



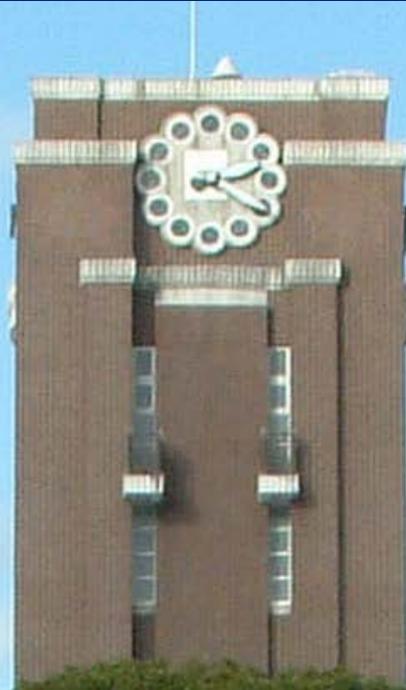
The 3<sup>rd</sup> Japan-Indonesia Rectors' Conference  
Nov. 5<sup>th</sup>, 2015 @Hokkaido University

# Research Collaboration of Kyoto University with Indonesia: Toward Sustainable Networking

**Kono, Yasuyuki**  
**Director, Center for Southeast Asian Studies**  
**Kyoto University**



- Established in 1897
- 2,832 faculty members
- 22,806 students
- 10 Faculty
- 18 Graduate School
- 14 Research Institute





## ● History



**50** years

## ● Achievements

**24**

University-level  
MOU

**179**

Department-level  
MOU

**5**

SATREPS Projects

## ● Toward the future



**29** Offices

**ASEAN Center**



Late Professor Kenji Tsuchiya

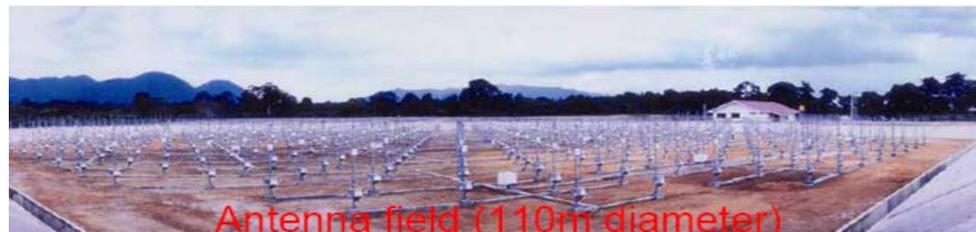
インドネシア民族主義研究：タマン・シ  
スワの成立と展開（1982）

Democracy and leadership : the rise of the  
Taman Siswa movement in Indonesia (1987)

Demokrasi dan kepemimpinan : kebangkiran  
gerakan Taman Siswa (1992)



Radar observatory in PUSPITEK,  
West Java, Indonesia (1992)



Equatorial Atmosphere  
Radar (2001)  
West Sumatra,  
Indonesia



## Wood Science School

The First Wood Science School (WSS) was held in the satellite office of the RISH at the Research and Development Unit for Biomaterials (RDUB), the LIPI, Cibinong, Indonesia on 5-7 March, 2006. The second WSS will be held in the same place on 26-28 February, 2007.



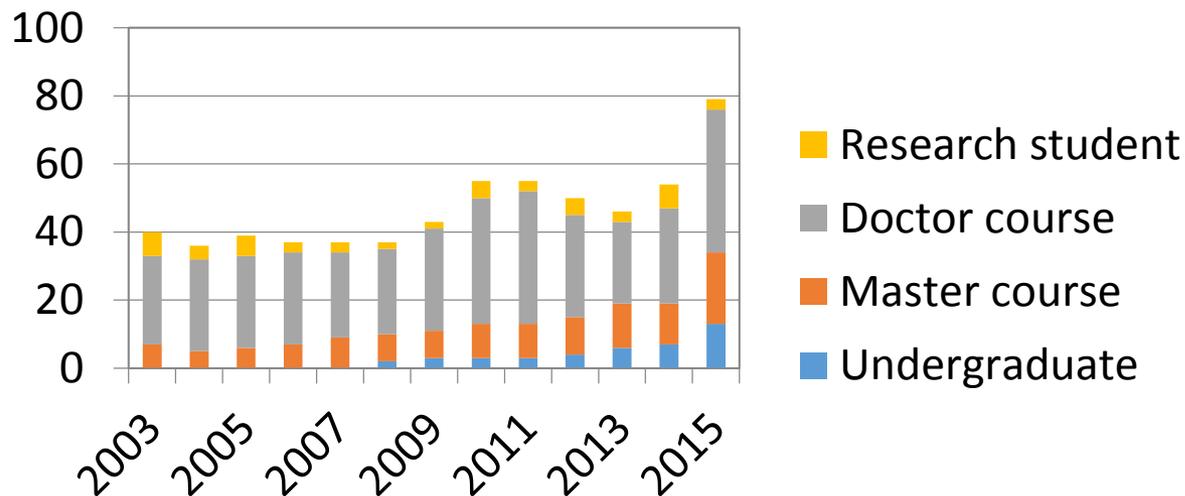
## Summer School in Geosphere Studies

The Summer School in Geosphere Studies was held in Bandung under the project of the COE KAGI21 (Kyoto University Active Geosphere Investigations)



Prof. K. Oike, former President of KU, giving a special lecture

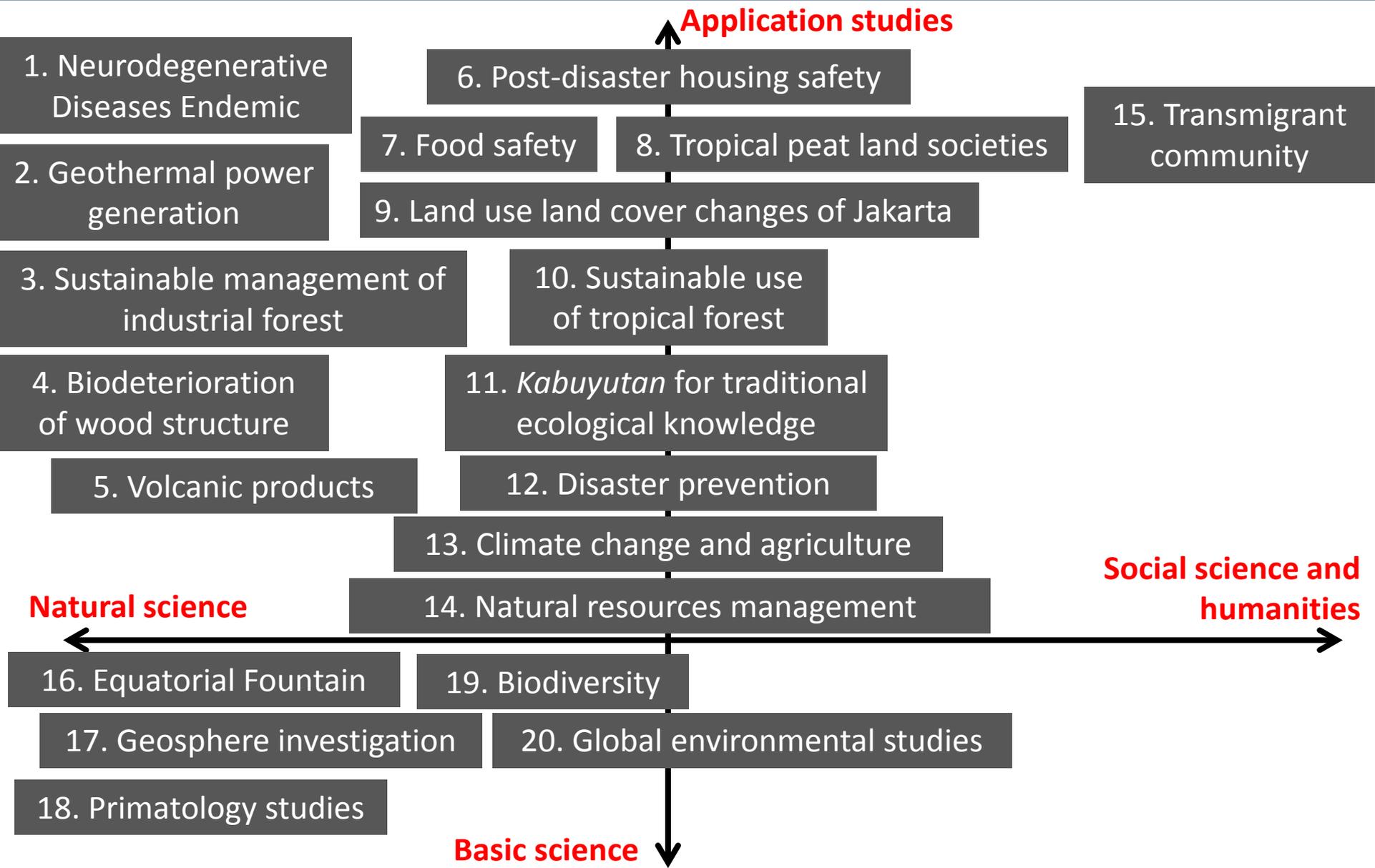
## Indonesian students at KU



Dr. Erman Munir, a RISH Graduate, received the special award from LIPI for his achievement during his PhD course (2003)



# On-going Research Collaboration between KU and Indonesian Universities





# Agenda for further development of academic collaboration between Japanese and Indonesian Universities

- 1. Institutionalizing the collaboration**
- 2. Collective rather than competitive and forming academic community**
- 3. Visualizing the networks and appealing them to the non-academic societies**

## **Launch of Japan-ASEAN Science and Technology Innovation Platform (JASTIP)**

- 1. Promoting Japan-ASEAN joint science and technology researches for Sustainable Development Goals through open science and open data approach**
- 2. Enhancing linkages between science and technology researches and scientific innovations of society**
- 3. Visualizing the outcomes of science and technology researches and their impacts to wider stakeholders**

## Japan's Science and Technology Policy and Its Implications Prof. Takashi Shiraishi

Recently, Kyoto University has got the grant administered by the JST, Japan Science and Technology Agency, a funding agency, for Japan ASEAN Science and Technology Innovation Platform and I understand that the LIPI is one of the partner institutions ...

And I am sure you now understand why this initiative is geared to promote research for sustainable development to solve common issues ASEAN countries are confronted with, especially in the fields of energy and environment, bioresources and biodiversity, and disaster prevention, ...

This is something you better keep in mind somewhere, because at the end of the day, when the JST comes back to Kyoto University what they have achieved, they would be looking not only at the research outcomes, but also what innovations you have produced and what good you did to improve life, ...

**the science and technology part will become even more important in the coming years in Japan ASEAN relations.**



Prof. Takashi Shiraishi



# A Japanese Newspaper reported the launch of JASTIP

1 4版 2015年(平成27年)10月14日(水曜日) 日本経済新聞社 2015 (日刊)

**トレンド&プライス**

「フォトログ」楽しげ

世界遺産 富士山

住まいナビ

短期お試し 北海道移住

アートセレクト

高図せず作る 芸術

## ASEANとの研究仲介

### 京大東大など、タイに拠点

【共同研究成立】

日本とASEANの共同研究を仲介する仕組み

共同研究の推進を目的として、日本とASEANの共同研究を仲介する仕組みが構築された。この仕組みは、日本とASEANの共同研究を推進するための重要な役割を果たす。共同研究の推進を目的として、日本とASEANの共同研究を仲介する仕組みが構築された。この仕組みは、日本とASEANの共同研究を推進するための重要な役割を果たす。

## 首相、軽減税率を指示

### 「消費増税と同時に」検討

財務省の還付案撤回

## 日生、豪生保買取で

### 2000億円台前半で

日生、豪生保買取で2000億円台前半で

## 防振ゴムでも不正

### 東洋ゴム品質検査せず出荷

鉄道・船舶向け

店舗集客の強い味方

15年目

OSG

1000円〜1500円

## マンツーマン投資セミナー

総合面

TOPP「変節」批判に反論

総合面

川内2号機 あす再稼働

社会面

厚労職員、他にも現金か

**WORLD MARKETS**

日経平均 13桁

127899.16

NYダウ 13桁

127081.89

ナスダック 13桁

4796.609

FTSE100(英) 13桁

6342.28

円・ドル 東京12時

## JASTIP Steering Committee

### Japan-ASEAN Joint Research Headquarter

(Tri-field linking and integration, developments toward social implementation, policy advice)

Headquarter: Kyoto University ASEAN Center (Bangkok), Branch Office (Jakarta)



- Social implementation of research achievements, intermediary with private industry
- Promotion of policy proposals, S&T dialogue through Kyoto ASEAN Forum, etc.
- Promotion of All-Japan links and connections with existing networks
- Support for external funding applications for projects

- Dissemination of results, outreach activities
- Partnership support to and between satellite centers



  
**Support from Kyoto ASEAN Center**  
**ASEAN Center Director · URA · Admin Staff · Local Staff**

## Joint Laboratories for Joint Research

**Joint Laboratories at leading research institutes in ASEAN:**  
**Forming a hub for Japan-ASEAN academic community for SDGs**

Promotion of international joint research and social implementation

Expanding networks via proposal-type research projects

### Environment · Energy

National Science and Technology Development Agency (Thailand) (NSTDA)



### Bio-resources · Biodiversity

Indonesian Institute of Sciences (LIPI)



### Disaster Prevention

Malaysia-Japan International Institute of Technology (MJIIT)





## Bio-resources · Biodiversity : Biodiversity as a resource – Effective utilization of useful tropical plants

### Enhancing tropical biodiversity databases to investigate useful tropical plants

Need for **ownership-based resource development** enacting the Convention on Biological Diversity for genetic resource development

**Joint research focusing on the entire region** is logical in terms of biology and resource studies considering overlaps of flora in the ASEAN region

### Enhancing biodiversity databases to investigate useful tropical plants

### R&D into tropical plant breeding, conversion into fuel and functional materials

Need for **international cooperation between ASEAN nations and developed countries** developing biomass technologies for **new environment-friendly industries** around sustainable production and advanced uses of biomass in ASEAN region, based on **the characteristics of bio-resources across the region.**

**Methods to convert useful tropical plants into fuel, functional materials, and food, and joint development of high-strength, durable wood structures and materials**

## Joint Lab: Indonesian Institute of Sciences (LIPI)

**Forty-one branches - Indonesia's largest national research institute**

Partnership with two biological science research centers

**Research Center for Biology**

With a world-leading collection of animals and plants, the center conducts national-level research into use of biodiversity as a resource.

**Research Center for Biomaterials**

National research institute researching property analysis of Indonesian timber resources, conversion to functional materials, and timber deterioration control.

**ASEAN Network**

**LIPI Innovation Support** is available for applications and social implementation

LIPI has strong links to NSTDA and TISTR in Thailand in the fields of biodiversity and bio-resources. Opportunities to enhance Pan-ASEAN networks in these fields.

**Strong partnerships with Japanese organizations (Research Center for Biology)**

Kyoto Univ., Kagoshima Univ., Hokkaido Univ., Tottori Univ. Faculty of Engineering, Hokkaido Univ. of Education, Hokkaido Institute of Technology, Kanazawa Univ., Univ. of Shiga Prefecture, National Institute for Environmental Studies, Forestry and Forest Products Research Institute, National Institute of Technology and Evaluation, JICA

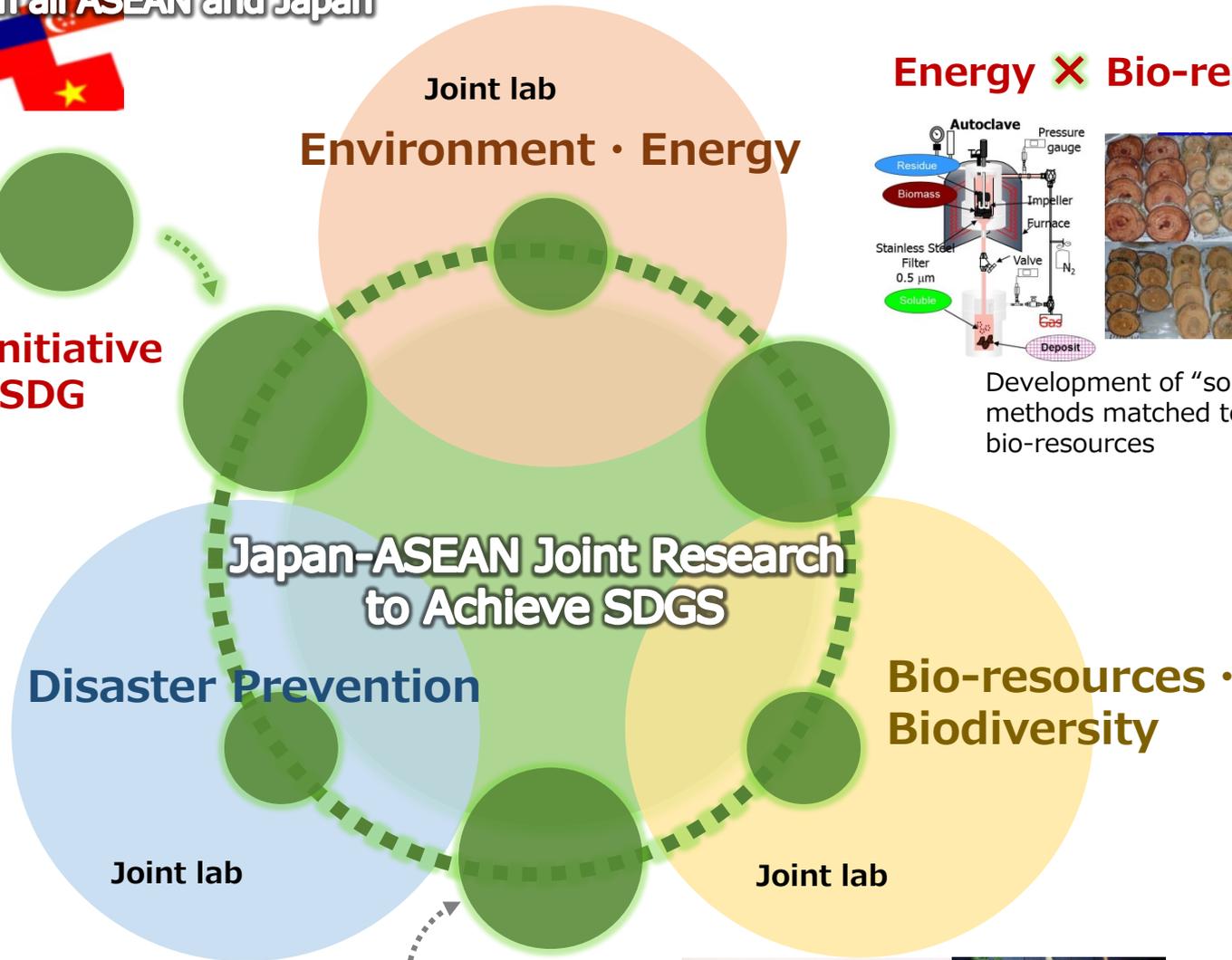




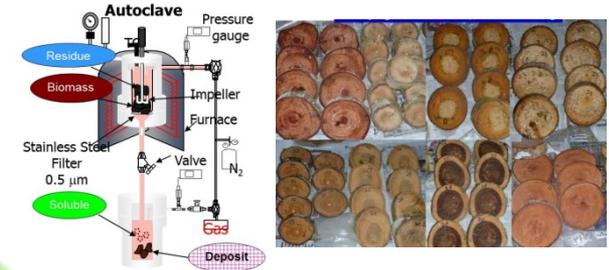
Researchers from all ASEAN and Japan



Community Initiative Research for SDG



Energy X Bio-resources



Development of "solvent treatment" methods matched to ASEAN region bio-resources

Disaster Prevention X Biodiversity

Research into prevention of peat bog fires for biodiversity conservation and ecological restoration





Researchers Existing Research Projects

Community Initiative  
Research for SDG

Environment · Energy

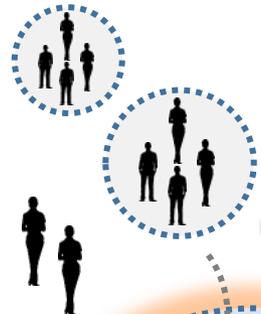
Japan-ASEAN Joint Research  
to Achieve SDGS

Disaster Prevention

Bio-resources ·  
Biodiversity

Researchers Existing Research Projects

**Japan SDG Research Community**



Existing Networks



Governmental Sector  
High Level Visit & Meeting

Effective Policy Advice



Scientific Advice  
Research Data

Sustainable Funding

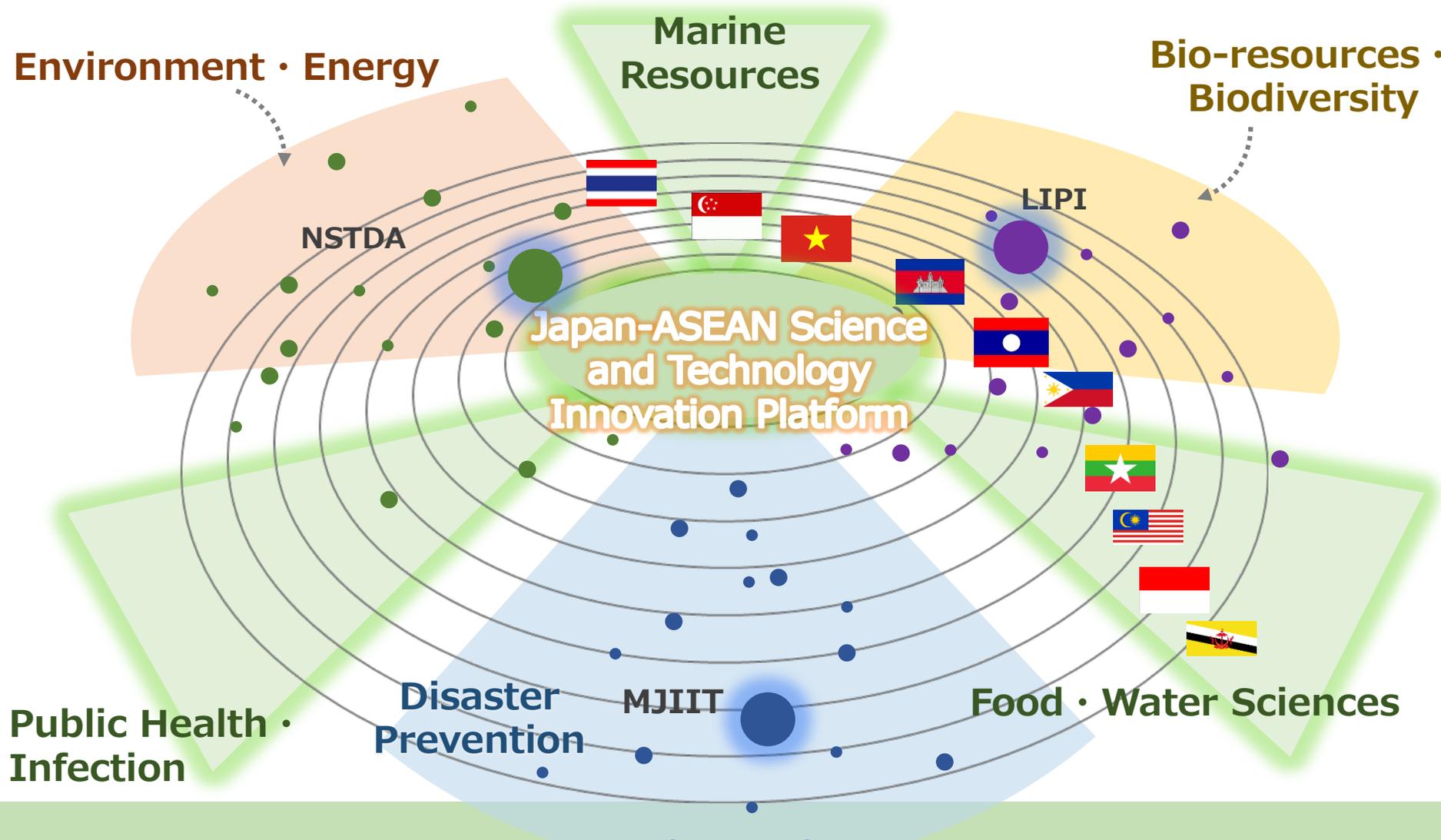


Practical Utilization



**Private Sectors**

**International Agency**



Creating a **Visible Platform** for Japan-ASEAN  
 STI Collaboration toward SDGs



*Thanks and see you again at Kyoto.*



# Longitudinal Study on Neurodegenerative Diseases Endemic in an Area in Papua in Indonesia Related with Nature, Culture and Humanity

BMJ Open

bmjopen.bmj.com

BMJ Open 2014;4:e004353 doi:10.1136/bmjopen-2013-004353

Epidemiology

## Amyotrophic lateral sclerosis and parkinsonism in Papua, Indonesia: 2001–2012 survey results

Kiyohito Okumiya<sup>1,2</sup>, Taizo Wada<sup>2</sup>, Michiko Fujisawa<sup>2</sup>, Masayuki Ishine<sup>3</sup>, Eva Garcia del Saz<sup>4</sup>, Yutaka Hirata<sup>5</sup>, Shigeki Kuzuhara<sup>6</sup>, Yasumasa Kokubo<sup>7</sup>, Harumichi Seguchi<sup>8</sup>, Ryota Sakamoto<sup>9</sup>, Indrajaya Manuaba<sup>10</sup>, Paulina Watofa<sup>11</sup>, Andreas L Rantetampang<sup>12</sup>, Kozo Matsubayashi<sup>2</sup>



*Project Leader:*  
*Kiyohito Okumiya*  
*Renkei Associate Prof of CSEAS*  
*(KIBAN (B ⇒ A):JSPS, 2005-2017)*



[Title] JST/JICA Science and Technology Research Partnership for Sustainable Development (SATREPS)  
**Project for Technology Development of Steam-spot Detection and Sustainable Resource  
 Use for Large Enhancement of Geothermal Power Generation in Indonesia**  
 – **Beneficial and Advanced Geothermal Use System (BAGUS)** –

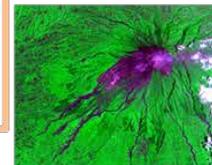


by Graduate School of Engineering, Kyoto University and Bandung Institute of Technology (ITB)

[Leader] Katsuaki KOIKE (Professor, Department of Urban Management)



[Outline of Research] Geothermal is a promising renewable energy resource, and *Indonesia plans to greatly increase its geothermal power output*. This increase necessarily involves many deep drilling operations for resource exploration, which requires a tremendous expense. This project aims to **reduce the initial costs and raise the identification success rate by integrating several methods that do not require drilling**, such as satellite remote sensing and geochemical analysis. The outcome is expected to promote the use of geothermal resources.



[Outcomes] This project just started from this April. A part of the results so far will be published in *Remote Sensing of Environment* (the highest impact factor journal in Remote Sensing) and presented at the Stanford Geothermal Workshop in Feb. 2016.

[URL] <http://www.geoenv.kumst.kyoto-u.ac.jp/>

ARTICLE IN PRESS

RSE-09568; No of Pages 15

Remote Sensing of Environment xxx (2015) xxx-xxx

Contents lists available at ScienceDirect

Remote Sensing of Environment

journal homepage: [www.elsevier.com/locate/rse](http://www.elsevier.com/locate/rse)

A new vegetation index for detecting vegetation anomalies due to mineral deposits with application to a tropical forest area

Arie Nafali Hawu Hede<sup>a,b</sup>, Koki Kashiwaga<sup>c</sup>, Katsuaki Koike<sup>a,\*</sup>, Shigeki Sakurai<sup>d</sup>

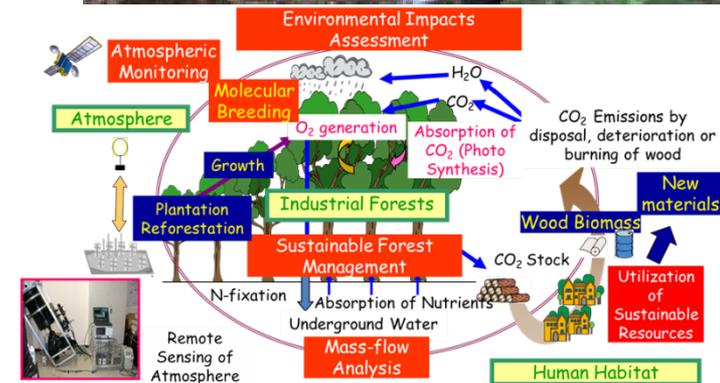
<sup>a</sup> Laboratory of Environmental Complex Engineering, Department of Urban Management, Graduate School of Engineering, Kyoto University, Kyoto 615-8540, Japan

<sup>b</sup> Earth Resource Exploration Research Group, Faculty of Mining and Petroleum Engineering, Institut Teknologi Bandung, J. General Soediro 40132, Indonesia

<sup>c</sup> Graduate School of Advanced Integrated Studies in Human Sustainability, Kyoto University, Kyoto 606-8506, Japan

### Acacia research forest in Sumatra

In consideration of an increasing social demand for sustainable forest management, RISH, Indonesian Institute of Sciences, and PT. Musi Hutan Persada MHP, owner of acacia industrial forest have exchanged the Memorandum of Understanding (MOU) and have studied sustainable forest management and production of plant biomass resources and their efficient utilization in harmony with regional environment.



### Satellite Office and Humanospheric Science School

The RISH Satellite office is located at the Research and Development Unit for Biomaterials (RDUB), LIPI. RISH conducted with RDUB for sampling of tree tissues. RDUB has become the research core of wood science in Indonesia, and the researchers of RDUB established the Indonesian Wood Research Society. Humanospheric Science School (visiting lectures) is regularly held in the satellite office at the office. More than hundred students and young scientists attend Humanospheric Science School, and some students among them come over to RISH to study.



## Global-COE Program

"In Search of Sustainable Humanosphere in Asia and Africa"

"Next-generation research initiative" study report for 2010

Title: Investigation of Biodeterioration in Indonesian Wooden Structures

Place of survey: Yogyakarta (Indonesia)

Member: Dr. Takuro Mori and Dr. Yoshiyuki Yanase (Kyoto University)  
Dr. Sulaeman Yusuf (LIPI Urban Pest Management)  
Dr. Joko Sulistyono (Universitas Gadjah Mada)



## Overview

We started the collaborative project between Japan and Indonesia in 2013 under the SATREPS (Science and Technology Research Partnership for Sustainable Development) supported by JST (Japan Science and Technology Agency) and JICA (Japan International Cooperation Agency). Overall goal is to alert to Indonesian people by real-time and forecasting information on volcanic ejecta and multimodal sediment disaster.

Intensity of volcanic disaster fundamentally depends on volume of volcanic ash. Firstly, we forecast scale of eruption or evaluate in real-time based on monitoring volcanoes and geological survey and dating. Secondly, we simulate dispersion of ash in the atmosphere and ash-fall on the ground surface based on the discharge rate of volcanic ash. Thirdly movement of ash-fall deposit by rain-fall triggering is forecasted by GIS-based simulators. Finally, these units are integrated as a support system of decision making for mitigation of multimodal disasters, which can be accessed by national government and local governments.



## Partners in ASEAN

Representative counterpart of Indonesia under the project is Center for Volcanology and Geological Hazard Mitigation, Geological Agency, Ministry of Energy and Mineral Resources. The center is responsible to monitor volcanic activity and issue alert levels for finally evacuation. Department of Civil Engineering of Universitas Gadjah Mada contributes to hydraulic observation along rivers and collaboration of simulation engines for sediment movement. Sabo Technical Center, Research Centre for Water Resources, Ministry of Public Work is responsible to monitor sediment movement on the flank of Merapi. Centre for Climate Change and Air Quality, Meteorological, Climatological and Geophysical Agency (BMKG) contribute forecasting volcanic ash dispersion and estimation effect on aviation safety. In order to promote utilization of Support System for Decision Making, we will establish consortium joined by project members, national and local governments, related scientist and local residents.

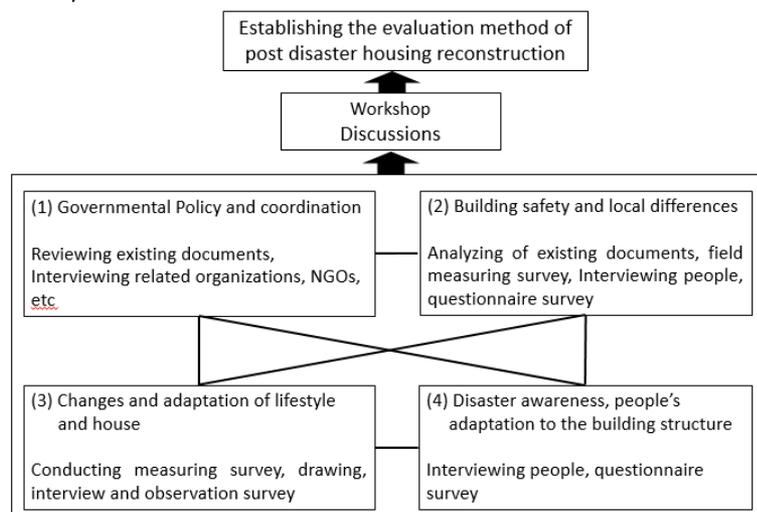
## 基盤研究（B）（海外学術調査）

「インドネシアにおける復興住宅に係る住宅安全性及び住民のリスク認知の経年劣化」  
 JSPS Kaken (B) “Housing safety and people’s risk recognition in post disaster areas in Indonesia: Changes over the years”

- 期間 (Period) : FY2015-2017
- 主要部局 (Department) : 地球環境学堂 (GSGES)
- 代表者 (Leader) : 岡崎健二教授 (Prof. Kenji Okazaki)
- カウンターパート (Counterpart) : バンドン工科大学 (ITB)、Prof. Krishna S. Pribadi
- 内容 : インドネシアのアチェ、ジョクジャカルタ、パダンの各被災地において、災害後の再建住宅を対象に住宅安全性、生活形態、リスク認知と行動の変化を工学及び社会学の総合的な視点から検証し、長期的視点に立った住民参加型の住宅再建の評価手法を確立する。

(Contents) : Study changes of Building safety, Lifestyle, Risk awareness and behavior of post-disaster housing through technical and social approach to develop the evaluation method of participatory housing reconstruction from a long term.

Study Framework and Flow





## \*Tropical Peat in Indonesia= Facing rapid degradation



<76% of Tropical peatland located in SE asia.  
 Most of the peat in SE Asia (**Red**) located in INDONESIA.  
**Containing 20% of global soil carbon!**  
**Recently Peatland in Indonesia facing serious problems.**



## \* Propose the Solutions by Transdisciplinary Research Groups

### ① Ecology

- ❑ Ecological characteristics
- ❑ Silvicultural characteristics
- ❑ Material cycles: soil, water, biomass

### ② Socio-Economic

- ❑ Socio-economic & cultural survey
- ❑ Local institutions for peatland use & governance

### ③ Network

- ❑ Integration of research activities
- ❑ MOU (LIPI, IPB, ITB, UI, UGM, UNRI etc.)

### Feasible Solution

“Rewetting & Reforestation”  
 in Degraded Peatland  
 with Local People



Simple dam to prevent fire



Reforestation



International seminar (Government, Company, NGOs, academics)

# Understandings of Land Use Land Cover Changes in Jakarta Metropolitan Area

under the JSPS Strategic Young Researcher Overseas Visits Program for Accelerating Brain Circulation (2013-2015)

International Network-hub for Future Earth:  
Research for Global Sustainability

## Project coordinator:

Prof. T. Katsumi, GSGES

## Research conductor:

Assist. Prof. N. Tsutsumida, GSGES

Assoc. Prof. I. Saizen, GSGES

Assoc. Prof. S. Hashimoto, GSGES

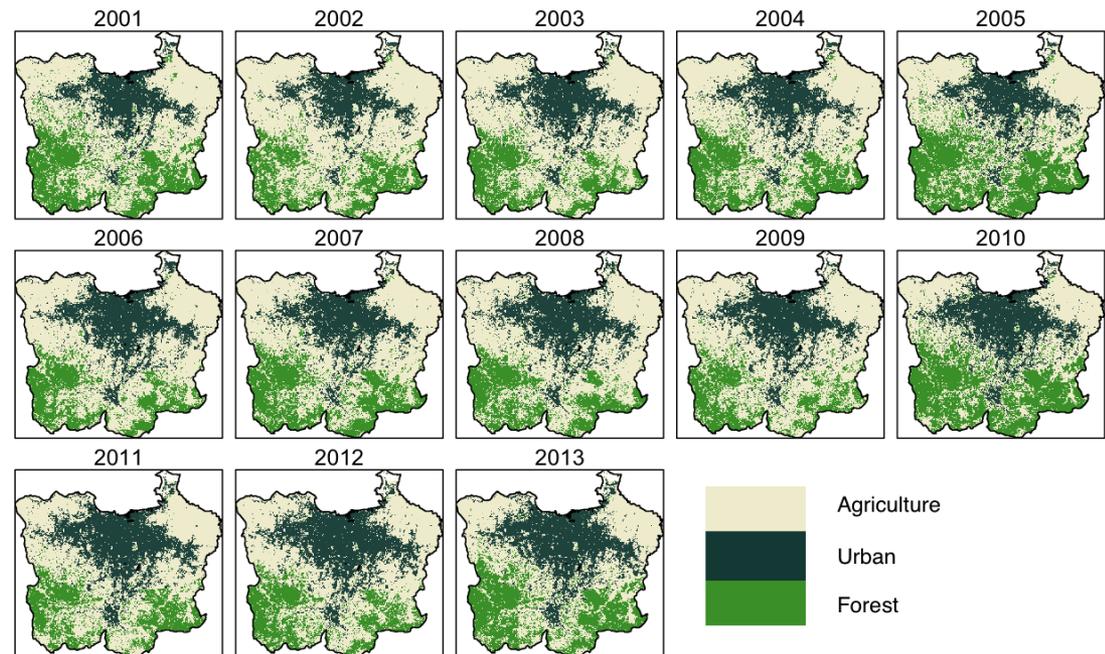
Prof. T. Watanabe, GSGES,

collaborated with Prof. A. Comber, University of Leicester, UK

and Prof. E. Rustiadi, IPB

Urban expansion in Jakarta Metropolitan Area was investigated and mapped annually by using multi-temporal satellite images during 2001–2013.

It revealed that urban areas have been expanding at the pace of approximately  $20\text{km}^2/\text{year}$ .



## Outputs:

Tsutsumida N. et al. (Submitted) Sub-pixel classification of MODIS EVI to map annual changes in impervious surface, Remote Sensing of Environment .

Tsutsumida N. et al. (Submitted) Challenges of spatio-temporal land cover classification and its accuracy assessments, Toward Future Earth: Challenges and Progress of Global Environmental Studies.

Comber AJ. et al. (Submitted) Improving land cover classification using geographically weighted principal component analysis, Remote Sensing of Environment

Tsutsumida N. and Comber A.J. (2015) Measures of spatio-temporal accuracy for time series land cover data, International Journal of Applied Earth Observation and Geoinformation, 41, 46-55.

Tsutsumida N. et al., (2014) A time series analysis of land cover change: random forest models of annual changes in urban land cover, Extended Abstract Proceedings of the GIScience 2014, 446-449.

# Strategic Funds for the Promotion of Science and Technology 2010-2013

## Creation of a Paradigm for the Sustainable Use of Tropical Rainforest with Intensive Forest Management and Advanced Utilization of Forest Resources



Prof. Mamoru Kanzaki  
Graduate School of Agriculture



Funded by Japan Science and Technology Agency

JP: Kyoto Univ. (Graduate School of Agriculture, Research Institute of  
Humanosphere, Center for Southeast Asian Center, Center for Integrated  
Area Studies) & Utsunomiya Univ.

ID: Universitas Gadjah Mada  
Universitas Tanjungpura  
Institut Pertanian Bogor  
Indonesian Institute of Sciences  
Res. Inst. Human Settlement



### Achievement:

- Clarified the high performance of intensive forest management for sustainable timber production.
- Developed several innovative wood processing techniques.
- Found feasible plants with bioactive functions and for biomethanol production.

<http://tofproj.kais.kyoto-u.ac.jp/jst2010/> In Japanese

## A New Paradigm of Tropical Rainforest Management for Sustainable Future



# Reevaluation of Kabuyutan in the Sundanese Traditional Landscape: toward a sustainable landscape management

## Importance to evaluate the Kabuyutan as the model of TEK (Traditional Ecological Knowledge) in West Java

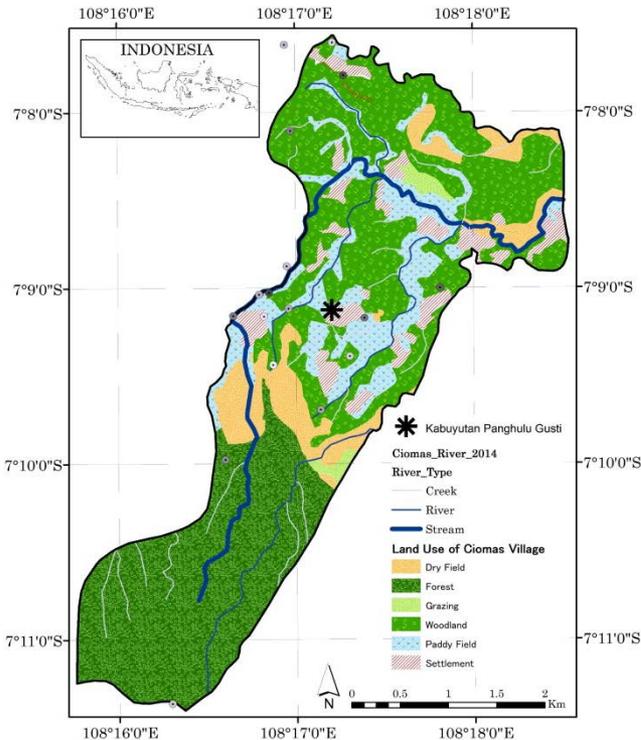
### BACKGROUND OF STUDY:

1. A sacred place has an important roles to provide environmental services .
2. *Kabuyutan* as a sacred place has a unique characteristic both structurally and functionally in the Sundanese's landscape.
3. The role of local people towards sustainability landscape management is important to be considered more, but few studies focused on local people's perception.

### OBJECTIVES OF STUDY:

1. To identify local people's perception regarding *kabuyutan*.
2. To assess the particular aspect in order to improve participation of local people in managing *kabuyutan*.

**METHOD:** Vegetation survey, Interview to villagers, Questionnaire



**PERIOD:** FY2014 – 2016

**RESEARCHERS:** Shozo SHIBATA, Katsue FUKAMACHI, Dahlan Mohammad Zaini (GEGES D2 student) of Laboratory of Landscape Ecology and Planning, GSGES)

**COUNTERPART:** Andi GUNAWAN (IPB)

# Strengthening the Disaster Resilience of Local Communities through Interactive Real-Time Area Studies using SNS and Cloud GIS Methodologies

## Background and Purpose

Indonesian Rural Communities Faced with New Climatic/Natural/Human Disasters



Real Time Collaboration between Local People and Area Studies and Disaster Prevention Sciences

Necessary to tackle

## Interactive Real-Time Area Studies

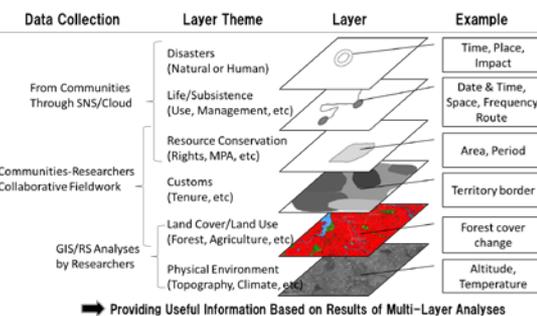
- Smartphones and Social Network Services
- Recording space and time coordinates easily by GPS Smartphone
- Easy sharing of GIS Files and satellite images through Cloud Services

## Collaboration

- Nusa Cendana University (NTT) = Kyoto University

## New Methodology

Smartphone/SNS + Cloud GIS + Science Interpreter



## For Understanding

- 'Chronic' Natural Disasters
- Human Disasters under Socioeconomic Changes

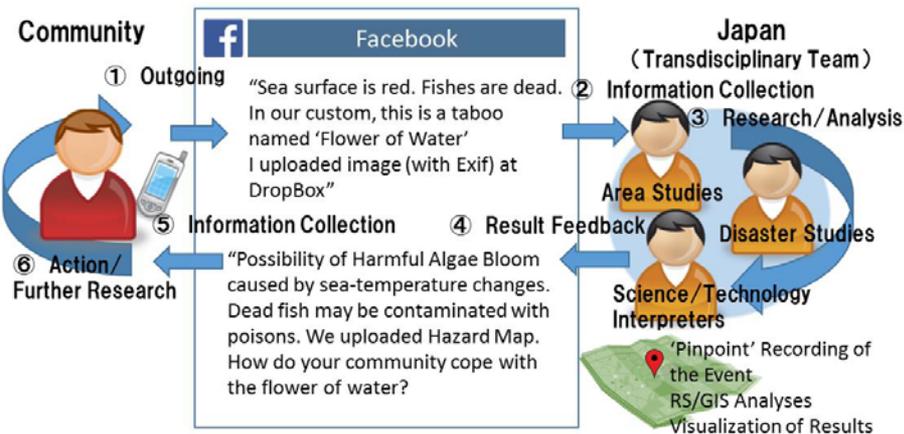
## Expected Outcomes

- Scientific Understanding Indigenous Disaster and Natural Resources Management
- Exploring New Resilience of Local Communities under Climatic and Socioeconomic Changes



**PI: Takuro Furusawa**  
 Graduate School of Asian and African Area Studies, Kyoto University

<http://www.asafas.kyoto-u.ac.jp/furusawa/>



# 基盤研究(S) 熱帯アジア・アフリカにおける生産生態資源管理モデルによる気候変動適応型農業の創出 (2012～2016)

## 目的

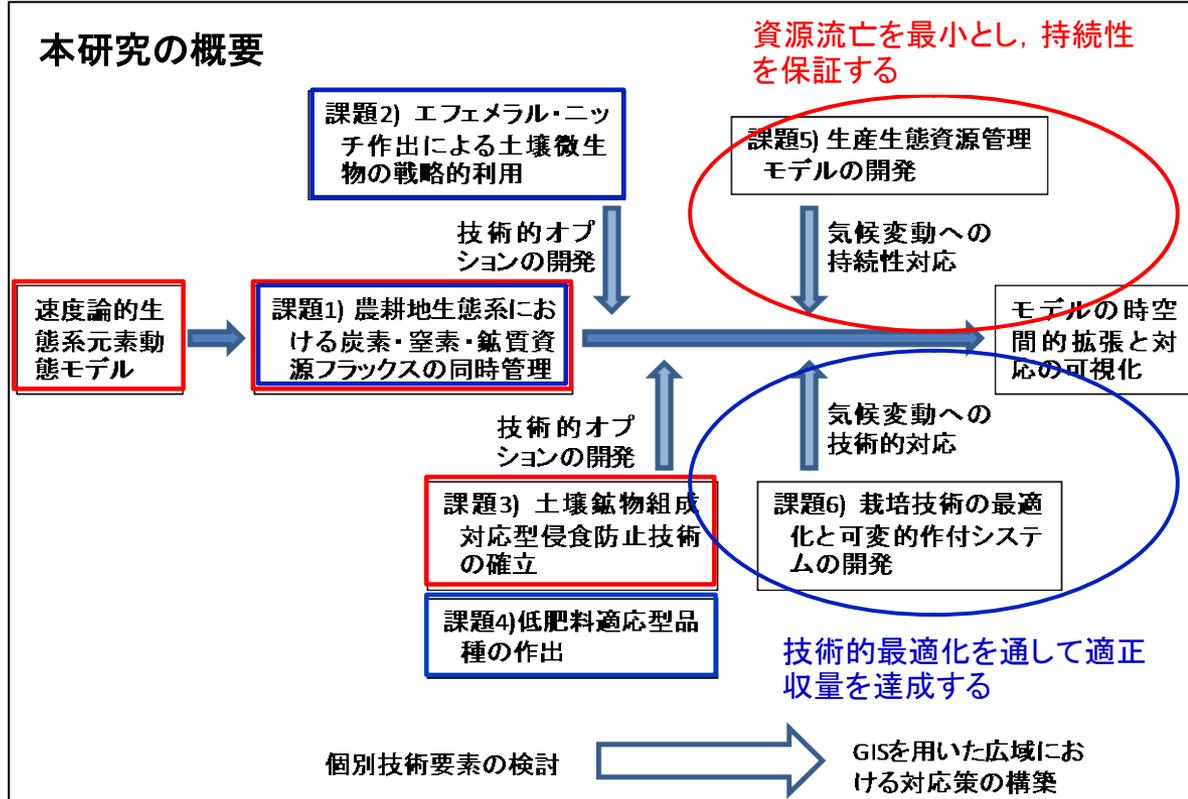
変動気候下において、収量向上を達成するための栽培技術的対応、生産生態環境の持続性維持のための対応をそれぞれ強化することを通して、気候変動適応型農業のモデルを提案する。

## 研究体制

- 舟川晋也  
京都大学・地球環境学堂/農学研究科
- 小崎 隆  
首都大学東京・都市環境科学研究科
- 間藤 徹  
京都大学・農学研究科
- 縄田栄治  
京都大学・農学研究科
- 渡邊哲弘  
京都大学・地球環境学堂/農学研究科

## インドネシアにおける活動

- インドネシアでは、西ジャワ州の畑作地、西カリマンタン州・リアウ州の泥炭地開発地において実施
- インドネシア側カウンターパートは、ボゴール農業大学 Supiandi Sabiham教授
- 本課題に関連し、インドネシアより博士課程学生1名、修士課程学生1名を受入(農学研究科)、インターン研修として修士課程学生1名を派遣(地球環境学堂)、その他数名の学生が博士・修士学位論文研究として取り組む



# Indonesia Field School

## On-site Interdisciplinary Education Using KU Overseas Station

For example in 2013 at Makassar and Jakarta  
Based on  
**Hasanuddin University – Kyoto University  
General Memorandum for Academic Exchange and  
Cooperation**

### Aims

- Education and field experience of KU Graduate students from various departments
- Enhancing transdisciplinary collaboration and international exchange



Kyoto University runs 2 Field Stations (Hasanuddin University and Riau University) in Indonesia

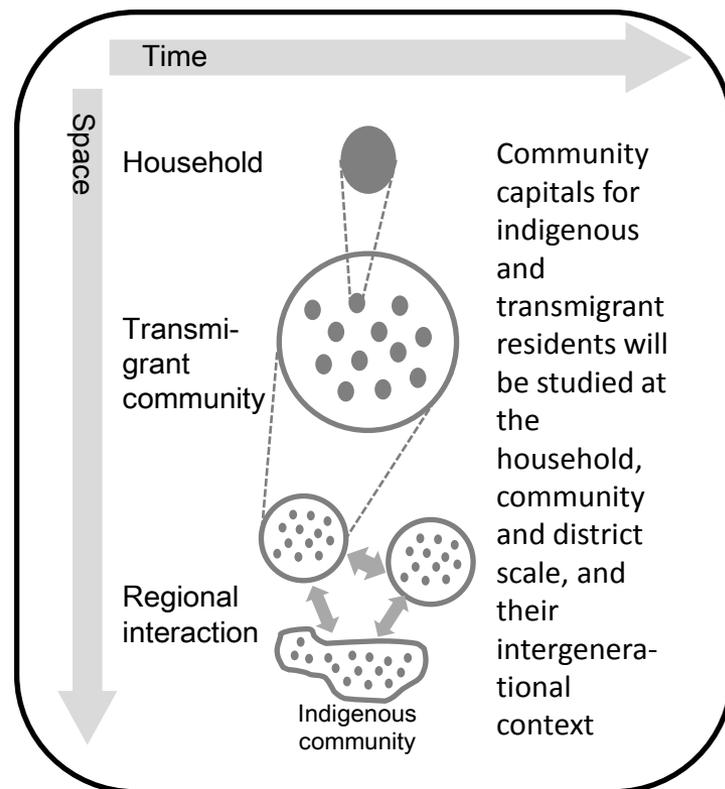
Graduate School of Asian and African Area Studies  
Center for Southeast Asian Studies  
Integrated Area Studies Unit



## 基盤研究(B)海外

### JSPS Kaken B (Overseas): Intergenerational impacts and resilience of transmigrant communities in the outer islands of Indonesia

- 期間 (Period): FY2015-2018
- 主要部局: 地球環境学堂
- 代用者: Assoc. Prof. Jane Singer
- カウンターパート: ボゴール農林大学(IPB) Prof. Ernan Rustiadi, ジャンビ大学 Prof. Junaidi Chiniago
- 内容: This project investigates post-resettlement outcomes for transmigration communities in Sumatra to understand long-term adaptation, community resilience and intergenerational impacts.



### Equatorial Atmosphere Radar (EAR)



The Equatorial Atmosphere Radar (EAR) is a large Doppler radar built for atmospheric observation at the equator in West Sumatra in the Republic of Indonesia. It was completed in March 2001, a collaboration between the RISH and the National Institute of Aeronautics and Space of Indonesia (LAPAN). The equatorial atmosphere over Indonesia is considered to play an important role in global change of the Earth's atmosphere. Many facilities such as a meteor wind radar, an all-sky airglow imager, various kinds of lidars, and a weather radar have been equipped in the EAR site. RISH has conducted a collaborative research program by using the EAR and its related facilities since 2005 to enhance scientific research activity conducted with the EAR and associated facilities, or by using their database.

### New scientific challenges: Equatorial MU Radar (EMU)



Under international collaborations within Indonesia, we propose to develop EMU, the new radar that is 10 times more sensitive than the EAR. Cumulonimbus convection is active in the equatorial atmosphere. It generates various types of atmospheric waves that propagate upward to transport energy and momentum into the upper atmosphere including the ionosphere. Also, different kinds of materials (atmospheric minor constituents) originating at low- and mid-latitude regions and converging into the equatorial region are blown upward through the tropopause; they eventually reach the middle atmosphere and spread to the whole globe. In the upper atmosphere, there are plasma disturbances, and equatorial ionization anomaly (EIA) is generated around the equator. We developed the MU radar in Japan, which is the first application of active phased array antenna to atmospheric radars, and extended it to similar radar systems in overseas bases. Based on this heritage, we will establish much more advanced state-of-the-art radars in the equatorial. We will capture the energy and material flow that occur in all height ranges of the equatorial atmosphere as "Equatorial Fountain" using the Equatorial MU Radar (EMU).

## ■ Division of Earth & Planetary Sciences, Faculty of Science, Kyoto University

## ■ Takahiro TAGAMI, Shigeo YODEN

## ■ Purpose & Summary of the Overseas Bases

In Kyoto University Active Geosphere Investigations of the 21th century COE program (KAGI21), which was promoted by Division of Earth and Planetary Sciences, Graduate School of Science, we had implemented annual summer schools for graduates in Bandung, Indonesia since 2003.

Furthermore, the satellite office was established in Bandung Institute of Technology because there are many research fields of the program in Indonesia.

Although ITB satellite office was downscaled after KAGI21 program was completed in March of 2007, a research program of "Paleoclimate Study based on High Time Resolution Analyses of Stalagmites heading towards Forecast of Water Circulation in Asia", which was born from KAGI21 program, has been developed due to funding program for next generation world-leading researchers (NEXT program), keeping research contacts to Indonesia.

## ■ Alliance Contents with Overseas Cooperation Organization

In KAGI21 program, we had implemented annual summer schools for graduates in Bandung, Indonesia from 2003 to 2007. In addition, we also conducted many field surveys and workshops on the program of "Paleoclimate Study based on High Time Resolution Analyses of Stalagmites heading towards Forecast of Water Circulation in Asia".

## ■ Action Results at the Overseas Bases

### ○ Implementation summer schools for graduates

As a result of KAGI21 program, there are many students graduated our summer schools. We could also acquire educational and research connections, for example some of graduates applied to the graduate school of Kyoto University.

### ○ Research progress: Geological & hydrological study of the limestone cave

We surveyed limestone caves in Indonesia and collected a lot of stalagmites and stalactites. We also performed environmental monitoring around the limestone caves in Indonesia to elucidate the mechanism that meteorological condition are recorded into stalagmites as the chemical compositions.

## ■ WEB

○ Integrated Earth Science Hub, Division of Earth and Planetary Sciences, Graduate School of Science, Kyoto University  
<http://www.eps.sci.kyoto-u.ac.jp/ieshub/index.html>

○ NEXT program: Paleoclimate Study based on High Time Resolution Analyses of Stalagmite  
[http://www.kueps.kyoto-u.ac.jp/~web-tecto/NEXT\\_WEB/index.html](http://www.kueps.kyoto-u.ac.jp/~web-tecto/NEXT_WEB/index.html)

▼ Cave monitoring @ Petruk Cave



▼ Cave monitoring @ Petruk Cave



▼ Cave monitoring @ Petruk Cave



▼ Workshop of paleoclimate study @ ITB



Research project by **Primate Research Institute, KU and Indonesian Institutions (Gadjah Mada Univ. and Bogor Agricultural Univ.)**

**These JSPS Oversea projects have supported and are supporting exchange of students and researchers every year.**

- 1) Comprehensive research on sub-speciation of agile gibbons (2002~2003).
- 2) Genetic diversity and phylogenetic biogeography of small apes (2008~2012).
- 3) Search of History of Host-Parasite relationships between Asian primates and pathogens (2012~2015).
- 4) Molecular ecology of Indonesian primates (20015~2017)



Leader: Hirohisa Hirai

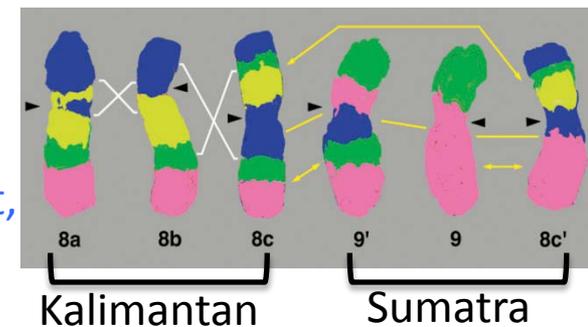
### Small ape project



agile gibbon

siamang

Project 1: We found that agile gibbons of Sumatra and Kalimantan have different karyotypes. At present, they are classified into two different species.



Hirai H et al. (2005) *Chromosome Research* 13: 123-133.

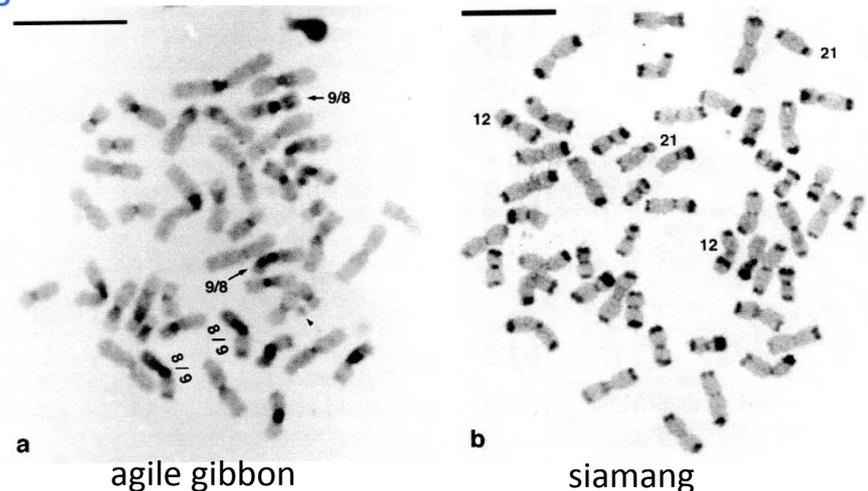
Hirai H et al. (2009), *The Gibbons*. Springer, pp37-49.

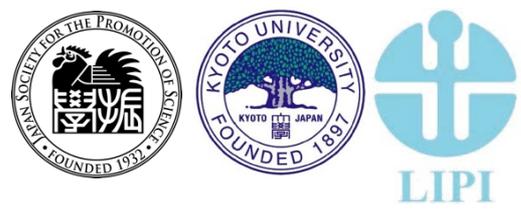
Project 2: We found that the C-bands of agile gibbons and siamangs were shown to be G+C-rich and A+T-rich DNA, respectively.

**A member (Hery Wilayanto, Associate Professor of Gadjah Mada Univ.) acquired Ph.D. diploma from Bogor Agricultural University using this paper.**

Wijayanto H et al. (2005)

*Chromosome Research* 13: 717-724.





# Asian Vertebrate Species Diversity Network Platform with Combining Researchers, Specimens and Information

## Multi-Countries Biodiversity Network by / for Young Researchers

<http://www.museum.kyoto-u.ac.jp/acore/>

*Building New Museum Model from Asia*



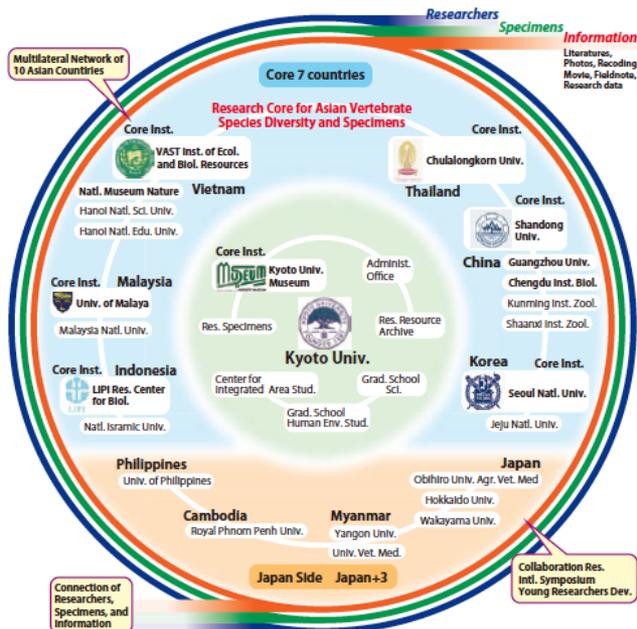
Japan: Kyoto University  
The Kyoto University Museum  
Assoc. Prof. Dr. M. Motokawa

Indonesia: LIPI Center for Biology  
Museum Zoologicum Bogorensis  
Researcher Dr. Hamid Amir

Museum Zoologicum Bogoriense (2014.2)

+ Malaysia, Thailand, Vietnam, Korea, China

## Int'l Symposium by / for Young Researchers



5th AVIS (2014.12, University of Malaya)

## Two-weeks Multi-countries' Training in Kyoto Univ.



Discussion / seminar of 5 countries' young peoples (2014.11)

# KYOTO UNIVERSITY GSGES SHORT-TERM SCHOLARSHIP PROGRAM



The international joint education program  
Graduate School of Global Environmental Studies  
Dean Prof. Shigeo FUJII

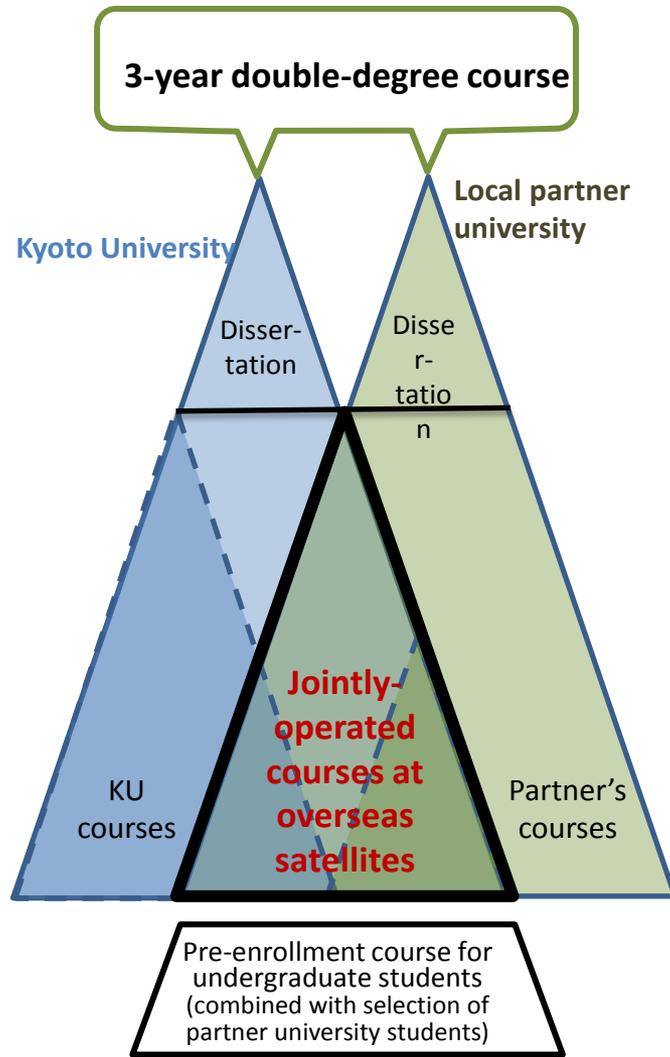
- We offer **six month research experience in Kyoto University's graduate school** to ITB and IPB master and doctoral students. Day-to-day supervising and 24 hours 7days free access to lab facilities to boost own research.
- We accept total of **22 students** from master and doctoral courses of **ITB** and **IPB** since 2011. Some students stepped up into our doctoral program.
- <http://sea-sh.cseas.kyoto-u.ac.jp/en/international-joint-education/>



# Environmental Innovator Program: Cultivating Environmental Leaders across ASEAN Region

**Double Degree Program: master's degrees from KU and partner universities**

Shigeo Fujii (GEGES, Kyoto Univ)



- **Partner Universities:** Bogor Agricultural University as a principle partner & Bandung Institute of Technology as a sub-principal partner (and other universities in Thailand and Vietnam)
- **Satellite Offices in ASEAN Region for Collaborative Education and Research of Environmental Sciences**
  - Cross Appointment of faculty members
  - Language education (Indonesian Classes and Japanese Classes)
  - Deep understandings of local environmental problems and possible solutions through fieldworks
  - Consortium with global Japanese firms and international organizations

# AUN-KU Student Mobility Program toward Human Security Development

