



Old harbour area in the Kvarken area. Glasioisostatic uplift causes change in harbour location. De Geer moraines give complex and shallow waters to navigate. Photo: Lars Erikstad.

Geodiversity and geology for nature heritage

**ProGEO / Northern European working group
International conference in Vaasa, Finland
May 20-24, 2007**

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The 2007-year conference and meeting of ProGEO WG 3 was held in Vaasa, western Finland 20-24 September. It consisted of two days of presentations, business meeting and discussions, followed by two days of field excursions. About 50 participants from ten nations in Northern and Eastern Europe + the Netherlands and Ireland attended the meeting. The program contained

25 oral presentations and several posters. ProGeo WG 3 together with the Geological Survey of Finland (GTK) and the Geological Society of Finland organized the meeting. The National forest and park services (Metsähallitus) and the city of Vaasa contributed to the meeting and excursions in many ways.

The theme of the conference was divided into four sessions:

- Geoconservation, transboundary co-operation
- Geoparks, geosites
- Geotourism, popularisation of geology
- Planning and management of conservation areas

Hanneke van den Ancker opened the conference with greetings from Jonas Satkunas (chairman of ProGEO WG 3), who was unable to attend the conference. Many interesting geosites were described during the

sessions. Geoparks was a common theme in several presentations and geoparks are under development in many countries. The best ways to initiate a geopark and wake the interest of the local communities were discussed. There was a vivid discussion about where the initiative for a geopark should come from. From local communities, authorities or geoscientists? It was suggested that the amount of geoparks should be limited and the participants were encouraged not only to work with top geosites but also promote the geodiversity in every day landscape.

Several presentations and papers inspired and advised how to implement geotourism and popularisation of geology. E.g., the following subjects were brought up and discussed:

- The development of a system to display geological data in a clear and popularly understandable way and how to format the information to fit an Internet environment (University of Turku, Finland).
- Develop geological sights located at or close to tourist routes.
- Develop educational material (leaflets and films) for schools, courses for teachers, geological camp schools / trips for children.
- The public is interested in: the beauty of geology and landscape, the geological time, the processes behind the formations, etc.
- In most (all?) countries the flora, fauna and history, but not geology, are protected in different programs. However, for example in Norway geology and landscape are gradually becoming part of the descriptions for National Parks.
- Individual sites are usually protected for their landscape or geomorphological values, not on scientific grounds.
- Geoparks are often considered as a tool for



*Tors in the Lauhanvuori National Park.
Photo: Lars Erikstad.*

conservation and popularisation.

- Many universities have difficulties getting enough students in geosciences. The school teaching in geosciences should be improved.

Field trips

On the first excursion day we visited geosites included in a regional Geopark project. Our first stop was at Öjberget on the rim of the ca 520 million years old Söderfjärden meteorite impact crater. The well-preserved crater is filled with fossiliferous sandstone and claystone covered by loose surficial deposits formed during several glaciations. The uppermost layers consist of clay deposited during 10,000 years after the latest glaciation, when Söderfjärden was under water.

At our next stop we had the opportunity to crawl into the Wolf Cave, the home of Neanderthals more than 50,000 years ago. At least seven sediment layers dat-



The Wolf Cave east of Susivuori, oldest known human dwelling site in Northern Europe. Photo: Lars Erikstad.



*De Geer moraines in the Kvarken World Heritage site.
Photo: Lars Erikstad.*

ing back to Eemian interglacial and Weichselian interstadials have been found during the excavations of the cave. The four lowermost layers contain archaeological finds. All of us probably felt the breeze from the past when we sat there in the cave.

After lunch break the bus headed towards Lauhanvuori, western Finland's highest hill. The tor formation Aumakivi brought about lively discussions; is it really a tor formation shaped by preglacial weathering or was it just an erratic boulder? The most striking formations on Lauhanvuori are however large autochthonous boulder fields of quartz sandstone.

The final stop for the day was at the Levaneva mire system, where we climbed up a watchtower and walked along a duckboard trail into a Natura 2000- and mire protection area. Levaneva is the largest protected bog in the region (2500 ha), and it consists of concentric and eccentric raised bogs. There is also a representative aapa mire part, while the central parts of the bog contain lots of bog pools.

The second excursion day we spent in the newly approved Kvarken Archipelago World Natural Heritage Site. The stony land uplift archipelago of Kvarken is a unique, changing landscape formed during and after the Ice Age. In July 2006, the Kvarken Archipelago was included on UNESCO's World Heritage List, as an extension to Sweden's "High Coast". "The Kvarken Archipelago is the most representative site in the world for the study of land uplift processes in flat and shallow

moraine archipelagoes. It is a unique example of ongoing geological and biological processes and ecosystem development in space and time."

The unique characteristics are the result of geological processes that have been going on for millions of years. The flat bedrock is the remnant of an 1800 million years old mountain range, and it is overlain by spectacular formations formed mostly during and after the latest Ice Age, ending 10,000 years ago. De Geer- and ribbed (Rogen-type) moraine ridges (transversal to the flow of the inland ice) are common, while elongated drumlins (parallel to the flow) are quite sparse.



ProGEO-conference Photo Olli Breilin.



Kivijata boulder field in the Lauhanvuori National Park. Photo: Lars Erikstad

The ice sheet pressed down the earth's crust for hundreds of thousands of years, and the land has then risen 250 metres, today at a speed of 80 cm/100 years. The first islands in the Kvarken area rose from the sea ca 2000 years ago. The rapid land uplift - a heritage from the Ice Age – creates ever-changing dynamic geoenvironments, landscape and nature. This land is reshaped by waves and winter ice, creating shingle fields and raised beaches at different levels.

The area is well suited for geotourism and for educational purposes from compulsory school to university and adult education. The ongoing processes of land uplift and the ever-changing environment are most tempting also for multidisciplinary research.

One positive outcome of the Conference, for the Finnish geologists and for ProGEO, was that the amount of ProGEO-members in Finland increased from one to eight (thanks also to Gunnel Ransed).

The Business meeting of the ProGEO Regional working group no 3, Northern Europe, was held during the conference. The participants surely returned home with

new inspirations and ideas about how popularization and conservation of geology can be realized / put into practice and how geotourism can be promoted.

Concluding and closing remarks and thanks were made by Peter Edén and Keijo Nenonen from the organizers, and by Lars Erikstad, Hanneke van den

Ancker and Radoslav Nakov. And Enno Bregman wished us welcome to the Netherlands in 2009 for the next conference.

Geological-Geomorphologic heritage of Greece

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(abstracts can be sent as pdf to those interested)

In the framework of the 11th International Conference of the Greek Geological Society (GSG), organized in Athens from 23 to 26 May 2007, a special session on Geological Geomorphologic Heritage conservation took place, organized by the Geological-Geomorphologic Heritage Committee of GSG, on 26.5.07.

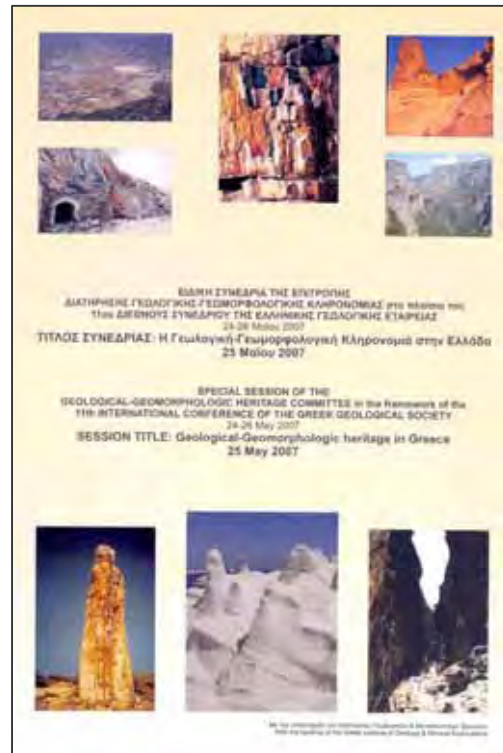
Numerous contributions have been made, on issues of geological heritage conservation, such as history and state of the art, European Geoparks network presentation, Geodiversity, presentation of Geosites and Geosites networks, urban environment planning and geological heritage, protection issues, GIS and Geosites data base design, etc. The contributions triggered a very interesting discussion around several aspects on conservation and protection of several Geosites and Geosites networks. The participants agreed in compilation of a text, as a synopsis of the meeting. The text was compiled by the executive secretariat of the Committee and circulated on 5th of June, the annual day dedicated to environment. Parts of this text follow:

“A great number of geoscientists participated in the session on Geological Geomorphologic Heritage con

servation, during the 11th International Conference of GSG. The values of non-biotic and specifically of the geological environment, were presented and discussed, as well as the need of promotion and protection of this environment, at least to the degree existing in other European countries.

The steps already done for nature conservation and protection in several developed countries, the multidisciplinary approach of the environmental parameters and the interaction between them, but definitely the increasing awareness of the public in respect to these matters, turn gradually the attention of the modern society to the non biotic (abiotic) world.

Rocks, minerals, formations, landforms and landscapes, as well as the traces of previous life (fossils) resulting of natural processes in each area, constitute the geological-geomorphologic heritage of this area. This heritage needs the same degree of conservation and protection as the biotic environment for the reason that it is an integral part of the whole environment. Every attempt of one-dimensional approach is fragmentary and incomplete and leads to irreversible sometimes effects.



Along with its richness and variety, geological heritage of the country is substantial element of several memorable achievements. Various marble ores gave the primary material for the creation of art masterpieces, the rich gold and silver ores contributed in Greek civilization, various and active geological processes shaped the landscape of the country with thousands of islands and endless coastlines, high mountains and volcanoes.

Despite its value for the science, the education and culture, all this richness is not taken into consideration and it is not protected, as it is appropriate for a modern European country.

Important Geosites have been destroyed, as for example Epidaure marbles with impressive and scientifically important ammonite fossils, or are under threat as it is the case of Pikermi area and its important fauna, Serifos island minerals are under illegal collection or under improper building development; these are some indicative examples of the existing situation.

The Greek State has a relatively sufficient legal framework for the protection mainly of the biotic nature. The problem is that this framework is not put into practice. Furthermore, funding and relevant mechanisms are minimal for the abiotic environment. But geological and geomorphologic heritage is a source of knowledge and

education, a value contributing in the quality of life and in the improvement of the modern urbanized society.

An initiative aiming to the local development and the protection-promotion of the geological heritage is the institution of geoparks, the establishment of which in areas of significant geological values, is actively supported by UNESCO. The implementation of Geoparks in recent years in European Union countries, approves that they constitute an effective tool for the Geosites protection and the society awareness for the geoconservation values.

The Geological-Geomorphologic heritage Committee of the Greek Geological Society and the geoscientific community of the country consider that the State and its institutions should take into account the richness of the geological environment and activate adequate laws and decrees for its conservation and protection. Increase of funding mechanisms, for these purposes, is indispensable as well. Besides, the geoscientific community urges local authorities and the citizens to care for their geological heritage, to learn its values and discover the profits these values can give to culture and the improvement of life quality.

The Committee invites all geoscientists to contribute to the identification and promotion of geological-geomorphologic heritage of the country, to help for its designation and promotion as an important element of the environment and the development planning. The Committee also invites for the incorporation of geological heritage conservation concepts in education, in research and in alternative tourism programmes."

Impressions from the Open Conference of the Russian ProGEO group on "Geological heritage study and protection problems", 6-12 August 2007, at Ilmen State Reserve, Urals Branch of the Russian Academy of Science, Miass, Russia

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Background

The above-mentioned conference came to my attention through ProGEO NEWS and the ProGEO website. Motivated by my great interest in this huge country, I decided to participate. The key words Urals, Ilmen, Mias intrigued me greatly.



Explorers in a treasure hunt. Photo: I. Gogin

After a long trip by various means of transport we arrived at the southern Urals chain, namely at Ilmen Mountains and the Ilmen State Reserve, in the mineralogical Museum of which the conference took place. Miass, situated 96 km from Chelyabinsk, on the bank of the Miass River, was founded in 1773 as a copper mining factory, near the copper ore deposits, and was granted town status in 1926. During the 19th century, the development was driven by the discovery of the richest gold deposits in the Urals in the valley of the river Miass. The "Big Triangle", the biggest gold nugget (more than 36 kilograms) ever found in Russia, now in the Diamond fund of Moscow, was found in this deposit.

Scientific Sessions

The sessions took place between 7 and 9 August at the Mineralogical Research Institute of the Ilmen State Reserve, which was founded in 1920 as the first mineralogical reserve in the world and was later transformed into a nature reserve.

Most of the participants were mainly geoscientists from the Saint Petersburg All-Russian Geological Research Institut (VSEGEI) and Ilmen state reserve personnel,

while colleagues from other Russian areas (Tyva Republic of Southern Siberia, Komi Republic situated in the West of Ural Mts) were also present. I was the only foreigner, with the exception of Vladimir Manuk from Ukraine. Presentations were obviously in Russian, interpretation for me was kindly provided by Marina Vdovets and Ivan Gogin. The scientific presentations and contributions gave me a certain idea of the study and state of protection of the Russian geological heritage, the objects under protection and the geosite types, as well as the criteria for selection, the problems and threats and also the existing and on-going relevant information systems and data bases, and certain geotourism aspects.

A guided visit was kindly provided at the reserve's museum, one of the largest geological museums in Russia, with 9000 samples exhibited, some of which are unique in terms of beauty, historical and scientific value.

At the end of the sessions, the following recommendations were discussed and compiled, provided to me in English by Marina:

- Submitting an application to the Ministry of Natural Resources (MNR) of the Russian Federation (RF) to receive funding for the creation of the "Methodical recommendations for the identification, classification, evaluation, management and preservation of geosites", which should be accepted by MNR as guidance for geologists, geosite researchers and geon-



Great dances in front of Russian geological map. Photo T. Saltykova

servators in all subjects of the RF.

- Compiling the list of geosites (first of all of global and subglobal significance) proposed to be protected, and preparing the appropriate documents for giving them official status of protected areas (nature reserves, national parks, nature parks, etc.).
- Monitoring of officially protected geosites.
- Creation of nature-protected excursion-tourist centers on the base of protected geosites, the main concept of which is organization of geosite protection using funds from regulated tourist activity. Sablino complex nature monument



The participants photo at the bank of Turgayak Lake. Photo I. Gogin



*The Blum diggings.
Photo M. Vdovets*

(Leningrad Region) is a positive example.

- Preparing appropriate documents for the inclusion of the Ilmen State Reserve into the UNESCO World Heritage List.

Excursions

The excursions took place from 9 to 11 August to the most important mineralogical geosites in small stripped diggings, inside the 1800 sq km area of the reserve. We felt like explorers in a treasure hunt for precious specimens of minerals and stones, such as topaz, aquamarine, phenakite, zircon, sapphire, tourmaline, emerald, quartz crystals, in the diggings connected with the amazonite, miascite and corund pegmatites veins. Pegmatites are very important from the mineralogical point of view.

The area has been exploited since the XVIII century and at present there are 400 diggings spread in the forest territory of the reserve. If you are patient you may find something of value, but personally I preferred more to wander in the amazing perennial forests of birches and pines (beriosy and sosny in Russian) with a unique biodiversity of the lower plantation, such as campanulas, and taste wild fruits which were unknown to me (malina and vishnya in Russian), trying not to slip into the bogs (balotas). I was feeling sad thinking of the fires in Greece that had burnt precious forests,

one of which was the Parnitha national park near Athens. I didn't know at the time the worst was yet to come with the fires in Peloponnese, later in the same month, in an area with 2 World Heritage sites and a Natura 2000 territory.

The Ilmen reserve area is characterized by enormous geodiversity: 268 minerals and 71 rocks have been identified here. There are notable occurrences and it is the type-locality for the mineral ilmenite, getting its name from the area (KUPFFER, 1827). It is a crystalline iron Titanium Oxide ($\text{Fe}^{++}\text{TiO}_3$), a common accessory mineral in igneous and metamorphic rocks, used in the industry for numerous purposes. Miascite (or miassite) also gets its name from Miass.

The conference finished with swimming and a picnic at the banks of the lake Turgayak, one of the many lakes in the area. Turgayak is a lake of tectonic origin, located in an intermountain valley near Miass and is one of the most picturesque lakes in the Urals with a coastal line of 27 km. It is recorded as one of the most valuable lakes in the world.

All that time in the Urals I was kindly hosted by Natasha Korikova at her new-built house, near the Turko-yak lake. I cannot forget her spontaneity, inventiveness and generosity to make me feel welcome. In conclusion, I would say that it was an interesting meeting, organized with a lot of effort, in less than favourable circumstances. But Russian people are constantly



*TurgauakMarina: A view of Turgayak lake.
Photo M. Vdovets*

ready to cover any shortage with a lot of courage and kindness. They will do anything to help you and make you feel well.

After the conference

Traveling back to the West in Saint Petersburg, an amazing city floating on the rivers, I was invited to visit the impressive premises of the All-Russian Geological Research Institut (VSEGEI) and especially the Geological Museum inside it. It has a display area of 3.750 sq m., with more than 80.000 various specimens. The collections include over 1.000.000 specimens of minerals, rocks, ores and fossils. The Museum was established in 1882 and was opened to the public in 1930.

I enjoyed the wonderful collections (incredible combinations of rocks, landscapes and art pieces!) shown to me by Olga Mironenko. Marina Vdovets, Elena Shkolnikova and Margarita Chuiko showed me the existing Database's of Geosites and geological monuments; this was very useful to me. Tatiana Saltykova was wonderful in making me feel at home, while later on, Alexander, Nina Kopylova's son accompanied me to the dreamy sites of Petrodvorets, a wonderful area near Saint Petersburg, on the Finnish Gulf.

On 17 August I left Russia and its wonderful people. I hope to return on another occasion to explore a bit

more this impressive country but also to cooperate on Geosite selection criteria and Geosite database compilation.

In conclusion, I would say that I had a unique experience with this trip: first, as regards geological heritage conservation and, second, it was an experience that enriched my ideas, enlarged my views and helped me modify stereotypes, giving me the opportunity to meet and discuss with people, some of which I now consider as friends, and to experience a bit the new Russian face.

This experience is owed to Marina, the key person of this organization and of my trip to Russia. She did a lot at a difficult time for her: she lost her father during that time, again my deep condolences for this. The place and the people confirmed my concept of the Russian soul, treasured in my memory from literature, history and music since my youth. As time passes, I value the experiences I had during this trip more and more.

I will finish with a great thank you to all the people I met there and especially to Marina, Elena, Olga, Margarita, Vladimir Petrov, Tatiana, Ivan, Nina, Alexander, Natasha and her wonderful family.



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