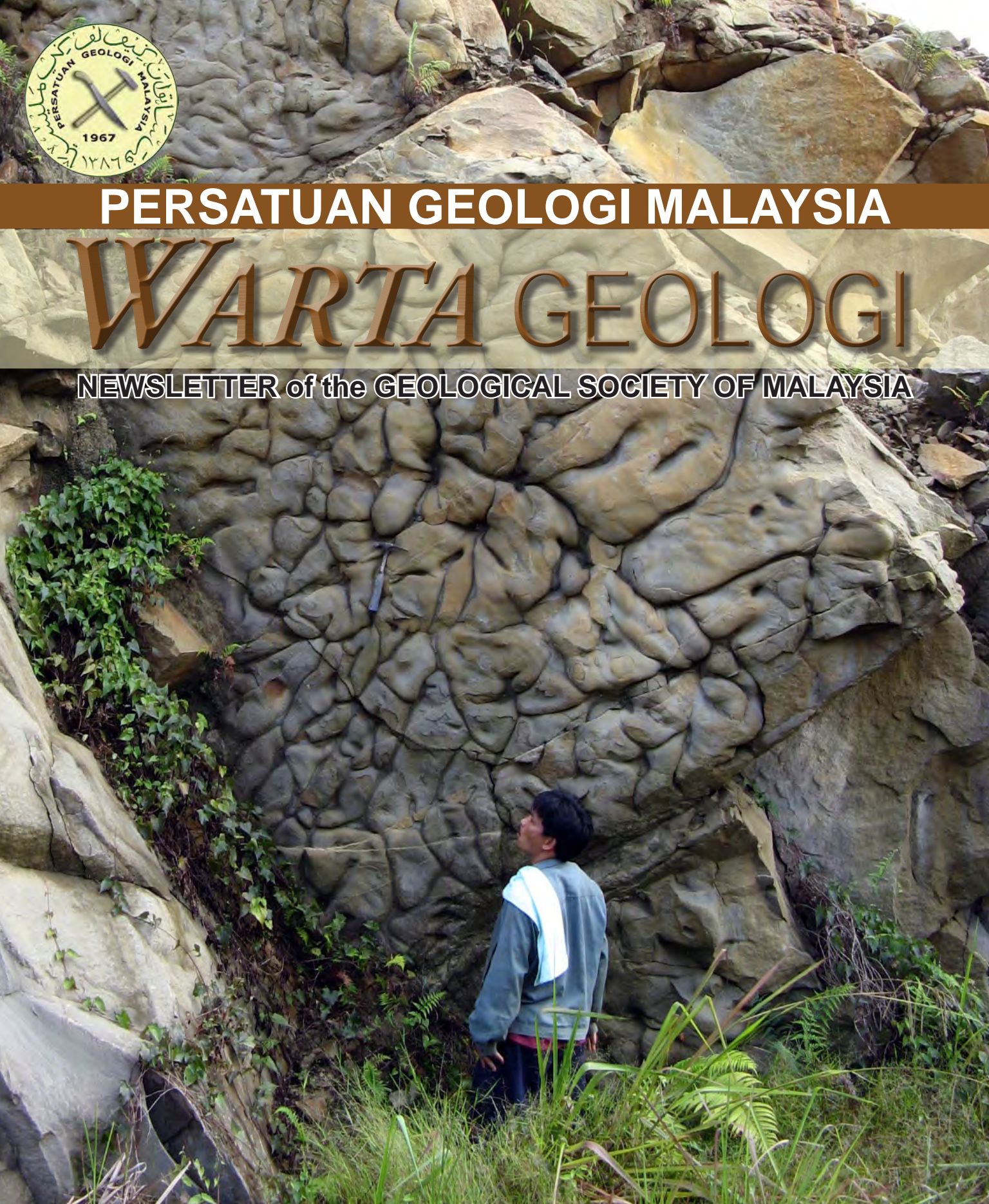




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The Editor
Geological Society of Malaysia
c/o Department of Geology,
University of Malaya,
50603 Kuala Lumpur, Malaysia
Tel: 603-79577036 Fax: 603-79563900
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CATATAN GEOLOGI GEOLOGICAL NOTES

Survei keamatan medan magnet bumi serta kaitannya dengan geologi permukaan di Pulau Tuba, Langkawi

(Intensity of the earth magnetic field in Tuba Island, Langkawi and its relationship with surface geology)

ABDUL RAHIM SAMSUDIN & NURUL BAIZURA MOHD YUNUS

School of Environment and Natural Resource Sciences, Faculty of Science & Technology
Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor

Abstrak: Survei magnet daratan telah dijalankan untuk mengkaji pengaruh perbezaan jenis batuan terhadap keamatan medan magnet bumi di Pulau Tuba, Langkawi. Keamatan medan magnet bumi diukur menggunakan magnetometer liukan proton di sepanjang beberapa rentisan di dalam kawasan batuan granit, sedimen dan aluvium di Pulau Tuba. Beberapa rentisan magnet dibuat hampir berserenjang dengan sempadan litologi antara batuan. Hasil kajian menunjukkan keamatan medan magnet bumi dalam kawasan granit adalah relatif lebih tinggi (berjulat dari 41450 hingga 41500 gamma) berbanding keamatan medan magnet di kawasan aluvium (41300 hingga 41480 gamma). Manakala dalam kawasan batuan sedimen Formasi Setul, medan magnet memperlihatkan ciri keamatan menaik dan menurun di sepanjang profil dengan nilai kemagnetan yang direkodkan berubah daripada 41460 hingga 41550 gamma, lebih tinggi berbanding pengukuran yang dibuat di kawasan granit. Kenaikan dan penurunan keamatan medan magnet ditafsirkan akibat kehadiran kandungan mineral bermagnet yang tinggi dan tidak seragam dalam jasad batuan Formasi Setul. Analisis geokimia menggunakan kaedah sinar-X (XRF) menunjukkan terdapatnya kandungan oksida besi yang tinggi dalam batuan sedimen dan ini boleh menyebabkan turun naiknya keamatan medan magnet yang diukur.

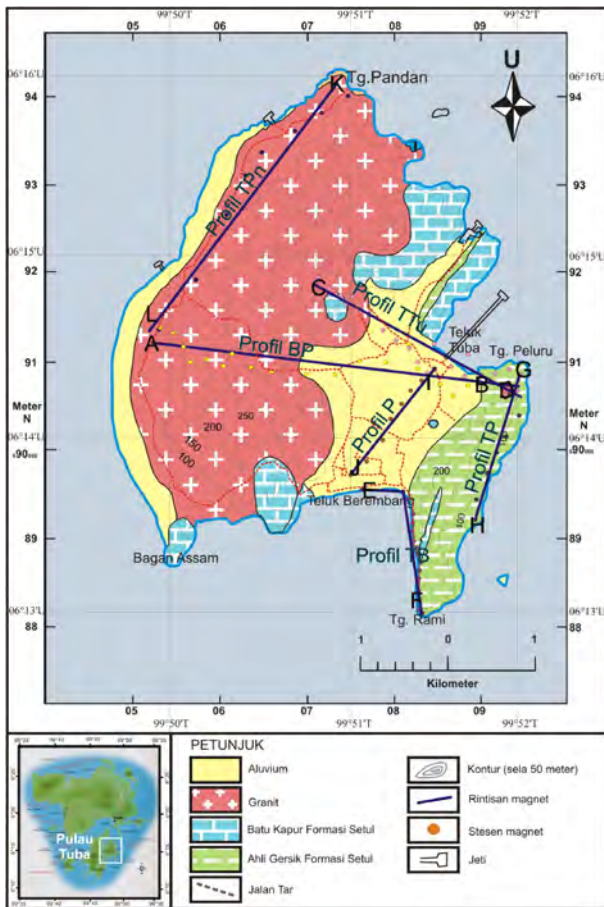
Abstract: Ground magnetic survey was conducted to investigate the influence of different rock types on the intensity of the earth magnetic field in Tuba Island, Langkawi. The magnetic measurements were conducted using proton precession magnetometer along several traverses in the granite and sedimentary rocks areas as well as in the alluvial area of the Tuba Island. Some of the traverses were run perpendicular to the lithological boundary. Results of the study revealed that the intensity of the earth magnetic field over granite area of the Tuba Island is relatively higher (ranging from 41450 to 41500 gammas) than the magnetic field intensity measured in the alluvial area (41300 to 41480 gammas). The earth magnetic field recorded over the sedimentary rocks of the Setul Formation fluctuated with the recorded intensity values vary from 41460 to 41550 gammas which appears to be slightly higher than those measured in the area of granites. The fluctuation of the magnetic field readings with high intensity values are interpreted to be due to the influence of high and inhomogeneous contents of the magnetic minerals in the sedimentary rock. Geochemical analysis using x-ray fluorescence (XRF) method indicated high content of iron oxide in the sediments which supported the above interpretation.

PENDAHULUAN

Kaedah magnet telah digunakan dengan meluas untuk mengesan kewujudan dan kedudukan sumber bijih dalam industri perlombongan sejak awal kurun ke Sembilan belas. Kaedah ini juga telah digunapakai untuk menyiasat struktur geologi bawah permukaan seperti struktur sesar, intrusi granit dan kubah garam yang berasosiasi dengan lapangan minyak, meteorit dan jasad magnet yang terkandung di bawah permukaan bumi (Parasnis 1991). Abdul Rahim Samsudin & Mohd Yamin Ali (1984) telah menggunakan kaedah magnet untuk menentukan sempadan batuan serpentinit di kawasan Kuala Pilah,

Negeri Sembilan. Manakala Abdul Rahim Samsudin *et al.* (1992) telah dapat mengaitkan keamatan medan magnet dengan kewujudan zon sesar di Lembah Tekai, Pahang.

Dalam kajian ini, kaedah magnet telah digunakan untuk mencirikan keadaan kemagnetan medan magnet bumi dan kaitannya dengan geologi permukaan di Pulau Tuba. Pulau Tuba yang berkeluasan kira-kira 30km persegi, terdiri daripada batuan granit yang tersingkap di bahagian barat dan endapan sedimen Formasi Setul di bahagian timur Pulau Tuba. Batuan granit dan sedimen ini dipisahkan oleh endapan aluvium yang terletak di bahagian tengah pulau tersebut. Wan Fuad Wan Hassan (1997; 2000) mendapati batuan granit di Pulau Tuba berkaitan dengan



Rajah 1: Peta geologi Pulau Tuba menunjukkan lokasi rentisan magnet.

granit di Pulau Dayang Bunting dan batuan granit yang terdapat di Langkawi. Batuan granit menunjukkan saiz butiran kasar kesederhana kasar, bertekstur porfir dan berwarna kelabu gelap. Fenokris dalam batuan ini jelas kelihatan dengan butiran bersaiz sehingga 6cm panjang. Intrusi granit berusia Trias ini didapati menyebabkan berlakunya proses pengreisenan, pentormalinan dan pembentukan skarn serta lain-lain pemineralan di sempadan intrusi batuan. Batuan sedimen Formasi Setul terdiri daripada batu kapur, syal, batu lumpur, sabak dan kuarzit (Ibrahim Abdullah 1997; Ibrahim Abdullah *et al.* 1997). Secara umumnya, batuan Formasi Setul ini boleh dibahagikan kepada ahli batu kapur, ahli detrital bawah dan detrital atas. Kajian ini bertujuan untuk melihat perubahan keamatan medan magnet bumi di Pulau Tuba dan kaitannya dengan singkapan batuan di permukaan bumi di sepanjang garis rentisan.

BAHAN DAN KAEDAH KAJIAN

Keamatan medan magnet bumi di stesen-stesen lapangan diukur dengan menggunakan meter magnet jenis liukan proton model Geometrik G-826 yang mempunyai kejituan sebesar ± 1gamma. Manakala

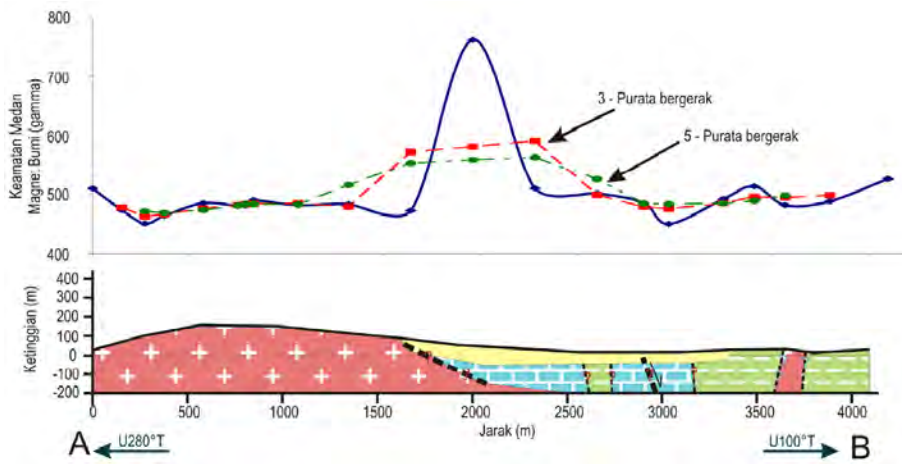
magnetometer G-856 digunakan untuk merekod secara otomatis perubahan harian medan magnet bumi di stesen induk. Keamatan medan magnet bumi yang direkodkan di permukaan bumi biasanya dipengaruhi secara tempatan oleh kemagnetan batuan di kawasan tersebut. Batuan yang mempunyai litologi dan struktur yang berbeza sering menampilkan sifat kemagnetan yang berlainan dan ciri ini kadang-kala boleh membantu kerja-kerja pemetaan dan pentafsiran geologi di sesuatu kawasan. Lokasi stesen lapangan ditentukan dengan menggunakan peta topografi dan GPS. Jarak antara stesen lapangan berjulat daripada 200 hingga 500 m dengan jumlah panjang garisan profil magnet sekitar 2 hingga 5 km. Sebanyak enam garisan profil magnet telah diukur merentasi kawasan batuan granit, batuan sedimen dan aluvium. Beberapa garisan profil dibuat dalam arah hampir tegak lurus dengan sempadan antara batuan untuk melihat perubahan keamatan medan magnet dan kaitannya dengan pelbagai litologi batuan di kawasan kajian. Beberapa sampel batuan telah diambil untuk tujuan analisis sinar-X. Analisis ini bertujuan untuk mengukur kandungan besi oksida yang terdapat di dalam sampel batuan tersebut.

HASIL DAN PERBINCANGAN

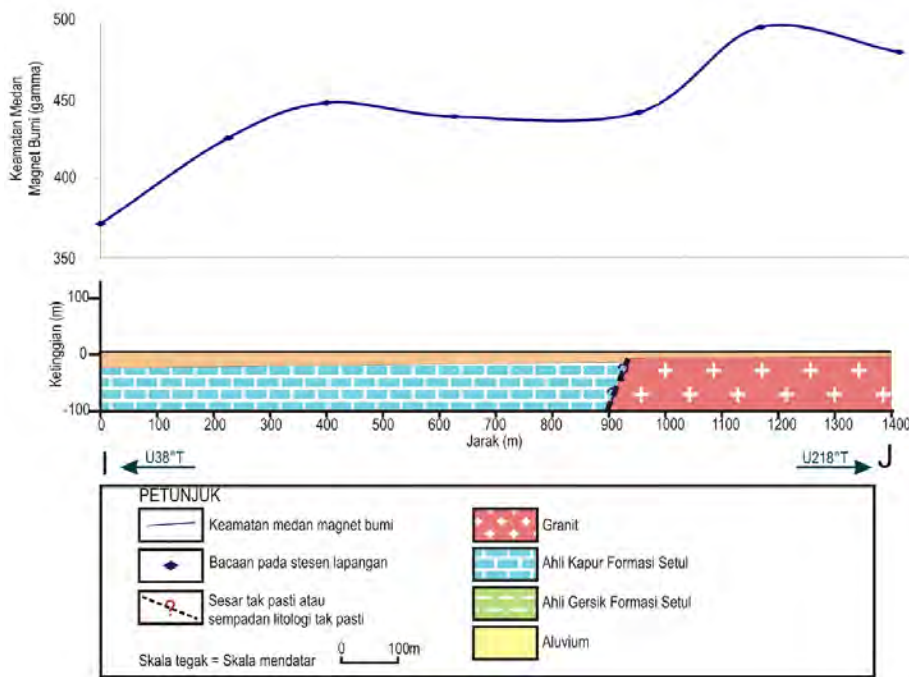
Rajah 1 menunjukkan peta geologi Pulau Tuba dan lokasi profil magnet yang telah berjaya diukur di kawasan kajian. Secara umumnya keamatan medan magnet bumi yang diukur di kawasan batuan granit relatif lebih tinggi berbanding keamatan medan magnet yang diukur di kawasan aluvium. Keamatan medan magnet bumi di kawasan granit berjulat daripada 41450γ hingga 41500 γ dengan nilai purata lebih tinggi berbanding keamatan medan magnet yang diukur di kawasan aluvium yang menunjukkan julat keamatan kemagnetan sekitar 41300 γ - 41480 γ. Keamatan medan magnet bumi yang direkod di kawasan batuan sedimen Formasi Setul secara relatifnya adalah lebih tinggi berbanding keamatan medan magnet di kawasan batuan granit. Medan magnet bumi di kawasan sedimen menunjukkan julat keamatan kemagnetan daripada 41460 γ hingga 41550 γ.

Rajah 2 menunjukkan profil keamatan medan magnet yang diukur merentasi ketiga-tiga jenis batuan di Pulau Tuba. Nilai keamatan medan magnet bumi di kawasan batuan granit kelihatan lebih seragam berbanding nilai keamatan medan magnet yang bersifat turun naik (berfluktuasi) di kawasan batuan sedimen. Nilai keamatan medan magnet yang relatif tinggi dan tidak seragam ini ditafsirkan kerana kewujudan mineral oksida besi bermagnet di dalam batuan sedimen Formasi Setul. Tafsiran ini disokong melalui analisis XRF ke atas sampel batuan granit dan batuan sedimen Formasi Setul yang menunjukkan kandungan unsur besi (Fe) dalam Ahli Gersik Formasi Setul adalah relatif tinggi berbanding batuan granit.

Kenaikan keamatan medan magnet secara mendadak di sempadan antara batuan sedimen dan granit dipercayai



Rajah 2: Profil keamatan medan magnet bumi dan kaitannya dengan geologi permukaan di Pulau Tuba.



Rajah 3: Profil keamatan medan magnet bumi di kawasan aluvium menunjukkan tren keamatan meningkat ke arah timur Pulau Tuba.

adalah disebabkan oleh struktur batuan yang mengalami peretakan dan penyesaran akibat canggaaan tektonik yang berasosiasi dengan permineralan yang terbentuk akibat intrusi batuan granit.

Rajah 3 menunjukkan nilai keamatan medan magnet bumi yang diukur merentasi kawasan aluvium Pulau Tuba. Profil keamatan medan magnet bumi yang diplot melawan jarak menunjukkan trend menaik ke arah timur. Keadaan ini boleh ditafsirkan kemungkinan wujudnya batuan dasar yang semakin hampir ke permukaan bumi ke arah timur, dan nilai keamatan yang berfluktuasi ini berkemungkinan dipengaruhi oleh topografi batuan dasar beralun di bawah permukaan bumi.

KESIMPULAN

Survei magnet yang dijalankan di Pulau Tuba telah menghasilkan keputusan seperti berikut:

1. Wujud korelasi yang jelas antara keamatan medan magnet bumi dengan geologi permukaan di kawasan kajian
2. Batuan sedimen Formasi Setul yang mengandungi kandungan oksida besi memberikan keamatan yang relatif lebih tinggi daripada keamatan medan magnet bumi yang diukur di kawasan batuan granit dan aluvium.
3. Keamatan medan magnet bumi yang berfluktuasi di kawasan aluvium berkemungkinan disebabkan oleh ketakseragaman kemagnetan dan topografi batuan dasar yang beralun.
4. Kenaikan keamatan medan magnet secara mendadak di kawasan aluvium memberi gambaran bahawa kemungkinan wujudnya sempadan antara batuan granit dan sedimen yang berada di bawah endapan aluvium tersebut.

PENGHARGAAN

Penulis merakamkan berbanyak terima kasih kepada Universiti Kebangsaan Malaysia kerana membiayai projek penyelidikan ini. Ucapan terima kasih juga ditujukan kepada pembantu makmal, En Shahrizal Deris dan En Wan Ali Wan Megal yang membantu mendapatkan data lapangan.

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Menteri Perancangan Sumber dan Alam Sekitar II/

Menteri Kemudahan Awam dan Menteri Pembangunan Perindustrian Sarawak

Assalamualaikum. Selamat pagi, salam sejahtera, Salam Satu Malaysia, Selamat Datang, Selamat Datai ke Sarawak, Bumi Kenyalang.

Mula-mula saya merasa terharu dan berterima kasih kepada warga Geologis kerana sudi menjemput saya sekali lagi untuk menyempurnakan dan seterusnya merasmikan Persidangan Geosains Kebangsaan 2012 ini atau *National Geoscience Conference 2012*.

Syukur kehadiran Allah Subhanahu Wa Taala kerana dengan taufik dan limpah kurnia-Nya, kita semua dapat berhimpun dalam sebuah majlis tahunan anjuran bersama Persatuan Geologi Malaysia (GSM), Jabatan Mineral dan Geosains Malaysia (JMG) dan Akademi Sains Malaysia (ASM) iaitu Persidangan Geologi Kebangsaan 2012 yang membawa tema "Geoscience in Everyday Life".

Bagi pihak Kerajaan Negeri Sarawak, saya ingin mengucapkan Selamat Datang ke Negeri Sarawak dan terima kasih kerana telah dijemput untuk merasmikan Persidangan Kebangsaan ini. Saya juga, bagi pihak Kerajaan Negeri amat berterima kerana Persatuan Geologi Malaysia telah memilih Sarawak sebagai tempat mengadakan persidangan geologi tahunan ini.

Saya difahamkan bahawa Persidangan Geologi yang pertama telah diadakan 25 tahun yang lalu di Universiti Malaya pada tahun 1986. Setelah itu pada tahun 1988 dan 1989, 'Persidangan Geologi Kebangsaan' diadakan di Cameron Highland dan Fraser Hill dianjurkan bersama Persatuan Geologi Malaysia dan Jabatan Mineral dan Geosains Malaysia yang pada ketika itu dikenali sebagai Jabatan Penyiasatan Kajibumi Malaysia. Sejak itu persidangan ini menjadi persidangan tahunan.

Saya percaya persidangan seumpama ini amatlah penting di mana para ahli geologi dan saintis dapat berkumpul dan berbincang untuk menjana idea dan strategi baru ke arah tahap kehidupan yang lebih baik di masa hadapan sesuai dengan perubahan iklim yang sedang melanda dunia sekarang ini.

Melihat kepada tema persidangan ini iaitu 'Geoscience in Everyday life', yang bertujuan untuk memberikan kesedaran pada diri kita betapa besarnya peranan yang dimainkan oleh geosains dalam kehidupan seharian kita. Bumi banyak membekalkan khazanahnya kepada kita dan kita pun sewajarnya membalas balik jasa yang diberikan itu dengan penjagaan bumi yang kita huni secara sementara ini melalui ilmu pengetahuan geosains. Biarlah kita wujudkan satu masyarakat yang kehidupannya bersifat lestari dan saling bekerjasama untuk menjadikan bumi tempat kita tinggal ini lebih sihat dan selamat untuk didiami. Para geosaintis pula merupakan barisan hadapan dalam merencanakan gerak kerja ini. Saya percaya tema persidangan ini akan dapat dicapai selaras dengan Cabaran ke-4 dan ke-6 Wawasan 2020 iaitu 'Mewujudkan masyarakat yang sepenuhnya bermoral dan beretika' dan 'Mewujudkan masyarakat saintifik dan progresif, mempunyai daya perubahan tinggi dan memandang ke depan, yang bukan sahaja pengguna teknologi tinggi tetapi juga menyumbang kepada tamadun saintifik dan teknologi masa depan.'

Kesungguhan dan komitmen anda semua dalam persidangan ini nanti adalah penting untuk masa depan negara dan rakyat.

Kerajaan Negeri Sarawak sentiasa memberi sokongan dan komited kepada sebarang usaha dari komuniti profesional dan akademik dalam memberikan perkhidmatan terbaik kepada rakyat dalam usaha menjadikan Negeri Sarawak ini sebagai kawasan yang selamat, yang selesa diduduki dan yang menarik dikunjungi. Para ahli geologi terutamanya dari Jabatan Mineral dan Geosains Sarawak, banyak terlibat dalam memberikan ulasan rancangan pembangunan seperti ulasan kebenaran merancang dan pelan kerja tanah. Ini untuk memastikan semua rancangan pembangunan ini dibina di kawasan atau tapak yang selamat, dan bangunan yang dibina dapat bertahan dalam jangka masa yang lama.

Dalam masa dunia sedang dilanda isu seperti perubahan iklim global, Negeri Sarawak juga pernah dilanda bencana alam seperti kejadian tanah runtuh, seperti yang pernah terjadi di Patiambun (Limbang), Bukit Cina (Kapit), Bukit Canada (Miri) dan banjir besar yang telah melanda Kuching beberapa kali sejak beberapa tahun kebelakangan ini, dan beberapa kejadian lain di daerah-daerah yang lain. Peranan Ahli Geologi dan pakar-pakar berkaitan mestilah ditingkatkan, supaya kesan kejadian bencana seperti ini dapat diminimumkan, melalui proses merakyatkan pengetahuan agar bukan saja pakar, malah rakyat juga dapat terlibat memberikan aduan bagi tindakan-tindakan pencegahan dilakukan.

Sumbangan industri perlombongan dan pengkuarian kepada peningkatan pendapatan Negeri Sarawak juga tidak dapat dinafikan. Batuan dikuari untuk bahan binaan dan agregat, arang batu kita gunakan untuk menjana kuasa demi mengurangkan kebergantungan kepada petroleum. Sumber pasir silika kita eksport untuk mendapatkan tukaran wang

asing. Sumber lempung diterokai dan digunakan secara tempatan untuk menghasilkan barang-barangan seramik. Walaupun secara perbandingan, sumbangan aktiviti ini dianggap masih kecil tetapi potensinya untuk berkembang tetap ada berasaskan kepada perkembangan teknologi baru dalam industri perlombongan, yang dapat meningkatkan jumlah produktiviti dari industri ini.

Saya juga dimaklumkan bahawa penerokaan emas di kawasan yang baru dalam Daerah Bau sedang berjalan dengan lancar. Saya amat berharap agar penerokaan ini berjaya membuah hasil. Jika ia berhasil, bukan sahaja Kerajaan Negeri mendapat manfaat daripadanya, malah masyarakat sekeliling akan mendapat manfaat secara langsung. Semoga Pekan Bau kembali ke zaman kegemilangannya sekali lagi.

Walau bagaimanapun, saya berharap aktiviti perlombongan dan pengkuarian ini dapat dijalankan dalam suasana yang mesra rakyat dan mesra alam agar ia tidak merosakkan pandangan dan keindahan alam semulajadi di Negeri Sarawak ini.

Saya telah menyentuh mengenai peranan besar Jabatan Mineral dan Geosains dalam menyelesaikan sebahagian masalah rakyat Negeri Sarawak yang menduduki kawasan luar bandar beberapa hari lalu semasa merasmikan Persidangan JMG. Kami menghargai peranan dan khidmat geosains yang dimainkan.

Saya juga sedia maklum bahawa langkah-langkah sedang diambil bagi memajukan keunikan kawasan delta di sekitar Kuching ini sebagai satu produk baru geosains melalui penarafan kawasan ini sebagai global geopark, yang dikenali sebagai Delta Sarawak Global Geopark. Saya fikir hasrat kerajaan Negeri Sarawak untuk memajukan kawasan Santubong sebagai kawasan pelancongan yang dilengkapi dengan “cable car” merupakan langkah menyokong yang lebih menguatkan usaha penarafan sebagai global geopark ini. Di harap kejayaan penarafan ini akan turut melonjakkan kawasan-kawasan sekitarnya sebagai destinasi pelancongan yang menggamit perasaan setiap pengunjung yang datang. Semoga yang pernah datang akan datang lagi, dan datang lagi.

Ahli geologi dan saintis dapat memainkan peranan lebih berkesan untuk pembangunan Negara iaitu dengan memberikan ulasan, komen dan input-input yang sesuai sebelum Draf Rancangan Tempatan tersebut diputuskan oleh pihak Kerajaan kelak.

Ahli geologi juga seharusnya mempertingkatkan penyelidikan dalam bidang masing-masing agar pengetahuan yang baru tersebut dapat diaplikasikan untuk kebaikan rakyat di samping dapat menyebarkan maklumat yang tepat pada kadar yang cepat bagi membolehkan usaha berkesan dibuat bagi menangani isu-isu yang berkaitan.

Saya juga maklum bahawa Akademi Sains Negara memainkan peranan dalam mencapai, menggalakkan dan meningkatkan kecemerlangan dalam bidang sains, kejuruteraan dan teknologi bagi pembangunan negara dan manfaat kepada manusia. Saya amat menghargai peranan mereka dalam menganjurkan bersama persidangan ini.

Saya mendoakan persidangan ini dapat menghasilkan keputusan dan impak yang cemerlang sebagaimana diharapkan. Dengan empat (4) kertas kerja utama dan lebih sembilan puluh (90) kertas kerja saintifik pelbagai topik berkaitan tema persidangan yang dibentangkan sama ada pembentangan lisan atau poster, saya percaya mesej yang mahu diketengahkan boleh dipanjangkan kepada masyarakat.

Saya ingin mengucapkan syabas kepada Persatuan Geologi Malaysia, JMG dan Akademi Sains Malaysia (ASM) atas penganjuran persidangan ini dan sokongan berterusan daripada semua pihak khususnya ahli akademik Institusi Pengajian Tinggi.

Mengakhiri ucapan ini, sekali lagi saya ingin mengucapkan terima kasih kepada pihak penganjur persidangan yang telah memilih Negeri Sarawak sebagai lokasi penganjuran persidangan. Selamat bersidang dan semoga mendapat ilmu yang bermanfaat daripadanya.

Dengan lafaz Bismillahirrahmanirrahim, saya dengan ini merasmikan ‘Persidangan Geologi Kebangsaan 2012’ dengan tema “Geosains dalam Kehidupan Harian”.

Sekian, terima kasih.



**Welcoming Address by
Prof. Dr. Joy Jacqueline Pereira**
President, Geological Society of Malaysia

Salam Sejahtera, Salam Satu Malaysia and Good Morning. Welcome to the National Geoscience Conference 2012, better known as NGC 2012, with the theme “Geoscience in Everyday Life”.

The theme is intended to highlight the fact that geoscience provides for the fundamental needs of society - from seeking the rock and minerals that provides shelter for us in our homes and in this lovely venue, to the fuel that we used to get here today. Geoscience also contributes to the provision of water, particularly groundwater, which a basic resource for society. In addition, geoscience knowledge reduces the risks we have to face due to geological hazards such as landslides, sinkholes and land subsidence, among others.

The Geological Society of Malaysia is proud to have played a small role in fostering the advancement of geoscience knowledge in the country. We have provided a platform for geoscientists to come together on an annual basis to share their research findings, through the two major conferences we organise annually, the National Geoscience Conference and the Petroleum Geoscience Conference and Exhibition.

The Academy of Sciences Malaysia has recognised geoscience as an important contributor to Science and Technology, and the role of the Society as custodian of this field of knowledge. In support of the Societies’ effort to nurture young geoscientists for the country, for the first time ever, the Academy has sponsored 12 research papers to be presented at this meeting by students from six universities that offer geoscience programmes. These are Universiti Malaya, Universiti Kebangsaan Malaysia, Universiti Sains Malaysia, Universiti Malaysia Sabah, Universiti Malaysia Kelantan and Curtin University, Sarawak Campus.

The 12 papers are given special mention in the proceedings. Ladies and gentlemen – may we have a round of applause for the 12 selected students who are here today. The manuscripts will be peer-reviewed and considered for publication in the Society’s two flagship publications, where we document original research findings by geoscientists – The Bulletin Geologi and the quarterly newsletter, Warta Geologi.

With respect to these two publications, I am happy to report that a third party assessment by the Malaysian Citation Centre this year, saw Bulletin Geologi Malaysia and Warta Geologi listed as the top 50 most cited scientific publications in the country. We are now in an excellent position for our publication to be indexed by the Centre. Such recognition is important as the Ministry of Higher Education will use findings from the Centre as part of the instrument to assess the quality of research in public universities, particularly research universities.

I urge all the researchers to support our two publications by contributing manuscripts. I also urge senior members of the geoscience fraternity to make time to review the manuscript of your peers and juniors’, with respect to its suitability for publication. The Society calls on your expertise and the time to contribute is NOW! The more we publish our findings in the these two publications, the better can the government assess the quality of geoscience research and development, as well as its contribution in advancing economic growth, environmental conservation and societal well-being; which constitute the three pillars of sustainable development.

The Council is striving to improve its service to all of you and advance geoscience in the country. In our effort to do this, we are appreciative of the support from all our collaborators; universities, government and the private sector.

For the NGC 2012, we are especially grateful to our co-organizers the Minerals and Geoscience Department and the Academy of Sciences Malaysia. I would like to thank the sponsors of this event for their outstanding support. I would also like to express my utmost appreciation to Dr. Richard Mani Banda from JMG Sarawak, Chairman of the Organising Committee and all his committee members, for making NGC 2012 happen in Sarawak; in such a splendid setting. May we have a round of applause for our Organising Chairman, his team and all our sponsors.

Last but not least, the Society would like to thank the State Government for supporting our event in this amazing State of Sarawak. We had a first-hand view of the gold mine in Bau; and an excellent perspective on its geological and mining history; and of course, there are not enough words in the English language to describe the hospitality and graciousness of Sarawakians! May I have a round of applause ladies and gentlemen, to celebrate all Sarawakians in this room today!

On behalf of the Society, I thank Y. Berhormat Datuk Amar Haji Awang Tengah bin Ali Hassan, Minister of Resource Planning and Environment (II), Minister of Public Utilities & Minister of Industrial Development, for making time to officiate NGC 2012. Your presence and support has made this event memorable.

I wish everyone a successful and productive discourse this week-end. Thank you very much.



Message by
Dr. Richard Mani Banda
Organising Chairman
National Geoscience Conference 2012

The National Geoscience Conference is the only conference with a wide spectrum of geology held annually in Malaysia. It gathers geologists from various disciplines. This conference also serves as the venue for presenting new discoveries, research findings and new ideas. It also incorporates geologists from various quarters such as government bodies, private sectors and institutions of higher learning. The NGC2012 was selected to be held in Kuching, Sarawak. It is a great honour to the State of Sarawak, the Land of the Hornbills. I sincerely hope that this will be followed by subsequent geological studies to be conducted more in Sarawak as Sarawak is too broad with many areas still needed to be explored and documented in detail. I am also very touched by the desire of few individuals from other countries to attend the conference. I think we should also officially invite some international participation in the years to come especially from neighbouring countries that we have some form of collaboration.

The theme of this NGC2012 is *Geoscience in Everyday Life*. This theme was chosen to instil awareness of the importance of geosciences that inhabit our daily lives. Almost everything that we touch has to do with geology. In Sarawak alone, geoscience services have directly improve the living standard of rural population through a system of water supplies, either using underground water resources through Sistem Penapisan Air Tanah Ringkas (SPATR) and simple gravity feed. The discovery of coal resources has also helped spur the development of government program in the SCORE area.

The programme we arranged for NGC2012 consist of four keynote papers, 50 oral presentations and 41 posters covering various fields. I am very confident participants will gain much benefit by mutual sharing of experience and knowledge through presentations and discussions.

On behalf of the NGC2012 Organising Committee, I welcome your arrival and your presence in this conference. I also want to express my appreciation for all authors for their contributions, the continued support by various parties, especially JMG, Akademi Sains Negara and Institutions of higher learning. I also am very grateful to our generous sponsors who help in various forms.

NATIONAL GEOSCIENCE CONFERENCE 2012 Organising Committee

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PROGRAMME

DAY 1 – SATURDAY 23 JUNE 2012

08:00 – 09:00	REGISTRATION	
09:00 – 10:00	OPENING CEREMONY Welcoming Speech by Y.Bhg. Dato' Yunus bin Abdul Razak, Ketua Pengarah Jabatan Mineral Dan Geosains Malaysia Welcoming Speech by Prof. Dr. Joy Jacqueline Pereira, President Geological Society of Malaysia Opening Speech by YB Datuk Amar Haji Awang Tengah bin Ali Hassan Minister of Resource Planning and Environment (II), Minister of Public Utilities & Minister of Industrial Development	
10:00 – 11:00	POSTER SESSION 1 AND TEA BREAK	
11:00 – 11:30	KEYNOTE 1 AZIMUDDIN BAHARI Towards a national policy on geoscience	
	TECHNICAL SESSION A1	TECHNICAL SESSION B1
11:30 – 11:50	PAPER A1 AYE KO AUNG, NG THAM FATT & KYAW KYAW NYEIN The first record of the Late Permian waagenophyllid rugose corals from Pahang, Central Peninsular Malaysia	PAPER B1 A.H.A. TEH SAUFIA, ROSLI SAAD, M.M. NORDIANA, NUR AZWIN ISMAIL, NOER EL HIDAYAH ISMAIL, ANDY ANDERSON BERY, NISA' ALI The role of self potential prospecting in delineating underground streams for engineering problems
11:50 – 12:10	PAPER A2 Junaidi Asis & Basir Jasin Some Cretaceous radiolaria from Kuamut Melange, Kunak, Sabah	PAPER B2 AFIKAH RAHIM, HAREYANI ZABIDI & ABDUL GHANI MOHD RAFEK Mechanised construction of tunnel boring machine (TBM-1) in granitic body in Karak, Pahang
12:10 – 12:30	PAPER A3 BASIR JASIN, ATILIA BASHARDIN & ZAITON HARUN Middle Permian Radiolarians from the siliceous mudstone block near Pos Blau, Ulu Kelantan and their significance	PAPER B3 I.N. AZWIN, ROSLI SAAD & M.M. NORDIANA Classification of saturated zones from signal amplitude of ground penetrating radar
12:30 – 12:50	PAPER A4 YONG ADILAH MUSTAFA & AYE KO AUNG Discovery of the Permian Foraminifera: A significant evidence for the age of limestone pinnacles at Gua Seh area, Pahang, Central Peninsular Malaysia	PAPER B4 WAN NORMIMMAIDA W.MOHAMED, HAREYANI ZABIDI & ABDUL GHANI MOHD RAFEK Joint pattern study of meta-sedimentary rocks at Karak Site for the Interstate Raw Water Transfer Tunnel Project
12:50 – 14:00	LUNCH BREAK	
14:00 – 14:30	KEYNOTE 2 IBRAHIM KOMOO Geopark: Inovasi untuk pembangunan lestari wilayah	
	TECHNICAL SESSION A2	TECHNICAL SESSION B2
14:30 – 14:50	PAPER A5 CHE AZIZ ALI & TANOT UNJAH Intergrated research for conservation, land use planning and geotourism in Langkawi Geopark, Malaysia	PAPER B5 ISMAIL ABD RAHIM, SANUDIN HJ. TAHIR, BABA MUSTA AND SHARIFF A. K. OMANG Adjustment factor of Slope Mass Rating (SMR) system: Revisited

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

14:50 – 15:10	PAPER A6 JOANES MUDA Geological heritage resources and potential geotourism development at the tip of Borneo, Northern Sabah, Malaysia	PAPER B6 MUHAMMAD FADZLI DERAMAN, HAMLEE ISMAIL &TAJUL ANUAR JAMALUDDIN Geobencana kegagalan cerun di laluan jalanraya merentasi kawasan perbukitan Hulu Terengganu
15:10 – 15:30	PAPER A7 MOHD. FAUZI RAJIMIN @ JEMAN, KAMAL ROSLAN MOHAMAD & CHE AZIZ ALI Pemuliharaan warisan geologi kepulauan Mersing, Johor	PAPER B7 RODEANO ROSLEE, TAJUL ANUAR JAMALUDDIN & MUSTAPA ABD. TALIP Intergration of GIS in deterministic model (infinite slope) for landslide susceptibility analysis (LSA) at Kota Kinabalu area, Sabah, Malaysia
15:30 – 15:50	PAPER A8 DONY ADRIANSYAH NAZARUDDIN, HASIMAH HASSAN & AHMAD FADLI AHMAD SANUSI Mount Chamah: Explore the hidden geological treasure in remote Kelantan	PAPER B8 TAN BOON KONG Slope failures associated with water tank and reservoir sites – Some case studies in the Kuching Area, Sarawak
15:50 – 16:20	TEA BREAK	
16:20 – 16:40	PAPER A9 ARHAM MUCHTAR ACHMAD BAHAR Geomorphological mapping of Chamah, Kelantan using GIS technique	PAPER B9 AMIRRUDDIN ROSNI, M. AZIZUL, M. HASSAN, SELAMAT, M. ZULFIKRI & M. NASIR, RASININ KALING Influence of geological features in blasting and quarry face design: A case study of the IJM MRP granite quarry, Kulim, Kedah
16:40 – 17:10	PAPER A10 MUHAMMAD MUSTADZA MAZNI Sumber geowarisan dan geopelancongan di sekitar pembangunan wilayah ekonomi koridor utara Perlis	PAPER B10 S.V. ALAVI NEZHAD KHALIL ABAD, EDYTONNIZAM MOHAMAD, IBRAHIM KOMOO, R. KALATEHJARI & M. HAJIHASSANI A review on the limitations and applications of geological strength index
17:10 – 17:30	PAPER A11 RAMLI MOHD OSMAN Guide to greening of quarries in Malaysia	PAPER B11 TAJUL ANUAR JAMALUDDIN Survei ketakselajaran dan permodelan struktur geologi cerun potongan batuan
19:00 – 22:00	CONFERENCE DINNER	
DAY 2 – SUNDAY 24 JUNE 2012		
08:30 – 09:00	KEYNOTE 3 CHEN S. P. & ALEXANDER UNYA AMBUN A half century of geological surveying in Sarawak	
9:00 – 10:00	POSTER SESSION 2 AND TEA BREAK	
	TECHNICAL SESSION A3	TECHNICAL SESSION B3
10:00 – 10:20	PAPER A12 AZMAN A GHANI, MOHD ROZI UMOR & KHIN ZAW High Ba alkalic series rocks from the Benom Complex, Peninsular Malaysia: evidence of mantle infiltration to lower crust	PAPER B12 IFTIKHAR AHMED SATTI, MONA LISA & MUHAMMAD SAJID Integration of seismic and seismological data interpretation for better subsurface structure identification
10:20 – 10:40	PAPER A13 KYAW KYAW NYEIN, AZMAN A. GHANI, WAN FUAD WAN HASSAN & AYE KO AUNG Preliminary study of petrology and geochemistry of the Langkawi granites	PAPER B13 M. M. NORDIANA, ROSLI SAADB, I. N. AZWINC, EDY TONIZAM MOHAMAD Iron ore detection using electrical methods with enhancing horizontal resolution (EHR) technique

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

10:40 – 11:10	PAPER A14 KHAIRIL IZAM SELAMAT DIN & MOHD ROZI UMOR Kajian petrografi dan geokimia untuk menentukan asalan Pluton Palong, Jempol, Negeri Sembilan	PAPER B14 MUHAMMAD AHMED RAZA, WAN ISMAIL BIN WAN YUSOFF & MUHAMMAD IRFAN SULEMAN Fluvial channels delineation and geomorphologic characterization using well and seismic data
11:10 – 11:30	PAPER A15 NUR ISKANDAR TAIB Plio-pleistocene volcanism in the Upper Rajang Valley – a window into the crust under the Rajang Group	PAPER B15 MOHD HARIRI ARIFIN Kajian kesesuaian pembangunan di tanah bekas lombong sekitar Kampar, Perak menggunakan kaedah keberintangan geoelektrik
11:30 – 11:50	PAPER A16 YUNIARTI ULFA, TAN HONG KIEW & HAM WEN YI The transformation of amphibolite facies gneiss to greenschist facies: an Interesting phenomenon in East-West Highway Route A173, Baling-Gerik, Malaysia	PAPER B16 SAHIBIN ABD RAHIM, WAN MOHD RAZI IDRIS, ZULFAHMI ALI RAHMAN, TUKIMAT LIHAN & NURUL NAQIRAH ABDUL SHUKOR Physico-chemical properties of ultrabasic soil from Petaseh, Negeri Sembilan
11:50 – 12:10	PAPER A17 ZAKARIA ENDUT, TEH GUAN HOE, NG THAM FATT & SHARAFUDDIN MOHAMED Some aspect of vein texture, microstructure and implication to gold mineralization episode in Penjom Gold Mine	PAPER B17 RAMLI MOHD OSMAN & MOHD ANUAR ISHAK Geospatial analysis of ex-mining land of Perak
12:10 – 12:30	PAPER A18 MAHAT BIN HJ SIBUN, HABIBAH JAMIL, MOHD ROZI UMUR & WAN FUAD WAN HASSAN The source of gold and tin mineralization in the Western Belt of Peninsular Malaysia: Evidence from heavy mineral studies	PAPER B18 MOHAMAD ABD MANAP, MOHAMMED HATTA KARIM, NORAINI SURIP, HISAM AHMAD, NORHAZIDI MASROM & NURUL NADIA ABD MALEK Lithology and lineament density for delineation of groundwater potential areas at the Muar Basin
12:30 – 12:50	PAPER A19 MOHD SUHAILI ISMAIL The interdependence relationship of the minerals sector within the Malaysian economy	PAPER B19 EDY TONNIZAM MOHAMMAD, FARAH SHAFIQAH MOHD MAZNY & ROSLI SAAD Excavation of hard material for construction work in Labis, Johor
12:50 – 14:00	LUNCH BREAK	
14:00 – 14:30	KEYNOTE 4 WAN ZAWAMIE WAN AKIL Coal mining in Sarawak-Issues and challenges	
	TECHNICAL SESSION A4	TECHNICAL SESSION B4
14:30 – 14:50	PAPER A20 RICHARD MANI BANDA, AMIRUDDIN, WAHYU GUNAWAN, ALEXANDER YAN, YUSOP RAMLI, DANA BADANG, THOMPSON GALIN & REDZUAN BANJAR Progress report – Malaysian-Indonesian geological correlation program in the border area Sintang-Silantek area	PAPER B20 EDY TONNIZAM MOHAMAD & NORAZUIN ABU Assessment of potential alkali silica reaction on aggregates with 'fool's gold' from Kampung Melayu Majidee, Johor Bahru
14:50 – 15:10	PAPER A21 WONG YIEN LIM & LEE CHAI PENG Stratigraphy of the Ransi Member, Tatau Formation (Middle Eocene-Oligocene) in the Tatau-Bintulu area, Sarawak	PAPER B21 NORAZNIDA KAMARUSZAMAN, W.ZUHAIRI W.YAACOB & ABDUL RAHIM SAMSUDIN Sintesis dan pencirian nano zero valent iron (NZVI) untuk rawatan air tercemar
15:10 – 15:30	PAPER A22 MUSTAFFA KAMAL SHUIB The occurrences of probable Tertiary boulder beds along Chenur-Paloh Hinai Road, near Maran, Pahang and their implications	PAPER B22 M. A. ASHRAF, M. J. MAAH & I. YUSOFF Chemical speciation and potential mobility of heavy metals in the soil of former tin mining catchment

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

15:30 – 15:50	PAPER A23 IBRAHIM BIN AMNAN & ASSANEE MEESOOK The Singa and Kubang Pasu Formation: A review	PAPER B23 NUR ATIQA ANUAR & W. ZUHAIRI W. YAACOB Keupayaan beberapa jenis tanah dalam menjerap logam berat
15:50 – 16:10	PAPER A24 KHOR SIMON, MEOR HAKIF BIN AMIR HASSAN & MUHAMAD PEDRO J. BARBEITO Sedimentology and stratigraphy of Kampung Opak Limestone, Bekenu, Sarawak	PAPER B24 PRIVEETHA MANOGARAN, DAHLILA KAMAT & RAJA RAJESWARY SUPPIAH Study on characteristics of Malaysian sand as proppant
16:10 – 16:30	PAPER A25 MOHD DANIAL HARIZ MOHD AZIR, CHE AZIZ ALI & KAMAL ROSLAN MOHAMED Pendolomitan dan simen silika dalam batu kapur Formasi Setul di Tanjung Rhu, Langkawi, Kedah	PAPER B25 ABDUL RAHMAN ZAKARIA & ASKURY ABD KADIR Fractured metasediment outcrops at Pulau Redang, offshore Terengganu: An Analogue for natural fractured reservoir (NFR) basement in Malay Basin
16:30 – 17:00	CLOSING CEREMONY	
17:00 – 17:30	TEA BREAK	

POSTER SESSION 1: 10:00 – 11:00, Saturday 23 June 2012

- P1-1 LING HWEI CHIH, NG THAM FATT, AHMAD FARID BIN ABU BAKAR & JOY J. PEREIRA
Microstructure of deformed quartz in the mylonite of the Selinsing Gold Mine: Implications for the mechanism and condition of deformation
- P1-2 AYE KO AUNG, MEOR HAKIF BIN AMIR HASSAN, KYAW KYAW NYEIN, KYAW ZAY MYINT, AUNG AYE LIN, KYAW ZAY YA, MYO THU SOE, THAN HTOO AUNG & AUNG MIN Oo
Stratigraphic correlation of the Carboniferous-Permian sequence of Malaysia and Myanmar
- P1-3 MOHAMMED HAIL HAKIMI, WAN HASIAH ABDULLAH & MOHAMED RAGAB SHALABY
Palynofacies characterization of the Upper Jurassic Madbi Formation in the Kharir oilfield and their relation to oil generation potential
- P1-4 JOANES MUDA
Geoart: An innovative tool to promote geology and geotourism
- P1-5 JULAIHA AZMI & AYE KO AUNG
Some new findings of the coral and fusulinid faunas from the Jengka Pass Limestone, Pahang, Central Peninsular Malaysia
- P1-6 MOHAMAD TARMIZI MOHAMAD ZULKIFLEY, S. PARAMANANTHAN, NG THAM FATT, ROSLAN HASYIM & JOHN KUNA RAJ
Classification of tropical lowland peats
- P1-7 NOORHASHIMA ADENAN, CHE AZIZ ALI & KAMAL ROSLAN MOHAMED
Sedimentologi lapisan perantaraan Formasi Kubang Pasu dan Formasi Chuping, Beseri Perlis
- P1-8 NIZARULIKRAM B. ABDUL RAHIM, NOORAZHAR B. NGATIMIN & ABDULLAH SANI B. H.HASHIM
Fosil Kayu Terpetri Di Dalam Alluvium Kuaternari Di Ulu Tiram, Johor
- P1-9 ZARIFAH ZAMAN & AYE KO AUNG
Depositional Environment of the Sediments of the Calcareous Unit of the Gua Musang Formation from the Padang Tengku Area, Pahang – Analogs to the Western Great Bahama Bank
- P1-10 WONG YIEN LIM, LEE CHAI PENG & NURAITENG TEE ABDULLAH
Sediment and fauna of the Arip Limestone of the Tatau Formation, Sarawak, Malaysia
- P1-11 AHMAD. A.R. & ROSLI SAAD
The effectiveness of seismic refraction tomography for groundwater study
- P1-12 HAZWANI ANUAR & HAREYANI ZABIDI
Influence of rock properties on NATM drilling rate in Interstate Raw Water Transfer Tunnel
- P1-13 NISA' ALI, ROSLI SAAD, M. M. NORDIANA, NUR AZWIN ISMAIL, NOER EL HIDAYAH ISMAIL, A. B. ANDY & A. H. A. TEH SAUFIA
Imaging subsurface geological contact zone using 2D resistivity method at Batang Merbau, Tanah Merah, Kelantan
- P1-14 ROSLI SAAD, I.N. AZWIN & AHMAD. A.R
The use of P wave in pile length measurement for engineering application
- P1-15 SITI NORLIYANA HARUN, ZULFAHMI ALI RAHMAN, SAHIBIN ABDUL RAHIM, TUKIMAT LIHAN & WAN MOHD RAZI IDRIS
Kesan simen portland terhadap sifat geoteknik tanah gambut

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)

- P1-16 ANDY A. BERY, ROSLI SAAD, MOHD MOKHTAR SAIDIN, NORDIANA MOHD MUZTAZA, NOER EL HIDAYAH ISMAIL & NUR AZWIN ISMAIL
Application of electrical resistivity and magnetic surveys in archaeology at Sungai Batu, Kedah, Malaysia
- P1-17 DEWANDRA BAGUS EKA PUTRA
Kajian survei geofizik dengan menggunakan kaedah graviti di kawasan Bukit Bunuh, Lenggong, Perak
- P1-18 M.M. NORDIANA, ROSLI SAAD, M.N.M. NAWAWI & I.N. AZWIN
Horizontal resolution of 2D pole-dipole resistivity imaging as assessed by EHR technique
- P1-19 MUSTAFFA KAMAL SHUIB, AHMAD NIZAM HASAN, MOHD ROZI UMOR, ABDUL GHANI RAFEK, AHMAD ZULHILMI AHMAD YUSRI & MOHD HARIRI ARIFIN
The influence of natural slope geomorphology on active cut slope failures near Gunung Pass, Simpang Pulai-Lojing Highway
- P1-20 MAHMOUD KHAKI, MOHAMMED ABU SHARIAH & ISMAIL YUSOFF
Comparison between Gauss Newton and Quasi Newton methods for an experimental 2D electrical resistivity tomography for dyke model
- P1-21 AZMAN A. GHANI, MOHD FARID ABU BAKAR, WAN NUR ATIQA HAN ISMAIL, FATIN IZZANI HAZAD, MUHAMMAD HATTA ROSELEE & KYAW KYAW NYEIN
Ultrafelsic granitic rocks from Besar, Tengah and Hujung Islands, Johor: Implication to the high felsic granite from Peninsular Malaysia
- P1-22 AZRIN AZMI, AHMAD HUZAIFAH & ZAITON HARUN
Struktur Formasi Kubang Pasu di Guar Sanai dan Bukit Chondong, Perlis
- P1-23 DAYANG NOR ASYILLA BINTI ABANG ABDULLAH & SANUDIN TAHIR
Lithostratigraphy of the Belait Formation in Klias Peninsula, Sabah

POSTER SESSION 2: 9:00 – 10:00, Saturday 24 June 2012

- P2-1 FATEN TAHEERA & BASIR JASIN
Lower Carboniferous Liobole (trilobite) from the Kubang Pasu Formation Northwest Peninsular Malaysia
- P2-2 MOHAMAD TARMIZI MOHAMAD ZULKIFLEY, WAN HASIAH ABDULLAH, NG THAM FATT, S. PARAMANANTHAN, ROSLAN HASYIM & JOHN KUNA RAJ
Evaluation of hydrocarbon source potential of tropical lowland peats and organic soils based on the source rock analyzer (SRA) technique
- P2-3 MOHAMAD HANIF KAMAL ROSLAN, NOR YUSNIZA MD YUNUS, MUHAMAD FAIQ YAHAYA & ZAITON HARUN
Struktur dalam Formasi Kubang Pasu di Bukit Meng, Pokok Sena Kedah
- P2-4 NORSAFAWATI BT. SAAID, NG THAM FATT & AZMAN A. GHANI
Deformation microstructures of mylonites along the Bukit Tinggi Fault Zone, Peninsular Malaysia
- P2-5 NUR SUSILA MD. SAAID & BASIR JASIN
Facies study of the Kubang Pasu Formation, Northwest of Peninsular Malaysia
- P2-6 REZAL RAHMAT & SHARIFF A.K. OMANG
Petrologi batuan basalt Sungai Baliojong, Kota Marudu, Sabah
- P2-7 A. A. GHANI, NUR CHITRA DEWI MOHAMAD NOOR, N A MAJID & M H A HASSAN
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- P2-8 NOOR HAZWANI BINTI ABDUL RAHIM & MOHD SHAFEEA LEMAN
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ASM Sponsored Papers

The following papers submitted by students are sponsored by the Academy of Sciences Malaysia (ASM). The papers were selected by a committee comprising representatives from the Geological Society of Malaysia and the Academy of Sciences Malaysia.



UNIVERSITI KEBANGSAAN MALAYSIA

Mohd. Fauzi Rajimin @ Jeman, Kamal Roslan Mohamad & Che Aziz Ali: Pemuliharaan warisan geologi kepulauan Mersing, Johor
Zulherry Isnain & Juhari Mat Akhir: Integrasi penderiaan jauh dan sistem maklumat geografi (GIS) Dalam pemetaan kawasan berpotensi air tanah sekitar Kota Kinabalu, Sabah

UNIVERSITY OF MALAYA

Khor Simon, Meor Hakif bin Amir Hassan & Muhamad Pedro J. Barbeito: Sedimentology and stratigraphy of Kampung Opak Limestone, Bekenu, Sarawak

Norsafawati bt. Saaid, Ng Tham Fatt & Azman A. Ghani: Deformation microstructures of mylonites along the Bukit Tinggi Fault Zone, Peninsular Malaysia

UNIVERSITI MALAYSIA KELANTAN

Muhammad Haziq bin Hazizan & Arham Muchtar Achmad Bahar: Utilizing geo-information technologies in managing volcanic hazard and disaster

Nor Arina Muhammad Aris: Identification and assessment of geotourism potentials in Jeli District, Kelantan

UNIVERSITI MALAYSIA SABAH

Mohamed Ali Yusof bin Mohd Husin: Toxicity level of selected heavy metals in volcanis soils from Tawau, Sabah

Nur Fatinidiana Ramlee: Mineralogical and microstructural study of lime stabilized clayey soil from Trusmadi Formation

UNIVERSITI SAINS MALAYSIA

A.H.A. Teh Saufia, Rosli Saad, M.M. Nordiana, Nur Azwin Ismail, Noer El Hidayah Ismail, Andy Anderson Bery, Nisa' Ali: The role of self potential prospecting in delineating underground streams for engineering problems

Nisa' Ali, Rosli Saad, M. M. Nordiana, Nur Azwin Ismail, Noer El Hidayah Ismail, A. B. Andy & A. H. A. Teh Saufia: Imaging subsurface geological contact zone using 2D resistivity method at Batang Merbau, Tanah Merah, Kelantan

CURTIN UNIVERSITY SARAWAK CAMPUS

Yeo Chieh Tsing, Jacky Chen Zoon Jie, Glaiza Marie Gagno, Tai Chew Yee & Kong Pei Lu: Logging of a sedimentary sequence in the Sungai Rait Valley of Miri

Khalid, Khairul Asyraf, Azeeza B., Fatin Hamimi A., Mohd Syafiq S., Muhammad Hafiz Z. & Mpilo, S.: Mapping of the Lubang Lelong Cave System (Niah National Park)

PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)



PERTEMUAN PERSATUAN (MEETINGS OF THE SOCIETY)



PGCE 2013 SOFT LAUNCH



Kuala Lumpur, Malaysia (20 July 2012) – The prestigious Malaysian Petroleum Club was the rendezvous where close to 100 distinguished guests from more than 40 different companies of the oil & gas fraternity had gathered to grace the grand soft launch of the 2013 Petroleum Geoscience Conference & Exhibition (PGCE). The launch served to announce that the Kuala Lumpur Convention Centre will again be a proud host of the 36th edition of PGCE, themed ‘Innovative Geoscience: Securing Energy Needs’ to be held from 18-19 March 2013. PGCE is a collaborative effort among Malaysia’s national petroleum company, PETRONAS, Geological Society of Malaysia (GSM) and managed by professional society, European Association of Geoscientists & Engineers (EAGE) and the efforts will continue in the drive to make PGCE a regional podium where all geoscientists from SE Asia will meet and exchange their knowledge. Approximately 2,000 participants comprising geoscientists from oil and gas companies, institutions and undergraduates from around the globe are expected to attend this premier geoscience event following the resounding success of 2012. The 2013 PGCE will provide unprecedented opportunities for geoscientists from oil and gas companies to meet and address technical issues that challenge the industry, exchange knowledge and to learn more about research and technological developments and advancements.

The official opening of the soft launch was inaugurated by speech from the Patron of PGCE, Mr Effendy Cheng Abdullah, Vice President and CEO PETRONAS Exploration. Mr Effendy highlighted the long history of PGCE and that although the event has grown considerably, PGCE intends to stay; an event for the geoscientists and their companies exchanging their technical work. He added that the organisers have had more than 30 years’ experience in organising the event that had hosted both domestic and international speakers and participants. Speaking about the theme of



next year, Mr Effendy elaborated that today's challenges in exploration and production require a more creative approach as compared to conventional methods in geoscience assessment. It is essential to think out-of-the-box, keep an open mind and find innovative solutions. He also emphasized that "Geoscience is the heartbeat of the oil & gas industry and without geoscience, there will be no oil & gas industry. But with that of course comes a high responsibility for geoscience to secure the increasing demands of energy today and doing this in a responsible and safe way starts again with geoscience".

Looking back at the success of PGCE 2012, Mr Effendy shared on a clear increase in the quality of the technical conference and that the new initiative of the Gala Dinner was very well received. He highlighted that new to PGCE 2013 will be an effort by the Technical Programme Committee to have a dedicated session on exploration in SE Asia and in addition present unconventional projects. The overall event next year will include oral and poster presentations, exhibition, networking lunches, student programme, field trips, golf tournament and an 'all-new' Gala Night. In addition to this, the event will also be introducing a new 'Executive Programme' where VIPs and Distinguished Guests will be given the opportunity to meet with other industry leaders along with the PETRONAS senior management.

Mr Effendy thanked and congratulated all the attendees for their continuous support towards the event which makes it a success at every turn. He stressed that the participation from all the oil and gas companies will not only elevate the status of the event but would also further demonstrate the company's commitment to support the progression of geosciences fraternity in this region. To support the geoscience community and ensure the continuous success of PGCE 2013, the Organising Committee is currently seeking endorsement of industry-related organizations and soliciting sponsors for monetary contributions. Several sponsorship categories have been made available for companies to offer their support.

Concluding his remark, Mr Effendy was especially pleased to present a cheque from part of the event proceedings to support Yayasan Universiti Teknologi PETRONAS in enhancing its emerging earth science programmes, which will directly benefit the future generation of geoscientists in Malaysia. Mr Effendy was followed by the chairman of the organizing committee, Mr Redhani A Rahman, GM Basin Studies, PETRONAS Exploration at PETRONAS Carigali Sdn. Bhd. He thanked all the attendees and urged them to not to miss the 2013 PGCE. The official speeches were then followed by a montage presentation of PGCE 2013 and a short Q&A session. The response of the launch was overwhelming and first contracts were signed marking a promising start for a very successful event next year. The video presentation and all other details on the event can be found on the official website, www.pgcem.com.



MALAM SEKITARAN 2012

Malam Sekitaran 2012 was held on 18th July 2012 at the Department of Geology, University of Malaya. The two speakers were: Sdr. Wan Zuhairi Wan Yaacob (UKM), and Sdr. Ng Swee Siang on behalf of Sdr. Ng Hon Seng (AECOM).

The abstracts for the two presentations are attached below. Coincidentally, both speakers spoke on LNAPL and DNAPL as potential contaminants in their presentations. The presentations were followed by lively discussions, as usual.

Tan Boon Kong,
Chairman, W/G on Engineering Geology, Hydrogeology & Environmental Geology

Geotechnical Centrifuge and its Application for Geo-Environmental Research

Wan Zuhairi Wan Yaacob
Universiti Kebangsaan Malaysia

A mini 0.5 m diameter beam centrifuge has been fabricated at the Universiti Kebangsaan Malaysia in Bangi Selangor. The centrifuge was designed to allow centrifuge testing of soil package for up to 5kg weight with maximum rotational speed of 500 RPM and can accelerate for up to 140 in units of times gravity (xg). The dimension of soil package is 10cm (width) x 28cm (length) x 19.5cm (height). This centrifuge is equipped with digital video camera and high speed stroboscope. The recorded moving images can be stored directly into the computer. Real time video images can also be observed on the LCD monitor installed in the operation room. The centrifuge is controlled via a control box with various buttons and digital displays such as on/off button, RPM controller with digital display. As a safety precaution, the body of the centrifuge is made of double layer 5mm steel with 5cm absorbing membrane as sound barrier. It has a vibration auto switch-off that will automatically stop if the vibration is exceeded the permissible vibration limit. A research on the migration of DNAPL/LNAPL through porous geologic medium was conducted using this newly fabricated mini geotechnical centrifuge. The experiments were carried out at different g-forces; 25-g and 50-g force. The results showed that the contaminant (NAPL) movement in unsaturated soil was retarded upon reaching soils with smaller pore size and migrated laterally. In a case for LNAPL (toluene), the movement of LNAPL was observed to be lateral upon reaching capillary fringe and tended to float on the top of water table. DNAPL (TCE) was observed to migrate vertically through the water table down to the bottom of the model. The NAPL movement at 50g was dominated by vertical movement compare at 25g. The results showed that this centrifuge can be successfully used to model the migration of NAPL in porous medium.

Application of Geology: From an Environmental Industry Perspective

Ng Hon Seng
AECOM

Introduction

In 1940s and 50s, Love Canal in Niagara Falls was used by a chemical and plastics company to dump nearly 20,000 tons of toxic waste. The canal was then filled in and the land given to the expanding city of Niagara Falls by chemical company to build housing and elementary school. By late 1970s, several hazardous chemicals had leaked and risen to the surface. Investigations confirmed that the existence of toxins in soil had led to responsible the unusually high rates of birth defects, miscarriages, cancer, illness and chromosome damage. Families were evacuated from the area in 1978, and in 1980 the Love Canal area was declared a national emergency. The evacuated neighborhood was repopulated in the 1990s after the cleanup was completed. Incident of Love Canal, had led to the formulation of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA or Superfund) on December 11, 1980 by President Jimmy Carter. CERCLA or Superfund is a tax collected from the industries to fund cleaning up work for uncontrolled hazardous waste sites and spills. The process of clean up requires extensive investigation on the subsurface impacts; therefore traditional geological investigation was applied.

Environmental Geological Investigation

Environmental geological investigation which is also known as “Environmental Site Assessment” (ESA) can be divided into three stages: Phase I, Phase II and Phase III. Phase I ESA, developed by United States Environmental Protection Agency (US EPA) based on American Society for Testing and Materials (ASTM) in Standard E1527-05, is a process of environmental due diligence or non-intrusive investigation to identify area of potential concern (APC). Phase II ESA, based on ASTM in Standard E1903-11, is a process to evaluate environmental condition identified in the Phase I ESA or intrusive investigation through soil and groundwater sampling at the identified area of APC. Phase III Remediation is a process to clean up the area of concern identified in Phase II ESA.

In Phase II ESA process, the step to avoid or limit cross contamination during standard drilling procedure is to employ dry drilling method. Dry drilling method can prevent soil samples from mixing with impurities introduced through drilling fluids. In order to recognize the samples effected from cross contamination, strict QA/QC procedures are observed by collecting duplicates and blank samples. The higher level of percentage difference in duplicate sample indicates the higher chance of cross contamination occurred.

Physico-chemical properties and chemical behavior of the APC such as sinker versus floater, affinity (absorption) to soil organic, volatility and solubility, toxicity (carcinogenic and non carcinogenic), biodegradable versus recalcitrant, movement in groundwater are vital and will affect well designs and site investigation methods.

What geology means to environmental investigations work?

Geology is the study of the earth and it provides the primary evidence for plate tectonics, the history of life, and past climates. Apart from that, geology can be essential tool in environmental investigation work. Geological understanding helps in environmental investigation work. Basic skill of identifying soil type and geological setting provide critical information which could lead to the discovery of a subsurface environmental impact. Geological parameters typically assessed during an environmental site assessment include porosity, driving head (flowing from high level to low level), groundwater table, hydraulic conductivity (speed of groundwater movement) etc.

Contaminated Land Management

In Malaysia, the Department of Environment (DOE) issued a standard control guideline for contaminated land management (CLM) in July 2009. CLM guidelines include three guideline series that covers all the required investigations methodologies - CLM No 1: Malaysian Recommended Site Screening Level for Contaminated Land, CLM 2: Assessing and reporting Contaminated Sites and CLM 3: Remediation of Contaminated Sites.

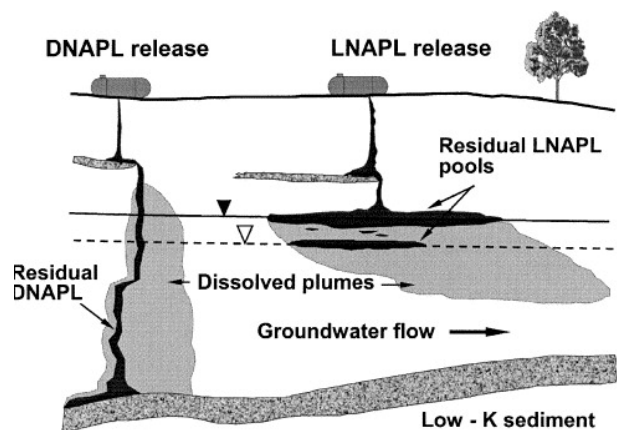


Figure 1: Conceptual Model for development of residual LNAPL and DNAPL sources within saturated zone.

MALAM SEKITARAN II 2012

Malam Sekitaran II 2012 was held on Wed 5th Sept 2012 at the Department of Geology, University of Malaya, Kuala Lumpur. The two speakers were: Dr. Wan Zuhairi Wan Yaacob (UKM), and Dr. Kamarudin Samuding (MNA).

Sdr Wan Zuhairi discussed the determination and use of the partition coefficient parameter of heavy metals for groundwater contaminant transport modeling. Soils investigated involved residual soils of rhyolite, andesite and basalt. Sdr Kamarudin presented a local case study involving the use of various integrated methods to determine the pollution plume migration at a waste disposal/landfill site.

Further details of the two presentations are contained in the abstracts below. As usual, lively discussions followed the two presentations.

Tan Boon Kong,

Chairman, W/G on Engineering Geology, Hydrogeology & Environmental Geology

Partition Coefficient (K_d) of Heavy Metals for Contaminant Transport Modeling

Wan Zuhairi W.Y. & Chong Y. L.
Universiti Kebangsaan Malaysia

In groundwater contaminant transport modeling, with the help of groundwater modeling, scientist can predict the time and the distance of the movement of the contaminants. Groundwater modeling is not an easy task. The most difficult part would be to determine the parameters that must be put into the model. Groundwater model precision and results is depending upon the input data that we put in. One of the important input parameters for groundwater modeling is partition coefficient (K_d). This presentation explains the determination of K_d parameters using batch adsorption test and high speed centrifuge column tests. Three common residual soils in Malaysia, namely residual rhyolite, andesitic and basaltic soils were chosen for this study. Physical and chemical properties of the soils were firstly determined, comprising of grain size distribution, Atterberg limits, compaction, permeability, soil pH, organic content, cation exchange capacity (CEC) and specific surface area (SSA). Both tests (batch and centrifuge tests) revealed that andesite residual soil adsorbed highest heavy metals compared to rhyolite and basalt with the ranking for sorption as; residual andesitic soil > residual basaltic soil > residual rhyolitic soil. The equilibrium adsorption data from batch test were fitted to linear, Langmuir and Freundlich isotherm models to calculate the partition coefficient parameter. The K_d for centrifuge test (from breakthrough curves) was determined using an equation from Pavék et al (1992). The K_d for residual andesite soil is bigger than other soils (i.e. effective adsorbent for heavy metals). All three types of soils were found to adsorb high amount of Pb compared to other heavy metals with the sorption selectivity of Pb > Cu > Zn > Co > Cd > Ni. Partition coefficient (K_d) for batch is found to be 4.50 times higher than the centrifuge test; K_d (batch) = 4.50 x K_d (centrifuge test).

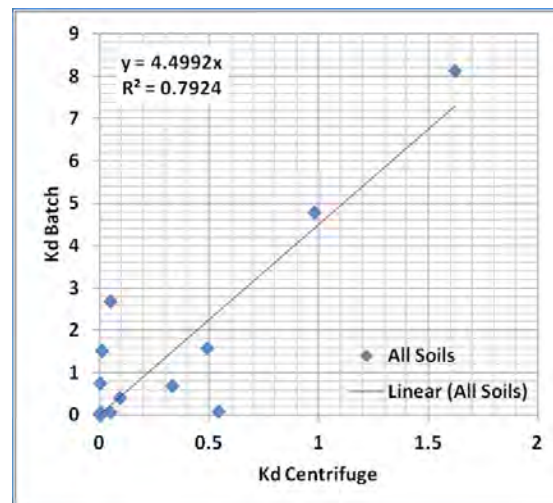


Figure 1: The relationship between K_d batch and K_d centrifuge.

Integrated Study on the Distribution of Groundwater Contamination Flow Path at a Waste Disposal Site in Malaysia

Kamarudin Samuding¹, Mohd Tadza Abdul Rahman¹, Ismail Abustan² & Lakam Mejus¹

¹Malaysian Nuclear Agency (Nuclear Malaysia)

²Universiti Sains Malaysia

Most of the waste disposal site in Malaysia can be categorized as open dump sites which are usually without proper liner, treatment facilities and final capping. Most of these landfills are poorly managed and as a consequence leachate will easily migrated to the surrounding area through soils, subsurface geological strata and finally contaminate the groundwater system. This study had demonstrated the use of integrated techniques in determining the distribution of groundwater contamination flow path to the surrounding area in a selected waste disposal site in Malaysia. This study deals with field survey, sampling and laboratory test. Field survey involves geophysical investigation and groundwater flow study. In this study, electrical resistivity imaging (ERI) and colloidal boroscope system (CBS) were carried out to detect the groundwater contamination flow path at a waste disposal site. In addition, groundwater was sampled at every existing borehole as well as surface water within the study area in order to understand the scenario of the leachate plume distribution. The samples were analyse for their heavy metals content and stable isotope concentration.

Groundwater contamination at the Taiping waste disposal can be visually detected through ERI technique. In general, the contours of resistivity results show the existence of inhomogeneous strata in the area. It is quite clear that low resistivity anomalies exist at certain location in this study area is due to leachate plume movement. The result of the study confirms that the occurrence of groundwater contamination can be detected up to 25 m in-depth. The ERI technique had successfully delineated pollution layers. Thus, this method is an effective tool in detecting contaminated groundwater zones or layers in the study area. With support from the colloidal borescope data, the movement direction of leachate plume can be determined. Generally, the flow pattern of the pollutant species dominantly towards to the southeast of the study area that is follow the flow direction of groundwater. Based on the geochemical analysis, higher anomaly pollutant species were detected at the boreholes which is located at the southeast of the study area, indicates that the contaminant dominantly migrated through this borehole. However, the migration of leachate plume in the study area is still localized and not disperses in a wide area. This correlates well with low resistivity zone (<10 ohm-m) from the ERI images. The interconnection between groundwater and surface water can be observed in the study area based on stable isotope data. The tritium content in groundwater samples indicated that most probably water of modern groundwater. This integrated study was conducted in order to get more reliable and conclusive results. These findings will help Local Authorities to take some immediate action to improve the existing waste disposal site for instances improving the leachate treatment facility and upgrading the infrastructure inside the waste disposal site.



CERAMAH TEKNIK TECHNICAL TALK

Inertia and Entrainment: Two Factors that Differentiate Subaqueous from Subaerial Sediment Transport Regimes on Complex Margins

Stefan M. Luthi¹, Remco M. Groenenberg¹, Xiaoxi Wang¹ & David M. Hodgson²

¹*Department of Geoscience and Engineering, Delft University of Technology,
Stevinweg 1, 2628 CN Delft, The Netherlands*

²*School of Earth and Environment, University of Leeds, Leeds, United Kingdom*

Dr. Stefan M. Luthi, the professor in production geology and head of the section Applied Geology at the Delft University of Technology gave a technical talk to the students of University of Malaya and members of the Geological Society of Malaysia on Thursday, 20 September 2012. The talk was attended by about 50 faculty, students and industry professionals. A native of Switzerland, Dr. Luthi received his M.Sc. in 1974 and Ph.D. in 1978 at the ETH Zurich. His specializations are reservoir characterization using new geophysical technologies, sedimentology, petrophysics, and reservoir management. He wrote over 50 papers in scientific journals and one textbook. He currently supervises several postgraduate projects and is involved in numerous research projects nationally and internationally. He is a member of many international societies such as the AAPG, EGU, SPWLA and EAGE.

Abstract: Complicated physiography on basin margins, where diapirism and/or faulting disturb an equilibrium profile, create a topographic template with abrupt changes in gradients and local depressions such as minibasins. In subaerial settings, sediment transport by rivers is strongly influenced by the geomorphology, with their courses usually following the maximum gradient. This behavior cannot be readily extrapolated to subaqueous settings, because the physics of subaqueous sediment-laden flows differ significantly from their subaerial counterparts. A comparison between subaerial and subaqueous flows on complex basin margins relies on general physical considerations, laboratory experiments and numerical flow simulation. Subaqueous flows on sufficiently steep margins differ from subaerial flows in that they 1) grow and dilute by entrainment of ambient fluid, and 2) have a much lower density contrast to the ambient fluid. Consequently, subaqueous flows are “lighter” than subaerial flows, but possess a significant momentum due to the generally large volume of the sediment-fluid mixture involved. The inertia and “lightness” cause them to respond sluggishly to topographic changes, with parts of flows able to cross obstacles, a behaviour that rivers do not exhibit. Entrainment causes the flows to increase in height with distance, resulting in lateral spillover and flow stripping in confined areas. These effects are demonstrated with numerical flow simulations on relay ramps and minibasins.



MALAM EG PRACTICE (erratum)

Geologist's Input in Hillside Development in Malaysia

Philip Tiong Chiong Ngu (G&P)

Engineering Geology Practice in Hong Kong

Jack Pan Kok Loong (G&P)

"MALAM EG PRACTICE" was held on Wed 30th May 2012, at the Department of Geology, University of Malaya Kuala Lumpur. It featured 2 speakers from G & P, namely Sdr Philip Tiong Chiong Ngu and Ir Jack Pan Kok Loong.

Sdr Philip discussed the "Geologist's Input in Hillside Development in Malaysia", while Ir Jack spoke on the "Engineering Geology Practice in Hong Kong". The abstracts for the 2 presentations are attached below.

It is worthy of note that in the Hong Kong practice, the use of Aerial Photo Interpretation (A.P.I.) is a matter of routine, geological models are used, and that government engineering geologists and geotechnical engineers work closely together in the same Geotechnical Engineering Office (GEO). This is in contrast to the Malaysian scenario where A.P.I. is used only on an ad-hoc basis, geological models are rarely used, and the government geologists and engineers work in 2 separate government departments, namely in the Minerals & Geoscience Department (MGD/JMG), and the Public Works Department (PWD/JKR) respectively. Of late, however, a handful of geologists are seconded to the PWD, working in the Highway and Slope divisions.

Those interested in the Hong Kong practice can refer further to the GEO Publication No. 1/2007 entitled "Engineering Geological Practice in Hong Kong", available from GEO Hong Kong. It makes interesting reading, to say the least. As usual, the talks were followed by some interesting discussions from the floor.

Tan Boon Kong

Chairman, W/G on Engineering Geology, Hydrogeology & Environmental Geology

ENGINEERING GEOLOGIST'S INPUT IN HILLSIDE DEVELOPMENT IN MALAYSIA

PHILIP TIONG CHIONG NGU (G&P)

Abstract: Hillside developments are the trend for the development in Malaysia for two reasons. The first reason is because of insufficient flat lands for housing development in Malaysia as the population increases every year especially in major town like Kuala Lumpur and Penang. The other reason is the impressive views, good ventilation and better natural lightings which attracted people to own houses in hilly areas. The risk for hillside development in Malaysia is always related to erosion and landslide, which can endanger public safety and cause damage to properties. There are several slope failure cases in Malaysia which are related to landslide, debris flow or rock fall, such as the collapse of Block 1, Highland Towers Apartment (1993), landslide at Bukit Antarabangsa (1999), Taman Hillview Bungalow collapse (2002), rock slide at Bukit Lanjan (2003), and debris flow at Gua Tempurung, PLUS Highway (2004). The talk is aimed at the engineering geologist's role in hillside development, i.e. to provide adequate information to geotechnical engineers for slope design.

The speaker has been working as an engineering geologist for about 10 years. The speaker highlights the concerns and awareness on the hazards of hillside development which started after the collapse of Block 1 of Highland Towers on December 1993 that killed 48 people. Since then, government and private agencies have issued numerous regulations and guidelines related to hillside development. The agencies which have issued the guidelines include DOE, JMG, MPAJ, Ministry of Housing & Local Government, Urban & Rural Planning Department, IEM and IKRAM. The engineering geologist's input can be divided into three stages, which are the planning stage, mapping stage and construction stage. In the planning stage, the engineering geologist should do desk study using geological map, topography map and aerial photos. In the mapping stage, the engineering geologist would classify the proposed hillside area into Class I to Class IV following the JMG guidelines and indicate the geohazard areas. If rock slope is encountered during the field trip, the engineering geologist would also have to carry out geological rock mapping to study the stability of the rock slope. Construction stage involves detailed geological rock mapping for a rock slope and design of strengthening works for the rock slope. The speaker concludes the presentation by saying that hillside development can be safe provided there is a good engineering geological input, good geotechnical design for slope stability and foundation on top of hill slope, and that the design must finally be checked by an Accredited Checker.

ENGINEERING GEOLOGICAL PRACTICE IN HONG KONG

PAN KOK LOONG, JACK (G&P)

Abstract: The aim of the talk is to introduce the Engineering Geological Practice in Hong Kong and to highlight some key areas where Geotechnical Engineers and Engineering Geologists work together in Hong Kong practice. The speaker has spent over 10 years working as a Geotechnical Engineer in Hong Kong. The talk is based on the GEO Publication No. 1/2007 titled Engineering Geological Practice in Hong Kong and the speaker's own experience working together with Engineering Geologists on numerous engineering projects. The speaker first introduced the geology of Hong Kong. He then explained the main input that Engineering Geologists provide such as desk study, geological mapping, sub-surface exploration, geotechnical characterization and development of geological models. The importance of getting input from Engineering Geologists at an early stage to help in the understanding of the geological processes and landforms together with the inherent geotechnical risks. The roles of Engineering Geologists in defining the geological models and communicating the potential and actual variations in the ground conditions are also presented.

A few examples of projects to illustrate how the Engineering Geological Practice is carried out in Hong Kong are presented. This include the natural terrain hazard studies for a proposed gas terminal project, assessment of water damming effects of a deep excavation for a large MTR railway station and also the foundation solution for a cable car project located within a geological shear zone.

Note: The abstracts of the presentations of "Malam EG Practice" were inadvertently left out in the last issue of Warta Geologi.

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11. Mohd Fauzi Rajimin @ Jeman
12. Mohd Khuzairi Abidin
13. Mohd Shaffizzan Ikmal Mohamad Khalil
14. Mritunjay Kumar
15. Muhammad Ammar Aziz Mohd Nasir
16. Muhammad Khairul Anwar Ibrahim
17. Noorazhar bin Ngatimin
18. Nur Faarhana Salleh
19. Nurul Aysha Abdul Razak
20. Nurul Shamira Mohd Rosdey
21. Oskar Pakpahan
22. Pang Ching Mei
23. Paul Hoskin
24. Peter R Parham
25. Redzuan Abu Hassan
26. Shinazamreena Mhd Sabohi
27. Stephen Teong Hua King
28. Tony Swiecicki

Student Membership

1. Afikah binti Rahim
2. Agnes Chan
3. Ahmad Muzakkir @ Khairom Muzakkir Baharom
4. Ahmad Sayful Mohamad
5. Ainun Fatihah Mohamad
6. Amir Kamal Hamidon
7. Angela Seymour-Boss
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9. Dayang Nor Asyilla binti Abang Abdullah
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17. Khairun Nisa' binti Ahmad Ali
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26. Nurul Nazirah Mohd Daud
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33. Siti Nur Syakireen binti Zulkaffli
34. Siti Salehan Musiran
35. Wan Nadia Wan Abdul Aziz

Dear Members

Please update your contact details by sending your email address, telephone no. and fax no. to : geologicalsociety@gmail.com



Dr. Mazlan Madon Elected to the UN Commission on the Limits of the Continental Shelf (CLCS)

GSM would like to congratulate Dr. Mazlan Madon, the Society's vice president, for his successful election as Member of the UN Commission on the Limits of the Continental Shelf (CLCS) for the term 2012-2017. The election of this 21-member UN body took place during the 22nd Meeting of the States Parties to the United Nations Convention on the Law of the Sea (UNCLOS) on 6th June 2012 in New York. The society is proud to have one of its geoscientists, and a serving council member, as an elected member of such a prominent international body.

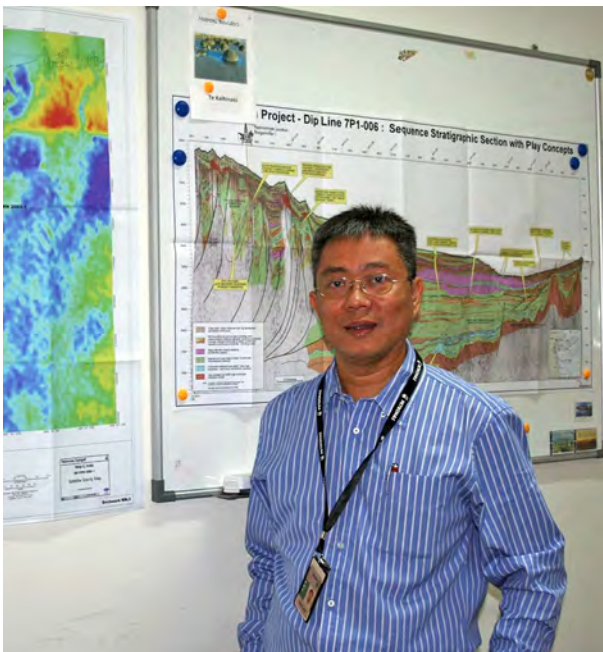
Established under UNCLOS, the CLCS facilitates the implementation of UNCLOS in respect of the delineation of the outer limits of the continental shelf beyond 200 nautical miles from the territorial baselines. Under Article 76 of the Convention, a coastal state is entitled to an 'extended continental shelf' if it can demonstrate that the outer limits of its continental margin lie beyond 200 nautical miles (EEZ). The CLCS comprises technical experts who will review and deliberate on the submissions made by coastal states, based on specific hydrographical, geological and geophysical criteria according to the provisions in Article 76. The Commission will then make its recommendations on the submissions to the Secretary-General of the UN for adoption by the relevant coastal states.

Members of the CLCS are elected from among the candidates nominated by the 162 States Parties to UNCLOS. The membership is distributed among regional groups, each with a pre-determined number of allocated seats. In the 6th June election, the seat allocations are: Asia-Pacific states (5 seats), African states (5), Latin American and Caribbean states (4), Eastern European states (3), Western European and other states (3), and one 'floating' seat, to be filled by any state from the regional groups. The 2012 election marks the fourth consecutive term in which Malaysia's candidate had been successfully elected in the Asia-Pacific group, along with other fourth-term members China, Republic of Korea, Japan and India. Other elected members are from Pakistan, Ghana, Nigeria, Mozambique, Kenya, Cameroon, Russian Federation, Georgia, Brazil, Trinidad and Tobago, Argentina, Mexico, Canada, Denmark, and France. There is still one seat left to be filled by an Eastern European state.

With this election, Dr. Mazlan Madon succeeds Dato' Dr. Ir. Abu Bakar Jaafar, who was a member of the Commission from 1997 to 2012. GSM wishes all the best to Dr Mazlan in this new appointment, and is confident that he will undertake his new role with full dedication and honour.

The CLCS is based in the UN headquarters in New York. Further information can be found at its website http://www.un.org/Depts/los/clcs_new/clcs_home.htm.

A full press statement by the Ministry of Foreign Affairs (Wisma Putra) on the outcome of the elections was released on its website on 7th June, 2012 (page 289).



PRESS RELEASE: OUTCOME OF THE ELECTION FOR THE COMMISSION ON THE LIMITS OF THE CONTINENTAL SHELF (CLCS) FOR THE TERM 2012 - 2017

Dr. Mazlan Madon, Malaysia's candidate to the Commission on the Limits of the Continental Shelf was successfully elected to serve as a member of the Commission for a five-year term of 2012-2017, during the 22nd Meeting of the States Parties to the United Nations Convention on the Law of the Sea (UNCLOS) on 6 June 2012 in New York.

Apart from Malaysia, candidates from China, Japan, Republic of Korea, India, Ghana, Nigeria, Mozambique, Kenya, Cameroon, Russian Federation, Georgia, Brazil, Trinidad and Tobago, Argentina, Mexico, Canada, Denmark and France were successfully elected to the Commission. One seat remains to be contested between Pakistan and Spain on 7 June 2012 in New York.

Malaysia's candidate has been a member of the Commission since 1997. Dr. Mazlan Madon succeeds Dato' Dr. Ir. Abu Bakar Jaafar who was a member of the Commission from 1997 to 2012. CLCS facilitates the implementation of UNCLOS in respect of the establishment of the outer limits of the continental shelf beyond 200 nautical miles from the baselines. Under the Convention, the coastal State shall establish the outer limits of its continental shelf where it extends beyond 200 nautical miles on the basis of the recommendation of the Commission.

Dr. Mazlan Madon currently holds the position of Chief Geoscientist, the highest technical position in PETRONAS. He also serves as Head for Research Geology in PETRONAS' Geoscience Skills Group Committee, which oversees and advises on matters related to geoscience skills development and career progression for geoscientists in the company. Dr. Mazlan Madon holds a Ph.D in Earth Sciences from the University of Oxford, United Kingdom.

Source: Wisma Putra (www.kln.gov.my)

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RM300 discount for corporate members (since 2010) and current student members. Limited places are available on a first-come-first-served basis. Deadline for full payment is 31 December 2012. For further information please call 03-7957 7036 or email geologicalsociety@gmail.com.

GSM Photographic Competition 2012

1st Prize: RM1,000.00
2nd Prize: RM 500.00
3rd Prize: RM 300.00
5 consolation prizes of RM100.00 each

Deadline: 31 December 2012

Email your entry to gsmphotocompetition@gmail.com

Please read the rules and regulation.



Geological Society of Malaysia Persatuan Geologi Malaysia

Photographic Competition 2012

Rules and regulations:

1. This photographic competition is open to all members of the Society, as well as the general public.
2. The purpose of the competition is to promote interest in the geology of Malaysia. We are especially interested in photographs that showcase the beauty and uniqueness of Malaysian geology, including geological landscapes, outcrops, specimens and photomicrographs of rocks, minerals and fossils. The subject matter and scene should be directly related to the geology of Malaysia, and located within Malaysia.
3. Judging will be based on artistic merit, originality and quality, as well as geological content.
4. Entries are to be submitted in the form of digital images in JPEG, TIFF, PSD or PNG file format. Maximum file size is 15 Mb and it is recommended that the image size be no smaller than 5 megapixels.
5. The subject matter and scene should be accurately depicted in the photograph. Limited digital adjustments (dust removal, cropping, level, saturation, colour balance and contrast, etc.) and black & white conversion are acceptable. Montages or blending of multiple photographs is not allowed, with the exception of panorama, HDR and DOF stacking.
6. Each contestant may submit up to ten entries, and multiple entries are encouraged. However, each contestant will be limited to winning two prizes.
7. The prizes are as follows:
 - 1st Prize: RM1,000.00
 - 2nd Prize: RM 500.00
 - 3rd Prize: RM 300.00
 - 5 consolation prizes of RM100.00 eachEach prize winner will also receive a certificate
8. By submitting the entry, the contestant acknowledges that he/she is the photographer, and sole owner of the photograph. By submitting the entry, you also grant the Geological Society of Malaysia the non-exclusive right to use your photographs. The winning photographs will become the property of the Society.
9. Closing date: All entries must reach the Geological Society of Malaysia before the 31 December, 2012.
10. The decision of the judges is final. The organizers reserve the right to make adjustments to these rules and regulations if deemed necessary.
11. Entries in CD should be carefully packed and mailed to: The Organizer, GSM Photographic Competition 2012, c/o Department of Geology, University of Malaya, 50603 Kuala Lumpur, or email to gsmphotocompetition@gmail.com
Each entry must be accompanied by the following information in a text file:
 1. Name
 2. Address
 3. Profession
 4. Affiliation/Institution
 5. Telephone & fax
 6. Email address
 7. Image file name
 8. Title of photograph
 9. Description/Geological information
 10. Locality
 11. Camera & setting
 12. Digital adjustment (if any)

UPCOMING EVENTS

November 5-9, 2012: Formation Damage: Causes, Prevention and Remediation, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 5-9, 2012: 2nd International Conference on Water Resources in conjunction with 20th UNESCO-IHP Regional Steering Committee Meeting for Southeast Asia and the Pacific, Langkawi, Kedah, Malaysia. Contact: ICWR2012 Secretariat, School of Professional and Continuing Education, Universiti Teknologi Malaysia, 34-50 Jalan Kebudayaan 1, Taman Universiti, 81300 Skudai, Johor. Tel: 607 5218170/59; Fax: 607 5211355; email: icwr2012@utmSPACE.edu.my/icwr2012@gmail.com; Website: <http://seminar.utmSPACE.edu.my/icwr2012>

November 12-13, 2012: Coalbed Methane, Calgary, Canada. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 12-14, 2012: Shale Plays: An Integrated Approach for Enhanced Exploration, Development and Valuation, Houston, Texas, USA. Contact: email: education@aapg.org

November 12-16, 2012: Unconventional Resources Completion and Stimulation, London, UK. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 18-20, 2012: Gondwana to Asia 2012; International Association for Gondwana Research (IAGR) Annual Meeting, Adelaide, Australia. Contact: Alan Collins <alan.collins@adelaide.edu.au>; website: <http://ees.adelaide.edu.au/research/gg/>

November 18-22, 2012: Integrated Petrophysics for Reservoir Characterisation, Abu Dhabi, UAE. Contact: HOT Engineering GmbH, Parkstrasse 6, A-8700 Leoben, Austria. Tel: +43 384243053-33; Fax: +43 3842430531; email: training@hoteng.com; Website: www.hoteng.com

November 19-23, 2012: Operations Geology, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 19-23, 2012: Reservoir Simulation Strategies, Perth, Australia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 19-23, 2012: Pore Pressure, Fracture Pressure and Wellbore Stability Management, Vienna, Austria. Contact: HOT Engineering GmbH, Parkstrasse 6, A-8700 Leoben, Austria. Tel: +43 384243053-33; Fax: +43 3842430531; email: training@hoteng.com; Website: www.hoteng.com

November 19-23, 2012: Clastic Exploration & Reservoir Sedimentology, Kuala Lumpur, Malaysia. Contact: PetroEDGE: info@petroedgeasia.com

November 19-23, 2012: Structural Styles in Petroleum Exploration, Bandung, Indonesia. Contact: Noriah Talip : talip@petroskills.com

November 20-21, 2012: IADC Critical issues Middle East Conference & Exhibition, Dubai, UAE. Contact: Tel: +31 246752252; email: Europe@iadc.org; Website: www.iadc.org/conferences

November 20-22, 2012: Leadership & Team Dynamics in Oil & Gas, Kuala Lumpur, Malaysia. Contact: PetroEDGE: info@petroedgeasia.com

November 21-22, 2012: Gasification, Europe. Contact: ACI's Energy Events, email: jkorfanty@acieu.co.uk

November 21-22, 2012: Future World of Biogas, Europe. Contact: ACI's Energy Events, email: jkorfanty@acieu.co.uk

November 25-29, 2012: Carbonate and Fracture Petrophysics – A Roadmap, Abu Dhabi, UAE. Contact: HOT Engineering GmbH, Parkstrasse 6, A-8700 Leoben, Austria. Tel: +43 384243053-33; Fax: +43 3842430531; email: training@hoteng.com; Website: www.hoteng.com

November 26-27, 2012: Deepwater Turbidites, Kuala Lumpur, Malaysia. Contact: PetroEDGE: info@petroedgeasia.com

November 26-30, 2012: Evaluating and Developing Shale Resources, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 26-30, 2012: Seismic Velocities and Depth Conversion, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 26-30, 2012: Carbonate Reservoirs – Petrophysical Characterization, London, UK. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

November 26-30, 2012: Basin Analysis and Petroleum Systems, Vienna, Austria. Contact: HOT Engineering GmbH, Parkstrasse 6, A-8700 Leoben, Austria. Tel: +43 384243053-33; Fax: +43 3842430531; email: training@hoteng.com; Website: www.hoteng.com

November 26-30, 2012: Flow Assurance for Offshore Production, Kuala Lumpur, Malaysia. Contact: Noriah Talip: talip@petroskills.com

November 27-30, 2012: OSEA2012: Energising Asia, Singapore. Contact: Kerry at kg@sesallworld.com or Cheryl at Cheryl@sesallworld.com

November 28-30, 2012: 10th ASCOPE Conference & Exhibition: Innovation & Cooperation – the Way Forward, Saigon, Vietnam. Contact: Chris Daniel Wong: email: chris@myevents.com.my

November 29-30, 2012: 4th China Deepwater Summit 2012, Beijing, China. Contact: email: deepwater@umsinstitute.org; website: www.chinadeepwatersummit.org/

November 26-December 7, 2012: Applied Reservoir Engineering, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 3-4, 2012: Annual International Conference on Geological & Earth Sciences (GEOS 2012), Singapore. Contact: Elleine Velasquez, Global Science & Technology Forum (GSTF), 10 Anson Road, International Plaza, Singapore 079903; Tel: +65 62224695; Fax: +65 63270162; email: elleine@globalstf.org

December 3-5, 2012: Introduction to Petroleum Business, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 3-5, 2012: Arctic Technology Conference, Houston, USA. Contact: American Association of Petroleum Geologists, email: convene@aapg.org

December 3-7, 2012: Basic Petroleum Technology, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 3-7, 2012: Mapping Subsurface Structures, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 4-6, 2012: Overview of Gas Processing, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 4-6, 2012: Basic petroleum geology for the non-geologist, Houston, USA. Contact: AAPG, P.O.Box 979, Tulsa, Ok 74101-0979, USA; email: education@aapg.org

December 4-7, 2012. National Ground Water Association (NGWA) Groundwater Expo and Annual Meeting. Las Vegas, California, USA. Theme: "Discover - Connect - Grow!" See: <http://groundwaterexpo.com/>

December 10-14, 2012: Fundamentals of Casing Design, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 10-14, 2012: Reservoir Engineering for Other Disciplines, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

December 10-14, 2012: Streamlines: Applications to Reservoir Simulation, Characterization and Management, Kuala Lumpur, Malaysia. Contact: Tel: 603 21684751; email: ap-enquiries@petroskills.com; website: www.petroskills.com

January 5-8, 2013: Second Symposium on the Geological Resources in the Tethys Realm, Aswan, Egypt. Contact: Prof. Bahay Issawi, email: Bissawi@yahoo.com; Prof. El Sayed Abd El Aziz Aly Youssef, Tel.: 002 0122 2926034, e-mail: elsayedyoussief2005@yahoo.com, tethyssociety@yahoo.com; Prof. EzzatS. Khedr: Mobile: +2 01006520472, e-mail: ezzatkhedr67@yahoo.com,

January 15-16, 2013: Deepwater Reservoirs: Global Discoveries and Technological Developments, Houston, Texas, USA. Contact: email: education@aapg.org

January 16-18, 2013: Offshore Convention, Yangon, Myanmar. Contact: marketing@neventurecorp.com

January 16-20, 2013: Granulites and granulites 2013, Hyderabad, India. Contact: Ian Fitzsimons & Chris Clark, Tel: +61 8 9266 2455; Fax: +61 8 9266 3153; email: i.fitzsimons@curtin.edu.au; website: www.geology.curtin.edu.au

February 26-27, 2013: Solving Water Problems in Oil and Gas Production, Fort Worth, Texas, USA. Contact: email: education@aapg.org

March 6-8, 2013: Offshore Asia, Kuala Lumpur, Malaysia. Contact: Jenny Phillips, Tel: +44 1992 656 629; Fax: +44 1992 656 700; email: jennyp@pennwell.com

March 18-19, 2013: Petroleum Geoscience Conference & Exhibition 2013, Kuala Lumpur, Malaysia. Contact: email: geologicalsociety@gmail.com

March 18-22, 2013: Prospect and Play Assessment, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

April 8-12, 2013: Basic Geophysics, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

April 15-19, 2013: AVO, Inversion and Attributes: Principles and Applications, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

April 22-26, 2013: Sandstone Reservoirs, London, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

April 22-26, 2013: Compressional and Transpressional Structural Styles, London, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

April 29-May 4, 2013: 7th International Conference on Case Histories in Geotechnical Engineering and Symposium in Honor of Clyde Baker, Chicago (Wheeling), Illinois, USA. For further information: website: <http://7icchges.mst.edu>

June 17-21, 2013: Seismic Imaging of Subsurface Geology, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

June 24-28, 2013. AOGS 3013: 10th Annual Meeting of the Asia Oceania Geosciences Society. Brisbane, Australia. Session proposals close 12 November 2012. Abstract submission 29 January 2013. Details at: <http://www.asiaoceania.org>

June 24-28, 2013: Basic Petroleum Geology, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

June 24-28, 2013: Sequence Stratigraphy: An Applied Workshop, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

July 1-5, 2013: Development Geology, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

July 1-5, 2013: Basin Analysis Workshop: An Integrated Approach, Singapore. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

August 5-11, 2013: North Sea Petroleum Geology and field trip, Aberdeen, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

August 25-29, 2013: MEDGEO 2013 - The 5th International Conference on Medical Geology. Hilton Crystal City Hotel, Arlington, Virginia, USA. Theme: "The Natural Environment & Health - Hidden Dangers, Unlimited Opportunities". http://rock.geosociety.org/GeoHealth/MEDGEO_2013/INFO.html

August 26-30, 2013: Introduction to Seismic Stratigraphy: A Basin Scale Regional Exploration Workshop, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

August 27-31, 2013: 8th IAG/AIG International Conference on Geomorphology. Paris. Theme: "Geomorphology and Sustainability". The session outlines and field trips notices are available online. <http://www.geomorphology-iaag-paris2013.com/>

September 1-5, 2013: International Symposium on the Cretaceous System. Metu Congress Centre, Ankara, Turkey. See: <http://www.cretaceous2013.org>

September 2-4, 2013: Building Strong Continents: Evolution of the Continental Crust: Growth, Stabilisation,

Preservation and Recycling, University of Portsmouth, UK. Contact: Craig Storey: craig.storey@port.ac.uk; Mike Fowler: mike.fowler@port.ac.uk; website: <http://www.port.ac.uk/special/buildingstrongcontinents/>

September 2-6, 2013: Advanced Seismic Stratigraphy: A Sequence – Wavelet Analysis Exploration – Exploitation Workshop, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

September 2-6, 2013: 15th Annual Conference of the International Association for Mathematical Geosciences, Madrid, Spain. Contact: Carolina Guardiola Albert, Tel: +34 91 349 5829; Fax: +34 91 349 5929; email: c.guardiola@igme.es or e.pardo@igme.es

September 9-13, 2013: Petroleum Geology for Early Career Geoscientists and Engineers and field trip, Weymouth, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

September 16-20, 2013: Naturally Fractured Reservoirs: Geologic and Engineering Analysis, London, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

September 23-27, 2013: Production Geology for Other Disciplines, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

October 7-11, 2013: Seismic Interpretation, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

October 7-11, 2013: Seismic Velocities and Depth Conversion, Kuala Lumpur, Malaysia. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

October 14-18, 2013: Carbonate Reservoirs, London, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

October 21-25, 2013: Analysis of Structural Traps in Extensional Settings, Las Vegas, USA. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

October 21-25, 2013: Geochemical Techniques for Solving Reservoir Management and Field Development Problems, London, UK. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

October 28 – November 1, 2013: Deep-water Turbidite Depositional Systems and Reservoirs, Houston, USA. Contact: Tel: +603 21664751; email: asiapacific@petroskills.com

September 15-18, 2014: IAEG X11 Congress. Torino, Italy. Theme: "Engineering Geology for Society and Territory". <http://www.iaeg2014.com/>

August 27 to September 5 2016: The 35th International Geological Congress: Cape Town, South Africa. Danie Barnado, Secretary-General: 35th IGC. barnardo@geoscience.org.za; <http://www.35igc.org>

REGISTRATION FORM
 I would like to register for the MSTC 2012 as a presenter/participant*
 Name: Prof/Dr/Mr./Ms: _____ Department: _____
 Position: _____
 Organization: _____
 Address: _____
 Tel. No : _____ Mobile : _____
 Fax no.: _____ Email: _____
 I would like to present a paper entitled: _____

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Electronics and Bio-sensors	<input type="checkbox"/>
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Nano-science and technologies	<input type="checkbox"/>
Sustainable technologies and Alternative Energy	<input type="checkbox"/>
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Mode of presentation: ORAL POSTER

Deadline for full papers: 30 SEPTEMBER 2012

REGISTRATION FEE (Please tick (✓) in the appropriate box:

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Students / Senior Citizen – RM300.00 (per paper)	<input type="checkbox"/>	<input type="checkbox"/>

Payment should be made by cash, cheque/bank draft or local order payable to "COSTAM"
 Please return the complete REGISTRATION FORM together with payment on or before 2nd
 November 2012 to the following address:
 COSTAM Secretariat, COSTAM Room, Level 3, Pusat Sains Negara (PSN), Persiaran Bukit
 Kiara, Bukit Kiara, 50662 KUALA LUMPUR. Phone: 03-2092 2370 / 013-637 0414 (Ms. Fiza)



Transforming the S&T Resources for Sustainable High Income Society

INTRODUCTION

The Science and Technology Congress (MSTC) is the major event of COSTAM and has been held for nearly three decades. The Congress is to showcase the scientific and technological research activities in the country, especially under the MOSTI research grants and the Scientific Advancement Fund Allocation for Fundamental Science Research (SAGA), and also related to the Malaysian Development Plan. As an umbrella of the major scientific professional bodies, it has the objective to promote the research and development in term of the findings of the institutions of higher learning plus the research and development centers to the general public and also as a tool of communication among the scientists, engineers and technologists.

In keeping with the above objectives the MSTC 2012 will focus on:

- Plenary or keynote lectures by leading scientists i.e. Fellows from the Academy of Sciences Malaysia (ASM) and international prominent scientists.
- Research papers or reviews by experts.
- Papers by researchers especially those who have received MOSTI and e-Science funding.
- Young researchers

Papers are invited in the following areas:

- Agro and Natural Resource Based Science
- Applied Sciences and Engineering
- Biology, Chemistry, Mathematics and Physics
- Earth and Space Sciences
- Engineering Materials, Photonics and Semi-conductors
- Electronics and Bio-sensors
- Emerging and New Innovative Technologies
- Nano-science and technologies
- Sustainable technologies and Alternative Energy
- Biomedical and Biotechnology



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MSTC Transforming the S&T Resources for Sustainable High Income Society

TENTATIVE PROGRAMME

DAY 1
19th NOVEMBER 2012 (MONDAY)

- 08:30am - 09:30am Registration
- 09:30am - 09:45am Welcoming Address by The Chairman of Organising Committee of MSTC 2012 and President of COSTAM, *Professor Ir. Dr. Ruslan Hassan*
- 09:45am - 10:30am Opening Address by *Y. B. Datuk Seri Panglima Dr. Maximus Johnny Ongkili*, Minister, Ministry of Science, Technology and Innovation (MOSTI)
- 10:30am - 11:00am Refreshment
- 11:00am - 11:45am Keynote Address 1 - 'Transforming the S&T Resources for Sustainable High Income Society' by **PEMANDU**
- 11:45am - 12:30pm Keynote Address 2 - 'Funding R & D Research in Transforming S & T for Generating Wealth' by *Prof. Datin Paduka Dr. Khatijah bt. Mohd Yusoff*
- 12:00pm - 02:30pm Lunch
- 02:30pm - 03:15pm Plenary Address 1 - 'Research in Pharmaceutical to High Income Society' by *Professor Dr. Aishah Adam*
- 03:15pm - 04:00pm Plenary Address 2 - 'Nanotechnology for Sustainable High Income' by *Professor Dr. Halimatun Homdan*
- 04:10pm - 05:30pm Parallel Technical Session 1 (1A, 1B and 1C - see the itineraries)
- 05:30pm Refreshment

DAY 2
20th NOVEMBER 2012 (TUESDAY)

- 09:00am - 09:45am Keynote Address 3 - 'Climate Change' by *Emeritus Professor Dr. Mohamad b. Awang*
- 09:45am - 10:15am Keynote Address 4 - 'Improving Sanitation in Developing Countries and in Response to the Great East Japan Earthquake' by *Professor Yoshinisa Shimizu*, Environmental Quality Management Research Centre, Japan
- 10:15am - 10:45am Refreshment
- 10:45am - 12:50pm Parallel Technical Session 2 (2A, 2B and 2C - see the itineraries)
- 12:50pm - 02:30pm Lunch
- 02:30pm - 03:15pm Plenary Address 3 - 'High Income Generating from Malaysian Natural Resources' by *Y. Bhg. Tan Sri Datuk Dr. Yusof Basiron*, CEO MPOC
- 03:15pm - 05:30pm Parallel Technical Session 3 (3A, 3B and 3C - see the itineraries)
- 05:30pm Refreshment

DAY 3
21st NOVEMBER 2012 (WEDNESDAY)

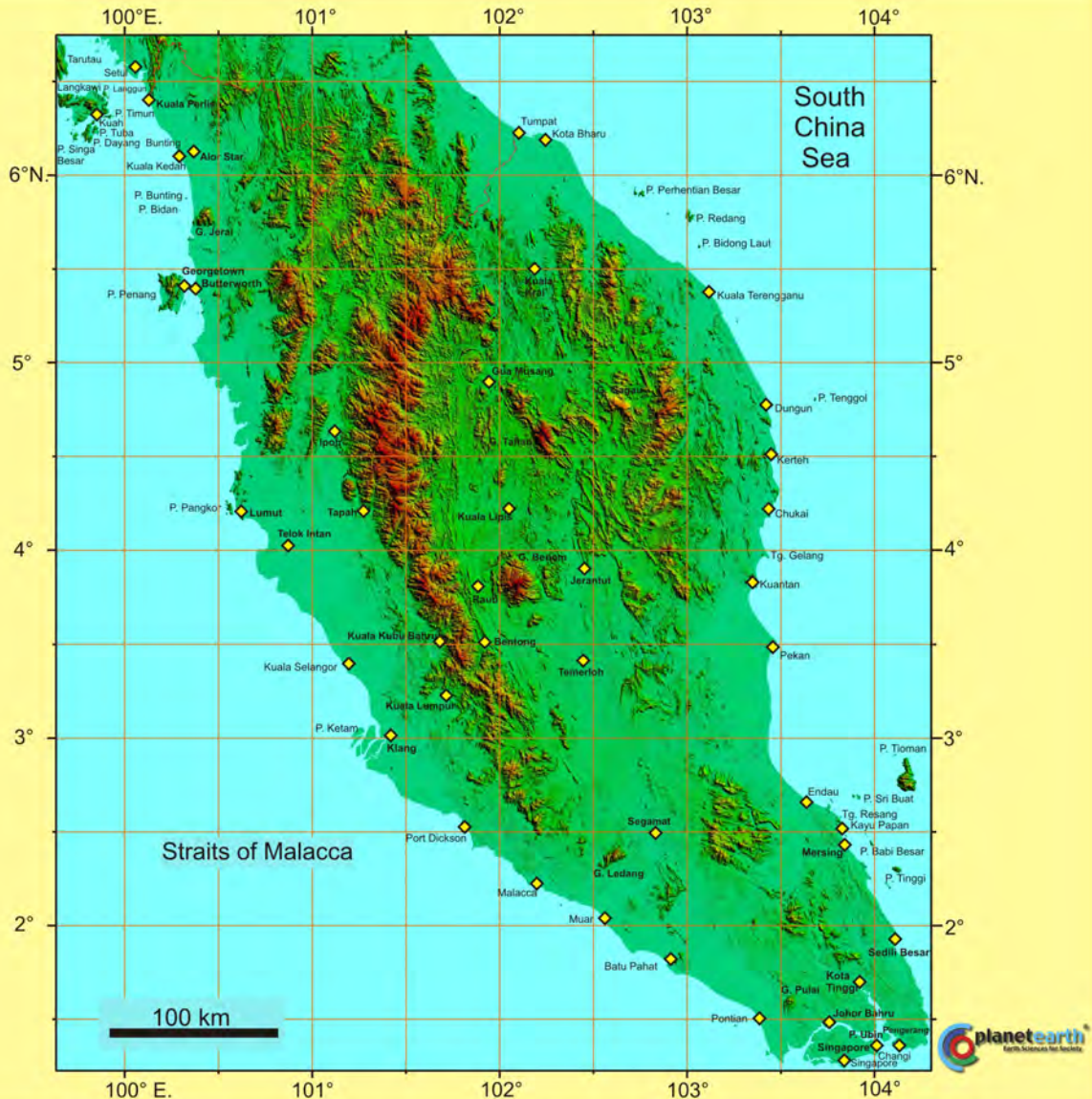
- 09:00am - 09:45am Plenary Address 4 - 'Energy for Sustainable High Income' by *Prof. Datuk Ir. Ahmad Zaidée Laidin*, FASC
- 09:45am - 10:15am Refreshment
- 10:15am - 01:00pm Parallel Technical Session 4 (4A, 4B and 4C - see the itineraries)
- 01:00pm - 02:30pm Lunch
- 02:30pm - 03:15pm Plenary Address 5 - 'Sustainability in Transportation' by *Professor Dr. Ir. Ruslan Hassan*, FASC
- 03:15pm - 04:30pm Parallel Technical Session 5 (5A, 5B and 5C - see the itineraries)
- 04:30pm - 05:00pm Closing Ceremony
- 05:00pm Refreshment and Adjourned

Note: The Speakers are not final subjected to confirmation

MSTC Transforming the S&T Resources for Sustainable High Income Society

GEOLOGY OF PENINSULAR MALAYSIA

Editors: C. S. Hutchison and D. N. K. Tan



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Newsletter of the Geological Society of Malaysia

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