7th Joint Project Team Meeting for Sentinel Asia STEP3 (JPTM2019)

Draft Summary
of
JPTM 2019

The 7th JPTM consisted of seven sessions plus training workshop, and 47 presentations were made during the three day meeting. The training session offered opportunities to learn about the studies by Sentinel Asia members.
"Sentinel Asia Café" was also held for the participants to communicate with DPN/DAN.

In total, more than 60 Participants, 40 Organizations.

Day One (12th November, 2019)

Opening Ceremony

Attendees had opening ceremony of the 7th JPTM (JPTM 2019), with the presence of Mr. Hans Guttman, Executive Director of ADPC and Dr. Shirou Kawakita of JAXA. Mr. Guttman mentioned about recent disasters in Asia Pacific countries and stressed importance of remote sensing technology. He also mentioned importance of disaster risk management by Sentinel Asia. Dr. Kawakita introduced activities of Sentinel Asia Step 3. He also mentioned the success of collaboration by Sentinel Asia so far and reported the introduction of Sentinel Asia operation system, OPTEMIS. He expressed his gratitude to Sentinel Asia members including ADPC for their co-organizing this JPTM.

Session 1: Overview
1.1 Overview of Sentinel Asia Status by JAXA
1.2 Report of the Steering Committee

- Mr. Miyoshi (JAXA), as a SA Sec, reported result of the last JPTM 2018 Awaji with 51 participants and 33 organizations including cooperation with UNDRR and endorsement of 10 year strategic plan. he also reported about APRSAF-25, held in November, 2018 in Singapore, where SA summary was reported.
- Mr. Suzuki, SC Co-chair, reported the overview of the discussion by SA Steering Committee including Strategic Plan for the next 10 years. He also reported that training session could be included at the next JPTM, which is realized at this JPT meeting. In addition, he mentioned the interest by central American countries to join SA.

Session 2: New membership
Presentation by new members
2.1 JICA
2.2 RIKEN

- Mr. Otsuka of JICA introduced about his organization's works for Disaster Risk Reduction related to "Sendai Framework". He added that rescue operation for the boys trapped in a cave in Thailand last year.
- Dr. Baier of RIKEN introduced RIKEN's "Advanced Intelligence Project (AIP)". As a part of AIP, they have "GEOINFORMATICS UNIT". He also introduced result of VA for the some past disasters.

Special Session: OPTEMIS Launch
Inauguration Ceremony of Sentinel Asia's new operation system, OPTEMIS, was held with the presence of Dr. Pakorn Apaphant, GISTDA board director. He addressed about importance to contribute to community by Sentinel Asia and GISTDA's contribution. Mr. Wasanchai introduced the overview of OPTEMIS.

Session 3: User's Session

Presentation on good practices of Sentinel Asia or expectations towards Sentinel Asia

3.1 Bhutan_Department of Disaster Management, Ministry of Home and Cultural Affairs: Mr. Wangchuk Namgay

3.2 Fiji_National Disaster Management Office, FIJI (NDMO): Ms. Litiana Bainimarama

3.3 Indonesia_Indonesian National Institute of Aeronautics and Space (LAPAN) : Mr. Udhi Nugroho

3.4 Korea_National Disaster Management Research Institute (NDMI) : Mr. Dalgeun Lee

3.5 Kyrgyz_Central Asian Institute of Applied Geosciences (CAIAG) : Mr. Bolot Moldobekov

3.6 Lao People Democratic Republic_National Disaster Management Office (NDMO Lao) Mr. PhonesavanhSaysompheng

3.7 Philippines_Manila Observatory (MO) : Ms. Del Catsillo

- Mr. Wangchuk Namgay of Ministry of Home and Cultural Affairs of Bhutan reported a case of a outburst of a glacial lake in Bhutan in 2019. ALOS-2 observation data processed by AIT was provided through SA.
- Ms. Litiana Bainimarama of NDMO of Fiji introduced an example of category 5 Cyclone Winston in 2016. SA and Disaster Charter data was used for damage assessment. She stressed importance to share information among disaster management partners.
- Mr. Udhi Nugroho of LAPAN showed about the case of an earthquake in Palu in 2018. LAPAN cooperated with AIT and Institute of Technology Bandung (ITB). More than 5000 damaged buildings were identified in three days. He proposed several solutions for better practices.
- Mr. Dalgeun Lee of NDMI of Korea introduced their organization and its activities. In 2019, a forest fire occurred in south Korea and SA was activated. SA satellite data was used to monitor damaged area. They will continue their contribution to SA as DAN.
- Mr. Bolot Moldobekov of CAIAG of Kyrgyz proposed several points to promote SA in central Asian countries, such as identifying the disasters in the region, introducing special EOR, and capacity building. He stressed a need to develop a road map to promote SA.

- Mr. Phonesavanh Saysompheng of NDMO Lao introduced disaster management status in his country and role of his organization. He noted several issues in Lao PDR.
- Ms. Flordeliza Del Castillo of MO mentioned the function of her organization in the Philippines. They are collecting and processing EO maps of their country as well as continuing capacity building.

Session 3: User's Session (continued)
3.8 Singapore_Earth Observatory Singapore (EOS) : Ms. Emma Hill
3.9 Viet Nam_Vietnam National Disaster Management Authority (VNDMA): Mr. Bui Quang Huy
3.10 Asian Development Bank: Mr. Ko Hamamoto
3.11 International Water Management Institute (IWMI): Dr. Giriraj Amarnath
3.12 Asian Disaster Preparedness Centre (ADPC): Mr. Peeranan / Ms. Dewi
3.13 Discussion - expectation for Sentinel Asia toward further improvement-

- Ms. Emma Hill of EOS of Singapore introduced their functions and their Advanced Rapid Imaging and Analysis (ARIA) system for SAR data with several examples. She proposed some recommendations including use of cloud computing and ARIA-SG, and *sharing ground validation data*.
- Mr. Bui Quang Huy of VNDMA introduced activities in applying space technology to disaster management in Vietnam. He mentioned importance of private organization, support to use of satellite data, and training.
- Mr. Ko Hamamoto of ADB showed their activities to support DRM including example in Armenia, Bangladesh, Fiji, and Philippines, as well as in Indonesia. He recommend to establish linkage with SA in project countries and use of ADB Web-GIS platform (SPADE) for information sharing.

- Dr. Giriraj Amarnath of IWMI introduced example of hazard maps and analysis. He also introduced a case studies on drought, insurance, flood risk by climate change. He mentioned importance to use multiple technologies, not only satellite observation and proposed on "Policy Change", "Risk Assessment", "Financing", and "Private Sector Engagement".
- ADPC showed a video on Good Practice of SA, a case of dam collapse in Lao PDR in 2018. Ms. Dewi stressed importance to know how to use the maps/VAPs as a next challenge.

- In the discussion <u>chaired by Dr. Peeranan of ADPC</u>, the panelist discussed how to support end users. As DMA, Mr. Bui Quang Huy of VNDMA and Mr. PhonesavanhSaysompheng of NDMO Lao mentioned their issues and problem on capacity is raised in using satellite products. Ms.
- Shahasrakiranna of AHA center introduced their experiences to <u>support use of products</u>. Mr. Udhi Nugroho of LAPAN suggested ways to quicken the response time including importance of collaboration. Dr. Kawakita of JAXA/SA Sec. suggested <u>increasing number of satellites could shorten the response time</u> and also stressed importance to benefit "data" into "decision", and add importance to define the purpose of use. Importance of feedback in SA activities is recognized.

- Requests to SA were raised by the panelists. AHA center mentioned language barrier in the field. VNDMA pointed <u>capacity building</u> to use the maps. NDMA Lao mentioned about local conditions. Wasanchai of GISTDA, in response to AHA center, possibility of multi language platform. EOS said that quality of the VAPs and timeliness sometimes compete so the communication is needed. Two NDMAs answered to Dr. Samarakoon's question about the use of the maps. AHA center also uses map for planning and they also mentioned they are coordinating with various stakeholders. EOS also mentioned importance of training.

Day 2; November 13: Training Workshop

1 Introduction (Background and Purposes)
ADPC (Ms. Dewi), JAXA(Mr. Miyoshi), Dr. Lal Samarakoon (co-chair of the SC)

Dr. Samarakoon explained history of training done by Sentinel Asia, such as "Mini Projects" and overview of the training this time. Mr. Miyoshi explained the purpose and the background of the training.

2 Overview
Sentinel Asia's Emergency Observation Mechanism and effective EOR (AOI planning) : ADRC (Mr. Ikeda)

Dr. Ikeda explained the flow to request emergency observation and new operation system "OPTEMIS". Summarized about the members, activations since 2007, distribution of activations, and a summary of response time. As of 2018, the response time for a request was about 2 days, and response time for VAP is about 3 days.

3 New Sentinel Asia web and Activation Training

- System Overview – JAXA (Ms. Yamamoto)

Ms. Yamamoto introduced the new JAXA system: Web Portal, OPTIMIS and WEB-GIS: Detail explanation of OPTEMIS was given with its function, usage and linkages. Future target will be an automated system at the time of the request to satellite data delivery

- OPTEMIS operation- GISTDA (Mr. Wasanchai)

Mr. Wasanchai introduced various information/documents to operate with OPTEMIS through step-by-step explanations. The system was quite easy to operate with all aspects including regulatory functions. He also showed possible future development plan including language support, background information overlay etc.

- DAN and DPN operation (Data upload/download from/to OPTEMIS and SFTP) – NARL (Mr. Chou)

Mr. Chou explained about data upload/download functions of OPTEMIS.

- WEBGIS operation- JAXA (Ms. Takakura)

Ms. Takakura introduced functions of "Web-GIS" used for SA. Account information for Web-GIS will be distributed to member organization after this JPTM. The operation of Web-GIS is done by manual procedure for the moment. The current system is a trail version until March 2020.

- Administrative information (Accounts, Procedures and Focal points, etc) –JAXA (Ms. Yamamoto)
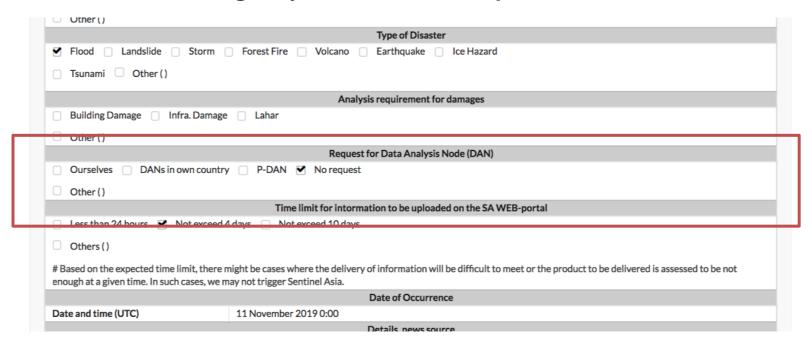
Ms. Yamamoto notified necessary information on demonstration in the next session.

4. Simulation training on Sentinel Asia Emergency Observation via New Sentinel Asia web/OPTEMIS:

- GISTDA, ADRC and JAXA (Dr. Ikeda, Mr. Wasanchai, Ms. Yamamoto)

Ms. Yamamoto and Dr. Ikeda demonstrated OPTEMIS operation. The participants experienced simulated emergency request.

<question on identifying DAN for particular activation was raised. >

Emergency Observation Request Form

Type of Disaster						
☑ Flood	☐ Landslide	☐ Storm	☐ Forest Fire	☐ Volcano	☐ Earthquake	☐ Ice Hazard
☐ Tsunami	☐ Other ( )					

Analysis requirement for damages		
☐ Building Damage	☐ Infra. Damage	☐ Lahar
☐ Other ( )		

Request for Data Analysis Node (DAN)			
☐ Ourselves	☐ DANs in own country	☐ P-DAN	☑ No request
☐ Other ( )			

Time limit for information to be uploaded on the SA WEB-portal		
☐ Less than 24 hours	☑ Not exceed 4 days	☐ Not exceed 10 days
☐ Others ( )		

Based on the expected time limit, there might be cases where the delivery of information will be difficult to meet or the product to be delivered is assessed to be not enough at a given time. In such cases, we may not trigger Sentinel Asia.

Date of Occurrence	
Date and time (UTC)	11 November 2019 0:00
Details, news source	

5. Knowledge-sharing toward good practices

- How to establish Standard Operating Procedure (SOP) : ADRC (Dr. Ikeda)

Dr. Ikeda mentioned that current SOP of SA should be updated to suite local needs. Workshops were held in 2018 to develop updated SOP in Thailand, Myanmar, and Vietnam. SOPs were developed in these countries. Each member countries are encouraged to develop its own SOP based on these three updated SOPs.

- Use cases based on Sentinel Asia's SOP in Vietnam to be shared with other members: Hanoi University (Mr. Nguyen Quoc Phi)

Mr. Nguyen reported about their SOP developed in 2018. He also introduced an analysis on cases of storms in 2018 and 2019.

- Emergency Response and Relief Support in the Spirit of One ASEAN One Response : AHA Centre (Ms. Shahasrakiranna)

Ms. Shahasrakiranna mentioned about the relation of the disaster risk and economics in ASEAN countries and the framework of AHA center and mandate. Also the "One ASEAN One Response" scheme. 2018 earthquake and tsunami in Indonesia was also reported.

6 Capacity-building on data analysis and VAP generation
- How to better understand SAR images, interpret SAR products, and realize the limitations: Yamaguchi University (Prof. Nagai / Ms. Tamkuan)

Ms. Tamkuan showed various SAR images to explain about the relationship of observation parameters and how these can effect information content. While presenting cases on flood and earthquake interpretation, she discussed the limitation of SAR, variation of processing on the type of disasters, and other characters of SAR.

- How to process satellite data (optical and SAR) to produce VAP with particular foci on flood and water-related disasters: AIT (Dr. Dan and Mr. Chathumal)

Mr. Chathual worked with participants on a hands-on exercise to make a flood map using before and after ALOS PALSAR data using QGIS software package. The interpretation was based on threshold values. Dr. Dan worked with Sentinel 2 optical data and the demonstrated was carried out to make a flood map. Use of open source packages with simple techniques were the highlight.

- How to produce different type of products, their strengths and limitations: Earth Observatory Singapore (Ms. Emma Hill) in collaboration with JPL ARIA Project (Mr. San-Ho Yun)

Dr. San-Ho demonstrated the difficulty in identifying an appropriate threshold to classify flood proxy areas using SAR data. The importance of ground observation was highlighted and requested to consider developing a scheme to collect and share with DAN members to ease their work.   Introduced a tool iseeflood.com to collect and share ground information

<Observation was made regarding the privacy of personal data currently shared though the above data colleting system>

- Applications of Google Earth Engine for disaster risk management: University of Tokyo (Dr. Miyazaki)

Dr. Miyazaki demonstrated the use of night-time light data for "damage assessment" using an earthquake in Hokkaido occurred in 2018 where large scale blackout occurred. Also, showed the changes of nightlight after the dam eruption in Lao PDR in 2018, and flood in Kerala, India in 2018. The demonstration was done using Google Earth Engine with simple scripts to make easy observations and comparisons.

- Approaches in emergency response mapping using multisource satellite data: IWMI (Dr. Amarnath and Mr. Alahacoon)

Mr. Alahacoon introduced the use of a flood map (VAP) for analyze risks a step towards SA Step-3. Demonstration was done using flood map, a DEM and vulnerability information. Dr. Amarnath stressed the use of multiple source information for risk assessment that need to address preparedness, the target of Step-3. Software based on GEE was discussed as a tool for this activity.

- Flood mapping and damage assessment using SNAP/ GEE: ICIMOD (Dr. Kabir Uddin)

Dr. Uddin demonstrated flood mapping with some exercises using Google Earth Engine and example of flood maps. He discussed about simple techniques that can produce many good output with little effort and time as a quick flood map to do quick assessment.

Day Three (14th November, 2019)

Training Workshop (continued)

- Topological / Terrain Modelling, - Hydrological Modelling : ISRO (Mr. Abhinav Shukla)

Mr. Shukla presented terrain modeling relating to flood using DEM, demonstrating an example of India.

- Drought monitoring : Symbiosis University (Dr. T.P. Singh)

Dr. Singh presented about drought monitoring, indicating cases in India, which affect the various scenes in the country. As to remote sensing data, MODIS, TRMM, and AMSR-E data is used. Result of assessment of drought is shown on the website.

- Wrap-up of the Training Workshop (chaired by Dr. Lal Samarakoon (co-chair of the SC))

Dr. Samarakoon wrapped up the training workshop.

Summary:
1. Participants appreciated the training workshop as well as the idea of SA Café; an interaction opportunity with DAN and DPN partners.
2. SOP for SA activation was established in 3 countries and rest of the countries can follow with modifications.
3. Need to create Meta Data for VAP was recommended.
4. Need of ground data to improve the quality/accuracy of VAP was emphasized and suggested to make discussions to realize.
5. Value of open source tools like QGIS, GEE was demonstrated. Suggested to consider sharing the material presented (via JAXA Web Portal).
6. All the participants agreed the necessity of capacity development; awareness raising and knowledge sharing.
   a. User training for end-user application
   b. Technical discussion of DAN members
   c. DPN meetings on data sharing policies and technicalities

Session 5: Strengthened link between Sentinel Asia and the Sendai Framework (chaired by Dr. Giriraj Amarnath)

- Keynote Speech ("Specific examples on the individual priorities and how countries can consider as best practices in the implementation of DRR") : Dr. Giriraj Amarnath

Dr. Amarnath presented Sentinel Asia STEP 3 and "Sendai Framework". He indicated recent trends in disaster impacts in Asia-Pacific area, impact by Climate, Change, and Drivers of risk. He stressed importance of space based information for progress of Sendai Framework.

- Presentations from UNESCAP

Mr. Srivastava introduced the impacts of disasters in Asia Pacific region. He also introduced the use of big data for DRR. He showed comparison damages by two typhoon in 2007 and 2018 as an example and he listed three challenges in using big data.

Ms. Braslow presented on ESCAP's RESAP program and their knowledge sharing scheme. She pointed the lack of intergovernmental discussion as the biggest gap for DRR.

- Discussion chaired by Dr. Giriraj Amarnath

Dr. Peeranan asked if ESCAP has guidelines for national and local levels. ESCAP answered that they are cooperating with some countries. Dr. Amarnath stressed the promotion of Sendai Framework in relation to SA STEP 3. A participant asked if ESCAP has funding for DRM and ESCAP has limited capacity but work with several entities in the region for space technology use. ISRO proposed to have trainings like one held this meeting and commented that <u>report on the result of SA activation is useful</u>. ADRC announced that global assessment report was issued last year, including the feedbacks. Dr. Amarnath expressed that OPTEMIS will help to share the feedback.

Session 6: Project Management
6.1 Data Provider Nodes (DPNs) GISTDA/ISRO/JAXA/NARL

- Mr. Prasit Maksin, GISTDA, briefed its overview and reported DPN's activities. In 2019 (by 11th Nov.), GISTDA provided 589 scenes for 34 SA EO requests.   THEOS-2 satellite is planned to be launched in 2020 and THEOS-2S in 2021.

- Mr. Shukla, ISRO, announced the next steering committee meeting in January in Hyderabad and introduced Decision Support Centre of NRSC-ISRO. Two radar satellites, RISAT-1A and NISAR are planned. He reported ISRO's contribution as DPN to SA activities. ISRO provided EO data for 19 requests in 2019 by now.

- Ms. Takakura, JAXA, reported JAXA's DPN activities. 21 activation were made in 2019 by today and for 18 requests, ALOS-2 data was provided. She also reported about the activation for Typhoon Hagibis in October and for volcano eruption in Indonesia in December, 2018. ALOS-3 with optical sensor will be launched in JFY 2020 and ALOS-4 with radar in 2021. With these two satellites, time for acquisition will be shortened.

- Dr. Chou, NARL, presented their activities. Their satellite data was provided to SA for 6 times in 2019 so far.

6.2 Primary Data Analysis Node (P-DAN) Report: AIT/University of Tokyo/ Yamaguchi University

- Dr. Manzul Hazarika, AIT, reported their P-DAN activities in 2019. 18 activations (one cancelled) were made in 2019 (by October). Some VAPs made by AIT were introduced. Their VAPs were posted on their website.

- Dr. Miyazaki made P-DAN report for University of Tokyo (UT). He introduced their recent activities including automated building mapping technology and use of Google Earth Engine.

- Dr. Nagai, Yamaguchi University (YU), reported their activities. He presented their work for the activation for Typhoon Hagibis, with which almost 550 images were received through SA and International Disasters Charter. As the VAP team leader in SA SC, he reported their progress. He then introduced "University Network for Data Analysis" in Japan.

6.3 Sentinel Asia documents review (TOR): JAXA

- JAXA, as a SA Sec, proposed the revision of the Terms of Reference (TOR) on the Joint Project Team for Sentinel Asia STEP3 (JPT-3).
  - ➢ Project office of JAXA to be one in Japan reflecting organizational change within JAXA.

  Change was approved by the participants.

Session 7: Wrap-up Session

7.1 Summary of JPTM2019 (JSF/JAXA)

Secretariat presented draft summary of JPTM 2019, which will be circulated to participants for their review and comments. Comments will be collected within two weeks.

7.2 Announcement of the next host organization : JAXA/LAPAN

LAPAN expressed their intention to host next JPTM, JPTM 2020, in Jakarta, Indonesia. The participants welcomed LAPAN's proposal.

7.3 Closing Remarks by ADPC and JAXA

Dr. Peeranan congratulated successful JPTM 2019 and expressed his gratitude to the participants including co-organizer, JAXA. He also emphasized the importance of using space technologies. Dr. Kawakita thanked to ADPC team for the success of JPTM 2019, as well as appreciated the support from SA members for the SA activation against Typhoon Hagibis.