Report

Asian Summer School in Bangkok 2013

Geoinformatics and Issues on Sustainable Development in Asia

CHUBU UNIVERSITY

AIT Asian Institute of Technology

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1. Summary

With the cooperation of the Chubu Institute of Advanced Studies, Chubu University, and Remote Sensing and GIS (RS&GIS) Field of Study, Asian Institute of Technology (AIT) organized the "Asian Summer School in Bangkok 2013" program from August 18th to August 31st, 2013 at AIT, Pathumthani, Thailand. The theme of the program was "Geoinformatics and Issues on Sustainable Development in Asia".

A total of 24 participants from 13 universities and organizations located in ten different countries participated in this program. From Japan, seven participants from Chubu University and one participant from Waseda University joined. Among eight participants from Japan, there were seven undergraduate students (Applied Chemistry, Communication, Psychology, Chinese, Commerce and International Relations) and one master student (History and Geography). Moreover, there are two Korean participants from Pukyong National University (South Korea), one master student (ITS Lab) and one doctoral student (GIS & GPS Lab), two undergraduate students from Institut Teknologi Brunei (Civil Engineering), one undergraduate student from Royal University of Bhutan (Sherubtse College), one undergraduate student from Taunggyi University, Myanmar (Geology), one doctoral student from Ho Chi Minh City University of Information Technology, Vietnam (IT), One staff from Bogor Agricultural University, Indonesia (Civil and Environmental Engineering) and two Indian staffs, one from Center for Environmental Planning and Technology (CEPT) and the other from Indian Institute of Technology, Bombay (IITB). Additionally, there is one Canadian master student from Kyoto University (Energy Science) and three Thai participants, two undergraduate students from Srinakharinwirot University (Geography) and one staff from Siam Cement Group (Environmental Engineer). Lastly, there were two participants from AIT which include one Nepali undergraduate student (Mechatronic) and one Cambodian master student (RS&GIS).

Several lecture and field trip were conducted during the 12 days of this program. Fourteen lecturers from Chubu University, seven different Field of Study in AIT (Remote Sensing & GIS, Computer Science and Information Management, Natural Resource Management, Urban Environmental Management and Water Engineering and Management) and one external lecturer from IITB were invited to provide the lectures on issues related on Geoinformatics and sustainable development in Asia. Moreover, ten visits and field trips were conducted to connect the what participants learned from lectures with the real world. Participants visited PASCO (Thailand) (Air Survey Company, Japan), National Disaster Warning Center (NDWC), 5th International Conference on Health GIS 2013, MRIGADAYAVAN Palace, SIRINDHORN International Environmental Park Hua Hin, SIRINART RAJINI ecosystem learning center, GISTDA(Geo-Informatics and Space Technology Development Agency, Thailand), Waste Water Treatment Plant (Din Dang), Grand Palace and Ayutthaya. Furthermore, the student session was initiated in this year. The graduated students from AIT and participants from summer school presented their research and discussed. It is also to stimulate motivation of undergraduate students to endeavor start their own research.

English is used as the mean communication in lectures and daily life during the program. It made a deep impression of importance of globalization to the participants. However, in order to prepare participants ready for English lectures and communication during the program, English

class which is organized by AIT language center was provided. During the program, we also requested participants to share their background, interest and expertise that crossed cultural and disciplinary boundaries. Participants made new friends from different countries as the international society. We received many positive comments that it is a wonderful time, which support the fact that Asian Summer School ended in large success.

Since 2009, Chubu University and AIT build a cooperative relationship, especially in the field of Geoinformatics and sustainable development. In September, 2011, Chubu University and AIT agreed on the Memorandum of Understanding about the academic cooperation. This Asian Summer School program falls within the scope of the Memorandum of Understanding between Asian Institute of Technology and Chubu University dated September 16, 2011. This program is also planned by Chubu University as a milestone towards Asia Campus project of MEXT, Japan, for which Chubu University, AIT, Pukyong National University and Fuzhou University in China are jointly applying.

In addition, we would like to thank each department and personnel of Chubu University, Division of Academic Affairs and RS&GIS FoS, AIT for the tremendous supports such as preparing a handbook, a detailed schedule of lecture and field trip, and any other logistics support. Also special thank to Visionary Value Japan Inc., Japan, Adin Research Inc., Japan, Earth System Science Co., Ltd., Tjapan for their financial support to establish this program. We would like to thank to each organization and individual who participated and some of whom shoulder their own expenses.

2. Purpose

The participants will learn issues what related to sustainable development in Asia, GIS, and how does it contribute to issues. Then they will understand the present situation and problems of Asian countries prosperously developing, and the value of GIS as a tool. Also they will realize the rapid progress and problems accompanying the advance in Asia through field trip. All lectures will delivered in English. The participants will experience absorbing knowledge in English and understand its importance. This summer school will help participants to have international sense and awareness of the problem for the participants' thesis.

3. Participants

Organizations:

Asian Institute of Technology

Bogor Agricultural University

Center for Environmental Planning and Technology

Chubu University

Ho Chi Minh City of Information Technology

Indian Institute of Technology, Bombay

Kyoto University

Institut Teknologi Brunei

Ministry of Agriculture & Forests, Bhutan

Pukyong National University

Srinakharinwirot University

Waseda University

Siam Cement Group

TAUNGGYI UNIVERSITY

Countries:

Chubu University

Takahiro Kato
Undergraduate student 2
Psychology

Yuka Yamazaki
Undergraduate student1
Chinese

Tomomi Ando
Undergraduate student 2
Applied Chemistry

Megumi Kashiyama
Undergraduate student 3
Applied Chemistry

Toshihiko Takahashi
Undergraduate student 3
Communication

Hiroaki Sano
Master Student 1,
History & Geography

Yuka Ebata
Undergraduate student 3
International Relation

Waseda University

Koki Morigami
Undergraduate student 3
Commerce

Taunggyi University

Aye Thiri Maw
Master Student 1
Geology

Ministry of Agriculture & Forests, Bhutan

Karma Tanzing
IT Engineer, Council for RNR Research of Bhutan (CoRRB)

Pukyong National University

Don-Jeong Choi
Doctoral student
GIS & GPS Lab

Sueng-Hyun Kim
Master student
ITS Lab

Institut Teknologi Brunei

Gloria Lau Cheng Yee
Undergraduate student 2
Civil Engineering

Haji Mohammad Iqzat Bin Haji Jamil
Undergraduate student 2
Civil Engineering

Ho Chi Minh City University of Information Technology

Nguyen Thi Hong
Doctoral Student
IT

Bogor Agricultural University

Andik Pribadi
Researcher
Civil and Environmental Engineering

University of Alberta/ Kyoto University

Michael H. Couch
Undergraduate student 4
Energy Science

Srinakharinwirot University

Sirapach Mangkang
Undergraduate student 4
Geography

Pornwimol Sawangchom
Undergraduate student 4
Geography

Asian Institute of Technology

Sunny Amatya
Undergraduate student 2
Mechatronic

Sainglong Kaing
Master Student
RS&GIS

Siam Cement Group

Jaruwat Kitiyanan
Engineer
Environmental Engineer

Center for Environmental Planning and Technology

Hardi Panchal
Researcher
Geomatics

Indian Institute of Technology, Bombay

Suryakant Ashok Sawant
Researcher
Resources Engineering

4. Lecture program

All lectures delivered by AIT and other staffs.

Date	Topic	Lecturer
19 Aug	English Communication	Language Center
20 Aug	Ubiquitous Geo-informatics	Prof. Kiyoshi Honda
	Rural-Informatics in decision making	Dr. J. Adinarayana
	Overview of Geo-informatics	Dr. Nitin K. Tripathi
	Geo-Information in Urban Development Planning	Dr. Humayun Rashid
22 Aug	Applications of Geo-informatics	Dr. Lal Samarakoon
	Machine Vision in Agriculture	Dr. Matthew N. Dailey
	Urban Environmental Management in Asia	Prof. Vilas Nitivattananon
23 Aug	Geo-informatics for Disaster, and Sentinel Asia	Dr. Masahiko Nagai
	Disaster Information Dissemination	Dr. Akiyuki Kawasaki
26 Aug	Student Session : • Carbon Capture and Storage: Risk and Public Perception by Micheal Couch • 3D Modeling and Geovisualization by Hardik Panchel • Sensor Web Enablement for Water and Pest/Disease Management in Horticulture by Suryakant Ashok Sawant • Web GIS Application to Disseminate Disaster Information Based on User Preferences by Ramesh De Silva • Development of Location Based Service Application Using Augmented Reality Technology for Historical Tourism on iOS Platform by Jittin Chaitamart	
	Interoperable Geoinformatics & Location Base Service	Dr. Sarawut Ninsawat
	Climate change and Water Resource	Dr. Sangam Shrestha
29 Aug	Natural Resource in Asia	Dr. Rajendra Shrestha
	Computer Modelling for Environmental Science	Dr. Raphael Duboz
	Introduction to Spatial Information Engineering	Dr. Naohiko Kohtake

5. Field trip program

The participants visited these places.

21 Aug	Line Mapping Section and Orthophoto Section (PASCO)
	National Disaster warning center (NWDC)
23 Aug	5th International Conference on Health GIS 2013 (Mapping, Monitoring and Managing Health)
24 Aug	MRIGADAYAVAN Palace
	SIRINDHORN International Environmental Park Hua Hin
25 Aug	SIRINART RAJINI ecosystem learning center
27 Aug	GISTDA: Head office
	Historical world heritage capital(Ayutthaya) & Elephants house
28 Aug	Waste water treatment plant (Din Dang)
	Grand palace: Emerald Buddha

6. Comments on lectures

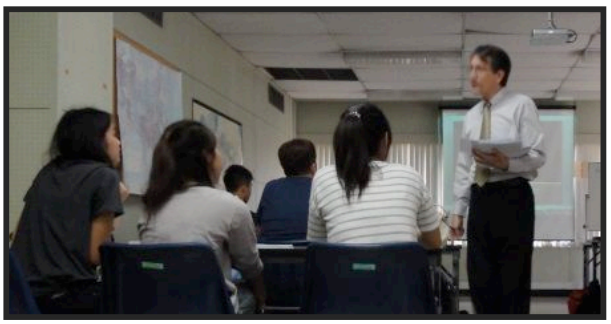
Some of comments below present the contents of lectures that participants received from each lectures.

English Communication (Language Center)

➢ Learn how to introduce yourself, learn how to improve listening comprehension of lectures through targeted listening strategy instruction, catch the main point from presentations and group discussion about the topic "the most impressive technology.

- **Haji Mohammad Iqzat Bin Haji Jamil** (Undergraduate 2, Civil Engineering)

The listening and comprehension skill testing are fun learning and as a moderate level English speaker, I, myself find it quite challenging but manageable to follow through till the end. The intention was great, with the lecturer preparing the whole passage of what the person in the video is talking. I think that was a job well done. Overall, the workshop is a very successful one



where at one time, our participants were mixed together to form 8 groups of three people. There were many interesting suggestions and I would say all of them are very good ones, all of which are contributed by each of the participants about the relevant topic. Almost all of the participants had the chance to talk and present their work to the whole class. About Mr. Matthew's teaching, he is a great teacher and he knows how to handle and make the class becomes fun. He speaks at a suitable speed that English beginners find it easy to follow to. In conclusion, I acquired many crucial things from the workshop such as an improved English usage and also management of time to prepare a short presentation by talking to the whole class. I would say that the workshop is also like a good ice breaker to break the awkwardness between ourselves.

- **Takahiro Kato (**Undergraduate student 2, Psychology)

I learned two types of strategies to improve to listen to English. One was top-down strategy and the other was bottom-up strategy. To use the strategies help me improve my English. During the lecture, I recognized that I was not good at listening English, but I was motivated to improve.

Ubiquitous Geo-informatics (Prof. Kiyoshi Honda)

➢ Learn about what is the Ubiquitous Geo-informatics? How are computers and sensors utilized with Geo-informatics for each utility? (such as agriculture , disasters and environment) satellite overview, learn about data assimilation, integration and application of Remote Sensing, field sensor, UAV and utilization, WEBGIS and geospatial data.

- **Hiroaki Sano** (Master student 1, History & Geography)

Ubiquitous is very important into the future from the current. Furthermore, it is possible to obtain great effect by combining the ubiquitous and Geoinformatics. For example, management of disasters and agriculture corresponds to it. Besides, we can handle and get the information. There is a photography and observation by satellites and sensors. In addition, some management of information by cloud, also processing speed improvement of GPGPU. On the other hand the technology developed, I felt there is a problem. It is that how to solve the digital divide of people.

- **Suryakant Sawant** (Researcher,Resources Engineering)

In the beginning speaker provided intuition on what is Ubiquitous and how Geo-Informatics has reached to this stage.
1.) Advances in Information and Communication Technology (ICT) based systems (i.e. Wireless Sensor Network, cloud computing, Remote Sensing, etc.) are providing information at different spatio-temporal resolution. Geo-Informatics has reached to the level that it facilitates/ assists for better decision making.

2.) In addition to satellite based systems, ground level real time applications for disaster early warning, precision agriculture, water management, etc. have provided insights into the Geoinformatics applications.

3.) The sensor based initiative "Sensor Asia" has provided better information for sectors such as, environmental, agriculture monitoring, etc. Also it provides OGC standardized interoperable platform for data and information discovery through platform independent architecture.

4.) The UAV application in agriculture monitoring was also discussed to provide the insights into advances in the Geoinformatics.

5.) The modeling techniques were discussed to provide insight into various application (agriculture, disaster early warning, management, etc.) and converting sensory data into user specific useful information.

How this topic was useful for me:

Through application of sensor based systems in economically important citrus crop it will be possible to have interactions between weather and crop pest/disease and water management problems. The statistical and machine learning techniques such as multivariate regression, support vector regression, etc. can be used to design the semi-automatic systems for assisting citrus cultivating farmers of the selected study area.

Rural-Informatics in decision making (Dr. J. Adinarayana)
(Online Skype Presentation)

➢ Learn about how to apply informatics for rural development planning and managing, integration of Geo–ICT and sensor network for Agriculture and environment monitoring as real time and using the information for the decision supports about crop cultivation.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

Geoinformatics is very useful to be applied in planning and managing rural development. GeoFARMatics is a new term that dealing with application of geoinformatics to support farming activities, which is the common activities in rural area.

- **Michael H. Couch** (Undergraduate student 4, Energy Science)

Covered watershed and other land resource issues and the plotting of relevant data to help with the decision making processes involved in alleviating such challenges.

- **Sainglong Kaing** (Master Student 2, RS&GIS)

I have learned that GeoSense is a real time decision support system in precision farming. One research is quite interesting and related to my research interest is "Groundwater-Disease-Yield Interactions".

Overview of Geo-informatics (Dr.Nitin K. Triphati)

➢ Learn about Geoinformation Technologies (GIT) and role of GIT, application of GIS in various sectors i.e. Industry, health, urban planning and management needs and Way forward GIT based Development.

- **Sunny Amatya** (Undergraduate student 2, Mechatronic)

Decision can be made from information; information is taken from data. GIT is the combination of Remote Sensing, Global Positioning System and Geographical Information. 200+ band in the satellite gives us advantage to take picture to get some data that can be converted into information for application in different field namely, sustainable planning, decision management, health care, education and business.

- **Tomomi Ando** (Undergraduate student 2, Applied Chemistry)

I think Geoinformatic technology is great because this system improves healthcare, education, business, urban planning and management and so on.

- **Haji Mohammad Iqzat Bin Haji Jamil** (Undergraduate 2, Civil Engineering)

Decisions making are pretty important in information technology. Geographic Information Technology (GIT) is to make a table of records from satellite data, aerial photos and digital maps. I.e. Usage of GIS too are fully used to obtain it. GPS are used for map mapping and also the important car navigation.
Urban planning needs to have fully detailed maps and its growth modelling. Transportation networks, water networks, commercial and residential zones, disaster management and even gas pipelines way. This requires a really complete and complex city planning. With the help of GIT, it is much easier rather than it was. Considerations are also need to be taken such as environmental and people-friendly, sustainable planning and management. Decisions making and GIT are really important for such situations.

Geo- Informatics in urban development planning (Dr. Humayun Rashid)

➢ Learn about the role of Geoinformations for urban development planning in Srinagar City, India because of faulty planning and the application of Geoinformatics for studying urban land use transformation trend in Srinagar city.

- **Suryakant Sawant** (Researcher, Resources Engineering)

Application of Remote sensing, GIS and Open source tools for city planning was discussed. The special emphasis was given on solving health related regional (case study of Srinagar City India) issues through application of Geospatial Technologies (GST).
1.) The mountainous regions are deprived of health facilities and there is need for GST based applications to address this issues.

2.) Through case study speaker provided insights into, how GIS could help to take decisions regarding location of health center and help development planner.

3.) This session/talk provided insights into health as a prominent sector which needs GIS applications for better resources planning.

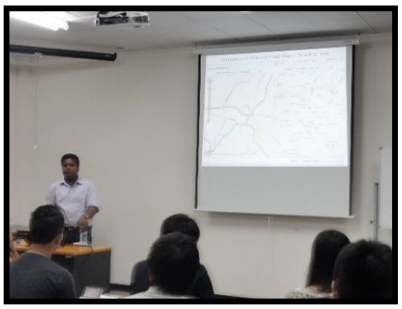
How this topic was useful for me:

In hilly and mountainous regions the government policies for location of health care center based on population density cannot be better option. There is need for taking into consideration regional geographic advantage and disadvantage into considerations in such remote areas. In addition to this there is need for better information dissemination mechanism in this regions through multi-modal (mobile, Internet, etc.) communication platforms. Application of GIS in Health related applications has large potential in developing countries.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

Geoinformatics has been successfully applied to solve public health problem in Jammu-Kashmir. The need of public health facilities in term of number and location can be determined using geoinformatics analysis.

Applications of Geo-informatics (Dr. Lal Samarakoon)



➢ Learn about applications of Geoinformatic for project in this region by the cooperation of GIC and regional organizations such as coastal erosion modelling in Sri Lanka, potential of space technology for REDD in Combodia, cyclone hazard modeling in Bangladesh, flood risk analysis in Srilanka, landslide Mapping in Tajikistan, habitat suitability mapping in Pakistan, drought analysis in Lao PDR and land degradation in Mongolia.

- **Tomomi Ando** (Undergraduate student 2, Applied Chemistry)

I think that GIS system is very useful. Application of Geoinformatics is great and coastal Signficance is a large-scale under taking. I think REDD can contribute environmental program.
In addition, hazard map is great system, because it can explain disaster dates and relate disaster management plan.

- **Haji Mohammad Iqzat Bin Haji Jamil** (Undergraduate 2, Civil Engineering)

There are three remote sensing techniques such as satellite images, aerial photographs and ground sensor system. There were many risk assessments such as flood, landslides hazard,

drought, volcano, cyclone, land use/land cover, biomass or land degradation, vetor borne diseases, coastal erosion. Carbon dioxide are released due to daily human activities such as deforestation.
Microwave data, optical remote sensing data are implemented to quantify amount of carbon dioxide present. So that the analytical reports can be stored for references and to come up with solution tackle such problem.

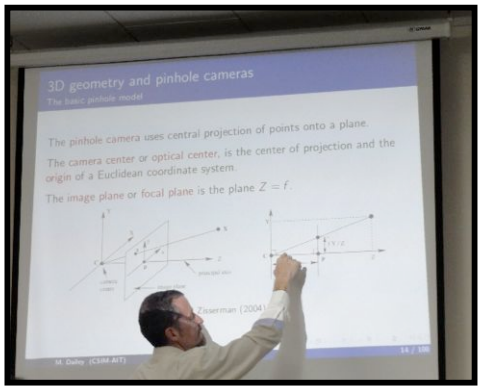
Land use/land cover change map generation through high resolution satellite images using maybe the most recent Landsat 8. Under the cyclone risk case study, participatory GIS (PGIS) which survey the local people and from these survey, opinions and problems are heard and this will create opportunities for the government to provide answers for the locals.

Data predictions are possible through regression analysis so that future appearances of disaster would be able to be predicted and the people nearby would be able to evacuate safely.

- **Toshihiko Takahashi** (Undergraduate student 3, Communication)

Geoinmaticsis a revolutionary new enable technologies, and harnessing its potential is within your reach at the Geomatics Institute at Fleming.
The term geomatics refers to a set of fast-growing technology-based disciplines focusing on the gathering, analysis, dissemination and management of geographic information.

Machine Vision in Agriculture (Dr. Matthew N. Dailey)



➢ Learn about image processing in the context of Vision Systems. The useful of image processing in all phases of agriculture, image processing in pre-harvest applications, the chromatic restoration of an image, mobile robot in agriculture, 2D mapping with laser range finders, mobile video processing for agricultural crop mapping, Mapping with stereo vision and occupancy grids and a high-throughput system for automatic phenotype measurement.

- **Pornwimol Sawangchom** (Undergraduate student 4, Geography)

This lecture renders me to know about 3D geometry and pinhole camera.
Appearance: chromatic restoration, mobile robots in agriculture, statistical inference tools, 2D mapping with laser range, mapping with stereo vision and occupancy grids.
Mobile video processing for agricultural crop mapping. 3D modeling with time of flight cameras and conclusion about doing research.

- **Sirapach Mangkang** (Undergraduate student 4, Geography)

ICT has means to improve quality and productivity in all of these phases. 3D models, object categories, object poses, camera poses are kind of information.
Important applications of vision systems include: Mobile robot navigation,Industrial inspection and control, Military intelligence, Security, Human-computer interaction, Image retrieval from digital libraries,Medical image analysis,3D model capture for visualization and animation,Agricultural monitoring.
Vision sensors are information-rich, cheap, and light weight. Fixed cameras have limited of view and resolution. Mobile vision sensors require solutions to challenge problems.

- **Hiroaki Sano** (Master student, History and Geography)

This lecture was difficult for me. There are several things that I feel interesting. First, I learned that it is very difficult to make 3D object. Then, I learned that this technology will contribute significantly to the management and harvest of agriculture. Finally, I was interested in two issues. The first is that it is not yet exactly be the user desires this technique. The second is that the cost

Urban Environmental Management in Asia (Prof. Vilas Nitivattananon)

➢ Learn about overview of urbanization in Asia, the physical environment in urban areas, urban environmental problems, management, measures and instruments. And know about Southeast Asia urban environmental management applications; (SEA-UEMA) project.

- **Sunny Amatya** (Undergraduate student 2, Mechatronic)

The things that I learned from this lecture is about data regarding the urban management in Asia, the rate of urbanization in different major hubs in Asia and future predictions of the data and the consequences to unmanaged urbanization in the city areas, the populated city of the world and predicted to be populated city in the world and the correlation between economy and environment. Moreover, I got ideas on the drainage management and waste management in major city of Asia including the possible solution for the development of the sustainable future being, policy, legal measurements, planning, economy and participatory tool.

- **Yuka Ebata** (Undergraduate student 3, International Relation)

I'm interested in environment associated with urban development. I learned about UNDP and FAO. I like his class.

- **Don-Jeong Choi** (Doctoral student, GIS & GPS Lab)

I understood for the problems of urbanization and learned more about application ways for urban analysis including motivation to related topic.

- **Suryakant Sawant** (Researcher, Resources Engineering)

There is need to understand the growth of cities in Asian countries through Geospatial Technologies. This session emphasized on growing cities across Asia and the effect of such uncontrolled growth on both environment and humans. The talk motivated to understand need for planning the development of growing cities. From environment and resources management perspective there is need to implement strategies to reduce effect on environment. Also, there is need to carry out "Environment Impact Analysis" (EIA) study of all such vulnerable cities to avoid the damage from uncontrolled environmental (earthquake, floods/ splash floods, etc.) events. The session motivated to think of various applications of Geospatial technologies some of them are, 1. GIS based flood prediction models, 2. GIS and WSN based real time flood monitoring systems, 3. Need for GIS data sharing (updated hydro-geomorphological, river water levels, etc.) among Asian countries and 4. Robust mechanisms and models for early warning systems.

Geo - informatics for Disaster, and Sentinel Asia (Dr. Masahiko Nagai)

➢ Know about RS and collaboration of JAXA, ALOS data applications, utilization of earth observation satellite (EOS) data, concept of Sentinel Asia and international agreement among space agencies.

- **Sainglong Kaing** (Master student 2, RS&GIS)

I've known and learnt that geoinformatics are quite important for regional and global study, especially for disaster management. For example, Sentinel Asia is responsible the managing disaster in Asia.

- **Aye Thiri Maw** (Master student 1, Geology)

I got more information about JAXA, company and the difference of the real spatial world and digital copy (GIS or spatial databases) that use for applying to the flood, land cover, earthquake, forest, rain fall for the map.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

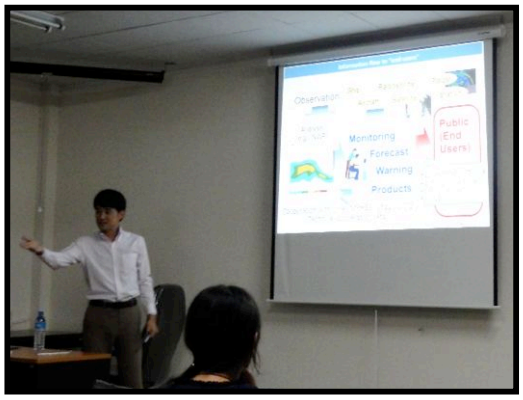
At the beginning of presentation, Dr. Nagai introduced JAXA, the Japan Aerospace Exploration Agency and its activities, including using satellite to create map of the world (mapping).

Nowadays, the world has entered a new era in mapping for creating digital copy of the real world. Research flow for mapping technology consist of three parts: Monitoring system development, Information/data processing and analysis, and Data interoperability arrangement.

He also explained the Sentinel Asia, which is a voluntary initiative by a collaboration between space agencies and disaster management agencies, applying remote sensing and Web-GIS technologies to assist disaster

Management in the Asia-Pacific region, this initiative was started in Feb 2006, and now has many organizations member from 25 countries. Its activities include mitigation/preparedness, response and recovery phase of disaster strike.

Disaster Information Dissemination (Dr. Akiyuki Kawasaki)



➢ Learn about the demonstration of initial result of comparing disaster information gathering behavior of Thai and Japanese during the Thai flood and the Tohoku earthquake and tsunami disaster in 2011

- **Gloria Lau Cheng Yee** (Undergraduate 2, civil Engineering)

As unprocessed public goods, information flows between and among people and groups in the form of verbal, non-verbal, or written interactions" whether memes, messages, or meanings" that serve as precursors to problem-solving and decision-making. Interactions instigated directly or indirectly by a disaster could be deemed disaster information.

As processed public goods, information" whether a meme, message, or meaning" influences the lives of those who experience it. When life-sustaining or life-fulfilling information is absent, inaccessible, or useless because it is inaccurate or interrupted as the result of a hazard" natural, civil, or technological, the persons affected may be said to be experiencing an information disaster. An information disaster hinders the access to or effective use of disaster information.

Traditionally, map dissemination on mobile devices and desktops occur using web services resident on powerful back-end servers. Recently, there has been a paradigm shift towards implementing GIS servers on embedded systems. For instance, research on architectural elements of GIS on embedded mobile platforms has been performed. These systems, however, still rely on back-end services running on powerful servers. A recent set of natural emergencies have also triggered the use of map servers during emergency response management.

Crowdsourcing refers to using a human network to solve a computationally expensive problem. With the growing popularity of smartphone devices, several crowdsourcing based applications have been designed. For instance, common applications include image tagging and search, and vehicle tracking and mapping. Crowdsourcing approaches have also been adopted to extract information during the aftermath of a natural disaster. While most crowdsourcing approaches are used to populate backend servers, our system uses crowdsourcing in a disconnected environment.

- **Sirapach Mangkang** (Undergraduate 4, Geography)

Disasters fall into two major categories. These include man -made and natural disasters. There is a major difference between these two and it is important to learn more about the same in order to increase your knowledge on the occurrence and causes of each and hence ensure that disaster preparedness is heightened.

Disaster makes the biggest economic loss, for example, in Tohoku (earthquake and tsunami) USA (hurricane Catharina), Koba (earthquake) and Thailand (flood)

The Sentinel Asia initiative is a collaboration between space agencies and disaster management agencies, applying remote sensing and web- GIS technologies to support disaster management in the Asia Pacific region.

Students Session

➢ Exchange the research experience of each university/ organization (Alberta University/Kyoto University, CEPT, IITB and AIT) by participant's presentation (Micheal, Hardik, Suryakant, Remash and Jittin).

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

I got many knowledge and interesting information from participant presentations. I got the idea of their presentation even though I still do not understand clearly about the concepts. I was impressed by the research about augmented reality since it is a new thing for me. The demonstration of AR implementation was also very interesting.

- **Sunny Amatya** (Undergraduate student 2, Mechatronic)

From Micheal's presentation, I got ideas on the process of compressing CO2 under soil for the better environmental sustainability. The two major economies, Canada and Japan and their parts on carbon foot print and mitigation on the disaster.

From Surya's presentation, I got the idea on the water management and pest management for horticulture in India. More ideas on the data mining technique required.

From Hardick's presentation, he presented ideas on the 3D modeling and visualization and its further application on the indoor modeling for emergency.

The idea on the Augmented Reality for data resourcing and trip management.

Interoperable Geoinformatics & Location Base Service (Dr. Sarawut Ninsawat)

➢ Learn the integration of general IT and geospatial data, how to interoperate geoinformatics data to The Open Geospatial Consortium (OGC) web service, web GIS, software development efforts, online data archives and applications.

- **Haji Mohammad Iqzat Bin Haji Jamil** (Undergraduate student 2, Civil Engineering)

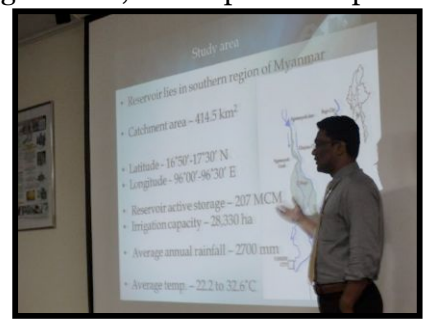
The world is a much better place when it started to have geospatially-enabled IT. I.e. The introduction and launch of Google Earth. Since then Multimedia mapping methods are available worldwide such as the geotagging using GPS. Crucial for transportation purposes and in addition, with ubiquitous GIS and augmented reality services would make it much rather useful and praise worthy.

Interoperability of Open Geospatial consortium (OGC), OGC web services (OWS), SOS, Dynamic 3Dgeneration would be an advantageous situation.

- **Sainglong Kaing** (Master Student 2, RS&GIS)

I've learned that the standardization is so important interoperability because the different software will be costly and with limitations of usage, the data will be different from one another in term of its type, knowledge of expertise are very limited to perform any analysis using this kind of software, and the distribution is not broaden enough. Thus, the Open Geospatial Consortium (OGC) is introduced for solving this problems.

Climate change and Water Resource (Dr. Sangam Shrestha)



➢ Learn about what is the climate change in global? The impact of climate change in environment and the adaptation of human for climate change such as the physical construction to avoid or reduce the impacts of climate change including policy for legislation, knowledge development and public norms for reduce risk and related impacts.

- **Tomomi Ando** (Undergraduate student 2, Applied Chemistry)

I learned relation between climate change and water resource. And I learned impact of climate change and water cycle. So, water cycle affects climate change. For example, snow melting and ice connects increasing sea level. This is serious problem.

- **Gloria Lau Cheng Yee** (Undergraduate student 2, Civil Engineering)

Weather VS Climate: The difference between weather and climate is a measure of time. Weather is what conditions of the atmosphere are over a short period of time, and climate is how the atmosphere "behaves" over relatively long periods of time.

Biosphere: The biosphere is the global sum of all ecosystems. It can also be called the zone of life on Earth. Thermal expansion of water due to increase in tempertature and melting of glaciers are the major cause to water level rise.

- **Suryakant Sawant** (Researcher, Resources Engineering)

This session started with the basic concepts of weather and climate change. The factors affecting climate change such as, 1.change in solar output, 2. Earth's orbital characteristics and 3. Continental drift are altogether responsible for the climate change. Effects of climate change such as, temperature rise, increase in rainfall over some areas, glacier melting, sea level rise, etc. were discussed and provided insights into the plausible effects of climate change on present leaving conditions. In order to reduce the impact of climate change two main strategies were discussed, first climate change mitigation and second adaptation. In which adaptation includes the measures taken to enhance the leaving conditions after climate change. These strategies include the structural and non structural options. In structural option building check dams, soil water conservation structures, rainwater harvesting, etc. were discussed. Whereas non- structural approach includes the public policy and governance decisions/measures to mitigate the climate change impact. The session also included a case study on Assessment of Climate Change impacts on Irrigation water requirement and rice yield in Ngamoeyeik irrigation project Myanmar.

This session enhanced the understanding about climate change and issues, also the mitigation strategies to adapt in such conditions. The new Food and Agriculture Organization (FAO) based rice crop modeling tool called Aqua Crop shown capability to simulate the rice crop yield. Statistical downscaling of Global Circulation Model (GCM) can be useful for predicting the regional meteorological data to grid level. From case study it was clear that there is need for forecasting the impact of climate change on irrigation water requirement of rice crop.

Natural Resource in Asia (Dr. Rajendra Shrestha)

- Study what is a natural resource? and key of Natural Resource Management (NRM) in Asia such as land, forest, biodiversity, fresh water, coastal and marine, atmosphere.

- **Suryakant Sawant** (Researcher, Resources Engineering)

Explained about natural resources definitions, their characteristics etc. Through example of Manila, Philippines and Yellow river, China motivated to think on the pressure.

- **Hiroaki Sano** (Master student, History and Geography)

I learned the transformation of Asia as seen from the natural resources in this lecture. Since modern era, the population of the world has increased significantly. Thereby, the range of urban is spread out significantly. I learned that it is possible to compare the photograph that aspect. In addition to this, it was possible to see how the terrain and land on the earth is changing greatly. From the above, I felt what human beings should be considered more seriously about the land use of the earth.

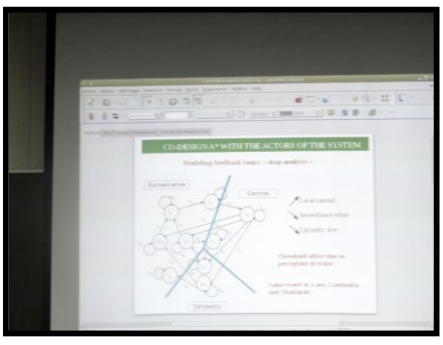
- **Michael H. Couch** (Undergraduate student 4, Energy Science)

An understanding of the true meaning of natural resources and their utility and the challenges of sustainability given their limitations and population growth. Highlighting the key requirements of sustainable development and protection of our resources. Of course, with a focus on how GIS can be applied to help monitor and demonstrate the efficient use of existing resources.

Computer Modelling for Environmental Science (Dr. Raphael Duboz)

➢ Learned about the companion of modeling for supporting complex systems that are used in environment issue. In this lecture, surveillance and control systems in animal epidemiology is the topic that were explained as the case study of model in complex system.

- **Suryakant Sawant** (Researcher, Resources Engineering)

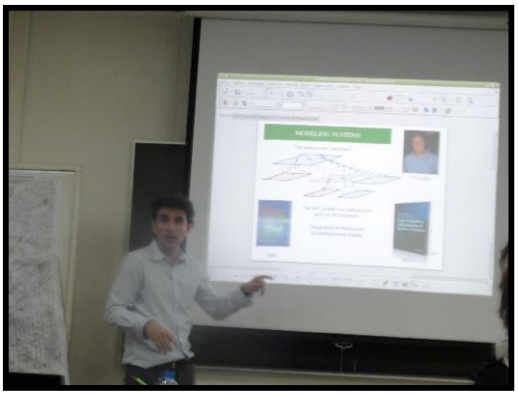


A new paradigm of simulation complex systems was explained in initial part further explaining the need for participatory approach in modeling. The session motivated to think on how large and complex environmental systems can be modeled with participatory approach. Further a

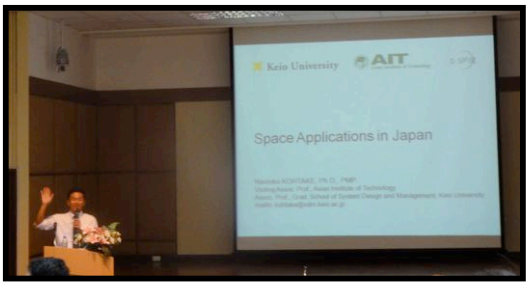
modeling technique PARDI was introduced with a case study on Thailand and Cambodian avian flu problem in animal husbandry sector. The session briefly covered the motivation, paradigm of modeling the real world systems and a case study. This would help in my study on citrus crop pest disease epidemiology. The ant colony algorithm was explained in a very interactive manner. I think to increase the understanding there should be some hands on experience with this modeling technique.

- **Sainglong Kaing** (Master student 2, RS&GIS)

I have learned from this lecture that complexity is something can be predicted or full understand. The complex system can be understood by decomposing the complex object to understand each unit of object. This is called Model which is not the prediction of the future but to understand it. Thus the cycle of a model, which will never stop is starting from [1] Questions - what we want to do, [2] Knowledge - use knowledge to understand it, [3] Models - model it from what we understand, [4] Simulations - simulate the models, [5] Analysis - analysis the result from the simulation, [6] Answers/Decisions/Actions - if the result is answered the questions, accept it; if not, adjust models and repeat the step. Thus the steps of conceptual modeling is PARDI: Problem (P), Actors (A), Resources (R), Dynamics (D), and Interactions (I).



Introduction to Spatial Information Engineering (Dr. Naohiko Kohtake)



- Learned about space technology in Japan, space applications and the application of space technology such as disaster and agriculture.

- **Suryakant Sawant** (Researcher, Resources Engineering)

This session introduced about space applications in Japan. The initiatives for space technology applications in environment, agriculture, disaster management, etc. In addition the student satellite project œCANSAT was also explained to provide insights into the application of space technology and develop understanding about it is application into various field of studies.

- **Sainglong Kaing** (Master student 2, RS&GIS)

I have learned about the space systems starting from the ground, transportation to the space by rocket, and observation station (Satellite). CanSat is a leading training program which is firstly introduced. If it's successful, Micro Satellite can be the next step. Moreover, Systems Engineering is an interdisciplinary approach which works in three steps:

[1] Classify what the customer needs,

[2] Show engineers the process to develop system, and

[3] Balance quality, cost and schedule.

The process is starting from Concept, Development, Deployment, Utilization and Disposal.

7. Comments of field trips

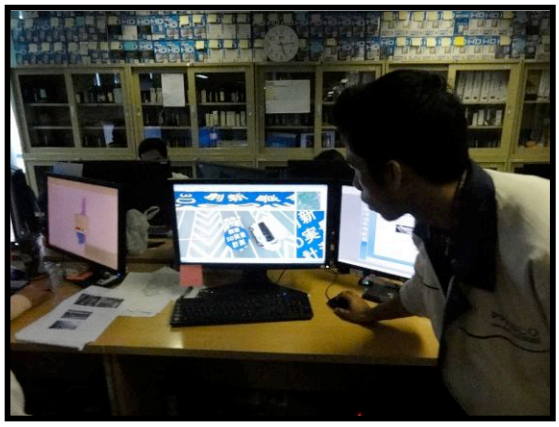
PASCO

➢ PASCO company corporations and company's activities, capabilities of remote sensing and production line. Observe line mapping, orthophoto and 3D map process sections.

• **Suryakant Sawant** (Researcher, Resources Engineering)

The company uses approach of Remote Sensing (RS) and Geographic Information System (GIS) applications for 3D urban mapping, Street mapping, terrain evaluation and mapping, etc. From this visit it is clear that there is growing need for applications of Geospatial Technologies (GST) in natural resources mapping and management. The company develops solutions based on datasets such as, aerial imagery, elevation data, satellite image, etc. Through this fine resolution datasets it is possible to identify the changes in the land use, growth of urban areas, potential sites prone to landslides, etc. Through discussions with company manager it was clear that there is need for field level surveys to validate the information generated from this datasets.

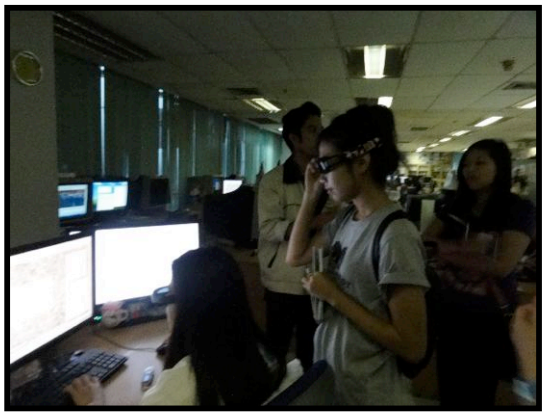
In country like India there is need and high potential for such GST application based companies to facilitate the existing public (government) sector initiatives in natural resources monitoring and management. The technologies such as 3D mapping and high resolution aerial photography have wide applications in agricultural drought monitoring, crop insurance, urban planning, transportation, etc.



The data processing tasks are too laborious, time consuming and susceptible to various errors (machine and human induced). Hence, there is wide scope for developing more robust software applications to process the data at higher rate thereby reducing latency in final outcome/application.

The visit has motivated to think on availability of datasets from various sensing platforms, also we are in the era where gap between the rate of data collection has increased very wide than data processing/ use. There is need for Spatial Data Infrastructures to provide such fine resolution data freely to everyone who needs (e.g. Landsat initiative), this may increase the use and bring out many advanced applications and utilities for public good.

- **Pornwimol Sawangchom** (Undergraduate student 4, Geography)



I think I go to the PASCO (Thailand) Company. I have vast knowledge about geography program. For example, Arc GIS, Auto CAD and Info program. This program is used for making images to 3D analysis to further use in the future.

- **Sunny Amatya** (Undergraduate student 2, Mechatronics)

Information on the background of PASCO. The work carried out in the system. Technology and methodology used to get perfect mapping and 3D image of the areas.

National Disaster Warning Center (NDWC)

➢ Learn about Thailand early warning system, risk map, supporting section, database modeling and international corporations. And we have chance to interact with staffs and visit operation rooms.

- **Sirapach Mangkang** (Undergraduate student 4, Geography)

Thailand now has the best warning system in Southeast Asia, eight years after the Andaman coast was ravaged by a devastating tsunami on Boxing Day in 2004. Before monstrous waves hit Thai shores and killed over 8,000 people in six provinces along the southern coast, no one knew Tsunami coming. All disaster will change with the early alert system and instruments installed by the National Disaster Warning Center along the Andaman coast over the past eight years, backed by necessary regulations. Now, ample time for evacuation is assured with streamlined regulations, in a bid to save lives within two minutes (after tsunami waves start to form), the speed can be calculated and know exactly when tsunami will reach the shore. Messages could be sent out immediately after the calculation.

- **Gloria Lau Cheng Yee** (Undergraduate student 4, Civil Engineering)

Following the catastrophic 2004 tsunami disaster, the Government of Thailand took immediate action to establish a National Disaster Early Warning System. It is responsible for disseminating warning messages on all kinds of natural disasters.

- **Hiroaki Sano** (Master student 1, History & Geography)

Large tsunami was rushed to the Tohoku region of Japan in March 2011. I've heard that there is experience the tsunami rushed to Thailand in the past. It is observed to changes in the wave by placing buoy on the sea. In addition, it was also made mechanism such as can safely emergency bulletin using the satellite. This has been done in Japan. I think that it's a very important thing. However, it is a problem to useless at that time. I thought that it was not only works, that people understand the disaster is important.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

During this visitation, we got explanation on the National Disaster Warning Center (NDWC) profile, history and activities. This institution use remote sensing data to monitor and predict disaster occurrence. They also have developed some models to simulate the tsunami wave on the Indian Ocean as well as South China Sea which can give impact to Thailand. We also observed the office and facilities to deal with disaster warning in Thailand.

<u>Mrigadayavan palace</u>

➢ Experienced in one of palace in Thailand, where was commissioned by King Vajiravudh to serve as a holiday villa. Construction took place during 1923–24, and was overseen by Italian architecture.

- **Sunny Amatya** (Undergraduate student 2, Mechatronics)

The architecture of the palace, the measures carried out to conserve the palace by the princess. The royal lineage of the current dynasty. The measures carried out to conserve the palace.

- **Pornwimol Sawangchom** (Undergraduate student 4, Geography)

At Mrigadayavan Palace render I know about the Background Andhave located on Bang Kra Beach in Cha-am County. It was constructed in 1923 under King Rama VI's command to be his summer palace. The palace was built from materials from the dismantled buildings of the old residence at the nearby Chao Samran Beach.

I was very impressed because Mrigadayavan palace is a beautiful place full of art and cultural life of the people in the past. Although the weather is hot, but I'm happy.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

I enjoyed the trip to this palace. The palace is so peaceful, with beautiful beach scenery. During the trip, the guide explained the history of the palace as well as the Thai Kingdom genealogy. The palace was commissioned by King Vajiravudh to serve as a holiday villa, which was constructed during 1923-1924. The palace, which also known as the Deer Palace, and its ornaments faced corrosion problem due to corrosive sea wind.

The Sirindhorn International Environmental Park

➢ Learn how to sustainably develop and preserve the mangrove forests and environment at Hua Hin. Get a close touch with planting mangrove and released the crab into the sea.

- **Sainglong Kaing** (Master Student 2, RS&GIS)

It's a kind of local learning center for mangrove ecosystem where the students from the neighboring areas are volunteering and come to visit and learn about the mangrove ecosystem.

- **Suryakant Sawant** (Researcher, Resources Engineering)

The visit to mangrove forest explained the importance of conservation of coastal areas. During visit explanation by Prof. Honda on mangroves as a natural break to tsunami disaster explained the interrelationships between natural resources, remote sensing and geographic information system and field surveillance. The understanding between continuum of natural resources, Geospatial technologies and disaster mitigation/management was clear. In addition to this various improvements in traditional and improved methods to catch aquatic animals (fish, crab, etc.) was clear. The exhibition of various species of birds, animals and mangrove plants showed the importance of such initiatives to conserve the ecosystem. The visit was best example of environmental awareness through eco-tourism approach. This approach is one of the effective ways to explain the need for conservation of environment and natural resources to common people.

In India there is huge potential for such initiatives. One of such initiative of eco-tourism in India is Saguna.

SIRINART RAJINI ecosystem learning center

➢ Learn how to sustainably renovate, develop and preserve the mangrove forests and environment from the abandoned aquaculture farm at Cha Am. Get a close touch with Nature studies path Located.

- **Suryakant Sawant** (Researcher, Resources Engineering)

The place offers a huge amount of experience and knowledge in terms of mangrove trees. Professor Honda too explained that the available of the mangrove trees can help to minimize down impacts caused by floods or tsunami. Hence, it is planted in a very huge scale of land. We proceed onto climb floors of tower to see these amazing views from the top. After that we also went into the exhibition site where we study history of the mangrove forest and also the royal family involvement in helping to grow these trees. For example, there is a mangrove tree that were plated by his majesty the king of Thailand. The place is also called "the grand old man of mangrove" mainly because they are now over 60 years old which is like if an old people's age. I find it interesting for this visit since it caters so many stuffs such from trees growing to full history and also its advantes or usages that Thai used for generations and generations.

- **Tomomi Ando** (Undergraduate student 2, Applied Chemistry)

When I looked around mangrove forest in Mangrove Ecosystem Learning Center, I saw mangrove which does not straight. I think raising mangrove is difficult.

- **Pornwimol Sawangchom** (Undergraduate student 4, Geography)

Sirinath Rajini Mangrove Ecosystem Learning Center render I know about the history mangroves in Thailand first mangrove study center is an epic achievement, developed on a derelict prawn farm, to celebrate His Majesty 50th year on the throne, and animals that live in the surrounding example fish crab Etc.

GISTDA: Head office

➢ Learn about Geo-informatics applications, GISTDA role on space technology in Thailand, implement projects and future works. Additionally, we learn about mapping with satellite data.

- **Sunny Amatya** (Undergraduate student 2, Mechatronics)

The satellite launched by Thailand and the countries covered by it. The use of data for Natural Resource Management, Agriculture, Disaster Management, Urban Planning, National Security and Cartography. The recent use in flood monitoring, canal river encroachment, runover dykes, storm pattern, rainfall record and work with FROC. Their initiatives during the 2011 flood. The possible clients of GISTDA is in the marketing system.

- **Sirapach Mangkang** (Undergraduate student 4, Geography)

GISTDA at chaegwattana is head Office. GISTDA have objective for Developing geo-informatics and space technology as a non- boundary knowledge for the country development. THEOS is the first operational earth observation satellite of Thailand. The THEOS program was developed by GISTDA, EADS Astrium, the prime contractor, initiated work on the satellite in 2004. On October 1, 2008, THEOS was successfully launched by Dnepr launcher from Yasny, Russian Federation. Today, GISTDA is developing a worldwide network of distributors to allow the users to use and access to all GISTDA products.

- **Toshihiko Takahashi** (Undergraduate student 3, Communication)

GISTDA is recognized in the international satellite market and with business alliances. It was active when the flood occurred in It was going to protect the city design.

- **Suryakant Sawant** (Researcher, Resources Engineering)

GISTDA was founded in year 2000 and works on the space research and application. The session by Dr. Preesan Rakwatin provided an insight into activities of GISTDA such as, satellite program, Thai satellite Thaichote-1 (THEOS), application of the remote sensing and GIS techniques in disaster, agriculture, water resources management. In addition to studies within Thailand GISTDA activities also include the application of RS and GIS in natural resources monitoring and management in other Asian countries (Cambodia, Vietnam, etc.). The agency also acts as a RS data provider of various international satellites such as, MT-SAT, TERRA/AQUA-MODIS, RADARSAT - 1 and 2, Quick Bird, Rapid Eye, etc.

Historical world heritage capital (Ayutthaya) & Elephants house

➢ Experienced in cultural and historical heartland of Thailand's former capital city "Ayutthaya". And observed rural house's architecture and floating market.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

I really enjoyed the trip to Ayutthaya, the capital city of ancient Ayutthaya Kingdom. It is a beautiful city that has many historical heritages. During this trip, I got information about the greatness of the Ayutthaya Kingdom that controlled the whole Indochina Peninsula, and some part of Malay Peninsula. I was also impressed by the elephant attraction in the elephant village and the dinner on boat also very nice.

- **Pornwimol Sawangchom** (Undergraduate student 4, Geography)

Ayutthaya province is a significant one for Thailand several hundred years. I am go at Ayutthaya province Makes me feel happy. I have go to the Floating market, Elephant Farm, Archaeological site and diner on the boat. It is very nice but the weather is very hot.

- **Hiroaki Sano** (Master student 1, History & Geography)

There are many temples in Japan. However, the image was different from the temple of Japan.

I specialize in geography. I have two questions from its position. The first, is that why did build a temple there. The second is that what brought effect around by building a temple there.

In order to understand this, I have to learn deeply the history of Thailand. While I think I want to learn deeply the history of Thailand, I learned the importance of understanding the history of Japan as Japanese.

Waste water treatment plant (Din Dang)

➢ Visit waste water treatment plant at Din Dang. We observed how to manage the waste water by Bangkok Metropolitan Administration (BMA) to operate and maintain under waste water treatment plant (Din Dang).

- **Karma Karma Tanzing** (IT Engineer, Council for RNR Research of Bhutan)

Waste water treatment plant is (Din dang) doing great work for the beneficial of sanitary urban area (City) and environmental friendly. I felt such kind of plant is very much needed immediately in Bhutan for the waste water treatment.

- **Jaruwat Kitiyanan** (Environmental Engineering, Siam Cement Group)

Study municiple waste water treatment process, there is the limitation about land use because the plant is set in urban area. They consume more electricity than other plants for pumping process. Biogas and solar cell should be applied to reduce an electricity cost.

- **Haji Mohammad Iqzat Bin Haji Jamil** (Undergraduate 2, Civil Engineering)

Dindaeng water treatment plant has been treating water in 8 districts of a population of one million. The current capacity of the plant is 200,000 m^3 and its maximum capacity 350,000 m^3 per day. In the plant, anaerobic bacteria and aerobic bacteria are used to treat water. They used oxygen to digest any impurities occurring in the water. This is somewhat similar to the Algae which is grown in unclean water and after it grows, it will help to clean the water and also it serves as a bio-energy due to it being nutrient-full.

The cost of treatment are measured in terms of power consumptions, which is 2 Baht per cubic meter. Dindaeng plant does not use separate system, i.e. mixed between waste water drainage system and storm water drainage system. Because there will be more water whenever there is rain.

Remote sensing and GIS technology are used locally, not by or through the satellite, however they are used to monitor mechanical or chemical operations. In conclusion, if it happens to be over the max capacity, a meeting would be declared by high ranking officials and decisions would be made such as opening a canal and redirecting the water towards it.

Grand palace: Emerald Buddha

➢ Sightseeing grand palace where made up of numerous buildings, halls, pavilions set around open lawns, gardens and courtyards. High lights are the temple of the Emerald Buddha and queen Sirikit textiles museum.

- **Sainglong Kaing** (Master Student 2, RS&GIS)

The grand palace consists of many buildings built at different eras and in different purposes. The buildings were designed by different architectures such as Thai, Sri Langkan, Cambodian, Indonesian and Britain. The museum is a collection of valuable items in terms of history and Thai artistic features such as Thai coins, royal Thai decoration and regalia.

- **Andik Pribadi** (Researcher, Civil and Environmental Engineering)

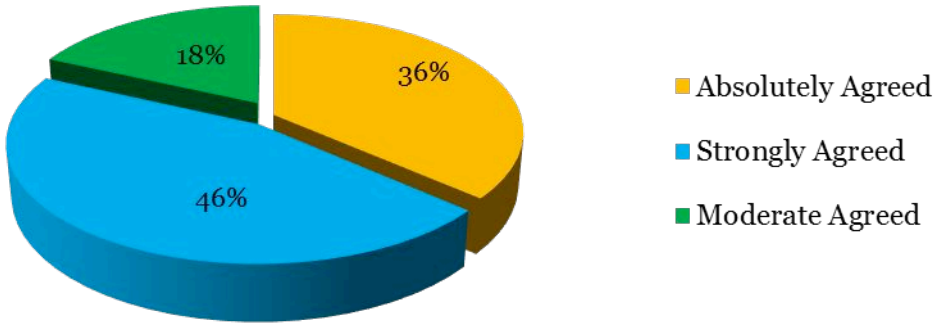
I've seen an amazing complex of palace during this trip. The Grand Palace is the greatest palace in Thailand that was first constructed during 16th century at the order of King Rama I. Later, several building have been added in this complex by the next King. The building architectures in this complex are also influenced by culture of another country. Now, the King (Rama IX) and the royal family do not stay in this palace anymore, but the palace still used for official events. Inside the complex, there is also museum that kept many valuable historical artifacts.

8. Program evaluation

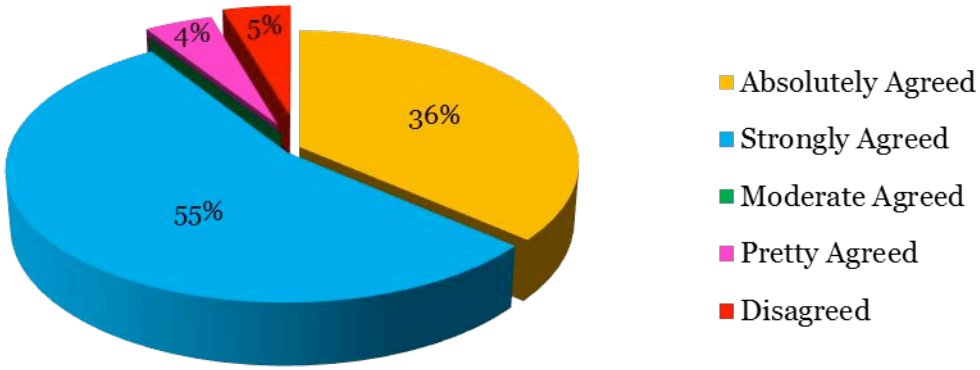
In this program, the evaluation forms were prepared for receiving the feedbacks from participants in order to evaluate the weakness points and improve them in the next time. The contents of program evaluation form are divided into two parts. The first part is the question about overall satisfaction and the second past is the recommendation from participants. In this evaluation, there are 22 respondents from 24 participants.

The first part, there are twelve questions and the feedback from participants are presented as the levels of agreement (absolutely agreed, strongly agreed, moderated agreed, pretty agreed and disagrees). The results of this part are displayed the level of agreement from participants in each question as the pie charts.

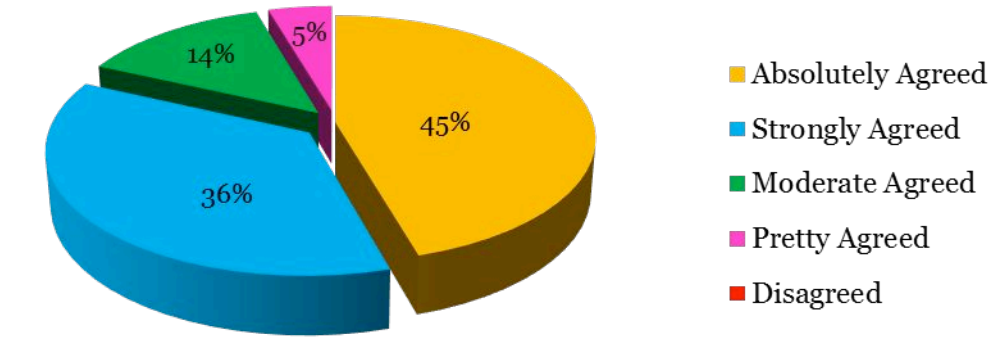
English class is great academic activity and also benefit in introduced for all participants



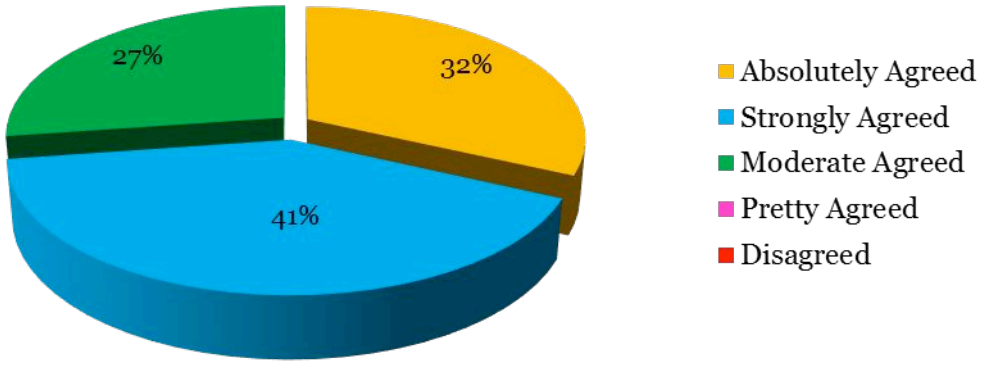
The lectures on Geoinformatics and issues on sustainable development in Asia are interesting for us



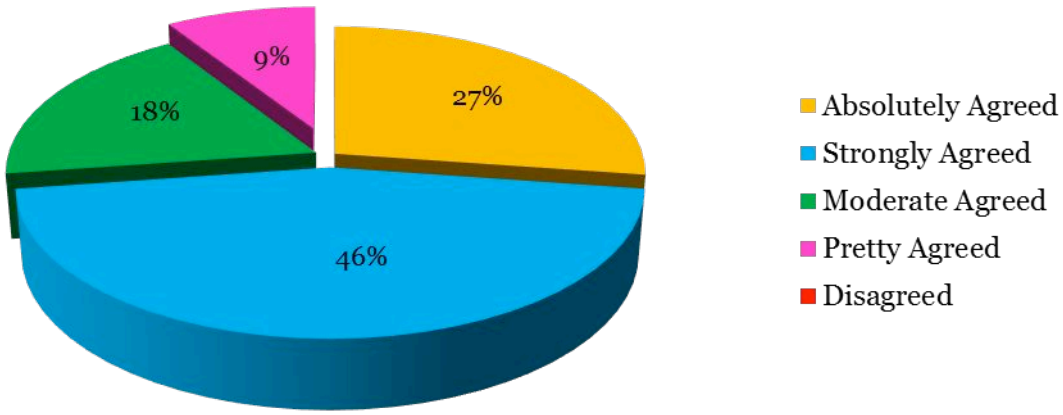
Lecturers are specialist in his/her career which help us to meet the learning needs in this program



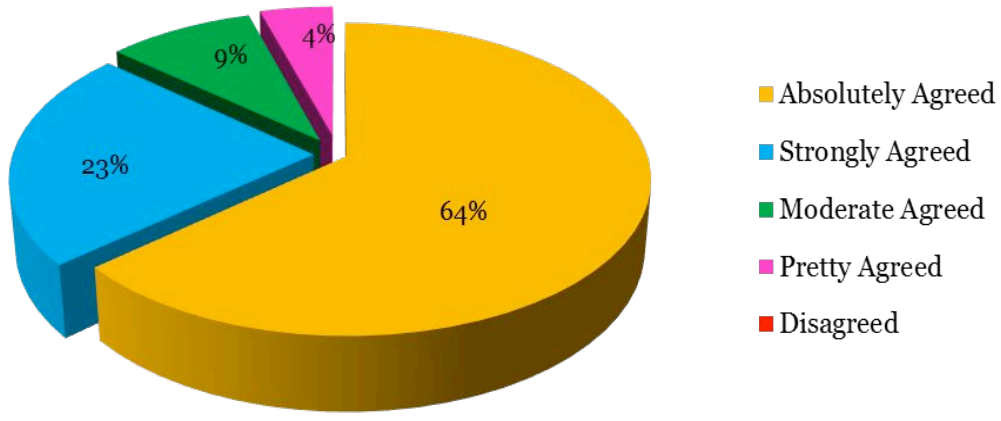
Laboratory instruction, facilities and equipment were appropriate for the program



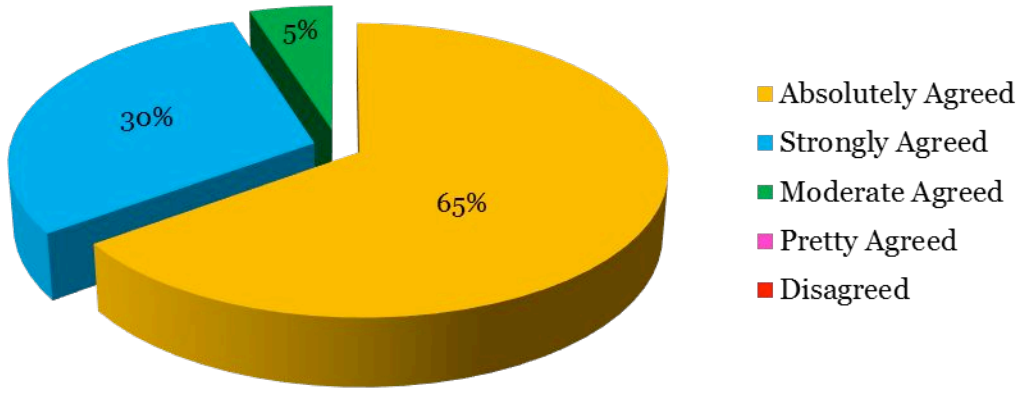
The amount of lecture class, study hours or time dedicated to academic learning were sufficient for us.



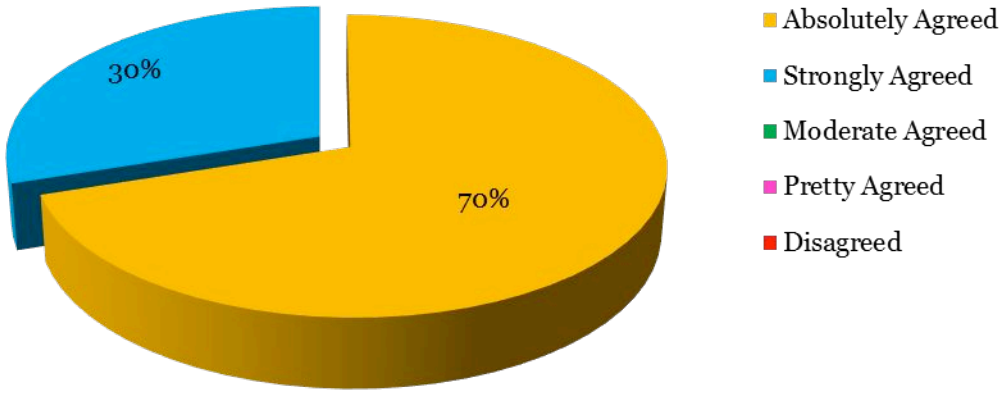
Visiting Geoinformatics organizations (government & private sectors) are good opportunity to learn and building capacity for us.



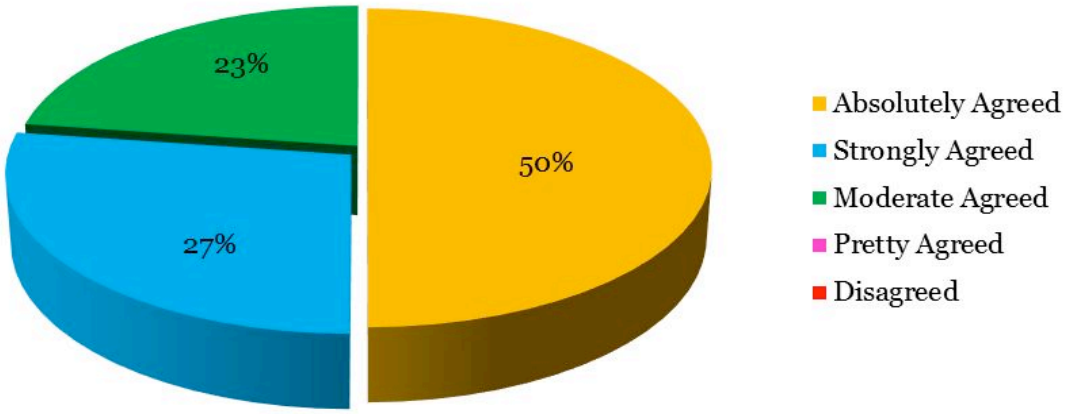
Environmental camp & activities in Hua Hin encouraging my environmental awareness



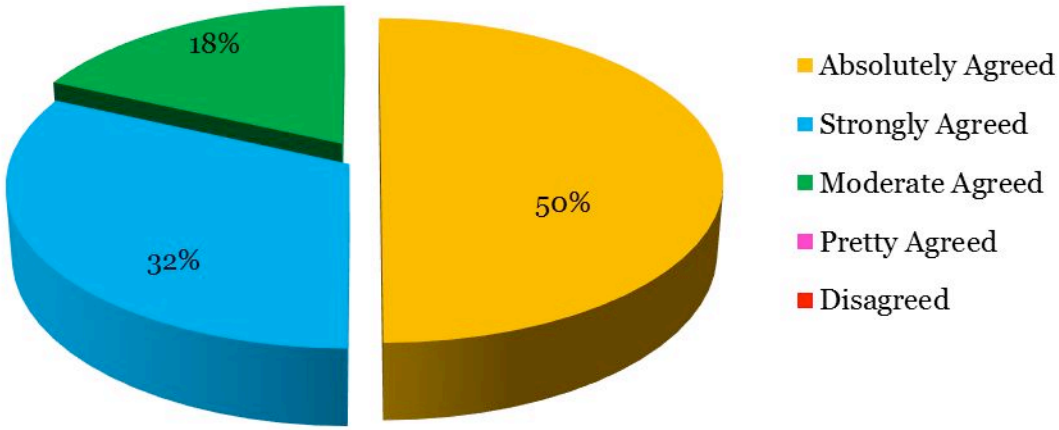
Accommodation (SSH) is comfortable and safety for us.



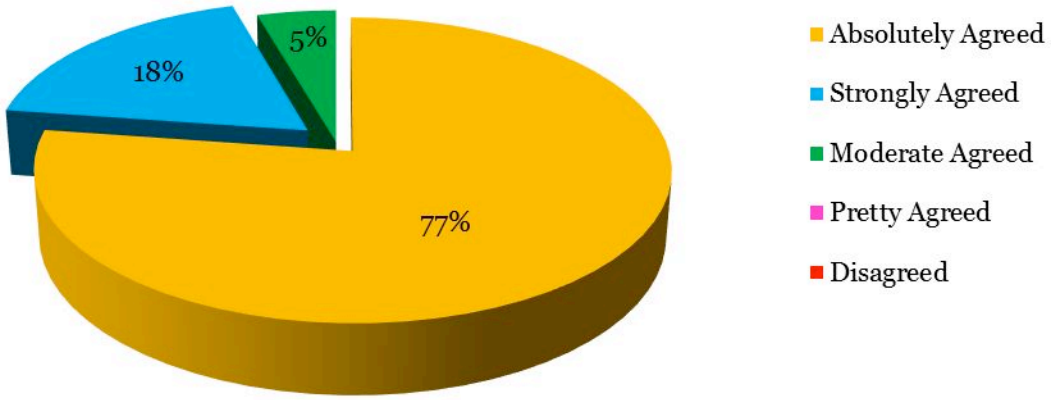
Preparation stuffs like handout, remark messages, welcome email, etc. are helpful for our preparation



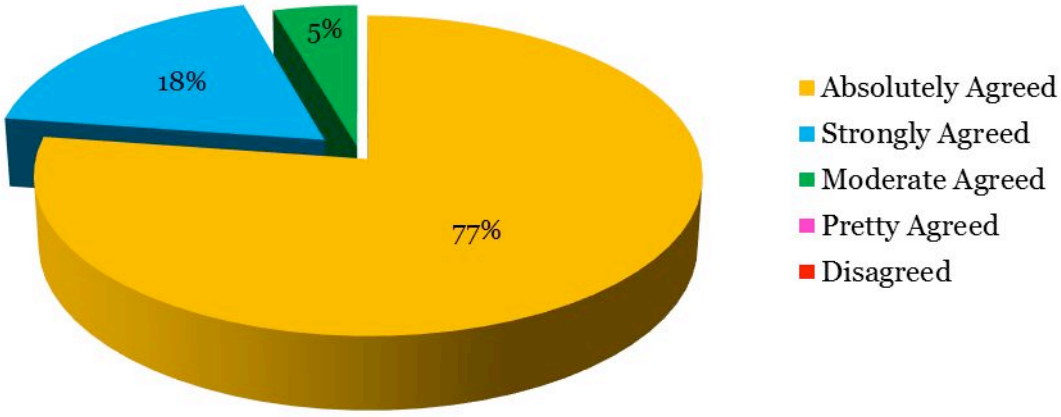
We learned the local culture through local life style like places, food, etc.



This program is good chance to have experience in multicultural environment.



Overall, how satisfied were you with your Asian Summer School in Bangkok 2013?



The second part shows the suggestions from participants. There are various comments that very valuable for improving more efficient in the next time.

Here are the comments that received from participants:

Overall, I am very pleased to say I am very satisfied with this program. It is a great experience to gain knowledge and gain new friends in a very difference environment. All the lecture and facilities are very kind and helpful throughout our journey. Halal food for outside AIT situations, more activities at night or after dinner, sport activities (football etc.), and musical activities. Lunch break must be longer, reason is lunch and praying time for Muslims maybe from 12.00 – 1:15 P.M. Thank you
Good!!! No suggestions. Everything is will be fine.
- Group presentation/Group works and group discussion will be some additional programs. - Pre- evaluation and post - evaluation forms can be also included to evaluate. - Practical session for better understanding. - Anyway it was wonderful camp.
This program is very good for me because this is the first time and experience of my life. So this program is very enjoying and thank you for everything. Thank you very much for your helpful.
It was fun being in this summer school! Thank you Ms.A & Ms.Ploy, Dr.Sarawut and Prof. Honda! Keep up the good work! Please shorten the lecture time?
- I do need the lectures not to be technically too specific. - Souvenir is preferable (T-shirt, key chain summer school). - Break time between each lecture to be increase. - Practical work for better understanding.
- Practical sessions should be scheduled. - Hand out (Lecture Material) should be distributed to the participants before the lecture. Therefore, they can prepare for the lecture and be able to understand easier. - Halal food may be better prepared. However, I enjoyed the foods in this summer school. They were great!

Overall summer school, program was excellent.
1) There is needed for reshuffling of lectures/ sessions, e.g. Natural resources in Asia (Prof. Rajenda Shestha) for the first day, etc.
2) Some hands on exercise on open source GIS/RS platform such as QGIS, etc.
3) Prof. Raphael Duboz session on second day is un-participatory approach from participants.
4) First day English class should not be changed, it is must.

Training material should be printed. This can help attendants more understand the lectures.

As Japanese, if this program is intended for Japanese who don't have knowledge of GIS and can speak English in low level. I think, you should choose representative of Japanese in light of English skill and hold a class of GIS before this program.

9. Conclusions for improvement

From all suggestions, it can be concluded that the overall of this program was good. The contents of program can help participant to gain more experience and knowledge, especially the issue of "Geoinformatics and Issues on Sustainable Development in Asia". Moreover, under the international society among participants, they can learn the different cultures and make the international friendships. However, there are some suggestions from participants and they can be expounded as below.

The handout of lectures should be distributed to the participants before the class because they can prepare themselves in each lesson. Additionally, hands on is required for more understand in the lectures.

Because of various field of study among all of participants, many participants do not have the background about Geoinformatics. Additionally, English language skill is the obstacle so that some participants cannot catch up the content of lectures. Thus, English class should be extended for one week in the next time for participants who has low English language skill and the basic of remote sensing and GIS should be provided for participants who do not have background for preparing them before the program start.

Food for multicultural should be provided especially Halal food or vegetarian food. Eventually, this type of food is provided in AIT but this problem occurred when the program was scheduled outside AIT or the countryside. Moreover, the break time or time for praying should be extended for Muslim participants.

Appendix 1: Summer School 2013 program

Open Ceremony
(20 AUG 2013)

Self-Introduction

(20 AUG 2013)

PASCO (21 AUG 2013)

National Disaster warning center (NWDC) (21 AUG 2013)

MRIGADAYAVAN Palace (24 AUG 2013)

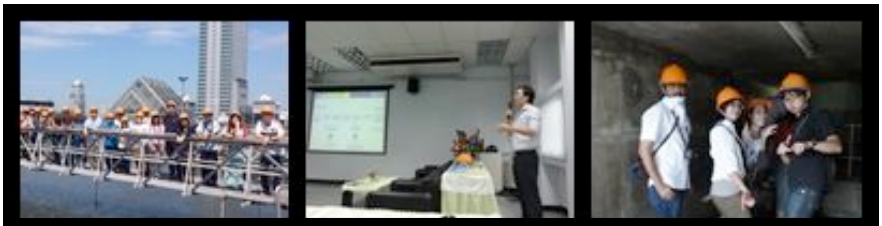
SIRINDHORN International Environmental Park, Hua Hin (24 AUG 2013)

SIRINART RAJINI ecosystem learning center (25 AUG 2013)

GISTDA

(27 AUG 2013)

Historical world heritage capital (Ayutthaya) &
Elephants house (27 AUG 2013)



Waste water treatment plant (Din Dang)
(28 AUG 2013)


Grand Palace
(28 AUG 2013)


Closing ceremony
(30 AUG 2013)

Appendix 2: Program Evaluation Form

Asian Summer School in Bangkok 2013
Geoinformatics and Issues on Sustainable Development in Asia
2013/8/18 – 2013/8/31
This summer, we are pleasure to joined summer program with you. Please provide your feedback based on their overall experience. Each participant need only complete this survey once. If you have already completed a survey, thank you.

	Absolutely Agreed	Strongly Agreed	Moderate Agreed	Pretty Agreed	Disagreed
English class is great academic activity and also benefit in introduced for all participants	(5)	(4)	(3)	(2)	(1)
The lectures on Geoinformatics and issues on sustainable development in Asia are interesting for us	(5)	(4)	(3)	(2)	(1)
Lecturers are specialist in his/her career which help us to meet the learning needs in this program	(5)	(4)	(3)	(2)	(1)
Laboratory instruction, facilities and equipment were appropriate for the program	(5)	(4)	(3)	(2)	(1)
The amount of lecture class, study hours or time dedicated to academic learning were sufficient for us	(5)	(4)	(3)	(2)	(1)
Visiting Geoinformatics organizations (government & private sectors) are good opportunity to learn and building capacity for us	(5)	(4)	(3)	(2)	(1)
Environmental camp & activities in Hua Hin encouraging my environmental awareness	(5)	(4)	(3)	(2)	(1)

Accommodation (SSH) is comfortable and safety for us.	(5)	(4)	(3)	(2)	(1)

	Absolutely Agreed	Strongly Agreed	Moderate Agreed	Pretty Agreed	Disagreed
Preparation stuffs like handout, remark messages, welcome email, etc. are helpful for our preparation	(5)	(4)	(3)	(2)	(1)
We learned the local culture through local life style like places, food, etc.	(5)	(4)	(3)	(2)	(1)
This program is good chance to have experience in multicultural environment.	(5)	(4)	(3)	(2)	(1)

Suggestions

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Thank you!