



# Peru-Japan Workshop on Peruvian Space Utilization

**Day 2**  
**Outline of Japanese semi-final report**

January 26/27, 2012

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**USEF**

## **1 Japanese Research Mission (Nov.2011)**

### **(1) Objectives and Plan**

### **(2) Organizations we visited**

## **2 Needs by Category from the results of Interviews**

## **3 Needs, current status and operational issues**

## **4 Summary**

We have been conducting the following activities under METI' s supervision.

## Objectives

- ◆ Find the area of our contribution to Peruvian space related activity
- ◆ Gather information about requirements and utilization plans for earth observation satellite with clarifying the needs
- ◆ Discuss future cooperation in satellite data utilization and satellite system development

## Plan

- ◆ Visited and met the persons who are related to the space activity (government, university and private sector).
  - #1 Stay: 21<sup>st</sup> Nov. to 2<sup>nd</sup> Dec. 2011 (Lima) (conducted)
  - #2 Stay: 23<sup>rd</sup> Jan. to 27<sup>th</sup> Jan. 2012 (Lima)
- ◆ Possible area of discussion
  - 1) Space related national strategy
  - 2) Earth observation satellite data utilization
  - 3) Peruvian manufacturers related to space (Space system / Data application)
  - 4) Capacity building program in space technology in university
  - 5) Collaboration and cooperation with Japan in space utilized system development
- ◆ Hold the workshop related with the space utilization system development during the second stay in Lima

We visited at 29 organizations and we thank you all the cooperation you made.

◆ **17** Peruvian governmental agencies, **6** Universities, **6** Others,

	Monday 21-Nov	Tuesday 22-Nov	Wednesday 23-Nov	Thursday 24-Nov	Friday 25-Nov	Monday 28-Nov	Tuesday 29-Nov	Wednesday 30-Nov	Thursday 1-Dec	Friday 2-Dec
08:00	NEC Office									
9:00				9.Ministerio de Agricultura		a. Universidad Nacional Agraria La Molina	d. FAP	g. Universidad Nacional Mayor de San Marcos		
10:00	1. Japan Embassy Mr. Imai	4.Ministerio de Transportes y Comunicaciones	7.CONIDA		13.Ministry of Production				K . Sociedad Nacional Minería, Petróleo y Energía	n. General Wrap Up Meeting
11:00	2.Peruvian National Congress									
12:00				10.Ministerio de Energía y Minas		b. Universidad Nacional del Callao	e. Ministerio del Interior	h. INGEMMET		
13:00										
14:00		5.National Police of Perú							I. Lunch with Japan Embassy	
15:00			8.IGN (Instituto Geográfico Nacional)	11,JETRO		c.Pontificia Universidad Católica del Perú	f. Ministerio del Ambiente	i. Universidad Nacional de Ingeniería		ñ. Municipalidad Metropolitana de Lima
16:00	3.Instituto Geofísico del Peru - IGP	6.JICA								m. Ministerio de Vivienda, Construcción y Saneamiento
17:00				12.Universidad Tecnológica del Perú	14. Gobierno Regional del Callao			J. MEF		o. Autoridad Nacional del Agua (ANA)
18:00										
19:00										

In the first survey, we have sent “Questionnaire” to each agency and expecting answers.



Questionario de Necesidades Peruanas para el Satélite de Observación Terrestre

Por favor completar los siguientes ítems, los cuales son relevantes para su trabajo e intereses. Sus respuestas serán usadas para nuestro entendimiento básico de su circunstancia y punto de partida para nuestra discusión cuando lo visitemos.

### Contenido del Cuestionario

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4. Fortalecimiento de las capacidades para el uso de datos de observación terrestre.....	5
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5. Proyectos de Desarrollo del Sistema Espacial .....	5
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7. Propósito para establecer la infraestructura del sistema espacial .....	6
8. Cooperación con ún país extranjero en el desarrollo espacial.....	7
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10. Tenencia del sistema satelital peruano de observación terrestre .....	7
11. ¿Cuál es la imagen que se necesitará (promoción) relacionado al enfoque del recurso del desarrollo humano?.....	8
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Sergio Tejada (Vice President)

Ronald Woodman :CEO

Juan F.Enriquez Pasco Barriga :CEO



Peruvian National Congress



IGP



CONIDA

### Summary of the first survey

- Various needs were identified for each organization by the survey, which focused on the following 3 points:
  - ① data utilization needs in earth observation related to issues and solutions for economic and social development
  - ② current satellite data applications
  - ③ future space policy
  
- Needs of the organizations were classified into the 6 categories:
  - ① environmental monitoring
  - ② agriculture
  - ③ resource exploration/development
  - ④ disaster prevention
  - ⑤ meteorology/ocean
  - ⑥ others (urban planning)

### ① Environmental monitoring

Needs	Suitable sensor
— Preservation and monitoring of the vast Amazon rainforests	Frequent observation by all-weather SAR (international constellation of satellites)
— Monitoring of illegal logging	Detection and Monitoring by high resolution optical sensor/hyperspectral sensor (international constellation of satellites)
— Detection/monitoring of illicit drug cultivation	Detection and Monitoring by high resolution optical sensor/hyperspectral sensor
— Monitoring of air pollution	Detection and Monitoring by high resolution optical sensor/hyperspectral sensor
— Detection/monitoring of water pollution from mining, etc.	Detection and Monitoring by high resolution optical sensor/hyperspectral sensor

### ② Agriculture

Needs	Suitable sensor
– Characterization of the Cuenca hydrosphere	High spatial resolution optical/SAR sensors, hyperspectral sensor
– Understanding of crop growth (high land agriculture)	High spatial resolution optical/SAR sensors, hyperspectral sensor
– Understanding of farmland use	High spatial resolution optical/SAR sensors

### ③ Resource exploration/development (oil/ minerals)

Needs	Suitable sensor
Resource exploration (geological map, mineral map, geological structure map for oil prospectives)	Hyperspectral/multispectral sensors,/SAR sensor
Resource development (environmental pollution associated with development)	Hyperspectral/multispectral sensors,/SAR sensor, high spatial resolution optical/SAR sensors,
Detection/monitoring of water pollution from mining, etc.	High spatial resolution optical/hyperspectral sensors

### ④ Disaster prevention

Needs	Suitable sensor
– Understanding of post-seismic damage extent(landslide, building destruction)	Frequent observation by all-weather SAR/optical sensors
– Monitoring of volcanic eruption (lava/pyroclastic flow monitoring)	High spatial resolution optical/SAR sensors (international constellation of satellites)
– Monitoring of long-term surface deformation (abnormal ground surface change)	Frequent observation by all-weather SAR sensor/thermal & short wave infrared Sensors (international constellation of satellites)
– Integration of location data into GIS	High resolution SAR sensor (SAR interferometry)
	High resolution optical & SAR sensors

### ⑤ Meteorology/Ocean

Needs	Suitable sensor
<ul style="list-style-type: none"><li>– Detection of abnormal sea temperature rise/turbidity</li><li>– Monitoring of vessels engaged in illegal fishing (foreign vessels?)</li><li>– Fish detection</li></ul>	<p>Meteorological/water surface temperature sensor with very wide coverage (El Niño and La Niña)</p> <p>High spatial resolution optical/SAR sensors</p> <p>Mid-resolution thermal infrared sensor (difficult?)</p>

### ⑥ Others

Needs	Suitable sensor
<ul style="list-style-type: none"><li>– Urban planning and infrastructure management(integration of location data such as roads, transportation and houses into GIS)</li><li>– Map preparation</li></ul>	<p>High spatial resolution spaceborne optical/SAR sensors</p> <p>High spatial resolution optical/SAR sensors</p>



## **(1) Utilization of high resolution satellite system**

### **① needs and current status**

Strong needs for high resolution optical/SAR data identified by the survey, but not enough utilization satisfying the needs due to economic issues/technological matters.

High spatial resolution optical/SAR data are expensive, which limits the utilization.

### **② operational issues**

How funding can be acquired for high spatial resolution optical/SAR system to solve the above?

In case of so many number of data purchase, it is one of the options to hold own satellite to save purchasing costs.

## **(2) Own satellite**

### **① needs and current status**

For disaster management, having an own satellite can establish a rapid response observation system and historical database contribute to the security and safety of the people?

### **② operational issues**

Owning a domestic satellite requires a large sum of money. Financing and pay back? Can the data acquired by the satellite sold to other countries?



### **(3) Human resource and skill development, comprehensive utilization enhancement program**

#### **① needs and current status**

Satellite data are utilized only in some organizations. Data analysis is not much performed due to shortage of technical experts. Strong needs from many organizations for fostering of experts.

#### **② operational issues**

The above can be solved independently, but leveraging a scheme offering overseas training?  
How can the space-related human resource be developed for establishing satellite development, operation and data utilization in Peru?  
Perhaps, a comprehensive utilization enhancement program incorporating satellite procurement, data applications and capacity building is necessary?

### **(4) Function integrating the national satellite utilization needs**

#### **① needs and current status**

While each organization has strong needs for utilization, needs are based on the individual organization basis and inter-organizational approach seemed to be little. Is it necessary that a function to integrate the needs of all organizations for Peru as a whole, thereby enhancing the sharing of requirements, cooperation and collaboration among organizations?

#### **② operational issues**

How can this national level coordinating function be realized?

**(1) The survey identified the following 3 points:**

- ① Overall needs, solution, issues for realizing satellite data utilization by application field, which contribute to solve problems that Peru might face in the future economic and social development.**
- ② Needs for making the most of the advantages of Japanese advanced earth observing satellites and having an own satellite,**
- ③ At least 3 difficulties must be solved for making use of the above advantages:**
  - i Funding issues**
  - ii Space-related human resource development such as capacity building for satellite development, operation and data applications**
  - iii Need to establish a long-term comprehensive space utilization program covering satellite procurement, satellite data applications and human resource development in Peru.**

### **(2) Solution to operational issues**

**It is one of the options for Peru to use the Japanese ODA system to overcome these difficulties. USEF considers the followings are necessary for considering the possibility for the Japanese economic cooperation.**

- ① It is informed that the function in the Peruvian government, which can integrate and accomplish the space utilization needs (including the needs in the category of environment and disaster prevention) of each organization, is necessary in order to explore the space-related economic cooperation measures by Japan to Peru.**
- ② Official request to Japan for the implementation of the Japanese economic corporation targeting the comprehensive space utilization in Peru may help the Japanese government to initiate the study for such support.**
- ③ Based on Peruvian request, USEF will consider to provide possible cooperation to overcome these difficulties facing Peru.**

A world map with a light gray background. The map shows the outlines of continents. Two regions are highlighted in red: one in East Asia (China) and one in South America (Brazil). A yellow satellite with two black solar panels is positioned above the red area in East Asia. Another yellow satellite with two black solar panels is positioned above the red area in South America. A brown truck with a satellite dish on its roof is positioned on the red area in South America. A white satellite dish is positioned on the red area in East Asia. A green rounded rectangle with a blue border is centered over the map, containing the text "Thank you for your attention!!" in blue font.

**Thank you for your attention!!**