

CCOP E-News

Coordinating Committee for Geoscience Programmes in East and Southeast Asia

VOL. 5 NO. 3

NOVEMBER 2014

Welcome to CCOP E-News. This e-news is brought to you by CCOP in order to give you the latest news and information on CCOP's activities around the region and worldwide.

CCOP e-news replaces the former printed CCOP Newsletter and will be issued several times each year. Each issue can be downloaded at the CCOP website, <http://www.ccop.or.th> in PDF format.



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Message from the Director

One of the most important activities of CCOP each year is its Annual Session. This year, 2014, CCOP's 50th Annual Session was held in Kokopo, Papua New Guinea (PNG) in October. This was a memorable event for both participants and locals not only because it had been a long time since 1970 when Annual Session last hosted by PNG. Many high ranking officers of the PNG government, led by the Ministry of Mines attended the opening ceremony of the Session and also the reception dinner for heads of delegations. More than 30 scientific papers were presented at the thematic session which focused on geo-resources: their potential, development and management. What was more wonderful about this event is all information was posted by various PNG media.

There were many cultural activities, different each night, shared by all participants. The special ones on the field trip day, both on land and sea, were so thrilling for all of us that we almost forgot what we had experienced days earlier in the meeting room. Those who missed the field trip enjoyed a special field trip with heavy rain, a nice experience too.

Kokopo served as one of the best venues for exchanging updated information on geo-resources in East and Southeast Asia. Many discussions took place, not only for our future collaboration tasks but also concerning new frontiers for geo-resources exploration. One more Member Country the fourteenth, will join us next year as approved by Steering Committee. Most importantly, we already know the host countries for Annual Sessions from 2015 to 2018, China, Thailand, The Philippines and Korea respectively.

With many activities lined up for the next year, I am confident that CCOP continues to be a relevant and important organization for enriching geoscientific endeavors in the region.

Administration News

On 1 July 2014, **Mr. Pornchai Pattamarat** started his probation period of four (4) months to 31 October 2014 for serving as a driver/clerk at CCOPTS. Upon his successful completion of the probation period, a 2-years contract was offered.

According to the decision of the 62nd CCOP Steering Committee in Chiangmai, Thailand in March, 2014, CCOPTS has renewed the contract of **Dr. Nguyen Thi Minh Ngoc** as Regional Expert for another two-year term, starting from 16 August 2014 up to 15 August 2016.



"Many best wishes for the season, and may the new year 2015 bring us prosperity and unity in achieving our geoscientific goals for the common good!" Cheers from all of us, Dr Adichat, with all the staff of CCOP Technical Secretariat.

Summary Report of the 63rd CCOP Steering Committee Meeting

(Editor's Note: The following account is an abridged version of the Steering Committee Meeting minutes. a full version of the minutes is available from the CCOP Technical Secretariat)

The 63rd CCOP Steering Committee Meeting was held at Gazelle International in Kokopo, Papua New Guinea on 25-26 October 2014. The Meeting was attended by delegates of the following Member Countries (MC): **CAMBODIA, CHINA, INDONESIA, JAPAN, REPUBLIC OF KOREA, LAO PDR, MALAYSIA, PAPUA NEW GUINEA, PHILIPPINES, THAILAND**, and **VIETNAM**. **MONGOLIA** and **MYANMAR** attended as observer countries, and **SOPAC** as an observer organization. Also present were **Ms Franca Schwarz**, Chairperson of the Advisory Group (AG) and the Director and staff of the CCOP Technical Secretariat (CCOP TS).

Mr Shadrach Himata, Permanent Representative of Papua New Guinea to CCOP gave the welcoming remarks. **Dr Eikichi Tsukuda**, Chairman of the CCOP Steering Committee Meeting and Permanent Representative of Japan to CCOP opened the 63rd CCOP Steering Committee Meeting.



Delegates of the 63rd CCOP Steering Committee Meeting, 25-26 October 2014, Kokopo, PNG.

Report on the CCOP CO₂ Storage Mapping Programme (CCS-M)

Mr Simplicio Caluyong, CCS-M Program Coordinator presented the report.

Malaysia recorded its appreciation to both CCOP TS and CCS-M Project Coordinator for coming up with clear project objectives and a list of outcomes for the project. The initiative to implement effective communication and sharing of information via a dedicated webpage should be emulated by other CCOP projects.

Indonesia reiterated their strong support for the activities of CCS-M Programme. As the host of a case study, Indonesia reported that the studied sediment basin has potential for CCS (through the injection method). The partners involved in these activities from Indonesia are the Center for Research and Development of Energy and Mineral Resources (LEMIGAS), the Geological Agency of Indonesia (GAI) and other related institutions such as national oil companies,

universities and etc. Ongoing activities related to CO₂ storage are carried out by both LEMIGAS and GAI. They suggested CCS-M activity should also include gas injection (CO₂) for enhancing oil/gas recovery (EOR) based on a consensus methodology.

On the query of the SC Chairman as to whether there would be additional countries to do case studies under the CCS-M Programme, **Mr Caluyong** replied that although the CCS-M case studies are only hosted by three (3) countries, all the member countries will be invited to participate in the case study activities. The case studies are designed to use the published methodology guidelines so that all countries can learn the methodologies and implement their own mapping for CO₂ storage potential and estimation of storage capacities.

CCOP Workplan for 2015

The Meeting endorsed the CCOP Workplan 2015, as presented by the CCOP TS Director, with the following comments:

Malaysia acknowledged the active partnership between CCOP TS and Korea through KIGAM IS-Geo. In this connection, the continuous effort of Korea in sharing expertise and knowledge through the IS-Geo program has benefited many MCs of CCOP. **Malaysia** also urged that capacity building initiatives undertaken by many MCs in cooperation with CCOP TS be enhanced. MC National CCOP committees should make efforts to co-partner with higher learning institutions in executing their capacity building programs.

Ms Schwarz, Chairperson of AG noted that more activities are taking place that reflect the strong relationship between MCs. She extended congratulations for all the efforts and well-thought actions that were realized during the last months and those that are planned for 2015. She expressed her confidence that the CCOP projects will have real impacts on technology transfer and personnel training.

China noted that the strategic plan set by the SC has been fully implemented. The number of Technical Projects has increased gradually during the last 2 or 3 years and **China** congratulated the MCs and CCOP TS for their continuous efforts and contributions.



Dr Adichat Surinkum's presentation of the Proposed CCOP Workplan 2015 at the 63rd CCOP Steering Committee Meeting in Kokopo, PNG.

New Project Initiatives

CCOP-KIGAM Unconventional Oil & Gas Project: Mapping of Black Shale Formations for the prediction of shale resources

The Meeting expressed its support and approval for the new and challenging initiative, “CCOP-KIGAM Unconventional Oil & Gas Project: Mapping of Black Shale Formations for the prediction of Shale Resources” which was presented and proposed by **Korea** through KIGAM. MCs commented as follows:

Indonesia informed the Meeting that they had prospective areas with potential for shale resources exploration, and that there is an ongoing national program to produce additional oil and gas from unconventional resources to help address the decreasing oil and gas reserves and production. The proposed project of KIGAM on unconventional resources will help attain the objectives of the national program of Indonesia.

PNG commented that they have done some very preliminary work in this area but more work is needed to advance PNG’s database. The Permanent Representative of PNG to CCOP made a commitment for PNG’s Department of Petroleum and Energy, and Mineral Resources Authority (MRA) to get in touch with CCOP TS in order for PNG to be involved in the project.

China suggested exploring further factoring-in of aspects of new technologies, such as horizontal well drilling and fracturing, besides Geology and Mapping. CGS, SINOPEC and Petrochina will comprise the team from China to participate in this project.

Vietnam stated their commitment to the new initiative and suggested that adequate time must be allocated to mapping since this particular area of study will require much effort. They also thanked Korea through KIGAM for supporting and organising a series of training courses in 2014 wherein a large number of participants from Vietnam and other MCs benefited.

Japan indicated that they will contribute to the proposed project mainly from a technical point of view.

The **SC Chairman** further suggested that possible cooperation with EuroGeoSurveys should be considered as they have already done much work on this topic.

Development of a Geoinformation Sharing Infrastructure for East and Southeast Asia

The Meeting expressed its support, and approved of the new initiative “*Development of a Geoinformation Sharing Infrastructure for East and Southeast Asia*” proposed and presented by Japan. The Meeting tasked the CCOP TS together with the project implementation team to consider the data policy of each Member Country and also the following comments of Member Countries.

Thailand thanked Japan (GSJ) for the project proposal which will be very useful for all CCOP MCs. They would like to support the project through the provision of an in-kind contribution to facilitate the implementation of the project.

Vietnam also expressed appreciation to Japan for the new initiative, and recommended Japan consider integration with the similar project under ASOMM. Vietnam further added that the uploading of data to the website is a sensitive issue for Vietnam and would need more internal discussions before deciding to approve the project. China similarly suggested that detailed data items needed further discussion before the SC approves the project proposal.

PNG stated that they will advise the CCOP TS and Japan before the next SC meeting in March 2015 of the National Coordinating Agency in PNG that will collaborate with the initiative. They also noted the points expressed by China and Vietnam and said that they would encourage more

detailed and specific discussions on this subject matter.

In reply to these data concerns, **Japan** informed the Meeting that the project's target data will include only published data. Data Policy, particularly on confidential data, will be managed by each member country. Data ownership will always be with the country the data.

Cambodia requested more clarification on the natural resources data to be entered in the database, for example whether or not these data are limited to mineral resources only. Cambodia informed the meeting on the recently signed JICA-MME Memorandum of Agreement focusing on the establishment of mine safety rules as well as mineral resources database. Under this agreement, a national working group on a mineral database has been set up. **Cambodia** also informed the meeting about the training on Web-GIS provided by the GSJ team which is useful in improving national capacity.

The Philippines sought clarification on which data will be uploaded or contributed regarding Mineral Resources, whether these will be only location points for non-metallic minerals and whether geochemical maps should be uploaded. The details on this should be discussed by the Technical Working Group under this new Initiative in order to have a standard data contribution coming from Member Countries.

Mr Caluyong thanked Japan for their Initiative and, as mentioned in the CCS-M report, the CCS-M will piggyback on to the project by creating a CO2 storage interface. The planned CCS-M Atlas will be presented both as a hard-copy report and via GIS. With an open source GIS such as WebGIS, there are many opportunities for up-scaling the CCS-M program, and also with the oil and gas network of CCOP and ASCOPE members.

Report of the 12th CCOP Select Finance Committee Meeting

Ms. Schwarz, facilitator of the 12th CCOP Select Finance Committee (SFC) Meeting presented the findings and recommendations of the SFC.

Malaysia proposed that membership of the SFC be revised taking into consideration the main objectives of the Committee and also to allow other MCs to serve in this privileged committee. In doing this, the CCOP TS needs to ensure the continuity and experience of the SFC. Furthermore they raised the importance of consistency of the SFC membership, and suggested that the respective MCs name their representative.

As facilitating chair of the SFC, **Ms. Schwarz** fully agreed with the statement made by Malaysia regarding membership and procedural questions of the SFC. The SC should decide whether to be bound by the decisions already made years ago or whether new rules should be applied to the SFC.

The Meeting approved the suggestions made by **Malaysia**, and tasked the Secretariat to carry out the suggestions with due consideration of the relevant SC decisions made in the past.



12th SFC Meeting held on 20 October 2014, a day before the 50th CCOP Annual Session in Kokopo, PNG.

Consideration of the proposed CCOP Budget for 2015

The Meeting endorsed the proposed budget as recommended by the Select Finance Committee. The Meeting also applauded the decision of the CCOP TS Director to use his housing allocation for CCOP technical activities.

Thailand informed the Meeting that the proposed USD10,000 increase to Thailand's current USD40,000 annual cash contribution is undergoing the process of approval by the Thai Cabinet. **Thailand** will convey the result at the next CCOP SC meeting.

PNG thanked the CCOP TS, under the leadership of **Dr Adichat**, for a sound and well-focused budget proposal for 2015. **PNG** also confirmed its commitment of USD 25,000 for its 2015 annual cash contribution.

The Philippines appreciated the efforts of **Dr Adichat** and his team in increasing the CCOP revenues as shown from the recently stated cash balances.

Consideration of the Recommendations of the CCOP Advisory Group's Meeting

Ms Schwarz presented the findings and recommendations of the CCOP Advisory Group's Meeting held at the CCOP Annual Session.

In discussion, **Malaysia** suggested that for enhancing the image of CCOP, the Director might consider writing to respective ministers for each MC, to reintroduce the organization and to thank the MCs for their yearly cash contributions as well as briefly reporting the progress achieved in CCOPs role of contributing to society.

With regards to the needs to come up with a strategic plan for 2016-2020, **Malaysia** applauded the suggestion made by the AG and also urged that each and every MC National Committee should hold their own brainstorming session/s to digest this issue.

The Meeting accepted the recommendations made by the CCOP Advisory Group.

Report on the Preparations and Plans for future Annual Sessions and SC Meetings

The **Thailand Delegation** informed the Meeting that the 64th CCOP Steering Committee Meeting is planned to be held on 23-26 March 2015 in Krabi, Thailand.

The **CCOP TS Director** reported that **Cambodia** cannot host the 51st CCOP Annual Session in 2015. **China** then volunteered to host the 51st CCOP AS and 65th SC Meeting. The venue and time will be decided after consultations with MCs, CCs and COs as well as CCOP TS. The Meeting accepted the offer of **China** with applause.

*Mr Shadrach Himata,
Permanent Representative
of PNG to CCOP, turning
over the hosting of the
CCOP Annual Session the
PNG way, to China,
represented by Mr Ma
Yongzheng, Deputy
Permanent Representative
of CCOP to China.*



The Philippines informed the Meeting that they will seek early approval from their government to host the 2017 AS and 69th Steering Committee Meeting.

Thailand confirmed their proposal to host the 52nd CCOP Annual Session and 67th Steering Committee meeting in 2016 to coincide with the 50th Anniversary of CCOP. The Royal Thai Government, through the Ministry of Natural Resources and Environment has been informed and agreed on the proposed activity. **Thailand** expects to commence work with CCOP TS and the working group as soon as possible.

Korea reiterated their offer to host the 2018 CCOP Annual Session and Steering Committee Meeting to coincide with KIGAM's centennial anniversary celebration.

CCOP Membership

The **CCOP TS Director** reported on the efforts made in expanding membership of CCOP, indicating that Mongolia, Myanmar and SOPAC have been invited to the current SC Meeting as Observers.

Mrs. Oyuntsetseg Dayandorj, Head, Regional Geological Division, of the Geological Survey, MRAM, Mongolia remarked that the Mongolian Geological Survey plans to cooperate with the members of CCOP in the future.

Dr. Ye Myint Swe, Director General, Department of Geological Survey and Mineral Exploration, Ministry of Mines, informed the meeting that the Government of Myanmar has approved Myanmar becoming a Member Country of CCOP. He requested more information on CCOP codes, rules and regulations to be adhered to as a Member Country of CCOP.

The Meeting accepted Myanmar as a CCOP Member Country and a signing ceremony will be held at the next CCOP Steering Committee Meeting in March 2015.

Other Matters

CCOP Member Countries Cash Contributions Report

The **CCOP TS Director** reported that Japan has already increased her Member Country Contribution to USD 50,000 from year 2014. He also recapped that at the 62nd Steering Committee Meeting held in Chiangmai, Thailand in March 2014, Papua New Guinea committed to increase her annual cash contribution from USD 10,000 to USD 25,000 starting from 2015.

Report of Networking Groups

The CCOP TS Director reported that a National Coordinator Network has been established with focal persons as follows:

- CCOP Stone Geo-Heritage Book Project, Dr. Hirokazu Kato, Representative Director, Geological Survey of Japan, AIST
- CCOP-ASEAN Working Group on Geochemical Mapping, Dr. Wang Xueqiu (CGS)
- CCOP Working Group for the ASEAN Harmonized Geology Project, Dr. Yasukuni Okubo (GSJ)
- National Coordinator for CCOP Book Project on Best Practices on Mine Decommissioning and Rehabilitation Plan in CCOP Region (Success Stories), Dr. Elmer B. Billedo, MGB Assistant Director (MGB)
- CCOP Higher Education Support Network, Dr. Koji Wakita (Yamaguchi University)
- CCOP Geopark Network, Dr. Tran Tan Van (VIGMR)

Nomination of Dr Oystein Berg as CCOP Honorary Advisor

The Meeting accepted Thailand's nomination of **Dr Oystein Berg** as Honorary Advisor of CCOP. Dr Oystein Berg's expertise and wide experience is beneficial and valuable to CCOP and to its Advisory Group. Dr Berg has contributed extensively through capacity building activities to all CCOP MCs.

Ms Schwarz fully acknowledged and supported the nomination of Dr. Berg as Honorary Advisor to CCOP. Dr Berg had served for many years as an outstanding active Representative of PETRAD to CCOP.

Proposal to establish a CCOP Editor Network

The **CCOP TS Director** proposed to create a CCOP Editorial Network, to be led by **Dr Anthony Reedman**, CCOP Honorary Adviser. CCOP TS will call for Member Countries to nominate volunteers to serve/cooperate as editors of CCOP publications. A Deputy Chief Editor will then be selected by the volunteer team through voting, and the elected deputy chief editor will be entitled to receive financial support according to CCOP regulations.

On **Japan's** inquiry on the current scope of CCOP editing work, the **Director** replied that it includes all the editing tasks of **Dr Reedman** such as the CCOP Annual Report, CCOP E-News, Thematic Session Papers, and Member and Cooperating Countries/Organisations Reports and, occasionally, CCOP Special Publications/Books.

Strategic Plan Working Group

The **Director** reported that with reference to a CCOP Strategic Plan for 2016-2020, the CCOP TS will establish a working group tasked with drafting the strategic plan, and outlining the preparations for the 50th Anniversary of CCOP. The working group will meet in March 2015, prior to the 64th CCOP Steering Committee meeting, and may include the 4 founding Member Countries and members of the advisory group. The working group will also determine the theme for the 50th year anniversary, as well for a book marking the event.

Publication of 2013 Thematic Session Proceedings

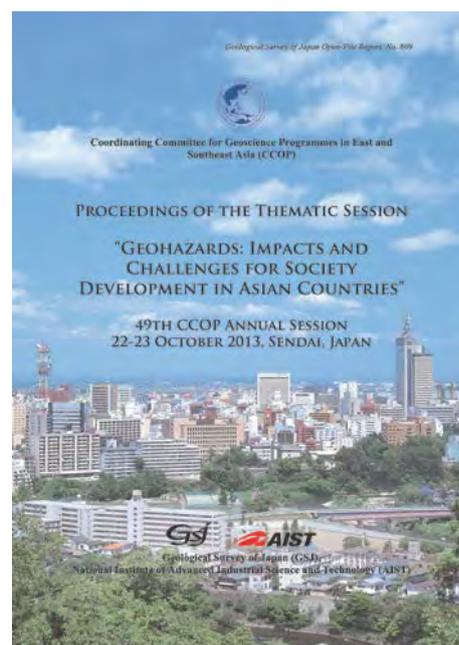
Japan had printed the proceedings of the 2013 CCOP Thematic Session as a GSJ open-file report, and duly distributed one copy per country at the current Annual Session. A CD ROM of the proceedings will also be produced, and will be sent out (probably in early November 2014). The Proceedings will also be made available at the CCOP website

International Meeting

Japan informed the Meeting that GSJ will hold an International Workshop on Earthquake and Volcanic Hazards in the middle of March 2015. Japan encouraged all CCOP Member Countries to participate in this workshop

SOPAC

Prof. Michael Petterson, Director of SPC Applied Geoscience and Technology Division (SOPAC) expressed



his thanks and appreciation to CCOP and PNG as host country for the invitation of SOPAC to the Annual Session as Observer. He extended a formal invitation to the Director of CCOP TS to visit SOPAC in Fiji in 2015. SOPAC is keen to promote and activate a professional connection with CCOP and welcomes discussion about how best SOPAC can work with CCOP. Both organizations are regional and promote geoscience amongst their membership. SOPAC has 26 member countries and encourages and facilitates geoscience activities in the Pacific. Currently, Korea and Japan work actively with SOPAC. The Director of SOPAC looks forward to future close relations with CCOP.

General Remarks

On behalf of CCOP MCs, **China** expressed gratitude to the Government of Papua New Guinea through the Department of Mineral Policy and Geohazard Management for generously hosting the 50th CCOP AS and 63rd SC Meeting and the great hospitality shown to all the delegates.

China invites all the delegates from CCOP MCs, CCs and COs to join next year's annual session.

Papua New Guinea replied that they were privileged and honored by the attendance of the delegation from CCOP Member Countries. The annual session, thematic session, steering committee and other side sessions occurred as planned; a lot has resulted from these meetings.

PNG hopes that all have received and digested reports from the CCOP TS and that scientists have appreciated the scientific presentations and the poster session. The country reports and number of presentations in this conference show that there is plenty happening in the CCOP region.

Much was presented on the science of geo-resources, but little on the policies & social aspects of exploiting geo-resources. Papua New Guinea has a complex land ownership system, and it is experienced in dealing with land ownership issues. PNG stands ready to share and learn from future discussions on this with other member countries.

Adoption of the Report and closure of meeting

The Report of the 63rd Steering Committee Meeting was adopted, subject to editorial checks.

The 63rd Steering Committee Meeting of CCOP was then closed.

Recent Project Activities (1 July 2014 – 31 October 2014)

Geo-Resources Sector

1. CCS-M Training Course 5 (T5): GIS Applications in Geological Storage Mapping

CCS-M is an important program that will promote collaboration among CCOP member countries in mapping potential geological storage of CO₂. CCS-M training course 5 (T5) was a workshop on the application of GIS system as an interactive tool to analyze data and provide information of CO₂ stationary resources, potential geologic CO₂ storage formations, infrastructure, storage estimations, etc. CCS-M will leverage on the experiences and networks of past and existing GIS and metadata projects of CCOP.

The WebGIS training course demonstrated the GSJ-developed GIS that could be useful for mapping of CO₂ storage sites and as a tool to query CO₂ storage capacity estimates for CCS-M. The hands-on exercises proved to be effective and well-appreciated by the participants as

based on their feedback.

For update on this activity, you may visit the CCS-M webpage, particularly this link: <http://www.ccop.or.th/ccsm/details/CCS-M-T5--GIS-Applications-in-Mapping-for-Geological-Storage-of-CO2>.

There were **32 participants** including Resource Persons from GSJ and KIGAM representatives from CCOP Member Countries (**Cambodia, China, Indonesia, Korea, Lao PDR, Japan, Malaysia and Vietnam**) and the CCOP Technical Secretariat.



Participants of the CCS-M T5 course, with Ms Marianne Damhaug, Chargè d'Affairs, Royal Norwegian Embassy, Seoul, Korea, Dr. Kyu Han Kim, KIGAM President and Dr Adichat Surinkum, Director of the CCOP Technical Secretariat.

2. The 4th ECF Asia Shale Gas Summit (Shanghai) 2014 & Asia Pacific Unconventional Resources Technology & Equipment Exhibition

The 4th ECF Asia Shale Gas Summit (Shanghai) 2014 and Asia Pacific Unconventional Resources Technology & Equipment Exhibition were successfully co-organized on 14-16 October 2014 in Shanghai, China by the Energy China Forum (ECF) and the Coordinating Committee For Geoscience Programmes in East and Southeast Asia (CCOP). The workshop was kindly sponsored by Energy China Forum and co-hosted by Shanghai Energy Economy Committee, National Energy LNG R&D Center, CNPC, China Petroleum Pipeline Bureau, SZ Energy Intelligence Co., Ltd and Shanghai Academy of Social Sciences, with support from the ECF International Shale Gas Forum, Shanghai Energy Economy Committee of SEA & SZ Energy Intelligence Co. Ltd and leading China producers. The conference provided a showcase for enhanced opportunities in the unconventional oil and gas resources sector in general and shale gas in particular, gathering government, research institutes, companies and financial professionals and senior administrators to establish the best communication platform for shale gas policy and technology. .

Delegates included resource persons and speakers from CCOP Member Countries (**China, Cambodia, Thailand and Vietnam**) and Director CCOP TS. All participants were interested in sharing national issues of potential and development strategies for shale gas.

3. CCOP-KIGAM-JDPC World water Forum on 6-8 October 2014 in Jeju, Korea

The CCOP Technical Secretariat (CCOP TS), together with the Korean Institute of Geoscience and Mineral Resources (KIGAM) and Jeju Province Development Corporation (JDPC) successfully organized the CCOP-KIGAM-JDPC World Water Forum on 6-8 October 2014 in Jeju, Korea. There were 300 attendants from governments and the private sector related to management and utility of groundwater resources, including **18 participants** from CCOP Member Countries (**China, Cambodia, Indonesia, Japan, Korea, Malaysia, Lao PDR, Thailand, and Vietnam**), KIGAM and CCOP TS staff. The event aimed to provide participants from CCOP Member Countries with an open forum in which to share information on groundwater resources as well as best practice in groundwater management and the bottled water market in CCOP Member Countries.

During the first day, keynote presentations by China, Indonesia, KIGAM, Water Industry research Center (JDPC) and CCOPTS focused on the bottled water market and industry and the trend in consumption of bottled water in CCOP Member Countries. On the second day, country reports by CCOP Member Countries focused on the status of water resources management and policy, as well as groundwater-related problems and solutions for each country. The presentations were followed by a panel discussion, facilitated by Dr Yongje Kim (KIGAM) with panelists, Dr Kyoo Chul Ha (KIGAM), Dr Gu Won Seo (KR Clean & Green), Dr Adichat Surinkum (CCOP TS), Mr. Lee Chan Jin (K-water) Mr. Won Bae Park (Representative of Jeju Development Institute), in plenary with participants from CCOP Member Countries (MCs). The meeting agreed that Jeju could be a model of the best experience for MC's delegates to learn and apply in their own countries. KIGAM and CCOP will continue to discuss and plan for future collaborative activities, including annual regular training courses on groundwater theory and application. CCOP will also bring the issue to UNESCO regarding trans-boundary issues.

After the two-day seminar, an excursion was arranged for participants to visit the water monitoring drilling site, factory and museum of Samdasoo Mineral water company, the Cheongup cultural village, Seopjikoji coast scenery site, Seongsan Ilchulbong sunrise peak and Manjanggul lava tube along the southeastern coast of Jeju Island.



CCOP delegation visited the monitoring well and factory of the Samdasoo Mineral Water company in Jeju, Korea

4. CCOP-VIGMR-UNESCO-DVKP Symposium on Developing Geoparks Within East & Southeast Asia Region - Opportunities And Challenges

The CCOP Technical Secretariat, together with the Vietnam Institute of Geosciences and Mineral Resources (VIGMR), United Nations Educational, Scientific and Cultural Organization (UNESCO) and Dong Van Karst Plateau Global Geopark (DVKP), co-organized a symposium on Developing Geoparks within the East & Southeast Asia region - Opportunities and Challenges- on 9-12 September 2014 in Hanoi city and Ha Giang province in Vietnam. The 30 delegates attending the one-day technical seminar and three-day excursion to Dong Van Geopark in Ha Giang province included delegates from 8 CCOP Member Countries, local participants and organizers and Director CCOP TS

Keynote lectures and country report presentations during the meeting covered various aspects of geoparks and displayed different approaches to conserving, protecting and promoting important geological sites. Participants discussed and agreed that understanding on current status, geopark values, opportunities and challenges in East & Southeast Asian countries are critical to adequately address the requirements for developing geoparks. In order to promote cooperation activities on geoparks in the CCOP region, participants suggested that CCOP develop a CCOP Geopark Network and organize further geopark workshops in Member Countries.

GEO-ENVIRONMENT SECTOR

5. KIGAM-CCOP Regular Training Course on “Groundwater Theory and Application”

The School for Geoscience Resources (IS-Geo) of KIGAM in cooperation with CCOPTS conducted the training course entitled “Groundwater Theory and Application” in Daejeon, Korea, from June 30 through July 15, 2014. There were **25 participants** from CCOP Member Countries.

During the 15-days training course, lectures and exercises covered 2 modules: Module 1- Groundwater Basics and Hydrogeological Investigations and Module 2- Groundwater Practices: Contamination, Remediation and Water Security. CCOP trainees also visited KIGAM Laboratories and took the Korea Water Resources Corporation (K-Water) Tour for a half day of lectures and a half day field exercise on aquifer tests and data interpretation based on the investigation well within the KIGAM campus. Trainees also attended Korean Language and Cultural classes for about an hour each day. On the last day of the training course, participants presented their country reports and shared their experiences on groundwater research, survey and management.



CCOP trainees attending the training course on “Groundwater Theory and Application” in Daejeon, Korea

6. KIGAM-CCOP Regular Training Course on “Coastal Geology and Geohazards”

The International School for Geoscience Resources of KIGAM in cooperation with CCOP organised the training course entitled “Coastal Geology and Geohazards”. The course was held at KIGAM from September 15 through September 30, 2014. A total of 12 participants attended from CCOP member countries (**Cambodia, China, Indonesia, Lao PDR, Malaysia, Papua New Guinea, Philippines, Thailand, Timor-Leste, Vietnam**), and a CCOP observer country (i.e. **Myanmar**) together with CCOPTS representatives

The training course was organized in two modules, namely wave-dominated coasts and coastal geohazards, and tide-dominated coasts and human impacts. It was conducted by classroom lectures as well as on-site visits. Country presentations on these topics were given on the last day of the course.

7. CCOP-UOT-DMR Workshop on INSAR Application for Geohazards

The CCOP Technical Secretariat, together with the Department of Mineral Resources of Thailand (DMR) and the University of Tokyo (Japan) successfully organized the CCOP -DMR-UOT Workshop on INSAR Application for Geohazards on 19-20 August 2014 in Bangkok and Kanchanaburi, Thailand. There were 34 participants from CCOP Member Countries, University of Tokyo and 3 CCOP TS staff at the seminar held in DMR and on a one day field trip in Kanchanaburi province.

At the Opening Ceremony Dr Adichat Surinkum delivered the welcome speech emphasizing the potential of the INSAR tool to detect earth surface deformation and displacements, which are important for geohazard monitoring as well as recognition of underground deposits. Dr Sommai Techawal, DMR general inspector, gave the Opening Address on behalf of DMR.

During the technical seminar in Bangkok, there were 5 keynote lectures presented by resource persons from the University of Tokyo and DMR and a country report by Indonesian participants. The following discussion session was chaired by Dr Adichat Surinkum and Prof Shuichi Rokukawa, focusing on the need of CCOP Member Countries to use INSAR techniques for geohazard management, a strategy of applying INSAR tools in East and Southeast Asia countries and some prospective work related to INSAR application. A possibility of cooperation between the Geo-Informatics and Space Technology Development Agency (GISTDA) of Thailand and the neighboring Member Countries was advanced with an offer to share INSAR data by the Agency. After the meeting, all participants took part in a field excursion in Kanchanaburi province to see the seismic monitoring station and evidence for active faults as well as an affected village in the Landslide watch network, occurrences of rare earth element minerals in weathered granitic rock and the metamorphic zone along the boundary between Thailand and Myanmar.



Meeting and excursion to visit the active fault zone in Kanchanaburi province, Thailand

GEO-INFORMATION SECTOR

8. CCOP/ASEAN Kick-Off Meeting of the Harmonized Geology Project

The new initiative “CCOP-ASEAN Harmonized Geology” project was proposed and endorsed at the 62nd CCOP Steering Committee meeting in Chiang Mai, Thailand on 4-6 March 2014 and will be implemented jointly by CCOP, ASEAN and GSJ. The Project Goals are 1) Standardization of Geology Legend; 2) Compilation of 1:1 million seamless geology map and 3) Development of a Data Management System on free and open sources such as web-GIS. Participating countries include **Brunei, Cambodia, Indonesia, Malaysia, Myanmar, Philippines, Lao, Singapore, Thailand and Vietnam**. The planned activities over 3 years (2014-2016) include 1) Workshops for Harmonization of geologic symbols, OneGeology specification, Web GIS technology, data dissemination and analysis and 2) Meetings for compilation, discussion, exchange of knowledge and experience on the geological setting of the region. To facilitate the implementation of this project, CCOP TS has formed the project’s Working Group and held two technical meetings on 21 October 2013 in Sendai, Japan and 3 March 2014 in Chiang Mai, Thailand with participants from CCOP member countries. Resource persons for the project are being trained in Web-GIS by GSJ experts during courses in Philippines, Indonesia, Cambodia, Laos, Vietnam and Myanmar.

On 16-17 July 2014, CCOP jointly with DMR of Thailand organised the kick-off meeting of the project in Bangkok, Thailand with 21 participants, including 17 Web-GIS trained experts and resources persons from member countries: Cambodia, Indonesia, Japan, Lao PDR and Vietnam. Presentations by resource persons from Japan were on processes of geological harmonization and in a discussion session all participants specified possible problems, proposed solutions and planned future activities.

The meeting agreed on 3 important points as follows: 1- Work would be on harmonization not compilation; 2- appoint responsible persons for ASEAN & CCOP (at least 2 from each MC); 3- Start from ASEAN then extend to CCOP. The latest versions of national geological maps were recommended to be used as input maps for the project. A template worksheet was prepared by Dr. Yutaka Takahashi for distribution to member countries and completion.

9. 'Integrated Geophysical and Geochemical Data Processing (IGDP) PROJECT': Second Workshop

The Second Workshop of the CCOP-CGS Project on Integrated Geophysical and Geochemical Data Processing (IGDP) was held on 22-24 August 2014 in Kunming, China hosted and funded by the China Geological Survey (CGS) in cooperation with CCOP. This activity was co-organized by the Development and Research Center (DRC), CGS and Yunnan Information Center of Geology and Mineral Resources (YICGMR).

There were 45 participants from CCOP and ASEAN countries (**Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines, Thailand and Vietnam**) and other countries (**People’s Republic of Korea, Pakistan, Peru and Sri Lanka**).



Hands-on exercises during the workshop.

Country presentations on national geophysical and geochemical works, as well as geological mapping and database activities were made by Cambodia, China, Indonesia, Laos, Malaysia, Myanmar, Philippines and Thailand. Other

countries also presented and shared relevant national activities to the meeting. IGDP Project Leader and Division Director, Dr Zhang Minghua (DRC, CGS) introduced the IGDP Project by presenting the general concept of geophysical exploration, its methods and applications, gave an overview of the IGDP software, its general function, geophysical/geochemical/geological databases, and gravity/magnetic data processing application. Chinese Experts from CGS ran the training session in the use of the IGDP Software, which was provided to all the participants. There were 3 case studies presented by Resource Persons from China, Thailand and Indonesia. During the discussion, participants from CCOP and ASEAN Countries expressed their need of a week-long intensive hands-on training session on the use of RGIS-IGDP software. All the participants received a package of the RGIS-IGDP Software as well as a certificate of participation at the end of the workshop.

10. The Third Business Meeting of the CCOP Book Project “Stone Heritage in East and Southeast Asia”

The third business meeting of the CCOP Book Project “Stone Heritage in East and Southeast Asia” has been held on 22 October 2014 in Kokopo, Papua New Guinea, in conjunction with 50th CCOP Annual Session. The meeting was attended by Dr Hirokazu Kato - Project leader, representatives of CCOP member countries: **Cambodia, Indonesia, Japan, Korea, Lao PDR, Malaysia, Philippines, Thailand, Vietnam** and CCOP Technical secretariat. During the meeting, the project leader presented an update of the project, a summary of seven submitted draft papers and suggestions on editing. Representatives of countries who have not yet submitted country chapters such as **Cambodia, Lao, PDR and Philippines** also gave presentations on the current status of Stone heritage in their countries and reassurance of their active involvement in the preparation of book chapters. The meeting proposed to nominate Mr Sieng Sotham, the representative of Cambodia, to be the second national coordinator of Cambodia to this book project. Publication of this book is scheduled to be completed in 2015.



Discussion on editing country chapters and scheduled plan of book publication

PROJECT INITIATIVES

CCOP-KIGAM Unconventional Oil and Gas Project: Mapping of Black Shale Formations for the Prediction of Shale Resources

The CCOP TS and KIGAM are currently in discussion for preparing the draft project proposal for this new initiative that is planned to be funded by Korea and to start in 2015, lasting for 6 years. This initiative was presented by KIGAM in the 63rd CCOP Steering Committee Meeting in Kokopo, PNG. The goal of this project is to create the highest possible value for CCOP society from potential oil and gas resources in order to improve the quality of life of the people in the CCOP Member Countries. Expected outcomes include integrated maps and database of shale resources; enhanced capacity of CCOP member countries in the assessment of potential areas for shale sourced resources, collaboration in research, development and demonstration (RD&D) by case studies in member countries.

CCOP – DMF Project on Petroleum Resources /Reserves Classification and Reporting System

This new initiative between the CCOP TS and Department of Mineral Fuels (DMF), Ministry of Energy, Thailand, plans to conduct a series of capacity building workshops, field work sessions and form a Working Group that will facilitate the development of the oil and gas reserves reporting guidelines and implementation of reporting standards in the CCOP region. The Project will leverage on the existing United Nations Classification for Fossil Energy and Mineral Resources 2009 (UNFC) Expert Group on Resource Classification (EGRC) where CCOP TS and some member/cooperating countries are actively participating. The funding will be coming from DMF and some allocation from CCS-M. The 1st Workshop is planned in Bangkok on 8-11 Dec 2014.

Mission Trips and Meetings

JULY-DECEMBER, 2014

30 June-2 July 2014, CCOPTS Dr. Adichat Surinkum and CCS-M Project Coordinator Mr. Simplicio Caluyong made a courtesy visit to the new PR of Indonesia, Dr Surono at the Geological Agency office in Jakarta, Indonesia.

3-4 July 2014, CCOP TS Dr. Adichat Surinkum made a courtesy visit to the new Permanent Representative of Cambodia to CCOP, H.E. Cheap Sour the General Department of Petroleum, Ministry of Mines and Energy in Phnom Penh, Cambodia.

6-11 July 2014, CCS-M Project Coordinator Mr. Simplicio P. Caluyong and Manager, Project Operation and Information Ms. Marivic P. Uzarraga attended the **Web/GIS Training Session for Myanmar** at Naypyitaw, Myanmar, conducted by experts from GSJ. At this time, a coordination meeting was also conducted with GSJ experts for the preparation of CCS-M T5.

29 July 2014, CCOPTS Director Dr. Adichat Surinkum, Regional Expert Dr Nguyen Thi Minh Ngoc and Assistant, Project Operation and Information Ms. Thanitnuth Invakul visited the Landslide Mitigation area with PTT GC at the construction site of Rayong Advanced Institute of Science and Technology (RAIST) & Rayong Science Academy (RASA) by PTT Global Chemical Public Company Limited, Rayong, Thailand.

30-31 July 2014, CCOPTS Director Dr. Adichat Surinkum attended the **Opening-Closing Ceremonies of the “Brainstorming and Dissemination of Knowledge about the Survey and Evaluation of Potential Areas of Basalt Stone for Construction Purposes”** session organized the Department of Mineral Resources in Ubon Ratchathane and Sri Saket, Thailand. He made a presentation on *“Infrastructure connecting ASEAN countries, a feasibility study”*.

9-12 August 2014, CCOP TS Dr. Adichat Surinkum had a meeting concerning future cooperation with Dr Eikichi Tsukuda, Chairman, CCOP Steering Committee, and Permanent Representative of Japan to CCOP at the Geological Survey of Japan (GSJ) National Institute of Advanced Industrial Science and Technology (AIST) office in Japan.

22-23 August 2014, CCOPTS Director Dr. Adichat Surinkum attended **“After Action Review (AAR) for Future of Minerals Exploration”**, organized by Department of Mineral Resources in Rayong, Thailand. He made a presentation on *“Future collaboration amongst CCOP Member Countries on Trans-boundary Mineral Exploration”*.

27-28 August 2014, CCOPTS Dr. Adichat Surinkum attended the **11th ASOMM Meeting of the Working Group on Mineral Information and Databases** at Sokhalay Angkor Hotel, Siem Reap, Cambodia.

28-30 August 2014, CCOPTS Director Dr. Adichat Surinkum attended **11th Malaysia-Thailand Border Joint Geological Survey Committee Meeting**, Phang-Nga, Thailand. This project involves collaboration between the Department of Mineral Resources (DMR) and the Minerals and Geoscience Department Malaysia (JMG). The meeting was to consider the final report of the Project in year 2014 and the work plan in year 2015.

28-30 August 2014, CCS-M Project Coordinator Mr. Simplicio P. Caluyong visited LEMIGAS office for a planning meeting with the CCS-M Indonesia Case Study team in Jakarta, Indonesia. The PR of Indonesia recently transferred the coordination of CCS-M case study from GAI to LEMIGAS. The new management of LEMIGAS were also updated about the developments and future plans of CCS-M.

1 September 2014, Mr. Ioannis Abatzis, Vice-Chair of CCOP Advisory Group, and Representative of Denmark to CCOP, visited the CCOP TS to discuss opportunities for cooperation between CCOP and the American Association of Petroleum Geologists (AAPG, <http://www.aapg.org>).

5 September 2014, **The CCOP Norway CCS-M Program Annual Meeting** was conducted at the CCOP Technical Secretariat. The CCOP TS was represented by the Director Dr. Adichat Surinkum, Regional Expert Dr Nguyen Thi Minh Ngoc, Administration Manager Ms Sansanee Wudhiwanich and CCS-M Project Coordinator Mr. Simplicio P. Caluyong. Norway was represented by Dr. Chatri Moonstan of the Royal Norwegian Embassy (RNE) – Bangkok and Ms Hilde Solbakken of RNE-Jakarta (who joined the Meeting via Skype).

14-15 September 2014, CCOP TS Director Dr. Adichat Surinkum attended a **“Seminar on Subsurface Geophysical Investigation”**, organized by Department of Mineral Resources in Chainat, Thailand. He made a presentation on *“Geo-resources potential of SE Asia for AEC’s economic development”*.

15 September 2014, CCS-M Project Coordinator Mr. Simplicio P. Caluyong visited the Department of Mineral Fuels, MOEN, Thailand for a Meeting regarding a new CCOP – DMF Energy Reserves Reporting Project.

Recent and Upcoming CCOP Activities

Date / Venue	Activities
11 - 14 November 2014 Bangkok, Thailand	4 th South East Asian Industrial Minerals Conference
21 November 2014, Bangkok, Thailand	UNEP-CCOP-GSJ/AIST Workshop on “The Risk Management of Mercury in and around the Artisanal/Small-Scale Gold Mining Sites”
25 - 27 November 2014 Vientiane, Lao PDR	BGR - CCOP Workshop “State Management of Mining Activities in ASEAN Countries”
8 - 11 December 2014 Bangkok, Thailand	CCOP – DMF Workshop on the Application of UNFC 2009: Classification and reporting of Petroleum Resources/Reserves and CO ₂ injection projects
14 - 16 December 2014 Kanchanaburi, Thailand	CCOPTS Team Building / Planning
10 – 14 January 2015 Myanmar	ASEAN+3 Geological Mapping (Myanmar, Lao PDR & Cambodia)

19 January – 13 February 2015 IS-Geo, Daejeon, Korea	KIGAM-CCOP Regular Training Course: Petroleum Exploration, Development and Production
21 – 24 January 2015 Lampang, Thailand	CCOP- DMR-EGAT Mae Moh Workshop on Clean & Green Mining
10 – 12 February 2015 Bangkok, Thailand	CCOP- GSJ/AIST-DGR Groundwater Project Phase III Kick-Off Meeting
25 – 27 February 2015 Bali, Indonesia	CCS-M C1S1: Indonesia Case Study Workshop 1 (Expert Visit)
February 2015 (TBC) Ipoh, Malaysia	JMG 7-day Advanced Course in Geochemical Analysis
2 – 6 March 2015 Busan, Korea	CCOP-GSJ/AIST-KIGAM DeISEA Project Phase III: Kick-Off Meeting
2 March – 20 April 2015 IS-Geo, Daejeon, Korea	KIGAM-CCOP Regular Training Course: Exploration and Evaluation of Mineral Resources
16 – 18 March 2015 Sendai, Japan	GSJ/AIST International Workshop on Earthquake and Volcanic Hazards
21-22 March 2015 Krabi, Thailand	CCOP Strategic Plan Working Committee Meeting
23 March 2015 Krabi, Thailand	CCOP Select Finance Committee Meeting
23 March 2015 Krabi, Thailand	Business Meeting of the CCOP Book Project “Stone Heritage in East and Southeast Asia”
23 March 2015 Krabi, Thailand	CCOP Harmonized Geology Project Meeting
24 – 26 March 2015 Krabi, Thailand	64 th CCOP Steering Committee Meeting
25 March 2015 Krabi, Thailand	Pre-Launching Meeting of CCOP-KIGAM Unconventional Oil & Gas Project: Mapping of Black Shale Formations for the Prediction of Shale Resources
20 – 24 April 2015 (TBC) Palawan, Philippines	Seminar on Best Practices on Mines Rehabilitation and Decommissioning
April 2015 (TBC) Bangkok, Thailand	CCOP – DMF Energy Reserves Reporting Project Second Workshop
14-15 May 2015 Hanoi, Vietnam	CCOP Activity during the 50 th Year Anniversary of VIGMR (TBC)
May 2015 (TBC) Malaysia	CCS-M C2S1: Malaysia Case Study Workshop 1 (Expert Visit)
May 2015 (TBC) Seoul/Daejeon, Korea	Launching & Seminar CCOP-KIGAM Unconventional Oil & Gas Project: Mapping of Black Shale Formations for the Prediction of Shale Resources
26-27 May 2015 Kota Kinabalu, Malaysia	AAPG Workshop: Tectonic Evolution and Sedimentation of South China Sea Region

**TBC means to be confirmed*

New Publication

CCOP Guideline on the Methodologies for Selecting Geological Carbon Dioxide (CO₂) Storage and Estimation of Storage Capacities

This publication introduces the guiding principle adopted by CCOP on methodologies for selecting geological CO₂ storage and estimation of storage capacities, gives a brief overview of the current status of storage capacity assessments per CCOP country, provide some details regarding the development of the Guideline, such as the workflow and adopted capacity estimation calculation methods.

This can be downloaded from [CCS-M webpage](#), in particular from this link, <http://www.ccop.or.th/ccsm/details/CCOP-GUIDELINE-on-the-Methodologies-for-Selecting-Geological-CO2-Storage-and-Estimation-of-Storage-Capacities--Download-here->

For more information

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