J AXA and its Capacity Building Activities for the Asia-Pacific Region

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Space Applications and Promotion Center (SAPC)  
Japan Aerospace Exploration Agency (J AXA)

http://www.jaxa.jp
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JAXA: Japan's Sole Space Agency

- **On October 1, 2003, ISAS, NAL and NASDA were merged into one independent administrative institution: the Japan Aerospace Exploration Agency (JAXA.)**

- **ISAS** (The Institute of Space and Astronautical Science) Devoted itself to space and planetary research;

- **NAL** (The National Aerospace Laboratory of Japan) Focused on research and development of next-generation aviation;

- **NASDA** (The National Space Development Agency of Japan) Responsible for development of large-size launch vehicles represented by H-IIA, satellites and a part of the International Space Station initiated by the United States.
On November 15, 2004, Dr. Tachikawa was officially appointed as the President of the JAXA by the Minister of Education, Culture, Sports, Science and Technology (MEXT) of Japan.
JAXA Field Centers & Offices

1. HQ/Chofu Aerospace Center
2. Tokyo Office
3. Tsukuba Space Center
4. Sagamihara Campus
5. Tanegashima Space Center
6. Uchinoura Space Center
7. Earth Observation Center
8. Kakuda Space Center
9. Noshiro Testing Center
10. Usuda Deep Space Center
15. Nagoya Office

Overseas Offices
1. Washington D.C. Office
2. Houston Office
3. Kennedy Space Center Liaison Office
4. Paris Office
5. Bangkok Office
★JFY2008 Budget: US$1.8billion
★JFY2009 No. of Personnel: 1,550
JAXA’s Tanegashima Space Center since 1969
JAXA’s Principal Activities

★ Launch Vehicles & Space Transportation Systems
★ International Space Station & Human Space Exploration
★ Satellites & Spacecraft
★ Space Utilization with Satellites
★ Space Science Research
★ Space & Aeronautic Engineering Research
★ Aviation Program
Role of SAPC-JAXA

1. The Satellite Applications and Promotion Center (SAPC)’s most important role is to use the data obtained with JAXA’s satellite programs to the full extent.

2. As one of Japan’s public organizations, JAXA always endeavor to share its data and technologies with both domestic and international communities.

Tsukuba Space Center where SAPC is located
At the UNWSSD (World Summit on Sustainable Development) which was held in September 2002, the Government of Japan proposed the following 3 then on-going activities and they were registered as part of Japan’s Type-II projects:

1. **Capacity Building Activities in cooperation with the Asian Institute of Technology (AIT);**
2. **Pilot Project using Satellite Data with GISTDA Thailand; and**
3. **Pilot Project using Satellite Data with LAPAN Indonesia.**
Objectives of JAXA’s Capacity Building Activities

1. To provide necessary technical know-how to RS & GIS users in the Asia-Pacific region as a contribution by the Government of Japan to the capacity building activities recognized by UNWSSD, UNWCDR, EO Summit, GEOSS and CEOS;

2. To use the Japanese satellite data archived for last 30 years for sustainable development, planning and monitoring purposes in the region;

3. To develop in-house capacities of prospective users in the region by working on project-based training programs;

4. To identify future space technology needs in the region for better services of the forthcoming Japanese satellite programs.
JAXA’s Present Capacity Building Activities

(1) **Mini-Projects** in cooperation with GIC-AIT;

(2) **Specialized Training in Japan for the Mini-Projects’ High-Achievers and GIC-AIT Lecturers**;

(3) **ALOS Applications & Verifications Project with LAPAN**;

(4) **Organizing Asia Water Cycle Initiative (AWCI)**; and

(5) **Sentinel Asia Project – System Operation Training** –
Structure of JAXA’s Present Capacity Building Activities

JAXA-initiated projects, such as Sentinel Asia, SAFE (Space Applications for Space Environment), etc.

- Mini-Projects in cooperation with GIC-AIT
- Specialized Training in Japan for the Mini-Projects’ High Achievers and Lectures
- ALOS Applications & Verifications Project with Indonesian LAPAN
- Organizing Asia Water Cycle Initiative (AWCI) Meetings
- Sentinel Asia Project - System Operation Training -

The following capacity building activities are supporting the above projects using satellite data.
JAXA’s Present Capacity Building Activities for the Asia-Pacific Region

(1) Mini-Projects in cooperation with GIC-AIT
15-Year History of JAXA’s Capacity Building Activities in cooperation with GIC-AIT

1. **For last 15 years starting from April 1995,** JAXA has been entrusting a responsibility to the Geo-Informatics Center, Asian Institute of Technology (GIC-AIT) in Bangkok, Thailand, to carry out various training programs mainly focusing on RS and GIS development of the Asia-Pacific nations.

2. **The contents of the training programs have sometimes changed by the needs of the times,** and now we concentrate on the Mini-Projects which are one of the problem-solving type of training programs.
Outline of J AXA’s Capacity Building Activities in cooperation with GIC-AIT

1. **Number of Trainees (JFY1995 ~ 2009):**

   About 1,300 from 27 countries of the Asia-Pacific region

2. **Staff of GIC-AIT:**

   There are usually 12 to 15 Asian personnel including lecturers and administrative staff
GIC-AIT Staff for Mini-Projects
Scenes from Past Mini-Projects
New Selection System (=Accepting Application System) started with JFY2007 Mini-Projects

At the 3rd Sentinel Asia JPTM (Joint Project Team Meeting) held in Singapore in March 2007, JAXA announced, from the JFY2007, it would start selecting about 10 Mini-Projects focusing on Disaster and environmental Management through the offer for public participation due to the following 2 reasons:

1. To open the door of the Mini-Projects to all the Sentinel Asia JPT member-organizations who are interested in developing their capacities in RS/GIS mainly for both disaster and environmental management.

2. To facilitate Sentinel Asia Project, which is a disaster information sharing support system, by using the Mini-Projects as a means of supporting it.
1. During May and July 2009, JAXA and GIC-AIT received 35 proposals from 68 organizations of 15 Asian countries through their websites. (Case of JFY2008: 33 proposals from 62 organizations of 14 Asian countries.)

2. In August 2009, JAXA finally selected 12 proposals as its 2009 Mini-Projects based on technical evaluation made by GIC-AIT.

3. The 1st and 2nd phases of the JFY2009 Mini-Projects are carried out at GIC-AIT as below: (1st Phase: 3 weeks from Sep. to Oct. 2009) (2nd Phase: 4 weeks during February 2010)
2009 Mini-Projects Selected (Theme No.1-6) (19 Participants from 17 Organizations of 11 Countries)

1. Bangladesh: Cyclone (1 participant)
   (1) Local Govt. Engineering Department

2. Cambodia: Landuse and Landcover Change (1 participant)
   (1) General Department of Cadastre and Geography,
       Ministry of Land Management, Urban Planning and Construction

3. Indonesia: Landslides (1 participant)
   (1) Indonesia Agricultural Land Resources Research and Development (ICALRD)

4. Kyrgyz Republic: Earthquake (1 participant)
   (1) Central Asian Institute of Applied Geosciences

5. LaoPDR: Floods (2 participants)
   (1) Water Resources and Environment Research Institute,
       Water Resources and Environment Agency (WREA)
   (2) Department of Irrigation, Ministry of Agriculture and Forest

6. Mongolia: Drought (1 participant)
   (1) National Remote Sensing Center,
       State Committee for Nature and Environmental Control
2009 Mini-Projects Selected (Theme No.7-12)
(19 Participants from 17 Organizations of 11 Countries)

7. Nepal: Floods (2 participants)
   (1) Ministry of Land Reform and Management
   (2) Survey Department

8. Pakistan: Wild Life Conservation (1 participant)
   (1) World Wild Fund (WWF) for Nature – Pakistan

9. Sri Lanka: Floods (2 participants)
   (1) Arthur C. Clark Institute for Modern Technologies (ACCIMT)
   (2) Survey Department

10. Thailand: Soil Erosion (2 participants)
    (1) Dept. of National Park Wildlife & Plant Conservation Thailand

11. Thailand: Coastal Conservation (2 participants)
    (1) Survey Engineering Department
    (2) Southeast Asian Fisheries Development

12. Vietnam: Making Vulnerability Index Map (2 participants)
    (1) Institute of Oceanography
    (2) Ministry of Agriculture & Rural Development
## Number of Mini-Projects by Themes (2005-2008)

<table>
<thead>
<tr>
<th>Themes (10)</th>
<th>Flood</th>
<th>Landslide</th>
<th>Drought/Land Degradation</th>
<th>Mapping</th>
<th>Coastal Zone Management/Sea Level Rise</th>
<th>Forest Fire</th>
<th>GIS Database/Web-GIS</th>
<th>Tsunami</th>
<th>Volcano</th>
<th>Earthquake</th>
<th>Total by Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>JFY 2008</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<tr>
<td>JFY 2007</td>
<td>5</td>
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<td></td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
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<td>1</td>
<td>1</td>
<td>10</td>
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<tr>
<td>JFY 2006</td>
<td>5</td>
<td>3</td>
<td>1</td>
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<td></td>
<td>9</td>
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<tr>
<td>JFY 2005</td>
<td>4</td>
<td>2</td>
<td></td>
<td>1</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>9</td>
</tr>
<tr>
<td>Total by Theme</td>
<td>18</td>
<td>6</td>
<td>3</td>
<td>3</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>39</td>
</tr>
</tbody>
</table>
J FY2008 Mini-Project Participants

With a JAXA researcher as one of the trainers for the JFY2008 Mini-Projects
Oceanic Mini-Projects Newly Started at Indonesian Udayana University from JFY2009

JAXA newly started to entrust a responsibility to carry out the two (2) Oceanic Mini-Projects to the Center for Remote Sensing & Ocean Sciences (CReSOS) - Udayana University located on the Indonesian island of Bali from the JFY2009. The following two organizations are participating in both of the 2009 Oceanic Mini-Projects as below:

**Participating Agencies:**

1. Indonesian National Institute of Aeronautics and Space (LAPAN)
2. Ministry for Marine Affairs and Fisheries (DKP)

**Mini-Project Themes:**

1. Study of Coral Reef and Mangrove Distribution from Satellite Data
2. Study of Climate Change Monitoring using Satellite Data and Data Archive System in Indonesia

External Appearance of Udayana University, Bali Island, Indonesia

(c) Udayana University
JAXA’s Present
Capacity Building Activities
for the Asia-Pacific Region

(2) Specialized Training in Japan
for the Mini-Projects’ High
Achievers and Lecturers
Specialized Training in Japan for Mini-Projects’ High Achievers & Lecturers

From JFY2008, JAXA started to invite once a year some of the highest achievers and lecturers of the Mini-Projects to Japan in order to let them have another training opportunity in their respective fields in cooperation with some specialized organizations located in Japan.
Specialized Training in Japan for Mini-Projects’ High Achievers & GIC-AIT Lecturers

6 Cooperation Organizations for the 12 Invitees of 2008 & 2009 in Total:

(1) University of Tokyo (UT)

(2) Kyoto University

(3) Keio University

(4) Hokkaido University

(5) United Nations University

(6) International Centre for Water Hazard and Risk Management (ICCHARM) under the auspices of UNESCO operated by an independent administrative institution so-called Public Works Research Institute (PWRI) of Japan
JAXA’s Present Capacity Building Activities for the Asia-Pacific Region

(3) ALOS Applications & Verifications Project with Indonesian LAPAN
17 Indonesian Organizations Participating in ALOS Applications & Verifications Project started in 2009

| JAXA’s Counterpart:                        |
| National Institute of Aeronautics and Space (LAPAN) |
| of the Republic of Indonesia               |

| Participating Organizations:               |
| 17 Participating Organizations:           |
| (10 Governmental Organizations & 7 Universities) |

<table>
<thead>
<tr>
<th>Number</th>
<th>Organization Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Agency for Technology Assessment and Implementations (BPPT)</td>
</tr>
<tr>
<td>2</td>
<td>National Coordinating Agency for Survey and Mapping (BAKOSURTANAL)</td>
</tr>
<tr>
<td>3</td>
<td>State Ministry for the Environment (KLH)</td>
</tr>
<tr>
<td>4</td>
<td>Ministry for Marine Affairs and Fisheries (DKP)</td>
</tr>
<tr>
<td>5</td>
<td>Ministry of Energy and Mineral Resources (DESDM)</td>
</tr>
<tr>
<td>6</td>
<td>Ministry of Forestry (DEPHUT)</td>
</tr>
<tr>
<td>7</td>
<td>Ministry of Agriculture (DEPTAN)</td>
</tr>
<tr>
<td>8</td>
<td>Ministry of Public Works (DEP. PU)</td>
</tr>
<tr>
<td>9</td>
<td>Ministry of Public Housings (MENPERA)</td>
</tr>
<tr>
<td>10</td>
<td>Indonesian Maritime Security Coordinating Board (BAKORKAMLA)</td>
</tr>
<tr>
<td>11</td>
<td>Bogor Agricultural University (IPB)</td>
</tr>
<tr>
<td>12</td>
<td>Bandung Institute of Technology (ITB)</td>
</tr>
<tr>
<td>13</td>
<td>Syiah Kuala University (UNSYIJA)</td>
</tr>
<tr>
<td>14</td>
<td>Indonesia University (UI)</td>
</tr>
<tr>
<td>15</td>
<td>Diponegoro University (UNDIP)</td>
</tr>
<tr>
<td>16</td>
<td>Gadjah Mada University (UGM)</td>
</tr>
<tr>
<td>17</td>
<td>CReSOS – Udayana University</td>
</tr>
</tbody>
</table>
In October 2009, JAXA and LAPAN started the new project called the “ALOS Applications & Verifications Project” after the completion of the ALOS Pilot Project in March 2009.

Some Scenes from the Kick-Off Meeting held on 14th October 2009 at LAPAN
ALOS Applications & Verifications Project with Indonesian LAPAN

JAXA

RESTEC

LAPAN

Support

Cooperation Framework
Letter, Agreement, Contract.....

October 2009 – March 2012

1st WG Theme: Change Detection of Vegetation Cover (for Forestry, Plantation/Palm Oil, Paddy Fields, Land Rehabilitation and REDD)

2nd WG Theme: Change Detection of Coastal Areas and Small Islands

3rd WG Theme: Monitoring of Volcanoes and Earthquake

4th WG Theme: Production and Updating of Maps
# ALOS Applications & Verifications Project

## 1ST WG’s Chair & Participating Organizations

| Theme: | 1ST WG Chair Organization: Bandung Institute of Technology (ITB)  
(15 Participating Organizations including Chair Organization) |
|--------|------------------------------------------------------------------|
| Change Detection of Vegetation Cover  
(for Forestry, Plantation/Palm Oil, Paddy Fields, Land Rehabilitation and REDD*) | Implementing Organizations (7): |
|        | 1. Ministry of Forestry (DEPHUT)                                  |
|        | 2. Ministry of Agriculture (DEPTAN)                              |
|        | 3. State Ministry for the Environment (KLH)                      |
|        | 4. Ministry of Public Works (DEP. PU)                            |
|        | 5. National Coordinating Agency for Survey and Mapping (BAKOSURTANAL) |
|        | 6. CReSOS – Udayana University                                   |
|        | 7. Indonesia University (UI)                                     |
|        | Technical Supporters (8): |
|        | 1. Agency for Technology Assessment and Implementations (BPPT)   |
|        | 2. National Coordinating Agency for Survey and Mapping (BAKOSURTANAL) |
|        | 3. Bogor Agricultural University (IPB)                           |
|        | 4. Syiah Kuala University (UNSYIAH)                              |
|        | 5. Bandung Institute of Technology (ITB)                         |
|        | 6. Gadjah Mada University (UGM)                                  |
|        | 7. Diponegoro University (UNDIP)                                 |
|        | 8. LAPAN                                                          |

*REDD: Reduced Emissions from Deforestation and forest Degradation*
ALOS Applications & Verifications Project
- 2ND WG’s Chair & Participating Organizations -

<table>
<thead>
<tr>
<th>Theme: Change Detection of Coastal Areas and Small Islands</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>2ND WG Chair Organization:</strong> National Coordinating Agency for Survey and Mapping (BAKOSURTANAL) (15 Participating Organizations including Chair Organization)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Implementing Organizations (7):</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. State Ministry of the Environment (KLH)</td>
</tr>
<tr>
<td>2. Ministry for Maritime Affairs and Fisheries (DKP) / Research Agency for Maritime and Fisheries (BRKP)</td>
</tr>
<tr>
<td>3. Indonesian Maritime Security Coordinating Board (BAKORKAMLA)</td>
</tr>
<tr>
<td>4. Ministry of Public Works (DEP. PU)</td>
</tr>
<tr>
<td>5. Ministry of Energy and Mineral Resources (DESDM)</td>
</tr>
<tr>
<td>6. Ministry of Agriculture (DEPTAN)</td>
</tr>
<tr>
<td>7. National Coordinating Agency for Survey and Mapping (BAKOSURTANAL)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Technical Supporters (8):</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Agency for Technology Assessment and Implementations (BPPT)</td>
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<td>5. Syiah Kuala University (UNSYIAH)</td>
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<td>6. Bandung Institute of Technology (ITB)</td>
</tr>
<tr>
<td>7. Gadjah Mada University (UGM)</td>
</tr>
<tr>
<td>8. LAPAN</td>
</tr>
</tbody>
</table>
**Theme:**

| **3RD WG Chair Organization:**  
| Ministry of Energy and Mineral Resources (DESDM)  
| (6 Participating Organizations including Chair Organization) |

**Monitoring of Volcanoes and Earthquake**

| **Implementing Organizations (1)**  
| 1. Ministry of Energy and Mineral Resources (DESDM) |

| **Technical Supporters (5)**  
| 1. Agency for Technology Assessment and Implementations (BPPT)  
| 2. National Coordinating Agency for Survey and Mapping (BAKOSURTANAL)  
| 3. Bandung Institute of Technology (ITB)  
| 4. Gadjah Mada University (UGM)  
| 5. LAPAN |
### ALOS Applications & Verifications Project
- **4TH WG’s Chair & Participating Organizations** -

<table>
<thead>
<tr>
<th>Theme:</th>
<th>3RD WG Chair Organization: National Coordinating Agency for Survey and Mapping (BAKOSURTANAL) (9 Participating Organizations including Chair Organization)</th>
</tr>
</thead>
</table>
| Production and Updating of Maps | **Implementing Organizations (4):**  
1. Ministry of Forestry (DEPHUT)  
2. Ministry of Energy and Mineral Resources (DESDM)  
3. National Coordinating Agency for Survey and Mapping (BAKOSURTANAL)  
4. Ministry of Public Housings (MENPERA)  

**Technical Supporters (5)**  
1. National Coordinating Agency for Survey and Mapping (BAKOSURTANAL)  
2. Bandung Institute of Technology (ITB)  
3. Indonesia University (UI)  
4. Gadjah Mada University (UGM)  
5. LAPAN |
JAXA’s Present Capacity Building Activities for the Asia-Pacific Region

(4) Organizing Asia Water Cycle Initiative (AWCI) Meetings
AWCI (Asian Water Cycle Initiative) in cooperation with GEO Secretariat, Japanese MEXT, UT, UNU, APN to contribute to GEOSS

- Water is qualified as one of the 9 public social benefit fields of GEOSS.
- AWCI is concentrating on the following 2 tasks out of the GEOSS’ 5 tasks relating to water:
  1. Understanding of water cycle and water management.
  2. Mitigation of wind and flood damages which should be urgently worked out by utilizing earth observations.

<Past Symposia & Meeting>
*1st Asian Water Cycle Symposium: Nov.2005 in Tokyo, Japan
*2nd Asian Water Cycle Symposium: Jan.2007 in Tokyo, Japan
*3rd Asian Water Cycle Symposium: Dec.2007 in Ohita Prefecture, Japan
*4th AWCI-ICG (International Coordination Group) Meeting: Feb.2009 in Kyoto, Japan

<Future Plan of Meeting & Capacity Building Activity>
AWCI 5th ICG-Mtg. will be held at the University of Tokyo (UT) in Dec.2009, and a training workshop on AQUA/AMSR-E, ALOS and Application of Drought Monitoring by RS Products will be organized at the same time.
AWCI in cooperation with GEO Secretariat, Japanese MEXT, UT, UNU, APN to contribute to GEOSS

Collective Photo of the 3rd AWCI Symposium held in Ohita Pref., Japan, in Dec. 2007
JAXA’s Present Capacity Building Activities for the Asia-Pacific Region

(5) Sentinel Asia Project – System Operation Training –
Asia-Pacific Regional Space Agency Forum

[History] Established in 1993 after the Asia-Pacific International Space Year Conference (APIC) held in 1992

[Organizers] MEXT (Ministry of Education), JAXA and co-host organization
Past co-host organizers: National government or related entities of Mongolia, Malaysia, Korea, Thailand, Australia, Indonesia, India and Vietnam

[Last Session] APRSAF-16, which was held on the Indonesian island of Bali, in September 2009, was co-hosted by Indonesian LAPAN in addition to Japanese MEXT and JAXA

Sentinel Asia
establishing
Disaster Management
Support System

Working Groups

Earth Observation
Communication Satellite Applications
ISS
Space Education & Awareness

http://www.aprsaf.org
Framework of Sentinel Asia

Voluntary and best-efforts-basis initiative by participating organizations

**Sentinel Asia**

Joint Project Team (JPT)

Joint Project Team consists of 54 organizations of 22 countries and 9 international organizations as of November 2009.

**Space Community**

- APRSAF*
  - Contents
  - Satellite Image
  - Promotion of Utilization
  - Capacity Building

**Digital Earth / Web-GIS Community**

- Digital Asia
  - Information Sharing Platform
  - Web-GIS
  - Data / Meta Data Management

**International Community**

- UNESCAP, UNOOSA, ASEAN, AIT, etc.
  - International Cooperation

**Disaster Reduction Community**

- ADRC**
  - Contents
  - Disaster Information
  - Utilization (User)

* Asian-Pacific Regional Space Agency Forum

** Asian Disaster Reduction Center

** Asian Disaster Reduction Center

Joint Project Team consists of 54 organizations of 22 countries and 9 international organizations as of November 2009.
Between JFY2007 and 2008, JAXA organized a system operation training for 4 times in Bangkok for accelerating the Sentinel Asia Project by inviting 10 to 20 participants each time from the member-organizations of the project as its trainees.
Sentinel Asia Website

http://dmss.tksc.jaxa.jp/sentinel/

Number of Sentinel Asia Joint Project Team (JPT) members as of November 2009:

- **54 organizations from 22 countries**
- **and 9 international organizations**
Thank you very much for your interest &
Domo Arigato Gozaimashita