Rough Beauty. As much as the Japanese Sea is heaving in this picture, as wild was the year 2013 for our institute. The picture has been taken at the western edge of the Oga Peninsula in Akita Prefecture (Honshu), impressively shaped by young volcanic rocks (Quaternary).
And this is what you will discover in the next few pages:

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As always, this annual report shall also serve and with warm greetings as a **Thank You** to all friends of the institute, who accompanied us this year and/or others and supported us.

**Impressum.** The individual working groups (WG), and generally the Director of the Institute of Mineralogy, Prof. Dr. Gerhard Heide, are responsible for all content.
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**Sources** (other than the content per se):
Institute of Mineralogy – Annual Report 2013

Institute, University and City

Current issues in and around Freiberg in 2013. Once again, the year 2013 was a year of busy construction and building, renovations and restorations for the city of Freiberg. It is not only our guests, who will appreciate this – at last once the noise and detours become history. And there were lots of big parties, among them celebrating 300 years of the term sustainability, coined in Freiberg ...

Right: Prof. Christof Mauch, Director of the "Rachel Carson Center for Environment and Society" at the Ludwig-Maximilians-University in Munich, keynote speaker at „300 Years Sustainability“ in Freiberg. Photo: Detlev Müller

A review of regional history. Odd, nobody celebrated that one: our university slept over its 20th Anniversary as an officially nominated Technical University. It was only in the year 1993 that our alma mater fribergensis was bestowed with this title. Until then (and for many until today still) it is just the Bergakademie (Mining Academy). But first things first ...

At the time of the first full bloom of the Freiberg mining activities, the Freiberg Mining Law was first mentioned in 1233. In 1423, Margrave Friedrich der Streitbare received the Duke-dom Sachsen-Wittenberg and with it the electoral dignity. Thus the term Electorate of Saxony became known for all lands of the Wettin family. Dr. Ulrich Rülein von Calw died in 1523 (even back then, Freiberg experienced “Swabian imports” and had no reason to be ashamed of them). The man was in the city council and at times councilman and even mayor. In 1500, he published the first montanistic textbook in the German language, entitled „Ein nützlich Bergbüchlein“ (a useful montanistic booklet). In the year of his death, Adam Ries took up his new job as mining officer in Annaberg-Buchholz. Balthasar Rösler, a Bohemian mining surveyor, working in Freiberg, invented the Hängeko mpass in 1633 (picture r.). Ten years later, Freiberg survives almost without harm the besiegement by Swedish troops under the gui dance of General Lennart Torstensson. The „Manufaktur für le- onische Waren“ (fabrication of silver and gold thread-based items) opened in 1693 in Freiberg, run by the N u- remberg tradesman Thomas Weber. In the same year, the „Ausführliche Berginformation“ (extensive information) is published by the Freiberg Chief Mining Officer and reformer of mining, Abraham von Schönberg. 300 Years of „Nachhaltigkeit“ (sustainability) were commemorated in 2013 at many places and many times because the book „Sylvicultura oeconomica“ appeared 1713 in Leipzig, written by the Freiberg Chief Mining Officer Hannß Carl von Carlowitz. The government of the Elector of Saxony Friedrich August I, named August the Strong, ended in 1733. He had led Saxony to its historical prime as a European power. In the same year, the Freiberg medical doctor and mining officer Johann Friedrich Henckel installed the famous Laboratorium für Probierkunde – a predecessor of modern analytical geochemistry. The 1713-born Christlieb Ehregott Gellert was appointed teacher for metallurgical chemistry in Freiberg in the year 1753, and later filled the first professorship of metallurgy. Gottfried Silbermann from Frauenstein near Freiberg, the famous Baroque organ builder, died ten years later. Our city guards four of his organs, all of them actively in use. Shortly thereafter, the Seven-Year War raged until 1763, leading to the definite end of the Saxon-Polish Union. In the same year, Friedrich Anton von Heynitz was appointed General Mining Commissioner...
and Friedrich Wilhelm von Oppel Chief Mining Officer – both founding fathers of the Bergakademie Freiberg. 1813 was the year of the „Völkerschlacht“ (Battle of Leipzig), with many commemorative events. And that battle brought Napoleon back to Saxony; he resided in Freiberg before on his march East. The first steam engine was put to work in 1823 in the Roch-Bucherschen Spinning Factory. Another ten years later, Saxony became part of the Deutsche Zollverein (German Customs Union). The first turbine has been used as of 1843 in Saxon mining. The element indium (In) was discovered in 1863 by the Freiberg chemists Ferdinand Reich and Theodor Richter. The first Freiberg group of the Social Democratic Party was founded in 1873. In the same year, the local silver coins were taken out of traffic with the united monetary union in the German Reich. The Freiberg mining activities come to a planned end between 1893 and 1913. And in 1913 the Elite Motorenwerke AG started their vehicle production in the neighbouring town Brand-Erbisdorf (today, only the beautiful old factory premises remind passer-byes of those glorious days). Ten years before, in 1903, the Bergakademie received the right to bestow the title “Diplom-Ingenieur”. In this year, the cavern power plant Dreibrüderschacht between Freiberg and Brand-Erbisdorf started working. Twenty-nine dead were to be mourned in 1923, the year of the Munich coup by Adolf Hitler: victims of an encounter between hunger-driven demonstrators and the military (Reichswehr) on the Freiberg Postplatz – supposedly there was no memorial activity in Freiberg in this year, either. Ten years later, Hitler was elected as Chancellor of the Reich. On January 31, a large demonstration of the Freiberg NSDAP took place, and on March 02 already, leading communists were being arrested. On June 17, workers of the Freiberg Zinc-smelter demonstrate, in parallel with the big demonstrations in Berlin and in the same year as the show trial against the Freiberg Mining professor Otto Fleischer at the Highest Court of GDR. In 1993 Freiberg had 46.027 inhabitants – today we count an official 40.083 (2012). The year 1993 also saw the first Saxon Law for Universities (August 04), which declared Freiberg a Technical University (see above).

Institute and Working Groups

BHMZ. The Biohydrometallurgical Centre Freiberg for Strategic Elements is the latest Krüger-College of our university (http://tu-freiberg.de/forschung/bhmz). It was officially launched in May 2013. This time, all three working groups of our institute are jointly involved. The big project want no less that to find new ideas and solutions about the future of mining, ore dressing and smelting of non-ferrous metals in an environmentally friendly, yet efficient manner. At the same time, a very decent number of doctoral students will be receiving their education and training – and benefit from the many additional offers available within the Krüger-College. While still at the beginning, we are very much aware of the various other groups worldwide, who aim at similar challenges with creativity and engagement – we try to do our best and contribute our share.

SMSB (Strategic Metals and Minerals from Saxon Mine Heaps and Tailings). Within this BMBF-joint research project, four tailings deposits have been drilled in January 2013 with one borehole each and sampled (http://www.hzdr.de/db/Cms?pNid=3052). The investigations aim at a deeper assessment of the reusable material potential and at technological solutions to use it, while at the same time renaturating the mining legacy in an environmentally appropriate and economic fashion. The project is under the guidance of the WG Economic Geology and Petrology with Dr. Inga Osbahr taking the key responsibility for this group’s activities. The other two working groups, Mineralogy and Geochemistry, are equal partners. Further support comes from Philipp Büttner from the Helmholtz-Institute Freiberg for Resource Technology, who coordinates the project that has already stirred quite some attention in Germany.

Right: Test drill on the Tiefenbach deposit in Altenberg in February 2013 (© TU Bergakademie Freiberg; photo: Mario Köhler)
A Team’s Trip. Everyone of us, who was able to walk (and could afford the time) came along on September 04 to a truly interesting and fun excursion day. The first destination was the Glückauf shaft with the mining museum Mehren in Käbschütztal, where kaolin and clays have been mined and processed for the porcelain, chemical, pharmaceutical and construction industries. The shaft had been dug in 1925 to a depth of ca. 20 m. Today, all mining takes place above ground. Following this highly interesting and inspiring visit, and after a short bus trip, we took a larger hike from and to the State Wine Cellars of Wackerbarth. Through the vineyards and the beautiful city of Radebeul, we enjoyed the opportunity to leisurely discuss all of those things that too often get neglected in daily routines and to meet new faces (e.g., guest doctoral students and Post-Docs). The photos below give a taste.

Prolongation of the guest professorship for Stefan Norra. Stefan is a geoeconomist and environmental mineralogist (picture at right). His focus lies in the analysis of element budgets in ecosystems. He works on urban ecology, agricultural soils, waters quality, air pollution and microclimate at the interfaces with environmental health and ecosystem services. His projects lead Stefan through Germany, France and Eastern as well as southeastern Asia (http://www.igg.kit.edu/58_Stefan%20Norra.php). He heads a group on Environmental Mineralogy and Environmental Systems Analysis at the Karlsruhe Institute of Technology (KIT) and teaches Soil Chemistry and Urban Ecology in Freiberg since 2011/12.

His optional (!) courses, albeit blocked, find so much positive feedback from the students that they opted for a prolongation – which was happily granted by both Faculty and Rectorate.

„Im Grunewald ist Holzauktion ...“. These following photos below are not from a Berlin forest as in the song, but were recently taken in our institute’s garden ...

“How sustainable this action may have been” is a question, many of us are musing about.
WG Applied and General Mineralogy

Four bursaries from the National University for Mineral Resources (Mining Institute) in St. Petersburg, Russia, worked for six months with us since September 2013. Their stay has been supported by DAAD and related co-financing via the Russian Lomonossov as well as university stipends. They thus extend a long tradition of mutual exchange of junior scientists between the Mineralogy professors of both institutions. In this year of the 240th anniversary of our partner university in St. Petersburg, a record number of four bursaries were successful applicants. The Freiberg mineralogists congratulate their Russian colleagues warmly on the occasion of the jubilee on November 01.

Anna Kurguzova investigates the Russian tin deposit “Severnij”, located in the extreme northeast on the shores of the icy seas of Tschukotka. Anna studies the main ore mineral cassiterite in more detail. There is a long-standing tradition of such works at TU Bergakademie Freiberg, currently represented by Dr. Ulf Kempe. During her stay, Anna takes a closer look at the characteristic of cassiterite with cathode luminescence. She performed her studies largely at the new scanning electron microscope, jointly used with the Institute of Geology. Another focus is dedicated to the inclusion of water and iron; using infrared spectroscopy and colour analysis. In respect to cathode luminescence studies, Freiberg is a worldwide respected centre of expertise.

Maria Machevariany studies another Russian tin deposit in the far east of her country near the Chinese border. The “Urmi” deposit is seen as one of the World’s largest tin ore potentials and has not been mined yet. The investigations follow a radically different path as compared with Anna Murguzova’s work. The widely spread, yet mostly lowly concentrated mineral zircon is in the focus of Maria’s studies. Zircon is often used on the geosciences as a natural “clock” to determine the age of various geological formations. Thus Maria aims at presenting the first age determinations for the Urmi zircones; to be performed at the isotopic laboratory under the guidance of Prof. Dr. Marion Tichomirowa. In addition, special zircon characteristics such as crystal shape and chemical composition are to be determined in detail.

Yury Nefedov. There is one type of diamonds, known worldwide, of which we do neither know where they formed nor how, since they have occurred in placer deposits only. This type, so-called Brazil-Ural-diamonds, are the topic of Yury’s work. Using infrared spectroscopy under the guidance for Margitta Hengst, information on the nitrogen content within the diamonds should become available. The reasons for varying colours shall also be elucidated in Yury’s studies. Very thin slices had been cut out of the diamonds in Russia already, to enable related studies.

Anton Popov. The upper reaches of the Jenissej River developed in recent years as one the most important gold mining regions of Russia. In his PhD dissertation, Anton performed de-
tailed studies on the geological position of one of these deposits. This work was continued and enhanced during his stay in Freiberg. Within the “Zolotoe” deposit, gold occurs as so-called “free gold” or, as geologists address it, as “native gold”. The chemical composition of the gold may contain valuable hints on the formation conditions of the deposit. Accompanying sulphides shall be studied in addition, using light and electron microscopy.

**ELSA (Annia Greif*).** The study to characterise the pollutant input from the Mulde region mining areas into the Elbe River was finished successfully. Starting from the pollutant potential of Elbe river sediments that continuously contribute to strain biota, overbank soils and the North Sea, the City of Hamburg and the Hamburg Port Authority launched the project ELSA – Pollutant Remediation Elbe Sediments – in 2010. It aimed at initiating and supporting measures to improve the pollution situation of the Elbe ans its sediments (http://www.elsa-elbe.de/). The study to characterise pollutant inputs from the ore mining regions of the Mulde catchment was the first one to be supported by BSU Hamburg to the benefit of our institute.

In the early 1990’s already, the Mulde River was identified as a relevant tributary to the Elbe in respect to its pollutant load. Even today, it still presents an important – and mainly geogenic – source of various trace elements (see pictures above). Inputs from the Erzgebirge ore mining travel via the two tributaries Freiberger and Zwickauer Mulde into the Vereinigte Mulde and additional waters reach the Elbe via the Rothschönberger Stolln and Triebisch River (see pictures below). The focus of our project lay in the evaluation and interpretation of substantial data that were gathered over the past years for various questions by state agencies and consultant In addition; we performed some new investigations on element behaviour under high discharge conditions and the supply potential.

The contents of toxic elements in water and sediments of the Mulde catchment are still high and often exceed the official thresholds (EU-WFD) for dissolved cadmium and particulate arsenic. Over time, a concentration decrease was noticeable. Major remediation actions have been done in the main polluted areas of Freiberg and Aue-Schlema by Saxonia mbH and Wismut GmbH, respectively; nevertheless, a certain pollutant export level remains. Point sources can be estimated, yet explain only a fraction of the observed freight increases at some river stretches. Flood events lead to concentration peaks, particularly of particle-bound pollutants. The bonding and distribution behaviour of the elements is crucial for the retention in sinks. Next to the Mulde reservoir, the Eibenstock reservoir in the upper reaches of the Zwickau Mulde act as pollutant sinks.

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WG Geochemistry and Geoecology (Earth System Science)

2013 delivered some very successfully defended PhD theses. On January 25, Dipl.-Geoecol. Anne Schucknecht defended her thesis on soil chemistry, land-use and climate change in northeastern Brazil. Today, Anne works at the “European Commission Joint Research Centre” in Ispra on the Lago di Maggiore. Dipl.-merchant (!) Andreas Hoy came next; his defense on May 24 became a particular highlight. The referees Dr. Christoph Beck (Univ. Augsburg), Prof. Dr. Hartmut Graßl (Max-Planck-Institute for Meteorology in Hamburg), Prof. Dr. Jaak Jaagus (Univ. Tartu, Estonia) and Jörg Matschullat as doctoral father had all rated this work as very good (the prerequisite for an excellent final mark, if the defense itself justifies this ultimate rating). Andreas’ outstanding oral presentation, entitled “Variability of atmospheric circulation and its relation to climate” attracted a large audience – and the subsequent defense was so impressive that he received the very rare rating “excellent” (summa cum laude). Thereafter, Andreas “fled” into Bhutan and could establish a new study course for Environmental and Climate Research, which is supposed to start in 2014. Just before the end of the year, on December 16, Dipl.-Geoecol. Juliane Bernhardt defended her similarly very demanding work on lake physics, entitled “Rotation-affected internal seiches and its effects on transport through the sediment-water interface”, which was done in close collaboration with the Leibniz Institute for Lake Research and Fisheries in Berlin. All three former candidates set new standards for the 2014 candidates, who are already busy preparing themselves.

ALL-Africa. This interesting small project, again in close collaboration with the IGB, and internally a tight cooperation between the groups of Mineralogy and Geochemistry/Geoecology studied the question, whether recent lake sediments from arid basins with lesser flamingos (photo left; with strongly decreasing populations), are a signal for contamination or ecological degradation from the perspective of mineralogy and geochemistry. The question could be answered within the Master thesis of Katharina Großer: the sediments are not contaminated and it is more likely external influences such as physical disturbances and decreasing distance to human settlements that threaten the flamingo populations.

BLITSN. Parts of Saxony belong to those regions in Germany with the highest density of lightning occurrences and the highest strike intensities. Even the absolute maximum lies in our Free State. Will this situation change with regional climate change? Lightning and thunderstorms are energy and temperature dependent – and the surface temperatures in Saxony increase above average. While there are certain tendencies that could support such a hypothesis, we must admit that the available observation time period (14 years) with the Siemens BLIDS system is too short for a comprehensive (and robust) answer. Nevertheless, Anne Schucknecht and Jörg Matschullat were able to lay the foundations for a lightning climatology for Saxony (and earlier Thuringia with Bianca Fielder); to be published soon.

GEMAS. On December 4, the new GEMAS atlas by EuroGeoSurveys on the pedogeochemistry of agriculturally used soils of all Europe was presented at FAO in Rome. We had to stay home and will have to do some homework until 2014, since something had been neglected: the quantitative analysis of this most valuable sampling set for the macronutrients carbon, nitrogen and sulfur. We are looking forward to the first public results in January 2014, when the highly engaged Master student (M.Sc.) Débora dos Santos Carvalho will defend her related thesis. See also http://www.eurogeosurveys.org/topics/geochemistry/.

GREGASO. What had been seen by the German Science Foundation (DFG) as not worth supporting, attracted the attention of the Air Liquide Foundation: our ideas on the development of a new technique to measure soil emissions, here mostly greenhouse gases (GHG) (http://tu-freiberg.de/fakult3/min/geochemie/Mitarbeiter/Oertel/GREGASO/index.html). Meanwhile, the technique, developed mainly by doctoral student Cornelius Oertel with substantial support from our great Faculty workshop, functions not only in Saxony, but has demonstrated its usability in semiarid tropical environments. We built two variants, a very robust version
of a static closed chamber system that needs no electricity from the net chamber system (dynamic in respect to CO₂-measurements) and a fully automated dynamic closed chamber. The latter needs electricity and more maintenance. Both serve not only the quantitative determination and flux calculation of GHG, but allow application for e.g., hydrocarbon exploration and the detection of underground leakages of technical appliances and transport systems. We hope to be able to continue this very successful work, for quite a while also supported by doctoral student Kamal Zurba, in 2014.

REGKLAM. The rather big BMBF joint research project in the framework of the federal KLIMZUG initiative comes to and end with 2013 (http://www.regklam.de). Six PhD students in our group alone, numerous publications, including a book edited under the guidance of Stephanie Hänsel, and countless reports later, we did learn quite a bit: on the hydrological behaviour of urban and near-city biogeotopes under the influence of climate change (which meteorologically translates in our region mainly into shifts of precipitation frequencies and intensities as well as temperature profiles (Daniel Leistner and Sabine Tesch); on a better understanding of the physics and the chemistry of grain-size differentiated urban and rural aerosols, also under projected conditions of various assumed futures (Silvia Leise); on a deeper physical understanding and on the behaviour of large-scale weather patterns and its consequences in the past, at present, and in some foreseeable future (Andreas Hoy); on the behaviour of extreme weather conditions (mainly drought and extreme precipitation) in the same time frames (Stephanie Hänsel and Wiebke Miketta); and, also coupled with REGKLAM, yet independent, on the dynamic reaction of biomes and the differentiation of this reaction between climate change and land-use-related changes (Anne Schucknecht), and on the physical and chemical behaviour (inorganic and organic) of fog, differentiated by interstitial aerosol and the liquid phase (Stephanie Schüttauf). The latter and still ongoing work would be impossible without the generous support and collaboration with the Leibniz Institute for Troposphere Research (IfT) in Leipzig and the DBU. As a bottomline we may say, that climate change-related risks in our region are rather underrated still, likely because individual extreme events and risk probabilities are difficult to communicate to the public.

VeLuDeClim-NEB and BraSol-2010. As the brainchild of a conference meeting in June 2012 and the “mother” project BraSol-2010, we developed jointly with Dr. Stefan Erasmi (Göttingen University) the DAAD-supported pilot project Vegetation, Land-use, Desertification and Climate Change in North Eastern Brazil. This enables us to invite colleagues from the federal universities of Natal (Rio Grande do Norte) and Campina Grande (Paraíba) to Freiberg and Göttingen, and to work in Brazil ourselves. Thus, Anne Schucknecht, Anne Müller (Scratinha), Anne Marie de Grosbois and Jörg Matschullat traveled in February to the extreme Brazilian northeast. We aimed at a representative soil sampling in the interior region Seridó in the central south of Rio Grande do Norte, where serious desertification tendencies are reported from that supposedly are a result of regional climate change. Together with our colleagues, professors Reinaldo Petta, Mario Pereira da Silva (both UFRN) and Marx Barbosa (UFCG), we organized a well-attended workshop, before heading by rental cars for almost three weeks into the Caatinga biome. In parallel, and thanks to the enormous en-
gagement of professors Judith Hoelzemann (UFRN) and Marcio Furukawa (UFERSA in Angicos), we were able to successfully obtain some aerosol test samples using two of our newly developed low volume samplers (LVS). A special Thank You to the teams of Judith, Marcio and João Gualberto (INPE). By now we assume that is land-use changes and not climate change that have led to decreased soil fertility and salinization. We expect more certainty by additional works, planned for 2014.

*Left:* Marcio Furukawa and JMT setting up the LVS at the UFERSA site in Angicos. *Centre:* Drilling in northeastern-Brazil comes with a price. *Right:* the female drill team

**WWDACC.** This acronym stands for the book title ‘*Why we disagree about climate change*’ by Mike Hulme, former director of the Tyndall Centre for Climate Change Research in England. The book is – in the eyes of Jörg Matschullat – one of the most differentiated and wise discussions on the topic climate change ever written. It deserves special mentioning that Mike Hulme does not primarily address scientists here (he is a well-known atmospheric physicist himself), but a much wider, educated audience. His approach is multidisciplinary and in principle transferable (in respect to key hypotheses) on practically all major conflict topics of our time. This probably enticed the eight Master students Danny Arnold, Ronny Badeke, Erik Donner, Valentin Garbe, Stephan Lenk, Friderike Klos, Anne Müller, and Berit Schult to jointly with and under the guidance of Stephanie Hänsel and Jörg Matschullat translate the book for the German-speaking world. It shall appear in March 2014 under the title ‘*Streitfall Klimawandel oder warum es für die größte Herausforderung keine einfachen Lösungen gibt*’ at oekom Publishers, Munich.

Sportive high performance was also part of the 2013 successes. Dipl.-Geocologist and doctoral student Cornelius Oertel convinced not only in his research work on soil emission of greenhouse gases (GREGASO) but in the triathlon on June 29 at the Kober valley reservoir. Cornelius won the competition as Saxon Vice University Champion with 1:07:11. We are proud of Cornelius and congratulate.

**WG Economic Geology and Petrology**

**Hybrid Lithium winning.** This 2-year BMBF joint research project ended in early 2013. After Sören Rode having left us for Brisbane, Kai Bachmann pulled his weight. The project could be finished successfully with the university and industry partners involved.

*Left:* volcanic dome: fumarole activity to 880°C (As-Pb-In-minerals); *Centre:* Re-Feld: high-T fumarole activity (Re + Mo, In?); *Right:* Mo-field: Cu-As-Pb-Mo(-In?)-mineralisation $T = 550°C$ (phot. TS)
Ore dating. Jointly with the German Geological Survey (BGR) in Hannover, doctoral student Jörg Ostendorf develops direct dating options for ore minerals. With Dr. Henjes-Kunst (BGR), this project focuses on the Rb-Sr dating of sphalerite. Important examples that could be dated successfully include the hydrothermal gangues of the Freiberg mining district and the Jabali deposit in Yemen. The latter is seen as the most important silver mine of the antique Arab world. This was done in collaboration with professor Maria Boni (Naples University, Italy) and supported by the German Science Foundation (DFG).

In addition, the WG runs a sequence of directly industry-fianced research projects with prominent partners such as Anglo American, Boliden, KGHM, K+S, LKAB, Rockwood Lithium (earlier Chemetall), Solarword and Vergenoeg Fluorspar. The collaboration with K+S is the youngest success story.

And the group keeps growing: Anja Dabrowski (WM) works since May 01 at a geological deposit model of the Calvörde wedge with special emphasis on the lithofacies of the potash seam Ronnenberg. Anne Engler (WM) deals with the geology and tectonics in the Werra potash region – a contribution to sustainable deposit usage; and Matthias Bauer (WM) is busy as of October 1 with the ‘Geology and metallogeny of indium and germanium deposits in the Erzgebirge and areas for comparison worldwide’.

Freiberg Short Course in Economic Geology. For the 12th time already, this compact course took place in December 2013. Unique within in Europa, the course focussed this time on ‘Granite-related Mineral Systems’. The number of applicants far exceeded the possible number of places of our large lecture hall in the Werner-Bau – we had to restrict the total number to 125. The participants came from 17 countries and represented five continents – a new record for this course that meanwhile has taken a firm position in the calendars of economic geologists worldwide. The picture below shows the participants along the staircase of our institute.
News from the Laboratories

One of the strength of our institute certainly lies in the joint discussion of research content (where it applies) and of shared laboratory infrastructures. While we do have clearly defined responsibilities for each individual laboratory, it is a pleasant naturalness to use all resources together.

Analytical Geochemistry (Dr. Alexander Pleßow). Two young Lab technicians were educated over the past three years by Thurit Tschöpe and the colleagues of the geochemical labs with additional help from others in our institute, the Chemical Institutes and the Institute of Energy Processing and Chemical Engineering. Jennifer Glanz finished her education earlier than anticipated in July and was honoured as the best of her year by the Chamber of Industry and Commerce IHK in Chemnitz. We are very happy that she may keep working with us, now in the Isotope Lab. Jule Lehnert has taken her theory exam in December, to be followed by the practical finals in January 2014. We keep our fingers crossed for her and are confident that she will do well. She will likely work in the Institute of Energy Processing and Chemical Engineering as a chemical lab technician thereafter.

Since early in 2013, the labs sport a total reflection XRF, the Bruker S2 Picofox, with a molybdenum tube and a 10 mm² silicon-drift-detector. The advantages of this system in comparison with other XRF techniques lie in the largely matrix-independent options, since X-radiation does not penetrate the samples and in the very low amount of sample mass needed – one droplet is sufficient. Both liquid and suspended samples can be determined. The limitations are given by the energy-dispersive detection with a resolution of < 160 keV für Mn Kα. Lower limits of detection in suspensions are comparable with WD-XRF; in solutions, a few µg L⁻¹ are realistic. The S2 Picofox was immediately put to use in the ALL-Africa project with Katharina Großer.

To improve acid digestion options, we could buy a new microwave systems including waste gas washing from the company Berghoff. The special issue here are rather simple handling, the fuming off of acids without refilling and the direct and accurate pressure and temperature determination within the beakers and ‘bombs’ without corrosion-prone sensors.

Diffractometry-Lab (Dr. Reinhard Kleeberg). The most important technical change this year was the installation and launch of the new powder diffractometer Empyrean (Panalytical). The machine was bought through the HZDR/HIF and will be run jointly with our lab. Its key tasks relate to the resource-oriented projects of the BMBF r3-programme, particularly „SMSB“ and ‘Chemical-biotechnological winning of valuable residuals from lignite powerplant ashes’ as well as in the cooperative works with the HZDR/HIF. The fast detector system allows for rapid and low noise measurements. Methodological works on an improved profile description of the new detector system have already yielded first successes, so that we can use the machine for Rietveld analyses in a good quality. Our old Philips diffractometer PW3020 has found a new home at the University of Concepcion in Chile; thanks to Gerhard Heide; and is busy there every since.

The improvement of the Rietveld programme BGMN slowly, yet steadily progresses. Through a new collaboration partner, Nicola Döbelin from the RMS-Foundation in Bettlach/Switzerland, a new, user-friendly and cost-free user interface is being developed and tested in our lab – this will certainly boost the distribution and use of the software.

Xiaoli Wang was awarded a Student Travel Award of the Clay Minerals Society with 1,200 USD. She gave a very well-received oral presentation on her first results on smektite structural analysis at the 50th Annual CMS Meeting in Urbana, Illinois (6.–10.10.).
Reinhard Kleeberg gave various talks at conferences, e.g., at the same CMS meeting, the ‘Accuracy in Powder Diffraction’ conference at NIST in Swarthmore/USA, the Annual Meeting of the German Clay and Clay Minerals Group in Munich and the Panalytical Applicants Meeting in Weimar. As consultant and lecturer, he was at NGU in Trondheim/Norway in November 5 and 6., and on December 13 busy as a lecturer in the ERASMUS-study course ‘International Master in Applied Clay Science’ in Poitiers/France.

**Geometallurgy-Lab (Prof. Bernhard Schulz).** No major changes occurred in the Geometallurgy-Laboratory (also referred to as MLA-Lab for Mineral Liberation Analysis) in 2013. Both SEM’s were used extensively for a sequence of research projects. The methodological emphasis lay on the characterisation of pegmatites of the Lithium-Tantal-Cesium group (LCT) and on several studies on REE mineral-bearing rocks and their ore dressing products. The other petrology-directed investigations saw the preparation of element distribution maps of garnet blasts in mica schists and of amphibole blasts in blue schists and eklogites. The lab also served the company FEI at various days to demonstrate the instruments to potential customers. We intensively schooled four colleagues of the Polish mining company KGHM from January 28 to February 08. Here, Sabine Haser particularly engaged herself. By now, KGHM has its own SEM-MLA lab in Lubin, Poland.

The lab and its team are also engaged in the programme ProMinNet, a platform for University-based researchers, dealing with Ore Process Mineralogy. After Trondheim (Norway), Luleå (Sweden) and Freiberg, the University Oulu in Finland organized this year’s workshop for the platform members. The Freiberg delegation with Dr. S. Birtel (coordinator, HIF), Dr. M. Rudolph (HIF), Dr. I. Osbahr and Prof. Dr. B. Schulz (both TUBAF) partook from September 20 to 24. Next to presentations of the individual working groups, the participants visited the Talvivaara Ni-Cu-Zn-Pb mine. Its geological conditions (fine-grained ore minerals, rock matrix with a lot of graphite) provoke the metal liberation with bacterial enhanced heap leaching. It may be an interesting side remark that the Mining School at the University Oulu runs its own ore flotation test plant (mini pilot plant) for student education.

Next to numerous short machine and method demonstrations, a full-day MLA course took place on November 11 with 20 students from the Universities of Liège, Nancy, Luleå and Freiberg under the umbrella of the Emerald programme (Erasmus Mundus Master in Georesources Engineering).

**Isotope-Lab (Prof. Marion Tichomirowa).** The establishment of the single zircone U-Pb dating method stood in the foreground of this years’ methodological development; one of the very few highly precise techniques, since it delivers a ca. 10-times higher precision and accuracy as compared with all other U-Pb-zircone dating methods (e.g., SHRIMP, SIMS, Evaporation, LA-ICP-MS). In its reply letter to a related proposal by Marion Tichomirowa, the DFG wrote: “The establishment of the highly precise U-Pb-dating method in Freiberg appears highly desirable” and further: “since it is a well thought-out, well-planned and useful enterprise”. The key prerequisite for successful dating with this single zircone U-Pb-method is reaching and maintaining a low total Pb blind value (Pb; ideally < 1 picogram, pg = 10^-12 gram). To reach this aim, all acids and the water have to have a very low blind value. We succeeded this year – by lab-internal distillation (knee-still, see picture below) – to obtain constant blind values below 1 pg. Two trial series of U-Pb-dating were performed with zircon standards. A total blind value of 5 pg was reached in the second series – thus developing the Freiberg lab to the best U-Pb facility in Germany. Yet, there is a lot to do still to play at the top worldwide. We had to further lower the blind value to obtain even lower dating errors. Various hinderances needed to be overcome such as the production of ultra-pure silica-gel. Although the initial substance is no longer in production, and cannot be bought any more, Marion Tichomirowa managed to obtain some material from isotope colleagues and produce the necessary purity. Thus the boundary conditions can now be met and the first zircone samples shall be dated with the new method in early 2014.
Repairs needed for both mass spectrometers, were successfully mastered by Klaus Bom-bach; thus avoiding longer downtimes in measuring valuable samples. The Isotope-Lab received (free of cost) a no-longer-needed clean bench from the Federal Geological Survey (BGR), thus allowing us to retire the old (and fairly contaminated) one. Many hands and heads supported the not-so-easy process of installation of this laminar flow box into the Isotope Lab. We are most thankful to everyone involved.

*Right:* So-called ‘Knee still’ for acid distillation within the outlet at the Isotope-Lab (photo MT)

Members of the Isotope-Lab performed many Sr-isotopic investigations this year. This included, e.g., the study of water samples from Iraq and Palestine (in collaboration with Prof. Broder Merkel) and of waters of the geothermal-drill site Groß-Schönebeck (with GFZ-Potsdam) to identify the Sr-sources of those waters. Other samples were dated with the Rb-Sr-method (e.g., by Irfan Mousa Yara, Iraq, and Erzgebirge samples). We continued the collaboration with the Saxon State Authority for Environment, Agriculture and Geology (LfULG) and worked on sampling and analysis of zircones.

From July 24 to 26, the XIIth ESIR Workshop (European Society of Isotope Research) took place in our Werner-Building; jointly organized by Marion Tichomirowa with colleagues from the Isotope-Lab. 65 scientists from 15 countries actively participated at this bi-annual platform (see picture below).

*Participants of the XIIth ESIR Workshop in front of the Werner-Building (our Institute)*

**Shockwave-Lab Freiberg (Dr. Thomas Schlothauer).** The development of shockwave synthesis with flyer-plate and passive plane-wave-generator as well as impedance-corrected container could be brought to a successful end. This system allows to gain a 100% sample winning in the full (currently achievable) pressure range. Interest to apply this method already emerged from Japan (Profs. T. Sekine and K. Tsukamoto). In addition, tests for the Joint Institute of High-Temperature of the Russian Academy of Science (JIHT-RAS) were done with this method, results of which were presented at the Elbrus 2013 conference.

This new impedance-corrected system was used to develop the sample container for large sample amounts; a set up that has demonstrated its functionality in six successful tests so far. This container permits the synthesis of high-pressure phases in the pres-
sure range at a minimum of 40 GPa with masses of up to 7.5 g – a comparatively very good value (Fig. top right). Another development concerns the container that allows for the synthesis of high-pressure phases, equivalent to the outer Earth core (Fig. top left). Using the reflection method with reflectors made from tantalium and wolfram, sample spressures of up to 165 GPa can be realized.

WG Geoscientific Collections

As in late 2012, the year 2013 started with the Krüger-House (final touches for the exhibit ‘Mineralogical Collection Germany’). Since some of the showcases did not hold their promise, all of January went by to empty them and re-establish the exhibit after their reconstruction. To do so, the exhibit had to be closed for the public. The re-opening in early February started with a BIG event: the World’s largest Haüyn-crystal can now be admired in the treasure chamber of the Krüger-House; found on the day that the House initially opened its gates. The specimen could be bought with additional support by the chancellor of TU Bergakademie Freiberg following the Munich Mineral Days. Apart from this addition, the ‘Foundation Mineralogical Collection Germany’ developed quite well. Fourteen new sponsors were found, who donated generously to the Krüger-House exhibits. The number total of private donators has increased to 50. 68 people and institutions have loaned us specimen. These include nine museums (Staatliche Kunstsammlungen Dresden – Grünes Gewölbe, Stiftung Schloss Friedenstein Gotha, Museum für Naturkunde Berlin, Deutsches Bergbaumuseum Bochum, Museum Idar-Oberstein, Museum für Mineralogie und Mathematik Oberwolfach, Städtische Museen Zwickau, Goldmuseum Buchwald, Museum Huthaus Einigkeit Brand-Erbisdorf).

The new book volume on mining and minerals from Siegerland and Westerwald in Germany, launched on March 15, has received very positive responses. The most interesting talk by Markus Heinrich, one of the authors, attracted too many people to seat them all in the Senate Hall. The Krüger Foundation generously sponsored this new edition. The volume presents a valuable continuation of its predecessors such as the Tsar’s treasures, Namibia, Czech Republic and Slovakia, India and China. At the same time, it is the first volume dedicated to German sites. Further volumes are in the planning. Let yourself be surprised!

The team of the geoscientific collections is strengthened since April by three new colleagues, Susanne Eberspächer, Beata Heide and Ines Jaschke, the latter being replaced by Ilja Kogan for the time being since she gave birth. The reason for this increase is the successful acquisition of three DFG-projects (HE 3015/5-1, HE 3015/6-1, VO 902/2-1) with a total time of three years each. The projects are targeted to build a web-based systems to assess, digitize and visualise the complete historical mineralogical collections of Abraham Gottlob Werner, the entire fossil fuel geology collections, and the thin section collection of TU Bergakademie Freiberg. Withing these three projects, all part of the mantle application Geo and Montane Scientific Collections in Freiberg and Dresden (HE 3015/7-1), related tools shall be developed and the collection items transferred into a modern scientific database, available thereafter to everyone interested. All of the Freiberg collections are intended to become part of this database in the future to be available online to all researchers worldwide. The related work is done jointly with the Senckenberg Naturhistorischen Sammlungen in Dresden and Frankfurt.
The stock of our geoscientific collections was used this year by many scientists from both Germany and abroad. Apart from our intensive use in teaching at TU Bergakademie Freiberg, 220 objects were given away for scientific investigations to 37 scientists. The highest demand came from our working group of economic geology and petrology. External groups such as from the Helmholtz-Center Dresden-Rossendorf and Freiberg, from the University of Hamburg, the Free University Berlin, Tübingen University, the Unweltmuseum GEOSKOP, the Museum Schleusingen, the Loser Chemie GmbH Langenweißbach and from the German Amphibolin works Ober-Ramstadt, received samples for their investigations. Extensive photographic documentations were made from type materials and other originals that cannot be on loan.

The use of our Paleontological Collections was particularly intensive this year. Among others, four guest scientists studied Cenozoic conifers and palms, Paleozoic calamites, graptolites, and Devonian ammonoidea. The interdisciplinary collaboration with the Freiberg Institute of Mechanics and Fluid Dynamics gained quite some attention for the joint work on fossil fish (photo at right). Within this project, the collections could welcome a spectacular new specimen – the 3D-remains of a *Saurichthys madagascariensis* skeleton.

In the framework of the DFG-project OB 80/44 (Oberhänsli, Rötzerl and Gaitzsch 2011: „U-Pb and Ar-Ar dating of minerals from metamorphic and syn-orogenic sedimentary rocks as a key to understanding architecture and evolution of collisional orogens“), we could jointly sample with J. Bek from the Czech Academy of Science in Prague for palynological studies.

The Mineralogical Collection registered 177 new specimen, obtained through exchange, donations and to come extend, purchases. Here, the acquisition of a regional collection with ca. 150 specimen from the CaF₂-deposit Schönbrunn in the Vogtland is of particular relevance. The Mineral Deposit Collection grew by a suite of about 250 minerals, ore and rock specimen from the Döhlen basin. Dr. Bellmann from Markkleeberg forwarded again numerous polished rock sections to the Petrological Collection. The Palaeontological Collection registered Tertiary material from Lausatia (thanks to Dr. W. Schneider, Hoyerswerda) and the donation Reuter from Freiberg (various fossils).

The World Bank finances a project for the modernization of the Geological Survey of Tanzania, to be realized by the Freiberger BEAK Consultants GmbH. We received the assignment to develop a scientific concept for a new display and organization of the geoscientific collection of the Tanzanian Survey in Dodoma. The know how of the Freibergers in conceptualization and realization of geoscientific collections was on demand beyond this project, however. The international acclaim that the exhibits in Castle Freudenstein (terra mineralia) and in the Krüger House (German National Collection) attracted led to numerous invitations for curator Andreas Massanek to give talks and presentations in Germany and abroad. Visits to China and Norway have been highlights of these activities.

Just as nice as travelling is the reception of esteemed colleagues from abroad, who wish to benefit from our experience and share theirs with us. This included such prominent addresses as the Mineralogical Museum of Harvard University in Cambridge, USA (Raquel Alonso-Perez), the Manitoba Museum, Canada (John Whitey Hagadorn), the Denver Museum of Earth Sciences, USA (Graham Young), the Minerals Heritage Museum Brisbane, Australia
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(Tony Forsyth), the Mining Museum St. Petersburg and das Vernadsky Museum in Moscow. At the end of 2013, more visitors were welcomed from Harvard University (Kevin Czaja) and from the Socorro Mineral Museum, USA (Virgil Luedth) as well as the Smithsonian Institutions in Washington, USA (Paul Pohwat).

As usual, the Geoscientific Collections contributed largely to the public relations work of our institute and university. Eleven special exhibits were shaped with material from our collections. Within the university, we designed the “Window to Science” in Castle Freudenstein twice (with material from the Fossil Fuel Geology Collection and the Biominerals and Biomineralization Collection) and in the Historicum (Scientific relations between the Bergakademie and Russia). In the Freiberg Mining Archives we contributed to the exhibit “100 Year Anniversary of the end of Freiberg Mining Activities 1913”. Loans from our collections largely enriched the special exhibits in the Erzgebirge Museum Annaberg-Buchholz (Minerals from the Erzgebirge and Mineral Deposits from Saxony) and in the Novalis Museum in Castle Oberwiederstedt (About the Nature of Light and the Colour Blue in Science, Fine Arts and Poetry around 1800). More special exhibits were supported on Mineral Fairs (Bad Ems, Munich, Hamburg), with collaboration with such famous partners as the Museum of Natural History London, the Museum of Natural History in Vienna, museums in the USA (Smithsonian Institutions Washington, Natural History Museum Los Angeles, Colorado School of Mines, Harvard University, Socorro Mineral Museum) and the Museum “Reich der Kristalle” in Munich.

At Europe’s largest Mineral Fair in Munich that celebrated its 50th Anniversary this year, we jointly manned a stand with terra mineralia. Again, we were completely overrun on all three days. Visitors of all ages were attracted by the Geo-Ralley and the offer to partake in the interactive program “Humans and Minerals”. Not only children were surprised to learn about the minerals in our body and which minerals we need to survive.

Right: The joint stand of the Geoscientific Collections and terra mineralia again attracted many visitors at the International Mineral Fair in Munich

In July, Dr. Birgit Gaitzsch partook at the summer party of the university Kindergarten with the special activity “We dissect fossils”. A similar activity took place within the summer university and in September for kids of the 4th grade.

Last but certainly not least, team members of the Collections guided 40 tours through our collections for school classes and other groups, and oversaw six student practical trainees in 2013. 1.620 visitors were welcomed in the exhibits (Werner-Bau 1.144, Humboldt-Bau 476), of course not counting the large number of our university students.

Our Team (the regulars)

... and the enhancement (doctoral students, Post-Docs, guest scientists, etc.)


Gerhild Landers ended her long-term commitment with us. It was not in her group alone, at the Diffractometry-Lab, that she was seen as a wise and differentiated personality, a dear, empathetic, eager and tedious colleague. We miss her – and wish her all the very best for the new stretch of life.

After giving birth to her daughter Ida Helene, Sabine Haser is now on maternity leave. Michael Hohf (WG Economic Geology) has left the group to continue working in the Tectonophysics group in Freiberg at his research project. Przemyslaw Michalak (Slavo) now works for the HZDR Helmholtz-Institute Freiberg for Resource Technology. Dirk Sandmann started a new career on August 1 at the company FEI in Brisbane. We thank him for many many years of dedication and success in the working group for Economic Geology and Petrology.

And we say Good-Bye to Marlis Zimmermann. It has been a fine and successful time with her, greatly due to your engagement. Thank you! Marlies now has a permanent position in the Institute of Chemical Engineering.

Outlook onto 2014

A workshop on the Rietveld software BGMN will be held in 2014 in our institute. Reinhard Kleeberg will serve as the Conference Chair for the 7th Mid-European Clay Conference in Radebeul (16.-19.09.2014).

JMT has some plans and will spend much of the year 2014 on a ‘sabbatical leave’ at the University of Queensland in Brisbane, Australia, and at Akita University in Japan. Yet his absence is well organized. Thanks to the dedication of the very fine team around Katja Horota, Alexander Pleßow and Frank Zimmermann, hardly anyone will notice his absence.

The next conference ‘Freiberg Innovations’ will not take place in 2014; instead on March 25 and 26, 2015. Entitled ‘Energy and Resources Turnaround’, the conference will be organized again by Peter Kausch, Martin Bertau, Jens Gutzmer and Jörg Matschullat with additional support from Helmut Mischo and Karl-Ernst Kegel. We look forward to the event.

Below: Impressions from the derelict Steelworks in Ostrava, today an industry museum
Annex

Publications in refereed journals and book contributions 2013 (n = 37)


Pleßow A (2013) X-ray induced alteration of specimens as crucial obstacle in XRF-spectrometry of fluorine in rocks and soils. X-Ray Spectrometry 42: 19-32
dung mit Genesevorstellungen. Mineralienwelt 5: 89-96
prehensive chemical characterisation of size-segregated PM10 in Dresden and estimation of changes due to
global warming. Atmos Environ 75: 365-373
doi: 10.5721/EuJRS20134603
Schulz B, Schüssler U (2013) Electron-microprobe Th-U-Pb monazite dating in Early-Paleozoic high-grade gneis-
ses as a completion of U-Pb isotopic ages (Wilson Terrane, Antarctica). Lithos: 175–176: 176–192, DOI:
10.1016/j.lithos.2013.05.008.
Schulz B (2013) Monazite electron microprobe Th-U-Pb age pattern in Variscan metamorphic units in the Armori-
can Massif (Brittany, France). Z Deutsch Ges Geowiss (German J Geosci) 164: 313-335, DOI: 10.1127/1860-
1804/213/0008
properties of rocksalt-type AIN and implications for high pressure phase relations in the system Si-Al-O-N. High
Pressure Res DOI:10.1080/08957959.2013.857020
Engineering 52: 155-168
Smith AJB, Beukses NJ, Gutzmer J (2013) The composition and depositional environments of Mesoproterozoic iron
formations of the Witwatersrand Supergroup, South Africa. Econ Geol 108: 111-134
Dunkl I, Tichomorowa M, Stearns MA, Project TIPAGE members (2013) The giant Shakdara migmatitic gneiss
dome, Pamir, India-Asia collision zone: 2. Timing of dome formation. Tectonics 32: 1-28,
Tichomorowa M, Köhler R (2013) Discrimination of protolithic versus metamorphic zircon ages in eclogites: Con-
straints from the Erzgebirge metamorphic core complex (Germany). Lithos 177: 436-450
Tichomirowa M, Whitehouse M, Gerdes A, Götz J, Schulz B, Belyatsky BV (2013) Different zircon recrystallizati-
on types in carbonatites 1 caused by magma mixing: evidence from U-Pb dating, trace element and isotope
composition (Hf, O) of zircons from two Precambrian carbonatites from Fennoscandia. Chem Geol 353C: 174-
199
weathering in the Damma glacier forefield: Evidences from CL, SEM, and Nomarski DIC microscopy. Geoder-
ma 211-212: 116-127

Other publications 2013 (not necessarily refereed) n = 92

Anonymus (2013) Glückauf! Schwerpunktbeitrag in BMBF (Hrsg) Unternehmen Region 1: 33-41
Atanassova P, Gutzmer J, Leijd M (2013) Geometallurgical classification of REE Mineralisation in alkaline com-
plexes. Critical Minerals 2013, 04.-05.06.2013, Perth, Australia Proceedings: Australasian Institute of Mining
and Metallurgy, 978 1 921522 88 8
14.11.2013, Freiberg, Deutschland
alkaline complex, Sweden. Mineral Deposit Research for a high-tech world: 12th SGA Biennial Meeting, 12.-
15.08.2013, Uppsala, Sweden, 978-91-7403-207-9, p. 298-301
alkaline complex, Sweden. FEI User Group Meeting, 08.-09.10.2013, Eindhoven, Holland
Assessing associated regional uncertainty by a vulnerability approach. CCRR2013 Abstract
treatment of images acquired by automated mineralogy. 15th Annual Conf Internat Assoc Math Geosci
(IAMG), 02.-05.09.2013, Madrid, Spain Mathematics of Planet Earth Proceedings, Springer, 978-3-642-
32407-9, p. 45-48
Birtel S, Wunderlich I, Gutzmer J (2013) Tracking ore mineral characteristics from mine to concentrate: The fate
of electrum at the Cavanacaw gold deposit, Northern Ireland. 12th SGA Biennial Meeting, 12.-15.08.2013,
Uppsala, Sweden: Mineral deposit research for a high-tech world. Proceedings 1: 306-309; Elanders Sverige
AB, 978-91-7403-207-9
Thermobarometry and electron microprobe monazite dating from garnet paragneisses of the Andrelandia
Group in the Jequeri-Vicosa region, Southern Aracuai Orogen, Brazil. Abstracts Geosudeste 2013, 17. Sym-
posio de Geologia de Minas Gerais, Juiz de Fora


HänSEL S, Mehler S, Matschullat J (2013) Evaluating dry and wet period changes using an ensemble of GCMs, ENSEMBLES RCMs and additional higher resolved RCMs. Abstract EGU 2013-12144 in CL5.6

HänSEL S, Mehler S, Matschullat J (2013) Bewertung regionaler Trockenheitsrends anhand eines Ensembles globaler und regionaler Klimamodells. DACH 2013, Innsbruck


Herrmann A, Matschullat J, Trimiš D (2013) Climate change impacts on energy production and energy conversion technologies. CCRR2013 abstract


Leistner D, Mutschall J, Dunger V (2013) Impacts of climate change on small scale catchments in Dresden: results from different regionalized climate projections. CCRR2013 abstract


Schönberg CD (2013) From birth to death of arc magmatism: The igneous evolution of Komandorsky Islands recorded tectonic changes during 50 Ma of westernmost Aleutian history. Abstract V21C-2742, presented at 2013 Fall Meeting, AGU, San Francisco, CA


Schüttauf S, Matschullat J, Zimmermann F, van Pinxteren D, Herrmann H (2013) Fog as an organic aerosol transformer – phase partitioning of carboxylic acids at a mountainous site in Germany, 6th International conference on fog, fog collection and dew, Yokohama (Japan), 19.-24.05.2013


Tesch S, Dunger V, Matschullat J (2013) Modeling groundwater recharge in an urban area under changing climatic conditions. CCRR2013 abstract


Research projects and contracts in 2013

WG Applied and General Mineralogy

1. Seltenerdenelemente (Gd, La, Sm, Y) für mikroakustische Bauteile im Hochtemperaturbereich. Mit Leibniz-Institut für Werkstoffforschung Dresden (DFG GO 677/10-1; 4 years) – JGö
2. Global warming-induced vegetation change and their effects on mineral weathering in a cold-dry and alpine environment (Wind River Range); (2 years) mit ETH Zürich – JGö
4. Freiberger Hochdruckforschungszentrum, Dr. Erich-Krüger-Stiftung (until August 2014) – GH
5. Unkonventionelle Synthese von ternären und quaternären nanoskaligen Nitriden mittels Schockwellen (Synthese), Leuchtstoffwerk Breitungen GmbH (until March 2014) – GH
9. SecMinStratEl - "Secondary Mining – The extraction of strategic elements from mining dumps (e.g., tailings) at selected Chilean sites, connected with a more environmentally friendly subsequent disposal residual materials. BMBF-Verbundprojekt der Förderinitiative CLIENT mit Prof. Drebenstedt, Prof. Lieberwirth, BGR Hannover, UdeC Concepcion, UDA Copiapo, Codelco, ENAMI, SQM, Municipality of Copiapo, GEOS, Erz&Stein, UVR-FIA, GFI Dresden und Tenova-TAKRAF, 2013–2016


20. ELSA - Schadstoffeinträge aus den Erzbergbaurevieren der Mulde in die Elbe, Stadt Hamburg und der Hamburg Port Authority, 2010–2013 (AG)

**WG Geochemistry and Geoecology**

21. ALL-Africa (Arid Land Lakes in SW and E-Africa). Sediment investigations on lake sediments from Kenya and Namibia to detect geochemical anomalies and possible keys for recent environmental change (with IGB, Dr. Peter Casper). 2012–2013; finished successfully

22. BLITSN Lightning project Saxony. In analogy to a forerunner project for Thuringia, we evaluated lightning frequencies and intensities in Saxony and interpreted the phenomenology based on land-use, weather patterns and other basic geodata (with LfULG, SMUL). 2012–2013. successfully finished

23. BraSol-2010. Soil geochemistry and land-use, NE-Brazil. The large interdisciplinary joint research project continues and received further support for 2014. So far, 2 PhD projects, 4 M.Sc. theses, 12 B.Sc. theses, and an additional 6 student works successfully finished; more to come. see publications, too. 2008 – 2014 – JMT

24. Einhausungen (photo at right). This DBU project performs open-air experiments at Oberbärenburg, trying to figure out the best winter protection means for natural stone sculptures. Cooperation project with the Institute for Diagnostics and Conservation of Memorials in Saxony and Saxony-Anhaltina e.V., Dr. Christoph Franzen – JMT, HK and FZ

25. Fog Organic Aerosol. The DBU-supported PhD project (Stephanie Schüttauf) separates Aerosol and fog water fractions and explores the role of organic aerosol in near ground air masses and in the fog phase, jointly with colleagues at the IIT in Leipzig, 2011–2014

26. FREKLISBO. Building upon the GREGASO works, we develop the preconditions for a state-wide GHG soil emission network in Saxony, supported by SMUL and LIULG. 2013–2014

27. Geochronological age determinations on acidic magmatites/volcanites of Erzgebirge and Lusatia. Contract with the LIULG 2013 – MT

28. GREGASO. The successful method development by Dipl. Geocool. Cornelius Oertel now permits manual and fully automated sampling and subsequent analysis of climate-relevant race gases from soils under various land-use. Supported by the Air Liquide Foundation, the system is being developed further and special questions addresses, e.g., the reaction of short rotation forestry (with Kamal Zurba) and soils in different climate zones. 2011–2014

29. KLIWETT module II. Jointly with CEC Potsdam GmbH, we tackled the aspect of the ‘Influence of weather extremes and the deposition situation of Saxony’ within the project ‘Climate change and Weather patterns’. 2012–2013; successfully finished

30. REGKLAM. BMBF-joint research project. Various partial projects with Dr. Stephanie Hänsel, Dr. Frank Zimmermann, and the doctoral students Andreas Hoy, Silvia Leise, Daniel Leistner, Sabine Tesch (JMT). See above for details. 2008–2013; successfully finished

31. Skarn deposits in Kurdistan. Withing an Iraqi-German program of stipends, Irfan Mousa Yara works with us on his PhD. It is obvious now that important aspects of the crustal dynamic processes at the former edge of the Tethys Ocean will have to be re-considered. 2010–2014 – BS, MT, JMT
32. SMSB. Winnung valuable mineral materials from mine heaps and tailings is the focal point of the r³ project (BMBF; Innovative technologies for resource efficiency – Strategic metals and minerals). The project headed by Jens Gutzmer ‘SMSB – Gewinnung strategischer Metalle und anderer Mineralien aus sächsischen Bergbauhalden’ studies materials in Saxony for their strategic elements. It is our task to further develop inorganic high-end analytical tools. TU Bergakademie Freiberg receives 910.000 Euro. 2012–2014

33. SoilTempCC. Long-term soil temperature data from Germany are being evaluated for climate relevant signals in the PhD project of Falk Böttcher. With DWD; 2012–2015

34. WEIMAR. Element sorption, relevant to long-term nuclear safety. With GRS and HZDR we host a PhD project (Sandra Kalanke, Carsten Kruse) to study the sorption behaviour of nickel, europium and aluminium (as analoga and homologa) on various pure mineral phases. 2012–2014; JMT

WG Economic Geology and Petrology


38. Geometallurgical study for REE on processing plant concentrates and in situ ore samples from the Vergenoeg Fluorite Deposit. Kooperation mit Vergenoeg Mining Company (Pty) Ltd. (Master thesis: Marius Kern, Betreuer: JG, Sandra Birtel [HZDR])


40. Geometallurgical assessment of the rare earth mineralogy and processing characteristics at the Vergenoeg Fluorite Mine, South Africa in Kooperation with Vergenoeg Mining Company (Pty) Ltd. (Master thesis: Marius Kern, Betreuer: JG, Sandra Birtel [HZDR], Tobias Höfig)

41. Characterization of the Cu-Ag mineralization of the Polkowice-Sieroszowice mining district, SW Poland, and its significance for the potential recovery of trace metals in Kooperation with Centrum Badań Jakości Sp. z o.o. (CBJ) (Master thesis: Carolin Kresse, Betreuer: JG, Tobias Höfig, Sandra Birtel [HZDR])

42. Deportment of critical metals and process mineralogy of Kupferschiefer ores from the Polkowice-Sieroszowice mining district, SW Poland – Cooperation with Centrum Badań Jakości Sp. z o.o. (CBJ) (Master thesis: Michael Stoll, Betreuer: JG, Tobias Höfig, Sandra Birtel [HZDR])

43. Petrological, microstructural and geochemical characterization of the ore types of Kirunavaara, Sweden in Kooperation mit LKAB (Master thesis: Karsten Aupers, Betreuer: JG, Sandra Birtel [HZDR], Tobias Höfig)

44. Cs-Potential of LCT Pegmatites in Western Australia. Kooperation mit Rockwood Lithium GmbH Frankfurt/M. (Projektleitung: THS u. BS; PhD-Student: Thomas Dittrich)

45. Metallogenie von Indium- und Germanium-Lagerstätten im Erzgebirge und im Ausland. Teilprojekt 1 des BHMZ an der TUBAF (Krüger-Stiftung): (Projektleitung für TP1: THS; PhD student: Matthias Bauer)


Qualification works, defended in 2013

PhD dissertations 2013 (n = 5)

Juliane Bernhardt (2013) Rotation-affected internal seiches and its effects on transport through the sediment-water interface – JMT mit IGB (Georgyi Kyrillin und Christian Engelhardt), December


Anne Schucknecht (2013) Soil geochemistry, vegetation dynamics, and precipitation in north-eastern Brazil – a global change study – JMT (January)

Christoph Reuther (2013) Züchtung und Charakterisierung von Sr₃Gd[BO₃]₄-Einkristallen (GH)

Master theses 2013 (n = 11)


Tom Járóka (2013) Mineralogical and geochemical characterization of cassiterite-bearing mineralizations in metamorphic rocks of the “Felsitzone” in the Großschirma area, Freiberg mining district. (Betreuer: TS, BS)


Tobias Petermann (2013) “Wood tin” as constituent of heavy mineral concentrates from modern water courses in Central Saxony: distribution, mineralogy, genesis (TS, BS)


Juliane Schmidt (2013) Thiosulfatpotential in geschichteten Seen. Externally with Katrin Wendt-Pothoff (UFZ) – JMT


Bachelor theses 2013 (n = 14)


Anne Hänig (2013) SPI-Trend im 21. Jahrhundert für die REGKLAM Modellregion. JMT mit Stephanie Hänself


Katharina Kupper (2013) CNS-Konzentrationen in tropischen Böden Nordost-Brasiliens. JMT and AP

Friderike Kutz (2013) Nährstoffe im Kreislauf tropischer Böden am Beispiel Nordost-Brasiliens. JMT and AP


Louisa Polzer (2013) Nutrient content of tropical soils in north-eastern Brazil. JMT and AP


Carolin Schröder (2013) Soil respiration of forest locations in Saxony, Germany. JMT with Cornelius Oertel

Ulrike Schwerdtner (2013) Treibhausgasemissionen aus der Landwirtschaft gemäßigte Klima. JMT with Stephanie Hänsel

School student works and internships 2013 (n = 1)

01.–07. Constanze Horn, 11. Klasse Gymnasium Arnstadt, in the Geochemical Lab

Prizes and Awards 2013

Xiaoli Wang received a Student Travel Award of the Clay Minerals Society for 1,200 USD.

GH has been nominated by the Bavarian Staate Ministry for Education and Culture, Science and Art as a member of the advisory board of the State Collections of Bavaria (SNSB).

Oral presentations and conference organisation 2013

15.01. Gaitzsch B Talk im Rahmen des Geowissenschaftlichen Kolloquiums, Senckenberg Naturhistorische Sammlungen Dresden

01.–06.03. XXVIII Internat Conf on Interaction of Intense Energy Fluxes with Matter, Elbrus, with
- Yu S, Anan’ev, Milyavskiy VV, Schlothauer T, Mases M, Waldbrock J, Dossot M, Devaux X, McRae E, Soldatov AV: Shock compression of carbon nanotubes up to 100 GPa (talk)

03.–06.03. Teilnahme von JG und TS an der weltgrößten Explorations- und Bergbau-Messe (PDAC 2013: mehr als 30.000 Teilnehmer) in Toronto und Betreuung eines gemeinsamen Informationsstandes von HIF am HZDR, TUBAF and DERA/BGR

18.03. AP talk „Fluoranalytik in der Geochemie – warum nicht mit der RFA?“ Colloquium Analytische Atomspektroskopie CANAS, Freiberg

19.03. Leise S talk „Charakterisierung von Aerosolbelastung durch Filteranalysen mittels RFA und ICP-MS“. Colloquium Analytische Atomspektroskopie CANAS, Freiberg


19.03. Kehrer C: Charakterisierung der Erze vom Typ Kupferschiefer mittels MLA-Technik. Talk zur Arbeitstagung AK Mineralogische Sammlungen und Museen der DMG, Leipzig

19.–22.03. 21st Annual Conference of the German Crystallographic Society (DGK), Freiberg, with
- Köhler A, Schimpf C, Schlothauer T, Schwarz M, Klemm V, Heide G, Kroke E, Rafaja D: Structural and chemical analysis of shockwave-synthesized superhard γ-Si3N4 Material (talk)
- 22.03. Keller K, Schlothauer T, Schwarz M, Brendler E, Kroke E, Heide G: Structural characterisation of shocked AlN-powders (talk)


07.–12.04. EGU: European Geosciences Union General Assembly 2013, Vienna, Austria, with
- Hänsel S, Matschullat J: V Climate change education in Earth System Science
- Hänsel S, Heidenreich M, Franke J, Riedel K, Matschullat J, Bernhofer Ch: Climate services within a regional climate adaptation project (poster)
- Hänsel S, Miketta W, Matschullat J: V Decadal variability in European wet and dry phases (poster)
- Hänsel S, Mehler S, Matschullat J: P Evaluating dry and wet period changes using an ensemble of GCMs, ENSEMBLES RCMs and additional higher resolved RCMs (poster)

12.04.
Neßler J, Seifert T, Gutzmer J “Geology and Exploration of the Li-Sn-W-Rb-Cs-deposit Zinnwald, eastern Erzgebirge, Germany”. Treffen des Forschungskollegiums Lagerstätten, Zinnwald

17.04.

18.04.
Massanek A: Die neue Ausstellung „Mineralogische Sammlung Deutschland“ im Krügerhaus in Freiberg. Talk beim Verein der Mineralien- und Fossilienfreunde Radebeul

24.–26.04.

27.04.
Massanek A: Das Krügerhaus in Freiberg – die neue Ausstellung „Mineralogische Sammlung Deutschland. Talk Symposium Internationale Mineralien- und Fossilientage Bad Ems

02.–04.05.
CL-Workshop Uni Genf, Switzerland (JGö)

03.05.
Massanek A: „Mineralogische Sammlung Deutschland“ – die neue Ausstellung im Krügerhaus in Freiberg. Talk beim Verein der Mineralienfreunde Dresden

08.05.

17.05.
Massanek A, Rank K, Heide G: The mineralogical collections of TU Bergakademie Freiberg, Germany. Talk: Conference at the first international mineral show, Changsha, China

15.–20.05.
Conference at the first international mineral show, Changsha, China, with

19.–24.05.
Schüttauf S, Matschullat J, Zimmermann F, van Pinxteren D, Herrmann H (2013) Fog as an organic aerosol transformer – phase partitioning of carboxylic acids at a mountainous site in Germany, 6th Internat. Conf. on fog, fog collection and dew, Yokohama (Japan)

22.–24.05.
Teilnahme von TS am GACMAC Joint Annual Meeting „At the heart of the Continent“, Winnipeg, Kanada. 3 von 4 Beiträgen mit den Koautoren Th. Dittrich, T. Jaroka, D. Sandmann (see other publications 2013)

26.05.
Kongsberg Minersymposium with two talks
- Massanek A: Terra mineralia – two new mineral exhibitions in Freiberg/Germany
- Massanek A, Rank K, Heide G: The mineralogical collection of the TU Bergakademie Freiberg/Germany

27.–30.05.
Climate Change and Regional Response (CCRR-2013) in Dresden mit diversen Beiträgen (talks, poster and Workshop-guidance) der AG Geochemie und Geökologie:
- Hänsel S: Leitung des Young Researcher Forum
- Hänsel S: Future drought conditions in the REGKLAM Region (talk)
- Heidenreich M, Hänsel S, Franke J, Bernhoefer Ch, Riedel K: Selection and evaluation of regional climate projections for the Model Region Dresden (talk)
- Mehler S, Hänsel S, Matschullat J: What changes in extreme precipitation events do ENSEMBLES models project for the REGKLAM region? (talk)
- Mehler S, Hänsel S, Matschullat J: Changes in frequency and duration of wet and dry periods in the REGKLAM region using ENSEMBLES data (poster)
Müller A, Hänsel S, Matschullat J: Fundamentals and success factors of climate change adaptation (talk)
Tesch S, Dunger V, Matschullat J: Data availability – a challenge for climate impact and adaptation research (poster)

Left: We hosted one of the CCRR-2013 excursions, leading two groups to Oberbärenburg

03.–04.06. Workshop “Geoanalyst” Academy of Sciences of Poland, Krakow (JGö)
03.–05.06. Köhler A, Schlothauer T, Schimpf C, Schwarz M, Klemm V, Heide G, Rafaja D, Kroke E: Structural and Chemical Characterization of shockwave-synthesized $\gamma$-Si$_3$N$_4$ material, Workshop on New Directions for High-Pressure Neutron Research, Oak Ridge, Tennessee, USA, Talk
12.06. Massanek A: The Mineralogical Collections of the TU Bergakademie Freiberg/Germany. Talk Geological Survey of Tanzania, Dodoma
01.–06.07. International Conference on Raman and Luminescence Spectroscopy in the Earth sciences (CORALS 2013), Wien (JGö) with (03.–05.07.):
- Götze J, Kotova EL, Brotskaya RL (2013) Micro-texture and cathodoluminescence (CL) of high-purity quartz from Russia
- Götze J, Schertl HP, Neuser R, Kempe U, Hanchar JM (2013) Cathodoluminescence (OM-CL) imaging as a powerful tool to reveal internal textures of minerals
- Götze J, Stevens-Kalceff M, Pan Y (2013) Origin and significance of the yellow cathodoluminescence (CL) of quartz

In early July, the conference CORALS–2013 was hosted for the first at the Faculty of Geosciences, Geography and Astronomy of the University of Vienna. Over 70 scientists from 22 countries exchanged knowledge on the field of destruction-free microbeam analysis of minerals and other geological samples.
The analytical techniques Raman and Luminescence-spectroscopy are increasingly applied in geoscientific research, since they permit a destruction-free and high-resolution analysis of very small samples. This increasing trend of light-spectroscopic mineral analyticval techniques is additionally documented by the support of a “Marie Curie Chair of Excellence for Mineral Spectroscopy” in the years 2006 bis 2009 at the University of Vienna by the European Commission. At the time it was the third Marie Curie Chair for Austria and the first one in Europe in the field of mineralogy.

It was the third CORALS conference, following preceding events in 2009 in Mainz, Germany, and 2011 in Madrid, Spain; this time organized by the Institute of Mineralogy and Crystallography of the University of Vienna; the Vienna Museum of Natural History was engaged as co-organizer. New research results and technical developments were presented and discussed over three days. Puctually at the conference start, a special column of the Springer journal “Mineralogy and Petrology” appeared with articles on the current development in the field, represented by invited review papers. The conference included a doctoral course on luminescence techniques that attracted an unexpected 30 participants.

This short contribution was taken from UNI-VIEW MAGAZIN (University of Vienna, Austria) from July 25, 2013 http://medienportal.univie.ac.at/uniview/forschung/detailansicht/artikel/corals-2013-erdwissenschaftskonferenz-erstmals-an-der-universitaet-wien/

12.–15.08. 12th Biennial SGA Meeting: Mineral deposit research for a high-tech world, Uppsala, Sweden with:


01.–06.09. Schüttauf S, Matschullat J, Zimmermann F, van Pinxteren D, Herrmann H (2013) Organic aerosol: distribution between fog water and interstitial air – a report of two mountainous sites in Germany, European Aerosol Conference, Prague

02.–06.09. DACH: Deutsch-Österreichisch-Schweizerische Meteorologentagung 2013, Innsbruck, Austria, with

- Hänsel S, Mehler S, Matschullat J: Bewertung regionaler Trockenheitstrends anhand eines Ensembles globaler und regionaler Klimamodelle (poster)
Köhler A, Schlothauer T, Schimpf C, Klemm V, Schwarz M, Heide G, Rafaja D, Kroke E: The role of oxygen in shockwave-synthesized γ-Si₃N₄ Material, International Workshop on Advances in Static and Dynamic High-Pressure Crystallography, Deutsches Elektronen Synchrotron (DESY), Hamburg; poster

JMT gives three invited talks and two poster presentations at BioClim 2013 in Skalica, Slovakia

Keller K, Schlothauer T, Schwarz MR, Brendler E, Kroke E, Heide G: Searching for hypercoordination. 8th Alpine Conf on Solid State NMR, Chamonix (poster)

JMT gives invited talk at the Leibniz-Societät in Berlin

Teilnahme von Prof. Dr. Thomas Seifert und Dr. Bernhard Schulz an der Tagung GEOPilsen in Pilsen. Es handelte sich um die gemeinsame Jahrestagung der Deutschen Gesellschaft für Geowissenschaften (DGG) und der Czech Geological Society mit dem regionalen Schwerpunkt Geodynamics in the Bohemian Massif

Teilnahme von Anja Dabrowski und Anne Engler ab der Konferenz Sedimentary Basins Jena 2013 – Research, Modelling, Exploration in Bezug auf die Zechsteinzyklen und Abfolgen des Buntsandstein in Mitteldeutschland waren die Themenschwerpunkte


III International Conference Crystallogenesis and Mineralogy, Novosibirsk, with
- Schlothauer T, Heide G: Infrared Spectroscopy of shock-wave synthesized γ-Si₃(N,O)₄, talk
- Keller K, Schlothauer T, Heide G, Kroke E „Shock-induced synthesis of high-pressure aluminium nitride with rocksalt structure“ (talk)
- Schlothauer T, Grund K, Heide G: Samples from the outer core? The new shock wave laboratory at the TU Bergakademie Freiberg (in Russ.), Sankt Petersburg (talk)
- Schlothauer T, Heide G: Properties of shock wave synthesized nitrides (in Russ.), Sankt Petersburg, (talk)
- Schlothauer T, Heide G: The possibilities of the shock wave laboratory Freiberg/Germany (in Russ.), Cernogolovka (invited talk)

TS as Invited Speaker an der IPPNW conference and field excursion „Uranium-mining: Impact on Health and Environment“, Dar Es Salaam and Bahl/Dodoma, United Republic of Tanzania

JMT gives invited talk at a Workshop, World Resources Forum in Davos

Xiaoli Wang hält auf dem 50th Annual Meeting der CMS in Urbana/Illinois einen viel beachteten Vortrag über die ersten Ergebnisse ihrer Arbeit zur Strukturanalyse an Smektiten

Tesch S: Modellierung der Grundwasserneubildung unter veränderten klimatischen Bedingungen. 5. Regionalforum REGKLAM, Dresden (poster)

Massanek A: Die Mineralogischen Sammlungen an der TU Bergakademie Freiberg. Vortrag Heimatverein Kemmlitz/Neusornzig

JMT Workshop halbtägig beim CIPSEM-Kurs an der TU Dresden

JMT invited by AvH to Sydney for talk and workshop moderation with Prof. Roger Read


25.–27.10. Massanek A: Minerale für das Krügerhaus – die Stiftung Mineralogische Sammlung Deutschland. 3 talks zur 50. Internationalen Mineralienmesse München


06.11. Keller K „Dynamic high pressure research at the Freiberg shock wave laboratory“. Seminarreihe Meteoriten- und Impaktforschung. Naturkundemuseum Berlin. Invited talk, Berlin

08.–16.11. JMT mit Kamal Zurba eingeladen zu Vorträgen, Workshop und experimenteller Arbeit mit Kollegen von CT’Gas, INPE, und UFRN (Prof. Dr. Judith Hoelzemann) zur Bodenentgasung (hard work, see below)

14.11. TS: Mineralische Rohstoffe in Sachsen und andere Rohstoffprojekte in Deutschland – Chancen für die Zukunft. Frankfurter Geographische Gesellschaft e.V., Institut für Physische Geographie, Goethe-Universität Frankfurt am Main

17.–21.11. JMT auf Einladung und in Vertretung der Universitätsleitung an der Akita University anlässlich ihres gut 100-jährigen Bestehens und der Gründung einer Fakultät für nachhaltige Ressourcennutzung mit Plenarvortrag und Workshopleitung gemeinsam mit Prof. Dr. Atsushi Shibayama


02.–06.12. 12th Freiberg Short Course in Economic Geology zum Thema “Granite-related Mineral Systems” mit 125 Teilnehmern, organisiert durch die AG Lagerstättenlehre und Petrologie.


Other Activities

All year:
- JGö – Guest-editor for the journal ‘Mineralogy and Petrology’
- RK – Nomination as Chair of the Source Clay Committee of CMS
- MT – Head of the European Society of Isotope Research (ESIR)
- MT – Editor for the ‘International Journal of Earth Sciences’

Work stays and internships of guest doctoral students and scientists
- Post-Doc Christian Mavris, ETH Zürich (March – September 2013)
- Post-Doc Dr. Clemens Reimann (NGU), Trondheim, Norway. Short stay for project discussion (GEMAS) and Erzgebirge excursion (July)
- Post-Doc Prof. Dr. Atsushi Shibayama with Mrs. Junko Sato (Akita University) for diverse project and cooperation talks in house and at the HIF (September)
Post-Doc Prof. Dr. Mario Pereira da Silva (UFRN), Natal, Brazil, short stay and talk within the joint VeLuDeClim-NEB project (October)

Post-Doc Prof. Dr. Massimo Gasparon, Humboldtian from The University of Queensland in Brisbane, Australia. Short stay for three talks and the planning for joint work with JMT in 2014 (December)

PhD Raphael de Vicq, UFOP Ouro Preto, Brazil (Dec. 2013–Feb. 2014)
PhD Elena Kotova, Mining-Institute St. Petersburg, Russia (Oct. 2012–Apr. 2013)
PhD Anna Kurguzova, DAAD research stipend 09/2013-03/2014
PhD Katarzyna Lisowiec, University of Warszawa, Poland (Apr. 2013)
PhD Carolina Lopez, DAAD PhD stipend 2012–2015
PhD Maria Machecvariani, DAAD research stipend 09/2013-03/2014
PhD Yury Nefedov, DAAD-Lomonosov research stipend 10/2013-03/2014
PhD Anton Popov, DAAD-Lomonossoov research stipend 10/2013-03/2014
PhD Peter Völgyesi, University of Budapest (Sep. 2013–Feb. 2014) with DBU-stipend

Jan.
Gestaltung der Ausstellung “Fenster zur Wissenschaft” in der terra mineralia/Schloss Freudenstein: Die Brennstoffgeologische Sammlung der TU Bergakademie Freiberg

12.01.
Tag der offenen Tür mit Präsentation der Gesteinsmikroskopie und Vortrag zu Berufsbildern für Geowissenschaftler

31.01.–01.02.
JMT besucht die Earth Science and Resources Gruppe um Prof. Patrick McKeever bei der UNESCO in Paris

Mitarbeit an der Bergbau-Sonderausstellung: „Von Leistung, Leid und Lehdenchaft“ im Oberschlesischen Landesmuseum Ratingen,

26.–27.02.
FZ: Teilnahme am Workshop “Ultrafine Particles in Urban Areas”, Düsseldorf

Feb.–Mrz.
JMT with Anne Schucknecht, Anne Marie de Grosbois and Anne Müller (Scratinha) at fieldwork in the Seridó, Rio Grande do Norte, Brazil (pictures below)

12.–14.03.
FZ: Teilnahme am Workshop „Eddy correlation measurements“, Hamburg

ab April
Mitarbeit an der Ausstellung: “Wissenschaftsbeziehungen zwischen Bergakademie Freiberg und Bergbaunstitut St. Petersburg” im Historicum

17.–18.04.
Besuch von 15 Geo-Studierenden der Universidad Nacional de Columbia in Bogotá, Kolumbien mit Besuch von Campus, Institut für Mineralogie, Sammlungen. Ansprechpartnerin Laura Catherine Paiba Garcia mit Prof. Pedro Calixto Roberto Patarroyo Gama.

18.04.–05.08.
“Mineralien aus dem Erzgebirge und Bodenschätze Sachsens”, Erzgebirgsmuseum Annaberg-Buchholz, Sonderausstellung mit dem Verein der Mineralienfreunde des oberen Erzgebirge e.V.

22.–26.04.
Gestaltung der Sonderausstellung “Mineralogische Sammlung Deutschland im Krügerhaus in Freiberg” – anlässlich der Mineralienbörse in Bad Ems

24.04.
JMT moderiert die Veranstaltung „300 Jahre Sylvicultura Oeconomica – 300 Jahre Nachhaltigkeit“ der TU Bergakademie Freiberg in der Alten Mensa mit Festvorträgen von Prof. Bernhard Cramer (Oberbergamt) und Ulrich Grober (Autor)

08.05.
Eröffnung des Biohydrometallurgischen Zentrums Freiberg für strategische Elemente (BHMZ Freiberg). Alte Mensa mit Erika Krüger (Stifterin), EE Jorge Eduardo O’Ryan Schütz (Botschafter der Republik Chile), Prof. Kümpel (BGR), Prof. Schlömann und Prof. Robin J. Batterham (Melbourne) zur Einweihung des Promotionskollegs
09.–11.05. JMT besucht mit dem Dekan Carsten Drebenstedt auf Einladung die Partneruniversität VSH Ostrava (CZ). Ziel der Partner ist es, von den Erfahrungen Freibergs bei der Umstrukturierung der Universität, der Fakultät sowie der Studiengänge nach der Wiedervereinigung Deutschlands und im Verbund mit der Umsetzung der Bologna-Reform zu lernen.

14.–17.05. JMT bei AvH Auswahlkommission in Bonn-Bad Godesberg für zukünftige Humboldtianer mit einem Klima-Fellowship.

12.06. Podiumsdiskussion im Städtischen Festsaal zur Eröffnung des Freiberger Forschungsfonds mit Bundesumweltminister Peter Altmeier, Ministerpräsident Stanislav Tillich, Prof. Ulrich Groß, Rektor Bernd Meyer, Prorektor Michel Steiler als Moderator und JMT zum Thema Nachhaltigkeit.

14.06. Podiumsdiskussion zum Nachhaltigkeitsbegriff im Bischof-Benno-Haus in Schmöckwitz zum 15-jährigen Bestehen der Sächsischen Landesstiftung Umwelt und der Verabschiedung von Dr. h.c. Fritz Brickwedde (DBU) mit Prof. Dr. Karl Mannsfeld (Moderation), Prof. Dr. Willy Xylander (Senckenberg Görlitz), Roland Horne (Landeszentrale für Umweltaufklärung Rheinland-Pfalz), Kornelie Blumenschein (Gäa e.V.), Wolfgang Hübel (Sächsische Bildungsgesellschaft für Umweltschutz und Chemieberufe) und JMT.

14.–16.06. JMT in Budapest zur Evaluation ungarischer „Großforschungs”anträge bei der OTKA.

25.06.–05.07. Stephanie Hänsel bei Sommerschule „Adaptation governance: spatial, temporal and cultural constraints and opportunities”, Budapest, Ungarn.


24.07.–Dez. Mitarbeit an der Ausstellung „Fenster zur Wissenschaft” über Biominerale in der terraminalia/Schloss Freudenstein mit dem Institut für Experimentelle Physik.

28.07. Geburtstag Prof. Dr. Jochen Pilot. Wir freuen uns und gratulieren nochmals!

02.–06.09. Limnologie-Praktikum 2013 mit neuen Rettungswesten. 
25.09. Lerncamp der Gymnasien Auerbach und Rodewisch im Waldpark Grüneheide, Thema: „Eintauchen in die Welt der Rohstoffe – Entdecke, was in (d)einem Handy steckt!“ (Talk sowie Gesteins- und Erzbestimmungskurs; Tobias Höfig)

ab 30.09. Mitarbeit an der Sonderausstellung “Über die Natur des Lichts und die Farbe Blau in Wissenschaft, bildender Kunst und Dichtung um 1800” im Novalis-Schloss Oberwiederstedt (bis 05.09.2014)

11.10. JMT moderiert das Krüger Kolloquium mit dem Ehrengast und Vortragenden Prof. Dr. Ernst Ulrich von Weizsäcker sowie Prof. Höck (Wirtschaftswissenschaften)

24.10. Empfang einer Delegation des Vale Institute of Technology mit JG, JM sowie weiteren Kollegen aus Geotechnik und Bergbau sowie der Brennstoffgeologie

25.10. Talk “Determination of Zenith Tropospheric Delay (ZTD) from GNSS data and its relationship to the tropical Atlantic TSM. A tool to determine the precipitable water Vapor in the stratosphere in the Brazilian semiarid region” von Prof. Dr. Mario Pereira da Silva, Federal University of Rio Grande do Norte in Natal (Gast und Projektpartner von JMT)


25.-27.10. Gestaltung der Sonderausstellung “Minerale für das Krügerhaus – Neuzugänge für die Stiftung Mineralogische Sammlung Deutschland” – anlässlich der 50. Internationalen Mineralienmesse in München

25.-27.10. Gestaltung der Sonderausstellung “Mensch und Mineral” – anlässlich der 50. Internationalen Mineralienmesse in München

07.11. MLA-Kurs mit 20 Studenten des Emerald-Programms (Erasmus Mundus Master in Georesources Engineering) der Universitäten Liège, Nancy, Lulea und Freiberg.

ab 27.11. Mitgestaltung der Ausstellung “100 Jahre Schließung des Freiberger Bergbaus”, Bergarchiv Freiberg

05.12 Wir trauern um Nelson Mandela, erfolgreicher Überwinder des Apartheid-Regimes und erster schwarzerPräsident der Republik Südafrika sowie Träger des Friedensnobelpreises. Mandela starb nach langer Krankheit bei Johannesburg

And very important, too:

On August 1, 2013, Ines Jaschke happily delivered her daughter Gerda Margarethe (no pic)
Ida Helene Haser, daughter of Sabine Haser made her first moves towards us on 29.09.2013 (left)
And Tom Marlon (*17.11.2013), the second son of Stephanie Hänsel, became another pearl (right)

We congratulate and enjoy the good news with you!
And we wish to everyone

All the very best for 2014