Sentinel Asia 10th Anniversary Event and the 4th JPT Meeting for Sentinel Asia STEP-3 (JPTM2017)

Geospatial information and technology for better DRR-related decision making: advantages and challenges

By : Anggraini Dewi

Hanoi, 7-9 March 2017

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Background

- 1986
  - Originally a training agency, established in partnership with United Nations Office for the Coordination of Humanitarian Affairs (UNOCHA), UNDP and World Meteorological Organization (WMO)
- 1990s
  - Kick-started project implementation and advisory services

Our Locations

ADPC currently works in **23 countries** in the South and Southeast Asian region and the Pasific.

Offices:

- Bangkok, **Thailand**
- Dhaka, **Bangladesh**
- Yangon, **Myanmar**
- Jakarta(at BNPB), **Indonesia**

Partnerships

Who we work with

Partnerships

Cooperation and collaboration

+ Private sector

Sentinel Asia Membership

- Member of JPT-3 in August 2014
- Member of Data Analyst Node in July 2016

Sentinel Asia

JPT Members

Currently Sentinel Asia has 104 JPT members.
(89 organizations from 27 countries/regions and 15 international organizations)

No.	Country / Region	No.	Organization	Data Provider Node (DPN)	Data Analysis Node (DAN)
28	International Organization	90	Asian Institute of Technology (AIT)		●
		91	The ASEAN Secretariat		
		92	United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)		
		93	United Nations Office for Outer Space Affairs (UNOOSA)		
		94	International Center for Integrated Mountain Development (ICIMOD)		●
		95	Coordinating Committee for Geoscience Programmes In East and South East Asia (CCOP)		
		96	International Centre for Water Hazard and Risk Management (ICHARM)		
		97	Asian Disaster Reduction Center (ADRC)		●
		98	Applied Geoscience and Technology Division (SOPAC)		●
		99	The World Bank (WB)		
		100	International Water Management Institute (IWMI)		●
		101	Asian Development Bank (ADB)		●
		102	ASEAN Coordinating Centre for Humanitarian Assistance on disaster management (AHA Centre)		
		103	World Wide Fund for Nature (WWF) - Pakistan		
		104	Asian Disaster Preparedness Center (ADPC)		●
				7	45

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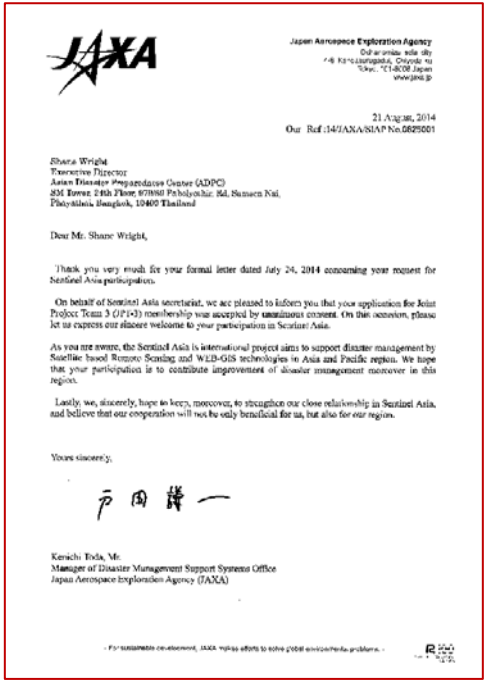

JAXA

Japan Aerospace Exploration Agency

21 August, 2014
Our Ref.:14/JAXA/SIAP No.0825001

Shane Wright
Executive Director
Asian Disaster Preparedness Center (ADPC)
SM Tower, 24th Floor, 979/80 Phahonyothin Rd. Samsen Nai,
Phayathai, Bangkok, 10400 Thailand

Dear Mr. Shane Wright,

Thank you very much for your formal letter dated July 24, 2014 concerning your request for Sentinel Asia participation.

On behalf of Sentinel Asia secretariat, we are pleased to inform you that your application for Joint Project Team 3 (JPT-3) membership was accepted by unanimous consent. On this occasion, please let us express our sincere welcome to your participation in Sentinel Asia.

As you are aware, the Sentinel Asia is international project aims to support disaster management by Satellite based Remote Sensing and WEB-GIS technologies in Asia and Pacific region. We hope that your participation is to contribute improvement of disaster management moreover in this region.

Lastly, we, sincerely, hope to keep, moreover, to strengthen our close relationship in Sentinel Asia, and believe that our cooperation will not be only beneficial for us, but also for our region.

Yours sincerely,

戸田謙一

Kenichi Toda, Mr.
Manager of Disaster Management Support Systems Office
Japan Aerospace Exploration Agency (JAXA)

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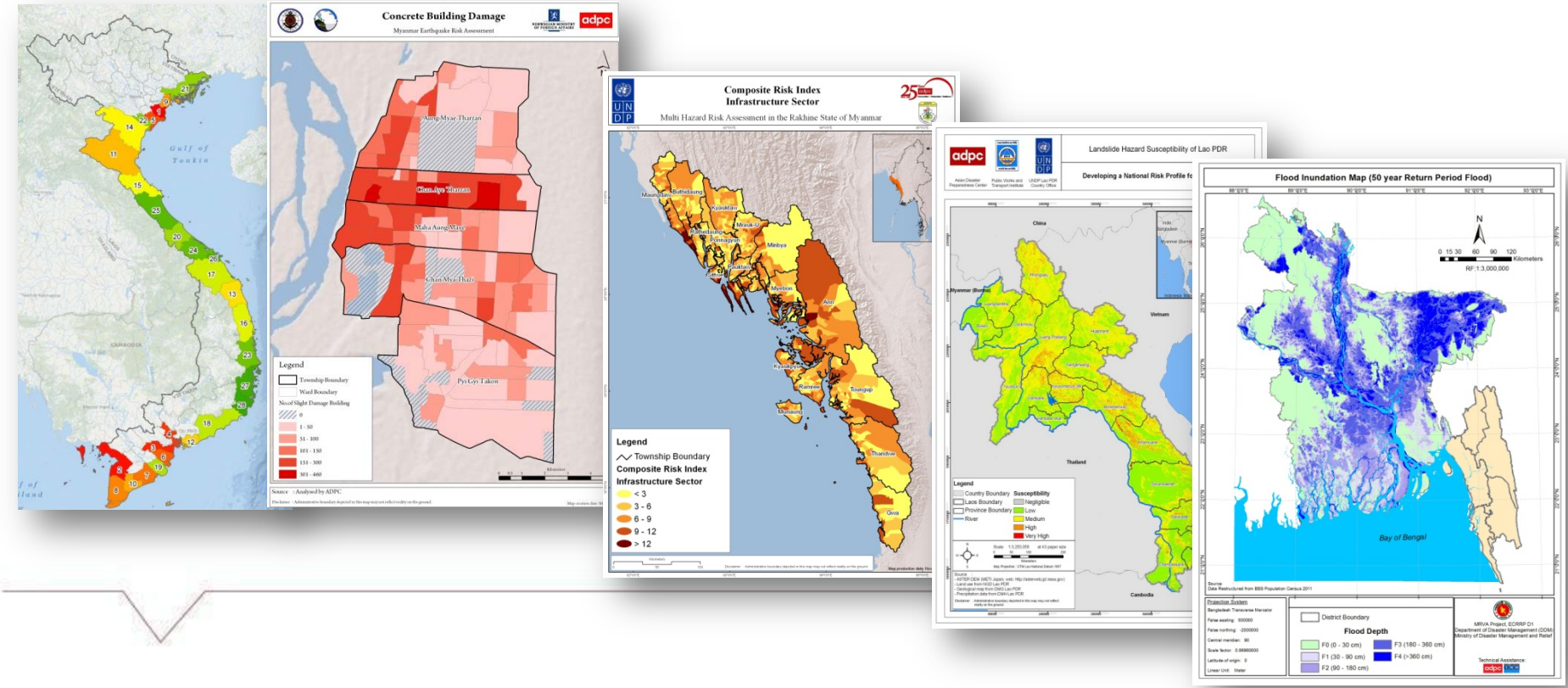
Contributions to DRR community through GIT Applications and Capacity Building

Sendai Framework : *Priority for Action 1: Understanding Risk*

Risk Assessment



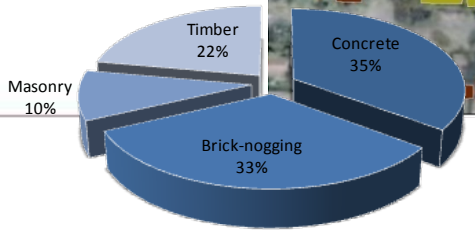
Determine what exists on the ground

- What can be damaged by the typhoon wind force?

Determine what exists on the ground

Elements at Risk

- Making a database of building locations (geospatial database)…
- …and also the characteristics of each building such as construction materials, number of stories, use of the building, etc.



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Determine what exists on the ground

Elements at Risk

- Use a combination of satellite imageries, GIS techniques, and ground survey

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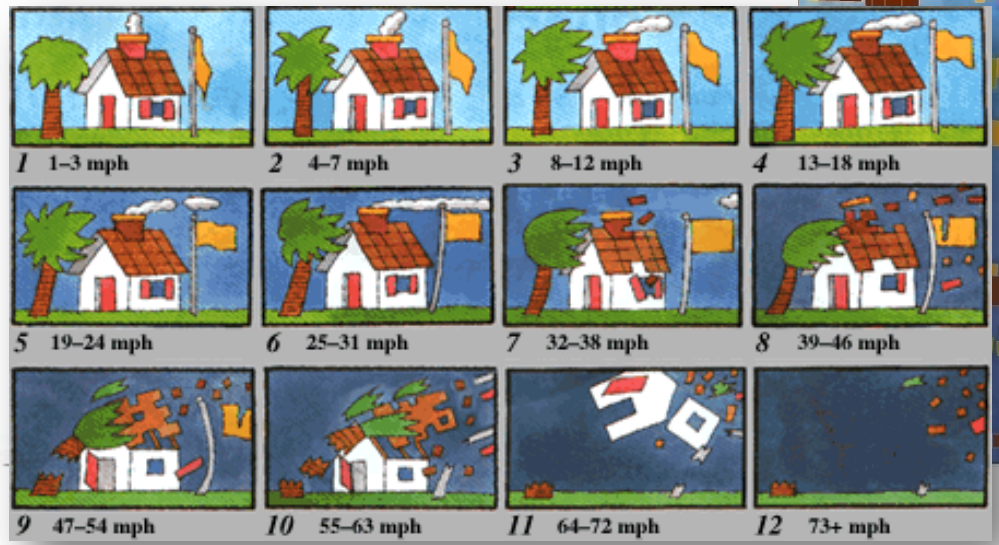
Overlaying the typhoon wind field

Vulnerability Assessment

- Determine what wind velocity each building is exposed to



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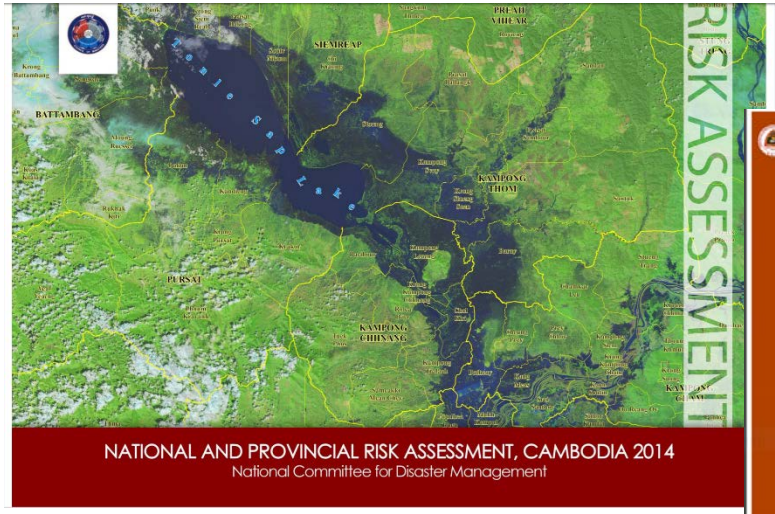
Calculate the damage

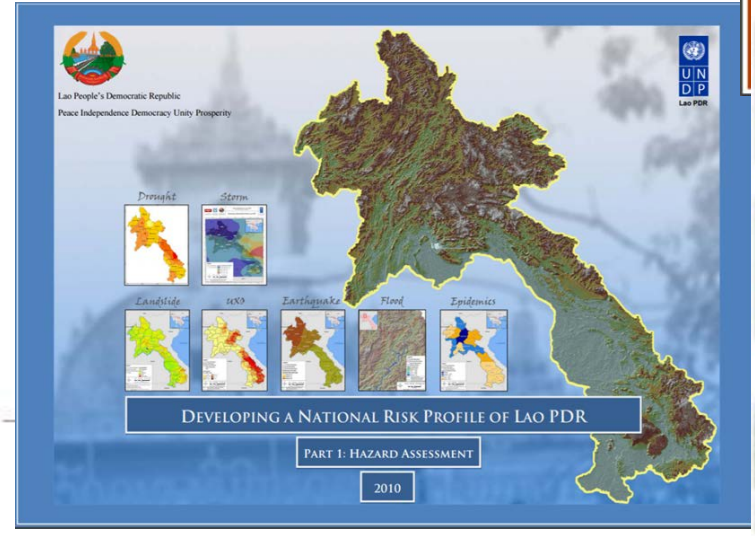
- The risk is represented by potential damage to houses from the typhoon.

Sub-district	# Buildings	Damage ($)
SD_1	14,676	12,098,677
SD_2	7,453	7,998,940
SD_3	3,789	5,675,300
SD_4	12,660	13,654,901



NATIONAL AND PROVINCIAL RISK ASSESSMENT, CAMBODIA 2014

National Committee for Disaster Management



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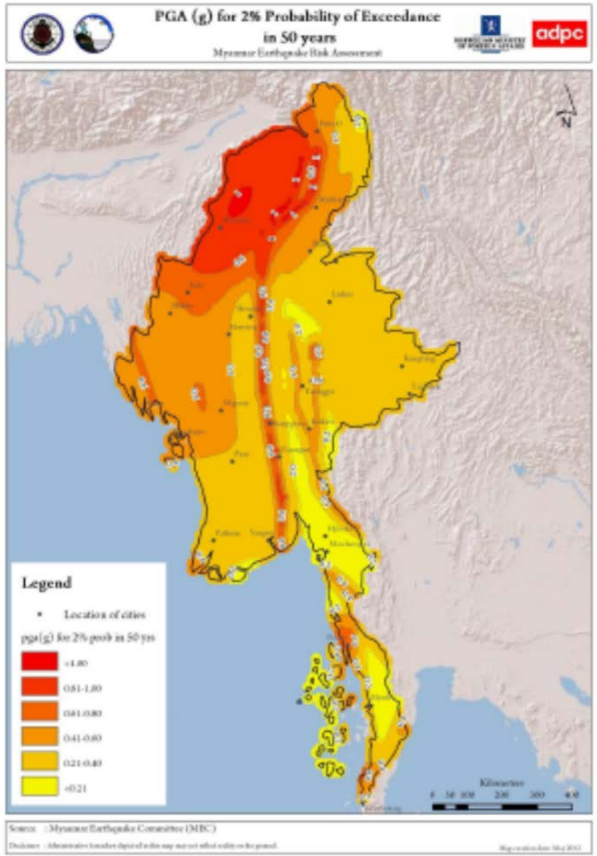

Figure 15: Training before actual survey

Figure 16: Actual field survey

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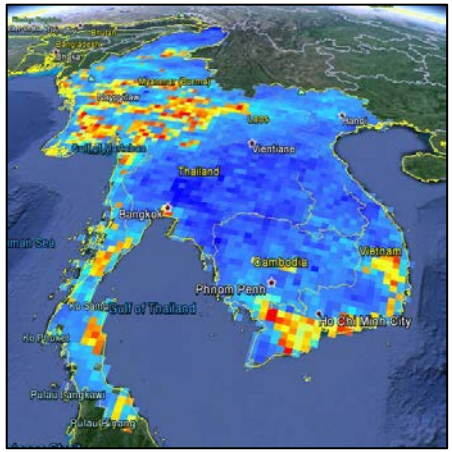
Capacity Building

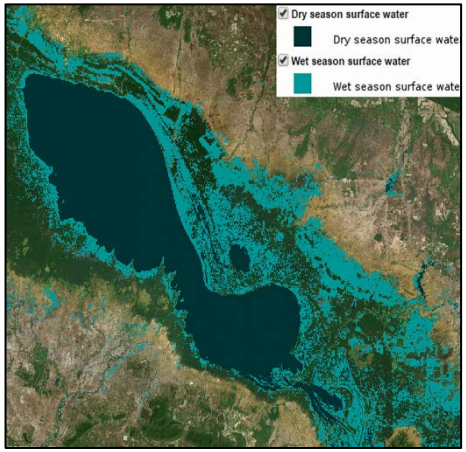
- Promoting open data sharing
- Based on demand-driven

Geospatial Tools/Data for Disaster Risk Management from SERVIR-Mekong (https://servir.adpc.net/)



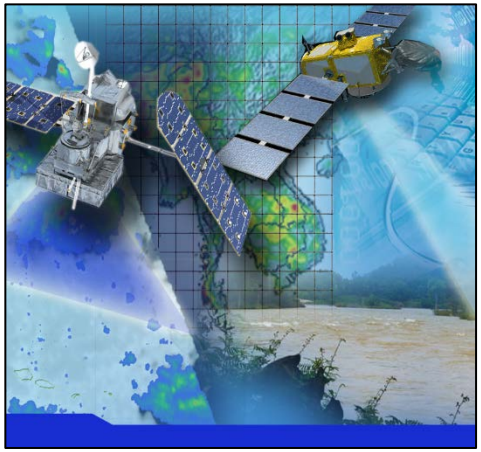
Regional Drought Monitoring

- Monitor and forecast drought
- Estimate impacts on crop yields



Surface Water Mapping

- Analyze trends of wet/dry areas
- Analyze river course changes



Virtual Rain and River Gauge

- Provide rain and stream height data
- Improve flood warning

Future Tools

- **Real-time flood monitoring**
- **Severe thunderstorm warning**

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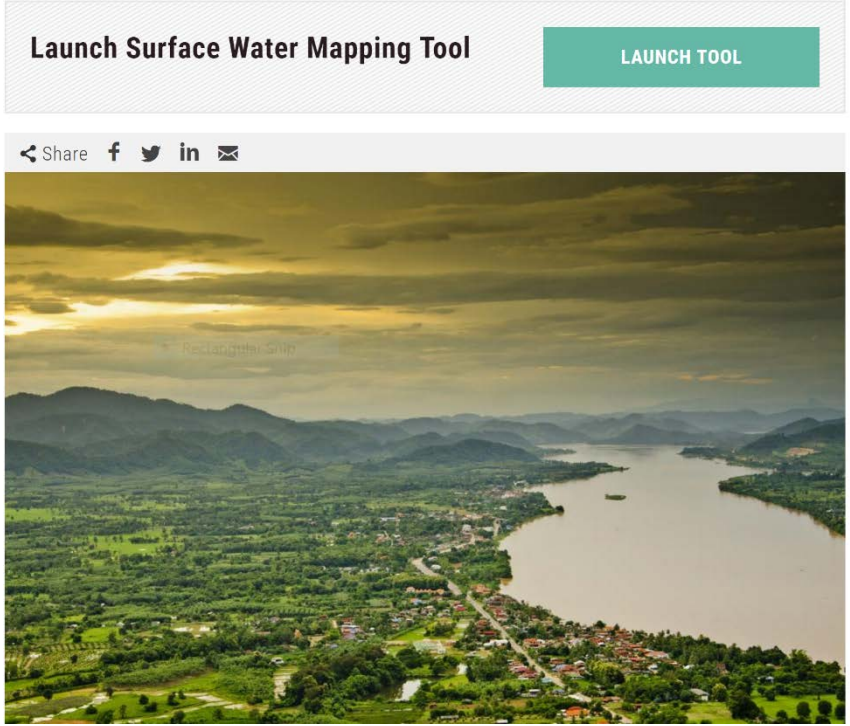
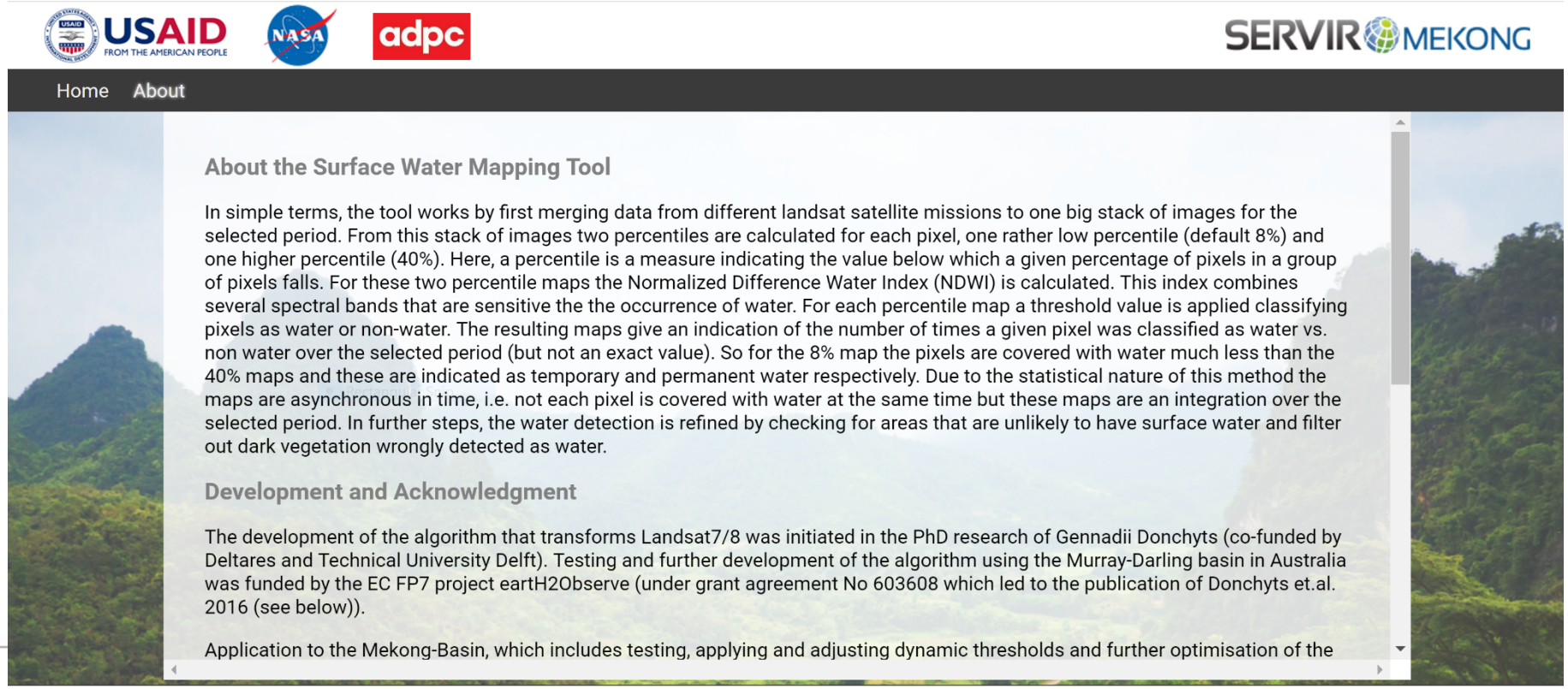
Description of Surface Water Mapping Tool :

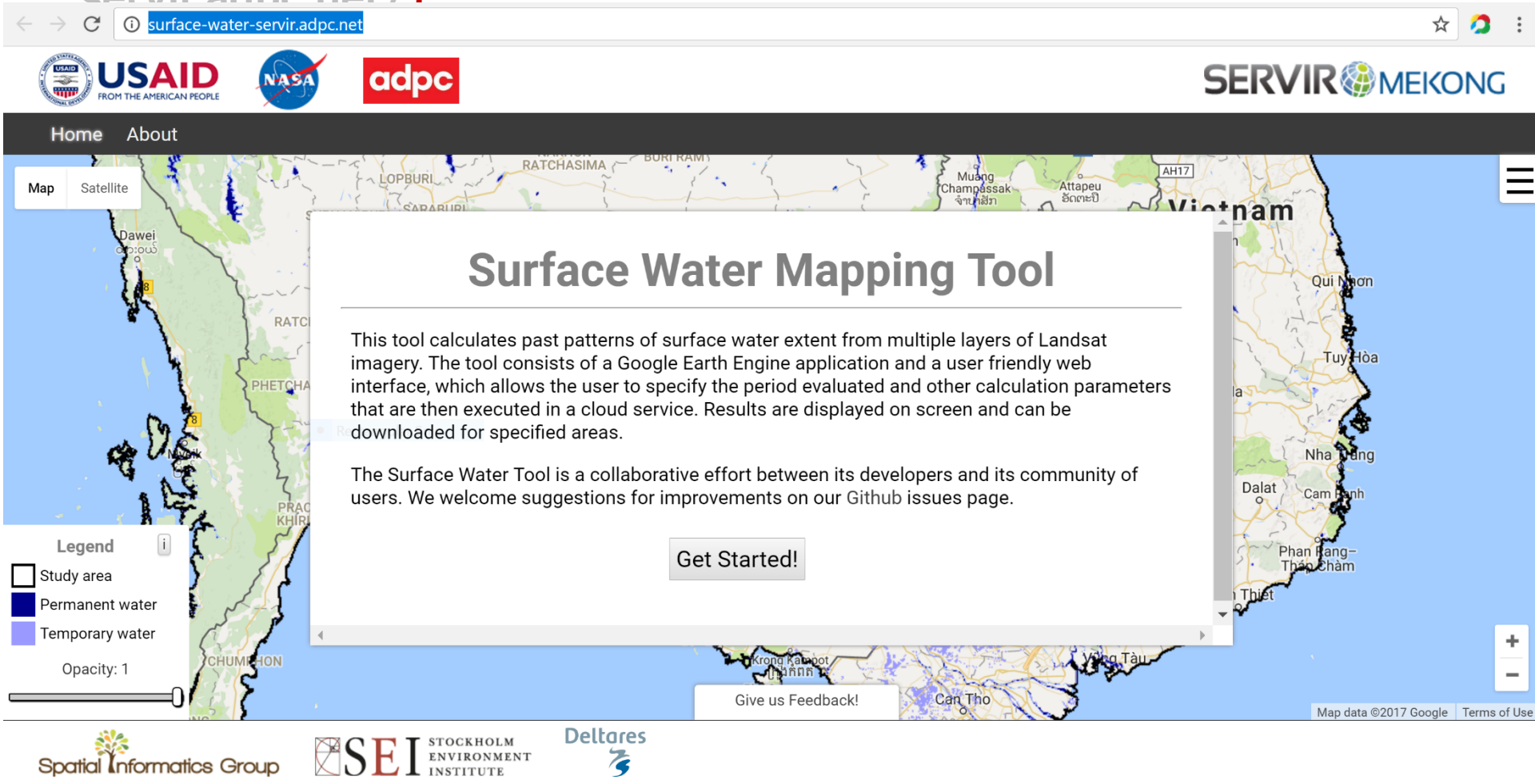
The Surface Water Mapping tool leverages the extensive archive of Landsat data in the Google Earth Engine archive and Google's cloud processing power to quickly calculate past patterns of surface water extent from multiple layers of Landsat imagery. The tool consists of a Google Earth Engine application and a user friendly web interface which allows the user to specify the period evaluated and other calculation parameters that are then executed in a cloud service. Results are displayed on screen and can be downloaded for specified areas.

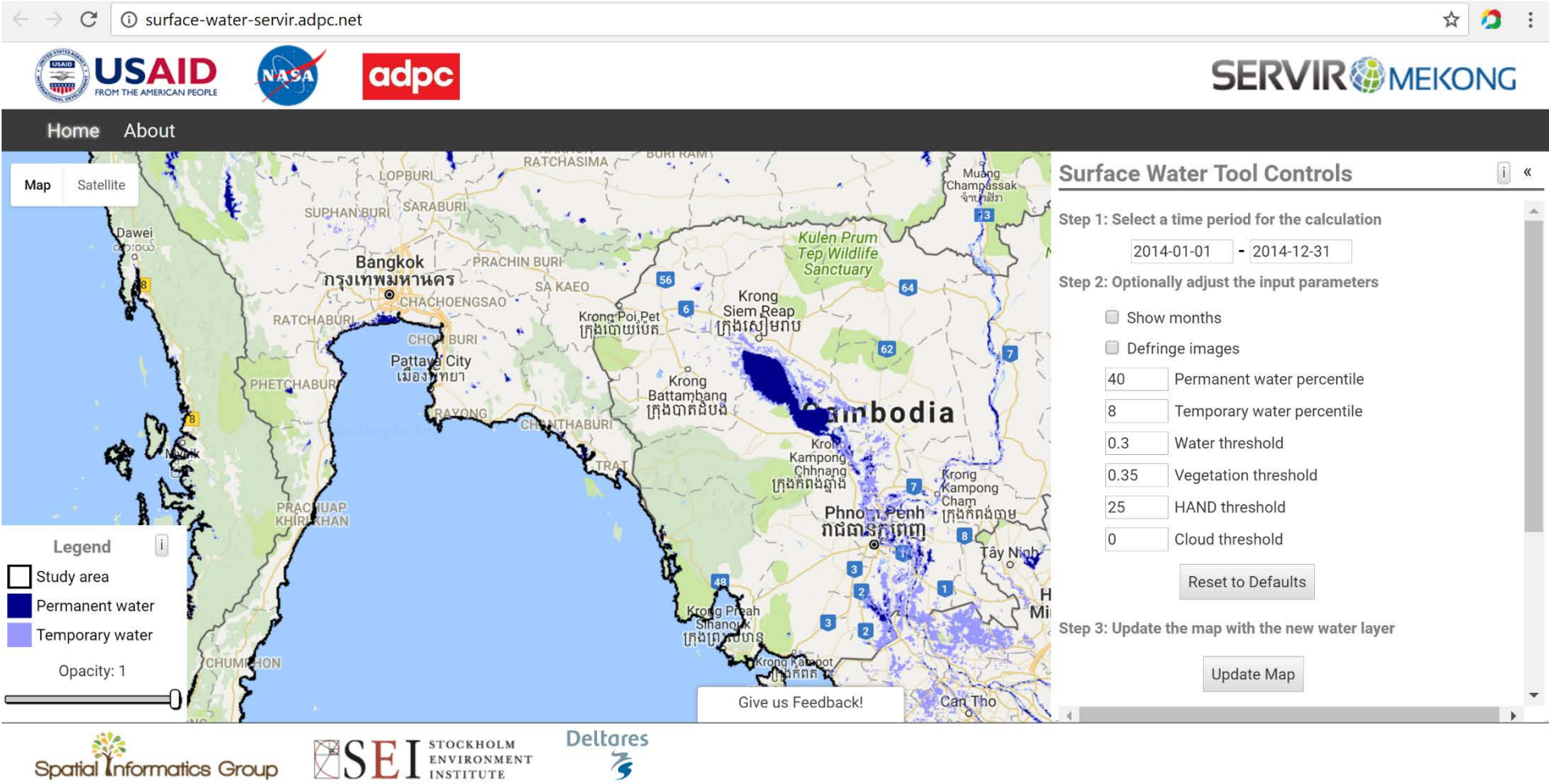


Description of Surface Water Mapping Tool :



Surface Water Mapping Tool (http://surface-water-servir.adpc.net/)

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Map
Satellite
Surface Water Tool Controls
Step 1: Select a time period for the calculation
2014-01-01
2014-12-31
Step 2: Optionally adjust the input parameters
Show months
Defringe images
40
Permanent water percentile
8
Temporary water percentile
0.3
Water threshold
0.35
Vegetation threshold
25
HAND threshold
0
Cloud threshold
Reset to Defaults
Step 3: Update the map with the new water layer
Update Map
Legend
Study area
Permanent water
Temporary water
Opacity: 1
Give us Feedback!
Bangkok
กรุงเทพมหานคร
Pattaya City
เมืองพัทยา
Krong Siem Reap
ក្រុងសៀមរាប
Krong Battambang
ក្រុងបាត់ដំបង
Kulen Prum Tep Wildlife Sanctury
Cambodia
Phnom Penh
រាជធានីភ្នំពេញ
Krong Kampong Chhnang
ក្រុងកំពង់ឆ្នាំង
Krong Kampong Cham
ក្រុងកំពង់ចាម
Krong Preah Sihanouk
ក្រុងព្រះសីហនុ
Krong Kampot
ក្រុងកំពត
Can Tho
Spatial Informatics Group
SEI STOCKHOLM ENVIRONMENT INSTITUTE
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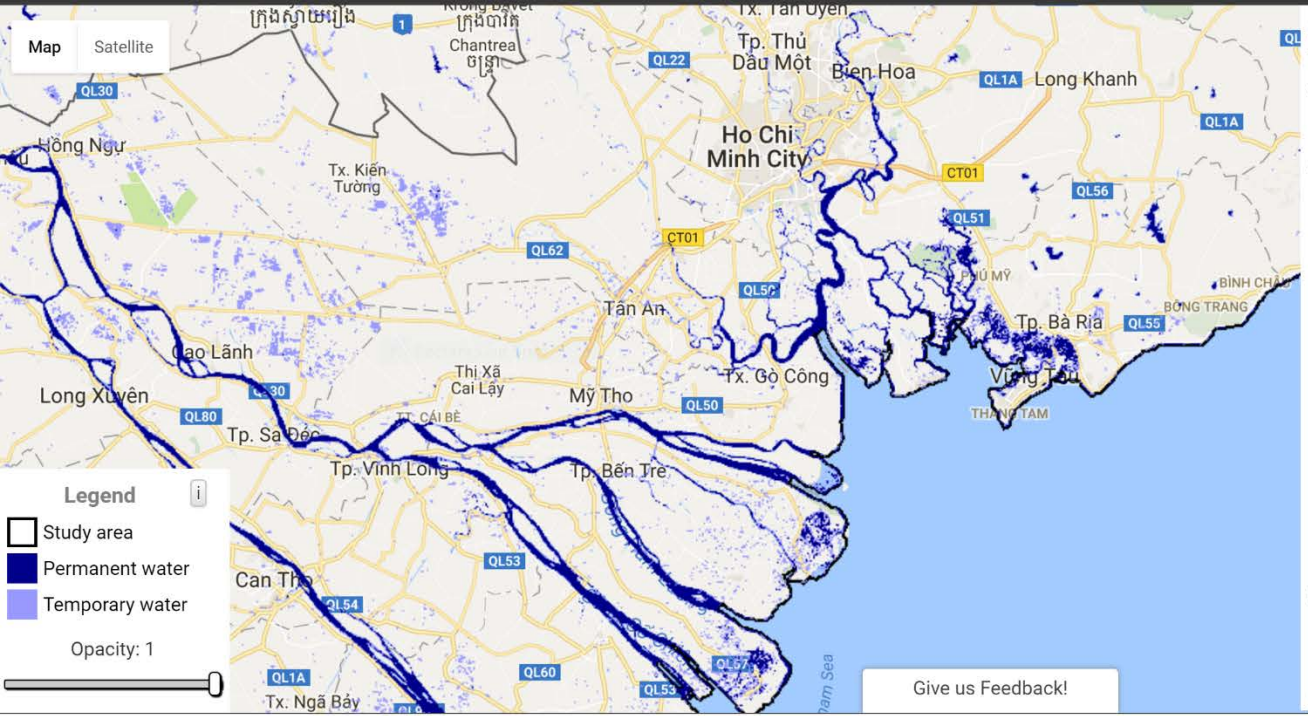

Surface Water Tool Controls

Step 1: Select a time period for the calculation

2013-12-07 - 2016-12-07

Step 2: Optionally adjust the input parameters

- [x] Show months — Month: January
- [ ] Defringe images

40	Permanent water percentile
8	Temporary water percentile
0.3	Water threshold
0.35	Vegetation threshold
25	HAND threshold
0	Cloud threshold

Reset to Defaults

Step 3: Update the map with the new water layer

Update Map

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Surface Water Tool Controls

Step 1: Select a time period for the calculation

2013-12-07 - 2016-12-07

Step 2: Optionally adjust the input parameters

- [x] Show months — Month: December
- [ ] Defringe images

40	Permanent water percentile
8	Temporary water percentile
0.3	Water threshold
0.35	Vegetation threshold
25	HAND threshold
0	Cloud threshold

Reset to Defaults

Step 3: Update the map with the new water layer

Update Map

"The Sendai Framework for DRR recognizes that States have the primary responsibility to prevent and reduce disaster risk, including cooperation"

Challenges:

How to meet the **needs** of end-users; measure the **impacts** of our interventions; and ensure that our interventions are **sustainable** ?

Suggestion to enhance DAN's :

- Collaboration is a key to enhance the DAN's continuous supports to the end-users, therefore, communication and coordination among DAN members are needed.
- Engagement of end-users (i.e. DMOs) in Sentinel Asia meetings/activities is one of important keys to better understand their needs in DRR-related decision making. Therefore, more encouragement is suggested to enhance/improve DMOs' active participation.

THANK YOU
FOR YOUR ATTENTION

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http://www.adpc.net

http://www.drrprojects.net

Group: Asian Disaster Preparedness Center

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