GEOLOGICAL SOCIETY OF SRI LANKA (GSSL)

NEWSLETTER

1983-2008

Vol. 26 No. 2 December 2009 ISSN 1391-3378

GSSL NEWSLETTER

December 2009
Geological Society of Sri Lanka (GSSL)
Established in 1983

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CONTENTS

Institute of Geology - Sri Lanka (IGSL)

INAUGURAL GENERAL MEETING OF THE IGSL

Inaugural General Meeting of the IGSL was held on 06th November 2009 at the Sri Lanka Foundation Institute (SLFI),Independent Square, Colombo 7. More than 60 members of the IGSL were present at the event and the first council of the Institute was elected.

Submit your abstracts for the Annual Sessions 2010

Visit GSSL Web for more details.
www.gsslweb.org

SOCIETY NEWS & NOTICES

26th Annual Sessions- Call for Abstracts!
"Geology for National Development"

GSSL in now calling for abstracts for the Annual Technical Session from those who wish to make a presentation. The Theme of this year's Annual Sessions is "Geology for National Development". The deadline for receipt of abstracts is January 15, 2010 and notification of acceptance will be mailed by February 10, 2010.

Please follow the following guidelines when you submit the abstracts to Editors.

Abstracts should be short, clear, concise and written in English with correct spelling and good sentence structure. Figures, tables and references should not be included. We recommend that the abstract is carefully compiled and thoroughly checked, in particular with regard to the list of authors, before submission in order to avoid last minute changes. The length of an abstract is limited to 500 words. The submission of an abstract carries with the obligation that it is actually presented at the meeting by the senior author or, at least, by one of the co-authors. You can send the abstract to anyone of the Editors via email: keerthip@pdn.ac.lk or atula.senaratne@gmail.com alternatively you can submit online. Please visit our web site 'http://www.gsslweb.org' for more details.

PG Cooray Medal -2009

Applications are invited from Sri Lankan young geoscientists under the age of 35 years at the time of application for the award of the PG Cooray Medal. The medal will be awarded to the most outstanding contributor to the field of Earth Sciences of Sri Lanka during the period of 2008-2009. Prospective applicants are requested to submit copies of their theses, dissertation, publications patents etc. to the secretary, GSSL on or before 15th January 2010.

Introductory Remarks on the Inauguration of the IGSL

by Mr Nimal Ranasighe

(Full text of the remarks made at the Sri Lanka Foundation Institute)

Thank you Chairman for inviting me today to offer few "Introductory Remarks" in regard to the formation of the "Institute of Geology of Sri Lanka". Fellow colleagues, a very good morning to you.

Today, I am indeed very happy to witness that an idea conceived by me in 1996 has now come to the point of realization where the beneficiaries would be our members and thereafter the whole geological fatermity and through its contributions the whole of Sri Lanka.

Looking at the programme it appears that I have been given ten minutes flat to do the honours. Hence, I am compelled to be quite brief. Given the unique happening today, rather than articulating the much quoted phrase "history is being created today", I prefer to state instead "future is being created today". In fact, considering the arduous task ahead, I feel today we are really laying the foundation stone for the future.

Now talking of the Society, as an 'old timer' hailing from the early, do I say Archean? age of the Society, allow me to share with you its beginnings. The GSSL had its beginning during the early sixties with a gathering named as the Ananda Coomaraswamy Geological Club (ACGC). The prime mover behind it was none other than, then, Mr. Percival Gerald Cooray. I recall Dr. Piyadasa W. Vithanage was mapping the Polonnaruwa 1" sheet at that time. Both were geologists at the Department of the Government Mineralogist as the Survey was known then.

cont. p-3

The ACGC was essentially a mix of few geology professionals of related sciences like geography, soil, irrigation, survey and few other interested individuals. The Club activities consisted of few technical meetings and the only highlight was a trip to Bogala graphite mines. The club unfortunately disintegrated in about two years.

I recall that it was Dr. Cooray who was always keen and ever trying to form a Society of and for those in geology but was unsuccessful due to lack of numbers. It became obvious that time was not right. It was clearly far too early. Dr. Cooray then left the country and began visiting Sri Lanka towards the late Seventies and finding that the 'numbers', as he used to call, have improved substantially, commenced his old task again. Although I was then involved in field work at Seruwila, Aruakkalu and Pulmoddai he always used to contact me to discuss his plans to form the Society.

So, it was very much his initiative and drive, ably supported by the scientific staff and Directorate of the Geological Survey Department and Department of Geology at Peradeniya that led finally to the formation of the Society and holding the inaugural meeting at the Peradeniya Geology Department in September 1983.

Despite the unfortunate riots that took place in July giving us organizers a considerable scare, we were able to go ahead with our plans holding a successful Meeting. From there on, as you would be aware, the Society's journey despite few minor 'bumps' sustained continual progress for 26 years as of now.

Looking back, it is very satisfying indeed to note that our Society has achieved much both professionally and in stature currently enjoying a somewhat respectable position within the scientific fraternity as a result of the efforts of our Presidents, Executive Committees and the general membership who have discharged their responsibilities with great commitment.

In 1996 when I was elected as the XIVth President of the Society, in addition to continuing already established programmes, I remember informing the new Executive Committee at its first meeting of my resolve to carry out two new tasks. They being, the registration of the Society and to commence relevant initiatives towards the establishing the Geological Institute. The main reason being to elevate our professional status and recognition among other professionals and within the government.

Considering the status and recognition gained by other professionals such as the Medical Practitioners, Engineers, Architects and Chemists, the establishment of an Institute for the geology fraternity to my mind was an urgent necessity. Of the said two new items, you may recall that, it was possible to have the Society registered with the Registrar of Companies (we have been an illegal outfit until then for thirteen years!) but was unable to make any tangible headway towards establishing the Geological Institute.

Today therefore whilst we have reached a historic milestone, personally it is a very happy day for me too. I am aware that we have arrived at this stage due to the tireless commitment of several specially appointed committees. For all those officials and members it is my pleasure to offer my heart-felt sincere appreciation and highest regard.

So, in responding to the vital unanswered question 'Why an Institution?' the simplest answer is that we elevate ourselves from basically a Trade Union status (answerable to the Registrar of Companies,who is only a public official) to that of a Parliament (the Legislature)-recognized status. A status, which is equivalent to a Royal Charter that empowers the Institute to initiate activities of wider scope, responsibility and authority.

Friday, November 6, 2009
Mr. Nimal Ranasinghe

Visit !
GSSL website for NEWS updates
http://www.gsslweb.org

GEOMISCELLANY

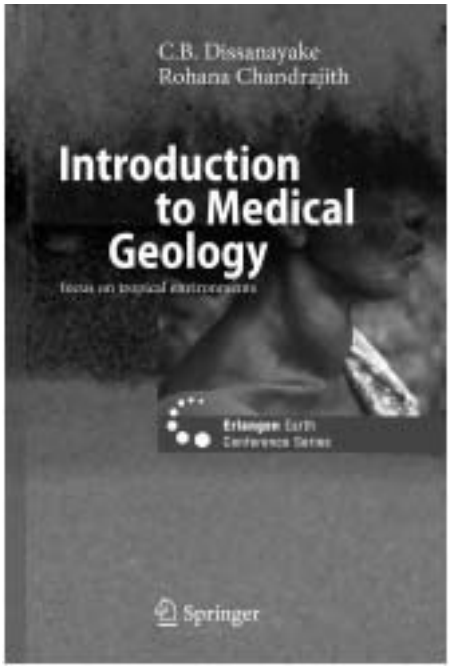
'Springer' publsihed a book written by Sri Lankan Geoscientists

Springer Verlag, Germany, the second largest science book publisher in the World, recently published a book written by two well known Sri Lankan geoscientists, Professor C.B. Dissanayake and Dr. Rohana Chandrajith on Medical Geology.

Medical geology started as a "new" discipline in 1998 with establishing a Working Group on Medical Geology within COGEOENVIRONMENT, an international commission on environmental geology under the International Union of Geological Sciences (IUGS).

Introduction to Medical Geology

Focus on Tropical Environment



C.B. Dissanayake and Rohana Chandrajith,
University of Peradeniya,
Sri Lanka

Over two billion people live in tropical lands. Most of them live in intimate contact with the immediate geological environment, obtaining their food and water directly from it. The unique geochemistry of these tropical environments have a marked influence on their health, giving rise to diseases that affect millions of people. The origin of these diseases is geologic as exemplified by dental and skeletal fluorosis, iodine deficiency disorders, trace element imbalances to name a few. This book, one of the first of its kind, serves as an excellent introduction to the emerging discipline of Medical Geology.... more on http://springer.com/978-3-642-00484-1

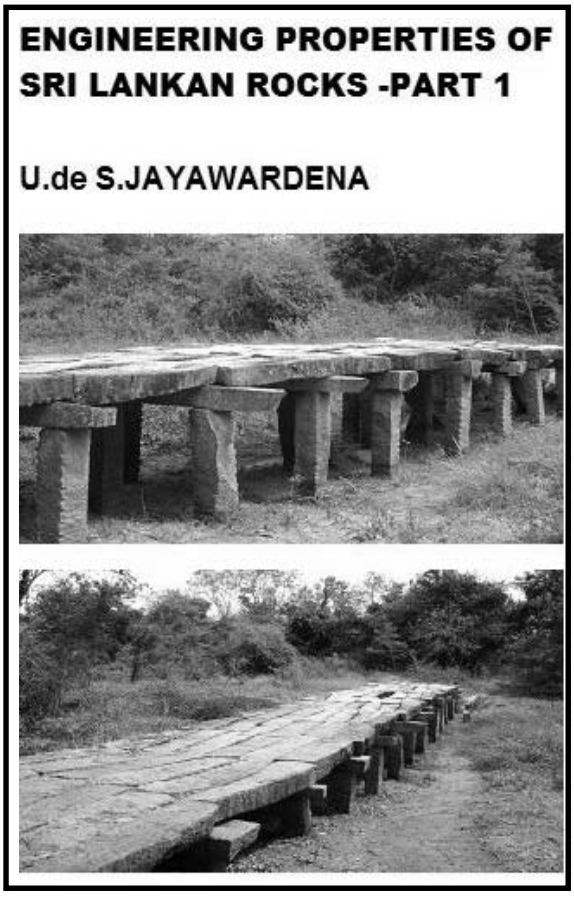
2009, 297 p., 166 illus, 50 in color.
(Erlangen Earth Conference Series) Hardcover,
Price- Euro 129,95; $169.00; £117.00
ISBN 978-3-642-00484-1

online version avialbale at http://www.springerlink.com/content/978-3-642-00484-1

ENGINEERING PROPERTIES OF SRI LANKAN ROCKS -PART 1

by

U.de S.JAYAWARDENA



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Send payment by Cheque in favour of Dr. U.de S. Jayawardena.
Department of Civil Engineering
Faculty of Engineering
University of Peradeniya
Peradeniya

Research Papers by Sri Lankan Geoscientists in ISI Journals

The Anthropocene - A 200 year record of human driven geological impacts: Prelude to global climate changes and implications for South Asia

Gunatilaka, A.

Abstract

Human activities now rival natural geological processes in transforming the Earth's surface and initiating the current global warming phase and inevitable future climate change. The record of the past 200 years of this impact, which started off with the fossil fuel driven industrial revolution, is designated the Anthropocene. This article highlights how the change is occurring globally and also focuses on the possible effects on Sri Lanka and its people, especially with regard to water availability, soil degradation and nutrient depletion, food security, ecosystem disruption and the increasing intensity of natural hazards. A harmonious Earth system is conditional on achieving a stable population and sustainable use of resources. High population growth and poorly regulated exploitation of basic resources, which are essential for life, could result in civilizational overshoot and collapse as has happened in the past. Climate change is an undeniable reality and constitutes the most critical challenge to global society and its security. It is within the capability of modern science, technology and proven socio-economic policies to reverse the negative trends and achieve a sustainable world. This will require great political will and leadership by all nations.

Journal of the National Science Foundation of Sri Lanka

Volume 37, Issue 1, March 2009, Pages 3-11

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The Indian Ocean megatsunami of December 2004: The scientific basis of the catastrophe

Gunatilaka, A.

Abstract

The Earth's surface is made up of 13 rigid lithospheric plates that move towards or away from each other, much like the pieces of a jigsaw puzzle. On the 26th of December 2004, three of these plates interacted in the eastern Indian Ocean to cause an earthquake of magnitude 9.3 and generated a tsunami or giant ocean wave that devastated the coastlines of nine countries including Sri Lanka, killing over 250,000 people. This is the greatest natural disaster to strike Sri Lanka in our recorded history. In this article, the geological and seismological basis of this awesome catastrophe is explained in terms of causes and effects and assesses the potential tsunamigenic risk to Sri Lanka. It is argued here on the basis of available data that a tsunami event of similar magnitude has a low probability of occurring in the "foreseeable future" within the Central Indian Ocean region.

Journal of the National Science Foundation of Sri Lanka

Volume 33, Issue 2, June 2005, Pages 69-80

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Natural radionuclides and trace elements in rice field soils in relation to fertilizer application: study of a chronic kidney disease area in Sri Lanka

Rohana Chandrajith, S. Seneviratna, K. Wickramaarachchi, T. Attanayake, T. N. C. Aturaliya, C. B. Dissanayake

Abstract

The rising number of chronic kidney disease patients with no identifiable cause (CKD of uncertain aetiology), prevalent in some areas of the dry zone of Sri Lanka is suspected to be related to the environmental exposure to heavy metals. Agricultural soils are well recognized as being contaminated with potentially toxic metals from various forms of fertilizers and agro-chemicals, which could easily enter the human body through the food chain. The objective of this paper is to determine the content of heavy metals and activity concentration of background radionuclides such as K-40, Ra-226 and Th-232, in rice field soils. Rice farming is the most common agricultural practice in the affected region and possible heavy metal sources such as fertilizers are applied in abundance in the rice fields. Soils collected from a rice field in a non-CKD region was used for the comparison. In dry zone soils, Ca, K, Ba, Pb and Zr contents were higher and Fe, Mn, Cr, Ni and Zn contents were lower compared to that of soils from the wet zone non-CKD region. However, the activity concentration of soils was mostly the same in all samples, except for the K-40 contents of the soils, which were higher in the rice field soils compared to the undisturbed forest soils and also to the world averages. The mean U content was 3.6 mg/kg in the studied soils, although extremely high uranium contents were found in some fertilizer samples particularly in the triple superphosphates. Most uranium applied via fertilizer could contaminate the drinking water sources and even low uranium concentrations in drinking water may cause nephrotoxic effects.

Environmental Earth Sciences (in press)

Online version available: DOI 10.1007/s12665-009-0179-1

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Please submit details of your recent publication to GSSL Editors

Phosphate mineral fertilizers, trace metals and human health

C.B.Dissanayake and Rohana Chandrajith

Abstract

Fertilizers, indispensable as they may seem, are nevertheless materials that clearly cause serious environmental contamination notably in the agricultural soils. The dire necessity for increased food production has been more marked than ever before. The fertilizers, which are indeed the most essential nutrient sources used for this enhanced food production, have unfortunately now become a 'necessary evil'. Excessive and continuous use of nitrogen and phosphorous fertilizers for decades and that too in more than one season annually have converted the agricultural soils into virtual chemical time bombs.

Phosphate rocks by their very geological and mineralogical nature carry a host of environmentally hazardous chemical elements such as Cd, Pb, Hg, U, Cr, As among others and these get further enriched in the factory production of phosphate fertilizers. The superphosphates are particularly abundant in these hazardous elements and they contaminate the agricultural soils under conducive chemical and physical conditions of the soils concerned. The leachability and dispersion of some of these toxic elements are most profuse in some types of soils such as andisols. Cadmium, after the discovery of the dreaded disease 'Itai-Itai' has been listed as one of the most potentially dangerous elements found in the phosphate fertilizers. Uranium apart from its radiotoxicity, is also chemotoxic and on account of these two properties, it is also considered as a disease causing element. The geochemical pathways lead these toxic elements into different environmental compartments such as food crops, soil, water, air and ultimately enter the human body tissues via the food chain. Several diseases are known to be caused by the excessive presence of toxic elements and gastrointestinal, pulmonary and kidney ailments are most noteworthy.

Journal of the National Science Foundation of Sri Lanka
Volume 37, Issue 3, Sept. 2009, Pages 153-165

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Effect of the Indian Ocean tsunami on groundwater quality in coastal aquifers in eastern Sri Lanka

M vithanage, K Villholth, K Mahatantila, P Engesgaard and KH Jensen

Abstract

Changes in water quality of a sand aquifer on the east coast of Sri Lanka due to the December 26, 2004 tsunami and subsequent disturbance due to well pumping and flushing by precipitation were investigated. Two closely spaced tsunami affected transects, spanning the ocean and an interior lagoon across a 2 km wide land strip were monitored from October, 2005 to September, 2006. Water samples were collected from 15 dug wells and 20 piezometers, from the disturbed and undisturbed sites respectively to evaluate the temporal and spatial trends in water quality. The EC values observed from the undisturbed area showed a significant decrease (3000 to 1200 ìS/cm) with the rain from November 2005 to March 2006, while the values in the disturbed area appeared to have stabilized without further decline through the same period. The concentration range of EC, Ca, K, Na, alkalinity, total hardness and sulphate were higher in the disturbed site than in the undisturbed site. PHREEQC modeling showed that the mixed sea water fraction is higher in the disturbed site than in the undisturbed site, and this is likely due to the movement of the disturbed plume by water extraction through pumping and extensive well cleaning after the tsunami, causing forced diffusion and dispersion. No arsenic contamination was observed as all observed arsenic concentrations were below 10 ìg/L. For the sites investigated, there are clear indications of only a slow recovery of the aquifer with time in response to the onset of the monsoon.

Science of Tsunami Hazards, Vol. 28, No. 3, page 218-231 (2009)

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The Executive Committee appeals GSSL members to settle all their membership dues for 2009 and the arrears, if any, as early as possible. The counter at the Registration Desk during Annual Sessions will be open for this purpose.

REPORTS

REPORT ON THE DETAILED HYDROGEOLOGICAL AND GEOPHYSICAL INVESTIGATION NEAR MADHU CHURCH.

During the last three decades Madhu Church faced many difficulties due to lack of water sources in the vicinity. Although several dug wells (12) and tube wells (06) had been constructed, these wells did not produce adequate quantity of water which is qualitatively safe. The detailed hydrogeological investigations including reviewing of previous data, relevant reports, studying of satellite images, aerial photographs and resistivity sounding data in the premises of Madhu Church revealed the difficulty of finding groundwater near the church area. Therefore the recent investigations were extended around 10Km radius from the Madhu church and favorable zone was found in between 05 to 11Km distance along the Parappukkandantan road. Based on the investigations, three locations were selected to construct test bore holes. The overall water requirement is approximately 1000 m3 per day, particularly in the festival season of the Madu church.

The topographic sheets, geology maps, aerial photographs and satellite images were studied to identify the hydrogeological features in the region and geophysical (Resistivity sounding) surveys were performed to evaluate the subsurface formations. Hydrogeological information was also collected from existing dug wells and tube wells in the vicinity of the area. Schlumberger electrode array was selected for the entire geophysical investigation.

The region is mainly underlain by granitic gneisses, hornblende biotite gneiss and Miocene limestone. Soils are predominantly reddish brown clay (hard red earth). The thickness of overburden varies from 10m to 30 m with an average thickness of 25 m. The depth of the groundwater table varies between 10 – 30 m with an average seasonal fluctuation of 10 to 27 m.

The electrical resistivity sounding (ERS) was carried out in 23 locations and based on the results of ERS, three locations were selected for the construction of test tube wells and 02 tube wells were drilled. The depths of the two tube wells were 65 and 30 meters in which 25 and 7000 liters per minute of yield were recorded, respectively. The second well in which an extremely high yield were obtained, had an electrical conductivity of 1730 ìs/cm. Water samples from this well were investigated in detail at the National Water Supply and Drainage Board laboratories and revealed that all major water quality parameters are within the permissible levels.

Further investigations are being conducted including comprehensive long duration pumping test to investigate a). aquifer parameters, fracture system and hydrogeological conditions, b). recharging pattern of groundwater in the area, c). discharging pattern of groundwater in the area, d). contamination of groundwater and Saline water intrusion, e) water level depletion of the area during the dry period and f). possible environmental impact in the area.

Upul Wickramaratne
Senior Hydrogeologist / Manager (GW),
Groundwater Section, NWS&DB
Anuradhapura

An Appeal

All members are kindly requested to keep the Editors informed about their own professional achievements and institutional activities. We are happy to publicize such news among fellow members. Your contributions to adorn the GSSL NEWSLETTER are most welcome. Contact the Editors! keerthip@pdn.ac.lk, atula.senaratne@gmail.com

3rd International Earth Science Olympiad Competition

The Sri Lankan team that participated in the 3rd International Earth Science Olympiad Competition. **From Left to Right :** Mr. Ashvin Wickramasooriya (Mentor, Sri Lankan team), Mr V. Ekanayake (Dharmaraja College, Kandy), Miss. R. Katugaha (Hillwood College, Kandy), Miss. M. Ekanayake (Mahamaya College, Kandy), Miss. D. Weerasinghe (Mahamaya College, Kandy).

3rd International Earth Science Olympiad competition was held in Taipei, Taiwan from 14-22, September, 2009. The competition was open for under 18-year high-school students, and thirteen countries took part in this event. The students had to take part in written and practical competitions on aspects of the Atmosphere, Biosphere, Geosphere and Hydrosphere of the earth and in a Group Presentation competition based on field observations. This is the first time that a Sri Lankan team has participated at an International Earth Science Olympiad Competition. Mr. Ashvin Wickramasooriya prepared the students for the competition by organizing, a series of lectures and practical with the help of the academic staff of the Department of Geology. The four students who participated in the competition were selected among many who completed the lecture and practical series successfully. At the competition in Taipei, Miss Dinuka Weerasinghe (Mahamaya Girls' College, Kandy) won a Bronze medal for her overall performance at written, practical, and field components of the competition. During Group presentations, the group in which Miss. Katugaha was also a member won the Best Presentation Award of the Competition.

Planet Earth Lisbon Event 2009

Sri Lankan delegation at the Planet Earth, Lisbon Event. From L to R: Ms. Chandima Nikagolle, Mr. Ashvin Wikramasooriya (IYPE National Committee Coordinator, Sri Lanka) and Mr. Amila Rathnayake.

The Planet Earth LISBON EVENT 2009 was held from 19th to 23rd November, 2009 in Lisbon National park - Portugal. The main objective of the event was to celebrate the closing of the International Year of Planet Earth Triennium (2007 – 2009), and to evaluate the results of the IYPE project and to discuss the future activities. Geoscientists, politicians, industrial leaders and young Geoscientists representing sixty five countries participated in this international event.

Planet Earth Lisbon Event 2009 (PEL2009) addressed three important themes; Renewable energy, Sustainable development & Water management and Planet Ocean from the points of view of politics, science & technology and industry. Ten experts delivered invited speeches covering the above themes.

(page 9..)

Seventeen out of eighty countries received merit awards for their outstanding National level contributions to achieve the objectives of the IYPE project during the IYPE triennium from 2007 – 2009. At the "IYPE & International Partners" and "Planet Earth Africa" sessions all IYPE events completed successfully throughout the world were presented. A two-day Earth Science awareness exhibition was held parallel to PEL2009.

During the PEL2009 "Youth & Earth" conference was organized for invited young Earth Scientists representing more than sixty countries. About 160 young Earth Scientists from universities and colleges representing the sixty IYPE Nations participated at this conference. Sri Lanka was represented by Mr. Ashvin Wikramasooriya (IYPE Sri Lankan National Committee coordinator), Ms. Chandima Nikagolle, Mr. Amila Rathnayake.

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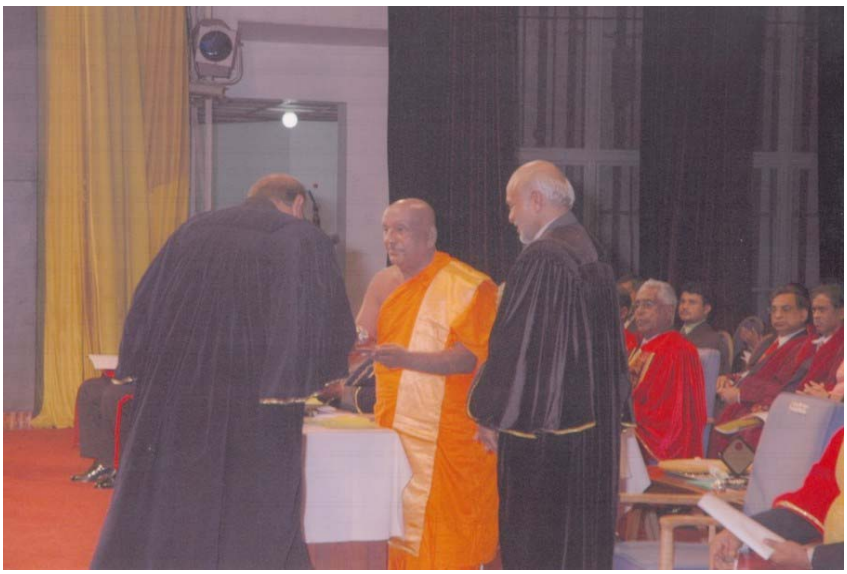
MEMBER'S CORNER

HONORARY DOCTORATE FOR PROFESSOR C.B.DISSANAYAKE



Professor Dissanayake receiving his Doctor of Philosophy degree from the Chancellor of the Sabaragamuwa University Ven. Kumburugamuwe Vajira Thero.

Director , Institute of Fundamental Studies and Emeritus Professor of Geology, University of Peradeniya, obtained his third doctorate when the Sabaragamuwa University of Sri Lanka conferred on him the Degree of Doctor of Science (Honoris causa) at the convocation held in the BMICH on the 26th December 2009. Professor Dissanayake already has a Doctor of Philosophy degree and a Doctor of Science (earned) degree from the University of Oxford. He was conferred this degree in recognition of his pioneering research in the field of Applied Geochemistry and Medical Geology in Sri Lanka. The degree was conferred on him by the Chancellor of the Sabaragamuwa University Ven. Kumburugamuwe Vajira Thero and the citation was read by Prof. K.Palipane, Dean of the Faculty of Applied Science. Prof. Mahinda Rupasinghe, Vice Chancellor announced the award of the D.Sc. degree.

Geologist Honoured....

Mr. Upul Wickramarathne, Senior Hydrogeologist and the Manager of the Anuradhapura Groundwater Investigation Units, National Water Supply and Drainage Board, received a "**PROUD TO SERVE**" award for the appreciation of the Miracle water resource identify in the Sacred Shine of Our Lady of Madhu. A special plaque was awarded to Mr. Wickramarathne by Most. Rev. Dr. Rayappu Joseph, Bishop of Manar, in the direction of H.E. tht President of Democratic Socialist Republic of Sri Lanka.

The Geological Society of Sri Lanka congratulates Mr. Wickramarathne for his achievement.

(from page 9)

Young scientists had an opportunity to get more details about a few activities of the IYPE project Young Earth Scientist (YES) network, Big Mamma project, International Earth Science Olympiad (IESO),.etc. After the conference many young scientists were of the opinion that the PEL 2009 has encouraged them to take more interest and enthusiasm on earth science, and has been a mile-stone in their life and a real platform which guided them to make a better professional Earth Science carrier. The PEL 2009 was an event which highlighted the contribution of young scientist to make IYPE slogan subtitle "Earth Science for Society" a fully functional global reality.

Mr. A. C. Silva; Honorable President of the Republic of Portugal, Prof. F.A.Guimaraes; President of the Portugal Commission for UNESCO, Prof. Walter Erdelen; Assistant Director General for natural sciences for UNESCO, Prof. L.D. Woodfork; Chairman of IYPE Board of Directors, Representatives from IUGS, EGS and IYPE National Committees were among the distinguish guests of PEL2009.

(Reported by Chandima Nikagolla)

Forthcoming Conferences

Seismix 2010

14th International Symposium on the Seismic Probing of the Continents and their Margins; Australia 2010
The current proposed date for Seismix 2010 is between August and September 2010. A post Symposium geological/geophysical excursion will be arranged immediately after the symposium.
Symposium Location: The proposed location for Seismix 2010 is Cairns, Queensland, Australia; More derails: http:// www.earthscrust.org/earthscrust/seismix2010.htm

Geolasi 2010

International Symposium: Geology of Natural Systems , September 1 - 4, 2010 Lasi, Romania.
International Symposium on Geology of Natural Systems organized by the Faculty of Geography and Geology, Department of Geology and the University "Al. I. Cuza" of Iasi, Romania.
More details: http://geology.uaic.ro/symposium/index.php?act=inf

Geological Society of Sri Lanka
Newsletter

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