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January 1, 2004

Tsunami Strikes Sri Lanka: On December 26, 2004, tsunamis swept across the Indian ocean, spawned by a magnitude 9.0 earthquake off the coast of Sumatra. Aside from Indonesia, the island nation of Sri Lanka likely suffered the most casualties, with the death toll reported at 21,715 on December 29th. DigitalGlobe's Quickbird satellite captured an image of the devastation around Kalutara, Sri Lanka (top), on December 26, 2004, at 10:20 a.m. local time—about an hour after the first in the series of waves hit. A Quickbird image taken on January 1, 2004 (lower), shows the normal ocean conditions. Water is flowing out of the inundated area and back into the sea, creating turbulence offshore. Some near-shore streets and yards are covered with muddy water. It is possible that the image was acquired in a "trough" between wave crests. Imagery of nearby beaches shows that the edge of the ocean had receded about 150 meters from the shoreline
***Credit**:*
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The "Day after Tomorrow" in Asia

by Yorgos Moussouris & Irini Theodossiou – Drandaki,
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Last December's earthquake in Indonesia was an extreme event, with apocalyptic consequences; countless deaths and disheartening material damage. Once again many people's misfortune and misery in living conditions magnified the impact of the disaster. Adding to the human tragedy, the tsunami destroyed a large number of coastal ecosystems: coral reefs, wetlands and mangroves.

Although events of this or larger magnitude, have occurred in the distant past, nature have the ability to rebound. Time; the thousands, millions, even billions of years of geological time, make even the strongest disasters a part of natural processes that contribute to earths history. Keep in mind the difference in scale and consider the impact of the comet collision that crashed into our planet at the end of the Cretaceous, 65.000.000 ago, causing the extinction of a multitude

December 29, 2004


January 10, 2003

Tsunami Destroys Lhoknga, Indonesia: The Indonesian province of Aceh was hit hardest by the earthquake and tsunamis of December 26, 2004. Aceh is located on the northern tip of the island of Sumatra. The largest waves struck the northwestern coast of Sumatra. The town of Lhoknga, on the west coast of Sumatra near the capital of Aceh, Banda Aceh, was completely destroyed by the tsunami, with the exception of the mosque (white circular feature) in the city's center.
***Credit**: Ikonos images copyright Centre for Remote Imaging, Sensing and Processing, National University of Singapore and Space Imaging.*

of species. It has been speculated that it took 3 million years, a time span difficult to fathom, for the complete restoration of normal planetary processes. Nevertheless, the evolutionary "explosion" that followed healed the wounded tree of life as the planet entered the Cenozoic Eon.

Despite its age of 4.6 billion years our planet remains virile: It keeps on changing its face, carrying the continents on the back of its lithospheric plates, putting together super-continents, breaking them up again, giving birth to new oceans – as if it was a child playing with dirt and water. All this takes place with the passing of geological time, through processes, which even though their effects are measured in means of centimeters per year, resulting in both slow and rapid changes. The Indonesian earthquake was such a quick change, a flexing of the planetary muscles, which brought the sides of the fault underneath Sumatra about 15 meters apart, as preliminary estimations claimed.

The mosaic made of structures, rocks and fossils, put together by geological time, bears witness of the Earth's history. Many events, similar to we witnessed this December have left scars enciphered deep inside this mosaic; "time the destroyer is time the preserver" as Elliot, wrote. We shall look into this deep past and never find ourselves once more unprepared.

There is not much experience in dealing with the environmental impact of extreme events. Greece is a country of rich natural heritage. A hypothetical tsunami breaking on one of its coastal ecosystems would be devastating: onto the deltas of Axios or Evros, the nesting beaches of the loggerhead sea turtle in Zakynthos, the islets offshore Crete - rich in flora biodiversity, the sea caves - last refuge for the relic monk seal population…

The vulnerability of protected areas in the case of an "extreme event" is evident. The "one-dimensional" conservation management approach needs to encompass the parameter of geological time, in such a way that the changes that inescapably time will bring along, shall be "absorbed" in the smoothest way as possible.

In the case of the Indian Ocean tsunami disaster, following the efforts to relieve the human suffering, there is a need to evaluate the damage to the ecosystems. Contemplation is necessary on how they shall recover, taking into account contemporary coastal development pressure in the region. It might sound harsh, but such events within a time span of two generations fascinate the imagination, pass to the mythic realm; and the pain of the thousands of humans who perished will remain in memory as a legend. More time is needed though for the natural "healing" of the impact on the natural systems; and it is exactly what the quality of human life depends on; the quality of the physical environment.

It is morally unacceptable to apply natural disaster warning and protection technologies selectively for the benefit of wealthy country populations. Furthermore, we need to augment our approaches to natural heritage conservation, in such a way that margins for ecosystem recovery are provided in the rare, but inevitable cases, when Mother Nature's throw of dice on life's board game sends her creatures "many squares back".

The day after the disaster we should be awakened alert and taught, with a global consciousness for a safer and sustainable planet.

Valuable nature sites of the bedrock and soil in Helsinki, Finland

By Antti Salla, antti.salla@hel.fi

This text is the English abstract of a report in Finnish. The purpose of the report was to document those places in the bedrock and soil of Helsinki having scientific, educational or nature conservation value. It is hoped that the report will promote an awareness of the geological sites and lead to their general appreciation and protection from destruction.

A ”valuable site” is defined as a bedrock or soil formation, or part thereof, which is restricted on the basis of some valuable feature or visible part. Most of the sites described are geologically important, in addition to which there are sites whose value is based on the bedrock or soil being in a natural state within the inner city area.

Bedrock sites have been categorised as follows:

- rock types and minerals
- potholes and similar formations
- other bedrock surface formations
- massive rock formations
- historical quarries and excavations
- areas still in a natural state within the inner city area.

Soil sites have been classified as follows:

- mineral soil formations
- erratic boulders
- organic soil formations
- springs and clusters of springs
- historical soil excavations and other signs of human activity
- soil areas still in a natural state within the inner city area.

The report describes 241 geologically important sites and 101 bedrock or soil sites still in a natural condition, making a total of 342 sites. The sites have been assigned a value class of 1, 2 or 3, of which 1 is the most valuable.

Among geologically valuable site types, the most commonly described are erratics (41 examples), massive rock formations (33 examples), and springs (30 examples). Massive rock formations are most commonly sites of high landscape value.

117 sites have been assigned to class 1, the most valuable class. In addition, 30 class 1 sites have been listed which at present are not under protection but whose preservation is considered to be of the utmost importance. Five of these are put forward for actual protection.

Initiative for the preservation of the Pikermi fossil locality, Greece

By The Pikermi Initiative Committee
Nic. Carras, Dim. Galanakis, Chrys. Ioakim, Ann. Rassios, Mart. Stefouli, Ir. Theodossiou-Drandaki

As publicized in recent newspapers' articles (example The Kathimerini, March 3rd, 2005: www.kathimerini.gr) and other Media, a water treatment facility has been proposed by the Athens Water Authority to be constructed on the site of the Pikermi fossil locality.

Pikermi hosts a unique upper Miocene faunal assemblage, the Pikermian fauna and relative chronostratigraphic Pikermian stage (6,5-5.3 m.y). The fauna includes between others Dinotherium, machairodus, Mesopithecus pentelicus, Rhinoceros, Hyaena, Mastodon, Hipparion, a small-bodied horse that once ranged from Iran, Greece, to England, and is the ancestor of the modern horse.

The site, registered in Cowie list, has hosted research and student education by the University of Athens since its foundation in 1906. It is protected by a 1984 law while excavations without permission are prohibited since 1932.

Metailurus parvulus

Ancylotherium pentelicum

If the project proceeds, this world-class fossil locality will be destroyed and we urge all geoscientists, all over the world, to join the Greek geoscientific community in its efforts to save the Pikermi site and to preserve and promote the locality to the world-class stature it so justly deserves.

Crocuta eximia

We intend also to ask for support by International Organizations and initiatives as UNESCO, ProGEO,IUGS, European Geoparks, GeoSEE.

Dear colleagues, we ask that you, if you agree in this initiative to save the Pikermi area, will send an email to Irini Theodosiou-Drandaki, ren@igme.gr, declaring it. We also hope that by informing other scientists and nonscientists of the importance of the Pikermi site and the threat to its preservation, they, too, will help this effort by sending an email in respect.

PIKERMI IS OUR GEOLOGICAL HERITAGE, A GEOTOPE OF SIGNIFICANT SCIENTIFIC VALUE AND MUST BE PROTECTED FROM ABUSES

Proposal for new environmental legislation in Norway

By Lars Erikstad, lars.erikstad@nina.no

A committee appointed by Royal Decree 20 April 2001 with the task to review the legislation relating to biodiversity, have proposed new legislation in Norway. Not since the first nature conservation act of 1911 has geology as such been specified more clearly in this type of legislation in Norway. The committee has considered it particularly important to develop legislation that takes into account the dynamics of natural systems and the need to use a variety of instruments to achieve Norway's objective of stopping the loss of biological diversity. Biological diversity is therefore of key importance, but the draft Act has a considerably wider scope than this, since it is also de signed to protect other natural assets, especially landscapes and geological features.

The objects clause of the draft states that the purpose of the Act is to ensure that the biodiversity, landscape diversity, geological diversity and ecological processes of the natural environment are safeguarded for posterity.

Geology is covered in the different protection categories such as natural reserves and is also included in the term "habitat type" (actually in Norwegian more neutrally called "nature type", which is defined very widely in the draft Act. This is important as much of the local natural management is concentrated around this term.

It will be interesting to see if these proposals will be followed and what sort of impact they will have on Norwegian geoconservation.

Roddines Nature Reserve, Finnmark, Norway. Photo: Lars Erikstad

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New post-graduation course on Geological Heritage and Geoconservation

By José Brilha, jbrilha@dct.uminho.pt

The University of Minho (Braga, Portugal) recently approved the creation of a new post-graduation on Geological Heritage and Geoconservation. Under the responsibility of the Earth Sciences Department, this course is an integrated and multi-disciplinary approach to understanding how Geology should integrate Nature Conservation policies and actions, together with the maintenance of biodiversity.

The main aims are:

• To promote the development of skills and expertise in geoconservation;
• To offer a post-graduation course for people already involved in Nature Conservation;
• To increase science teachers awareness of education for sustainability subjects;
• To allow the exchange of geoconservation experiences;
• To develop scientific research in geoconservation.

The minimum entry requirement is a graduate degree with a major in Geology, Biology, Geography, Environmental Studies or other related. The main scientific domain of this course is Geology. Other scientific domains complement the course such as Biology, Archaeology, Education Science, Management, Informatics, Law, and History of Science. The approval in the modules (300 hours) allows the attribution of a Specialisation Diploma. To obtain the Master Degree is necessary the further development and approval of a dissertation. The University of Minho welcomes candidates from abroad.

For more information please visit the web pages
http://www.dct.uminho.pt/eng/mest/pgg/index_pgg.html

England's Heritage in Stone 15-17 March 2005, York

By Mick Stanley, mick.stanley1@btinternet.com

The conference, organised by the GeoConservation Commission, with sponsorship from English Heritage, English Nature, Stone Federation GB and the British Geological Survey, had themes on the historic use of stone, conservation practice, supply of stone, planning issues associated with the use of indigenous stone, and the training of practitioners.

The first morning session, which looked at the history of use and types of stone and their properties, was followed by a visit to York Minster mason's yard to see carvers, masons, profiling and cutting machinery, the plaster cast museum and computerised setting out shop, to allow delegates to understand the current practices in Europe's largest gothic Cathedral with a full programme of repair and replacement of stone.

This was rounded off with a tour up the spectacular East front, now covered in 15 miles of scaffold to give access to the weathered stone, and two walking tours of the immediate area around the Minster taken by Eric Robinson and Jane Jackson.

The conference dinner saw delegates enjoying their meal next to 'Mallard' the A4 Gresley Pacific railway engine of 1936 and world record holder for steam engines, now in retirement and a star attraction at the National Railway Museum; the guest of honour was Sir William McAlpine, President of the Natural Stone Institute and former owner of the 'Flying Scotsman', a very famous A3 Gresley Pacific.

A recurring issue throughout the conference, but especially the second morning session was the re-opening of ancient quarries for the supply of indigenous stone in designated areas e.g. national parks, AONBs, SACs or locally in conservation areas. The public's perception of quarrying makes local politicians unlikely to agree to re-opening, even if the weekly traffic movements are small in number and dust and noise are minimal. A concerted effort is needed to work together with built and natural heritage conservation bodies and local planning authorities to attempt the resolution of conflicting interests.

In the longer term there is a need to recognise that 'old' stone quarries may require statutory recognition as a 'heritage' resource similar to that for the built and the biological heritage. Government recognition has begun with the introduction of building stone within the newly drafted Minerals Planning Statement 1 (MPS1) - Plan-

ning and Minerals (England & Wales) and its annexes leading on from the Symonds report on 'Planning for the Supply of Stone and Slate in England'. Pilot resource/building studies currently being undertaken, by British Geological Survey, Building Research Establishment, English Nature and English Heritage may point the way for future research.

Other issues raised in the second and third morning sessions included the provision and accessibility of appropriate technical information for practitioners (including architects, designers and builders), global market constraints on stone producers, provision of craft skill, building conservation skills and new build skills and the short design life of modern buildings.

The second afternoon field trip looked in detail at the building limestones of the Upper Permian, Cadeby Formation (Magnesian Limestone) of the Tadcaster area to the south west of York starting with the late 11th century Selby Abbey and the mainly late Norman church at Sherburn-in-Elmet, a much modified Saxon foundation with Romanesque and Perpendicular features. Visits to Mickelfield Quarry, an SSSI with an interpretation of its importance, and Smaws Quarry, now sadly an active landfill site but formerly supplier of stone to repair York Minster in the 1880s and Clifford's Tower in York in 1903, completed the trip.

The evening event was a conducted tour of the Centre for Vocational Excellence for stone masonry at York College, one of only 3 such centres in Britain, where delegates viewed the exceptional facilities available to students for learning the art of the mason and carver.

At the final plenary session it was the wish of the meeting that a Steering Group be convened to establish terms of reference and operational aspects of the English Stone Forum. The consensus of the conference was that there is a need for such a body although alternative names would be considered. It was proposed that the Stone Group of the Geoconservation Commission, which had been responsible for the conference, should in the first instance act as the Steering Group. It would co-opt additional members and would hold its first meeting on 12 May in London, preceding the next full meeting of the GeoConservation Commission.

Deadline for the next issue of ProGEO NEWS: 01.06.2005

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