just like Robert MacFarlane, Jim and I learned that beneath the surface in the Planina Cave in Slovenia – a river runs through it. An extensive cave system extends throughout the Julian Alps of Slovenia called the Corst, the origin of the term we know as Karst.

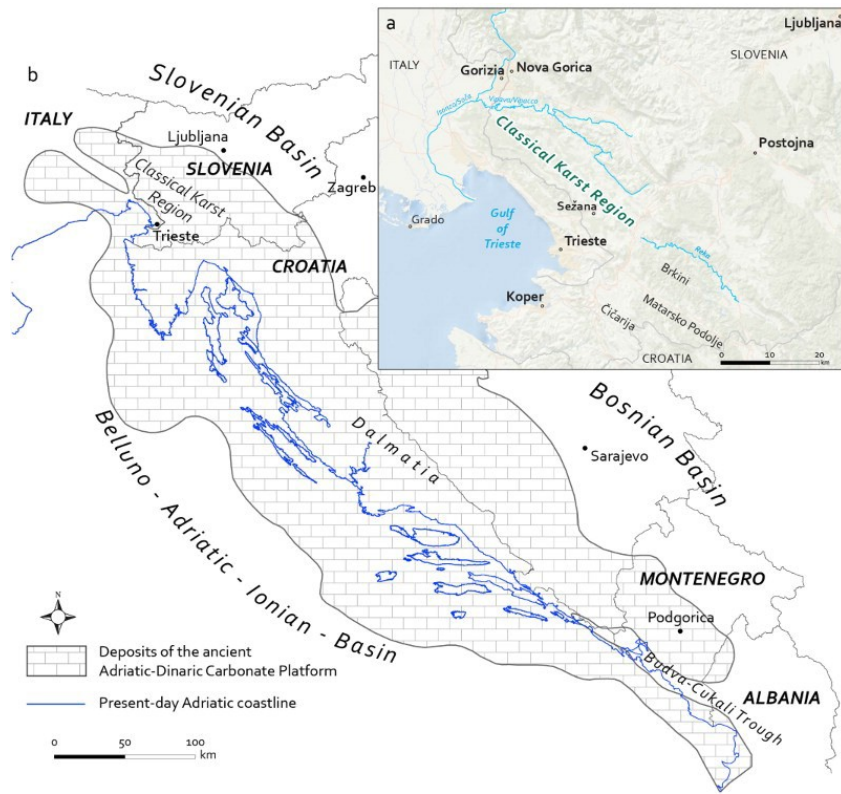


Planina Cave Entrance



Location of Planina and Postojna Caves

The geology of Slovenia is rather complex and it will not be repeated here but for those wanting to know all there is about it, here is the link: [Full article: Geology of the Classical Karst Region \(SW Slovenia–NE Italy\) \(tandfonline.com\)](https://doi.org/10.1080/17445647.2016.1215941) .For those requiring a geology map see below.



Carbonate Basin Geology of Slovenia

(Bogdan Jurkovšek, Sara Biolchi, Stefano Furlani, Tea Kolar-Jurkovšek, Luca Zini, Jernej Jež, Giorgio Tunis, Miloš Bavec & Franco Cucchi (2016) Geology of the Classical Karst Region (SW Slovenia–NE Italy), Journal of Maps, 12:sup1, 352-362, DOI: [10.1080/17445647.2016.1215941](https://doi.org/10.1080/17445647.2016.1215941))



Location of Planina and Postojna Caves (Detail)

Our day began in a tourist cave with a castle at the mouth named Postojna Cave. The cave is a 24,340 m long karst cave system near Postojna, southwestern Slovenia. It is the second-longest cave system in the country. Like many other cave systems in the area the geology was ideal for guerilla warfare. In WWII, Yugoslavia was invaded by Germany from the North, Italy from the West, and Hungary in the Prekmurje region. In the tourist cave streaks of black powder could be seen along the walls of the cave resulting from the demolishment of an explosives bunker. German occupying forces used the cave to store nearly 1,000 barrels of aircraft fuel, which were destroyed in April 1944 by [Slovene Partisans](#). The fire burned for seven days, destroying a large section of the cave and blackening the entrance.



Family Speleology Adventure

My cousin observed that we were not afraid of the underground and he suggested we explore another tributary of a wild cave, Planina Cave located northeast of the Postojna Cave system (not fully explored or mapped at the time). It is a huge tunnel and the subterranean bed of the Unica River located in Inner Carniola. Five hundred meters from the entrance into the cave is a confluence of two underground rivers: the Pivka River, flowing from the Postojna Polje through Postojna Cave, and the Rak River, flowing to Planina Cave through Weaver Cave from Rak Škocjan. This is one of the largest confluences of subterranean rivers in Europe. We did so in two-person rafts.

Stone and concrete trestles of a poorly designed railroad system lined the side of the river at the base of the cave. Our guide said it was created during the Italian occupation of WWII so as to move munitions out of reach of partisans. The length of the cave is 6,656 m (21,837 ft). It has been shown by water tracing that there is a connection between the systems of Planina Cave and Postojna Cave, and the administration of Postojna Cave estimates the connection will also be explored by cavers. The length of the joint system is over 31 kilometers (19 mi).



Underground River Transportation



Climbing Mud Can Be Fun



At the time of our trip, the Planina Cave was still wild and required a guide from the local Speleological Society. The trip to the back of the Planina Cave took approximately 2 hours therefore a little refreshment was in order. I *think* this was Slivovitz. It was the first time that my cousins' son tasted hard alcohol but I missed the opportunity to snap a picture of his reaction. We all had a swig and we were ready to go home.



We all enjoyed ourselves even though we were all covered in mud. Alas, the cave has now been commercialized with walkways and handrails.



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