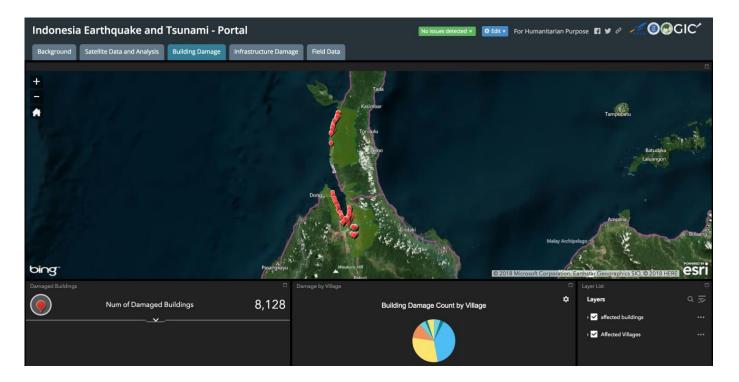
## Use of Satellite Data for Emergency Response in Sulawesi Earthquake and Tsunami



#### Manzul K. Hazarika, Ph.D.



Director, Geoinformatics Center Asian Institute of Technology (AIT) manzul@ait.asia

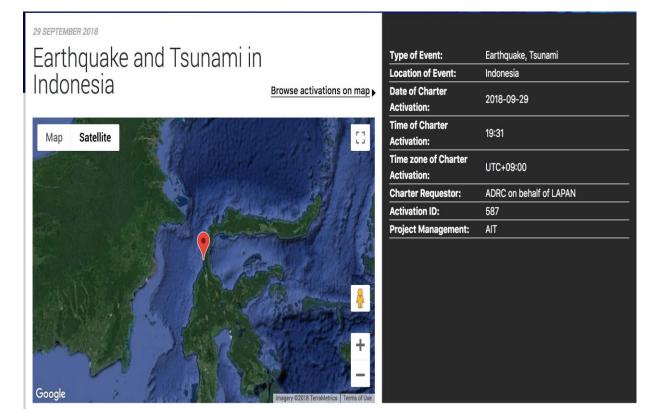


#### Latest Earthquake in Sulawesi Indonesia, Sep. 2018

- A 7.5 magnitude earthquake struck Sulawesi on 28 Sep. triggering a tsunami with 3m;
- At least 844 people lost their lives and displacing 50,000 people;
- The worst affected areas were the city of Palu with 300,000 inhabitants;

#### Sentinel Asia was activated on 28 Sep. 20 with a request to escalate to IDC

Emorgonov Ob	s. Request Inform	nation					
mergency Obs. I		HAC000006		Same Reque	et.		
isaster Type:		Iquake		Country:		Indonesia	
currence Date		іquaке 28/Sep/2018	Time			EQ-2018-000156-ID	
DRC URL:	UTC): Date	28/Sep/2018	Time	GLIDE NUMB	er:	EQ-2018-000156-1D	/N
ser ID:	ahac	0001		Name:		AHA CENTER	
rganization:		CENTER		Phone:		62 21 298 277 93	
llular Phone:		_CENTER		Fax Number		62 21 298 277 93	
Mail 1:		n.bisri@ahac				Rokhis.Khomarudin	Manar
Mail 1. Mail 3:		nggapbencar		E-Mail 2:		dian.oktari@gmail.c	
-Mail 5:	umua	nggappencai	la@iapai	L-Mail 4.		ulan.oktan@gmail.c	Jum
oservation Term	: From: 29/5	ep/2018		To:03/Oct/2018	_		
Location	20/00	50/2010		10.00/0012010			
Deg	Dms						
•	Upper-Left(deg):		,0.0	) Upper-Right(deg)		,0.0	)
	Lower-Left(deg):	-	,0.0	) Lower-Right(deg)	1	,0.0	)
	Center(deg):	<b>(</b> -0.398	,119.75		80.0	)	[km]
_	e Charter, Space						
Request to	escalate this EO	to the Char	ter				
Disaster Situati							
Disaster Situati powerful 7.5 mag	nitude earthquak			n island of Sulawesi Frida that hit the coast minutes		ing just hours after a	a
Disaster Situati powerful 7.5 mag werful, deadly fo	nitude earthquak					ing just hours after a	a
Disaster Situati owerful 7.5 mag werful, deadly fo Comment	nitude earthquak reshock, apparen	tly triggered a	a tsunami	that hit the coast minutes		ing just hours after a	a <i>[;</i>
Disaster Situati powerful 7.5 mag owerful, deadly fo Comment	nitude earthquak	tly triggered a	a tsunami	that hit the coast minutes		ing just hours after a	a ii
Disaster Situati powerful 7.5 mag werful, deadly fo Comment IRC registered th	nitude earthquak reshock, apparen	tly triggered a	a tsunami	that hit the coast minutes		ing just hours after a	a /
Disaster Situati powerful 7.5 mag werful, deadly fo Comment	nitude earthquak reshock, apparen	tly triggered a	a tsunami	that hit the coast minutes	s later.	ing just hours after a	a //



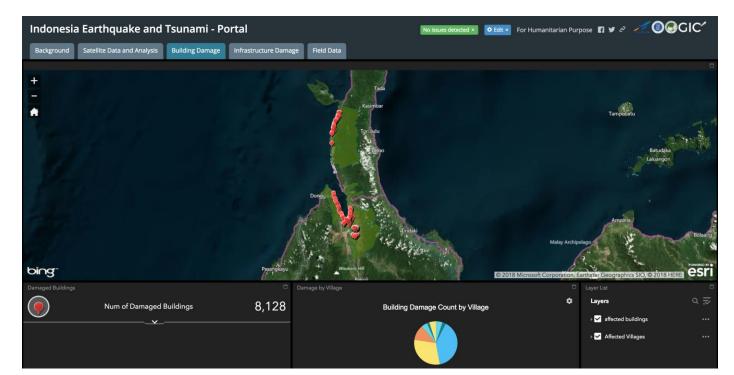
### Value Added Products (VAPs)

60 VAPs were created:

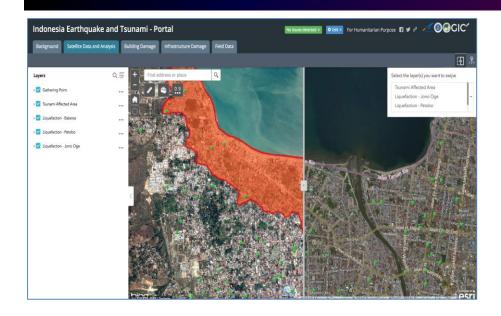
- 22 VAPs for Sentinel Asia
- 38 VAPs for IDC

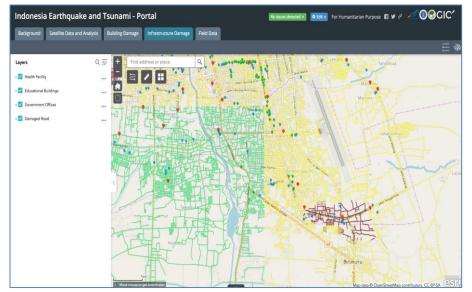


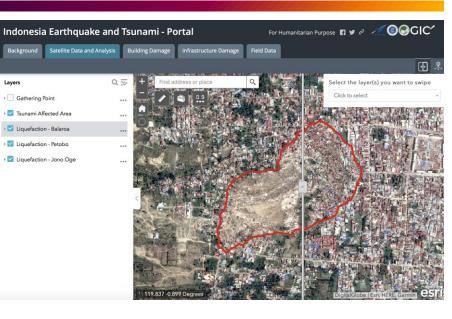
An ArcGIS online platform was develop for wider dissemination

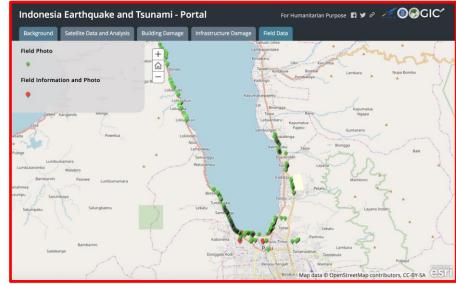


#### VAPs in ArcGIS Online Platform





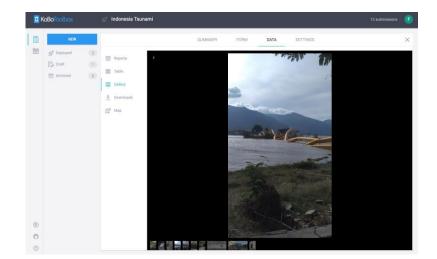


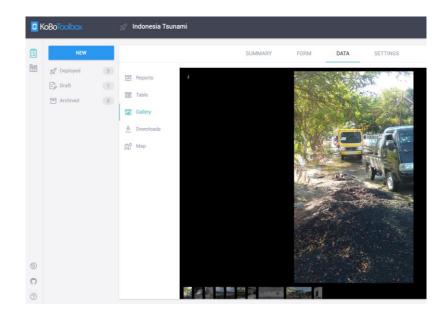


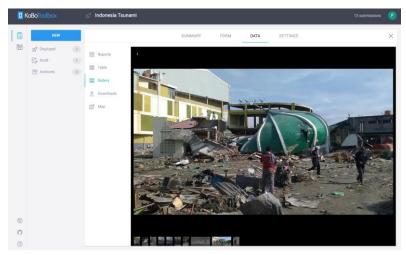
## Field Survey - Using a Mobile Phone App.

Develop Mobile Apps for Survey using DRM Survey and Kobo toolbox

Damage Assessment- I
Describe the types of tree damage observed (if any):
Small limbs broken
Tree less than 2" diameter broken (5 cm)
Trees from 2" to 8" diameter broken (5-20 cm)
Trees greater than 8" diameter broken (20 cm)
Trees uprooted
O Total destruction of vegetation
What percentage of buildings or structures were damaged by the wave in your locality?
O None
O Few (about 5%)
O Many (about 50%)
O Most (about 75%)
Check the approximate age of the majority of damaged buildings or structures:
O Built before 1945
O Built between 1945 and 1965

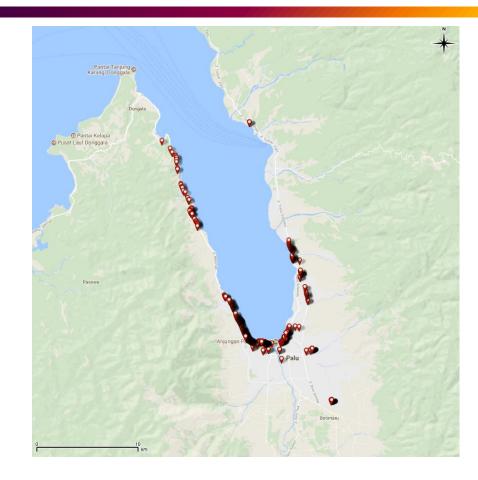






### Field Survey - Locations





### Field Survey - Geotagged Photographs



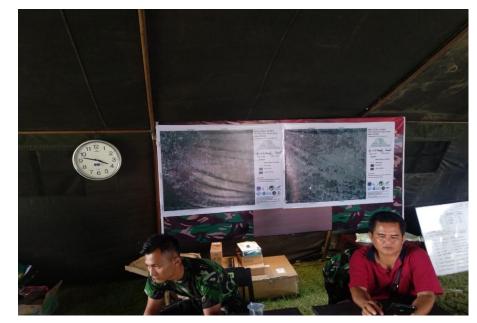
- Around 400 geotagged photos have been collected in Palu, Sigi and Donggala;
- Partnerships with local/international humanitarian organizations were established;
- Field survey was conducted with the help of local volunteers.

### Coordination for dissemination of VAPs

- Constant coordination with local partners (LAPAN, BNPB, Public Works, Poso Energy etc.)
- Product dissemination to local government (Governor, Indonesian Army etc.)



Mr. Longki Djanggola (The Governor of Central Sulawesi)



Army Central Commando Station in Sigi

#### Partnership with Local/International Organizations



Partner from LAZ AI-Azhar

Participatory mapping with local people



#### Daily morning meeting with the volunteers



Meeting with volunteers from World Central Kitchen

#### Interactive Website - <u>http://arcg.is/15uObi</u>

#### Indonesia Earthquake and Tsunami - Portal

Background

Satellite Data and Analysis

Building Damage

Infrastructure Damage Field Data

For Humanitarian Purpose 🖪 🗑 🖉 📶 🕼 🕼 🕼 🖉

# Indonesia Earthquake and Tsunami

Background

## Thank you for your kind attention