



Denver Region Exploration Geologists' Society

May 2021

This month's meeting: May 3, 2021

Virtual Zoom Presentation

Social chat – 6:30 p.m. Presentation: 7:00

TECHNICAL PRESENTATION:

Exploration guidelines for VMS deposits

Dr. Thomas Monecke

ANNOUNCEMENTS

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DREGS is inviting you to a scheduled Zoom meeting.

Topic: DREGS May Meeting

Time: May 3, 2021 06:30 PM Mountain Time (US and Canada)

Join Zoom Meeting

<https://zoom.us/j/98034597386?pwd=YkpHZGozQjZROGY1bkR6M2cwYlFpUT09>

Meeting ID: 980 3459 7386

Passcode: 461578

DREGS would like to express a sincere thanks to the following:

- **Britt Bluemel** for her excellent presentation entitled “**Improving Resource Estimation by Improving the Geological Model: a tale of geochemistry, machine learning, and 3D modelling from the Castelo de Sonhos Paleoplacer Gold, Brazil.**”
- **Meeting Moderator Cory Beaver**, and **Nate Brewer** for hosting the Zoom meeting.

This is our last meeting until September. Let us hope that Covid restrictions will ease next fall. Have a good summer and stay safe.

Meetings are held the 1st Monday of each month from September through May unless otherwise noted in this newsletter.

Abstracts of technical presentations and other announcements must be received by the Secretary by the 15th of the previous month. (See the officers listing in this newsletter for the Secretary's contact information.)

Dues are \$25.00 (+ \$10.00 for paper newsletter). Dues may be paid in person to the treasurer or sent to the DREGS post office box. (see the officers listing in this newsletter for contact information and membership application forms)

Please Visit the DREGS website at <http://www.dregs.org> for up-to-date information on meetings; membership applications; abstracts of technical presentations since 1997; and more.

Exploration guidelines for VMS deposits

Dr. Thomas Monecke, Department of Geology and Geological Engineering,
1516 Illinois Street, Colorado School of Mines, Golden, Colorado 80401, U.S.A.

Volcanogenic massive sulfide deposits (VMS) are stratiform or stratabound accumulations of base metal sulfides that formed in submarine settings on or immediately below the seafloor by precipitation from 250–350°C, dominantly seawater-derived hydrothermal liquids. Based on the study of VMS deposits hosted in ancient volcanic successions and their modern seafloor analogues, processes involved in the formation of these deposits are well understood. It has been shown that VMS deposits form mostly in zones of rapid, but short-lived extension within intraoceanic, transitional, and continental margin arcs. Many of the large VMS camps worldwide are hosted by bimodal volcanic successions. Extension results in crustal thinning and mantle depressurization, with mantle-derived mafic magmas being injected in the thinned crust. Ponding of mafic magmas causes partial melting of the crust, generating felsic melts. In many VMS camps, evidence for synchronous mafic and felsic volcanism is recorded by compositional shifts within the stratigraphic interval hosting the deposits and the occurrence of magma mingling and mixing textures in shallow intrusions and lavas. In many cases, VMS deposits occur in clusters along discrete stratigraphic intervals. While hydrothermal fluid flow is a universal process of heat transfer within the crust, the presence of such favorable stratigraphic intervals suggests that deposit formation is tied to particular processes in the regional tectonic and basin evolution. At the local scale, VMS deposits typically occur at topographic highs, marking the location of volcanic vents. Careful volcanic facies analysis has shown that VMS deposits always occur within vent-proximal volcanic facies associations. In many cases, a particular style of felsic volcanic centers is recognized as being particularly favorable. The location of volcanic centers hosting VMS deposits is controlled by syn-volcanic faults, which also form conduits for the hydrothermal fluid flow. Hydrothermal alteration halos associated with these structures represent important vectors to ore. In volcanic successions dominated by volcanoclastic rocks, massive sulfides are commonly formed by subseafloor replacement, while mound-style deposits formed on the ancient seafloor are more common in flow-dominated volcanic successions. In combination with geophysical and geochemical methods, these key elements of the VMS model can be used to guide exploration for massive sulfides in ancient volcanic successions.

Bio: Thomas Monecke is an economic geologist who specializes in the formation of base and precious metal deposits in modern and ancient volcanic arcs. He has more than 25 years experience in geological research and mineral exploration and has authored or co-authored approximately 80 journal papers, book chapters, government publications, and field guides during that period. Thomas graduated from the University of Freiberg, Germany, with a M.Sc. in 1996. He obtained his Ph.D. from the same university with his doctoral thesis focusing on the anatomy of a volcanic-hosted massive sulfide deposit in northern Australia. Between 2002 and 2008, Thomas conducted post-doctoral research at the Institute of Marine Sciences in Kiel, Germany, the University of Ottawa, and the Geological Survey of Canada on modern and ancient gold-rich volcanic-hydrothermal systems. In 2006, Thomas received the Waldemar Lindgren Award of the Society of Economic Geologists. He joined the Colorado School of Mines in 2008 where he teaches economic geology. Thomas runs a large research group and supervises graduate student working on a diverse range of hydrothermal ore deposits around the world.

Meetings, Lectures, and Courses

Colorado School of Mines Van Tuyl Lecture Series. Schedule posted at: <https://geology.mines.edu/events-calendar/lectures/> , or call 303-273-3800. The Van Tuyl lectures are given every Thursdays 4:00-5:00 p.m. as an online Zoom presentation.

Colorado Scientific Society.

April 15. Time: 7:00 p.m., monthly meeting via Zoom, Colorado Scientific Society.

“Fluvial deposits of the Raton Basin: Implications for paleotopography and paleoclimate,” Teresa Schwartz, Colorado School of Mines.

For more info upcoming see <https://coloscisoc.org/> .

– This will again be an online Zoom presentation; see <http://coloscisoc.org/> for the abstract and speaker biography, and where the link to the Zoom presentation will be posted.

Colorado State University, Department of Geosciences Seminar Schedule. Schedule posted at: <https://warnercnr.colostate.edu/geosciences/geosciences-seminar-series/> . Please call 970-491-5661.

All are Welcome!! All seminars will be virtual until otherwise noted. If you wish to attend, please email for Zoom link - patti.uman@colostate.edu.

University of Colorado Benson Earth Sciences Colloquium Schedule/Zoom link. Schedule/recordings posted at: <https://www.colorado.edu/geologicalsciences/colloquium>

Denver Mining Club. Golden Corral Buffet & Grill 3677 South Santa Fe Drive, Sheridan, CO 80110 – Southwest side at Santa Fe Dr. & Hampden Ave. (Purchase of buffet lunch required). Every Monday, except when noted 11:30 a.m. - 1:00 p.m. (+/-). Visitors always welcome! For more information contact Dick Beach. Tel: 303-986-6535; E-mail: dickbeach@alumni.mines.edu; Website: www.denverminingclub.org.

May 3. Larry Lens, Geologist and Dinosaur Ridge Volunteer. What’s Happening at Dinosaur Ridge.

May 10. Speaker and title to be announced.

May 17. Auction of Mining Memorabilia. Check your attic, closet, & garage for items to donate, or come and look for that special gift. Books, rocks/minerals, jewelry, prospecting & mining supplies & equipment, and much more. Come help us celebrate our 130th anniversary!

May 24. Speaker and title to be announced.

May 31. No meeting. Memorial Day Holiday.

Alistair Ronald Turner Obituary
November 7, 1942 ~ April 3, 2021 (age 78)



Alistair Ronald Turner passed away April 3, 2021 at the age of 78. He was born November 7, 1942 to Dr. James Ronald and Helen Muriel Turner in Kilcoy, Queensland, Australia where his father was serving as a medical doctor during World War II. In 1947, Alistair and his family moved back to their home country of New Zealand where he was raised and educated. Alistair earned his Bachelor of Science degree in Geology from Canterbury University in Christchurch and later continued his post graduate studies at the University of Adelaide in South Australia, earning a Master of Science degree in Economic Geology. On October 8, 1966 Alistair and Kristen McDonald were married in Blenheim, New Zealand.

Alistair was a dedicated Professional Geologist specializing in precious metal exploration. His work took him to many locations throughout Australia for the Anaconda Company in search of nickel and gold deposits including the Kalgoorlie region of Western Australia. In 1977, Alistair accepted a new position from Anaconda in the USA to explore the Stillwater district in Montana principally for chromium, platinum, and palladium. As a result, he and Kristen and their young family immigrated to the USA, settling in the small mountain town of Nye. While in Montana, Alistair explored the Beartooth Range (Stillwater Valley) discovering economic deposits of chromium and palladium which are being mined to this day. In 1979, Alistair moved for a final time with his family to Littleton, Colorado to work from Anaconda's North American headquarters in Denver. In 1989, he led the North American branch of the Australian-based company Boulder Gold Group in Denver, developing precious metal and steel projects. His work took him all over the world including Alaska, Canada, South Africa, Madagascar, Mauritius, Iceland, Germany, and Russia prior to retirement. Alistair was well respected by his peers for his knowledge and strong work ethic. These traits have been passed down to his family of which he was immensely proud and supportive.

Alistair enjoyed exploring the western USA with his family on camping vacations visiting many different National Parks and other points of interest. Alistair was good with his hands, completing carpentry and home improvement projects in his spare time and was an avid stamp and coin collector.

Alistair is survived by his wife Kristen of 55 years, three sons David (Marlene), Richard and Alan (Christie), five grandchildren, his brother Graham (Linda) and his extended family in New Zealand. He was an incredibly supportive, loving, and considerate person and will be missed.

A memorial service will be held Thursday, April 15 at 1:00 p.m. at Horan & McConaty, 5303 E. County Line Road (west of Holly St), Centennial, Colorado 80122. There will be a reception following the service. In lieu of flowers, please consider a donation to the Craig Hospital Foundation (<https://craighospital.org/foundation/howtogive>) or a charity of your choice in Alistair's name.

The Road to the Cabin



It swept across the sage-covered hills below our cabin; visible only here and there as it ascended out of the creek bottoms and over bare ridges. Twelve miles to the north it started at the main Upper Nowood graveled road at the old Deiter Ranch, twisted and turned and dove mostly up and some down in a southerly way. From there and to the east is Box Elder Basin on the higher mountain slope where the yellow-green of the distant aspen groves and sweeping green meadows say its spring up there. It is too soon to rejoice just yet—the day is hot and the radiator begins steaming. After cooling a while, we are on our way again. Soon, higher and higher up the mountain, the air turned cool and the grass is green with patches of shooting-stars as we passed the sturdy log cabin of the Helms homestead at Cherry Creek Hill. From there it was not far to the sheep corrals at Lost Creek. And from

there up the dim trail to our cabin and summer adventures.

We called it The Road because it was the only one in sight from our view across the vast expanses of the southern end of the Big Horn Mountains. Our own trail, which led up to the cabin from the sheep corrals was a two mile stretch of deep ruts, high sagebrush, and wet green meadows, was barely locatable in the spring. A mental map was in Dad's mind,

though, and each spring he headed up the mountain slope for the cabin as though the road were paved and marked with signs. The treeless meadows were landscape of fragrant mountain sage, sunflowers, lupines and in the wettest places, smiling clumps of shooting stars. We would breathe in deeply, intoxicated by the redolence of spring in the mountains.

During the 1940's there was little traffic on The Road. Days would go by without a single spotting. It was during the days of gas rationing and to spot a car was an Event. If we kids were lucky, we could first see it on the Road when it was only a flash of sun on the windshield on the other side of Lost Creek. My sisters and I spent a lot of time on the great jumble of rounded granite rocks next to the cabin and we kept an eye peeled for a car. It was cause for great excitement when we spotted one and we would dash to the cabin to inform Mother. The most thrilling possibility was that it might be a visitor coming to see us. More likely it was a camp tender for one of the shearherders in the area.

Any company we had would arrive from Ten Sleep, 45 miles to the north, so traffic from that direction elicited much more interest than that coming from the west. A car's progress would be watched with almost unbearable anticipation as it approached the Sheep Corrals. That was the critical spot, when a turning car was almost certainly coming to see us. Its progress seemed unnecessarily slow as it crossed rough places in the road, then speeding up until it came to a gate. With Dad's field glass we would study the car and the person opening the gate in a vain attempt to identify the traveler.

A sighting built our expectation to an unbearable pitch and when a car drove past the sheep corrals without so much as slowing down we would feel a great let-down, comparable to a sad ending in a story. Our imaginations had built a fantasy replete with the delivery of special things to eat, fresh magazines and someone to tell our adventures to.



One summer Mother got a letter from her good friend and former Chicago classmate, Willa, that she would be arriving in Worland by bus. Could we pick her up? Willa was speechless with amazement at the absolute wilderness that we lived in. We thought it was the most civilized place on earth. Sometimes the Holland ranch camp tender pickup from the west would turn up our trail, either coming to move their shearherder or bring him supplies. Most often shearherders were somewhat undesirable characters, but the Holland herder was different. Scotty kept his wagon spiffy, and the aroma of baking would greet us before we reached the wagon. We loved to visit Scotty—his burr transported us from the green slopes of Wyoming to the green hills of Scotland. After a visit from the camp tender we would troop over to his wagon a mile or so from the cabin and find out if there was any news or maybe new magazines we could look

at, but mainly just a visit with Scotty who loved to have our company.

The sheep corrals where we turned up the trail to the cabin were the gates to paradise. To anyone else it was nothing but a dilapidated enclosure of wire and poles, but to us it was like opening a new adventure book, where every page (day) brought something different, always good, although a sad ending, when, at the end of summer we headed back down The Road to town and school.

Jim Davis
2021

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DREGS Meeting Tuesday May 3, 2021
Zoom Vitual Meeting