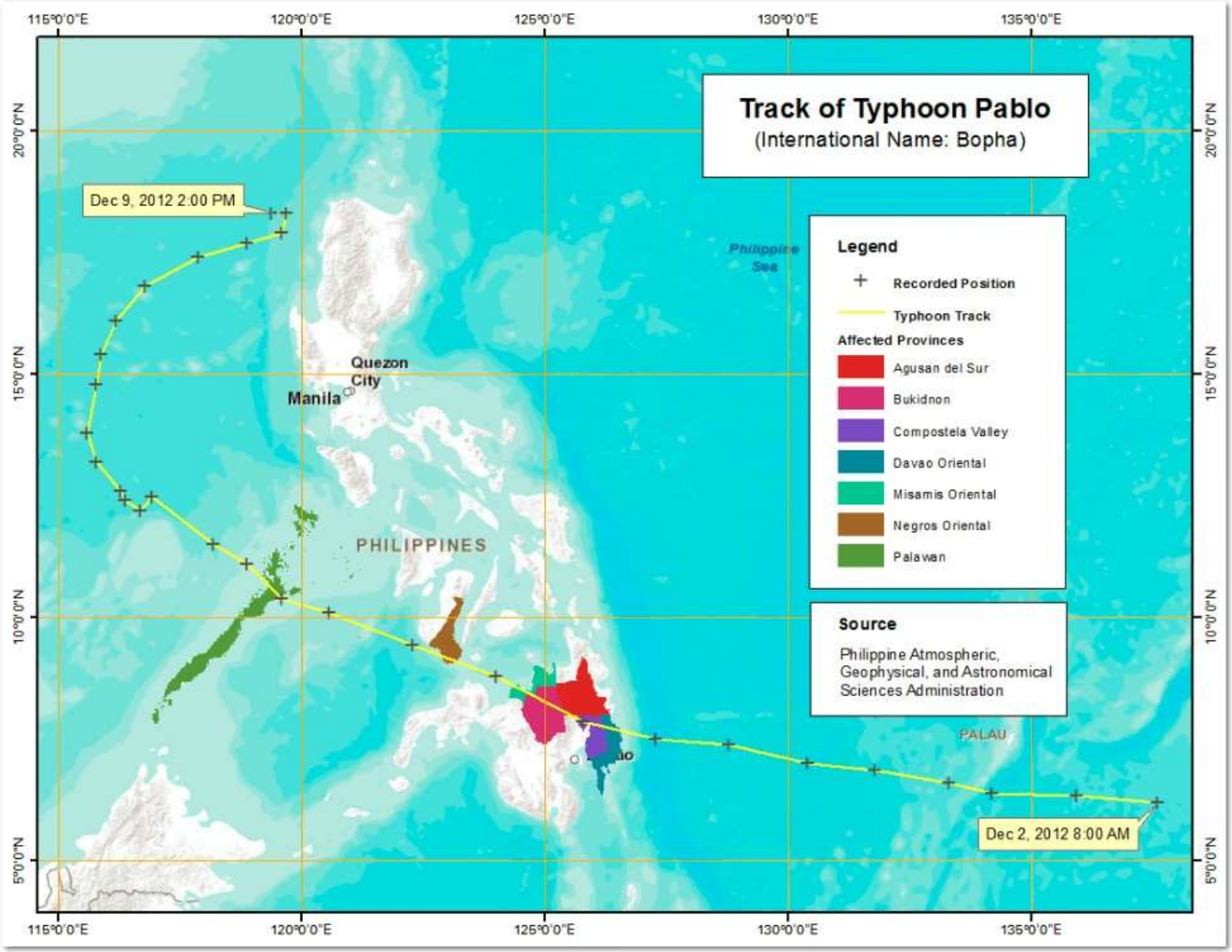
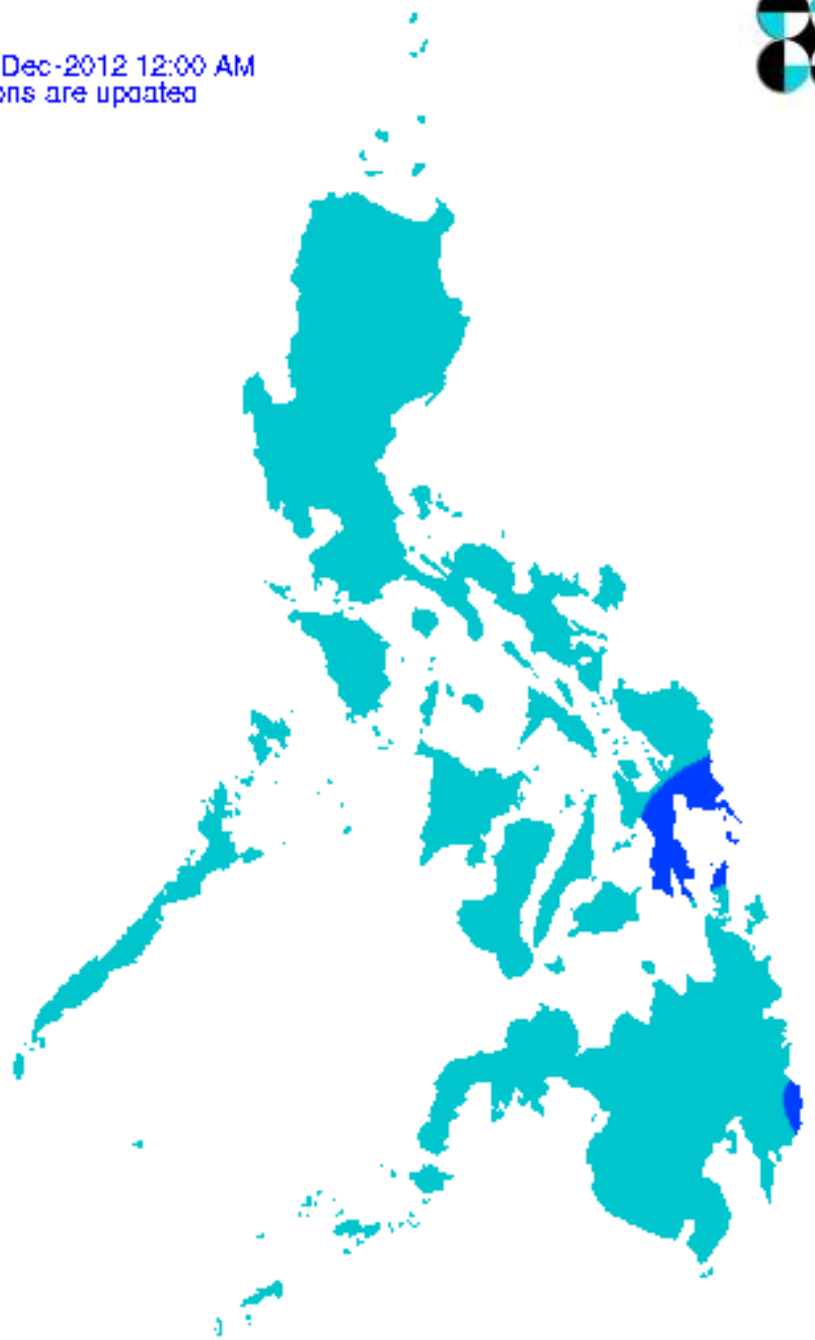
Project NOAH

DOST Project NOAH team and collaborators

Lagmay et al., 2013



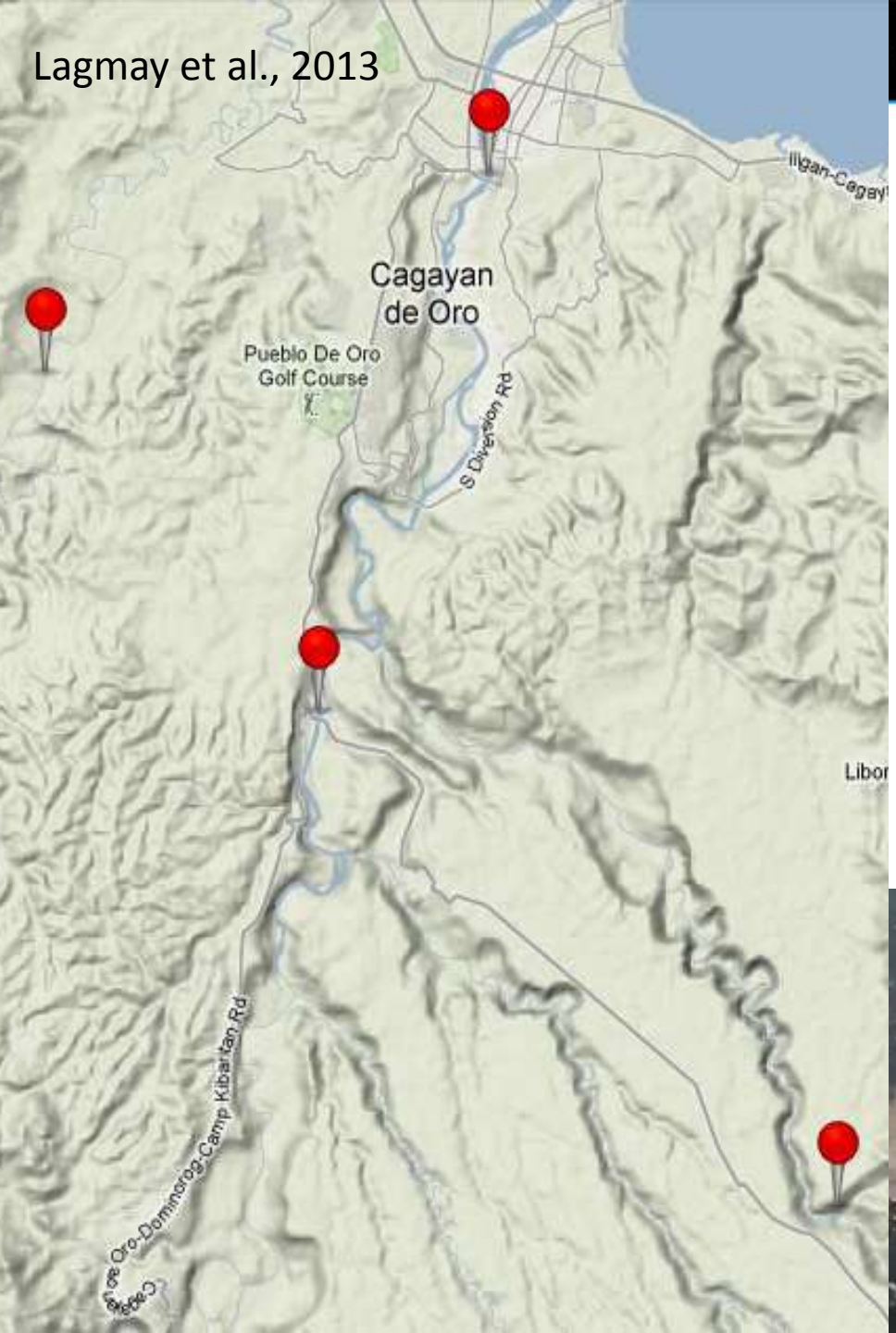
Lagmay et al., 2013

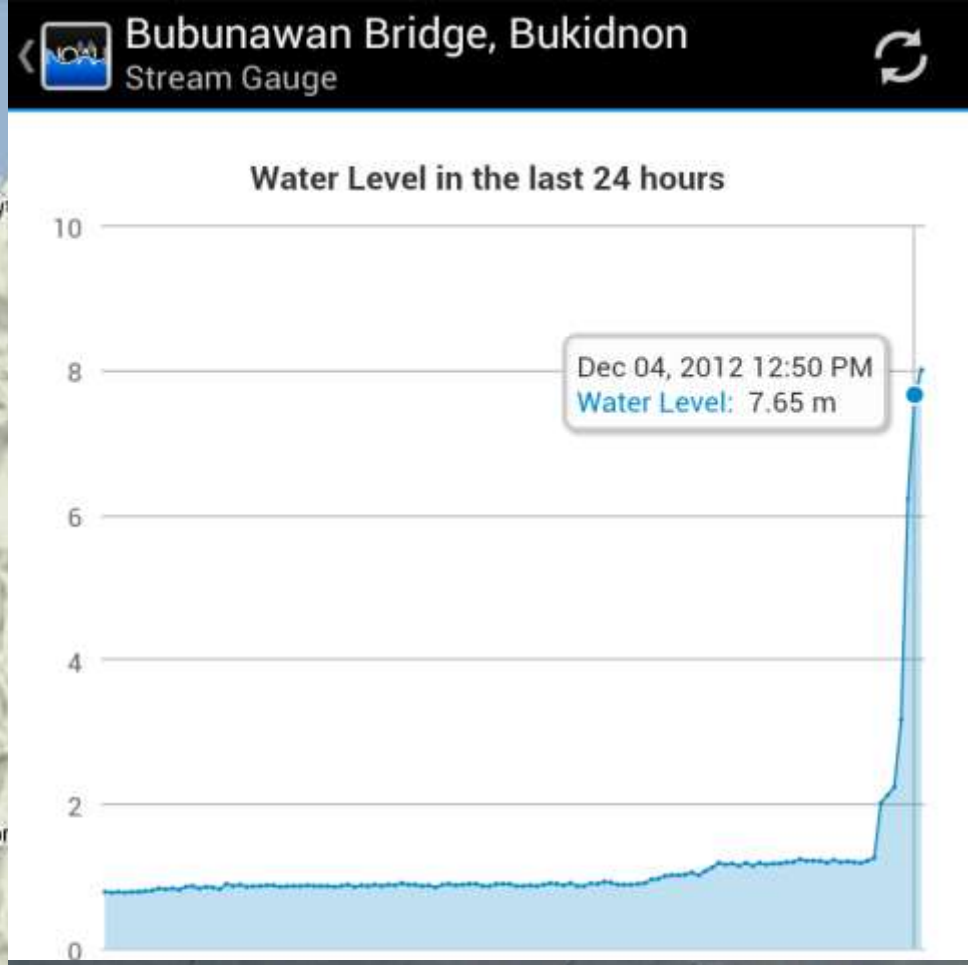


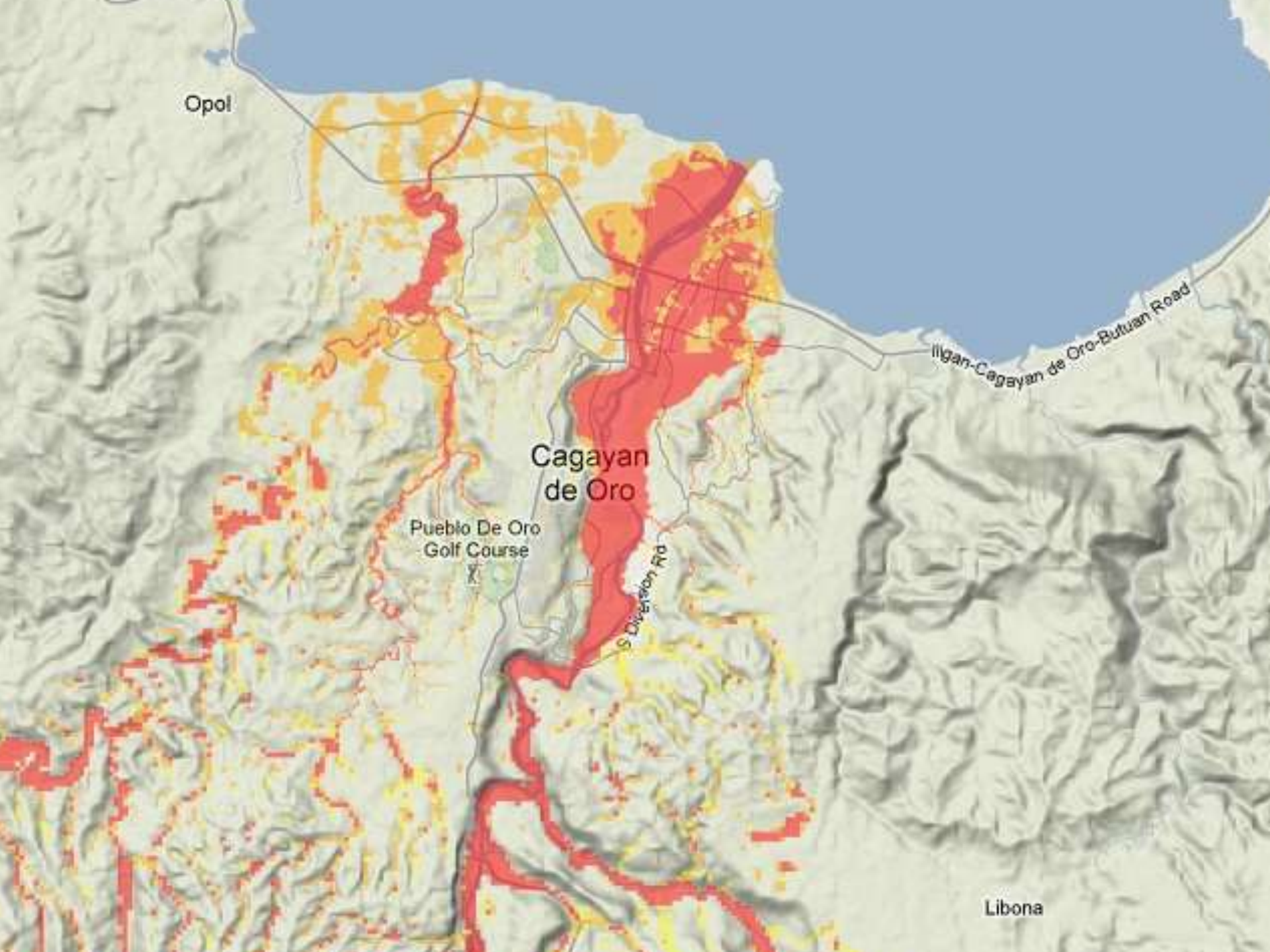
Rainfall contour map
On 4 December 2012


Ugiaban Bridge in Cagayan de Oro, Philippines
Washed out during typhoon Pablo

Lagmay et al., 2013

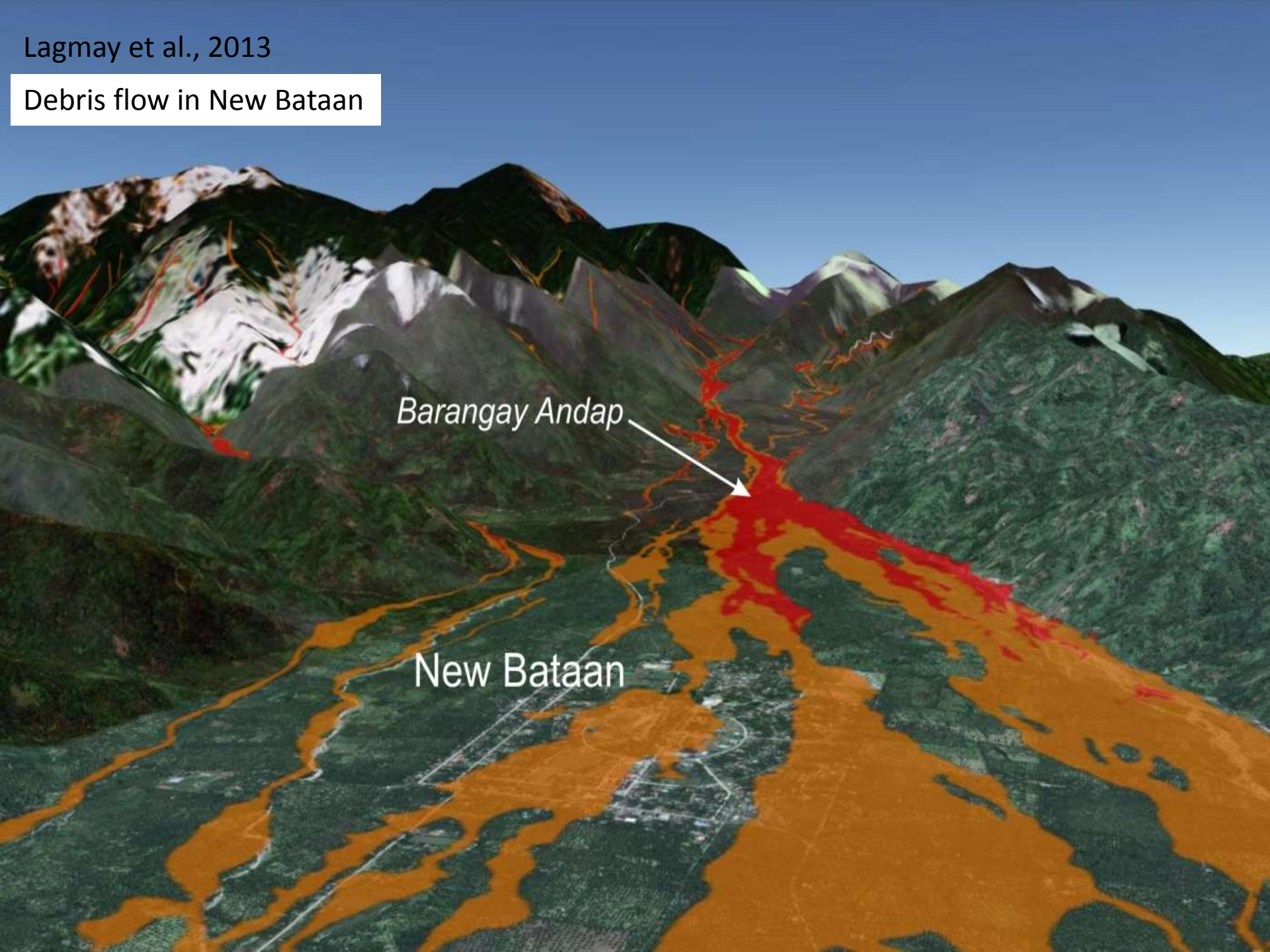





Opol
Iligan-Cagayan de Oro-Butuan Road
Cagayan
de Oro
Pueblo De Oro
Golf Course
Libona

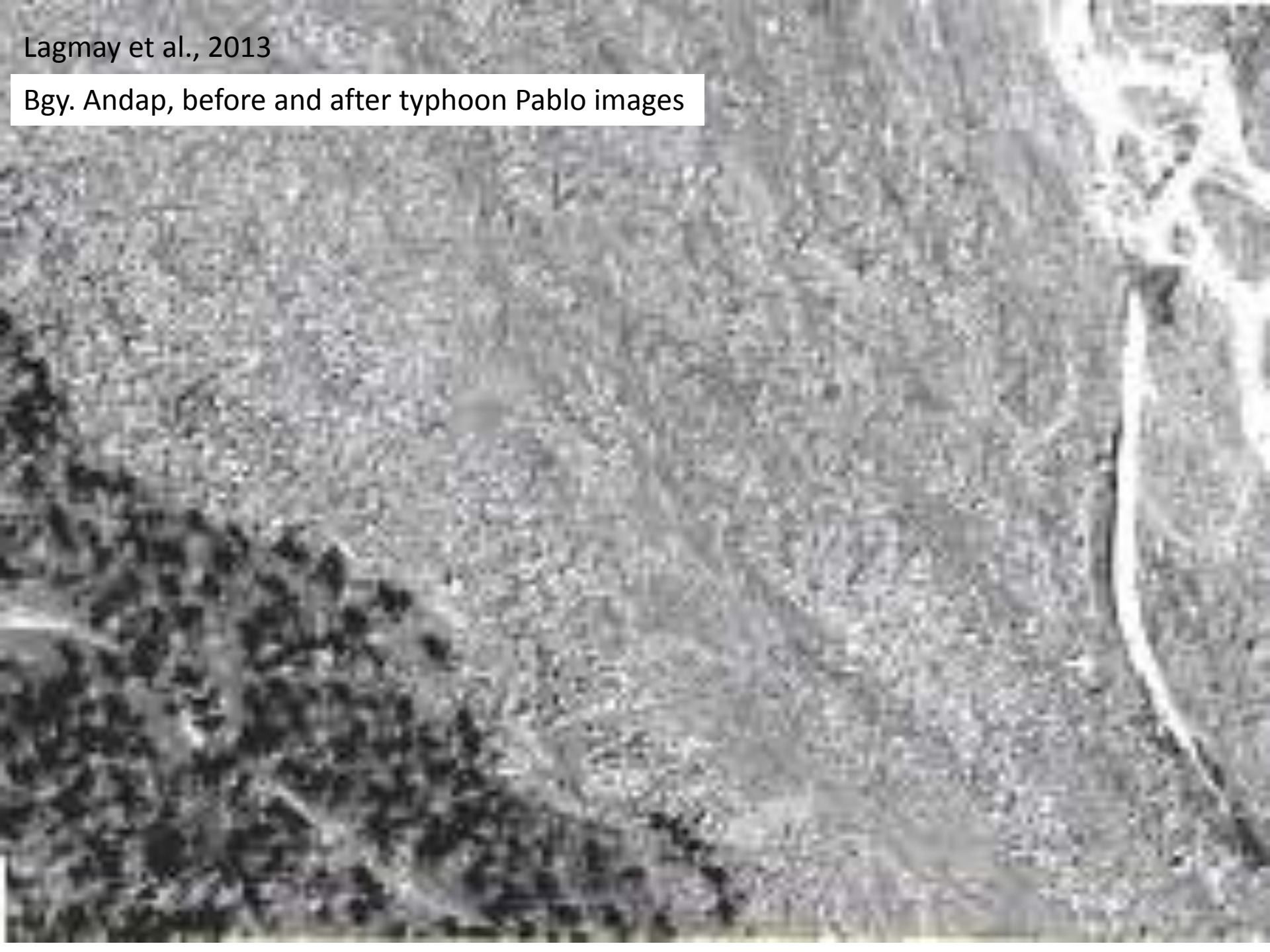
Lagmay et al., 2013

Debris flow in New Bataan



Lagmay et al., 2013

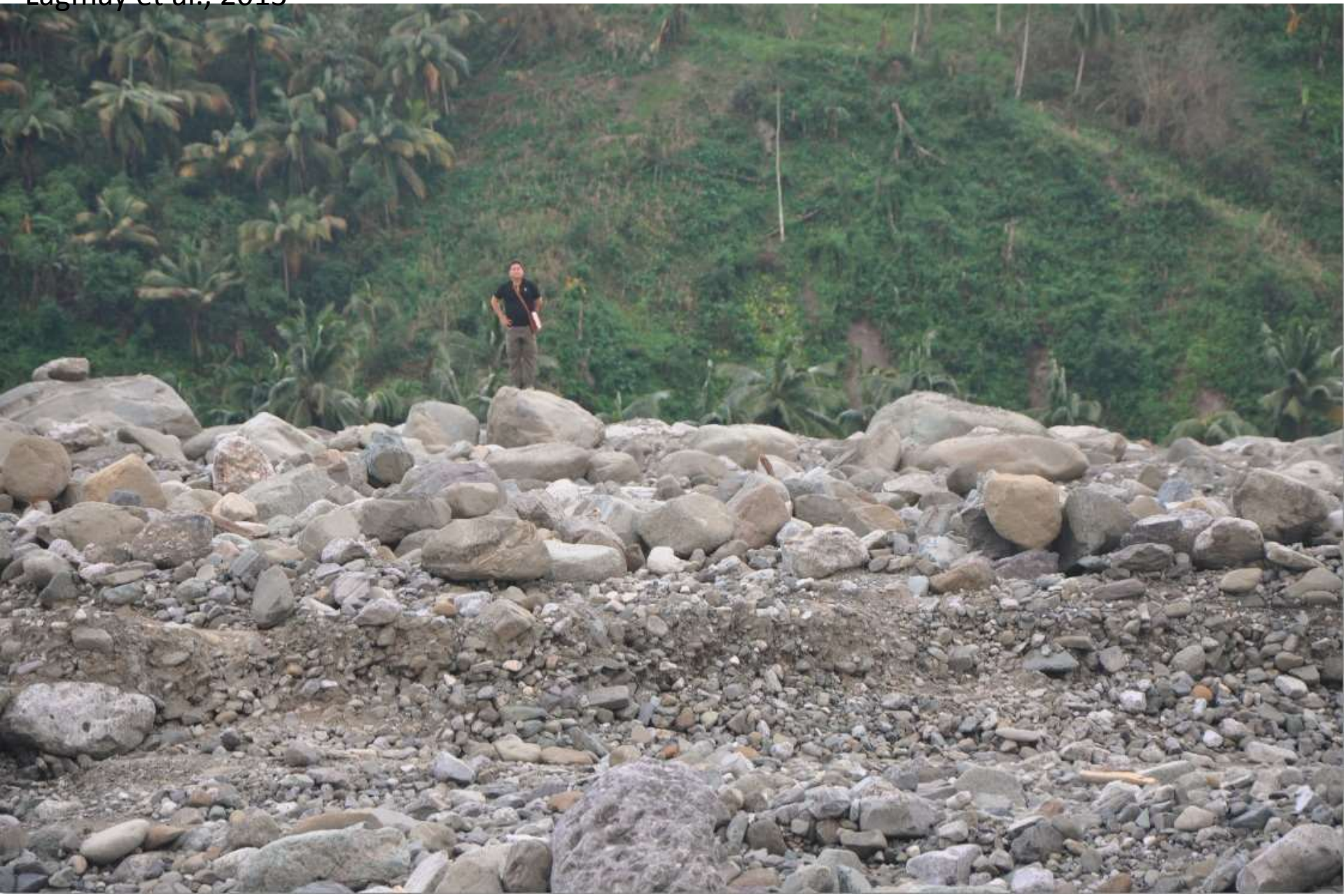
Bgy. Andap, before and after typhoon Pablo images



Lagmay et al., 2013

Debris flow field in New Bataan, Compostela Valley

Lagmay et al., 2013



Debris flow field in New Bataan, Compostela Valley

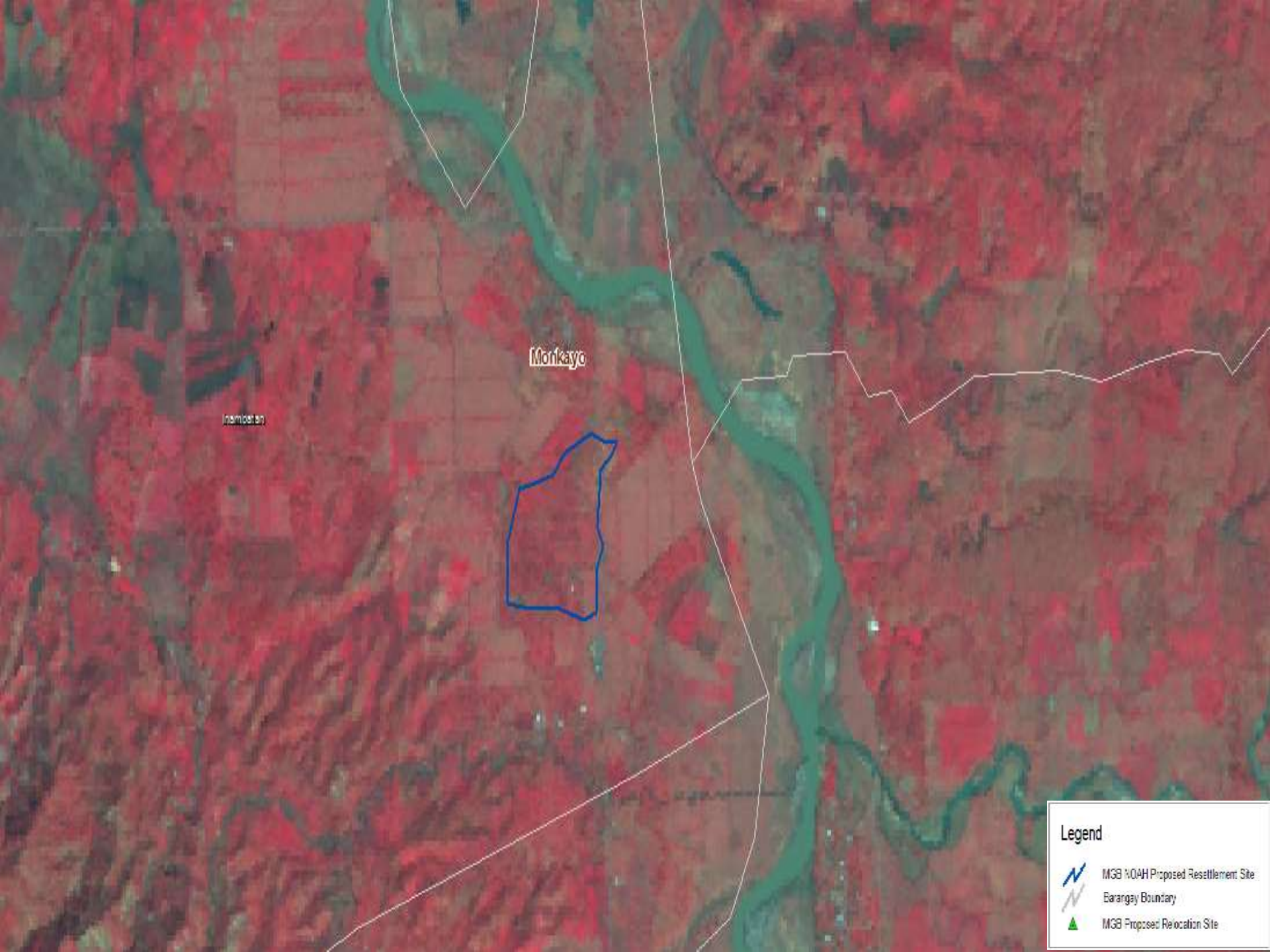
Lagmay et al., 2013

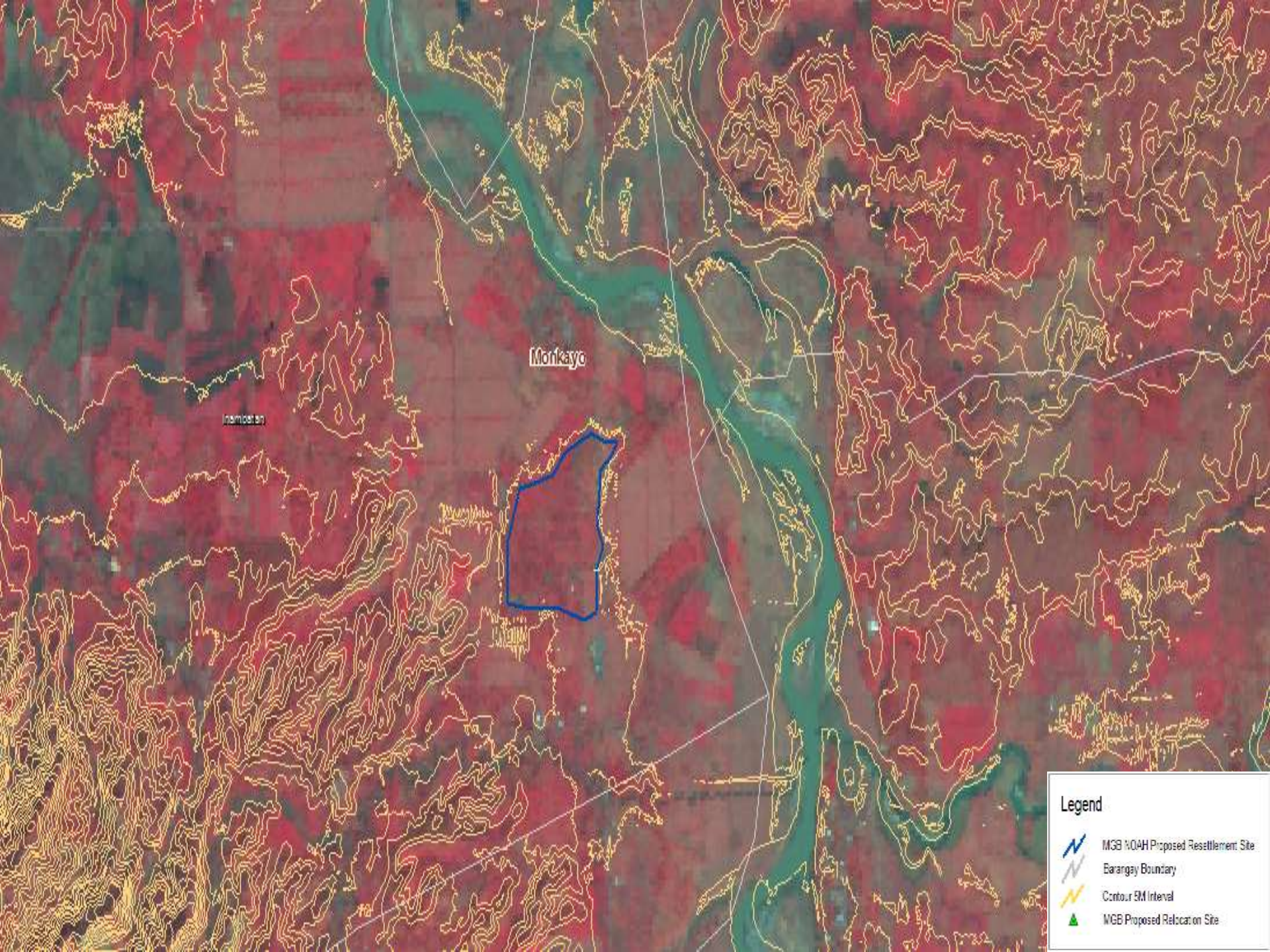
Debris flow field in New Bataan. Volume of deposit – 25-30 million cubic meters

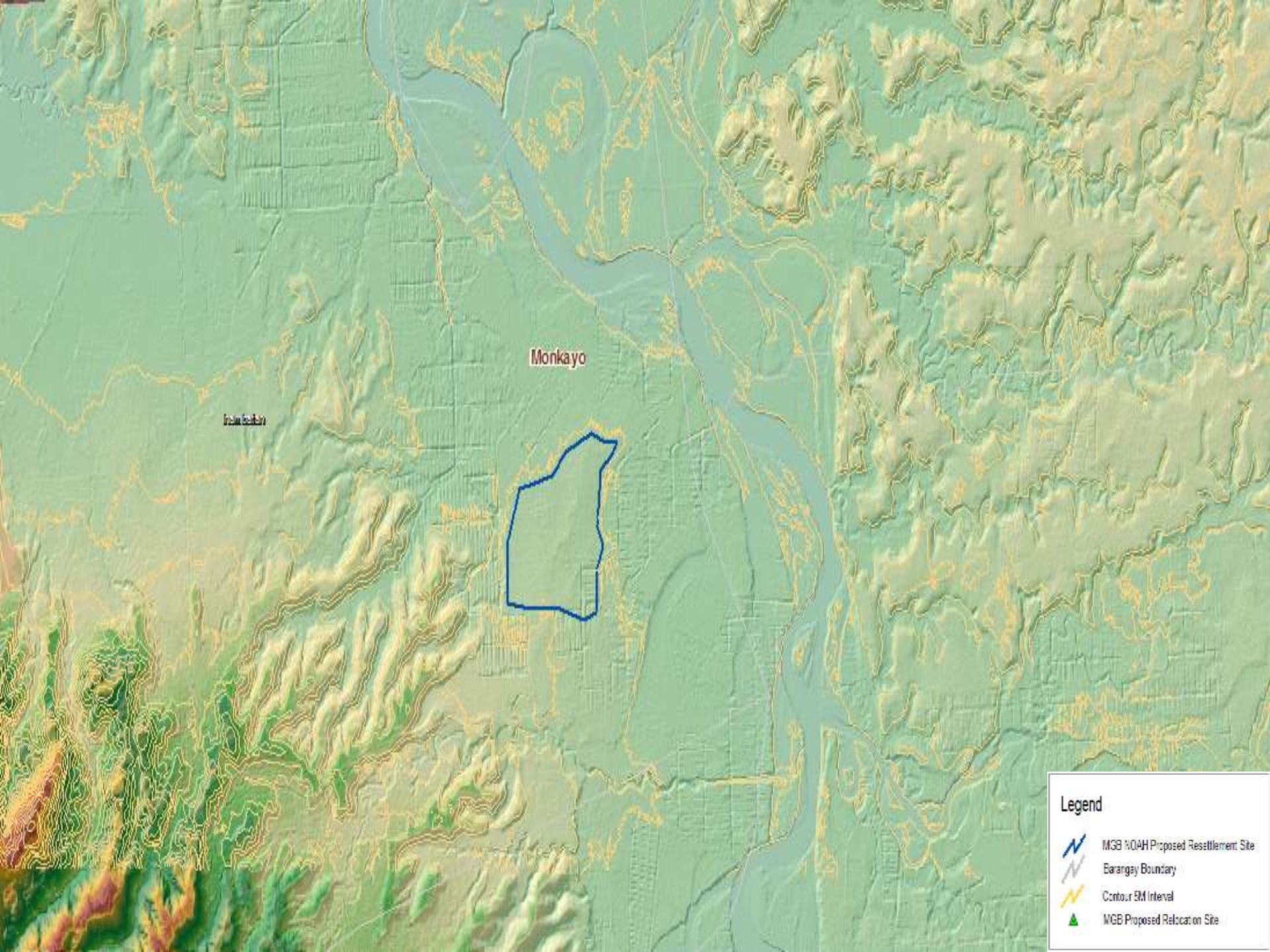
Debris flow field in New Bataan, Compostela Valley

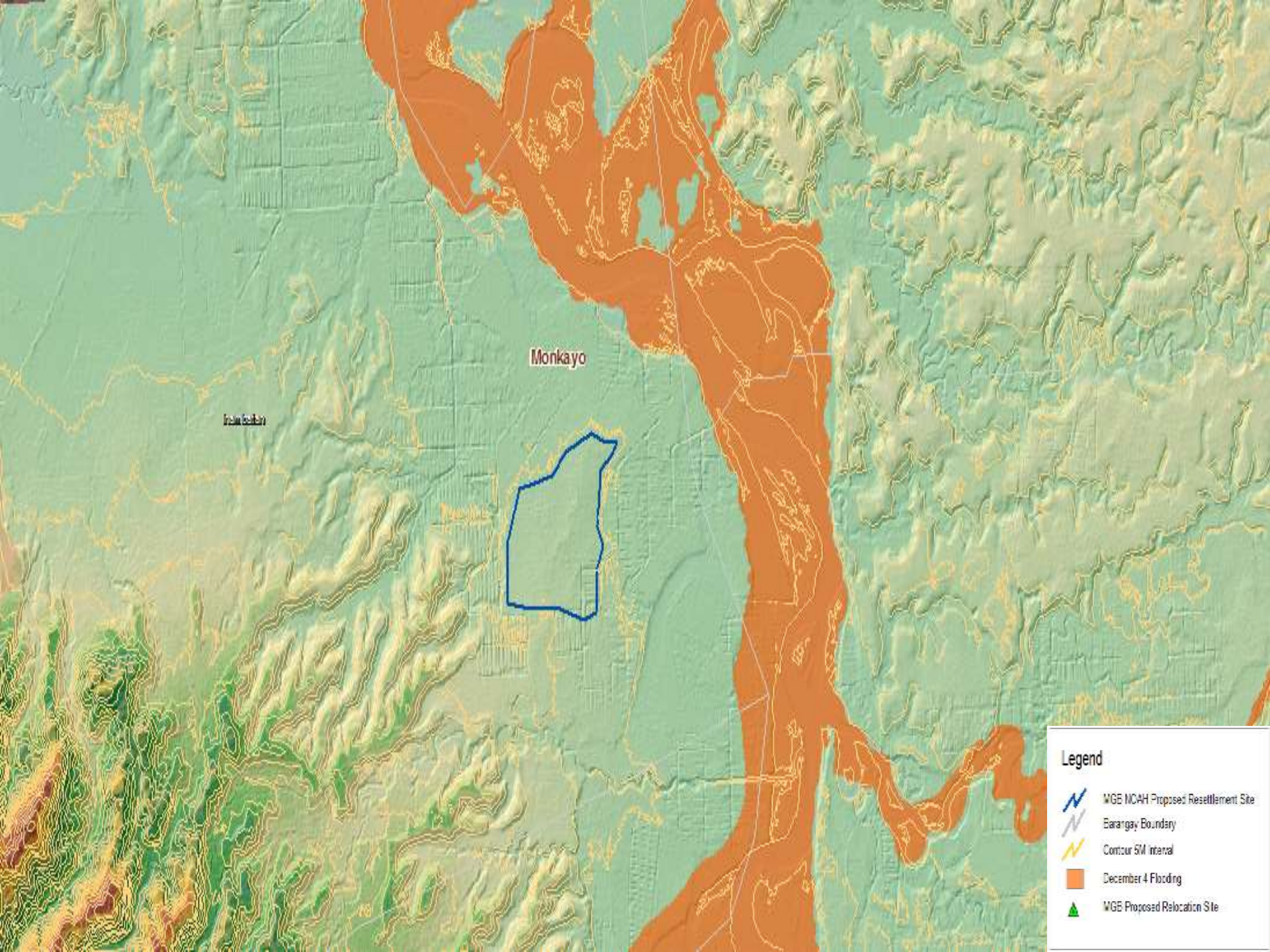
Debris flow field in Cordillera de La Costa, Vargas, Venqezuela. 19,000 died in 1999

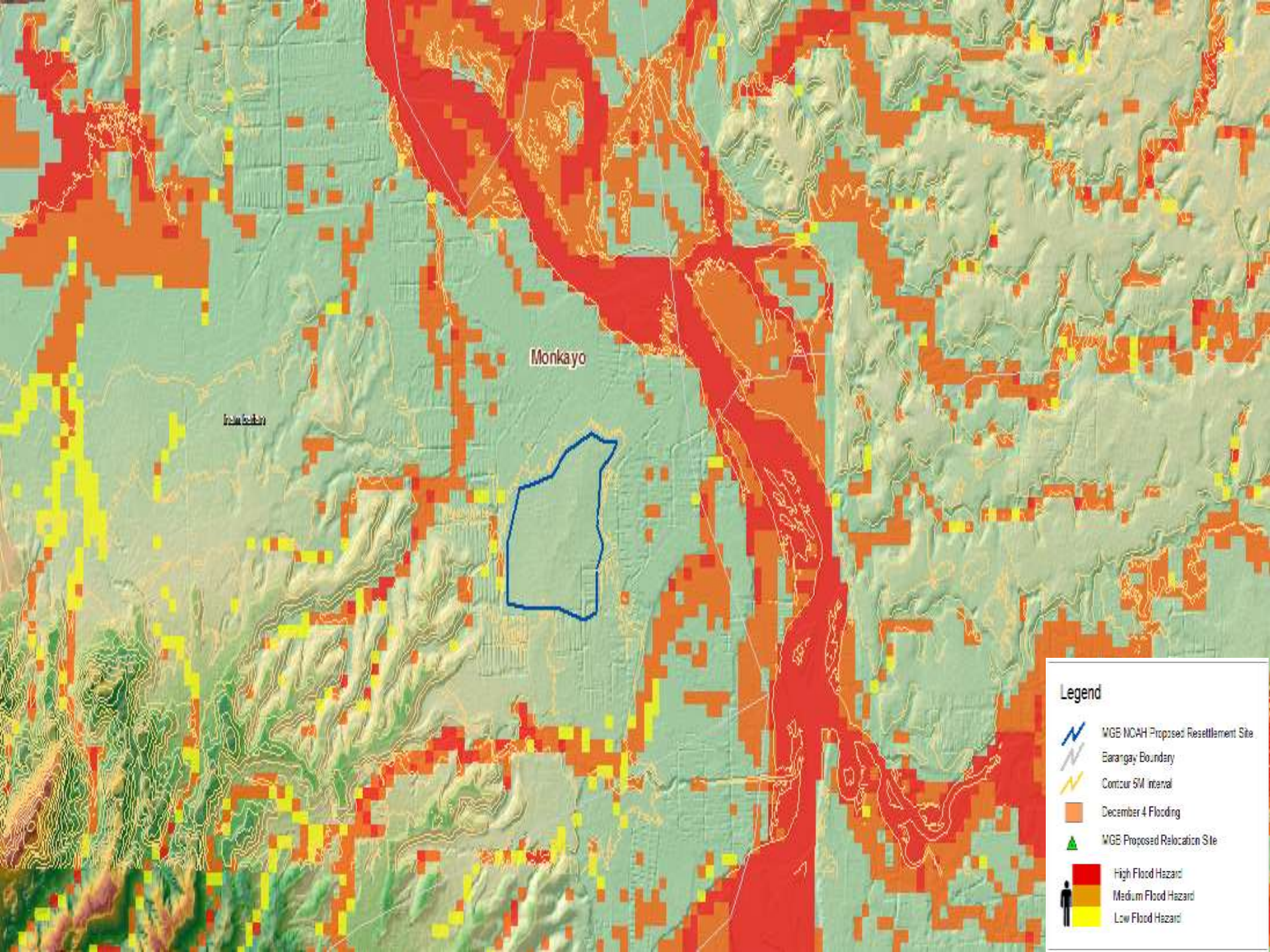
http://www.webpages.uidaho.edu/~simkat/cors220_files/lecture12.html


Monkayo
Legend
MGB NOAH Proposed Resettlement Site
Barangay Boundary
MGB Proposed Relocation Site

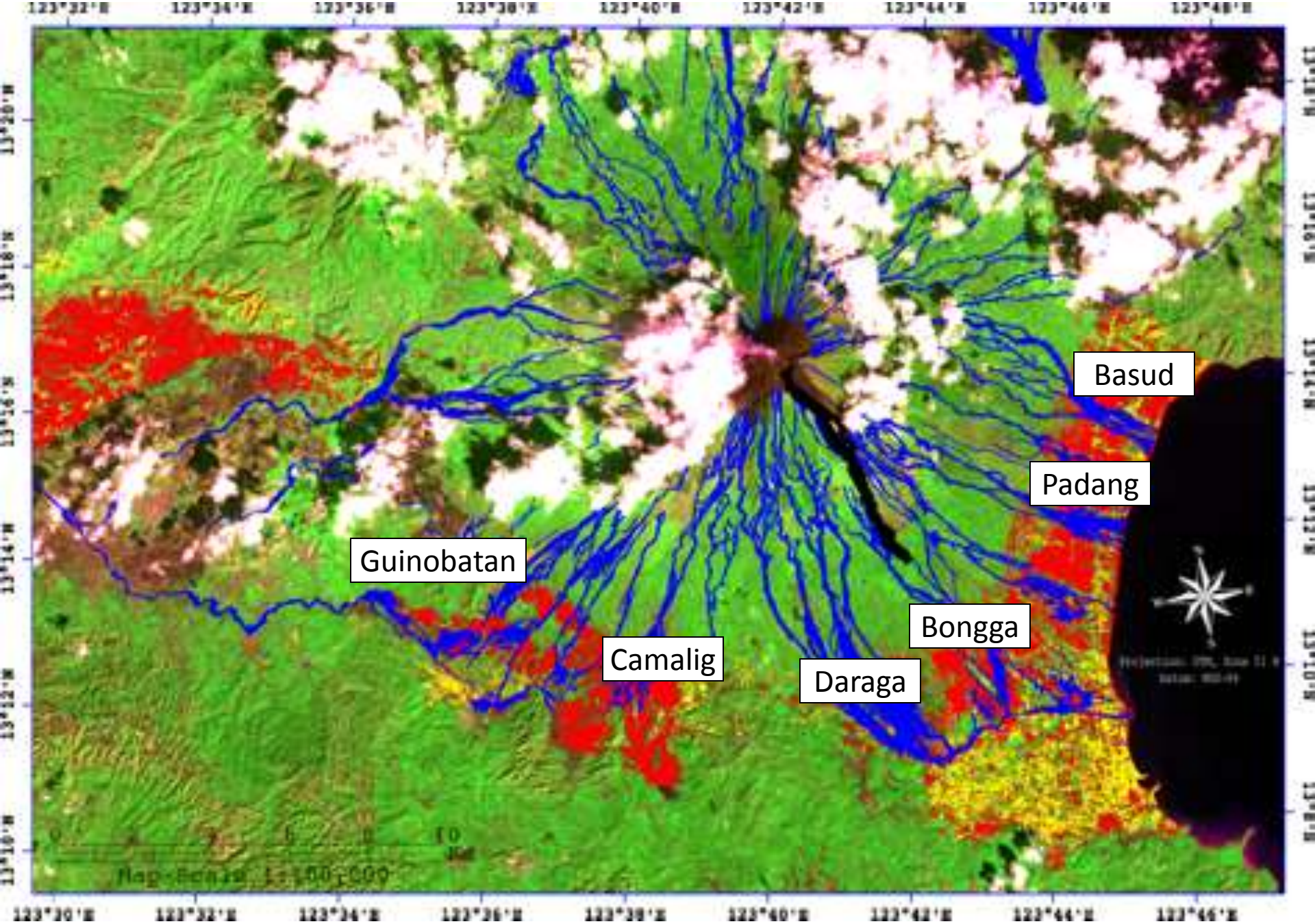

Monkayo
Inambatan
Legend
MGB NOAH Proposed Resettlement Site
Barangay Boundary
Contour 5M Interval
MGB Proposed Relocation Site

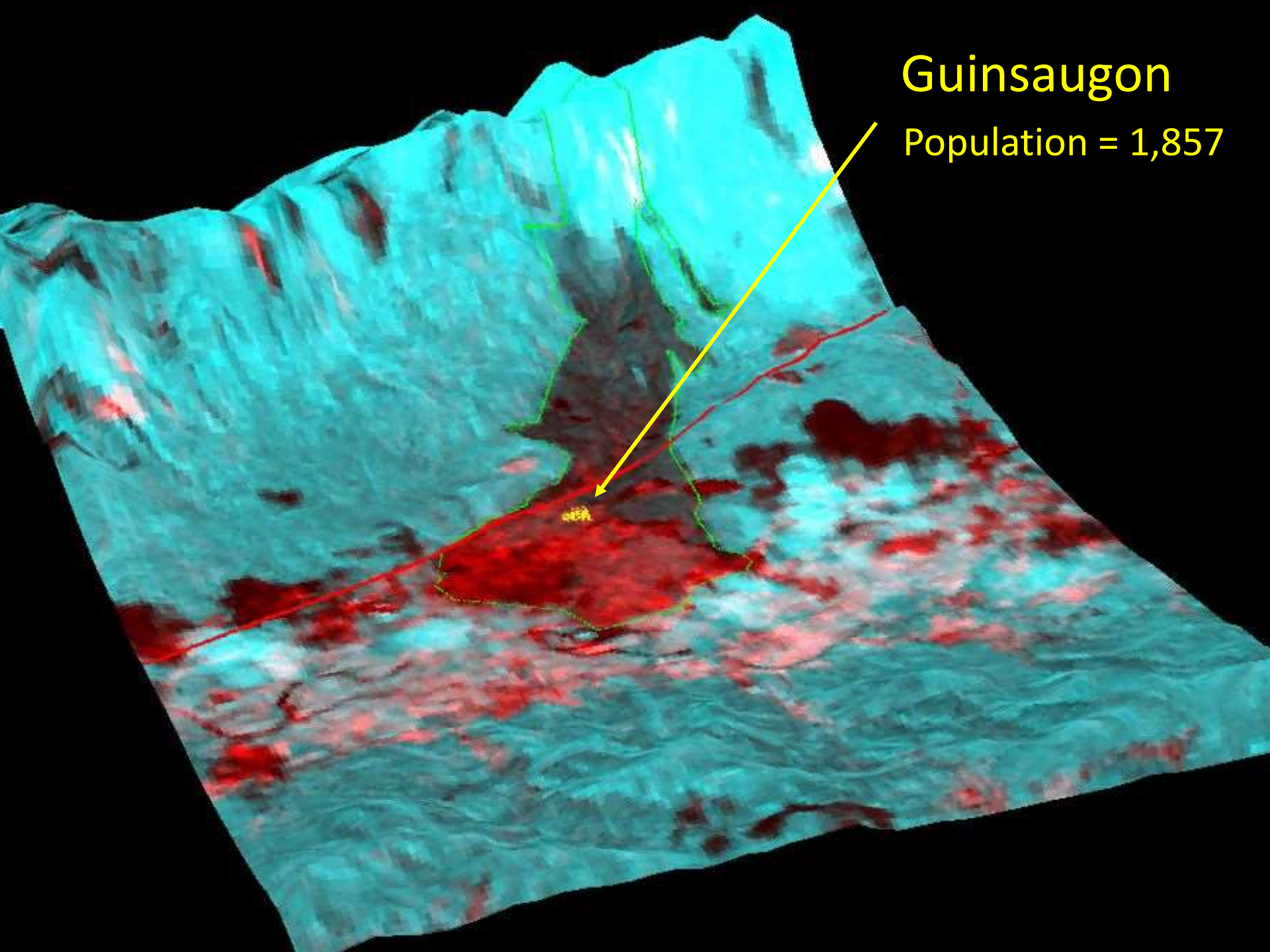

Monkayo
Legend
MGB NOAH Proposed Resettlement Site
Barangay Boundary
Contour 5M Interval
MGB Proposed Relocation Site


Monkayo
Legend
MGB NCAH Proposed Resettlement Site
Barangay Boundary
Contour 5M Interval
December 4 Flooding
MGB Proposed Relocation Site


Monkayo
Legend
WGE NCAH Proposed Resettlement Site
Barangay Boundary
Contour 5M Interval
December 4 Flooding
WGE Proposed Relocation Site
High Flood Hazard
Medium Flood Hazard
Low Flood Hazard

Mayon volcano lahar deposits . Lahars triggered by typhoon Durian in 2006


Basud
Padang
Guinobatan
Bongga
Camalig
Daraga


Guinsaugon
Population = 1,857

Feb. 17, 2006 Guinsaugon landslide 1126 dead US$ 2.203 million

15-20 million cubic meters

Day 6, Wed, 22 Feb 2006


Day 7, Thurs, 23 Feb 2006

Day 7, Thurs, 23 Feb 2006

RESCUE 505

Pedring and Quiel typhoons in 2011

NIGS

Google Earth

Sentinel Asia

Tropical storm Sendong


Orchids Home Subidivision, Santiago, Iligan
http://www.firmbuilders.com.ph/

Orchids Home Subidivision, Santiago, Iligan

DOST PROJECTS UNDER THE NOAH

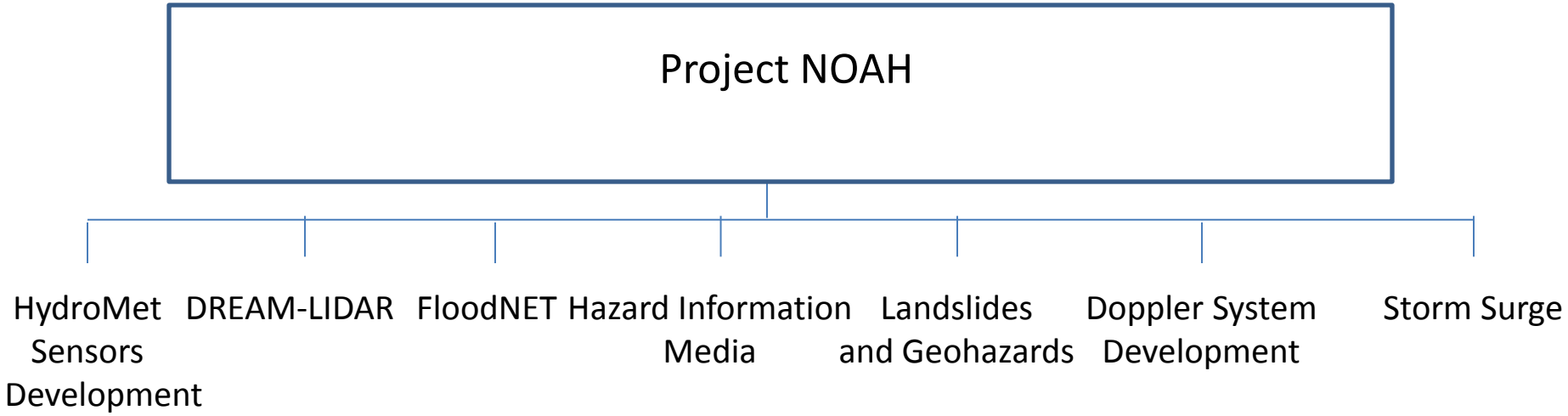
In response to President Aquino's instructions to put in place a responsive program for:

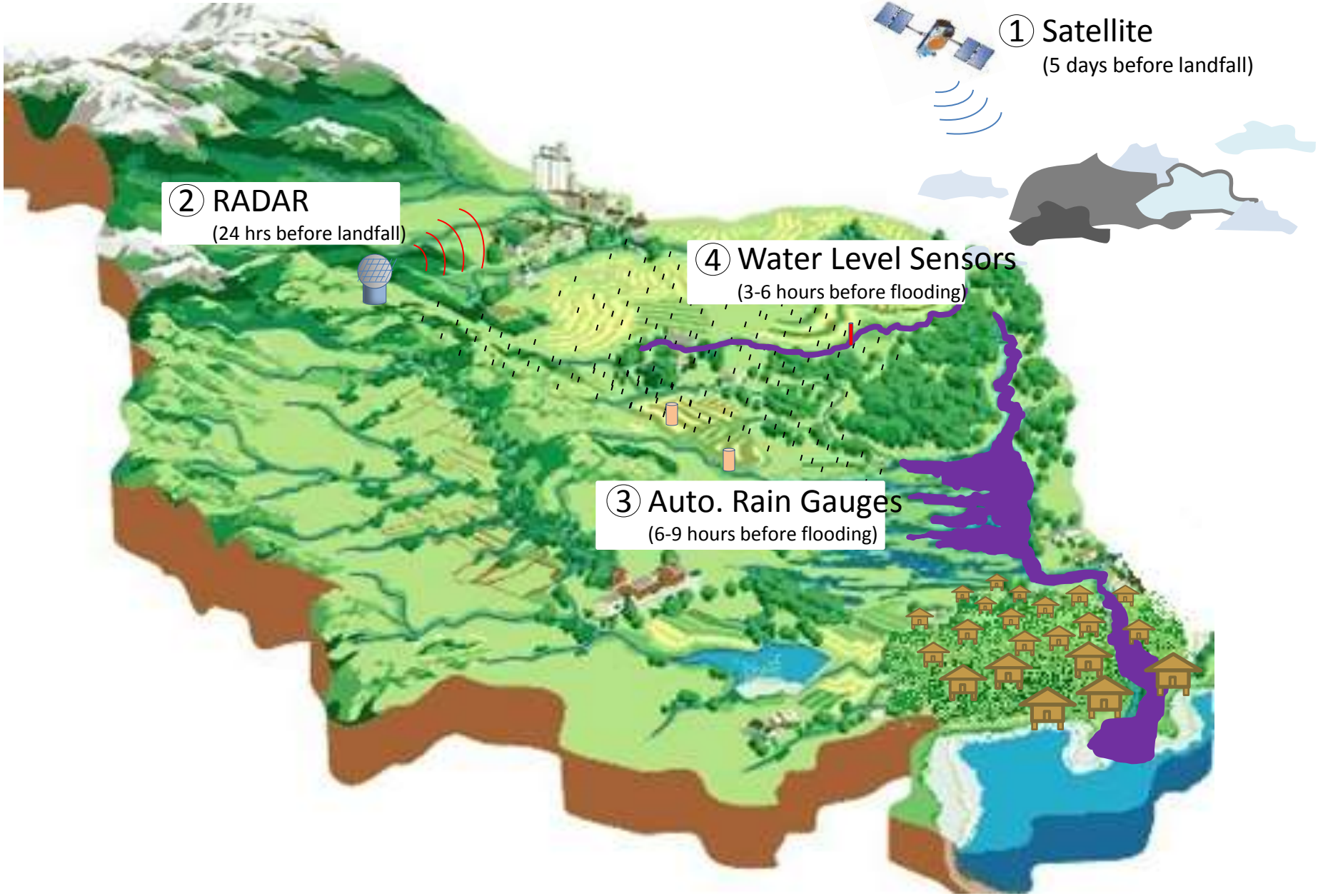
1) flood mitigation, specifically targeting a 6 hour flood early warning system for communities along 18 major river systems;
2) enhancement of geohazard maps and;
3) enhancement of storm surge vulnerability maps

the DOST is presenting the
Nationwide Operational Asessment of Hazards

DEPARTMENT OF SCIENCE AND TECHNOLOGY

DOST PROGRAMS UNDER THE NOAH PROGRAM




① Satellite
(5 days before landfall)
② RADAR
(24 hrs before landfall)
④ Water Level Sensors
(3-6 hours before flooding)
③ Auto. Rain Gauges
(6-9 hours before flooding)

Teknolohiyang Gamit ng Project NOAH

Automated Rain Gauge (ARG)

Measures amount of rainfall over a period of time

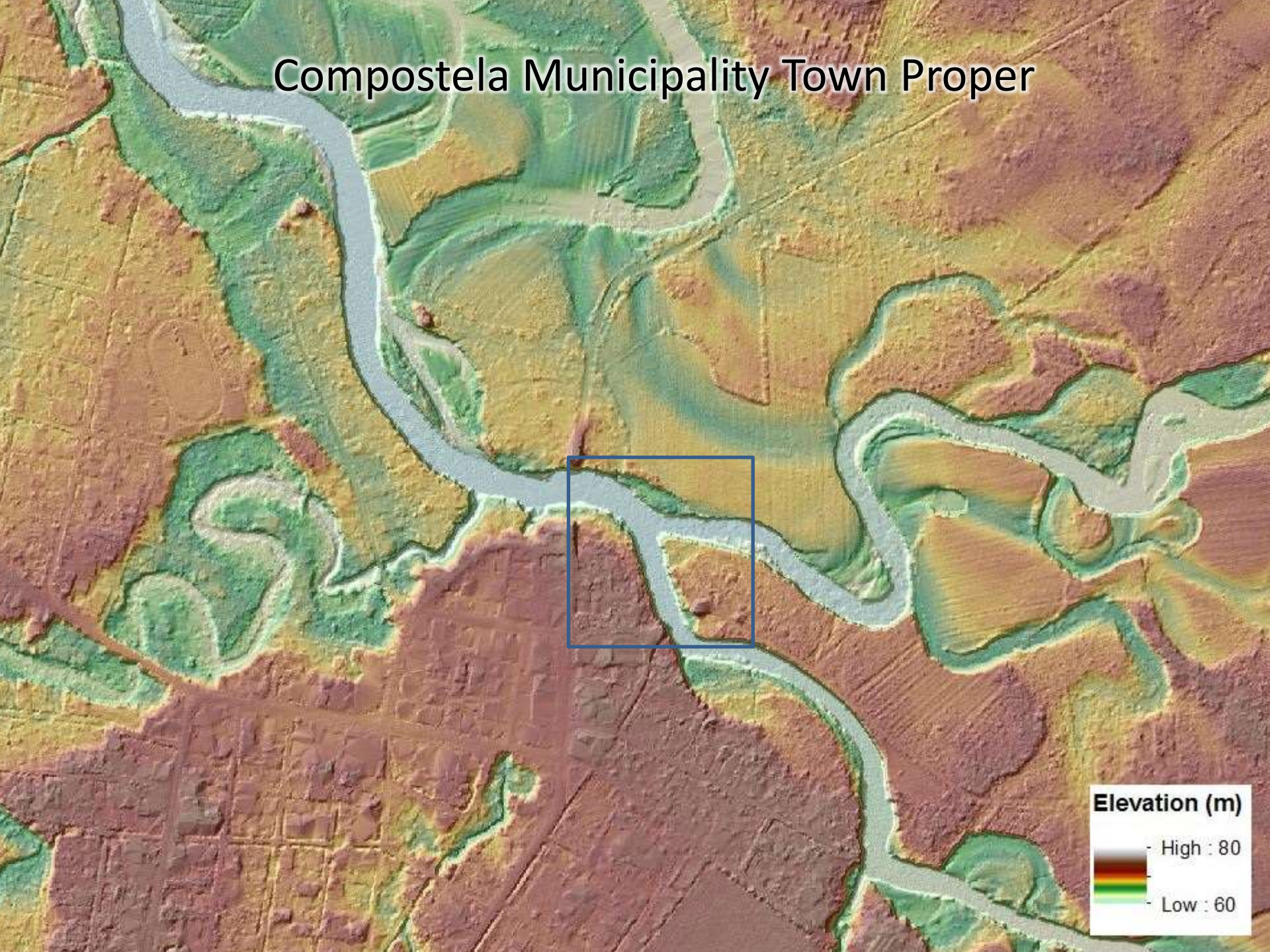
Measures
- **Wind Speed**
- **Wind direction**
- **Air Temperature**
- **Air humidity**
- **Air pressure**
- **Rain amount, duration & intensity**

Automated Weather Station (AWS)

Doppler Radar

Stream Gauge


Compostela Municipality Town Proper
Elevation (m)
High : 110
Low : 60


Compostela Municipality Town Proper
Elevation (m)
High : 80
Low : 60

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Nationwide Operational Assessment of Hazards - Beta

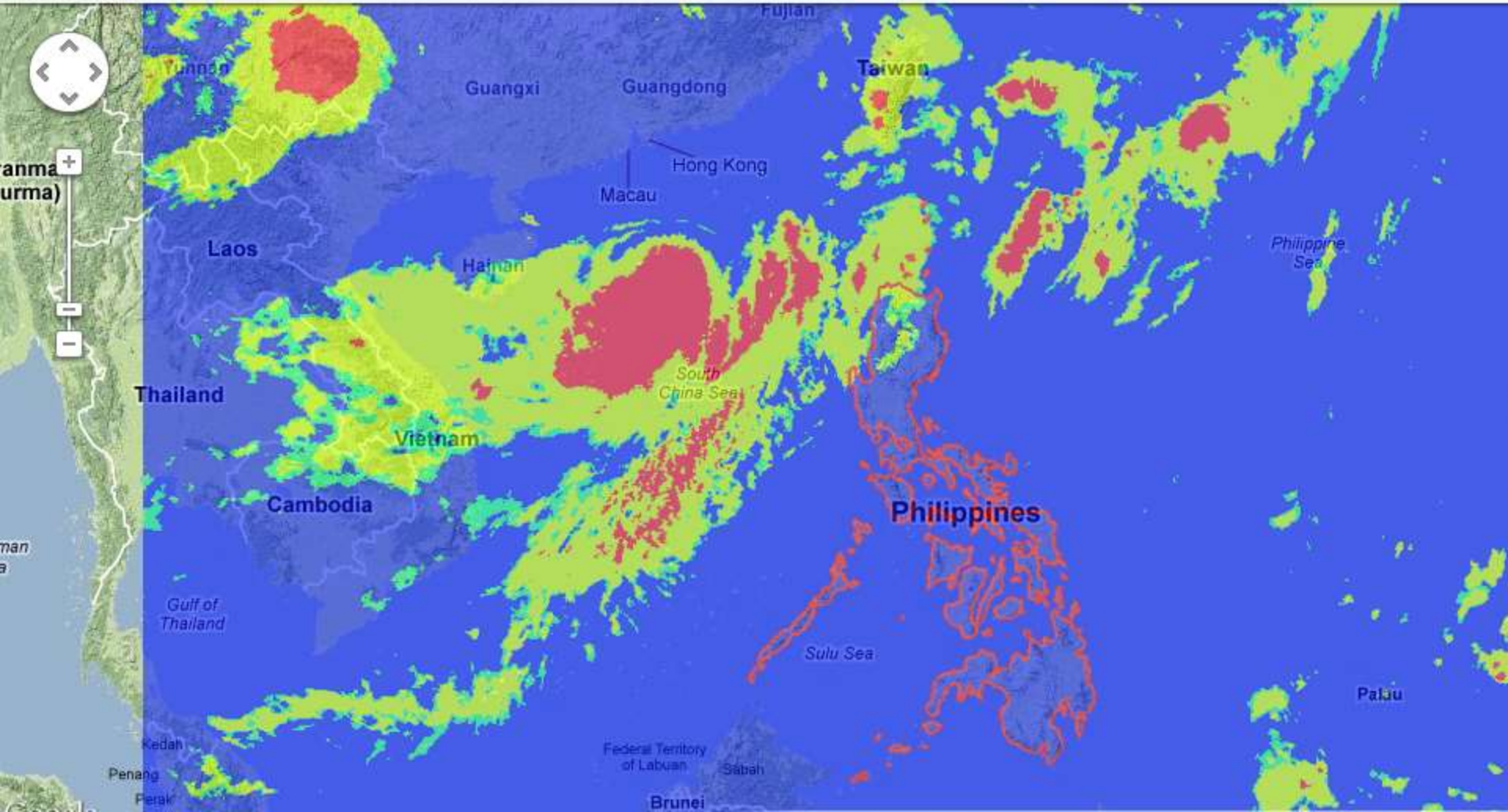
SEARCH: Enter a location

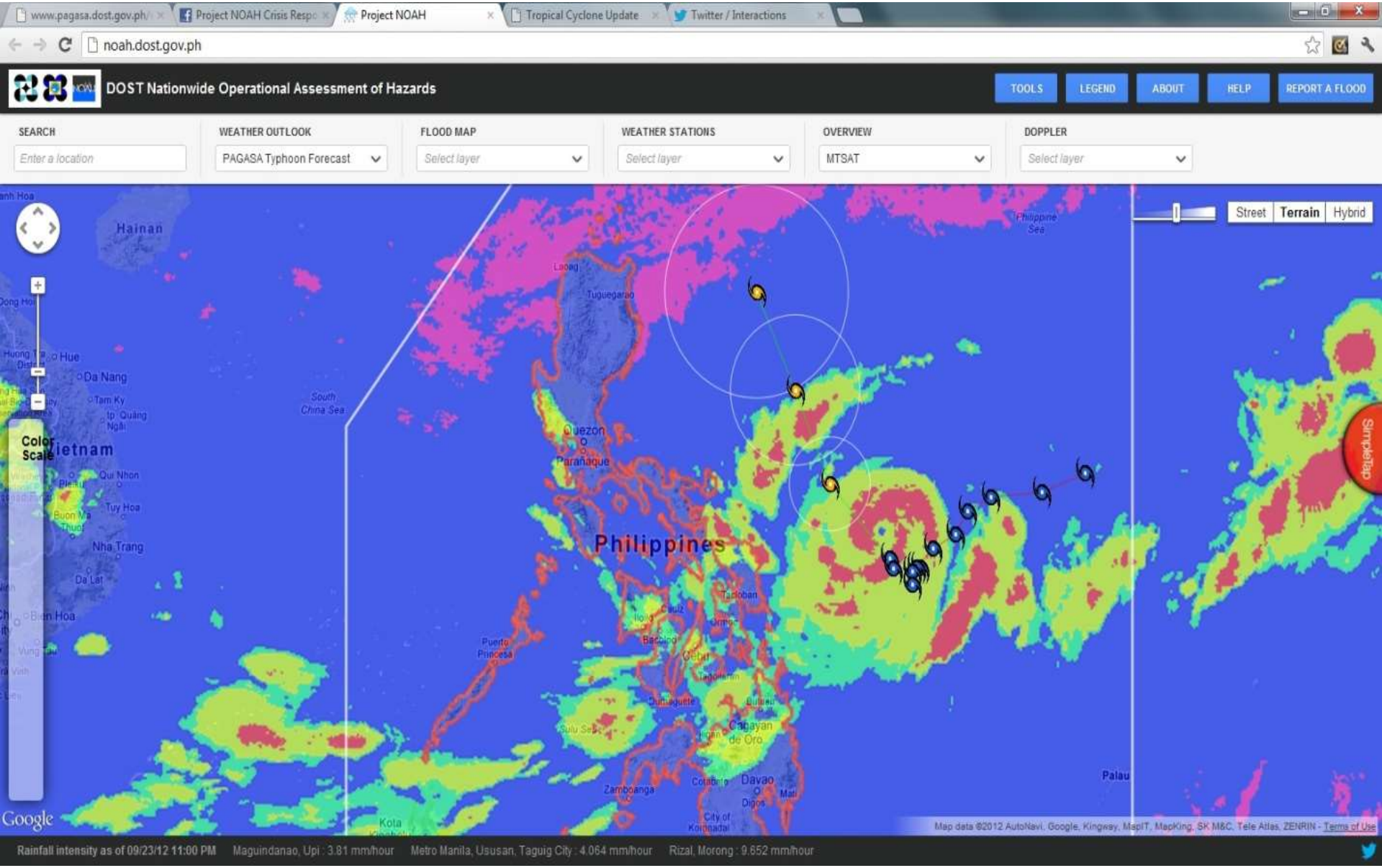
WEATHER OUTLOOK: Select layer

FLOOD MAP: Select layer

WEATHER STATIONS: Select layer

OVERVIEW: MTSAT

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Project NOAH
Tropical Cyclone Update
Twitter / Interactions
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WEATHER OUTLOOK
PAGASA Typhoon Forecast
FLOOD MAP
Select layer
WEATHER STATIONS
Select layer
OVERVIEW
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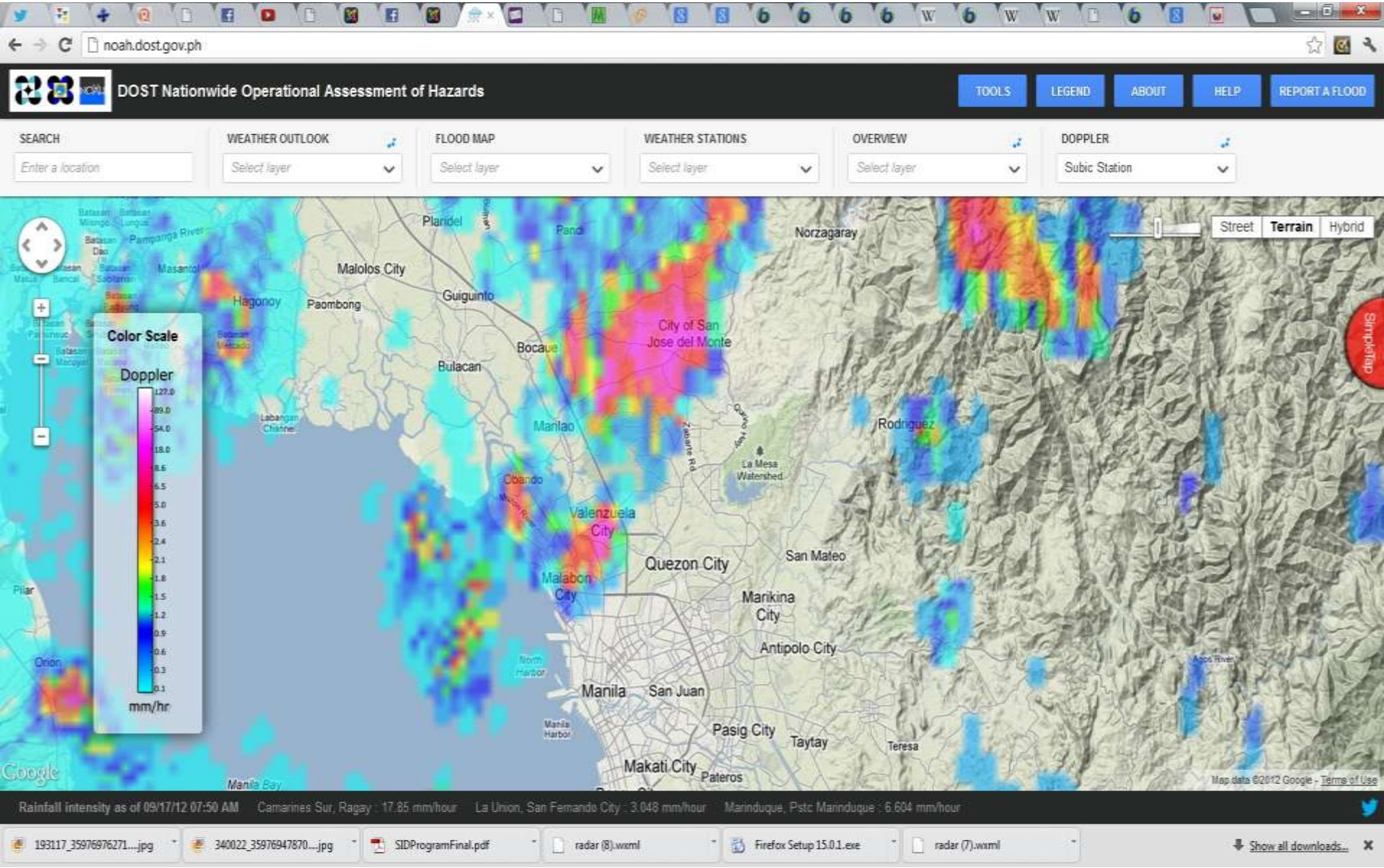
DOPPLER
Select layer
Street
Terrain
Hybrid
Color Scale
Philippines
Hainan
South China Sea
Philippine Sea
Vietnam
Hue
Da Nang
Qui Nhon
Tuy Hoa
Nha Trang
Da Lat
Quezon
Paranaque
Tuguegarao
Laoag
Puerto Princesa
Cagayan de Oro
Davao
Zamboanga
Palau
Google
Map data ©2012 AutoNavi, Google, Kingway, MapIT, MapKing, SK M&C, Tele Atlas, ZENRIN - Terms of Use
Rainfall intensity as of 09/23/12 11:00 PM
Maguindanao, Upi : 3.81 mm/hour
Metro Manila, Ususan, Taguig City : 4.064 mm/hour
Rizal, Morong : 9.652 mm/hour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Hybrid
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2.1
1.8
1.5
1.2
0.9
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mm/hr
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Pandi
Norzagaray
Malolos City
Guiguinto
Hagonoy
Paombong
City of San Jose del Monte
Bocaue
Bulacan
Marilao
Rodriguez
La Mesa Watershed
Obando
Valenzuela City
Quezon City
San Mateo
Malabon City
Marikina City
Antipolo City
Manila
San Juan
Pasig City
Taytay
Teresa
Makati City
Pateros
Pilar
Orion
Manila Bay
Google
Map data ©2012 Google - Terms of Use
Rainfall intensity as of 09/17/12 07:50 AM
Camarines Sur, Ragay : 17.85 mm/hour
La Union, San Fernando City : 3.048 mm/hour
Marinduque, Pstc Marinduque : 6.604 mm/hour
193117_35976976271....jpg
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SIDProgramFinal.pdf
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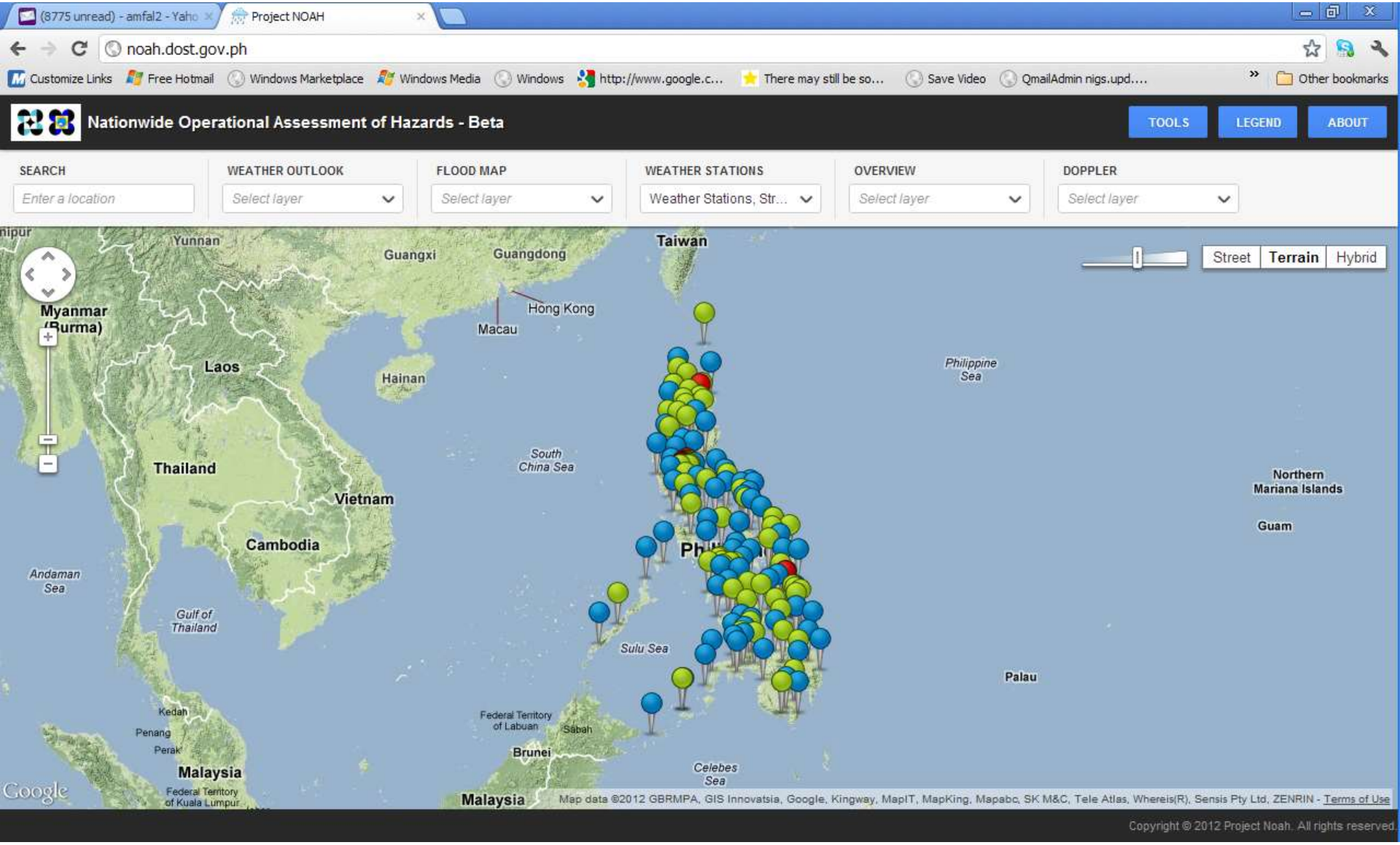
Firefox Setup 15.0.1.exe
radar (7).wxml
Show all downloads...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OVERVIEW
Select layer
DOPPLER
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Street
Terrain
Hybrid
Yunnan
Guangxi
Guangdong
Taiwan
Myanmar (Burma)
Hong Kong
Macau
Laos
Hainan
Philippine Sea
South China Sea
Thailand
Vietnam
Cambodia
Northern Mariana Islands
Guam
Andaman Sea
Gulf of Thailand
Sulu Sea
Palau
Kedah
Penang
Perak
Malaysia
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Federal Territory of Labuan
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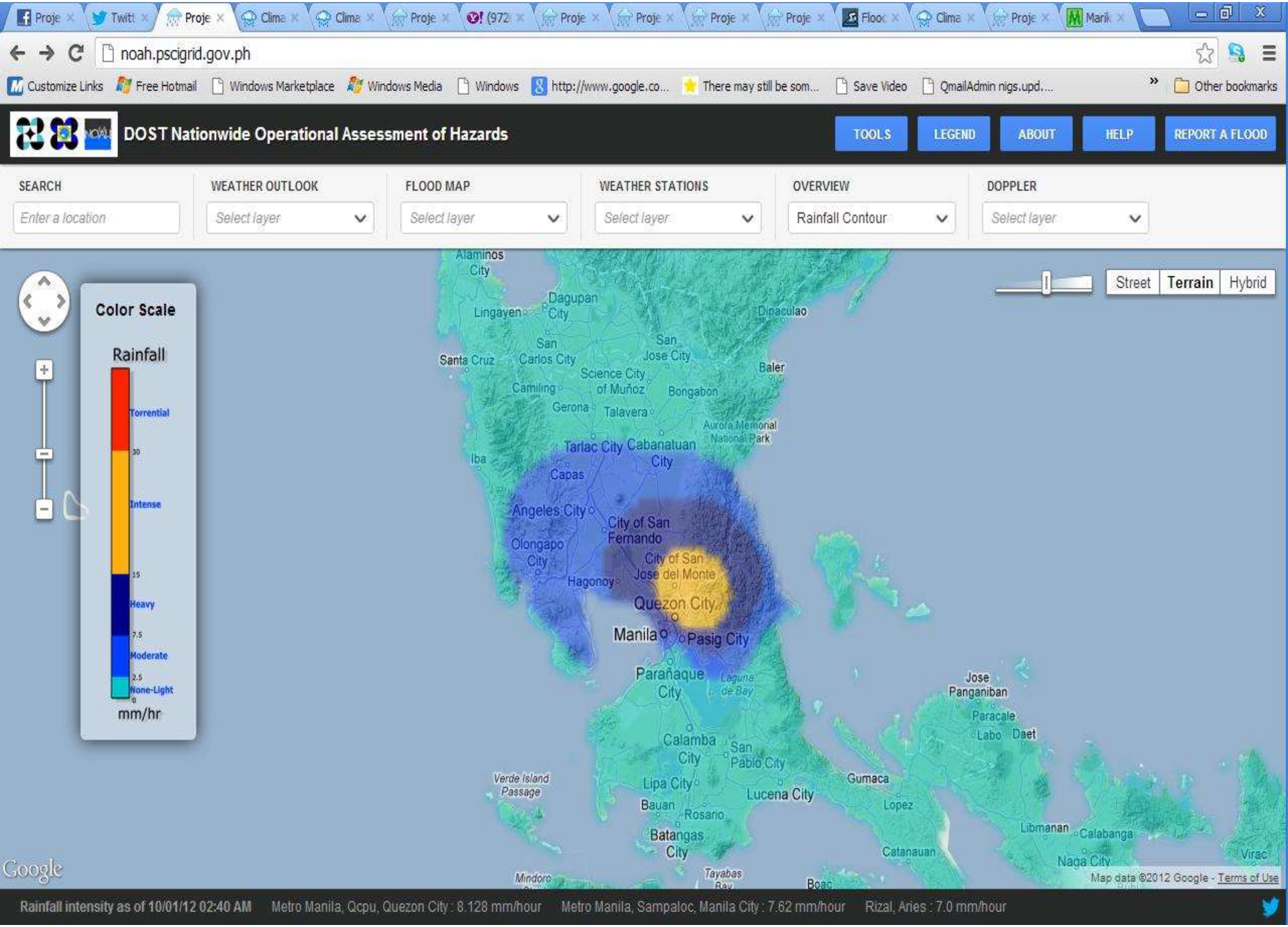
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DOPPLER
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Moderate
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mm/hr
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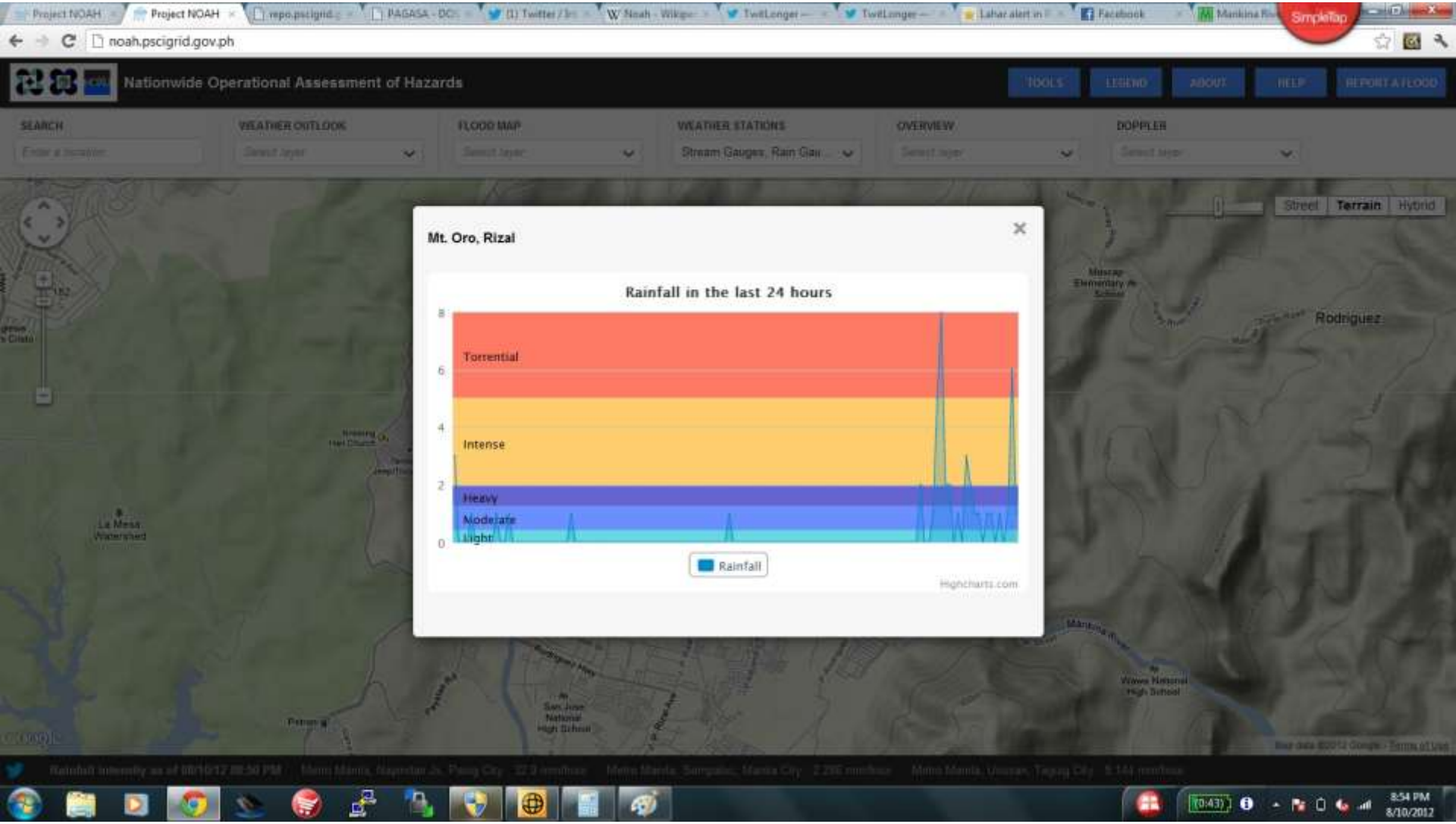
Terrain
Hybrid
Alaminos City
Dagupan City
Lingayen
Dipaculao
San Jose City
Santa Cruz
San Carlos City
Science City of Muñoz
Baler
Camiling
Bongabon
Gerona
Talavera
Aurora Memorial National Park
Tarlac City
Cabanatuan City
Iba
Capas
Angeles City
City of San Fernando
Olongapo City
City of San Jose del Monte
Hagonoy
Quezon City
Manila
Pasig City
Parañaque City
Laguna de Bay
Jose Panganiban
Paracale
Labo
Daet
Calamba City
San Pablo City
Verde Island Passage
Lipa City
Gumaca
Lucena City
Bauan
Rosario
Lopez
Batangas City
Libmanan
Calabanga
Catanauan
Naga City
Virac
Mindoro
Tayabas Bay
Boac
Google
Map data ©2012 Google - Terms of Use
Rainfall intensity as of 10/01/12 02:40 AM
Metro Manila, Qcpu, Quezon City : 8.128 mm/hour
Metro Manila, Sampaloc, Manila City : 7.62 mm/hour
Rizal, Aries : 7.0 mm/hour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OVERVIEW
DOPPLER
Street
Terrain
Hybrid
Mt. Oro, Rizal
Rainfall in the last 24 hours
Torrential
Intense
Heavy
Moderate
Light
Rainfall
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Nationwide Operational Assessment of Hazards

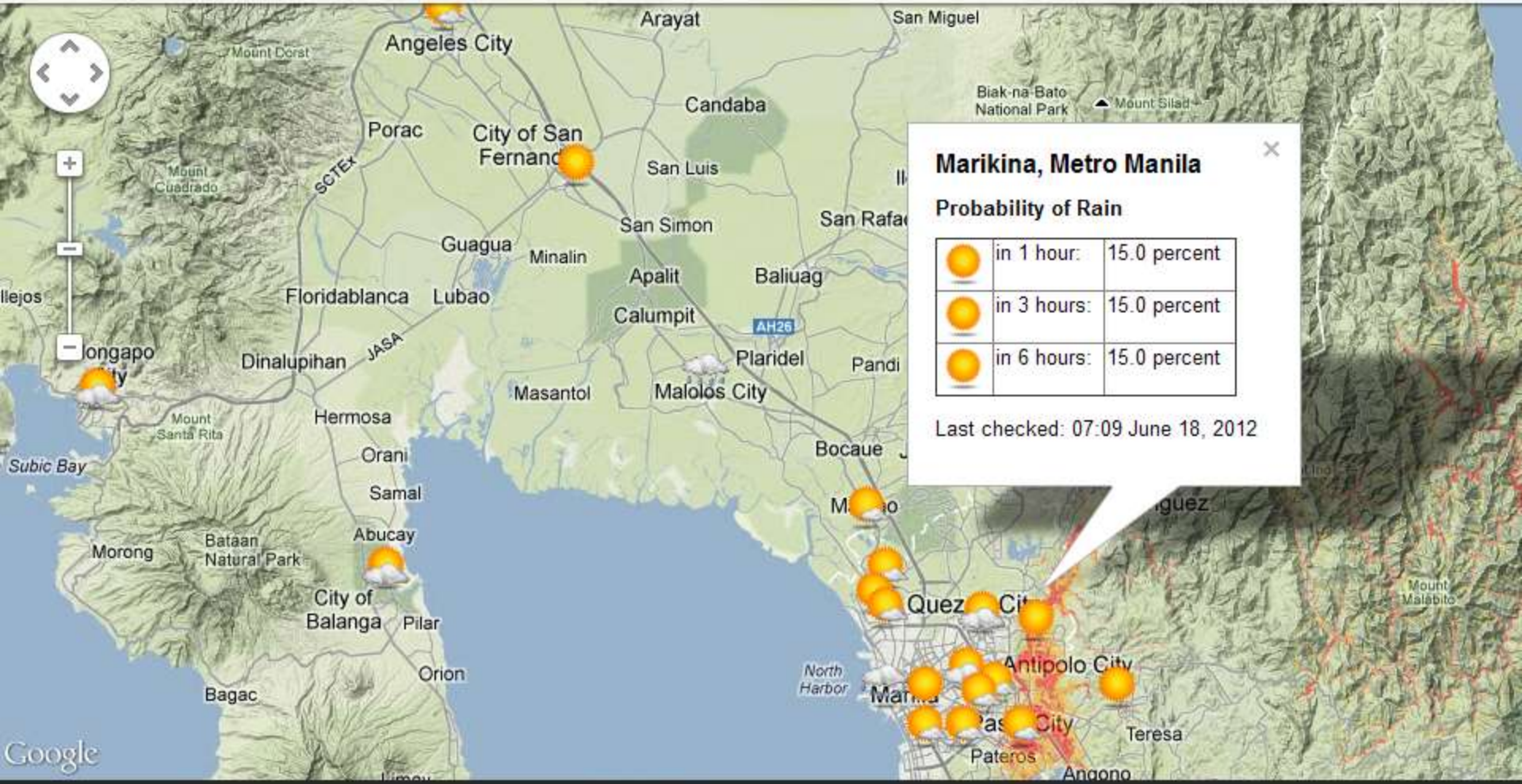
SEARCH: Marikina City, Metro Manila,

WEATHER OUTLOOK: Probability of Rain

FLOOD MAP: Ondoy Flood Map

WEATHER STATIONS: Select layer

DOPPLER: Select layer

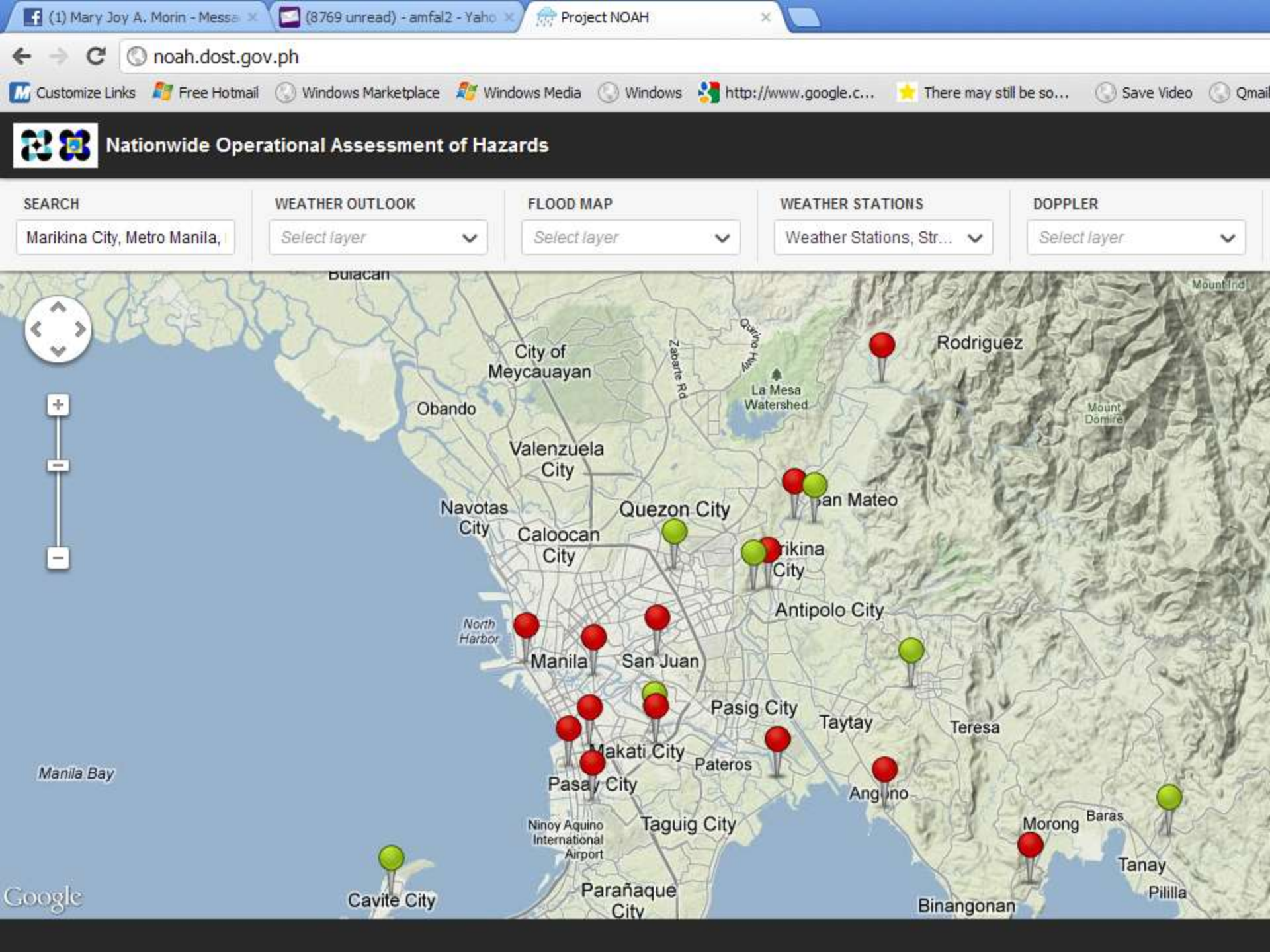


Marikina, Metro Manila

Probability of Rain

in 1 hour:	15.0 percent
in 3 hours:	15.0 percent
in 6 hours:	15.0 percent

Last checked: 07:09 June 18, 2012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DOPPLER
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Bulacan
City of Meycauayan
Obando
Valenzuela City
Navotas City
Caloocan City
Quezon City
La Mesa Watershed
Rodriguez
Mount Dómire
Antipolo City
North Harbor
Manila
San Juan
Pasig City
Taytay
Teresa
Makati City
Pateros
Pasay City
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Cavite City
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Morong
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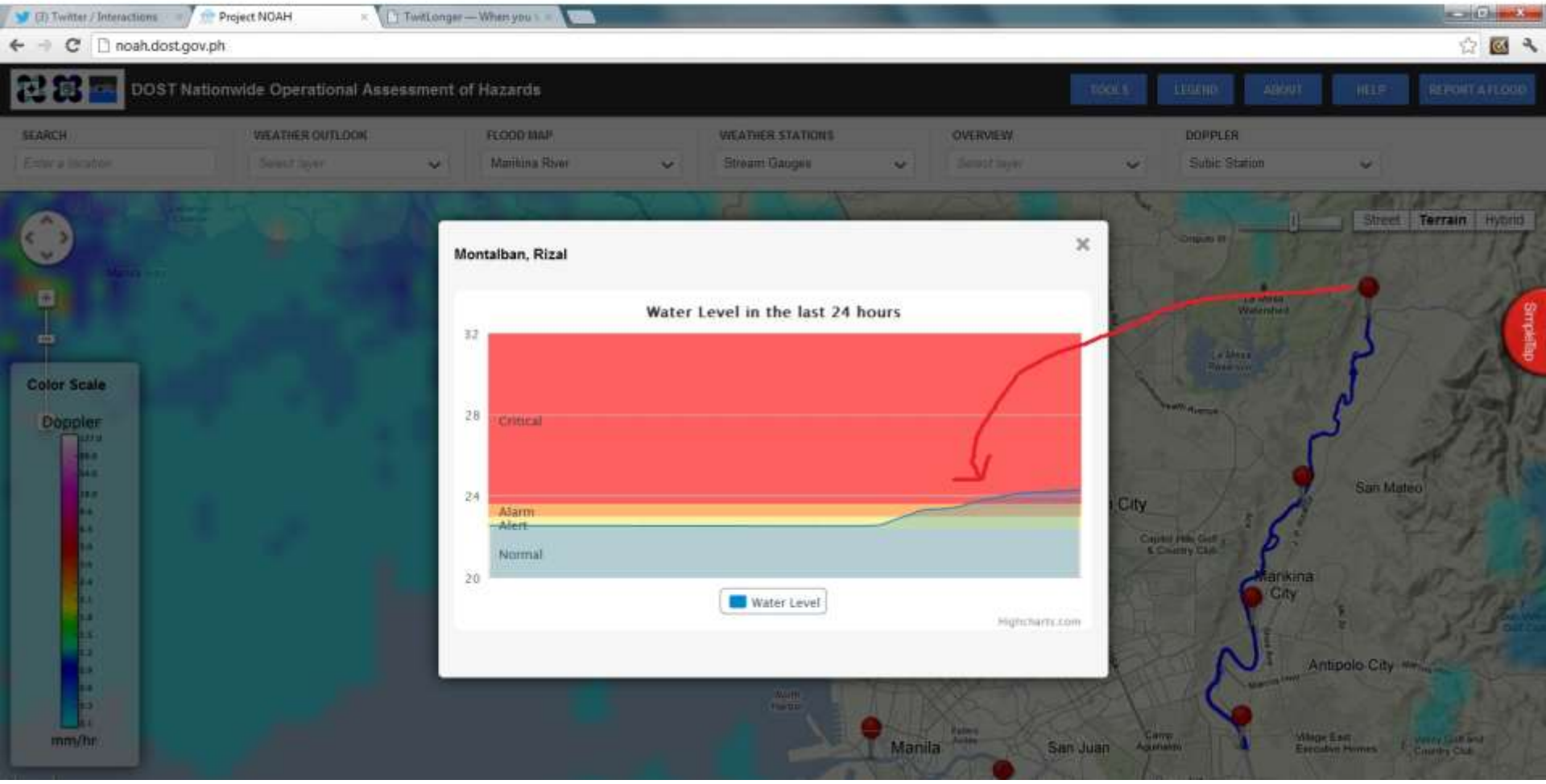
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WEATHER STATIONS
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Street
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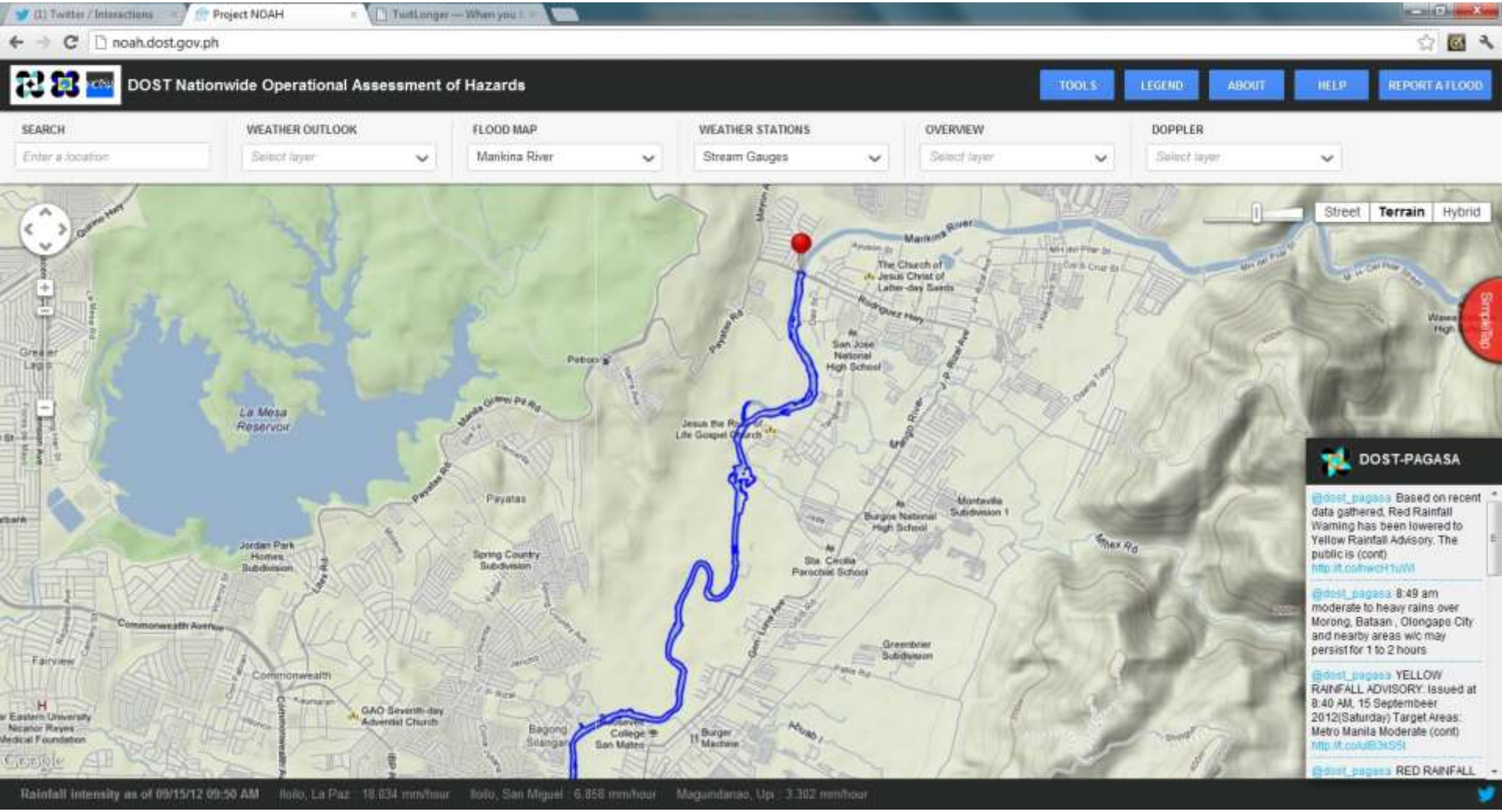
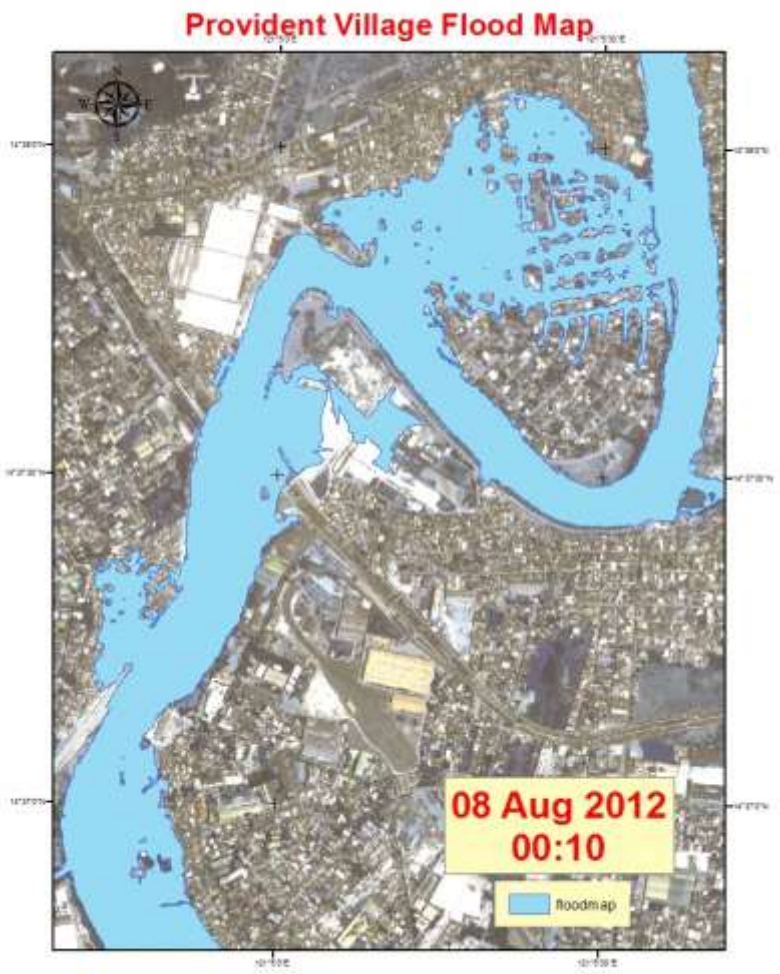
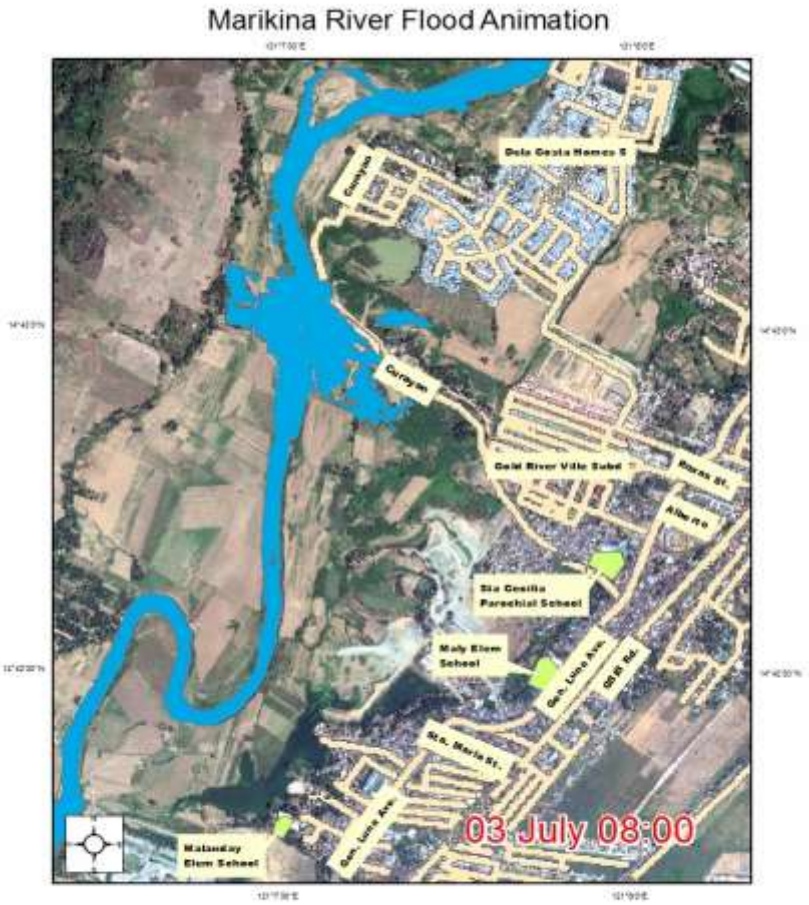
Color Scale
Doppler
mm/hr
Montalban, Rizal
Water Level in the last 24 hours
32
28
24
20
Critical
Alarm
Alert
Normal
Water Level
Highcharts.com
San Mateo
Marikina City
Antipolo City
Manila
San Juan



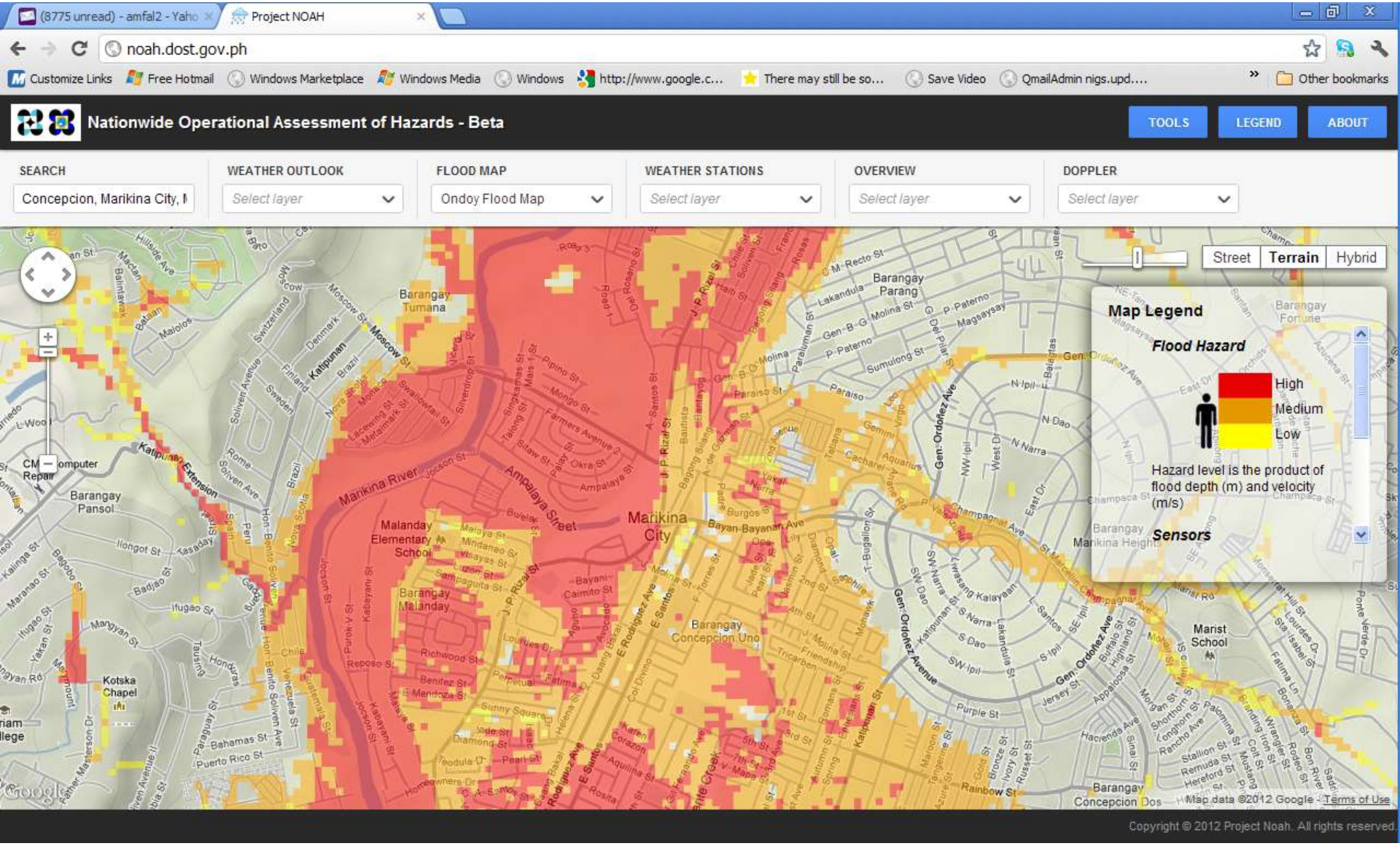
Simulated over Office of Civil Defense (OCD) – CSCAND Lidar data

Rapid Flood Simulation for Flood Events

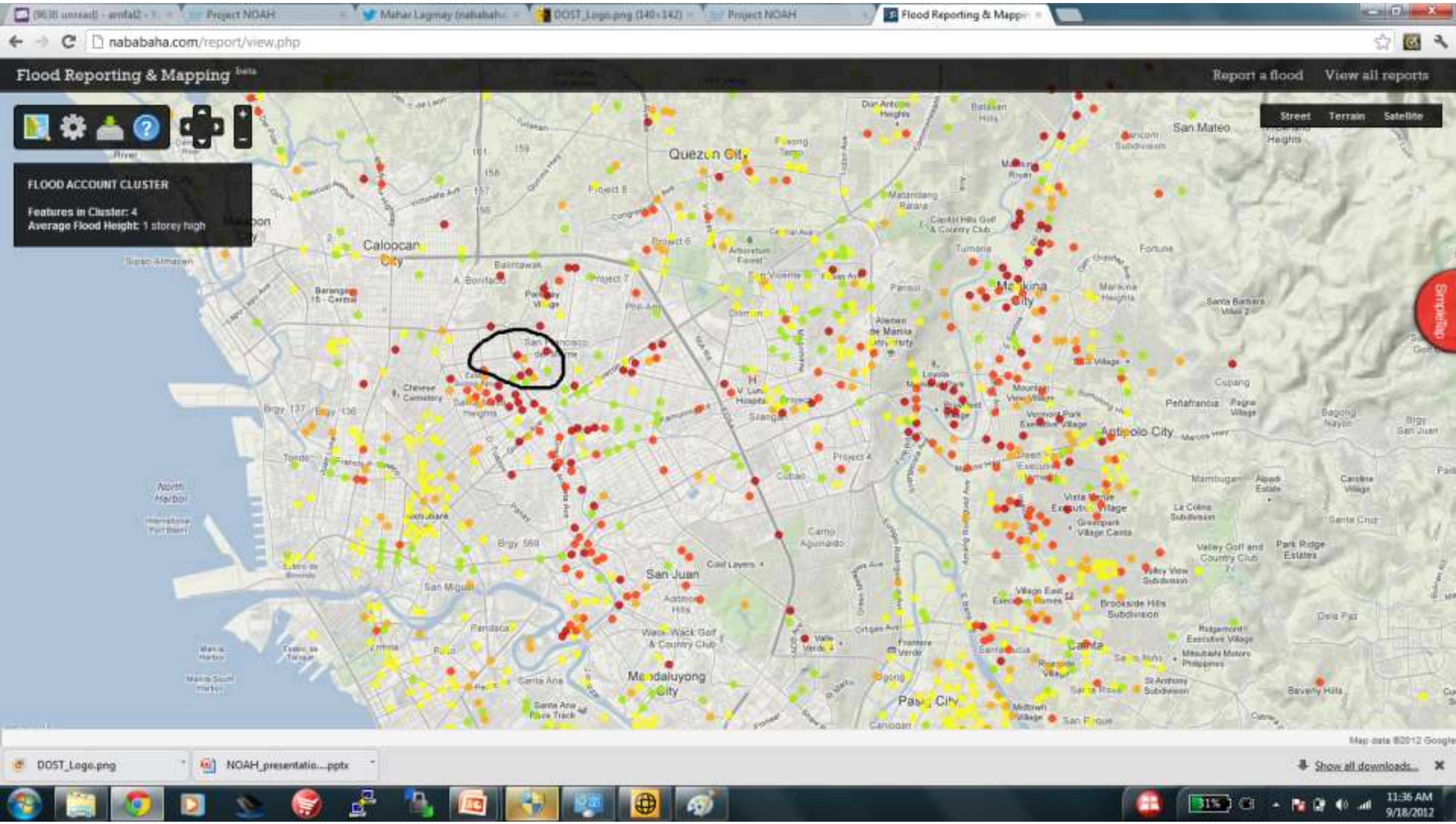




Simulated over Office of Civil Defense (OCD) – CSCAND Lidar data



Simulated over Office of Civil Defense (OCD) – CSCAND Lidar data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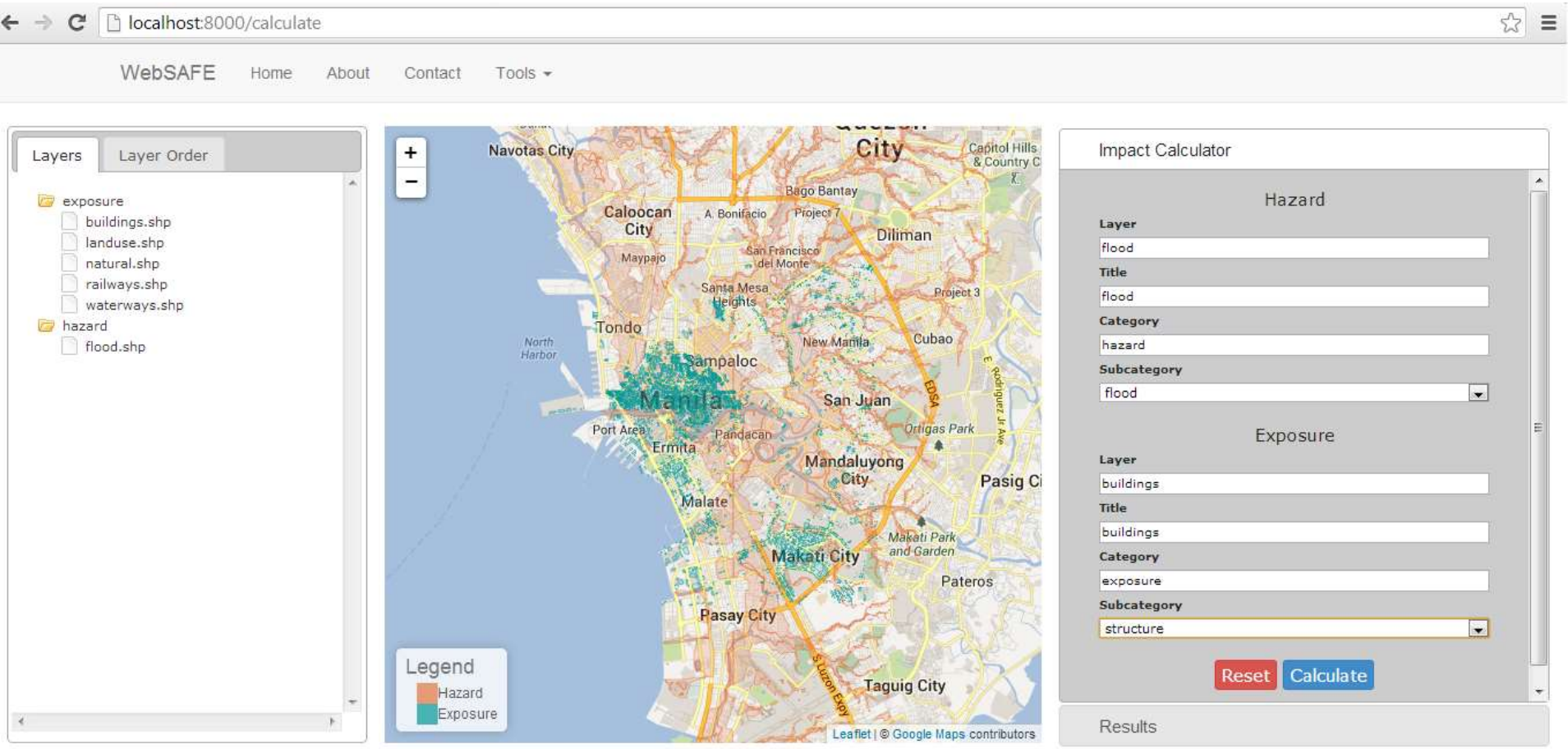
Flood Reporting & Mapping
nababaha.com/report/view.php
Flood Reporting & Mapping beta
Report a flood
View all reports
Street
Terrain
Satellite
FLOOD ACCOUNT CLUSTER
Features in Cluster: 4
Average Flood Height: 1 storey high
Quezon City
Caloocan City
San Mateo
Marikina City
Antipolo City
San Juan
Mandaluyong City
Pasig City
Cainta
North Harbor
Map data ©2012 Google
DOST_Logo.png
NOAH_presentatio....pptx
Show all downloads...
11:36 AM
9/18/2012

“WebSAFE” Development

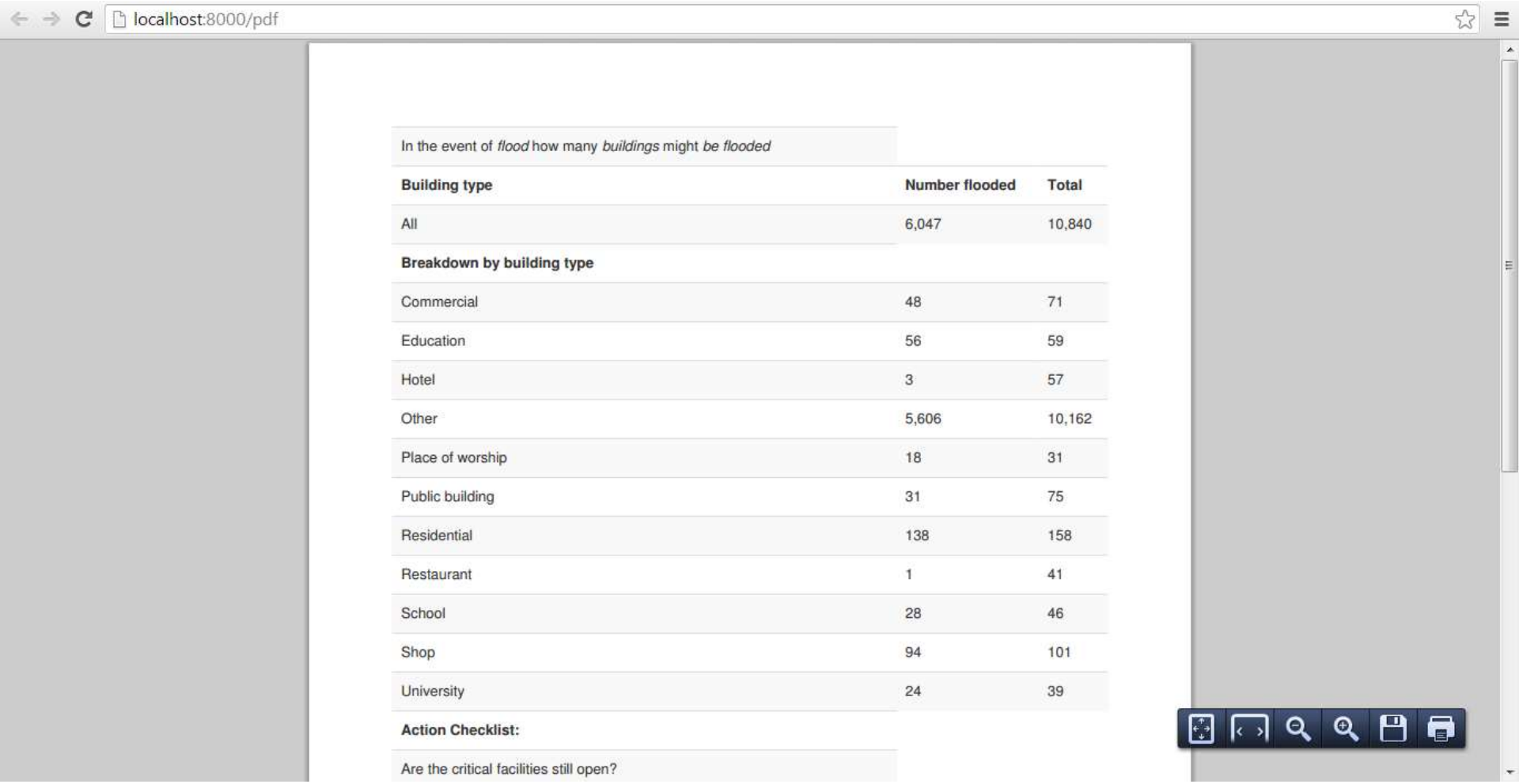
Using WebSAFE, we can perform the following operations:

- Create Impact Scenario Cases for specific hazards (ie. 10-year, 100-year flooding)
- Integrate data from Project NOAH, National Government Agencies and Local Government Units
- Estimate Exposure of Population and Properties to specific Hazards
- Conduct Damage and Needs Assessments for Relief Operations
- Provide hazard, demographic and vulnerability information for Responders and Rescuers

“WebSAFE” Development

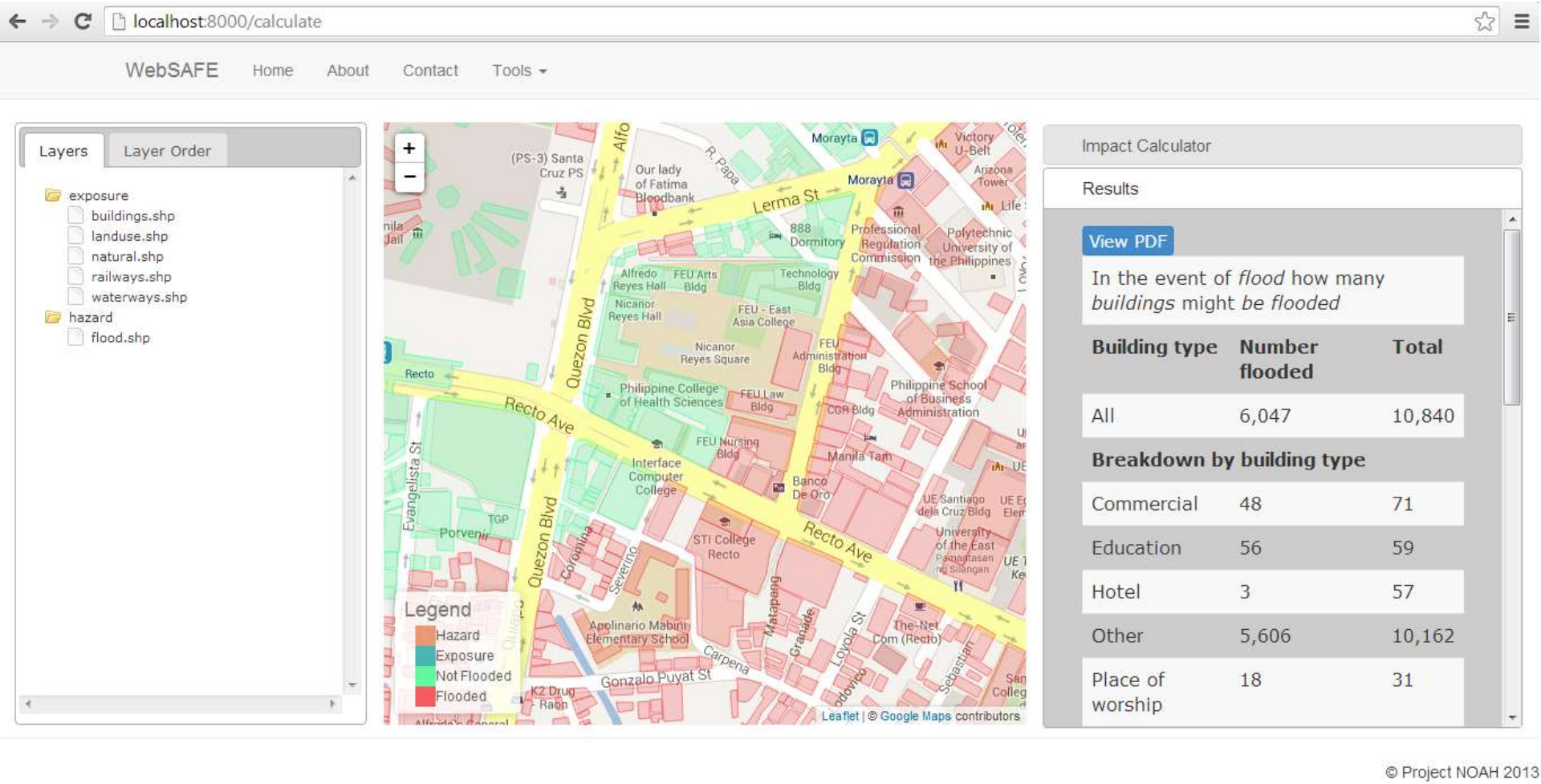


“WebSAFE” Development



In the event of *flood* how many *buildings* might *be flooded*		
Building type	**Number flooded**	**Total**
All	6,047	10,840
Breakdown by building type		
Commercial	48	71
Education	56	59
Hotel	3	57
Other	5,606	10,162
Place of worship	18	31
Public building	31	75
Residential	138	158
Restaurant	1	41
School	28	46
Shop	94	101
University	24	39
Action Checklist:		
Are the critical facilities still open?		

“WebSAFE” Development



Tweets

mario @ohohmario 3h

Good after noon po

Collapse Reply Retweet Favorite More

680 RETWEETS	680 FAVORITES

5:43 PM - 6 Dec 12 · Details

Reply to @ohohmario

Anica Bianca Ordan @anicaordan 3h

@ohohmario Good afternooooon Mario Baby! I love youu! <3

Expand

mika @inspiritmika 3h

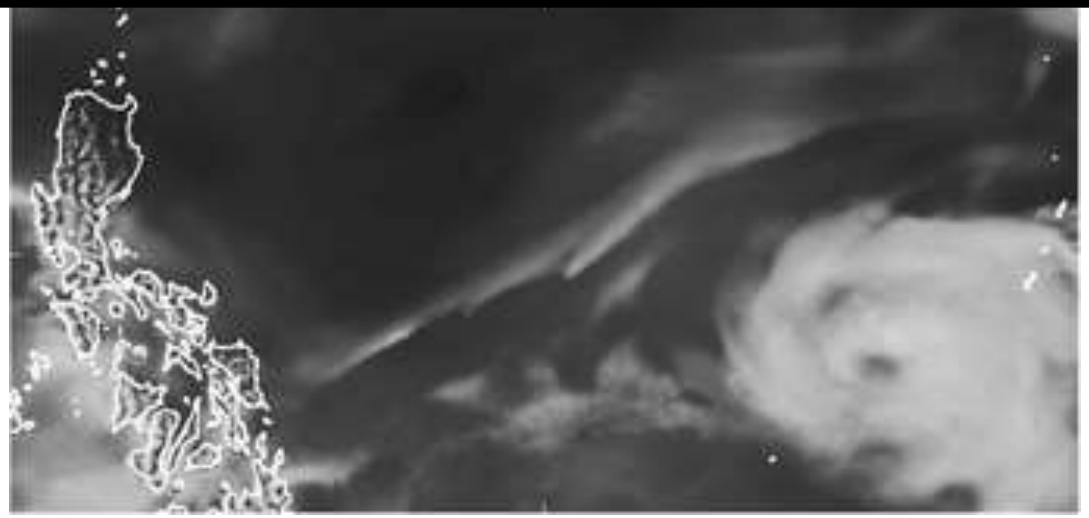
@ohohmario hi

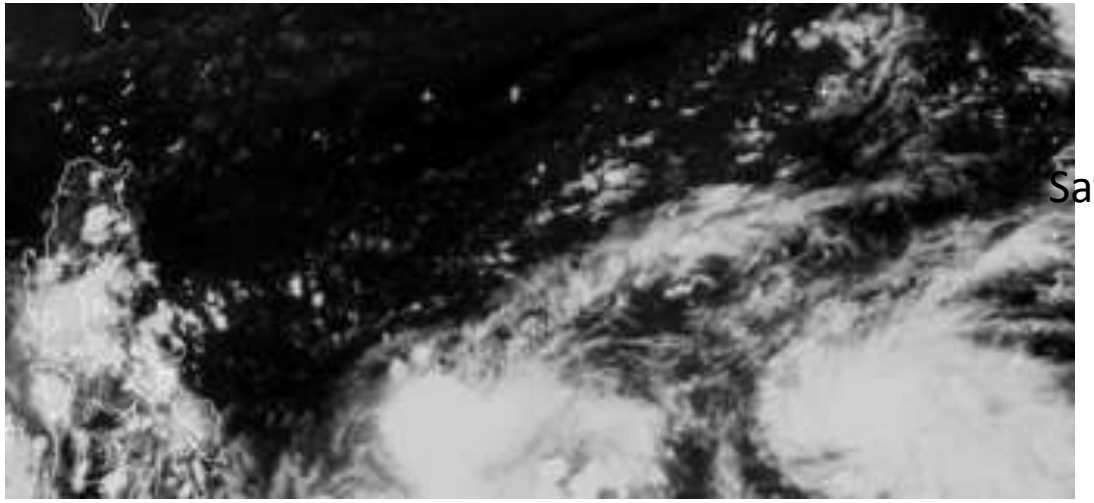
Expand

★ T W I N K L E ★ @superstaaarr 3h

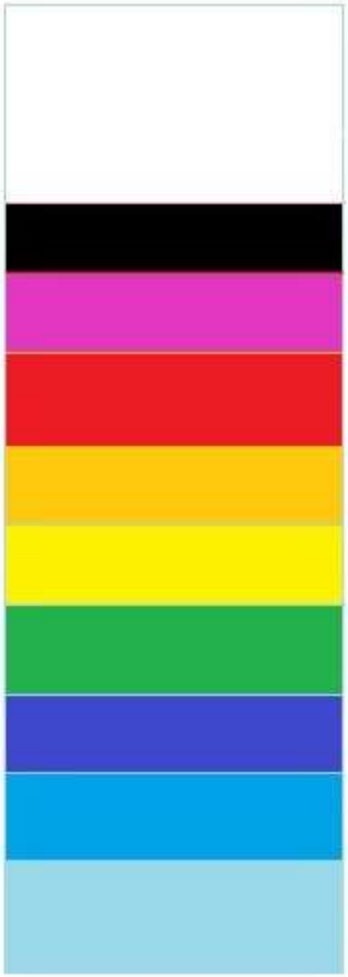
@ohohmario Hi Mario! Chan Rak Khun! :") ♥

Expand

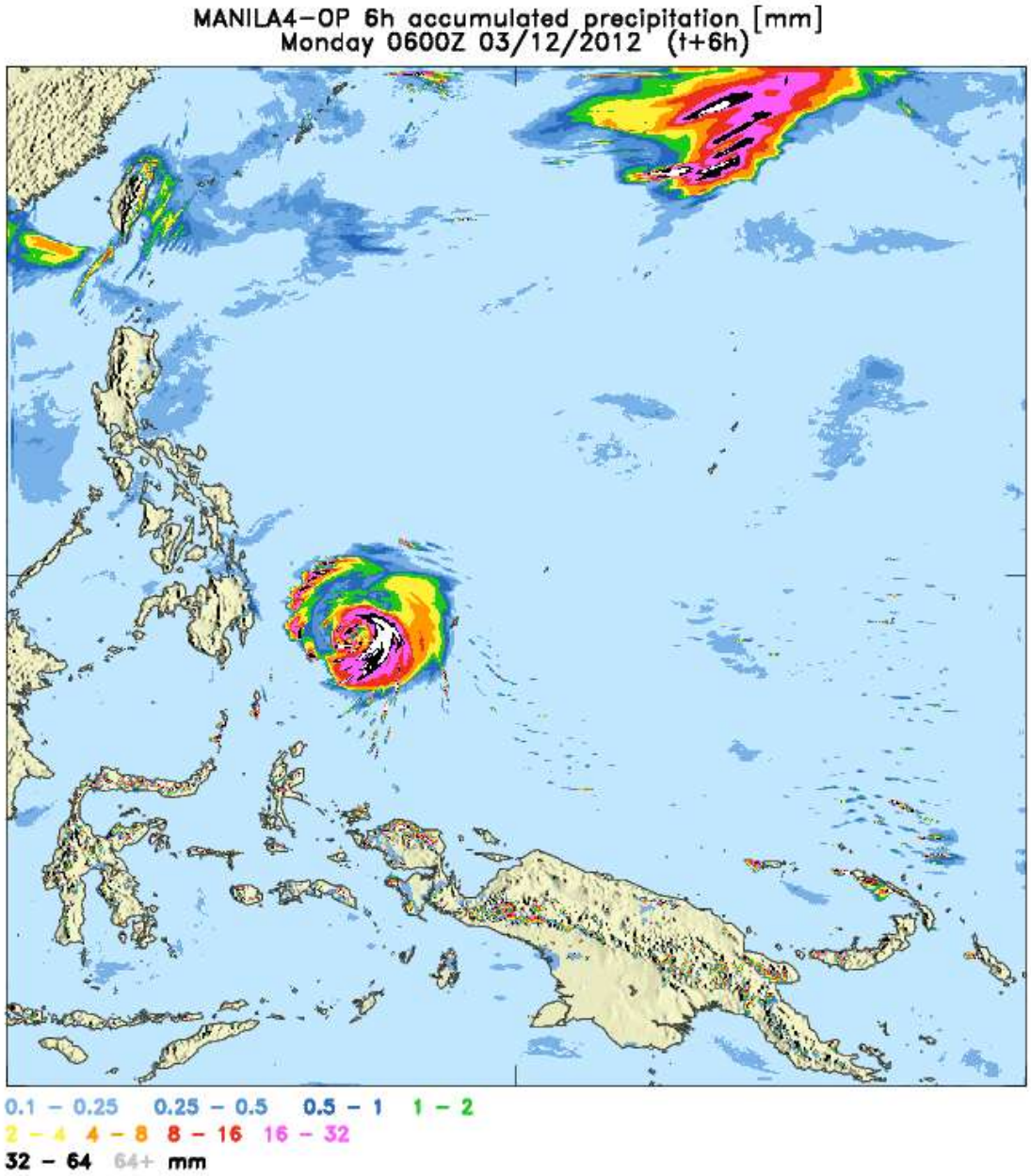




Satellite



6 hours accumulated rainfall in millimeters (mm)



Maraming Salamat po!

Visit our website: ***noah.dost.gov.ph***

Download our apps:

ARKO ***NOAH*** ***Flood Patrol***

Be informed by: ***blog.noah.dost.gov.ph***

E-mail us: ***info@noah.dost.gov.ph***