



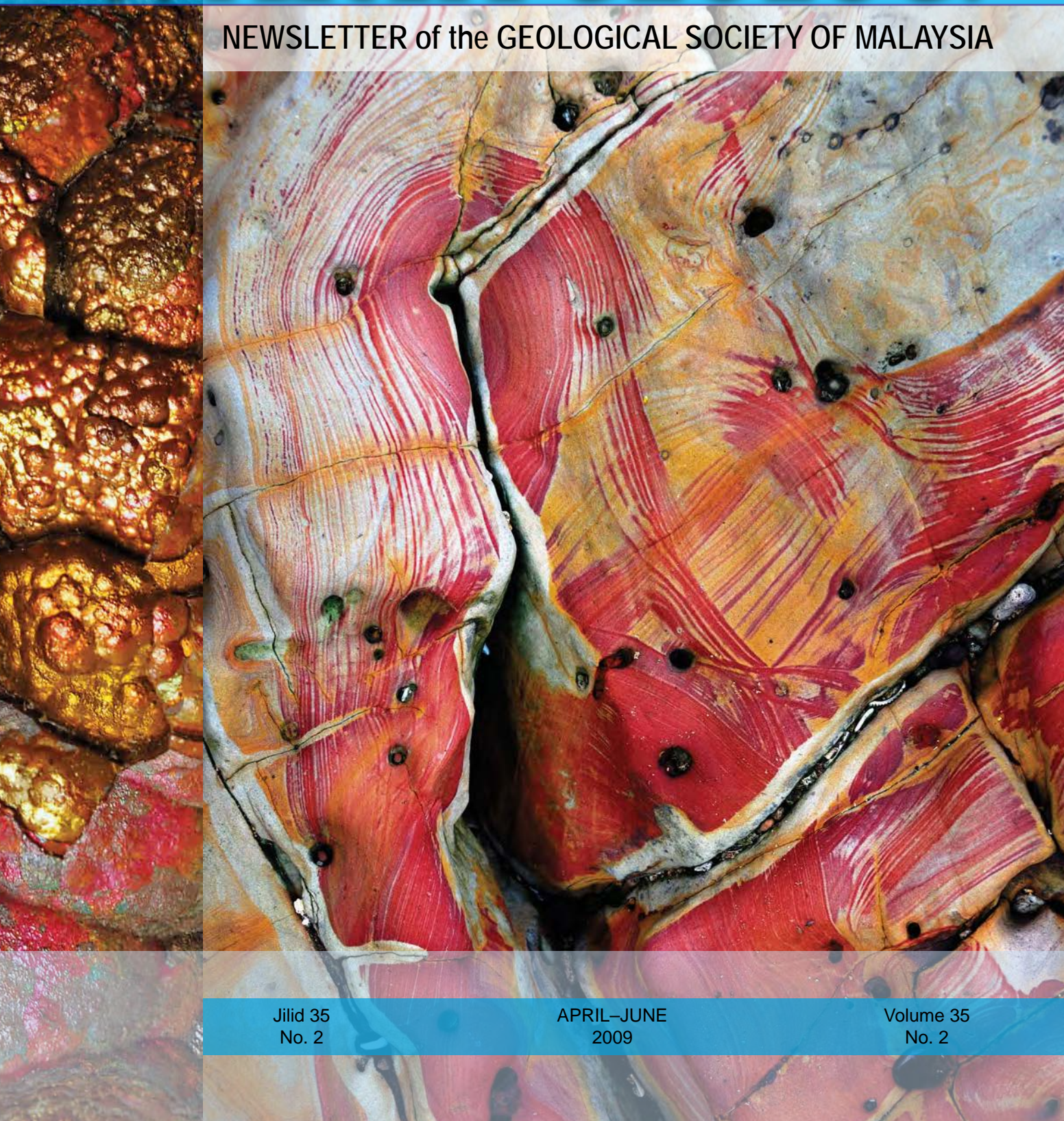
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# CATATAN GEOLOGI GEOLOGICAL NOTES

## Early geomorphological observations in Malaya: the contributions of J.B. Scrivenor (1876-1950)

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**Abstract:** J.B. Scrivenor was the first Government Geologist and later first Director of what has become the Minerals and Geoscience Department. His long and active service (he served some 28 years with a break only for military duties during the First World War) allowed him to acquire an intimate knowledge of the Malay Peninsula, and to note changes in the landscape. He coined the evocative term 'core-boulder', recorded data indicative of variable rates of weathering, noted the instability of granite slopes, and initiated a long-standing debate concerning the origin of karst inselbergs.

**Keywords:** core-boulder, landslide, karst tower, swamp slot, regolith, laterite.

### INTRODUCTION

Malaysia is today served by a large and highly trained Minerals and Geoscience Department centred in Kuala Lumpur but with a dozen regional offices also dedicated to providing the best possible advice and information to industry and the public. Though most obviously active in the applied fields of geotechnology or engineering geology on the one hand, and the extractive industries (mining, quarrying) on the other, the basics are not neglected, for regional surveys continue, producing up-to-date geological maps of various parts of the country and of the country as a whole. Viewing this world-class organisation it is difficult to appreciate that it all began just over a century ago with the appointment of one man as Government Geologist to what were then the Federated Malay States. That man was John Brooke Scrivenor (1877-1950).

### BIOGRAPHICAL NOTES

Scrivenor was born and educated in England but devoted most of his working life to geological investigations in the Malay Archipelago and in particular in what is today Malaysia. After Oxford, and service with the Geological Survey of England and Wales, Scrivenor in 1903 was appointed Government Geologist to the Federated Malay States (Willbourn, 1950). His initial appointment was for three years, but he fell under the spell of the country, its people, and its geology. So keen was he not to lose his position (and as a corollary, congenial and satisfying work), in what were times of financial stringency, that he volunteered to have his salary reduced; and his offer was accepted. He stayed on, married, and raised his family in the Federated Malay States. He became Director of the newly established Geological Survey Department and except for wartime duties in France

(1916-18) for which, though middle-aged and with family responsibilities, he nevertheless volunteered, he served for twenty-eight years until his retirement in 1931.

Working at first on his own, and concentrating on mining (mainly tin but also tungsten, gold, iron copper, and a range of other metalliferous ores) and geotechnical problems, he made himself familiar with the broad outlines of the geology of the region by assiduous travel and observation. An assistant geologist, W.R. Jones, was appointed in 1912, a chemist in 1914, and another geologist, E.S. Willbourn, in 1916. Thereafter the survey expanded with further appointments (e.g. F.T. Ingham, who became Director of the Geological Survey of the Federation of Malaya after the Second World War), survived through the lean postwar years and the economic depression of the 'thirties, but blossomed after the Second World War, producing many notable regional maps and reports, which attest the work of geologists of eclectic interests, and provide a sound foundation on which the present Minerals and Geoscience Department has successfully built and developed.

Scrivenor, of course, was not the first to take an interest in the geology of Malaysia. As early as 1822 Jack had published on the geology of Penang and Singapore and contributions by such as Crawford, Newbold, and Daly followed. Gifted amateurs like Logan (e.g. 1851) had made useful, and in some instances critical, observations and deductions. The tin and gold deposits had attracted investigators from many parts of the world and the Chinese miners working the Kinta tin mines acquired first hand practical knowledge of the surficial and shallow geology of the district. Errington (1883) alluded to the karst towers of Perak and an early map of the Kinta Valley tin mining region is due to de Morgan (1886; Ingham and

Bradford, 1960). Scrivenor (1928, 1931) mentions an American geologist, J.F. Newson, who was representing the interests of the Yukon Gold Company and who made a crucial if incidental observation concerning karst towers. Later Rastall (1927a, 1927b) was consulted to establish the stratigraphy of the Kinta Valley region which was the most important of the tin mining areas and concerning which a controversy had developed.

Nevertheless Scrivenor's long and dedicated service (1903-1931) gave him a unique insight into the geology and landforms of the Malay Peninsula and adjacent areas, knowledge which he summarised in his well-known *Geology of Malayan Ore-Deposits* (Scrivenor, 1928) and *Geology of Malaya* (Scrivenor, 1931).

### PERSONAL NOTE

The present writer met Scrivenor but once and then only briefly. In retirement in England, Scrivenor became interested in the Precambrian rocks of The Lizard Peninsula, an unfaulked inlier in south Cornwall (Scrivenor, 1938a, 1938b, 1938c, 1939a, 1939b, 1949). He joined a university student excursion held there in 1950 under the direction of Dr (later Professor) F. Coles Phillips (1902-1982) (Figure 1) who had also worked on The Lizard (Phillips, 1950; see also Howarth and Leake, 2002). Memories fade, but more than half a century later Phillip's description of the "capricious distribution of

schistosity" still comes readily to mind, as does Scrivenor's footwear; for in an age when sturdy field boots were *de rigueur*, Scrivenor, belying his years and clad in a pair of the speckled black plimsolls or gym shoes then available in austerity post-war Britain, led students and staff a merry dance along the rugged cliffs. He died, peacefully in his sleep, on 21 April 1950, a few days after leaving the excursion.

### SCRIVENOR'S GEOMORPHOLOGICAL OBSERVATIONS

#### General

Scrivenor's various geological studies on the Malay Peninsula and on adjacent islands were directed to practical matters such as the development of tin mining, but also technical problems. For example, a thick regolith is developed almost everywhere and even on steep slopes. This weathered mantle tends to be unstable, partly as a result of its becoming saturated and partially liquefied, partly as a result of sapping by streams running along the underlying bedrock surface or weathering front (Mabbutt 1961): that is, the more-or-less abrupt transition from the permeable regolith to less- or impermeable fresh rock, which is particularly well developed in granitic rocks (Scrivenor, 1931, pp. 137-138). The weathering of clays illuviated to, or developed near, the impermeable weathering front also provided lubrication (e.g. Myers, 1977). Clearing of slopes for cultivation, and the steepening of slopes during road construction, aggravated the problem for it caused unbuttressing of the slope above. This frequently resulted in the regolith sliding over the weathering front. As Scrivenor (1931, p. 138) remarked, "The scars of landslides can be seen on all granite ranges."

Regoliths derived from the weathering of granite commonly contain remnant masses of fresh rock that have withstood attack by groundwaters. They impede excavation and can mislead engineers into thinking they represent a secure foundation, when in reality they consist only of discrete masses of solid rock, known as 'floaters', set in a matrix of weathered granite or *grus*. If dislodged, such blocks and boulders constitute a considerable hazard to property located downslope and to people unfortunate enough to be in the way. Thus on 28 November 1998, a weathered granite slope failed near an apartment building in Penang (Figure 2). The slope had been slightly undercut during the construction of a carpark serving the apartments. Fortunately the debris slid onto the carpark and not the building but several cars were crushed by the corestones contained in the landslide (Bourne and Twidale, 2000).

Scrivenor compared the ferruginous regolith of the Malay Peninsula to the laterite described from peninsular India by Buchanan (1809, II, p. 436-460). He thought lateritisation was an extreme form of podsolisation but following Newbold and Ward (Scrivenor, 1931, p. 144)



**Figure 1.** J.B. Scrivenor (left) and F. Coles Phillips enjoying refreshments, Devon, U.K., April 1950.



**Figure 2.** Landslide developed on granite slope, Penang, 28 November 1998.

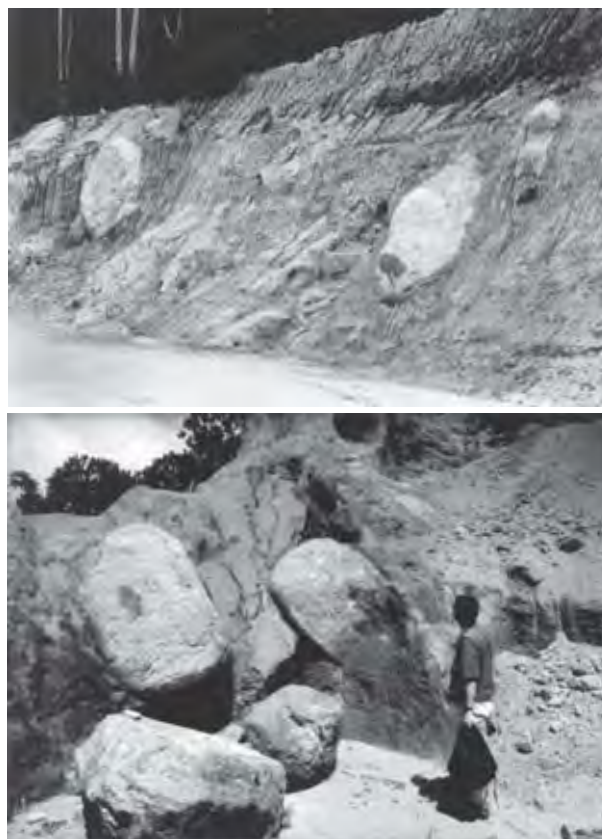
considered as laterite an exposure near Malacca in which the ferruginous zone underlies the kaolinised pallid and horizons (contrast e.g. Prider, 1966; Maignien, 1966): it and similar profiles may be of complex origin or simply ferricretes (i.e. accumulations of iron oxides) covered by argillites that were either weathered in situ or altered clays transported to the sites. Like Harrison (1910) Scrivenor attributed kaolinisation to weathering rather than hydrothermal action (Scrivenor, 1928, p. 149). He also recorded the use of laterite as a building stone (Scrivenor, 1931, pp. 145-146; see also Buchanan, 1809; Babington, 1821; Alexander and Cady, 1962), and made specific observations concerning the weathering and shaping of limestone and granite, outcrops of both of which are prominent and widespread in Malaysia.

### Granite weathering

Scrivenor's observations concerning various aspects of granite weathering remain relevant. Following Hassenfratz (1791), MacCulloch (1814), de la Beche (1839, p. 450) and Logan (1851), he recognised 'core-boulders' – he introduced the term (Scrivenor, 1913a, 1931, pp. 364-365) – as more-or-less rounded boulders of essentially fresh granite isolated in a matrix of *grus* and clearly of subsurface provenance (see Figure 3). He attributed their formation to weathering that proceeds most rapidly and deepest (up to 30 m) along fractures, leaving the kernels, corestones or core-boulders of still cohesive and relatively fresh rock within fracture-defined blocks.

His long service allowed him to note rates of weathering. Like the others before him, Scrivenor realised that weathering of granite is rapid in the humid tropics. He recorded that near The Gap in Selangor, a core-boulder some 50 cm diameter had had to be blasted in half during road construction but that ten years later the part remaining *in situ* had rotted through (Scrivenor, 1931, pp. 136-137). He also attributed the absence of

striae on boulders within the Gopeng Beds (which he considered to be of glacial origin) to the rapidity of alteration in a humid tropical climate (Scrivenor, 1912, p. 162). He noted the preferential decay of some minerals resulting in irregular surfaces (the 'pitting' of Twidale and Bourne, 1976). He appreciated the unpredictable nature of weathering, recording, for instance, that feldspar



**Figure 3.** Corestones set in matrix of *grus* and exposed in a quarry (a - above) near Gamencheh, Negeri Sembilan, West Malaysia, and (b - below) on Karimun Island, West Indonesia.



phenocrysts protrude from weathered surfaces (Scrivenor, 1931, p. 137), so much so that it is possible in places to hang a hammer on them; but that nearby, other, apparently similar, crystals are rotten. He noted the accumulations of transported boulders in valley floors known as *gugup* in Malaysia (Scrivenor, 1931, p. 124); in France they are called *compayrés*.

Scrivenor noted that in places smooth bare rock surfaces or *glacis* are exposed on slopes (e.g. Logan, 1848, p. 102; Wallace, 1869, p. 24). Some are precipitous, others gently-inclined, but most are exposed sheet fractures that formed part of the weathering front. A film of water flows continuously across some, facilitating their use as slides, for the skin of water allowed a person seated on a *pinang* leaf to slip downslope - an activity known as *menggelunchor* (Scrivenor, 1931, p. 139).

Scrivenor also recognised literal or littoral inselbergs, as well as isolated steep-sided hills on land, developed in granite. He cited Langkawi and Pulau Tioman (with its *Chula Nago* or Dragon's Spines: see Bean, 1972) as examples.

## Karst

Inselbergs (*Karstinselberge*) are spectacularly well-developed in limestone in Malaysia (Twidale, 2006); some are domical or *Cupolakarst*, others steep-sided towers or *Turmkarst*. Scrivenor (1928, p. 54) cited Gunong Melaka and Gunong Tempurong as examples. The latter stands some 600 m above sea level and is bounded by a 300 m-high bare rock cliff (Figure 4a) which he thought was an exposed fault plane. Scrivenor (1913, p. 10) suggested that the towers of the Kinta Valley of Perak "owe their origin primarily to faulting". Subsequent detailed mapping, however, has revealed no such regional assemblage of recently-active faults in the Kinta Valley. In Perlis, some towers are developed in faulted strata (Jones, 1978) but that is incidental to their existence. Some are fracture-defined, but even these, such as Bukit Wang Pisang, are not horsts, for the bounding faults throw in the same sense, with an upthrown block to one side of the residual and a downthrown on the other (Fig. 4b). Scrivenor's tectonic interpretation of the Kinta towers was challenged by Jones (1916, p. 192), who attributed them to "unequal denudation on a strongly jointed limestone". And though Scrivenor had reached a similar conclusion regarding the limestone cliffs in Ulu Pahang, on the eastern side of the Main Range (they are caused by "denudation acting unequally on masses of strongly jointed and tilted beds of limestone": Scrivenor 1911, p. 33) for several years he continued to interpret the Kinta valley forms as of tectonic origin (Scrivenor, 1923). Somewhat irrationally, he cited in support of his argument a personal communication from W.C. Klein concerning faulted karst hills in northern Sumatra, and limestone residuals in Sarawak which Geikie (1905-6, pp. 65-66) attributed to the joggling and vertical displacement of blocks defined by an orthogonal system of faults.



**Figure 4.** Sketches of karst towers (a - above) Gunong Tempurong (Scrivenor, 1912, p. 144), and (b - below) Twin Chuping Peaks (after Jones, 1978, p. 99).

By 1931, however, Scrivenor had abandoned the tectonic hypothesis. Instead he suggested that the Kinta towers, rising sheer from the sea or the plains, may have been "carved out by marine denudation" (Scrivenor, 1931, p. 123). He was impressed by the horizontal notches preserved not only at the base of towers but also high on the bounding cliffs and slopes. He considered the possibility that they had been shaped by marine agencies such as wave abrasion and noted evidence of stranded beach lines from the east coast (e.g. Newbold, 1839, pp. 51-52). But he considered the deducible consequences of the marine denudation hypothesis noting, for example, that notches that some attributed to marine action stood at different levels in the same district. For instance, they are preserved at roughly 75 m above sea level on Gunong Tempurong, but 30 m lower in the Gopeng-Ipoh area.

This may have led him to recall the Ulu Pahang towers and consider that some notches situated at higher topographic levels may be due to the action of subaerial processes. He recognised the validity and relevance of J.F. Newsom's suggestion that the horizontal indentations (Figure 5) are swamp slots caused by chemical attack on the limestone by standing water, and indicative of old swamp or plain levels, but nothing more. Nevertheless, though locally developed they are critical, for the development of such slots provides a mechanism for the steepening of hillslopes (see Jennings, 1976; also Twidale, 1962, 1987, 2006), and thus for the transformation of limestone domes into towers. They also constitute evidence of the episodic exposure of the towers. They are essential to any rational explanation of towerkarst, and are germane to the understanding of several other landforms and landscapes (e.g. Hills, 1955; Twidale, 1962, 1967; Twidale and Bourne, 1975).



**Figure 5.** Cliff-foot cave at base of karst tower, Kinta Valley near Ipoh, Perak.

The effect on limestone of groundwaters charged with chemicals and biota was demonstrated in shallow excavations in the Kinta Valley tin mining area where the rock surface beneath the alluvium is typically irregular with numerous pinnacles, rounded bosses and slots (Scrivenor, 1931, e.g. p. 142). Scrivenor (1931, p. 143, see also Ingham and Bradford, 1960, Plate VII, facing p. 30) also noted the disturbed bedding, what are now referred to as pseudostructural features (e.g. McCallien *et al.*, 1964), caused by the collapse of alluvia into dissolution depressions in the limestone.

### CONCLUDING REMARKS

In his Introduction to Charles Allen's (1983) *Tales from the South China Seas*, Sjovald Cunyngnam-Brown noted that wise diplomacy and administrative initiatives undertaken in the years of British influence had proved beneficial in later years. Amongst them may be listed the establishment of a geological survey to facilitate the location and development of mineral resources and to provide the geotechnical advice without which the safe construction of roads, railways, seaports, airports, and modern buildings, cannot be guaranteed.

J.B. Scrivenor was the first Government Geologist and Director of the Geological Survey Department. Many of his geological concepts were typical of his day, and have long since been superseded, as were his early theories concerning the glacial and allochthonous derivation of the tin deposits of the Kinta valley, and the nature of limestone towers (Scrivenor, 1910, 1912; Jones, 1916). Nevertheless many of his observations concerning weathering of granite and limestone and mass movements remain of interest and value. He was an able scientist who was tenacious in defence of his ideas yet did not persevere with untenable explanations. Though he differed with some of his colleagues in several of his interpretations he apparently tolerated, and perhaps even welcomed, debate within his department: there was no 'party-line'. Though fully seized of the responsibilities of his department in the fields of mining and engineering

geology, he did not neglect, and indeed encouraged, curiosity-driven research.

In a sense, Scrivenor lived up to his name for a 'scrivener' is an old English term for a person who earned a living as a writer, or scribe – in modern parlance, a clerk – though Scrivenor not only recorded data but produced useful syntheses concerning various aspects the geology and mineral resources of Malaysia as they were known toward the end of his tenure as Director. As with all scientific hypotheses, many are now out of date, but some remain of interest and value.

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PERTEMUAN PERSATUAN  
MEETINGS OF THE SOCIETY

# **PERSATUAN GEOLOGI MALAYSIA GEOLOGICAL SOCIETY OF MALAYSIA**



**43<sup>RD</sup> ANNUAL GENERAL MEETING &  
ANNUAL REPORT 2008**

**24<sup>TH</sup> APRIL 2009**

**AT**

**DEPARTMENT OF GEOLOGY  
UNIVERSITY OF MALAYA, KUALA  
LUMPUR**

**AGENDA FOR THE 43RD ANNUAL GENERAL MEETING**

**24th April 2009, Department of Geology, University of Malaya**

**Kuala Lumpur**

1. Welcoming Address by the President for session 2008/2009
2. Confirmation of Minutes of 42nd AGM held on 25th April 2008
3. Matters arising
4. Annual Report for Session 2008/2009
  - Annual President's Report
  - Annual Secretary's Report
  - Annual Editor's Report
  - Annual Treasurer's and Honorary Auditor's Report
5. Election of Honorary Auditor
6. Other Matters of which written notice is submitted to reach GSM Secretariat by 20th April 2009 or by majority vote of the AGM
7. Announcement of New Council for 2009/2010
8. Presidential Address for 2009/2010



**PERSATUAN GEOLOGI MALAYSIA**

**LAPORAN TAHUNAN PRESIDEN SESI 2008-09**

Laporan ini adalah bagi Sesi 2008-09 Persatuan Geologi Malaysia (GSM). Tahun 2008-09 merupakan satu tempoh yang bermakna kepada masyarakat geosaintis Malaysia. Pada Februari 2008, IYPE peringkat antarabangsa dilancar di ibu pejabat UNESCO di Paris dan pelancaran peringkat Malaysia dibuat bersekali dengan PGCE 2008. Perlbagai program seperti seminar, pameran dan penerbitan dibuat oleh pelbagai entiti yang menganggotai Jawatankuasa Kebangsaan IYPE Malaysia di mana GSM menjadi ahli. Program dibawah IYPE Malaysia diteruskan dalam tahun 2009.

Akta Ahli Geologi (Akta689) telah dilulus oleh Parlimen pada 15 Julai 2008 dan Dewan Negara pada 24 Julai 2008. Akta ini telah diwartakan kepada 27 Ogos 2008. Peraturan bagi Akta ini sedang digubal dan YB Menteri akanewartakan tarikh pemakaiannya.

GEOSEA 2009 yang merupakan kali ke-11 akan diadakan pada 08-10 Jun 2009. Aktiviti ini akan menjadi penutup kepada sambutan IYPE di Malaysia. Malaysia akan mencadangkan supaya empat Negara penaja asal bersetuju menubuhkan Urusetia Tetap GEOSEA dan juga mengembangkan ahlinya.

Dalam tempoh laporan ini GSM telah Berjaya melaksanakan aktiviti rutin yang kebanyakannya dilaksanakan bersama organisasi lain yang berkaitan. Sebagai *way forward*, GSM perlu memulakan usaha ke arah mengendalikan kursus yang lebih berstruktur, melalui *smart partnership* dengan institusi pengajian tinggi atau sebagainya. Persidangan Geosains Kebangsaan NGC perlu diberi nafas baru bagi mendapatkan lebih penyertaan.

## SECRETARY'S REPORT 2008

### 1. Introduction

On behalf of the Council of the Geological Society of Malaysia (GSM), I am pleased to present the 43<sup>rd</sup> Annual Secretary Report for session 2008/2009.

### 2. The Council

The new Council for the GSM for 2008/2009 session resumed office after the 42<sup>nd</sup> AGM, which was held on 25 April 2008.

#### 2.1 Council Members for 2008/2009

Council Members for 2008/2009 are as follows:

President : Yunus Abdul Razak (JMG)  
 Vice President : Prof. Dr. Joy Jacqueline Pereira (LESTARI, UKM)  
 Secretary : Jasmi Ab Talib (UTP)  
 Assistant Secretary : Mohd Rozi Umor (UKM)  
 Treasurer : Ahmad Nizam Hasan (Geo Solution Resources)  
 Editor : Lau Yin Leong (Ginn-M Corporation Sdn. Bhd.)  
 Imm. Past President : Prof. Dr. Lee Chai Peng (UM)

Councillors:  
 (2008/2009) Tan Boon Kong (Freelance)  
 Dr. Ng Tham Fatt (UM)  
 Dr. Samsudin Taib (UM)  
 Dr. Nur Iskandar Taib (UM)

Councillors:  
 (2008/2010) Dr. Gan Lay Chin (Freelance)  
 Ling Nan Ley (JKR)  
 Abd. Rashid Jaafar (Asian Geos Sdn Bhd)  
 Dr Kamal Roslan Mohamed (UKM)

#### 2.2 Council Meeting

Over the 2008/2009 session, the council has held 7 council meetings. All meetings were conducted at the Department of Geology, University of Malaya. The attendance of the council members is presented in Table 1 below.

Table 1: Attendance of council members at Council Meeting

Name	13/06/08	25/07/08	12/09/08	14/11/08	09/01/09	13/03/09	17/04/09	Total
Yunus Abdul Razak	/	/	/	/	0	/	/	6/7
Prof. Dr. Joy Jacqueline Pereira	/	/	0	/	/	/	0	5/7
Jasmi Ab Talib	/	/	/	/	/	/	/	7/7
Mohd Rozi Umor	0	/	/	/	0	0	0	3/7
Ahmad Nizam Hasan	/	/	/	0	/	/	/	6/7
Lau Yin Leong	/	/	0	0	0	0	/	3/7
Prof. Dr. Lee Chai Peng	/	/	/	/	/	0	/	6/7
Tan Boon Kong	/	0	/	/	/	0	/	5/7
Dr. Ng Tham Fatt	/	/	/	/	/	/	/	7/7
Dr. Samsudin Taib	/	0	/	/	/	/	0	5/7
Dr. Nur Iskandar Taib	/	/	/	/	/	/	/	7/7



Dr. Gan Lay Chin	0	/	/	0	0	/	/	4/7
Ling Nan Ley	/	/	/	/	/	/	/	7/7
Abd. Rashid Jaafar	/	0	/	/	0	0	0	3/7
Dr Kamal Roslan Mohamed	0	0	/	0	/	/	0	3/7

Note: / = present, 0 = absent with apology

### 3. Society Structure

The Society's stakeholders are the members of the Society led by an elected Council. The Council's main functions were to set directions to promote the advancement of geosciences, endorse the society activities and provide guidance for the execution of the activities of the Society.

The Council was assisted by the Secretariat, the one and only Ms Anna Lee. The Secretariat assisted the society in the administration of day-to-day activities of the Council, Working Groups and State Representatives.

The Council was also supported by **FIVE** Working Groups and State Representatives. The Working Groups' main function is to promote advancement and exchange of knowledge in specific geoscience areas. The State Representatives' main function is to promote geosciences and implement the mission of the society within geographical area. The Organisation Chart of the Society is presented in Figure 1.

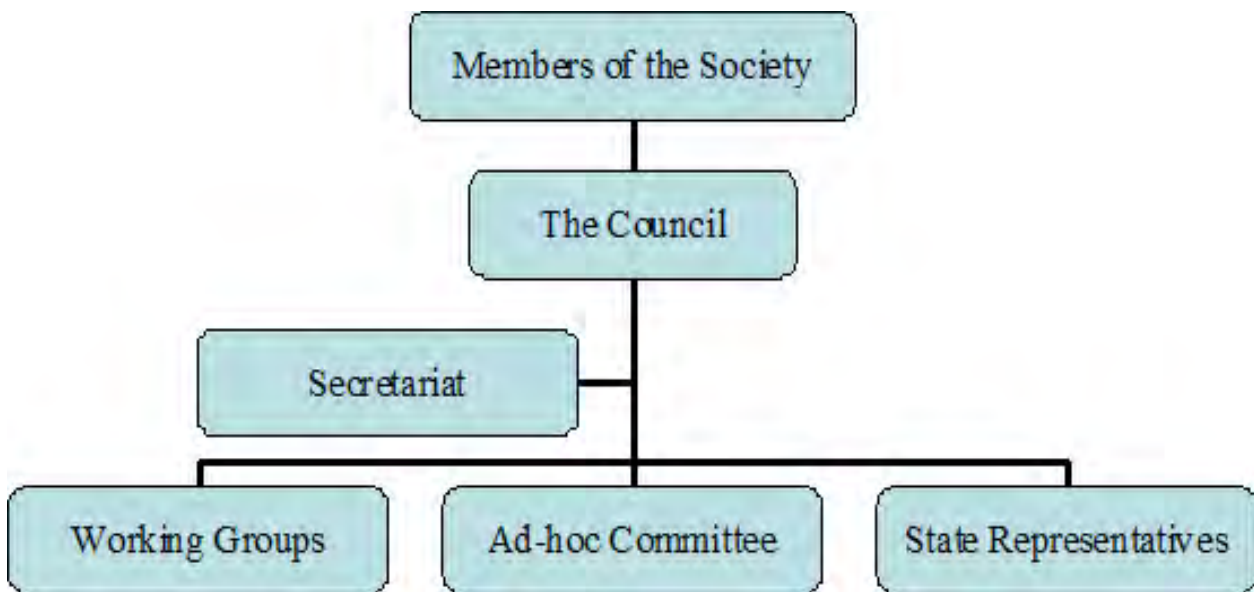


Figure 1: Organisation Chart of the Society

#### 3.1 Working Groups

The Society remains active in undertaking some activities under the various Working Groups. During this session, the working groups were reorganised accordingly. The main reason was to have person to lead the groups and initiated the programs. List of working groups is summarised as follow in Table 2.

NO	NEW WORKING GROUP	PREVIUOS WORKING GROUP	CHAIRMAN
1	Working Group on Engineering Geology, Hydrogeology & Environmental Geology	Working Group on Engineering Geology & Hydrogeology Working Group on Environmental Geology	Mr. Tan Boon Kong (Freelance)
2	Working Group on Promotion of Geoscience & Young Geologists	Working Group on Promotion of Geoscience Working Group for Young Geologists	Mr. Abd. Rasid Jaafar (Asian Goes Sdn. Bhd.)
3	Working Group on Mineral Resources	Working Group on Economic Geology	Mr. Lau Yin Leong (Ginn-M Corporation Sdn. Bhd.)
4	Working Group on Regional Geology	Working Group on Structural Geology & Tectonics Working Group on Sedimentology and Stratigraphy Working Group on Petroleum Geology	Dr. Kamal Roslan Mohamed (UKM)
5	Working Group on Geophysics	Working Group on Geophysics	Dr. Zuhar Zahir Tuan Harith (UTP)

Table 2: List of Working Groups

The activities conducted by the working groups mainly were technical talks as shown in Table 3, especially by Working Group on Engineering Geology, Hydrogeology & Environmental Geology. Besides that, Photographic Competition organised by Working Group on Promotion of Geoscience & Young Geologists is still in the process of judgement.

The Working Group on Website was sidelined this session as the main function of it was upgrading and maintaining Society website which was voluntarily successfully handled by Dr. Nur Iskandar Taib.

#### 4. Representatives to Outside Organisation

The Society had representatives in two (2) outside organisation namely; the Confederation of Scientific and Technological Association of Malaysia (COSTAM) and the American Association of Petroleum Geology (AAPG).

##### 4.1 COSTAM

The Society was represented by Prof. Dr. Joy Jacqueline Pereira and Dr. Samsudin Taib.

##### 4.2 AAPG

The Society was represented by Assoc. Prof. Askury Abd. Kadir of University Technology PETRONAS.

#### 5. Membership

As of 31<sup>st</sup> December 2008, the total membership in the Society stands at 431 and this is an increase of 4% over the previous year total of 415. This indicates that, recruiting efforts of new members especially during the conferences organised by society was effectively worked. Table 3 presented the breakdown of the type of membership and their geographical regions.



Table 3: Membership breakdown

Country	Full	Life	Institution	Student	Associate	Hon.	Total 2008	Total 2007
Australia	1	17	-	-	-	-	18	18
Brunei	-	1	-	-	-	-	1	1
Canada	-	2	-	-	-	-	2	2
Europe	3	11	1	-	-	-	15	17
Hong Kong	-	1	-	-	-	-	1	2
Indonesia	-	8	-	-	-	1	9	8
Japan	-	3	-	-	-	-	3	5
Africa	-	5	-	-	-	-	5	5
Philippines	-	2	-	-	-	-	2	2
Singapore	2	6	1	-	-	-	9	10
Thailand	-	3	-	-	-	-	3	2
USA	-	8	-	1	-	-	9	8
Malaysia	168	138	2	39	4	3	354	335
<b>Total 2008</b>	<b>174</b>	<b>205</b>	<b>4</b>	<b>40</b>	<b>4</b>	<b>4</b>	<b>431</b>	
<b>Total 2007</b>	<b>127</b>	<b>222</b>	<b>4</b>	<b>47</b>	<b>7</b>	<b>8</b>		<b>415</b>

## 6. Activities

The Society has successfully organized its two major events i.e. National Geoscience Conference 2008 (NGC 2008) and the Petroleum Geology Conference and Exhibition 2009 (PGCE 2009), which were organized by specific Organizing Committees directly under the Council. Other annual event is the GSM Photographic Competition 2008 handled by the Working Group of Promotion of Geoscience & Young Geologist.

### 6.1 National Geoscience Conference (NGC) 2008

The NGC 2008 was successfully held from 2<sup>nd</sup> to 3<sup>rd</sup> June 2008 at the Impiana Casuarina Hotel, Ipoh, Perak. The theme for the NGC 2008 was “Geoconservation, Geotourism and Geohazard”. The conference which was jointly organised by the UKM, UM, UTP and JMG was officiated by the Honourable Datuk Seri Ir Haji Mohammad Nizar Jamaluddin; Chief Minister Perak Darul Ridzuan.

A total of 106 participants were registered for the conference. Forty four (44) papers were presented orally and 33 as posters. A social visit to theme park of “The Lost World of Tambun” for the spouses on 2<sup>nd</sup> June 2008 was successfully done.

We wish to record our appreciation to the Organising Committee which was headed by Asoc. Prof. Dr. Kamal Roslan Mohamed for the excellent works.

### 6.2 Petroleum Geology Conference and Exhibition 2009 (PGCE 2009)

The PGCE 2009 that jointly organised by the Society and PETRONAS was held from 2<sup>nd</sup> to 3<sup>rd</sup> March 2009 at Kuala Lumpur Convention Centre, Kuala Lumpur. The theme for this year was “Accelerating Exploration Capability to Pace New Growth”. The opening was officiated by Mr Ramlan Abdul Malek, Vice President of PETRONAS.

The event manages to attract a huge crowd of more than 1,000 participants and a total of 39 companies for the exhibition. There were four (4) keynote papers presented during the conference that were presented by: i) Mr. Kurt Rudolph, Chief Geoscientist of ExxonMobil

Exploration ii) Dr Lawrence Bernstein, Vice President of Talisman Malaysia Limited iii) Mr William Schneider, Senior Vice President Newfield Exploration and iv) Mr Seet Chin Peng, Malaysia Institute of Geologists. The conference was divided into two parallel sessions i.e. geology and geophysics. A total of 70 technical papers were received, of which 47 papers were selected for oral presentation and the other 23 as poster presentations.

The Council wishes to convey its greatest thanks to each and every member of the Organizing Committee for their untiring efforts under the excellent leadership of Mr. Jamlus Md. Yasin. Thanks are also due to all donors and sponsors who helped made the PGCE 2009 a success.

### 6.3 GSM Photographic Competition 2008

The GSM Photographic Competition is organized by the Working Group on Promotion of Geoscience & Young Geologists . The result will be announced after the AGM GSM 2009.

### 6.4 Others

During the session, the Council with the cooperation of Working Groups and other organization were able to organize several technical talks. The details of these activities are presented in Table 4 below.

Table 4: List of Technical Talks.

Date	Nature	Activity/Topic	Speaker	Organizer
12/08/08	Talk	Diamonds	Mr. Calvin Lau	GSM & UM
13/08/08	Talk	Malam EG Muda i. Monitoring of the Gunung Pass Landslide ii. Debris flow in wet tropical terrain – some examples from Malaysia iii. Oil spill vulnerability assessment: A case study of SW Penang	i. Mr. Ling Nan Ley (JKR) ii. Dr. Tajul Anuar Jamaluddin (UKM) iii. Dr Ng Tham Fatt (UM)	GSM & UM
09/10/08	Talk	Finding tsunami source regions in Eastern Indonesia: Integrating Geoscience and disaster mitigation	Prof Ron Harris	GSM & UM
24/10/08	Talk	Malam Jurutera 2008 i. Electro-kinetic consolidation of soft clay ii. Challenges in near-shore piling works – a case study iii. A case history of soil nailed slope failure	i. Mr Lee Eng Choy ii. Mr. Chow Chee Meng iii. Mr Neoh Cheng Aik	GSM & IGM
17/12/08	Talk	National Slope Safety System – An Approach.	Mr Abd Rasid Jaapar	GSM & UM
08/01/09	Talk	Characteristics of earthquake belts and examples of tectonic activity in the greater Sundaland Area counting from the Tertiary	Dr. Franz L. Kessier	GSM & UM
15/01/09	Talk	The Geologists Act	Mr Seet Chin Peng	GSM, IGM & UM
22/01/09	Talk	Engineering Geology of Rock Slopes – Some recent case studies	Mr Tan Boon Kong	GSM & UM



18/02/09	Talk	Malam EG Tua / Wargamas i. Preventing slope failure related disasters in the granitic bedrock areas of Peninsular Malaysia ii. Geology behind the landslides	i. Dr John Kuna Raj ii. Mr Ng Chak Ngoon	GSM & UM
07/04/09	Talk	Tibet, the Himalaya and the Development of the Asian Monsoon: A chicken and egg problem for the IODP	Prof Peter D. Clift	GSM & UM

## 7. GSM Awards and Loan

GSM had set up various Awards for members and Loan Fund for Student Members as follow:

### 7.1 Honorary Membership

To-date, GSM had conferred Honorary Membership status to 8 consecutive persons:

- i) Prof. H. D. Tjia
- ii) Prof. C. S. Hutchison
- iii) D. Santokh Singh
- iv) S.k. Chung
- v) J.A. Katili
- vi) T. Kobayashi
- vii) N.S. Haile
- viii) D.J. Gobbett

The Council had decided to undertake a study on the possibility of conferring Honorary Membership to some eligible members in the future and is presently drafting on the qualifying criteria for Honorary Membership.

### 7.2 Student Loan Fund

To help the financially poor final year undergraduates in their theses preparation, a Student Loan Fund was created after the 1973 AGM with an initial allocation of RM10,000.00. Unfortunately, like other loan funds in the country, the GSM Loan Fund also suffered from non-performance loan (NPL) repayment.

### 7.3 Best Student Award

No nomination.

### 7.4 Young Geoscientist Award

No nomination.

### 7.5 Geoscientist Award

No nomination.

## **8.0 Regional Congress on Geology, Mineral and Energy Resources of South East Asia (GEOSEA 2009)**

The Eleventh Regional Congress on Geology, Mineral and Energy Resources of South East Asia (GEOSEA XI) will be held on the 8<sup>th</sup> to 9<sup>th</sup> June 2009 in Istana Hotel, Kuala Lumpur in conjunction with the International Year of Planet Earth (IYPE). The Organizing Committee has been established in February 2008, which was chaired by the President. The first circular has been circulated to the CCOP member countries during CCOP Annual Meeting, in Cebu, Philippines and the Conference on Geology of Thailand, in Bangkok, Thailand. The final circular which emphasis on revised fees and deadlines of abstracts submission was circulated on March 2009. To date a total of 81 technical papers has been received. The Council had also received consensus from ASEAN and member countries with regards to the setting up of a permanent secretariat for GEOSEA.

## **9.0 GSM-Student's Geological Club Collaboration**

The Council agreed to foster cooperation and assist Student's Geological Club by providing opportunities for financial support. To qualify for such support, Geological Club must have at least 25 Student Members. The Chairman, the Secretary and the Treasurer of the Geological Club must be a Student Member of the Society. The club must prepare a working paper for their program in line with society's objective and submit to the Council for acceptance.

## **10.0 GSM Secretariat**

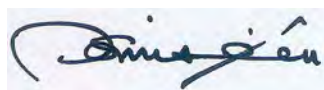
The Department of Geology, University of Malaya agreed to allow the Society to use a room next to the Department's Library (Klompe) as an office for the Society. In return, the Council agreed to contribute to the Department the sum of RM 4,000.00 per year for the purpose of upgrading the library resources, such as books, journals, magazines and maps.

## **11.0 Acknowledgement**

In conclusion, I wish to thanks all of the council, sponsoring bodies, and all the society members and non-members who contributed their time and talent to progress the work of the society during this session. The provision of office facilities by the Geology Department, University Malaya is acknowledged with appreciation. The continuing support of Higher Learning Institutions, Government Departments, Private sectors and NGOs are clearly important and very much appreciated.

Thank you.

Prepared by,



**JASMI AB TALIB**  
Secretary 2008/2009



## ASSISTANT SECRETARY'S REPORT 2008

### 1.0 Introduction

The sales of Society publications is listed as Table 1 below.

Table 1: Sale of publication for 2008

Publications	Sales 2008
Bulletin 2	0
Bulletin 3	2
Bulletin 4	2
Bulletin 6	1
Bulletin 7	0
Bulletin 13	1
Bulletin 18	1
Bulletin 19	4
Bulletin 20	1
Bulletin 21	4
Bulletin 22	2
Bulletin 23	3
Bulletin 24	2
Bulletin 25	1
Bulletin 26	3
Bulletin 27	5
Bulletin 28	3
Bulletin 29	0
Bulletin 30	1
Bulletin 31	1
Bulletin 32	3
Bulletin 33	2
Bulletin 34	2
Bulletin 36	6
Bulletin 37	2
Bulletin 38	0
Bulletin 40	4
Bulletin 42	0
Bulletin 43	1
Bulletin 44	45
Bulletin 45	5
Bulletin 46	0
Bulletin 47	3
Bulletin 48	1

Abstract (Bull 6)	0
Rock poster	0
Geological evolution of SEA	2
Malaysian Stratigraphic guide	1
Proceeding AGC 2000	2
Proceeding AGC 2001	2
Geology of Borneo (CD)	0
Geology of Borneo (Map)	0
Lexicon of stratigraphy	1
Bulletin 49	2
Bulletin 50	3
Bulletin 51	2
Bulletin 52	5
Bulletin 53	7
Bulletin 54	(392)*
Total	138

- \*Distributed free to all 2008 members
- \*Total printed is 700 copies

## TREASURER'S REPORT 2008

For the Financial Year 2008, the society's posted a financial deficits of RM163,900.00 compared to surplus of RM 18,031 recorded for the Financial Year 2007. The net current asset has decreased from RM 541,439.00 for 2007 to RM 431,155.00 for the year 2008.

Operating revenue posted low compared from year 2007 which is total income of RM 116,053 to only RM 31,275.00 for year 2008. This is mainly due to non accumulative income from major contributor; PGCE since not being held in year 2007. PGCE 2008 in conjunction with opening ceremony of IYPE 2008/9, which was held on 14<sup>th</sup> to 15<sup>th</sup> of January 2008 at Kuala Lumpur Convention Centre posted nett profit of RM 178,141.52 (*refer PGCE 2008 Account Statement*) lower than PGCE 2006 which is 270,910.16, due to high expenditure in organising both event concurrently which is RM 947,332.48 compared to RM 835,145.06 for PGCE 2006. Further increasing of capital expenditure for preparing the PGCE 2009 especially cost for venue (KL Convention Centre) that was increased by almost 50% made the profit of PGCE 2008 which is only remaining balance that received after 31<sup>st</sup> December 2007 not sufficient enough to cover the preliminary initial cost of PCGE 2009.

There was also depreciation of income previously from bank interest of RM 8,601.00 compare to RM 11,160 of year 2007 and subscription of 9,413.00 to RM 11,615.00 of 2007. There is slight increase on sales of publications by RM 1,493 to year 2007 of 1,239 and advertisement in warta geologi from RM 200.00 for 2007 to RM 540.00 year 2008.

Thus there was an extra income posted by jointly organised short course by Prof Harry Doust with University Malaya Geology Department with nett profit of RM 10,340.00.

Total operating expenditure for financial Year 2008 higher which is RM 195,175.00 compared to RM 98,022.00 for Financial Year 2007. This is mainly due to an increase expenditure on PGCE 2008 in conjunction with IYPE 2008 together with initial expenses of PGCE 2009 which is recorded a total of RM 111,756.00. Also increasing expenditure on NGC2009, Annual Dinner, slightly on Honorarium, photo competition prize, auditing fees, refreshment, speaker's account, xerox and annual general meeting.

The Hon. Treasurer would like to express a great appreciation to all the donors and sponsor for their contributions and supports.

Ahmad Nizam Hassan  
Treasurer



**PERSATUAN GEOLOGI MALAYSIA**  
**(GEOLOGICAL SOCIETY OF MALAYSIA)**  
 (Registered in Malaysia)

STATEMENT OF ASSETS AND LIABILITIES AS AT 31 DECEMBER 2008

	Note	2008 RM	2007 RM
<b>FUND ACCOUNTS</b>			
GENERAL FUND	3	369,237	533,136
STUDENT LOAN FUND		156	-
EVALUATION FORMATION WORKING GROUP FUND		48,205	2,580
YOUNG GEOSCIENTIST AWARD FUND		3,143	3,143
AAPG-UM STUDENT CHAPTER FUND		10,414	2,580
		<u>431,155</u>	<u>541,439</u>
Represented by:			
<b>NON-CURRENT ASSETS</b>			
PLANT AND EQUIPMENT	4	31,290	34,914
<b>CURRENT ASSETS</b>			
Inventories	5	41,042	11,684
Deposits and prepayment	6	12,632	600
Fixed deposits with licensed bank	7	192,908	242,908
Cash and bank balances		153,283	251,333
		<u>399,865</u>	<u>506,525</u>
 NET CURRENT ASSETS		 399,865	 506,525
		<u>431,155</u>	<u>541,439</u>

The accompanying notes are an integral part of these statements

**PERSATUAN GEOLOGI MALAYSIA**

(Registered in Malaysia)

STATEMENT OF INCOME AND EXPENDITURE FOR THE YEAR ENDED  
31 DECEMBER 2008

<b>INCOME</b>	2008 RM	2007 RM
Entrance fee	640	440
Fixed deposits interest income	8,601	11,160
Subscription	9,413	11,615
Sales of publications	1,493	1,239
Petroleum Geology Conference	-	80,305
Miscellaneous income	34	912
Working groups	214	-
Geological Evolution (CSH)	-	1,093
GEOASIA Conference	-	10,000
Advertisement (Warta Geologi)	540	200
Short course	10,340	-
	<u>31,275</u>	<u>116,053</u>
<b>EXPENDITURE</b>		
National Geological Conference	8,473	7,472
Annual dinner	2,645	1,688
PGCE	111,756	-
Bank charges	197	338
Professional fee	300	-
Honorarium	20,548	20,337
Photo competition	1,100	1,000
Postages	3,301	6,986
Printing and Stationery		
- Miscellaneous	148	814
- Warta Geologi	26,160	27,120
- Bulletin	33	16,338
Audit fee	800	800
Refreshment	1,955	636
Speakers' account	3,112	1,417
Sundry expenses	5,695	2,771
Subscription to COSTAM	100	100
Telefax	478	459
Telephone	715	756
Working groups	-	382
Photostat	3,471	722
Depreciation on plant and equipment	3,624	4,064
Annual General Meeting	469	322
UMS: Geology Club	-	1,500
UKM: Geology Club	-	2,000
Service tax	55	-
Travelling expenses	40	-
	<u>195,175</u>	<u>98,022</u>
(Deficit) / Surplus for the year	<u>(163,900)</u>	<u>18,031</u>



**PERSATUAN GEOLOGI MALAYSIA**

(Registered in Malaysia)

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NOTES TO THE FINANCIAL STATEMENTS - 31 DECEMBER 2008

**1. PRINCIPAL OBJECTIVES**

The objective of the Society is to promote the advancement of the geological sciences in Malaysia.

**2. ACCOUNTING POLICIES**

(a) Basic of Accounting

The financial statements have been prepared under the historical cost convention and comply with applicable Approved Accounting Standards issued by the Malaysian Association Standards Board.

(b) Plant and Equipment

Plant and equipment is stated at historical cost less accumulated depreciation. Depreciation on plant and equipment is computed on the straight line basis calculated to write-off the cost of the assets over their estimated useful lives.

The principal annual rates used are:-

Office equipment	10%
Computer	20%

The carrying values of the assets are reviewed for impairment when there is an indication that the assets might be impaired. Impairment is measured by comparing the carrying values of the assets with their recoverable amounts.

An impairment loss is charged to the income and expenditure account immediately, unless the asset is carried at revalued amount. Any impairment loss of a revalued asset is treated as a revaluation decrease to the extent of previously recognised revaluation surplus for the same asset.

Subsequent increase in the recoverable amount of an asset is treated as reversal of the previous impairment loss and is recognised to the extent of the carrying amount of the asset that would have been determined (net of amortisation and depreciation) had no impairment loss been recognised. The reversal is recognised in the income statement immediately, unless the asset is carried at revalued amount.

c) INVENTORIES

Inventories consists of compass and maps valued at the lower of cost and net realizable value.

**PERSATUAN GEOLOGI MALAYSIA**  
(Registered in Malaysia)

d) **INCOME RECOGNITION**

Membership subscription is payable annually at the beginning of the financial year. All subscriptions received during the financial year are recognised as income.

Income from sale of publications is recognised upon delivery of goods.

Income from organising conference is recognised on receipt basis.

Fixed deposit interest income is recognised on an accrual basis.

<b>3. GENERAL FUND</b>	2008 RM	2007 RM
At 1 January	533,136	515,105
(Deficit) / Surplus for the year	(163,900)	18,031
At 31 December	<u>369,236</u>	<u>533,136</u>

**4. PLANT AND EQUIPMENT**

	Cost			Balance at 31/12/2008	
	Balance at 1/1/2008	Additions	Disposal		
	RM	RM	RM	RM	
Office equipment	130,155	-	-	130,155	
Computer	2,596	-	-	2,596	
	<u>132,751</u>	<u>-</u>	<u>-</u>	<u>132,751</u>	

	Accumulated depreciation			Balance at 31/12/2008	Net Book Value at 31/12/2008
	Balance at 1/1/2008	Charge for the year	Disposal		
	RM	RM	RM	RM	RM
Office equipment	96,571	3,358	-	99,929	30,226
Computer	1,266	266	-	1,532	1,064
	<u>97,837</u>	<u>3,624</u>	<u>-</u>	<u>101,461</u>	<u>31,290</u>

**PERSATUAN GEOLOGI MALAYSIA**  
(Registered in Malaysia)

<u>2007</u>	<u>Cost</u>			<u>Balance at</u>
	<u>1/1/2007</u>	<u>Additions</u>	<u>Disposal</u>	<u>31/12/2007</u>
	RM	RM	RM	RM
Office equipment	129,067	1,088	-	130,155
Computer	2,596	-	-	2,596
	<u>131,663</u>	<u>1,088</u>	<u>-</u>	<u>132,751</u>

	<u>Accumulated depreciation</u>			<u>Net Book Value at</u>	
	<u>1/1/2007</u>	<u>Charge for the year</u>	<u>Disposal</u>	<u>31/12/2007</u>	<u>31/12/2007</u>
	RM	RM	RM	RM	RM
Office equipment	92,839	3,732	-	96,571	33,584
Computer	934	332	-	1,266	1,330
	<u>93,773</u>	<u>4,064</u>	<u>-</u>	<u>97,837</u>	<u>34,914</u>

**5. INVENTORIES**

	<u>2008</u>	<u>2007</u>
	RM	RM
Maps	4,031	4,231
Compass	5,993	7,453
Magazines	31,018	-
	<u>41,042</u>	<u>11,684</u>

**6. DEPOSITS AND PREPAYMENT**

	<u>2008</u>	<u>2007</u>
	RM	RM
Deposits	600	600
Prepayment	12,032	-
	<u>12,632</u>	<u>600</u>

**7. FIXED DEPOSITS WITH LICENSED BANK**

The fixed deposits with licensed bank have a maturity of between 3 to 15 months (2007 : 3 to 15 months). Interest rates for the deposits ranged from 3.75% to 5% (2007 : 3.75% to 5%) per annum.



**PERSATUAN GEOLOGI MALAYSIA**  
(Registered in Malaysia)

CASH FLOW STATEMENT FOR THE YEAR ENDED 31 DECEMBER 2008

	2008 RM	2007 RM
<b>Cash flows from operating activities</b>		
(Deficit) / Surplus over expenditure for the year	(163,900)	18,031
Adjustments for non-cash items:		
Depreciation on plant & machinery	3,624	4,064
Interest income	(8,601)	(11,160)
	<u>(168,877)</u>	<u>10,935</u>
Increase in prepayment	(12,032)	-
Increase in inventories	(29,357)	(392)
Decrease in payables	-	(800)
Increase / (Decrease) in Student Fund	156	(465)
Increase in AAPG-UM Student Chapter Fund	7,834	2,580
Increase in Evaluation Formation Working Group Fund	45,625	-
	<u>(156,651)</u>	<u>11,858</u>
 Cash flow from investing activity		
Purchase of plant and equipment	-	(1,088)
Outflow from investing activity	<u>-</u>	<u>(1,088)</u>
 Cash flow from financing activity		
Interest income	8,601	11,160
Inflow from financing activity	<u>8,601</u>	<u>11,160</u>
 Net (decrease) / increase in cash and cash equivalents	(148,050)	21,930
 Cash and cash equivalents at beginning of the year	494,241	472,311
 Cash and cash equivalents at end of the year	<u>346,191</u>	<u>494,241</u>
 Cash and cash equivalents comprised of:		
Deposits held with licensed banks	192,908	242,908
 Cash and bank balances	<u>153,283</u>	<u>251,333</u>
	<u>346,191</u>	<u>494,241</u>

PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)  
STATEMENT BY THE COUNCIL

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We, Yunus Abdul Razak and Ahmad Nizam Hasan, being the President and Treasurer respectively, of the Persatuan Geologi Malaysia (Geological Society Of Malaysia) do hereby state that, in the opinion of the Council, the financial statements set out pages 4 to 9 are properly drawn up in accordance with applicable approved accounting standards so as to give a true and fair view of the state of affairs of the Persatuan Geologi Malaysia (Geological Society of Malaysia) as at 31 December 2008, and of the result and cash flows for the year then ended.

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Yunus Abdul Razak  
President

Ahmad Nizam Hasan  
Treasurer

Kuala Lumpur

Dated :

PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)  
DECLARATION BY THE OFFICER PRIMARILY RESPONSIBLE FOR THE FINANCIAL  
MANAGEMENT OF THE SOCIETY

I, Ahmad Nizam Hasan, the officer primarily responsible for the financial management of the Persatuan Geologi Malaysia (Geological Society Of Malaysia), do solemnly and sincerely declare that the accompanying financial statements set out on pages 4 to 9 are, to the best of my knowledge and belief correct, and I make this solemn declaration conscientiously believing the same to be true and by virtue of the provisions of the Statutory Declarations Act, 1960.

Subscribed and solemnly declared by )  
the abovenamed Ahmad Nizam Hasan )  
at Kuala Lumpur in Wilayah Persekutuan )  
on )

Ahmad Nizam Hasan

Before me,

Commissioner for Oaths



REPORT OF THE AUDITORS TO MEMBERS OF THE  
PERSATUAN GEOLOGI MALAYSIA (GEOLOGICAL SOCIETY OF MALAYSIA)

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We have audited the financial statements set out on pages 4 to 9. These financial statements are the responsibility of the Council Members of the Society. It is our responsibility to form an independent opinion, based on our audit, on those financial statements and to report our opinion to you, as a body, and for no other purpose. We do not assume responsibility to any other person for the content of this report.

We conducted our audit in accordance with approved auditing standards in Malaysia. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the Council Members, as well as evaluating the overall financial statements presentation. We believe that our audit provides a reasonable basis for our opinion.

In our opinion, the financial statements give a true and fair view of the statement of assets and liabilities of the Society as at 31 December 2008 and of its statement of income and expenditure and cash flows for the financial year ended 31 December 2008 in accordance with the MASB approved accounting standards in Malaysia.

S.F. LEE & CO. (AF 0670)  
Chartered Accountants

LEE SIEW FATT  
(1179/9/10J)  
Chartered Accountant

Kuala Lumpur

Date :

## **Council Members and Members of GSM at the 43<sup>rd</sup> Annual General Meeting at the Geology Department Of University Malaya on the 24<sup>th</sup> April 2009**





**GSM Annual General Meeting Dinner at the Department of  
Geology, University of Malaya on 24<sup>th</sup> April 2009**





# GEOSEA 2009

## Eleventh Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia

8 – 10 June 2009 • Istana Hotel, Kuala Lumpur, Malaysia

Organiser:

**Geological Society of Malaysia**



Co-organisers:



Minerals & Geoscience  
Department Malaysia (JMG)



Universiti Kebangsaan  
Malaysia (UKM)



University of Malaya  
(UM)



Petroleum Nasional  
Berhad (PETRONAS)

## **Eleventh Regional Congress on Geology, Mineral and Energy Resources of South-east Asia (GEOSEA 2009)**

**Theme: 'Earth Sciences for Sustainable Development'**

The Eleventh Regional Congress on Geology, Mineral and Energy Resources of South-east Asia (GEOSEA 2009) was jointly organized by the Geological Society of Malaysia (GSM), Minerals and Geoscience Department Malaysia (JMG), Universiti Kebangsaan Malaysia (UKM), University of Malaya (UM) and Petroliaam Nasional Berhad (PETRONAS). It was held at the Istana Hotel, Kuala Lumpur from 8<sup>th</sup> to 10<sup>th</sup> June 2009. It is pertinent to note that the GEOSEA 2009 was organized after a lapse of almost 8 years where the last GEOSEA was held in September 2001, in Yogyakarta, Indonesia.

The aim of the GEOSEA 2009 is to foster an exchanged of scientific and technical information in geology, mineral, energy and other related issues among geoscientists in the core countries; namely, Indonesia, Malaysia, the Philippines and Thailand. GEOSEA 2009 also expanded to include participation from neighbouring countries, to establish a new era of regional collaboration among geological institutions. In appreciation of the closing of the United Nations International Year of Planet Earth (IYPE) celebration, 'Earth Sciences for Sustainable Development' was chosen as the theme of GEOSEA 2009.

The two-day conference was opened by Y.Bhg. Puan Aziyah Mohamed, Deputy Secretary General I, Ministry of Natural Resources and Environment on behalf of Yang Berhormat Datuk Douglas Uggah Embas, Minister for Natural Resources and Environment, Malaysia. A number of 240 participants attended the conference; representing geoscientists and experts from the government sectors, public and academia as well as students within the Southeast Asia region and other parts of the world.

A total of 92 technical papers were presented, of which 84 as oral presentations and 12 poster presentations. The technical session has been broke-up into three parallel sessions with selected themes of IYPE such as Resources, Deep Earth, Hazards & Megacities, Earth & Life, Groundwater & Soil, Geoscience Tools, and Earth & Conservation. There were also 4 Keynotes papers and 4 Regional & Country Papers presented during the conference. Six Side Events has been successfully organized; namely, (i) IYPE Regional Meeting, (ii) Asian Dialogue on Geoheritage Conservation, (iii) Workshop on Geomodelling, (iv) Workshop on Ore Deposit Models in SE Asia, (v) Workshop on Engineering Geology of Rock Slope, and (vi) Workshop on Knowledge Management.

The next Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia (GEOSEA XII) will be organized by the Geological Society of Thailand in year 2012.

**MOHD BADZRAN MAT TAIB**

Secretary for GEOSEA 2009

**THE ELEVENTH REGIONAL CONGRESS ON GEOLOGY, MINERAL  
AND ENERGY RESOURCES OF SOUTHEAST ASIA (GEOSEA 2009)**

**WELCOMING SPEECH BY  
Y. BHG. DATO' YUNUS ABDUL RAZAK  
PRESIDENT GEOLOGICAL SOCIETY OF MALAYSIA**

Yang Berbahagia Puan Aziyah Mohamed, Timbalan Ketua Setiausaha, Kementerian Sumber Asli dan Alam Sekitar,

Prof. Dr. Ed de Mulder, Director of IYPE Corporation,

Dr. Lambok M. Hutasoit, President, Ikatan Ahli Geologi Indonesia, (IAGI),

Mr. Rolando E. Pena, representing Geological Society of the Philippines,

Mr. Araya Nakanart, President of the Geological Society of Thailand

Dr. He Young Chun, Director, CCOP Technical Secretariat, Bangkok

Para tetamu jemputan dan tuan-tuan dan puan-puan hadirin sekalian.

Assalamu'alaikum dan Salam Sejahtera!

1. Let me begin this welcoming address by sharing with you an email received recently from Mr. Richard Murphy, who is now residing In UK. Mr. Murphy was the President for GSM in 1973 or thereabouts.

In the 1960's the Geological Society of Malaya (GSM) was centred in two places: Ipoh, concerned mainly with tin mining and the Geology Department, University of Malaya. I was working with Esso in Singapore but was loosely affiliated with the GSM.

The custom at that time was to have an annual meeting, usually in Ipoh or Kuala Lumpur, and expect some 20-odd people to attend.

But in 1970 the GSM decided to hold their annual meeting in Kuching as a new departure and as a means of attracting the geoscientists from Sarawak and Sabah, only recently established as states within the newly named Malaysia. Much to the surprise of all, there were 70 attendees, including a significant number from the petroleum exploration companies which had become active again in the late 1960's



in Southeast Asia.

I felt that it was the right time to hold a more ambitious regional meeting, hopefully to attract papers from the oil companies, who were amassing huge amounts of data by seismic surveys and the drilling of exploration wells.

As the interest in Southeast Asia was growing also among academic institutions, it seemed a good time to bring it all together. After some discussions and promotion on my part, the GSM scheduled a regional meeting for March 1972 at the University, when classes were out and there was adequate space available. I had little part in the organization of the meeting, as I was based in Singapore and heavily involved in Esso affairs. But the GSM members in KL laid on a splendid conference, to be rewarded by the attendance of some 280 geoscientists, many of whom came from Thailand, the Philippines and Indonesia, and others especially from Europe, Australia and America just for this meeting. We called it GEOSEA - Geology of Southeast Asia.

Excited by the success, GSM at the closing banquet called upon the regional agencies to hold GEOSEA meetings every three years in capital cities of the countries involved. Thus there was GEOSEA II in Jakarta in 1975, GEOSEA III in Bangkok in 1978 and GEOSEA IV in Manila in 1981. It gives me great pleasure to observe that the Eleventh GEOSEA is now being held in KL in 2009. It is also gratifying to see the wide variety of technical papers by regional geoscientists.

Ladies and Gentlemen,

2. That email has summarized the history of GEOSEA. The GEOSEA Congress is a premier geoscientific event which aims to foster an exchange of ideas, information and co-operation in geology, mineral and energy resources and related issues in the core countries, namely, Indonesia, Malaysia, the Philippines and Thailand. Unfortunately, the last GEOSEA before this one was held in 2001 in Yogyakarta, Indonesia. Due to some reasons, the tradition can't be continued. Hence, the Geological Society of Malaysia had taken initiatives to host this GEOSEA 2009, the Eleventh in its series.

3. In addition, GEOSEA 2009 tries to include participation from other countries within Southeast and East Asia to establish a new era of regional collaboration among geological institutions. The current economic slowdown had somehow contributed to the number of participants. The role of CCOP, an inter-governmental organization based in Bangkok in promoting this event is highly appreciated.

4. GEOSEA 2009 is organized in such a manner to mark the conclusion of

the triennium International Year of Planet Earth (IYPE), 2007-2009 in Malaysia. The IYPE is an initiative by the United Nations to appreciate the contribution of geosciences in conserving, monitoring and maintaining the balance of the various processes having an impact on our planet and its inhabitants.

5. We Geoscientists have a crucial role to play together with other professions, in ensuring that all the processes are interwoven harmoniously without affecting the planet's stability and balance, for the benefit of our current and future generations.

6. Therefore, the themes of the GEOSEA 2009 Technical Sessions have been streamlined to conform to the themes of IYPE.

Ladies and Gentlemen,

7. During this Congress, a total of 92 papers will be presented including 4 Keynotes papers, 4 Regional & Country Papers and 84 technical papers. There are also 12 poster presentations. The organizing Committee as shown in the detailed program organizes 6 Side Events. [(i) IYPE Regional Meeting - today, after Ice Breaker, (ii) Asian Dialogue on Geoheritage Conservation - tomorrow at 17:30; (iii) Workshop on Geomodelling; (iv) Workshop on Ore Deposit Models in SE Asia; (v) Workshop on Engineering Geology of rock slope; and (vi) Workshop on knowledge management. The last 4 will be held on Wednesday]. More than 200 from the geoscience fraternity, both locally and abroad have registered to attend this GEOSEA 2009.

8. I would like to take this opportunity to record my sincere thanks and appreciation to our patron Y.B. Datuk Douglas Uggah Embas, Minister for Natural Resources and Environment, and Puan Aziyah, Deputy Secretary General who represents the Minister this morning, for the support given, and the time taken to be with us this morning. I also want to congratulate and thank the Organizing Committees for their hard work and dedication to ensure the smooth running of the events. To all co-organizers (JMG, UKM, UM, PETRONAS) and collaborators, as detailed in the abstract book, I have no other word to say except Terima Kasih!

9. To all participants and presenters, I wish you a very warm welcome. Especially to participants from overseas, Selamat Datang ke Malaysia! I wish you a pleasant stay here in Malaysia and hope that you will bring back fond memories of your stay here back to you country. I sincerely hope that this GEOSEA 2009 will be beneficial in bringing us together to fulfill the objectives of the Congress, beneficial in promoting and enhancing the contribution of geoscientist in nation development.

Thank you very much. Terima kasih.

**THE ELEVENTH REGIONAL CONGRESS ON GEOLOGY, MINERAL  
AND ENERGY RESOURCES OF SOUTHEAST ASIA (GEOSEA 2009)  
SPEECH BY Y. BHG. PUAN AZIYAH BT MOHAMED  
DEPUTY SECRETARY GENERAL OF NATURAL RESOURCES AND  
ENVIRONMENT MALAYSIA DELIVERED AT THE  
ELEVENTH REGIONAL CONGRESS ON GEOLOGY, MINERAL**

SALAM SEJAHTERA AND A VERY GOOD MORNING.

Yang Berbahagia, Dato' Yunus Abdul Razak,  
The President of the Geological Society of Malaysia,  
Distinguished guests,  
Ladies and Gentlemen,

First of all, I would like to extend a warm welcome to all participants of the 11<sup>th</sup> Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia organized by the Geological Society of Malaysia.

It gives me great pleasure to be here today to officially launch the ELEVENTH REGIONAL CONGRESS ON GEOLOGY, MINERAL AND ENERGY RESOURCES OF SOUTHEAST ASIA, (or GEOSEA 2009); with the theme being "EARTH SCIENCES FOR SOCIETY".

I am also pleased to be given the opportunity to share my thoughts at this prestigious event, amongst prominent earth scientists and experts from the government sectors, public and academia within the Southeast Asia region as well as other parts of the world.

Ladies and Gentlemen,

I understand that the first GEOSEA Congress was jointly organized in 1972, in Kuala Lumpur by the four co-founders; Geological Society of Malaysia, Ikatan Ahli Geologi Indonesia, Geological Society of Thailand and Geological Society of the Philippines. The event was then held once in every three years, rotationally among the co-founders. But unfortunately, due to unforeseen constraints, the co-founders were unable to organize the event after the last GEOSEA which was held in September 2001, in Yogyakarta, Indonesia.

Hence, the initiative and efforts by the Geological Society of Malaysia to organize this event in Kuala Lumpur, after a lapse of almost 8 years is

commendable and timely. I sincerely hope that a similar effort to facilitate the next GEOSEA will also be taken by the next host country. I also wish to commend the geosciences community here and abroad for supporting this event as your contributions will in some way or other help to increase and enhance the knowledge of the participants of the Congress.

(objective) to live in was also made aware a having said that, I would like to offer as the permanent base for the secretariat.

Ladies and Gentlemen,

GEOSEA 2009 is also being organized to mark the conclusion of the United Nations International Year of Planet Earth (IYPE) celebration. As you may already know, the International Year of Planet Earth (IYPE) is a programme designed to foster outreach and research activities to promote a greater and more effective use of the Earth sciences knowledge and how this knowledge can be used by the geoscientists in the development of our countries. The geoscientists have been involved in exploration activities to source for minerals, oil and gas which are tremendously necessary and important as raw materials and as well as far a source of energy. for industries. The Geoscientists are also responsible for site investigations for purposes of construction as well as identifying sites for landfills. Geoscientists are thus responsible for finding resources and developing these very resources to make the world a safer and healthier place for the people to live in.

Ladies and Gentlemen

We would also like to commend the work of geoscientists who are responsible for looking for sources of groundwater as water has been described as the liquid of life. As indicated by the Food and Agricultural Organisation (FOAAO), by the year 2030 one in five developing countries will be facing shortage of water. Whilst it is important for geoscientists to discover new sources of water, it is equally important that the extraction of groundwater will be done in a sustainable manner. I understand that am glad that there will be Technical Sessions and in this conference whereby aspect on groundwater will be discussed at in one of these sessions. Hence new technological ideas on groundwater management will be further elaborated and discussed during the proceedings of the Congress and I hope that you will all benefit from these elaborations deliberations.

Ladies and gentlemen,

To support the IYPE, the Malaysian Government, working closely with the



IYPE Secretariat in Trondheim, Norway, has set up a National Committee for the IYPE in May 2006. Subsequently, Malaysia launched the National IYPE celebration which was attended by local and foreign geologists as well as students from local universities on 14<sup>th</sup> January 2008 at the Kuala Lumpur Convention Centre.

Among the IYPE programs implemented by Malaysia, include outreach activities which were held at the national level led by various ministries, agencies, universities and scientific bodies who served as Members of the IYPE. In addition, with the support of selected International organisations Malaysia has among others hosted:

- i) The Inaugural Working group Meeting of the Geoheritage Book Project,
- ii) The Forum on Cities and Climate Change which highlighted the contribution of geosciences in reducing risks of climate change,
- iii) The International Symposium on Cities and Conservation,
- iv) The National Conference on Geological Heritage and the Regional Conference on Asia Pacific Geoparks, and
- v) The Petroleum Geology Conference and Exhibition which was organised jointly by the Geological Society of Malaysia and Petronas and was attended by 1000 participants representing ten countries in the region..
- vi) other a number of Leaflets and geoscientific books were also published to disseminate information for the effective use of Earth Sciences knowledge for the betterment of society.

The Government has acknowledged the importance of geoscientific knowledge and has made it a requirement for geological reports to be submitted for obtaining approval of development proposals under the Town and Country Planning Act (Act 172) and Environmental Quality Act (Act 127). The Government also has set-up a One Stop Centre (OSC) at the local authority level to evaluate development proposals, and the Department of Minerals and Geosciences is one of the key members of the OSC. In the year 2008, the approved Parliament passed the Geologist Act (Act 689); an Act to establish the Board of Geologists which will regulate geological practices and enhance professionalism.

The Ministry strongly believes that innovative ideas coupled with application of new techniques, knowledge sharing and work collaboration among the

geosciences fraternity will be able to increase our understanding of planet earth. In this context, I see the GEOSEA Congress as the appropriate forum for the geosciences fraternity to meet, share, build, enhance relationships and networking in the pursuit of sustaining natural resources for the nation and society.

I am happy to note that we have with us more than 200 participants attending this 2 day forum, including university students, with more than 80 scientific papers and posters being presented. I am sure there are a multitude of technical issues and challenges to be presented and discussed which will ultimately benefit ultimately participants benefit participants of the Congress.

Ladies and Gentlemen

I was also made to understand that GEOSEA has no permanent secretariat to manage its activities and the four co-founders; Geological Society of Malaysia, Ikatan Ahli Geologi Indonesia, Geological Society of Thailand and Geological Society of the Philippines have discussed this issue and have proposed that a permanent secretariat be established to foster the spirit of cooperation between geoscientists from these countries. In this context connection, Malaysia supports this idea and I would like to wish to offer Malaysia as the permanent base for the secretariat. The GEOSEA will coordinate the activities and support the finances of the Secretariat.

Ladies and Gentlemen,

In conclusion, I am pleased to note that GEOSEA thus far provides a good platform for intellectual discourse on the geosciences in the Southeast Asia. In this regard, I would like to take this opportunity to congratulate the Geological Society of Malaysia for their commendable effort to organize this conference to promote geosciences and exchange of ideas. I also wish to take this opportunity to extend my appreciation to the Department of Minerals and Geosciences, University Kebangsaan Malaysia, University of Malaya and PETRONAS for all their support. Lastly, I wish to thank and congratulate the organising committee for their efforts in organising this conference.

On that note, it is with great pleasure that I declare open the Eleventh Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia.

Thank you.

# Programme

**Monday, 8 June 2009**

Room 1: Mahkota

## OPENING CEREMONY

- 09:00 : **Welcoming Address by Dato' Yunus Abdul Razak**  
President, Geological Society of Malaysia &  
Chairman, GEOSEA 2009 Organising Committee
- 09:10 : **Opening Address by Y.B. Datuk Douglas Uggah Embas**  
Minister of Natural Resources and Environment Malaysia
- 9:30 - 10:00 : Tea Break

Time	Room 1: Mahkota 3	Room 2: Delima & Nilam	Room 3: Baiduri & Berlian
10:00 - 10:40	<b>Keynote 1</b> <b>ED DE MULDER</b> Earth science for society – Beyond IYPE		
	<b>Regional &amp; Country Papers</b>	<b>Technical Session 2a Deep Earth</b>	<b>Technical Session 3a Hazards &amp; Megacities</b>
10:40 - 11:00	Paper 1 <b>HEE-YOUNG CHUN &amp; MARIVIC PULVERA UZARRAGA (CCOP)</b> Promoting Geosciences in East and Southeast Asia – Issues and Challenges Paper 2 <b>LAMBOK M. HUTASOIT (IAGI ASSOCIATION OF INDONESIAN GEOLOGISTS)</b> Promoting geology in Indonesia – Issues and challenges	Paper 2a1 <b>H.D. TJIA, ZAINAL ABIDIN JAMALUDDIN, MOHD NIZAM BIN MD NOORDIN, MUHAMMAD EZWAN DAHLAN, ZAKARIA MOHAMAD</b> Superimposed displacements on record in the Bukit Tinggi Fault Zone, Pahang, Malaysia	Paper 3a1 <b>F. TONGKUL, AHMAD KHAIRUT TERMIZI, EJRIA SALEH, NOOR FARASALIZA SAKHO</b> Tsunami inundation modeling for Eastern Sabah, Malaysia
11:00 - 11:20	Paper 3 <b>E.G. DELFIN JR. (GEOLOGICAL SOCIETY OF THE PHILIPPINES)</b> Promoting geology in the Philippines – Issues and challenges	Paper 2a2 <b>SENDJAJA, P., SUPARKA, M.E. &amp; SUCIPTA, E.</b> Adakites rocks from Sintang, West Kalimantan and Una-Una Island Central Sulawesi, Indonesia: Evidence of slab melting subducted young oceanic crust	Paper 3a2 <b>H. ZABIDI</b> Deterministic karst cavity distribution prediction through geospatial analysis: A case study of SMART tunnel project, Kuala Lumpur, Malaysia
11:20 - 11:40	Paper 4 <b>ARAYA NAKANART (GEOLOGICAL SOCIETY OF THAILAND)</b> Promoting geosciences in Thailand – Issues and challenges	Paper 2a3 <b>MICHAEL COTTAM, ROBERT HALL &amp; CHRISTIAN SPERBER</b> Age, origin and exhumation of the Mount Kinabalu Granite, Sabah	Paper 3a3 <b>ABD RAHIM BIN HARUN &amp; ABDUL RAHIM BIN SAMSUDIN</b> Gravity method and its contribution to geological mapping and cavity detection in Peninsular Malaysia
	<b>Technical Session 1a Resource Issues</b>		
11:40 - 12:00	Paper 1a1 <b>RASOUL SORKHABI &amp; FELIX TONGKUL</b> Dry gas, tight reservoirs in the West Crocker turbidites: A new exploration play offshore Northwest Borneo	Paper 2a4 <b>NURCAHYO I. BASUKI</b> A petrographic study on diagenesis of reef-associated Rajamandala carbonate rocks, Padalarang area, West Java, Indonesia: preliminary results	Paper 3a4 <b>MUSTAFA KAMAL SHUIB</b> Evidences for Quaternary to present seismicities in Malay Peninsula

Time	Room 1: Mahkota 3	Room 2: Delima & Nilam	Room 3: Baiduri & Berlian
12:00 - 12:20	Paper 1a2 <b>HAFTAY HAILAY ABRAHA &amp; ASKURY ABD KADIR</b> Naturally fractured basement reservoir: An example from Ruby Field	Paper 2a5 <b>PRIADI B., SUCIPTA IGBE &amp; SOPAHELUWAKAN J.</b> Post-collisional granitoids in Central Sulawesi, Indonesia	Paper 3a5 <b>RODEANO ROSLEE, ISMAIL ABD. RAHIM &amp; S. ABD. KADIR S. OMANG</b> Geological factors contributing to the landslide hazard occurrences in the Trusmadi Formation slopes, Sabah, Malaysia
12:20 - 12:40	Paper 1a3 <b>MOHAMMED H. HAKIMI, MOHAMED R. SHALABY &amp; WAN HASIAH ABDULLAH</b> Reservoir Characterization and Hydrocarbon Potential of the Lower Cretaceous Biyad Formation, East Shabowah Oilfield, Yemen	Paper 2a6 <b>GRACE CUMMING, KHIN ZAW, SANDY CHITKO, ZAW NAING OO &amp; HORST ZWINGMANN</b> Recent Pliocene volcanism recorded at Mount Popa, Central Myanmar	Paper 3a6 <b>TAN, B.K.</b> Engineering geology of rock slopes – Some recent case studies in Malaysia
12:40 - 13:00	Paper 1a4 <b>VISUT PISUTHA-ARNOND, WIROT TEERATANANON, BENJAWAN VORAKULAMORNAT, SUPAPORN PISUTHA-ARNOND &amp; POONSAWAT PRAJUKBUNJONG</b> Diagenesis of Tertiary reservoir sandstones in the Northern Malay Basin, the Gulf of Thailand: A key of success for hydrocarbon exploration	Paper 2a7 <b>NORLINA ASTANA, BABA MUSTA &amp; JUNAIDI ASIS</b> Chemical weathering of igneous rocks in Mount Kinabalu, Sabah	Paper 3a7 <b>RICHARD MANI BANDA, ZAKARIA MOHAMAD &amp; KAMALUDIN HASSAN</b> Geological significance of landslide occurrences in Canada Hill, Miri, Sarawak
13:00 - 14:00	<b>LUNCH BREAK</b>		
14:00 - 14:40	<b>Keynote 2</b> <b>S. PARAMARANTHARAN</b> Tropical lowland peats: to conserve or develop them?		
	<b>Technical Session 1b</b> <b>Resource Issues</b>	<b>Technical Session 2b</b> <b>Deep Earth</b>	<b>Technical Session 3b</b> <b>Hazards &amp; Megacities</b>
14:40 - 15:00	Paper 1b1 <b>SUPAPORN PISUTHA-ARNOND &amp; VISUT PISUTHA-ARNOND</b> Can Permian limestone in Central Thailand be the source of hydrocarbon?	Paper 2b1 <b>T. AHMAD, M. ALAM, MD. NAUSHAD &amp; M.K. MISHRA</b> Geochemistry and petrogenesis of mafic magmatic rocks of the Betul Supracrustals, Central Indian Tectonic Zone: Tectonic implications	Paper 3b1 <b>CHOW, W.S., PIERSON, B.J., ZUHAR, Z.T.H. &amp; ASKURY, A.K.</b> Assessment of rockfall hazards at a construction site, Gunung Panjang, Ipoh, Perak
15:00 - 15:20	Paper 1b2 <b>PATRICK GOU</b> Organic petrographic characteristics of the Crocker Formation, NW Sabah, Malaysia	Paper 2b2 <b>DJADJANG SUKARNA</b> Noble metal contents of high-Mg arc basalt from Galunggung Volcano, Indonesia	Paper 3b2 <b>ISMAIL ABD RAHIM, SANUDIN HJ. TAHIR, BABA MUSTA, SHARIFF A.K. OMANG AND RODEANO ROSLEE</b> The value of Rock Mass Rating (RMR) system for heterogeneous flysch deposit of the Crocker Formation from Tamparuli, Sabah



Time	Room 1: Mahkota 3	Room 2: Delima & Nilam	Room 3: Baiduri & Berlian
15:20 - 15:40	Paper 1b3 <b>ROLANDO PEÑA</b> Lexicon of Philippine Stratigraphy 2008	Paper 2b3 <b>SUPARTOYO, EMMY SUPARKA, IMAM ACHMAD SADISUN &amp; CHALID IDHAM ABDULLAH</b> Tectonic geomorphology of the Walat Fault at Sukabumi area of West Java, Indonesia	Paper 3b3 <b>GHANI RAFEK, A., GOH, T.L., BAIZURA YUNUS, N. &amp; HARIRI ARIFFIN, M. &amp; RAHIM SAMSUDIN, A.</b> Quantification of discontinuity surface roughness: stepchild of rock mechanics in Malaysia?
15:40 - 16:00	<b>TEA BREAK &amp; POSTER PRESENTATION</b>		
	<b>Technical Session 1c Resource Issues</b>	<b>Technical Session 2c Deep Earth</b>	<b>Technical Session 3c Hazards &amp; Megacities</b>
16:00 - 16:20	Paper 1c1 <b>A.H.EKI, S.AKMAL, Z.A.SULAIMAN &amp; H. MOHAMAD</b> Characterisation of fine mica (sericite) from Coldstream, Bidor Area, Perak State, Malaysia	Paper 2c1 <b>WIN SWE</b> Sagaing Fault of Myanmar: A brief overview	Paper 3c1 <b>ABD RASID JAAPAR</b> Cracks mapping: A case study on applying geologic skills in dilapidation survey
16:20 - 16:40	Paper 1c2 <b>LOLITA MARHENI</b> Investigating the differences of characteristics of the tin deposits between Bangka and Belitung Islands	Paper 2c2 <b>AZMAN A. GHANI</b> Characteristic of S-type, continental collision magma from the Main Range Granite of Peninsular Malaysia	Paper 3c2 <b>MOHD FOR MOHD AMIN, H.M. ABDUL AZIZ K.M. HANIFAH, AMIR HAMZAH MUSTAPHA &amp; CHAN SOOK HUEI</b> Engineering properties of limestone from Pandan Indah, Kuala Lumpur
16:40 - 17:00	Paper 1c3 <b>CITRA NURWANI &amp; ACHMAD SYAUKANI ANUGRAH</b> Sunda shelf as potential area of tin deposit	Paper 2c3 <b>ANWAR ABDULLAH, JUHARI MAT AKHIR &amp; IBRAHIM ABDULLAH</b> Filters integrated for the extraction of lineaments from Landsat TM-5 in the Sungai Lembing – Maran area, Malaysia	Paper 3c3 <b>TAJUL ANUAR, JAMALUDDIN, MICHAEL GOAY KEE HONG, MAHADZER MAHMUD &amp; FADLEE BABA</b> The significance of relict structures in slope failure geoforensic investigation – A case study from Serendah Selangor, Malayisa
17:30 - 19:30	Side Event 1: IYPE Regional Meeting		
19:30 - 21:00	<b>ICE BREAKER</b>		
<b>Tuesday, 9 June 2009</b>			
8:40 - 9:20	<b>Keynote 3</b> <b>CHARLES S. HUTCHISON</b> Tectonic evolution of Southeast Asia		
	<b>Technical Session 1d Resource Issues</b>	<b>Technical Session 2d Earth &amp; Life Through Time</b>	<b>Technical Session 3d Hazards &amp; Megacities</b>
9:20 - 9:40	Paper 1d1 <b>AZIMAH ALI</b> Trade liberalisation and sustainable coal resources in Malaysia	Paper 2d1 <b>RICHARD MANI BANDA, DAULIP LAKKUL, PETER CHUNG &amp; NIGHTINGALE LIAN</b> Lithostratigraphic and biostratigraphic corelations of Miocene sediments in the Pinangah Coal Basin and surrounding areas, Sabah	Paper 3d1 <b>JOHN KUNA RAJ</b> Minimizing failures at slope cuts in the granitic bedrock areas of Peninsular Malaysia

Time	Room 1: Mahkota 3	Room 2: Delima & Nilam	Room 3: Baiduri & Berlian
9:40 - 10:00	Paper 1d2 <b>TAKAYUKI MANAKA, KHIN ZAW &amp; SEBASTIEN MEFFRE</b> Characteristics of Sub-Microscopic Gold and Trace Element Geochemistry of Pyrite in the Long Chieng Track and Ban Houayxai Epithermal Deposits, Lao PDR	Paper 2d2 <b>MUSTAFA KAMAL SHUIB, MOHD FOR MOHD AMIN, TAJUL ANUAR JAMALUDDIN &amp; WAN ZULHAIRI WAN YAACOB</b> Soft-sediment deformation structures within the Indian Ocean tsunami deposit along the northern coast of Peninsular Malaysia	Paper 3d2 <b>CHE NOORLIZA LAT</b> Trends in the Southeast Asia earthquake activity
10:00 - 10:20	Paper 1d3 <b>ZAW NAING OO &amp; KHIN ZAW</b> Geology and mineralization characteristics of Meyon gold deposit, Mon State, Southern Myanmar	Paper 2d3 <b>INGA SEVASTJANOVA &amp; ROBERT HALL</b> Detrital heavy minerals from the Malay Peninsula and their use as provenance indicators in the Cenozoic Basins of Sundaland	Paper 3d3 <b>SOE THURA TUN &amp; MAUNG THEIN</b> Some observation on Earthquake Hazard in Myanmar
10:20 - 10:40	Paper 1d4 <b>EDI SUHANTO, KASBANI &amp; HARAPAN MARPAUNG</b> Geophysical electrical resistivity signatures on non-volcanic hosted geothermal areas in Indonesia	Paper 2d4 <b>YASAMIN KH IBRAHIM, LEE CHAI PENG, GATHONE CRANBROOK &amp; LIM TZE TSHERN</b> Preliminary report of vertebrate fossils in limestone caves at the foot of Batu Caves, Bukit Batu, near Kuala Lumpur	Paper 3d4 <b>NG, T.F., J.K. RAJ, AHMAD TAJUDDIN IBRAHIM &amp; NORSAAFATWI SAAID</b> Evidence of palaeoseismic slip near Bukit Tinggi, Peninsular Malaysia
10:40 - 11:00	TEA BREAK		
	Technical Session 1e Resource Issues	Technical Session 2e Earth & Life Through Time	Technical Session 3e Groundwater & Soil
11:00 - 11:20	Paper 1e1 <b>RIDWAN ARIEF &amp; R. HUTAMADI</b> Review of alluvial gold potency relation to the local people mining in Indonesia	Paper 2e1 <b>WAN HASIAH ABDULLAH, LEE CHAI PENG AND MUSTAFA KAMAL SHUIB</b> Coal-bearing strata of Labuan: mode of occurrence and organic petrographic characteristics	Paper 3e1 <b>ZAW WIN, UMAR HAMZAH, MOHD AZMI ISMAIL &amp; ABDUL RAHIM SAMSUDIN</b> Geophysical mapping of hydrocarbon-contaminated soil and groundwater at Sungai Kandis, Klang Selangor
11:20 - 11:40	Paper 1e2 <b>CHARLES MAKOUNDI &amp; G.H. TEH</b> Geology, structure and mineralization of the Tersang Hill Mine, Pahang, Malaysia	Paper 2e2 <b>SIMON SUGGATE &amp; ROBERT HALL</b> Provenance of Neogene Sandstones in Sabah, NE Borneo	Paper 3e2 <b>LAKAM MEJUS, NORDALILA DESA, JEREMY DOMINIC, ROSLAN ZAIRI MOSTAPA, ASMINAH RAJULI, HISAM AHMAD &amp; ISMAIL TAWNIE</b> Fractured rock zones determination for groundwater exploration using electrical resistivity imaging
11:40 - 12:00	Paper 1e3 <b>DEDDY AMARULLAH &amp; DAVID P. SIMATUPANG</b> Coal bed methane potential of Tanjung Formation in Tanah Bumbu, South Kalimantan	Paper 2e3 <b>BHAKTI H. HARAHAP</b> Tectonostratigraphy of the Phanerozoic continental province succession in Southern Papua, Eastern Indonesia	Paper 3e3 <b>KAMARUDIN SAMUDING, MOHD TADZA ABDUL RAHMAN &amp; ISMAIL ABUSTAN</b> Heavy metals profile in groundwater system at solid waste disposal site

Time	Room 1: Mahkota 3	Room 2: Delima & Nilam	Room 3: Baiduri & Berlian
12:00 - 12:20	Paper 1e4 <b>SOMBOON KHOSITANONT, KHIN ZAW, PRAYOTE OUNCHANUM &amp; THEERAPONGS THANASUTTIPIITAK</b> Cu-Fe-(Au) mineralization at PUT2 deposit, Loei Province northeastern Thailand	Paper 2e4 <b>KYAW LINN OO, KHIN ZAW, MYITTA &amp; DAY WA AUNG</b> Tectonic Setting of Pondaung Sandstones, Southern Chindwin Basin, Myanmar: Evidence from XRF-major and trace element geochemical analysis and LA ICP-MS U-Pb zircon geochronology	Paper 3e4 <b>NORAINI SURIP, KHAIRUL ANAM MUSA &amp; ABDUL RAZAK ZAINAL ABIDIN</b> GIS-based weightage overlay for groundwater potential study in Perak, Malaysia
12:20 - 12:40	Paper 1e5 <b>ARIF SUSANTO &amp; EMMY SUPARKA</b> Hydrothermal alteration and mineralization of porphyry-skarn deposits in Geunteut area, Nanggroe Aceh Darussalam, Indonesia	Paper 2e5 <b>BASIR JASIN &amp; ZAITON HARUN</b> Radiolarian biostratigraphy of Peninsular Malaysia — An update	Paper 3e5 <b>AWANG. H. MOHAMED. Z., NAWAWI, M.N. &amp; CHO, G.C.</b> Laboratory testing for electrical resistivity measurement for tropical ground material
12:40 - 13:00	Paper 1e6 <b>LOLITA MARHENI, ESTI ANGGAENI &amp; LEYLA SARI</b> The environmental effects of small scale tin mining in Bangka Island, Indonesia	Paper 2e6 <b>CHE AZIZ ALI</b> Microfacies and diagenesis of Setul limestone in Langkawi and Perlis	Paper 3e6 <b>NUR ISLAM, SAMSUDIN HJ TAIB &amp; ISMAIL YUSOFF</b> The Subsurface profiling comparison of Tawang and Pangkalan Chepa area, North Kelantan
13:00 - 14:00	<b>LUNCH BREAK &amp; GEOSEA BUSINESS MEETING</b>		
14:00 - 14:40	<b>Keynote 4</b> <b>KHIN ZAW</b> Metallogeny of mainland SE Asia		
	<b>Technical Session 1f</b> <b>Resource Issues</b>	<b>Technical Session 2f</b> <b>Geoscience Tools</b>	<b>Technical Session 3f</b> <b>Groundwater &amp; Soil</b>
14:40 - 15:00	Paper 1f1 <b>TEH GUAN HOE, GOH SWEE HENG, SHAZRIN AHMAD ZEHNUN &amp; T.F. NG</b> The Mengapur gold-bearing Cu-Fe skarn deposit, Pahang, Malaysia – Geology and mineralisation	Paper 2f1 <b>ZUHAR TUAN HARITH, ANI AIZA ASHARI, ASKURY A KADIR, ROSLI SAAD</b> Investigation of subsurface limestone kastic features in Hulu Kinta, Perak	Paper 3f1 <b>PARKORN SUWANICH</b> Clay minerals in Maha Sarakham Evaporites, Northeastern Thailand
15:00 - 15:20	Paper 1f2 <b>NYUNT HTAY</b> Geology and mineral resources of the area between Nogmung and Kan Paiti, Northeastern Kachin State, Myanmar	Paper 2f2 <b>UMAR HAMZAH, ROFIQUL ISLAM &amp; MARK JEEVA</b> Electrical resistivity survey of oil-spilled sandy soil at an abandoned Seberang Prai TNB power supply station	Paper 3f2 <b>ZAHIR YAHYA</b> Hard rock aquifers in Peninsular Malaysia
15:20 - 15:40	Paper 1f3 <b>KUSDARTO</b> Rocks potential pesources used for K-fertilizer from Ringgit Besar Complex area, Situbondo Regency, East Java Province, Indonesia	Paper 2f3 <b>KHAIROL NIZAM A. AZIZ, CHE NOORLIZA LAT &amp; AHMAD TAJUDDIN IBRAHIM</b> Investigation of saltwater intrusion in Marang, Terengganu using the resistivity method	Paper 3f3 <b>MUHAMMAD BARZANI GASIM, FREDOLIN T. TANGANG, EKHWAN TORIMAN &amp; SAHIBIN ABD, RAHIM</b> Case study of an extreme rainfall event during 2006/2007 flashflood in the middle and southern part of Peninsular Malaysia: a climate change threat?
15:40 - 16:00	<b>TEA BREAK</b>		

Time	Room 1: Mahkota 3	Room 2: Delima & Nilam	Room 3: Baiduri & Berlian
	Technical Session 1g Earth & Conservation	Technical Session 2g Geoscience Tools	Technical Session 3g Other Papers
16:00 - 16:20	Paper 1g1 <b>ROS FATIHAH MUHAMMAD, ZAKARIA MOHAMAD, QALAM AZAD ROSLE, AHMAD FARID ABU BAKAR, KHAIRUL AZLAN MUSTAPHA, BAHU EL DIN ELWALI &amp; H. D. TJIA</b> Kelang Valley Quartz Ridge – A geological monument to be preserved	Paper 2g1 <b>AHMAD TAJUDDIN IBRAHIM, CHE NOOR LIZA LAT &amp; NIK ROSLIZA NIK MOHAMAD</b> Characterizing granite and basalt of different weathering grades using the resistivity method	Paper 3g1 <b>ESWARAN PADMANABHAN &amp; FRANZ KESSLER</b> Low pressure-temperature Fe-organic matter chelation in the Lambir Formation (Mid – Late Miocene): Impact on carbon-sequestration potentials
16:20 - 16:40	Paper 1g2 <b>HERYADI RACHMAT, BUDI BRAHMANTYO, IGAN SUTAWIDJAJA</b> Mount Rinjani as first geopark in Indonesia	Paper 2g2 <b>SAMSUDIN TAIB</b> The gravity and magnetic anomaly in North-West Malacca, Malaysia	Paper 3g2 <b>SRILERT CHOTPANTARAT &amp; CHAKKAPHAN SUTTHIRAT</b> Influence of unsaturated soil hydraulic parameters on nonequilibrium transport of Mn <sup>2+</sup> under single and multiple metals through lateritic aquifer: A case study of gold mine in Thailand
16:40 - 17:00	Paper 1g3 <b>TANOT UNJAH &amp; IBRAHIM KOMOO</b> Geological landscape and public perception: Case study of landscape view from Dataran Lang, Langkawi	Paper 2g3 <b>ABDUL RAHIM SAMSUDIN, GOH, T.L. &amp; ABDUL GHANI RAFAK</b> Application of spectral analysis of surface wave (SASW) for characterization of rock mass in engineering geology: case study in Malaysia	Paper 3g3 <b>MARK JEEVA &amp; UMAR HAMZAH</b> Study of leachate migration around Sungai Sedu waste disposal site, Teluk Datok by geoelectrical imaging and geochemical analysis
<div>CLOSING CEREMONY</div> <div>Room 1: Mahkota</div> <div>17:00 - 17:15 : Closing Address by Dato’ Yunus Abdul Razak President, Geological Society of Malaysia &amp; Chairman, GEOSEA 2009 Organising Committee</div> <div>17:15 - 17:30 : Address by Representative of next GEOSEA host</div>			
17:30 - 19:30	Side Event 2: Asian Dialogue on Geoheritage Conservation: Issues and Challenges (Room2: Delima & Nilam)		
Wednesday, 10 June 2009			
09:00 - 13:00	Side Event 3: Workshop on Geomodelling: Computer Applications in the Earth Sciences (Venue: Minerals & Geoscience Department. Maximum 15 persons. Participants are required to bring their own fully charged notebook computer)		
09:00 - 13:00	Side Event 4: Workshop on Ore Deposit Models in SE Asia (Venue: Minerals & Geoscience Department. Maximum 15 persons)		
09:00 - 17:00	Side Event 6: Workshop on Engineering Geology of Rock Slope (Venue: Minerals & Geoscience Department & a short field trip around Kuala Lumpur. Maximum 15 persons)		
09:00 - 13:00	Side Event 7: Workshop on Knowledge Management (Venue: Danau Golf Club, Universiti Kebangsaan Malaysia, Bangi. Maximum 15 persons)		



## ELEVENTH REGIONAL CONGRESS OF SOUTHEAST ASIA

8 – 10 JUNE 2009 • ISTANA HOTEL, KUALA LUMPUR





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## CERAMAH TEKNIK TECHNICAL TALK

### Tibet, the Himalaya and the Development of the Asian Monsoon: A chicken and egg problem for the IODP

PETER D. CLIFT

7th April 2009

Department of Geology, University of Malaya

Peter D. Clift from the Department of Geology & Petroleum Geology from the University of Aberdeen gave a talk entitled "Tibet, the Himalaya and the development of the asian monsoon: a chicken and egg problem for the IODP". It was well attended by the academic staff and students of the geological department, University of Malaya. The abstract of the talk is given below:

**Abstract:** Both DSDP and ODP have made significant contributions to the understanding of the Asian monsoon system. Most notably work offshore Oman in the late 1980s was the suggested an intensification of the monsoon after 8 Ma. Many climate modellers have related monsoon strength to the elevation of the Tibetan Plateau, yet recent work from the plateau itself indicates that Tibet may have been elevated much earlier than 8 Ma, at least in the southern and central plateau. If true how does that relate to an 8 Ma monsoon? Moreover, modern models for the generation of the Greater Himalaya suggest an important role for monsoon-driven erosion in causing exhumation after around 22 Ma, well before the proposed monsoon intensification. Proposals have been submitted to IODP for renewed drilling of the Indus and Bengal fans in order to determine the variations in clastic flux to the ocean and the intensity of chemical weathering in South Asia, which can then be correlated with the tectonic evolution of the mountains. This work must be done offshore because there is a large unconformity before 22 Ma in the Himalayan foreland that has removed the terrestrial record. New drilling is also needed because the existing monsoonal sections in south Asia do not extend beyond 17 Ma, not old enough to compare with the onset of the Greater Himalaya. In the meantime a 24 Ma monsoon record has been derived from Leg 184 drilling in the South China Sea. This record indicates that the East and South Asian monsoons varied largely in parallel with one another since 17 Ma and that the initial intensification is around 22 Ma, while the summer monsoon may have weakened, not strengthened at 8 Ma. If this is correct in South Asia too this suggests that progressive growth of the Tibetan Plateau caused an intensification of monsoon rains around 23 Ma, perhaps when the plateau reached a critical threshold size. The resultant climate change then fed back on the solid Earth by driving stronger rains on the southern edge of Tibet, and allowing the Greater Himalaya to be exhumed. Subsequent monsoon weakening at 10–8 Ma caused deformation to step south in the Lesser Himalaya.





## Reservoir Distribution along Shelf Margin and Slope Depositional Systems

DR GRANT WATCH

28th April 2009  
Department of Geology, University of Malaya





## KEAHLIAN MEMBERSHIP

### 72.1 Ahli Penuh

1. Geoffrey Wee
2. Mahat bin isa
3. Abdul Mukrim Bolhassan
4. Khairul Nazri Hj. Yaakub

### 72.2 Ahli Penuntut

1. Rashmah Abd Razak, USM
2. Chiew Soon Mew, USM
3. Muhammad irwan Basharuddin, USM
4. Mohd Hauzi Che Ismail, USM
5. Mohd Syafiq Abu Bakar, USM
6. Muhammad Mukri Mohamed, USM
7. Mohd Amir Hafiz Hasmin, USM
8. Mohamad Afandi Mat Said, USM
9. Jayaraman A/I Chelvom, USM
10. Lim Symm Nee, USM
11. Mohd Fadhal Ridwan Yusoff, USM
12. Abd Hanif Abd Rahman, USM
13. yeong Jun Kang, USM
14. Nek Mohd Hamdi Nek Ali, USM
15. Muhamad Fadzli Basera, USM
16. Muhammad Shafiq Khairi Viji, USM
17. Zulkuffely osmen Abdul Rashid, USM
18. yap Kok Wang, USM
19. yousif Taha T. Hadad, UM
20. Antonio Gian luca Palombo, UM
21. Azrina Abd Aziz, USM
22. Masara idahamisa Mahadi, USM
23. Khor Gee Kit, USM
24. yung Mei Hua, USM
25. Nor Farhah Abdul Malek, USM
26. I oo Peir Ling, USM
27. Chia Lee Theen, USM
28. Raja Azwan Raja Daud @ Raja ismail, USM
29. Muhamad Jamil Amaruddin, USM
30. Chan Kok Leong, USM
31. Mohd Fairol Hisyam Mohd Azhar, USM
32. Kam Winnie, USM
33. Mohd Afik Muhammad, USM
34. Aidil Arnolous Rema, USM
35. Noor ilani Nasrani, USM

36. I ee yun Ting, USM
37. Hawa Md Tahir, USM
38. Nurain Aziana Zulkefly, USM
39. Siti Aishah Kamarul Zaman, USM
40. Baitul Umin Zakaria, USM
41. Annushia A/P Annamalai, UKM
42. Nor Shahidah Mohd Nazer, UKM
43. Nor Sara Izzatti Bashah, UKM
44. Amir Fahmi Abdullah, UKM
45. Che Ahmad Che Wanik, UKM
46. Mohd Syafiq Shaari, UKM
47. Nurul Farah Rahamat Noor, UKM
48. Norsheila Sofhia ithnain, UKM
49. Norasiah Sulaiman, UKM
50. Siti Fariza Abdul Hamid, UKM
51. Siti Athirah Kelana, UKM
52. Noorulakma Ahmad, UKM
53. Mohd Affan Mohd Arus, UKM
54. Mohd Akram Afiq Mohd Abidin, UKM
55. Wan Mohd Azrain Wan Zalani, UKM
56. Mohd Farid Abdul Kadir, UKM
57. Siti Saradila Abdul Razak, UKM
58. Siti Nur Athirah Osman, UKM
59. Muhammad Shahril Abdullah, UKM
60. Amir Huzairy Yahya, UKM
61. Madihah Abd Rahman, UKM
62. Abdul Rahman Zakaria, UKM
63. Sisfawarni Jaswar, UKM
64. Mohd Danial Hariz Mohd Azir, UKM
65. Suhaila Mohd Raes, UKM
66. Siti Razna Abdul Rahman, UKM
67. Muhammad Raqib Mansor, UKM
68. Nurul Iaila 'Adilah Amran, UKM
69. Nurul Adilah Manshor, UKM
70. Nursufiah Sulaiman, UKM
71. Nursyazwani Adnan, UKM
72. Fadzirul Hafith Margono, UKM
73. Atilia Bashardin, UKM
74. Siti Nurfarhana Mohamed Zaid, UKM
75. Nurul Hasanah Mohamed Wazir, UKM
76. Farah 'Ain Shahir, UKM
77. Dhiya Farhana Idrus, UKM
78. Nik Hafizah Nik Hamat, UKM
79. Hasanuddin Wases, UKM
80. Hanun Fatini Rasdi, UKM
81. Khairul Fahmee Mat Khairi, UKM
82. Annuar Faiz Shaparudin, UKM
83. Mohd Khairuddin Donia, UKM
84. Mohd Aizad Mohd Kamil, UKM
85. Norasikin Maarof, UKM
86. Fairuzatunnisaa Mohamad Runi, UKM
87. Farhana Yahya, UKM

88. Fatin Iyana Alias, UKM
89. Siti Zaleha Maulad Abdul Hamid, UKM
90. Nor Azidah Md Tahir, UKM
91. Tubliegh Mohammed, UKM
92. Wafi Azhar, UKM
93. Umi Kalsum Osman, UKM
94. Munira Asmal Aris, UKM
95. Nazatul Hidayah Mohd Kasmani, UKM
96. Che Ku Mohd Waqiyuddin Che Ku Besar, UKM
97. Mohd Hishamuddin Yusup, UKM
98. Choong Chee Meng, UKM
99. Mohd Khairudin Muhamed, UKM
100. Ferry Andriadi Kanasuri, UKM
101. Wan Noor Farahiyatul Akmal Mohd Sani, UKM
102. Nur Hamziah Idris, UKM
103. Masnizah Mohammad Salleh, UKM
104. Sheryl Liaw Hui Hung, UKM
105. Mohd Sallehuddin Mokhtar, UKM
106. Norfathiha Salleh, UKM
107. Muhammad Noor Naim Mohd Yusof, UKM
108. Juwita Hapaz, UKM
109. Mazni Mahat, UKM
110. Dayang Nor Asyilla Abang Abdullah, UKM
111. Siti Hajjar Hj Mohd Salleh, UKM
112. Khairul Aiman Sahrom, UKM
113. Siti Shazwani Md Yusof, UKM
114. Maizatul Asnida Abd Manaf, UKM
115. Nur Hafizah Mangsor @ Mansor, UKM
116. Nur Shazana Safian, UKM
117. Intan Munirah Mustaffa Kamal, UKM
118. Hasmizatul Atika Mohamed Ali, UKM
119. Nursyazwani Abdul Jalil, UKM
120. Misal Zarith Miskan, UKM
121. Rudhiatulhalimah Othaman, UKM
122. Nuratiqah Anuar, UKM
123. Siti Salwa Samigin, UKM
124. Amirruddin Rosni, UKM
125. Intan Naszlin Hussin, UKM
126. Noraznida Kamaruszaman, UKM
127. Muhamad Hafiz Jahuri, UKM
128. Mohd Shafiq Firdauz Abdul Razak, UKM
129. Zaidulkhair Jasmi, UKM
130. Nur Iyana Hashim, UKM
131. Muhammad Azfar Mohamed, UKM
132. Alexster Anak Basoo, UKM
133. Siti Noor Aisyah Idris, UKM
134. Nik Nurul Nadjah Noor Ramli, UKM
135. Raja Intan Nor Aznina Raja Khairul Anuar, UKM
136. Nuur Hani Mohammed, UKM
137. Hong Tzy Yang, UKM
138. Nur Amalina Hamsan, UKM
139. Nur Shuhadah Japperi, UKM

140. Nur Ilyana Yunos, UKM
141. Mahathir Yusup, UKM
142. Rafeeda Ab Rashid, UKM
143. Muhammad Hassan Abdul Hamid, UKM
144. Nur Zulfa Abdul Kalid, UKM
145. Noorzamzarina Sulaiman, UKM
146. Aisha Anasir, UKM
147. Siti Rafhan Noor Mahadi, UKM
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**July 13-17, 2009:** 18<sup>th</sup> IMACS World Congress MODSIM 09, Cairns, Australia: Session G3: Modelling and Simulation of Dangerous Phenomena, and Innovative Techniques for Hazard Evaluation. Contact: G. Iovine, Tel: +39 0984 835 521; Fax: +39 0984 835 319; email: [g.iovine@irpi.cnr.it](mailto:g.iovine@irpi.cnr.it). Website: [www.mssanz.org.au/modsim09/](http://www.mssanz.org.au/modsim09/)

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**August 11-15, 2009:** AOGS 6<sup>th</sup> Annual General Meeting, Singapore. Session IWG01: Modelling and simulation of dangerous phenomena and innovative techniques for hazard evaluation, mapping, mitigation.

Contact: G. Iovine, Tel: +39 0984 835 521; Fax: +39 0984 835 319; email: g.iovine@irpi.cnr.it . Website: www.asiaoceania.org/aogs2009

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**September 7-12, 2009:** Sustainable development and management of groundwater resources of hard rock terrains – Joint IAH/IAHS International Convention combining 37<sup>th</sup> IAH Congress and 8<sup>th</sup> IAHS Scientific Assembly, Hyderabad, India. Contact: email: iahs@ensmp.fr or w.struckmeier@hgr.de

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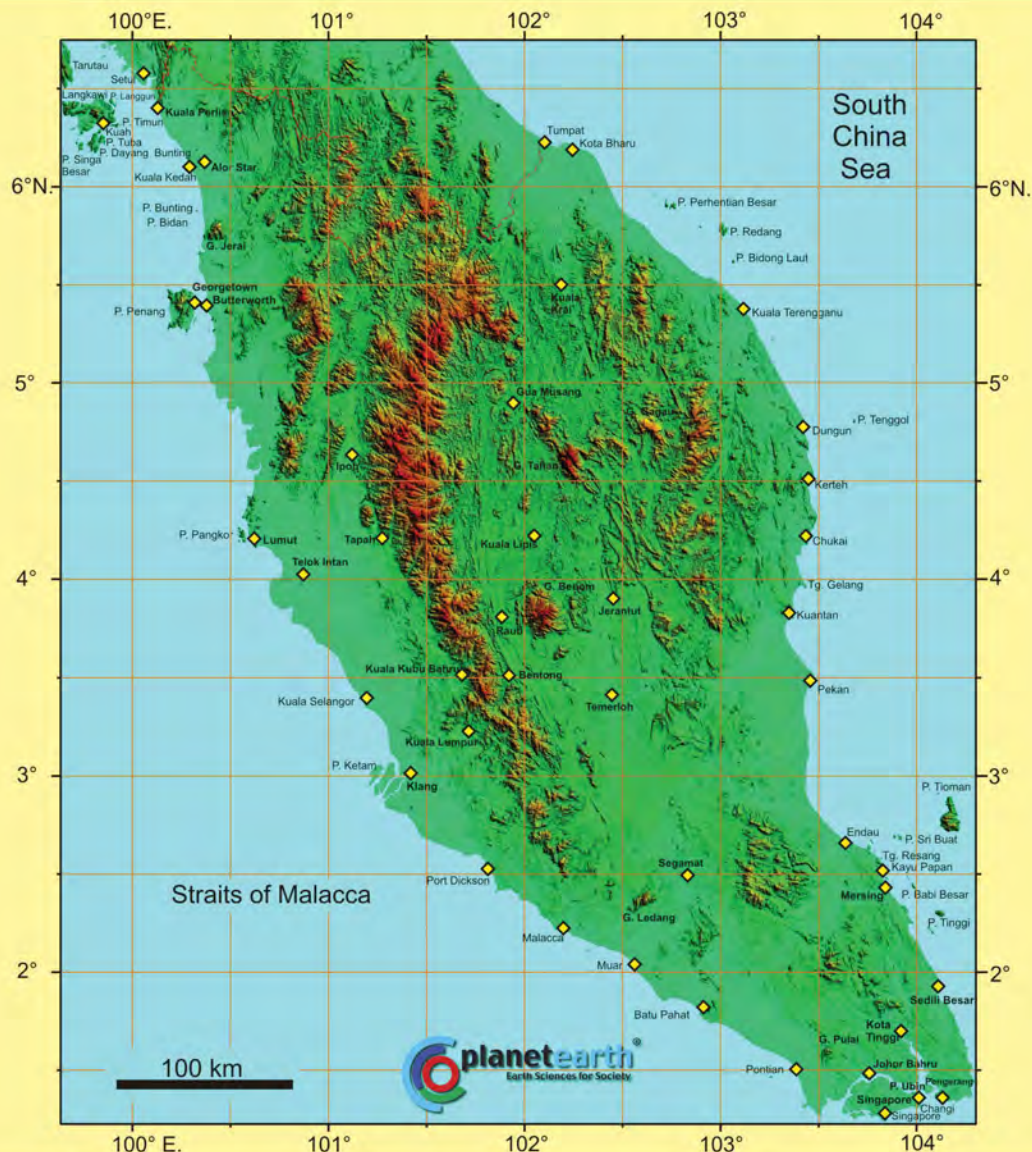
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**August 5-15, 2012:** 34<sup>th</sup> International Geological Congress, Brisbane, Australia. Contact: Dr. Ian Lambert, Geoscience Australia. Tel: +61 2 62499556; Fax: +61 2 62499983; email: [ian.lambert@ga.gov.au](mailto:ian.lambert@ga.gov.au); website: [www.ga.gov.au/igc2012](http://www.ga.gov.au/igc2012)

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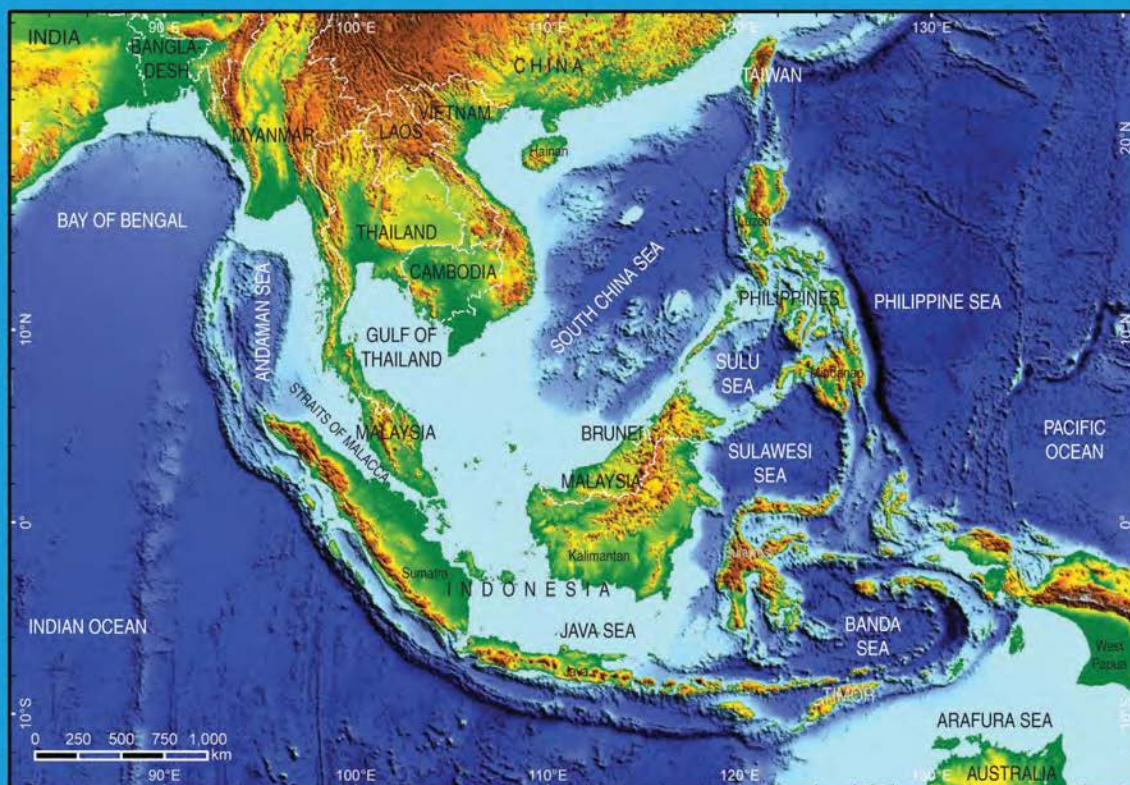
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