The Record of a Seminar **AT-2**

on

Overview of Remote Sensing and GIS Technology and its Application to Mt. Mayon Project

Date : 11 February, 1999

Time: 13:30 - 17:00

Venue: JICA Study Team Office, DPWH, Legazpi, Philippines

Participants: Five (5) JICA counterparts.

Lecturer Dr. HONDA Kiyoshi, Associate Professor, AIT
Dr. Mitsuharu Tokunaga, Lecturer, University of Tokyo
Ms. W. Jirathana, Research Associate, AIT

1. Objective of the Seminar

To understand overview of remote sensing and GIS technology and its application to the project.

The seminar was pitched to non experienced persons in remote sensing and GIS. Due to time limitation, the seminar cannot cover the deep depth of the knowledge but aimed to have participants understand the concept and principle of the technology and the application to the project.

2. Material and Method of the Presentation

Materials for conceptual explanation, actual application example to the project and other projects were appropriately mixed in the presentation to help participants to understand the concept and its application in each step of analysis.

Materials used are listed below

- HTTP (Web) version of Remote Sensing Note Published by Japan Association on Remote Sensing as a textbook
- Digital Presentation materials which are being used in the lecture

in AIT and University of Tokyo.

- A lot of example images of remote sensing ranging from local to global and from optical to microwave.
- Remote sensing and GIS data which were produced in the course of Mayon project.

Two laptop computers were prepared for the presentation. The materials were on these PC and demonstrated to the participants.

Software used to demonstrate the data were ER-Mapper and ARC-View.

3. Program of the Seminar

The program consists of 4 parts.

3.1 Principle of Remote Sensing

This part is to understand overview of remote sensing technology and basics of optical remote sensing.

The topics listed below were explained to the participants.

- Concept of R/S
- Wavelength Regions of Electro Magnetic Radiation
- Spectral Reflectance
- Black Body Radiation
- Orbit of satellites
- Platforms - Landsat and SPOT

Demonstration of application examples of various remote sensing data ranging from Local to Global in optical remote sensing was carried out using laptop PCs.

3.2. Optical Remote Sensing at Mayon

This part is to understand the basic processing of optical remote sensing data and its application to

the project. The demonstration was carried out using LNADSAT data in 1994 and SPOT in 1992 and 1994, which are being used in the analysis.

The topics listed below were explained and demonstrated

- True Color Composite for visualization (LANDSAT TM)
- False Color Composite for visualization (LANDSAT TM)
- Relationship between color and land cover.
- Vegetation index calculation and visualization (LANDSAT TM)
- Relationship between vegetation index and land cover
- Pseudo Color (Thermal Band) for visualization
- Geometric correction.
- Removing geometric distortion on oblique angle data
- caused by topography (SPOT)

The participants confirmed how lava, lahar area are seen in remote sensing images.

3.3. Radar Remote Sensing

This part is to understand characteristics of radar remote sensing, which is very different from conventional optical data. Firstly concept of radar remote sensing was explained followed by the application example in the Mayon project and other areas.

Topics explained are listed below

- Theory of radar remote sensing
- Concept of radar technology
- Geometry of radar remote sensing
- Interaction between objects and microwave
- Concept of interferometry analysis
- A lot of image example of radar remote sensing
- Radar remote sensing data being used in the Mayon project (Radarsat, JERS-1 SAR and ERS)

Strong backscatter in vegetated area and weak backscatter in lahar area due to relatively flat surface were demonstrated.

3.4. GIS

This part is to understand overview of GIS technology, and to view the actual GIS database that is being developed under the project

The topic listed below were explained and demonstrated.

- Theory of GIS
- Principle of GIS
- Basic Data Format in GIS
- Inputting Data into GIS
- Demonstration of GIS data around Mayon

The following examples of GIS coverages/layers of the Mayon area were demonstrated using ARCVIEW software.

- Contour line / elevation
- River Network
- Road Network
- Land Use Types

In addition, the demonstration of overlaying several layers e.g. contour line with river and road networks were demonstrated in order to show the ideas on getting more information from different layers.

4. Reaction from the Participants

The participants showed strong interest to the technology. Especially the materials which is related to the area of Mayon has drawn their strong attention. The appropriate mixture of conceptual explanation and practical application examples leads to the success of the seminar.

The participants were encouraged to operate the PC but due to being unfamiliar to PC and software, they hesitated to touch and operate the PC.

Very active discussion was held among lecture and participants on application to Mayon region. They are looking for the most appropriate application methodology to the area. One participant wanted to include reserved area in the GIS database.

3D computer graphics of Mt. Mayon was demonstrated and a participant requested to the image. The image was sent to the participant later.

5. Recommendations

More intensive training opportunity should be arranged to the counterparts to obtain deep understanding. It is important to develop disaster mitigation plans by utilizing the latest geo-informatics technology such as remote sensing, GIS, GPS or other related technology like networking, communication, with their participation

The training courses organized by GIS Application Center in AIT is one option. (a brochure is attached).

AT-3

SCHEDULE FOR THE SEMINAR ON DISASTER PREVENTION AROUND MAYON VOLCANO (March 3, 4, & 5, 1999)

March 1999:

8:00	A.M.	–	8:15	A.M.	–	Registration
8:15	A.M.	–	8:30	A.M.	–	Opening Ceremony
8:30	A.M.	–	9:10	A.M.	–	Opening Remarks (By Mr. Watanabe, JICA Specialist & Dir. Eleno U. Colinares, DPWH, Region V)
9:10	A.M.	–	9:50	A.M.	–	Disaster management, Warning and Evacuation System (By PDCC)
9:50	A.M.	–	10:10	A.M.	–	Break
10:10	A.M.	–	10:50	A.M.	–	Introduction of Volcanic Disaster (By PHIVOLCS)
10:50	A.M.	–	11:30	A.M.	–	Introduction of Typhoon Information (By PAGASA)
11:30	A.M.	–	12:00	Noon	–	Open forum together with the Resource Speakers
12:00	Noon	–	1:00	P.M.	–	Lunch
1:00	P.M.	–	1:40	P.M.	–	Activities of DSWD
1:40	P.M.	–	2:20	P.M.	–	Sediment Disaster (By Mr. Y. Sakatani, DPWH-JICA Sabo Expert)
2:20	P.M.	–	3:00	P.M.	–	Introduction of Sabo Works in Mayon volcano (By DPWH Region V)
3:00	P.M.	–	3:20	P.M.	–	Break
3:20	P.M.	–	4:00	P.M.	–	Selfguard against Sediment Disaster (By JICA Short Term Expert)
4:00	P.M.	–	4:30	P.M.	–	Open Forum
4:30	P.M.	–	5:00	P.M.	–	Closing Ceremony and presentation of Certificate of Training/Attendance