



SGA News

February 2023
Number 52

President's Corner

David Banks¹

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At this time, we often reflect on the past year. The SGA had its biennial meeting on-line due to COVID restrictions, but thanks to Tony Christie and his team it still proved to be a success. We also supported numerous other meetings and our student chapters, who are becoming more active after the restrictions have eased. The planning for the next SGA biennial meeting, in Zürich, is also well advanced and Nicolas and Cyril with their LOC have produced a really great programme of session themes, short courses and fieldtrips. I hope as many of you as possible will attend so we can meet and discuss face to face. Personal interactions at meetings are as important as the presentations, especially for our student members who can decide if this is the career for them. Talking with academics, industry, independent consultants can have a big impact on their future choices.

Our journal, *Mineralium Deposita*, continues to be the highest ranked journal in economic geology and is highly placed amongst geochemistry journals in general. The associate editors and reviewers, who give their time freely, are a large part of that success. Our chief editors, Bernd Lehmann and Georges Beaudoin, have guided the direction of the journal for many years and are to be congratulated for their efforts in making *Mineralium Deposita* the preeminent journal it now is. At the end of this year Georges will step down from his position of North American editor and on behalf of the SGA I offer him our thanks for all he has done. He will be replaced by Karen Kelley, a previous president of the SGA. We are fortunate that someone of Karen's calibre has accepted this post.

Our society is run by volunteers who give their time for all of us and deserve our thanks for their dedication to ensuring we have a society that continues the ideal of those who formed the society. Our councillors and RVP's, from all corners of the world, provide a breadth of experience and ideas that are invaluable in steering the SGA into the rapidly changing future. Our executive officers give a large amount of their time to ensuring all the key posts function smoothly and until I became involved with the council did not realise just how much behind the scenes work goes on.

Our membership has started to increase again after COVID, especially amongst the student members. You will hopefully become more involved with the society as your careers progress and ensure it continues to be at the forefront into the future. With the need for resources that will drive the "Green Revolution" more than ever ore deposit geologists are essential. But we face the perception from large groups of the population that the extractive industry is damaging the planet and must be curtailed. Combined with a big reduction in the numbers of students studying geological sciences in many countries this may have serious consequences. I believe that in our respective countries we need to be more proactive in showing the need for more mining and hence more ore deposit geologists into the future. So, I encourage all of you, in different countries, to provide details of how we and the extractive industry are essential and without new sources of critical resources carbon reduction is not achievable. Educate the population!

As well as reflecting on what we did in the past year, we make resolutions for the coming year. I guess most of us did not manage to complete all the tasks we thought we would a year ago, I know I didn't. We always think there is more time later, maybe yes maybe no. So, when I look forward to next year I have my list of papers to write, samples to analyse, places to go and people to meet, just as many of you will. Probably I won't achieve all of them?

So, whatever you have planned for the next year I hope you achieve your aims and wish all of you Seasons Greeting and a Prosperous New Year. But as a Scot I wish you the following.

Lang may yer lum reek
Lang may yer puddin squeak.

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News of the Society – Council Meeting

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The Hybrid-Council Meeting was organized on November 30, 2022 from 9,00 to 15,45 CET in the building of the ETH in Zurich (Switzerland). Sixteen Council members were present in person, 4 members joined the meeting virtually and the rest of Council members sent their apologies.

David Banks (SGA President) and Jan Pašava (SGA ES) welcomed SGA Council and thanked Nicolas Saintilan and Cyril Chelle-Michou from the ETH Zurich for hosting the meeting and their hospitality. Then Council approved suggested agenda.

Roll call and Apologies

Present: T. Aiglsperger, D. Banks, G. Beaudoin, H. Frimmel, P. Garofalo, G. Graham, D. Holwell, B. Lehmann, S. Mikulski, B. Orberger, J. Pašava, S. Petersen, I. Pitcairn, N. Saintilan, D. Schlatter and A. Vymazalová. Present on-line: G. Bozkaya, S. Decrée, T. Christie and J. Slack.

Guests: K. Kelley (USGS), C. Chelle-Michou (for item 4)

Apologies for absence: R. de Barrio, C. Conde, C. McCuaig, E. Ferrari, A. Idrus, J. Kolb, P. Ledru, F. Mbingeneeko, P. Mercier-Langevin, E. Naumov, Y. Song, X. Sun.

1. Minutes of previous Council meeting (May 11, 2022) – J. Pašava

After checking the actions (with some of the items pending), the Minutes were unanimously approved.

2. Reports of officers on Council

- 2.1. Report from President
- 2.2. Report from Executive Secretary
- 2.3. Report from Treasurer
- 2.4. Report from Promotion Manager
- 2.5. Report from Chief Editor, SGA News
- 2.6. Report from Chief Editors, Mineralium Deposita
- 2.7. Report from Chief Editor, SGA Special Publications
- 2.8. Report from Chief Editor, SGA website
- 2.9. SGA Educational Fund
- 2.10. to 2.16. Reports from Regional VPs (Asia - missing, Australia/Oceania - mis-

sing, Europe – presented by D. Holwell, North Africa and Middle East - missing, Sub-Saharan Africa – missing/partly covered by B. Orberger, North America – presented by G. Graham, South America – presented by J. Pašava on behalf of E. Ferrari)

Council expects to receive full missing reports at the next Council meeting.

After discussion, Council approved the presented reports with great thanks and suggested the following motions:

DAVID BANKS to inform ODH leadership that SGA can't offer any staff capacity for keeping restructured platform but wishes to stay as sponsoring body.

DAVID BANKS to inform SEG President on approved dates and venue for the 18th SGA Biennial Meeting (August 3-7, 2025, Golden, Colorado, USA).

DAVID BANKS to contact the Presidents of SEG and IAGOD to propose a joint approach to the threats to the extractive in-

dustries and research collaborations with mining industry. It is impossible to realize a smooth transfer to "Green Economy" without securing the future need for resources. All Council members to send their ideas regarding this issue to SGA ES and SGA President.

DAVID BANKS to contact SEG President to offer free SGA booth at the 17th SGA Biennial Meeting (Zürich, 2023).

DAVID HOLWELL to provide links to various educational websites dealing with the importance of Earth Sciences and economic geology for future development of our Society.

JAN PAŠAVA in collaboration with SGA President and selected SGA EC members to finalize SGA 2022 Report and mail it to IUGS.

HARTWIG FRIMMEL to contact the team who designed and minted SGA-Newmont Gold Medal to ask for a new proposal for layout and minting of a new SGA Gold Medal,



Fig. 1 Group photograph of Council members visiting the venue of the 17th SGA Biennial Meeting at ETH Zurich. First row, from right to left: N. Saintilan (SGA Council member, Co-Chair of the 17th SGA Biennial Meeting LOC), C. Chelle-Michou (Co-Chair of the 17th SGA Biennial Meeting LOC); Second row from right to left: S. Mikulski (SGA VP), J. Pašava (SGA ES), H. Frimmel (SGA Treasurer), P. Garofalo (SGA Council member); Third row from right to left: G. Beaudoin (Chief Editor, MD, North American Office), D. Schlatter (SGA Council member), B. Lehmann (Chief Editor, MD, European Office); Fourth row from right to left: K. Kelley (newly nominated Chief Editor, MD, North American Office), D. Holwell (SGA RVP, Europe), A. Vymazalová (SGA VP-Student Affairs); Fifth row from right to left: G. Graham (SGA RVP, North America), I. Pitcairn (Chief Editor, SGA website), D. Banks (SGA President), S. Petersen (SGA Council member), T. Aiglsperger (SGA Council member).

reflecting new situation. SGA will pay all costs related to this project – pending motion.

After discussing future financial strategy, HARTWIG FRIMMEL in collaboration with DENIS SCHLATTER, DAVID BANKS and JAN PAŠAVA to explore the possibilities of opening a new bank account with a trustworthy Swiss Bank, such as the Zurich Kantonal Bank. HARTWIG FRIMMEL to decide on how much money will be transferred to a newly opened bank account.

NICOLAS SAINTILAN and DAVID HOLWELL to secure production of series of clips/videos covering SGA activities/missions (during the 17th SGA Biennial Meeting in Zurich). NICOLAS SAINTILAN to get a quote for this activity from relevant ETH Office. These products will be offered to the public via SGA website and other communication means.

ALL COUNCIL MEMBERS to send their comments regarding the draft of the SGA Educational Fund flyers (presented in the Report of Promotional Manager) to Sophie Decrée.

JOCHEN KOLB and IAIN PITCAIRN to publish basic information on the newly approved bid for the 18th SGA Biennial Meeting (August 3-7, 2025, Golden, Colorado, USA) in SGA News and SGA website.

GRAHAM GARTH and KAREN KELLEY to write an article for upcoming SGA News on CRM (based on the revision/update of the previously published article), if possible.

IAIN PITCAIRN to list SGA Honorary members at the society website – pending motion.

IAIN PITCAIRN to advertise Council decision on creating a new category of SGA members who could be exempt from further SGA membership fees provided they have reached a minimum age of 70 years and have been fully paid-up members of SGA for at least 30 years – pending motion.

IAIN PITCAIRN to prepare a call for SGA awards to upcoming SGA News and update SGA nomination forms on website.

SGA Council approved two new auditors (Prof. Albert Gilg – TU Munich and Prof. Johann Raith – Mining University, Leoben). SGA COUNCIL MEMBERS to be proactive regarding nominations for the various SGA Awards.

SGA Council greatly appreciated long term activities of Georges Beaudoin as Chief Editor of the North American Mineralium Deposita Office, who decided to step down from this position on December 31, 2022,

and approved Karen Kelley as new Chief Editor. The Publisher of the Earth and Environmental Sciences at Springer Nature also approved this change.

GEORGES BEAUDOIN to carry on supervision of papers submitted during his tenure.

EUGENIO FERRARI to encourage SGA Chapter (Peru) to prepare reports for the SGA News covering November/December's activities.

Council agreed to keep extent of abstracts submitted to SGA Biennial Meetings up to 4 pages (SGA recommends to stick with 4 pages).

3. The 16th SGA Biennial Meeting – update

Tony Christie provided a complete report including financial aspects. Council greatly appreciated all efforts by LOC under leadership of Tony Christie which resulted in top scientific meeting with significant financial result and approved the Report with great thanks. Link to free download of two volumes of the Conference Proceedings were provided to the Clarivate Analytics for evaluation and inclusion on WOS.

Action:

JAN PAŠAVA to check with Clarivate Analytics on the status of evaluation of Conference Proceedings.

4. The 17th SGA Biennial Meeting – update

The report was presented by Nicolas Saintilan and Cyril Chelle-Michou. A detailed discussion, which covered scientific program, plenary talks, social events, sponsoring, short courses, field trips, student's issues, accompanying person's program and financial aspects of the meeting resulted in the following motions:

- to finalize a list of proposed sessions, short courses, field trips and important deadlines, and publish them at Conference website as soon as possible;
- to prepare a platform for registration of participants (use either ETH or Conference Partners);
- to prepare a platform for abstract submission and evaluation (abstracts up to 4 pages – recommendation of SGA to stick with 4 pages);
- to offer an accompanying member's program;
- to plan for higher attendance at the

conference dinner;

- to accept the suggested IAGOD's plenary talk;
- to plan for a free SEG booth (if accepted by SEG – SGA President will address SEG on this).

Council members had also a chance to visit the conference venue. Council highly appreciated all efforts by the LOC and approved presented report with great thanks.

5. The 18th SGA Biennial Meeting

After introduction by Jan Pašava, Karen Kelley presented the bid for the organization of the 18th SGA Biennial Meeting (August 3-7, 2025 Golden, Colorado, USA), which was approved by SGA Council with great thanks.

Action:

JAN PAŠAVA to provide chair of the LOC of the SGA 2025 bid with MOU to be signed between SGA and LOC.

6. Progress report on membership drive from the last SGA Council Meeting

The Report was presented by Sophie Decrée. Compared to September 2021, SGA membership increased from 1063 to 1212 especially in the category of student members and regular members with electronic access to Mineralium Deposita (with decreasing number of regular members subscribing to the print version of Mineralium Deposita). After discussion, Council approved the report with great thanks and accepted that this report to be presented only once a year at spring Council meetings.

7. Status of development of SGA Student and Young Scientist network (A. Vymazalová)

The report was presented by Anna Vymazalová. In 2022, SGA has in total 24 chapters: Baltic, Barcelona, Berlin, Black Forest-Alpine, Brazil, Cameroon, Columbia-Bogota, Colombia-Bucaramanga, Cordoba-Argentina, Ivory Coast, La Plata, Laval, Moscow, Namibia, Nancy, NW Russia, Peru, Prague, Senegal, Siberia, Turkey, UK, Urals and Western Australia. There is a request for 1500 € as an additional support from the Bucaramanga Chapter to organize a geological modelling short course for students at the end of this year.

All chapters were informed in May already, with a reminder in November, about strict enforcement of reporting deadlines. Anna asked Council members involved with Chapter to remind their groups as well.

- List of Chapter members should be provided to Christine Linge by December 31st, 2022
- Chapter Reports and request for continuing support should be sent to Executive Secretary by January 31st, 2023

January 31st is the latest date for possible correction of membership list. We will consider only those who are members on January 31st for the Chapter report and the Chapter Reports will be evaluated accordingly. The early-bird-fee (€ 10) will not be available (with no exception for Chapters) after January 31st, 2023.

Two volunteers from Prague Chapter keep promoting the Zürich meeting via social network (Facebook, Instagram, Twitter).

This year the Prague Chapter celebrates the 20th anniversary, there will be an event on December 7, 2022 to which all Chapters are invited.

After discussion, Council approved the additional support for Bucaramanga Chapter and presented report with great thanks.

Action:

ANNA VYMAZALOVÁ to inform Bucaramanga Chapter about approval of 1500 € and ask them to promote the Zürich meeting during the course and also to send a con-

tribution about the course to SGA News.

8. Requests for sponsorship

The 2022 National Meeting of the SGA Peru Student Chapter (October 22-23, 2022 Lima) with associated field trip to Mina Justa (IOCG) – E. Ferrari et al. – 1500 € requested – approved via email vote.

Platinum Conference (July 4-7, 2023 Cardiff, UK) – SGA Council approved 2000 € for SGA student sponsorship (D. Holwell and Anna Vymazalová).

GAC/MAC/SGA meeting (May 24-27, 2023 Sudbury, Ontario, Canada) – SGA Council approved 2000 € for SGA keynote speaker sponsorship – G. Beaudoin et al.

9. Any other business

Publishing books etc. by SGA members at Society website (could be part of SGA Archive or to create another folder with various open access materials provided by SGA membership)

Council approved publishing a book on Mineral Petrology (Spanish version) by R. Catsroviejo at Society website under the condition that the author provides a written agreement with Springer that online publication through the SGA website does not infringe whatever copyrights.

Action:

JAN PAŠAVA to inform Ricardo Castroviejo on Council decision.

Creating a new membership category – Senior without hard copy of MD (only e-access to MD and SGA News)

This item was introduced by Jan Pašava.

After discussion, Council declined this request.

Discussion on how to adjust SGA operation/activities to a new post-Covid situation (develop more virtual events etc.) – D. Banks

SGA Mobility Grant – update

This item was presented by Thomas Aiglsperger. After two years of low activity due to the pandemic, the SGA Mobility Grant was once again advertised via email after summer. This led to increased interest (the coordinator received many questions regarding the guidelines). The first SGA Mobility Grant application was finally received in October 2022 and approved (300 € for petrol costs) as all requirements were fulfilled. In order to collect information on laboratories that want to participate in the program, a digital form was sent to all regular SGA members. After one month, a total of 9 laboratories have filled the form. In a second step, the collected data will be processed so that regular SGA members can easily find participating laboratories on the SGA homepage. This should lead to more applications to reach the defined (current) strategic goal of 5 grants per year. After discussion, Council recommended to stick with present rules and approved the report with great thanks.

MoU between SGA and EAG (D. Banks)

10. Date and place of the next SGA Council meeting

Spring 2023, date and venue to be decided later.

11. Informative list of past activities

- SEG 2022 Conference (August 27-30, 2022 Denver, USA) – SGA booth – G. Graham et al.
- SEG-SGA Student Chapter Meeting (September 13-16, 2022 University of Geneva, Switzerland) – R. Moritz et al.

Council greatly appreciated all efforts of LOC under leadership of Robert Moritz. They resulted in a very successful meeting highlighting the importance of the need of sustainable mineral resources supply for future “Green Economy”. At the same time, it was a joint contribution of SEG and SGA to the 60th Anniversary of IUGS.

- Virtual seminar on “Can Africa reach net C-neutrality by 2050?” (Third week in September and November 23, 2022) – B. Orberger et al.

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This item was presented by Beate Orberger. In 2022, SGA continued in collaboration with NASIC/RFG and the Ministry of Mines of Namibia and in line with the IUGS Energy Transition Series as part of the events to celebrate the IUGS 60th anniversary, offering a series of virtual seminars under the title "Can Africa reach net C-neutrality by 2050"? Altogether, 22 persons (50% women, 50% men), representing 8 countries (Algeria, Cameroon, Canada, Gabon, Iran, Ivory Coast, Namibia, Nigeria) registered. Course leaders B. Orberger, E. Nickless and I. Chaouche organized several separate meetings with 6 groups (1 to 5 participants), discussing different subtopics and correcting prepared presentations by participants. The final and joint seminar was held on November 23, 2022. Council greatly appreciated all efforts by Beate Orberger, Philadelphia

Mbingeneeko and their team and approved the report with great thanks.

12. Informative list of future activities

- SGA Prague Chapter Meeting celebrating 20th Anniversary (December 7, 2022 Prague, Czech Republic)
- Mineral Deposits Studies Group, 44th Annual Winter Meeting (January 4-6, 2023 Leicester UK) – SGA sponsored (Holwell et al.)
- The 13th International Congress of Prospectors and Explorers 2023 (May 8-10, 2023 Lima, Peru) – SGA sponsored - providing one-year SGA membership and the registration to the 17th SGA Biennial Meeting to the best student presentation
- GAC/MAC/SGA meeting (May 24-27, 2023 Sudbury, Ontario, Canada) – Le-

sher et al. – G. Graham and S. Perrouty SGA links; SGA sponsorship 2000 € for 1 SGA keynote speaker approved (G. Beaudoin)

- Platinum Conference (July 4-7, 2023 Cardiff, UK) – SGA Council approved 2000 € for SGA student sponsorship (D. Holwell and Anna Vymazalová)
- Goldschmidt 2023 (July 9-14 Lyon, France) – MoU with EAG
- Inaugural SGA Field Conference Mount Isa and Cloncurry, Queensland (20-24 July 2023) – D. Huston and V. Lisitsin
- III. Symposium on Precambrian geology and metallogeny (May 25 to 29, 2020 in San Ignacio de Velasco, Bolivia) – USD 2500 approved by SGA Council to support SGA keynote speakers - postponed
- 17th SGA BIENNIAL MEETING (August

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Open for Application The SGA Mobility Grant

Get ready for SGA networking! Do you know about a SGA member who runs a laboratory that could answer open questions of your research? Then the SGA Mobility Grant can help to bring you together! The SGA Mobility Grant offers an opportunity for regular SGA members to apply for money to travel to a facility with SGA background.

Applicants have to be in good standing for at least 3 continuous years (i.e. paid up membership fees; up to 2 years of student membership count) and apply by sending their request following a template to the SGA Mobility Grant coordinator (thomas.aiglsperger@ltu.se).

The application template is available at <https://e-sga.org/home/>.

Learning and sharing! That's the spirit of the SGA Mobility Grant.

- 28-September 1, 2023 Zürich, Switzerland) – N. Saintilan et al.
- IAEG 50 Meeting (September 8-10, 2023 Galway Bay Hotel, Galway County, Ireland) – SGA sponsored (S. Decrée – SGA keynote speaker)
- SGA-UNESCO-IUGS-SEG Short Course on African Metallogeny (October/November 2023, Johannesburg, CIMERA South Africa) – B. Orberger/F. Mbindeneeko et al.
- 18th SGA BIENNIAL MEETING (August 3-7, 2025, Golden, Colorado, USA) – K. Kelley et al.

SGA awards at the 16th SGA Biennial Meeting in Rotorua, New Zealand



The SGA-Newmont Gold Medal

RICHARD GOLDFARB accepting the SGA-Newmont Gold Medal in Golden, Colorado from David Leach.

Erratum

ANDREAS MUELLER is the the recipient of the 2021 Mineralium Deposita Best Paper Award. Unfortunately his name was misspelled in the SGA News No. 51 in Fig. 8. The editor, Jochen Kolb and the author, Jan Pašava apologize for this mistake. Otherwise, his name is spelled correctly in the article.

SGA News

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SGA NEWS - MAILBOX

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REPORTS FROM THE SGA STUDENT CHAPTERS

SGA chapter	President	E-mail	Foundation
Prague	Jan Kamenský	jan.kamensky@natur.cuni.cz	2002
Baltic	Adam Tomczak	tomczakadam88@gmail.com	2009
Siberia	Anna Devyatiyarova	SiberianChapter@yandex.ru	2011
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Colombia-Bucaramanga	Fabian Samuel Reyes Santos	floramos7.kf@gmail.com	2012
Nancy	Alix Hauteville	alix.hauteville@etu.univ-lorraine.fr	2013
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Berlin	Laura Schulz	schulz.laura.b@gmail.com	2021

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Summary of the 2022 activities of SGA Baltic Chapter

Adam Tomczak¹ and Leslie Logan²

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One of the first activities of the Baltic Chapter in 2022 was an online meeting with SEG-SGA UNC Student Chapter (Córdoba, Argentina), which took place in March. Each chapter had the opportunity to give a presentation about mineral deposits of their country and afterwards, we discussed about differences between deposits of Poland, where the staple commodities are copper and silver from sediment-hosted stratiform copper deposit (Kupferschiefer) and zinc and lead from MVT deposit from Silesia-Cracow district. Argentina, on the other hand, is rich in epithermal Au-Ag deposits with zinc, lead and copper, porphyry Cu-Au deposits with molybdenum as well as lithium salars. It was an informative and valuable experience to exchange geological knowledge with our friends from across the Atlantic.

In April 2022, nine members of the SGA Baltic Student Chapter took part in a three-day field trip to the Ore Mountains (ger. Erzgebirge), a mountain range that extends along the German-Czech border. In the Late Paleozoic, the Erzgebirge was intruded by granite responsible for the formation of skarn, greisen and polymetallic vein deposits. For centuries the Erzgebirge was one of the most important sources of silver, tin, cobalt and uranium in Europe, hence long mining and geological traditions which are still alive in Saxony, where the Technische Universität Bergakademie Freiberg - the oldest mining and metallurgy university in the world - was established in 1765. Moreover, it was the scientists from the TU Bergakademie Freiberg who, in the 19th century discovered new elements such as indium and germanium. One of the both historically and geologically unique deposits is Zinnwald, the type locality for lithium-bearing mica (zinnwaldite), has historically focused on mining tin, but nowadays has switched interest towards the critical element - lithium. After a brief introduction to the geology of the region and mechanisms of skarn formation, we entered the visitors mine. There, we had the opportunity to walk through old mine galleries and to observe coarse quartz veins with



Fig. 1 Group photo of the Baltic Chapter members in the Zinnwald mine at the German-Czech border



Fig. 2 Charoite specimen from the Terra Mineralia collection, Freiberg, Germany



Fig. 3 Baltic Chapter members in the „Wekom II” granite quarry in Lower Silesia, Poland



Fig. 4 Exhibition of minerals from Ukraine on the 13th annual SGA Baltic Chapter meeting

few cm-size crystals of cassiterite, wolframite and zinnwaldite along with fluorite and topaz. During our walk, we even managed to reach the German-Czech border (Fig 1). Of course, no trip to Freiberg is complete without a visit in the Terra Mineralia Museum to see the stunning exhibition of minerals from around the world (Fig 2). In the evening we managed to meet fellow TU Bergakademie students who kindly showed us around the city.

The following day we started with visiting the Hämmerlein skarn in the Pöhla mine. The Hämmerlein Sn-skarn is hosted in Paleozoic gneiss and schist intercalated with marble laminae, that have been subducted during the Variscan orogeny. Then, the metamorphic suite was subsequently intruded by numerous granites, most famous of which is the Eibenstock granite which resulted in the formation of the Hämmerlein skarn due to contact metamorphism responsible for creating skarn layers and metasomatic processes which distributed hydrothermal fluids to form vein-type mineralization. The most important mineral – cassiterite – usually occurs within the mica schist wall-rocks but is also structurally controlled by the NE-SW-trending vein system. The Hämmerlein skarn also hosts mineralogically intriguing, indium-enriched sphalerite which occurs in a layer adjacent to the magnetite skarn as

well as pitchblende veins formed during subsequent late Variscan tectonic activity. After a brief ride on the mine-train, we found ourselves in the mine's galleries and we began our mine tour during which we could observe mineralized veins with sphalerite, magnetite as well as the whole skarn profile beginning with garnet skarn, through the amphibole and pyroxene zones and all the way up to the magnetite skarn. We also had the opportunity to collect samples, which is always nice and to observe some mining machines and talk about the future of mining in the region. To finish the skarn part of the trip, we also visited the Herkules-Frisch-Glück (HFG) mine.

In contrast to the predominantly schist- and gneiss-hosted Hämmerlein skarn, where Sn and In are the main elements of interest, in HFG we had the chance to observe a Zn-dominant skarn with much more abundant carbonate host rocks. The next day, the group moved to Poland, Lower Silesia to visit an active granite quarry in Strzegom, to see currently operating mining techniques and machinery and do a little session of mineral hunting on the granite dumps (Fig 3). The Strzegom-Sobótka Massif consists of various Variscan granitoids emplaced into Paleozoic low grade metamorphic rocks. The region is also known for occurrences of high-quality specimens of smoky quartz, fluorite, stilbite and feldspar found in pegmatites, the best specimens of which we were able to admire while visiting a local collector, Andrzej Korzekwa. He also gave us an introduction to the geology of the region over a geological barbecue.

In May, we had the pleasure of hosting the 13th annual SGA Baltic Chapter meeting in Kraków. The event kicked off with a lecture about Green Deal raw materials given by Prof. Frank Melcher. After that we heard a lecture given by Prof. Peter Kodera who explored the topic of genesis of Au-Ag epithermal and porphyry deposits of Slovakia. The lecture session ended with a lecture given by Prof. Adam Piętrzyński and Dr. Liuba Figura about mineral deposits of the Ukraine. The lecture session was followed by student presentations during which six students presented results of their research. Then, time came for the display of minerals from Ukraine from localities such as the world-famous BIFs from Kryvyi Rih, gold ore from the epithermal Berehove- Muzhijev district, native copper in basalt from Volhyn, and genthelvite ($\text{Be}_3\text{Zn}_4(\text{SiO}_4)_3\text{S}$) and villemite (Zn_2SiO_4) from Perga Be deposit (Fig 4). The next event was a trip to the historic Wieliczka salt mine, which was exploited since the Neolithic period, initially as brine and from medieval times until 1996 as regular underground mine. The deposit was formed in the Miocene (~14 Ma) during closure of the Paratethys in the region of the Polish Carpathians. Inside the mine, we explored a part of a 245 km long gallery system, see-



Fig. 5 Longwall shearer and hydraulic roof support in the historical „Guido” mine, Silesia, Poland



Fig. 6 Baltic Chapter members from Luleå inspecting pegmatitic intrusions on the hike in Hertsön

ing spectacular salt formations and structures while visiting giant chambers drilled in the salt itself with a collection of salt sculptures. The last part of the event was a visit in the “Guido” visitors coal mine in Silesia. We took a trip to ~320 m underground and began exploring formerly used galleries while the tour guide described historical and modern techniques of coal mining and showed several tools and machines used for coal extraction, such as continuous miners or longwall shearer (Fig 5).

Last but not least, after a pandemic break, trips to the mines of the Kupferschiefer area returned to the schedule. The Baltic Chapter members assisted in organizing trips to several mines of KGHM for a group of students from the SGA Chapter from Prague, the SEG Chapter from Bratislava, University of Tübingen and University of Halle.

In spring, the Baltic Chapter at LTU (Sweden) hosted several events for the student members including a LeapFrog workshop, a geological career talk with Benedikt Steiner and a geological movie night, where the students assessed the geological accuracy of the film, *Journey to the Centre of the Earth*. In September, the LTU Baltic Chapter members organised the fourth annual geological orienteering game where participants have to navigate using compass orientation skills through a Swedish forest filled with outcrops. The orienteering game adds a special twist where the members first have to correctly measure the strike and dip of rocks in outcrops in order to calculate the correct direction for the next point. The game aims at offering a casual setting where students from all levels can hone their compass skills as well as conducting outcrop assessment. The event saw a leap of popularity this year and attracted over 30 students to join for the game. The event was followed by a geological barbecue.

On 22nd of October, the chapter from LTU organized a short hike in the Hertsön area. During the walk around the lake, we had several geological stops, where we investigated outcrops. With each stop a piece of the history of the Svecokarelian orogeny was revealed. At the first outcrop we examined a pegmatite vein with classic schörl tourmaline, muscovite and feldspar, cutting a paragneiss host rock (Fig 6). After determining mineralogy and measuring strike, we went south, tracing the vein along the coast and found some evidence of both brittle and ductile deformation of the pegmatitic vein which suggests the dyke intruded syntectonically, possibly with the gneissic fabric development, reflecting a NE-SW crustal shortening direction. That corresponds with the northeastward subduction direction and the accretion of the Skellefte volcanic arc onto the Archean craton at around 1.88-1.86 Ga which is also responsible for the felsic intrusions which we observed.

SGA UNC Student Chapter - Córdoba, Argentina

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A Brief Introduction to our Chapter

The Society for Geology Applied to Mineral Deposits (SGA) UNC Student Chapter was founded in 2021 by undergraduate Geology students from the National University of Córdoba, Argentina. It is part of the SEG-SGA UNC Student Chapter, sponsored by both, the Society of Economic Geologists (SEG) and the Society for Geology Applied to Mineral Deposits (SGA).

The idea of creating this chapter began in late 2019, when a former student of our University and now geologist Axel Cima, MSc., was invited by the AAPG UNC Student Chapter to talk about his experience of pursuing a Master's Programme in Economic Geology in Finland, and also about his part as a student member of the

SGA Baltic Student Chapter during that time. This talk was held at the end of 2019 and was the kick-off for some classmates to start organising a student chapter oriented to mineral deposits and economic geology. It is also worth mentioning the participation of Arturo Crespi, current geologist and member of Yamana Gold, who led the first meeting of students.

Due to the 2020 pandemic, the attempt to create the Chapter was delayed until mid 2021, when this project was resumed and the SEG-SGA UNC Student Chapter was officially active by October 4th of 2021.

Since then, we have been organising seminars, workshops and meetings related to mineral deposits and economic geology, driven by the desire to create a bridge between undergraduate students and the

industry. We believe this is a priceless opportunity to share and receive the knowledge and experiences that will help us becoming better professionals in the future.

Activities carried out this year

Online meeting with SGA Baltic Student Chapter. March 2022

We held a joint activity with our colleagues from the SGA Baltic Student Chapter, chaired by Adam Tomczak, through a video conference. We shared knowledge about the activity related with ore deposits and the most important types of metal deposits of Poland and Argentina. We also discussed the geological similarities and differences between these deposits. To finish, we carried out a Geoquiz moderated by PhD. Krzysztof Foltyn.



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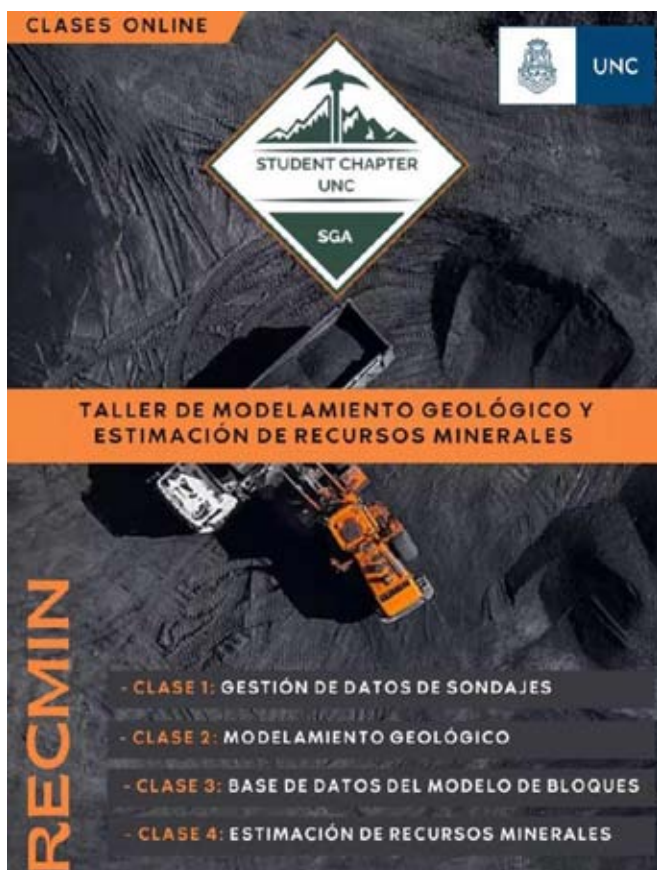


Fig. 1 Banner of the course with the topics of each lesson



Fig. 2 Geologist Gastón Tommasone and the audience during the seminar "The Mining Job: The Transition Between Geology Books and 150 Metres Underground Mining" at the National University of Córdoba on May 2022

Workshop: "Geological Modelling and Estimation of Mineral Resources". By advanced geology student Lucas Venier. May 2022

On May 16th, 18th and 23rd we had our first virtual workshop, called "Geological Modelling and Mineral Resources Estimation". This workshop was instructed by an advanced geology student from Río Cuarto National University, Lucas Venier, who is officially certified in RecMIN, a free-use mining software designed to manage mineral resources research and exploitation projects. It consisted of 4 modules (Fig 1):

- Borehole data management: Create a new project. Triangulate the topography from contour maps. Import

surface geological polygons. Manage the database.

- Geological modelling: Display perforations and view their attributes. Profile to visualise the various possible lithologies, delimitate them with polygons, create 3D solids from them and calculate their volume using the section method.
- Block model database: Generate project blocks. Create and edit the block diagram table. Assign lithology/alteration and weigh to each block.
- Mineral resources estimation: Export borehole data in GSLIB format and import them to SGeMS software. Calculate and model a variogram from the grade values of the boreholes. Resource estimation and characterization of each block in RecMIN.

Seminar: "The Mining Job: From books to working 150 metres underground". By Geologist Gastón Tommasone. May 2022

On this occasion, we met in the classrooms of our university to welcome Geologist Gastón Tommasone (Fig 2), who got his degree from the National University of Córdoba in 2021, and is now working in the Cerro Moro mine in Argentina. He made a brief introduction about epithermal systems, the geology of the Deseado Massif and the Cerro Moro mine.

The aim of this seminar was to introduce graduate students to what working in a mine is like. It is important to show the reality of the job in the field. For example: a normal day in an underground mine, what are the activities and expertise required from the geologist, the knowledge of the geological characteristics from the mineral deposit, etc. Mr. Tommasone also exposed the organisational structure



Fig. 3 Group photograph of the participants during lunch time in the installations of the National University of Córdoba

of a mining company, how the recruitment process works and the transition from being a student to becoming a mine worker.

Seminar: "Open Pit Mining in Cerro Moro, Argentina". By Geologist Arturo Crespi. June 2022

This virtual seminar had an ex classmate of ours, Geologist Arturo Crespi, as a speaker. He is now a colleague of our previous guest, Gastón Tommasone, in the Cerro Moro mine. This meeting meant a continuation of our previous seminar related to the working environment in a mine but with a different perspective and experience. Mr. Crespi shared with us a different side of working in the Cerro

Moro mine, since he works in the open pit area.

Seminar: "Uranium: Resources, Production and Demand for the Core-electric Generation". By Geologist MSc. Luis López. July 2022

In the 5th event organised by our student chapter, the guest was Mr. Luis Lopez, a geologist graduated from our university. He also has a Master of Sciences, obtained at the Federal University of Bahia (Brazil). He is an expert in uranium resources, with 36 years of experience in the nuclear industry. He is currently working at the National Commission of Atomic Energy of Argentina (CNEA).

This seminar was the second part of a previous seminar issued in December 2020 by Geologist Francisco Parra, who talked about "Geology of uranium in Córdoba, Argentina".

It is essential for graduate students to expand their knowledge about the uranium industry because it is an important work field and really necessary for the electricity supply for society. This seminar had the purpose of providing an update about global uranium resources, production levels and applied methodologies, and also, to offer a refresher about the stages of uranium projects for extraction and the production of nuclear energy. The bottom line was to know the future scene of this industry from the supply of uranium and demand of nuclear energy.

Workshop: "Geological Mapping and Profile Confection with RecMin". By advanced geology student Lucas Venier. August 2022

In this workshop held August 22nd, Lucas Venier, an advanced geology student from Rio Cuarto National University, shared his knowledge on RecMin once again, this time teaching how to create geological maps using QGIS and RecMin. The study area of this workshop was the Cerro Áspero batholith of the Pampean Mountain Ranges of Córdoba and San Luis, Argentina. We learned how to generate contour maps from a Digital Elevation Model (DEM) assigning spatial proportion in three dimensions, how to georeference a geological map to delimit the different lithologies on the study area, and how to draw polylines to delimit those lithologies in QGIS. Then, using RecMin, Mr. Venier taught us how to import the contour map, triangulate the topography from it, import

the polylines previously drawn, cut the topography with the different lithologies to obtain a three-dimensional geological map and, finally, create cross sections to draw geological profiles.

This workshop was a good way to get to use a different software program for geological mapping, besides the softwares that are taught during our career.

Seminar: "Geological and Spectral Considerations of Zoe vein in Cerro Moro, Argentina". By Geologist Gastón Tommasone. September 2022

The last seminar done by this Student Chapter was carried out once again in the classrooms of our University. In this opportunity, Mr. Gaston Tommasone exposed his tesis where he talked about the theoretical foundations on spectrometry of a mineralized vein in Cerro Moro mine, the problem related to clay material in ore processing, the relationship between the type of mineralogy of the clay group and ore mineralization, among other things. This seminar was relevant for the audience because it was an unusual topic that most have never heard about.

It is important to emphasise that all activities carried out this year, both remote and on-site, have been recorded and uploaded to our official channel in YouTube "SEG SGA Student Chapter UNC": https://youtube.com/channel/UC4YeUCGLiK5Pc-NaB0pVU-_A

Informative meeting and after-lunch in the installations of our University. By SEG-SGA Student Chapter members. September 2022

On September 23rd we held an informative talk at our University with the aim of sharing what this student chapter is all about and what activities we have carried out throughout this year with fellow students. We were joined by our SGA and SEG advisors, Mgtr. Axel Cima and PhD. Julio Bruna Novillo, respectively. After this talk, we all shared lunch at the facilities of our Faculty (Fig 3).

Future activities

Field trip. November 2022

This one-day activity is being organised to be carried out in the Cerro Áspero batholith which is located in the south of the province of Córdoba. This batholith is composed of three Devonian plutons and has many stockworks and epithermal occurrences besides LCT pegmatites in the

Guacha Corral belt.

The purpose of this trip is to recognize the different types of ore deposits, their structure, texture, zonation, composition, mineralogy and the geological features in general.

There will also be a pre-field online meeting to make an introduction about the geology of the Cerro Áspero batholith and to know what kind of activities are going to take place in the field trip to take advantage of that day.

Workshop: "Soft Skills and Leadership". By Bachelor in Psychology Juan Manuel Prat. December 2022

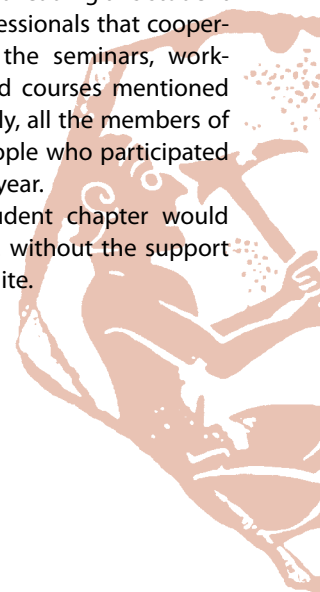
Next month we are going to gather in our university to welcome Mr. Juan Prat who is a Psychologist and Gesture Therapist with training in Enneagram, EMDR, Coaching and PNL.

This seminar of two or three classes will aim at introducing students to leadership, emphasising essential soft skills for the work environment. The activity will be planned collectively with the SEG UNC Student Chapter.

Acknowledgements

The SEG-SGA UNC Student Chapter of Córdoba, Argentina would like to thank: The Faculty of Exact, Physical and Natural Sciences and the National University of Córdoba for providing the installations and the academic support; the Society of Geological Applied to Mineral Deposits (SGA) and the Society of Economic Geologist (SEG) for being our principal sponsors; our advisor Axel Cima and PhD. Julio Bruna for guiding and leading this student chapter; all the professionals that cooperated providing all the seminars, workshops, meetings and courses mentioned previously, and finally, all the members of the chapter and people who participated in the activities this year.

Nothing in this student chapter would have been achieved without the support of these parties.



SGA Student Chapter Prague – The 20th Anniversary of its foundation

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Chapter History

This year marks exactly 20 years since the first-ever SGA Student Chapter was founded by several Charles and Freiberg Universities students. In 2002, a joint Prague-Freiberg Chapter was established by Dr. Anna Vymazalová and Dr. Alexander Otto. This newly formed Chapter's first event was an excursion to the Svornost mine in Jáchymov, Czech Republic, in April 2003. Subsequently, a division occurred and the independent SGA Student Chapter Prague was established. Currently, despite the difficult 2020-2021 years caused by the COVID-19 pandemic, the SGA Student Chapter Prague has around 40 members.

This year, we celebrate two important anniversaries simultaneously—the 20th anniversary of the existence of the SGA Student Chapter and the 10th president in office.

List of the SGA Student Chapter Prague's past and current presidents:

Anna Vymazalová
Petr Drahota
Emílie Kubíková
Jakub Trubač
Kateřina Schleglová
Luboš Vrtiška
Ondřej Krátký
Jan Kulháněk
Štěpán Jaroměřský
Jan Kamenský

Activities in 2022

This year we managed to organize and participate in several important activities. In May 2022, a two-day gemology seminar was held at the Faculty of Science. There, Dr. Tom Stephan from Europe's gemstone capital, Idar-Oberstein, lectured on the topic of the occurrences and gemologi-

cal description of tourmaline and the most important gemstone deposits of East Africa. In the summer, an European exploration boot camp was held in Finland, where we also actively participated. Later, in August 2022, those interested in gold deposit geology had the opportunity to visit the historically significant locality of the Bohemian Massif – Jílové u Prahy. Our next activity this year was participating in the SEG-SGA Student Chapter Meeting - Sustainable Mineral Resources Supply: Challenges for Future Generation. The newly acquired contacts here have already resulted in a joint excursion with SEG Freiberg to the Li/Sn deposits in the Krušné Hory mountains, which will take place in November 2022.

We would like to thank the SGA Baltic Student Chapter for the opportunity to visit the Rudna IX mine in mid-October. Finally, at the turn of October and November, there will be a three-day international field trip to the area of the Svratka dome.

Since 2022 is a celebratory year for the SGA Prague Chapter, we have decided to organize the international SGA Prague Christmas Meeting on December 7. All SGA members are warmly welcomed. The meeting will take place at Albertov 6, Faculty of Science, Prague, Czech Republic. On the same day and before the meeting, for those interested, there will be a field trip to Jílové near Prague.

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Guide to authors for the SGA News

Jochen Kolb¹; chief editor SGA News

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There are three types of submission: (1) regular article; (2) reports of SGA student chapters; and (3) reports related to SGA. Regular articles should present scientific studies of the geology, mineralogy and geochemistry of mineral deposits or other topics related to mineral deposits. Reports of SGA student chapters should represent detailed description of activities. They must be reviewed by the scientific supervisor of the respective chapter prior to submission. Make sure that the field reports include the exact location (coordinates if available) of each station described. There is no restriction to the length of a contribution, but it should be concise and informative. All figures should be informative and of good quality. The language of SGA News is British English and all contributions need to be formatted as such. When submitting a text, do not include figures or tables and their

captions. Present the latter at the end of the Word file and submit the figures separately, instead.

Text formatting

Manuscripts need to be submitted in Word. Use a normal, plain font (10-point Times) for text. Format the text as little as possible. For emphasis, use the format tools of Word (e.g., italics or capitals). Do not use the shift button for capitalizing a whole word. Do not use field functions, tab stops or other commands for indents, or the space bar. Do not insert extra lines between paragraphs; use the Word formatting tools instead. Use the table function, not spreadsheets, to make tables. Abbreviations should be defined at first mention and used consistently thereafter. Please always use internationally accepted signs and symbols for units (SI units).

References

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Figures and Tables

All figures and tables are to be numbered using Arabic numerals. They should always be cited in text in consecutive numerical order. The format in the text is "(Figure 1; Table 1)". For table and figure captions use "Fig. 1: xxxxx." and "Tab. 1: xxxxx."

Figures need to be submitted as separate files in jpg-format at a resolution of 300 dpi. They need to be formatted to fit the column format of SGA News: (1) 4 cm wide or (2) 8.3 cm wide for the 3-column part and 6.1 cm wide for the 2-column part. Make sure that the figures are of good quality.

The SGA website

<http://www.e-sga.org>

Iain Pitcairn¹; chief editor SGA website

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The screenshot shows the SGA website homepage. At the top, there is a green header with the SGA logo and the text 'SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS'. Below the header is a navigation bar with links for 'About', 'News', 'Publications', 'Members', 'Educational Fund', 'Awards', 'Meetings', 'Abstracts', and 'Contact Us'. A search bar is located on the right side of the header. The main content area features a large image of a mineral specimen on the left. To the right of the image are buttons for 'LOGIN' and 'SHOP', and links for 'Join SGA' and 'Renew Membership'. Below these are social media links for Facebook and Twitter. At the bottom, there is an announcement for the '15th SGA Biennial Meeting "Life with Ore Deposits on Earth - LODE 19" Glasgow, Scotland 27 - 30 August 2019'. On the right side, there is a sidebar with the heading 'Application forms for new members' and a brief description of SGA membership.

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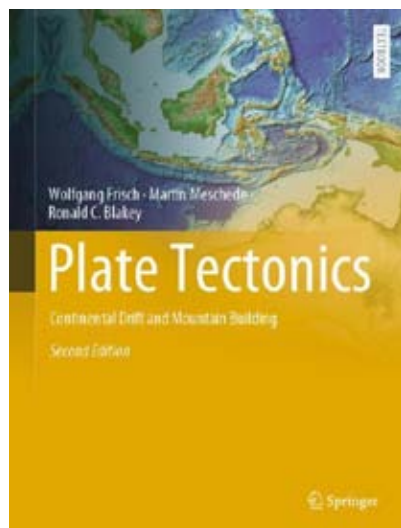
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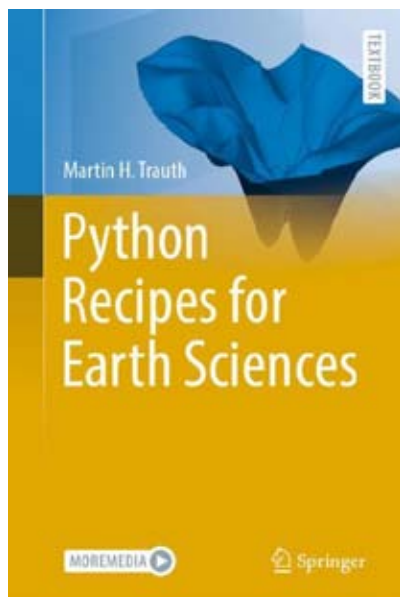
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Python is used in a wide range of geoscientific applications, such as in processing images for remote sensing, in generating and processing digital elevation models, and in analyzing time series. This book introduces methods of data analysis in the geosciences using Python that include basic statistics for univariate, bivariate, and multivariate data sets, time series analysis, and signal processing; the analysis of spatial and directional data; and image analysis. The text includes numerous examples that demonstrate how Python can be used on data sets from the earth sciences. The supplementary electronic material (available online through Springer Link) contains the example data as well as recipes that include all the Python commands featured in the book.

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SGA SOCIETY FOR GEOLOGY APPLIED TO MINERAL DEPOSITS

NEW MEMBERS from September 5, 2021 until April 10, 2022

51 Student and 5 Regular Members joined SGA between April 11, 2022 and October 31, 2022

Student members 51:

Argentina 1
Australia 3
Belgium 1
Cameroon 7
Canada 1
Finland 1
France 3
Germany 4
Hungary 1
Peru 16
Poland 1
Spain 2
Sweden 2
Switzerland 4
USA 3
Uzbekistan 1

Regular members 5:

Australia 2
Brazil 1
Peru 1
USA 1

APPLICATIONS to SGA for meeting sponsorship must be submitted to Jan Pašava, SGA Executive Secretary. Please contact Jan Pašava for forms and further information.

Ideas and Suggestions for SGA-sponsored activities are welcome and should be addressed to Jan Pašava or any other member of the Council (see e-sga.org for list of members).

Dr. Jan Pašava
SGA Executive Secretary
Czech Geological Survey
Klárov 131/3
CZ-118 00 Prague 1
Czech Republic

Tel.: +420 2 5108 5506
Fax: +420 2 518 18 748
e-mail: jan.pasava@geology.cz



Visit us in Zurich in 2023 • 28th August – 1st September 2023

Technical programme

Visit www.sga2023.ch
for all key dates and information

Technical sessions

During the four-day technical programme there will be up to four concurrent sessions:

Session 1a. Porphyry-type and skarn deposits

Session 1b. Geothermal systems and epithermal ore deposits

Session 1c. Hydrothermal mineralization associated with highly fractionated magmas (Li, Sn, W, Nb, Ta...)

Session 1d. IOCG and magnetite-apatite deposits

Session 2. VMS and seafloor mineralization

Session 3. Gold: a journey from sources to precipitation sites and processes

Session 4a. Metallogenesis in sedimentary basins

Session 4b. Supergene ore forming processes

Session 5. Critical minerals and geo-inspired technologies for a carbon-neutral future

Session 6a. Mineral deposits related to mafic-ultramafic intrusions

Session 6b. Ore genesis associated with alkaline-carbonatite systems

Session 7a. Advances in analytical techniques applied for ore deposits research and mineral exploration

Session 7b. New sensing instruments and processing methods in mineral exploration

Session 7c. Machine learning, data mining and new target generation in mineral exploration

Plenary talks

▀ **The securization of the green and digital transitions: Europe's distinct response**

(Prof. Dr. S. Kalantzakos, NYU Abu Dhabi)

▀ **A world with less CO₂ has much more mining** (Dr. S. Michaux, GTK)

▀ **Geoscience: Unlocking more than mineral resources across the mining value chain** (Dr. K. Turnock, BHP)

▀ **Ores for a changing world: mining in the 21st century, the energy transition and the future of the minerals industry** (Prof. Dr. S. Jowitt, UNevada Las Vegas)





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Students

All students within the broad field of ore deposit research are invited and strongly encouraged to participate in the 17th SGA Biennial Meeting. The meeting will offer a great opportunity for students to interact with leading scientists, other young researchers, and mineral industry representatives in an inspired and informal environment.

Benefits for students

- **Heavily discounted registration fees**
- **Discounted short course and field trip fees**
- **Students-Industry event** (A fully catered evening event where students can meet industry representatives – included in the conference registration fee).
- **Subsidy of student registration fees by the SGA to selected students**

Contact: SGA V.P. for Student Affairs – Anna Vymazalová – anna.vymazalova@geology.cz

For more information and “how-to”, visit www.sga2023.ch



SGA membership forms can also be downloaded in 5 different languages from the home page of our website www.e-sga.org

Business Card

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Society for Geology Applied to Mineral Deposits (www.e-sga.org)

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I would like to become a member of the **Society for Geology Applied to Mineral Deposits** and to receive my personal access to **Mineralium Deposita**. Membership fees will be due after acceptance of the membership application.

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Send the membership application form to:

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Version June 2018