

Seminar on Partnerships with Universities in Geospatial Sciences & Research

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Outline

- Introduction
- Objective, Mission, and Vision
- Motivation
- Current Research through Project
- Partnership Via National and International Collaboration
- Challenges
- Way Foward



- ~ To train undergraduate and postgraduate students in the fields RS and GIS technology and GNSS signal processing and to enhance the skill and competency of the students.
- ~ To enable effective and extensive use RS and GIS technology in the postgraduate research work of the university.
- ~ To collaborate with other engineering departments and international organizations in order to promote effective use of RS and GIS technology in their corresponding research areas.
- ~ To cooperate and carry out the research work in the areas of natural disaster reduction, natural resources management, water resources and transportation management, urban planning and the impact of climate changes contributed to sustainable environment and development of a country.

MISSION

- ❖ Academic support
- ❖ Develop Research & Development (R&D)
- ❖ Develop Comprehensive Disaster Resilience System and Collaboration Platform.



VISION

To stand as an *academic excellence research center* in the field of RS & GIS contributed to socio-economic development of the country and development of comprehensive disaster resilience platform

RS & GIS Research Center, YTU

Officially Inaugurated on 30th October 2018.



Supported by Japan as a part of the activities under JICA project "Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar" implemented through collaborative research between Japanese research team headed by the University of Tokyo and YTU under the programme of SATREPS



Regular Subject Offered

No.	Courses	Subject
1	Ph.D (Water Resource Engineering)	Remote Sensing
2	M.E (Water Resource Engineering) M.E (Transportation Engineering) Post Graduate Course (Water Resource Engineering) Post Graduate Course (Transportation Engineering)	Remote Sensing and GIS
3	Master of Science (Environmental Engineering) Master of Science (Environmental Planning and Management)	Remote Sensing
4	Master of Science (Water Resource Engineering)	Remote Sensing
5	Under-Graduate Course (4 th Year Civil Engineering)	Photogrammetry, Remote Sensing and Adjustments
6	M.E (Electronic)	Digital Image Processing
7	Ph.D(Electronic)	Advanced Digital Image Processing

Certificate Course

No.	Duration	Target Customer
1	One month	Teachers Working in Technological Universities

Capacity Building Training in Collaboration the University of Tokyo (2015 – Till Now)

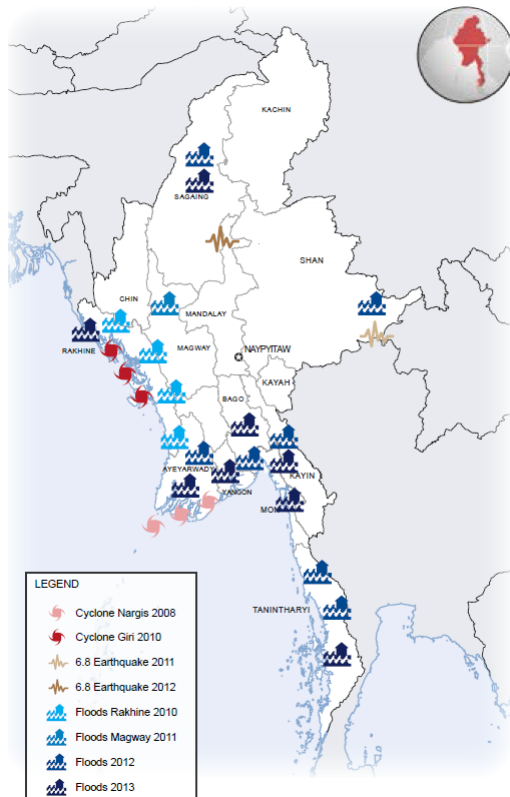
No.	Training Title	Remark
1	Principles of LULC Mapping from Remote Sensing Preparation of LULC Software in PC LULC Mapping with Satellite Image 3D Visualization of LULC Map Field Data Collection by GPS in YTU Campus Validation of LULC Map with GPS Data	Training Carried Out under the Scope of SATREPS Project
2	3D Terrain and Building Mapping of Yangon by Remote Sensing	
3	Principle and Application of 3D Laser Scanner Measurements for Civil Infrastructures	
4	Geo-spatial Database for Land Cover Mapping	
5	Visualizing the Height of the Buildings in 3D Model by using QGIS	
6	Principle of Geometric Correction and Application to Corona Imagery	
7	UAV Image Processing	
8	SAR Image Processing for Flood Mapping	

Capacity Building Training in Collaboration With Local and International Organization (2015 – Till Now)

No.	Training	Organization
1	Post Disaster (Earthquake) Rapid Damage Assessment	YTU, MES, CSSTEAP, UNOOSA, UN-HABITANT, UN-SPIDER
2	Google Earth Engine for Satellite Data Processing	YTU, SERVIR-Mekong, MIMU, YU
3	Google Earth Engine for Water Related Mapping	YTU, TU DELFT, FutureWater, PARTNERS VOOR WATER, NUFFIC, HKV CONSULTANTS, ADPC
4	GNSS Base Station Setup and Signal Processing for RTK Solution	YTU, The University of Tokyo
5	Training Course on Geographic Information System (GIS) using NK-GIAS®	YTU, Nippon Koei

Motivation

Myanmar: A country prone to a range of natural disasters



- Capacity Building for Disaster Resilience
- Fewer financial resources to support disaster mitigation
- Collaborative activities are essential for resilience
- Financial constraints
- Lack of training and equipment
- Practice of collaboration
- Capacity Building for Disaster Resilience

‘Building platform for Disaster Resilience cannot be done alone’

We are trying to develop ‘Comprehensive Disaster Resilience System & Collaborative Platform in Myanmar through collaborative research

Current Collaborative Research (Funded by JICA & JST)



SATREPS Project



Development of a Comprehensive Disaster Resilience and Collaboration Platform in Myanmar
(Research Collaboration between Myanmar and Japan led by Yangon Technological University and the University of Tokyo)

Signing Ceremony of Collaborative Research Arrangement (CRA)



Research Groups	Partnership
<ul style="list-style-type: none"> 1) Transportation and Human Mobility 2) Water-Related Disaster 3) RS & GIS Research Group 4) Earthquake-Related Disaster 5) Infrastructure 6) Disaster Management 	<p>The University of Tokyo</p>

SATREPS Project

Development of Comprehensive Disaster Resilience and Collaboration Platform in Myanmar

Research Group Members

SATREPS For the Earth, For the Next Generation

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Japan Science and Technology Agency

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Project Details

JST HOME SATREPS HOME Projects Disaster Prevention and Mitigation

Disaster Prevention and Mitigation

Development of a Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar

Build Safe Cities Through Disaster Risk Assessment and Thorough Preparation

FY2019 SATREPS Invitation for Research Proposals Sept.14th - Nov. 12th (at noon), 2018

Quick access

SATREPS SUSTAINABLE DEVELOPMENT GOALS

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Projects Click >

SNS

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Access map

Principal Investigator (Affiliation): Prof. / Director MEGURO Kimiro (International Center for Urban Safety Engineering, Institute of Industrial Science, The University of Tokyo)

Pro-Rector / Prof. Khin Than Yu (Yangon Technological University (YTU))

Research Institutions in Japan: The University of Tokyo / Hokkaido University / Tohoku University / Keio University

Research Institutions in Myanmar: Yangon Technological University (YTU) / Myanmar Engineering Society (MES) / Relief and Resettlement Department (RRD) / Department of Meteorology and Hydrology (DMH) / Directorate of Water Resources and Improvement of River Systems (DWIR) / Ministry of Construction (MOC) / Irrigation Department (ID) / Yangon City Development Committee (YCDC) / Mandalay Technological University (MTU) / etc.

Adoption fiscal year: FY 2014

Research Period: 5 Years

ODA Recipient Country: Republic of the Union of Myanmar

Assess the risk of urban disasters and prepare for disasters in the future

With Myanmar and its cities under large-scale development, the risk of disasters increases due to expansion of the urban population and climate change. This project monitors changes in the ground, terrain, and urban environment associated with the development process, and develops a system for assessing vulnerabilities to potential disasters in Myanmar. The project aims to identify disaster risks in advance to contribute to the formulation of regional development planning and disaster prevention countermeasures as

Earthquake-related Disaster Group

Building: Assoc. Prof. Zin Naung Hsun (YTU), Prof. Myo Myo Thakun (YTU)

Geotechnical: Assoc. Prof. San San Nye (YTU), Geotech. Dept. Head Taung Myo (YTU), Lecturer Tin Tin Myo (YTU)

Urban Planning: Assoc. Prof. Gaki (IS, UT), Assoc. Prof. Kato (IS, UT), Prof. Yoshimura (IS, UT)

Heritage: Assoc. Prof. Gaki (IS, UT), Assoc. Prof. Kato (IS, UT), Prof. Yoshimura (IS, UT)

Transportation and Human Mobility Group

Assoc. Prof. Fung (YTU), Assoc. Prof. Hsu (YTU), Assoc. Prof. Sakai (IS, UT), P.J. Researcher Sakai (IS, UT), Assoc. Prof. Hsu (IS, UT), Prof. Asai (IS, UT), P.J. Researcher Sakai (IS, UT), Lecturer Horita (IS, UT)

Water-related Disaster Group

Assoc. Prof. Win Win Zin (YTU), Prof. Assoc. Prof. Kawasaki (YTU), Prof. Kake (YTU), Prof. Tajima (YTU), Assoc. Prof. Shimazaki (YTU), Prof. Researcher Aoyama (YTU), Assoc. Prof. Kato (YTU), Assoc. Prof. Kohsaka (YTU)

Disaster Management Group

Pro-Rector Prof. Khin Than Yu (YTU), Prof. Meguro (IS, UT), Visiting Prof. In (IS, UT), Assoc. Prof. Kato (IS, UT), Dr. Win Win Zin (YTU), Dr. San Hsueh Pha (YTU), Dr. Sun Hsueh (YTU), Dr. Sun Hsueh (YTU), Dr. Sun Hsueh (YTU), Dr. Sun Hsueh (YTU), Assoc. Prof. Goto (IS, UT), P.J. Researcher Matsubara (IS, UT)

Infrastructure Management Group

Pro-Rector Prof. Khin Than Yu (YTU), Assoc. Prof. Nagai (IS, UT), Prof. Kawanishi (IS, UT), Prof. Inaba (Nagasaki U of Tech.), Prof. Yano (Hokkaido U), Assoc. Prof. Murakami (Nagasaki U of Tech.), Assoc. Prof. Hori (Hokkaido U), Prof. Lecturer Matsubara (IS, UT), Researcher Detsuda (Matsubara Laboratory)

Remote Sensing and GIS Group

Dr. Wataru Takeuchi (Remote Sensing and GIS, UT (Associate Professor)), Dr. Sato Hiroe (PhD Remote Sensing and GIS, YTU (Professor)), Mr. Tin Tin Aye (M.Sc. GIS (Associate Professor)), Mr. Takahashi Sui (Thailand), Remote Sensing and GIS, UT (Ph.D. candidate)

Research Groups

Transportation and Human Mobility Group

MPT base station locations and voronoi cells → Land cover generated from Landsat 8 → Land cover weighted 250 m grid cells

Visualize traffic/crowd flow by cell-phone

GPS-mounted public bus

Water-Related Disaster Group

Meteo-satellite observation data → Residents survey at the flood affected area along Bago river → Simulated Flood Inundation for the 100 year Return Period and for 2011 Flood Event of Bago River Basin

RS & GIS Group

Landsat reveals urban expansion patterns of Yangon from 38km² (1973) to 204 km² (2009)

Geocye 50cm digital terrain and building database of Yangon

Digital building height map, Digital terrain map, Training at YTU on RS and GIS

Earthquake-Related Disaster Group

Developing Building's vulnerability of Yangon City through interviews and field surveys → Tentative Vulnerability Assessment

Structural analysis & 3D scan of heritage building | "Re-Discover Yangon" Workshop, making 1/500 scale model of the central part

Disaster Management Group

Workshop with various stakeholders from government, NGO and International Organizations → affected area of Taik Kyi

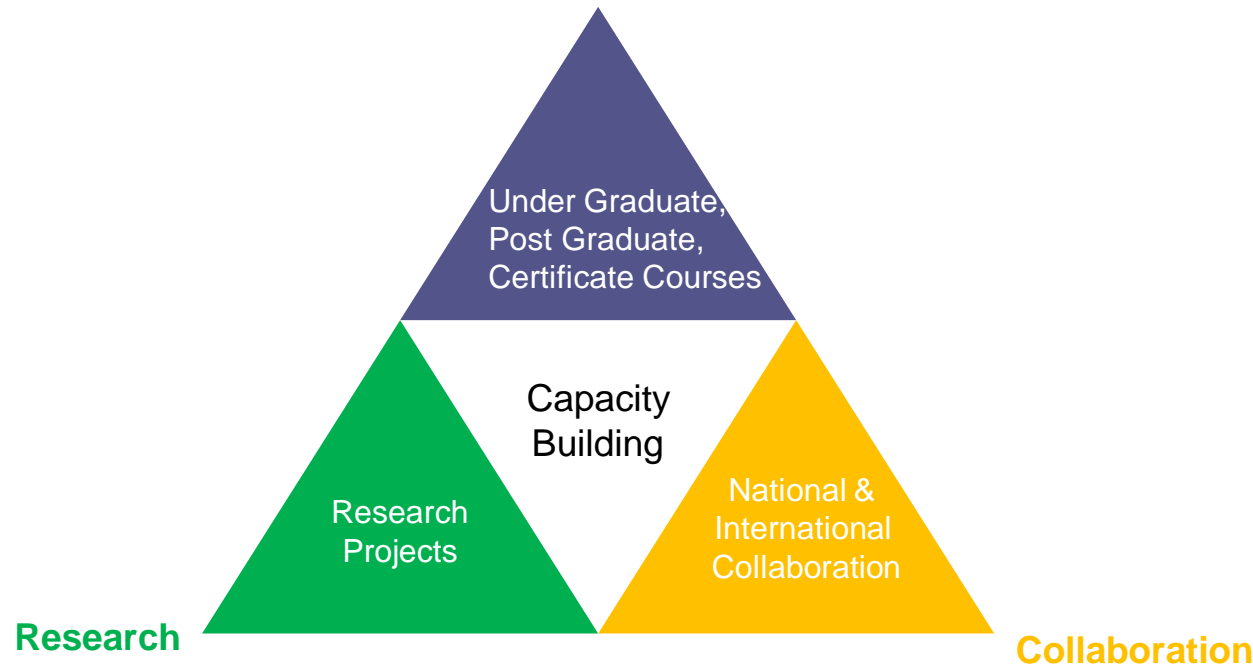
Infrastructure Group

Convert bridge inventory list of MOC (4000bridges) to GIS database → Propose management system including damage inspection, retrofit & repair

Our Approach for Capacity Building and Partnership

Academic

- Department of Civil Engineering
 - *Water Resource, Transportation, Environmental Engineering, Environment Management*
- Architecture Department
 - *Urban Planning*
- Department of Mining Engineering
- Department of Engineering Geology



(Development of Comprehensive Disaster Resilience System and Collaboration Platform in Myanmar)

(By means of Collaborative Research, Capacity Building Training)

What We Gained from Partners Through Collaborative Research

- ✓ Establishment of the center
- ✓ Project Experience
- ✓ Research Culture
- ✓ Methodology
- ✓ Data
- ✓ Infrastructure
- ✓ Capacity Building Training
- ✓ Funding
- ✓ Global Profile



- ✓ Human Resource
- ✓ Financial Assistance
- ✓ Recruitment of Teaching and Office Staff
- ✓ Professional and Curriculum Development
- ✓ Cultural Difference
- ✓ Sustainability

Way Forward

We are trying to gain new partners in terms of project, research, and collaborative work via MOU, LOA,

- ✓ Project Experience
- ✓ Higher Global Profile
- ✓ Sharing Expertise
- ✓ Potential to create New Networks
 - ✓ Multi-organization research groups
 - ✓ Access a wider array of funding opportunities

Benefits of Partnership

 Thank You

