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Complex data, made easy

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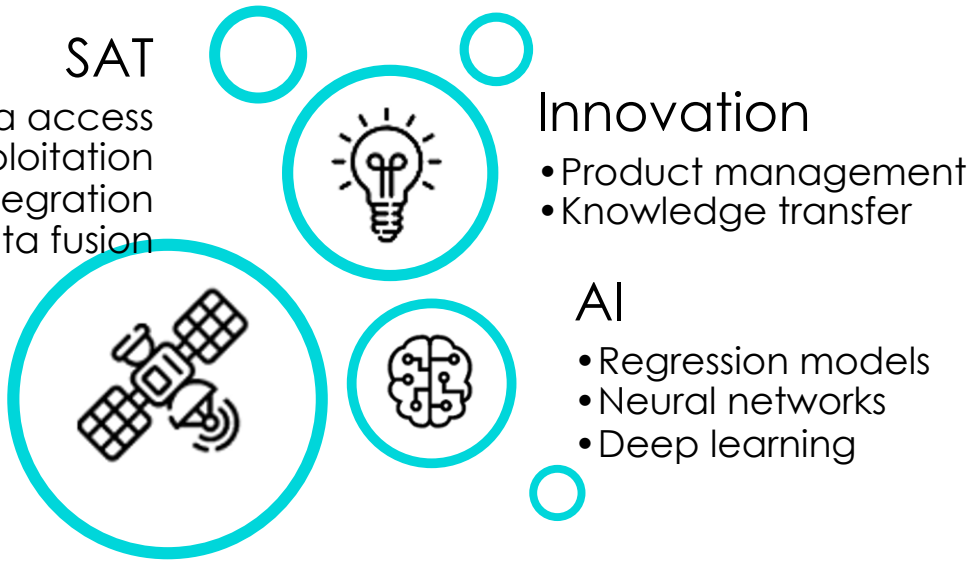
ADB ASIAN DEVELOPMENT BANK

LEAP on Using AI and Satellite to Assess Flooding Impact
22 April, 2021, 4.00-5.00 pm (Manila time)

EarthPulse – our mission

Our mission is to unlock the value of **Earth Observation data** leveraging the **power of AI** to absorb complexity and cost, providing **information for decision making**

Complex data, made easy.



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How can this be useful?

Public organisms and Private companies need to take evidence-based decisions

They need Trustable indicators to overcome social and economic vulnerability

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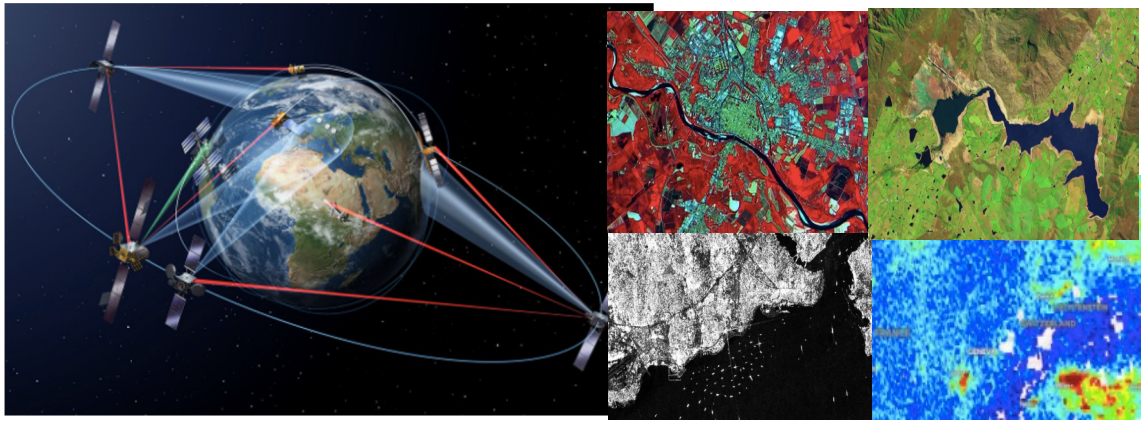
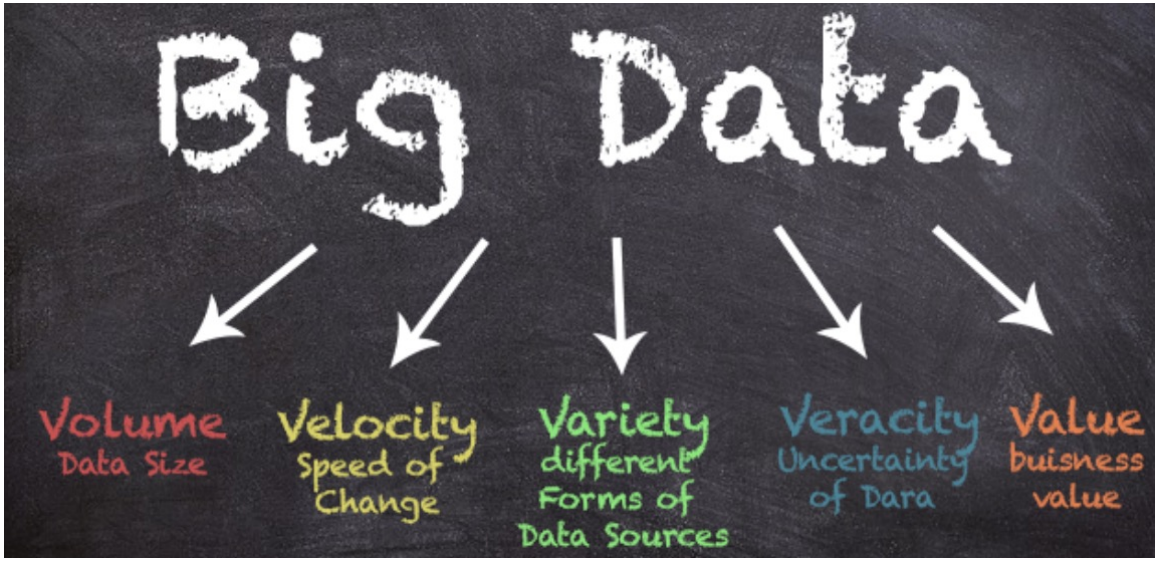
EO: the data source to exploit

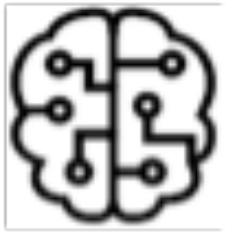


COMPLEXITY



Key Enabler: Artificial Intelligence

+



EO DATA

FREQUENT
CONSISTENT
NO DEPENDENCY
LONG HISTORIC DATA ARCHIVE

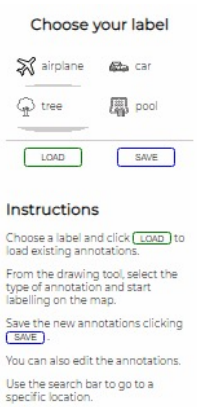
Artificial Intelligence

AUTOMATION
ABSORBS COMPLEXITY

How this happens?

Data Engine to make it possible:

SCAN – Satellite Collaborative Annotation Tool



Segmentation models!

Detection models!

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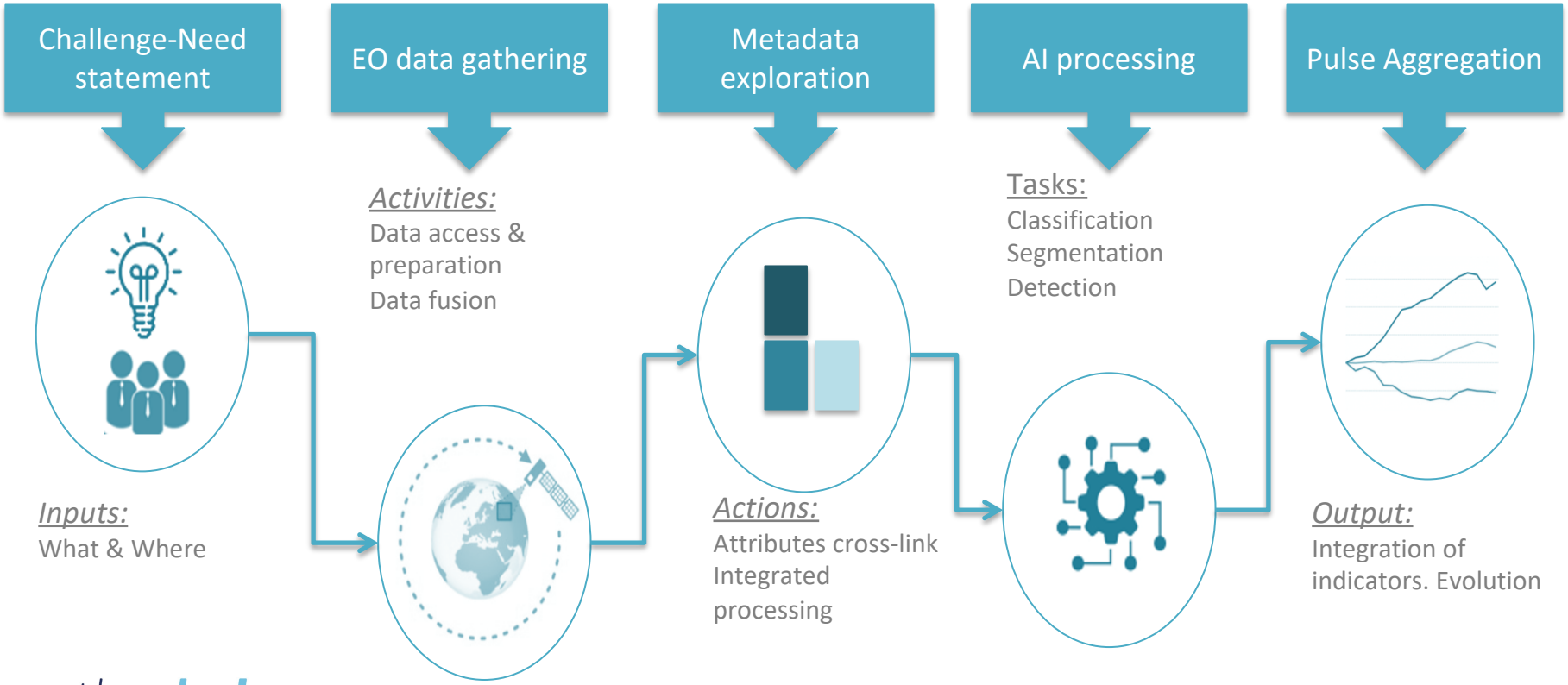
Indicators = Pulses

We provide **Pulses**, aggregated indicators based on **satellite data** and generated by **deep learning algorithms**.

Evidence-based decisions, better profitability.



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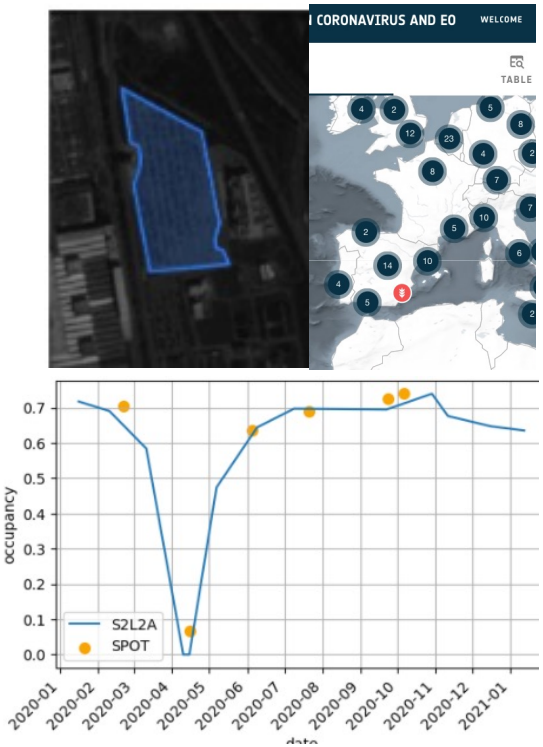
Pulses – Examples

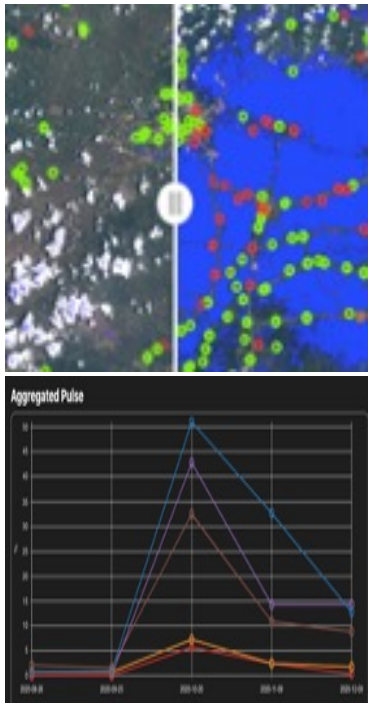
INDUSTRIAL ACTIVITY PULSE



ESA, RACE portal

Vehicle factories

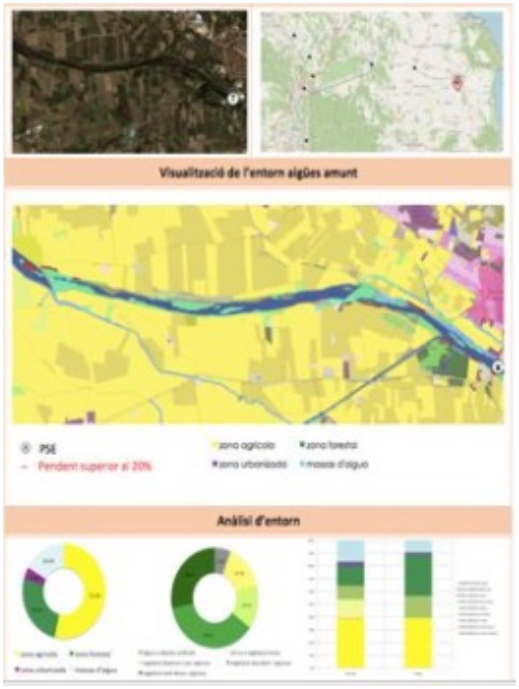
FLOOD IMPACT PULSE



Regional Public institutions

ADB

VULNERABILITY ANALYSIS PULSE



Regional Public institutions

Water Industry

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FLOOD IMPACT PULSE

Cambodia

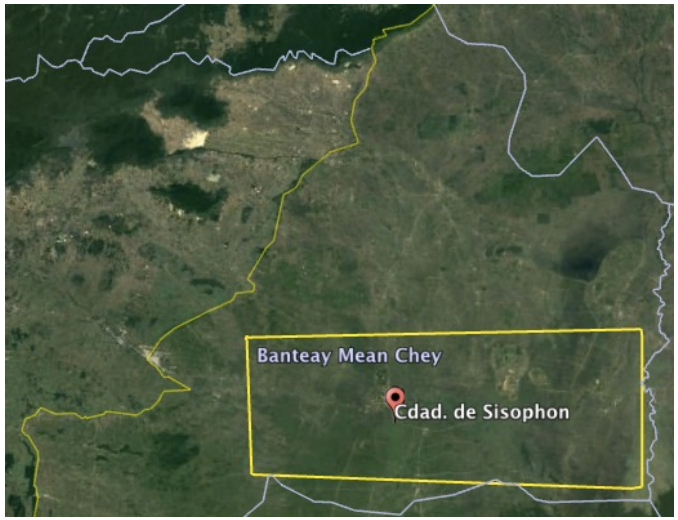
Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Objective:

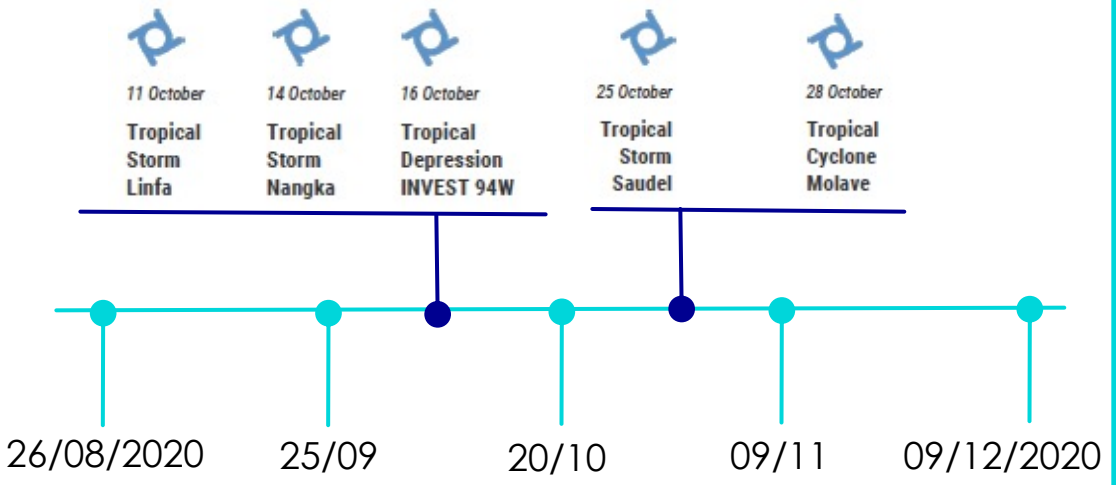
Evaluate the damage caused by the storms/natural floods in October 2020 in the south of the Banteay Meanchey province of Cambodia

AoI:



2.185 km^2

Time framework:



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Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Indicators / Pulse Components:

i. Water extension
Source: Water segmentation over S1& S2 images

ii. Affected crops
Source: Crop segmentation model over S2 images

iii. Affected infrastructures (transport, health, education)
Source: Open datasets HDX, Humanitarian Data Exchange (2020)

iv. Affected population (people, houses)
Source: Open dataset Facebook (2020) +
Open dataset census NIS Cambodia (2019)

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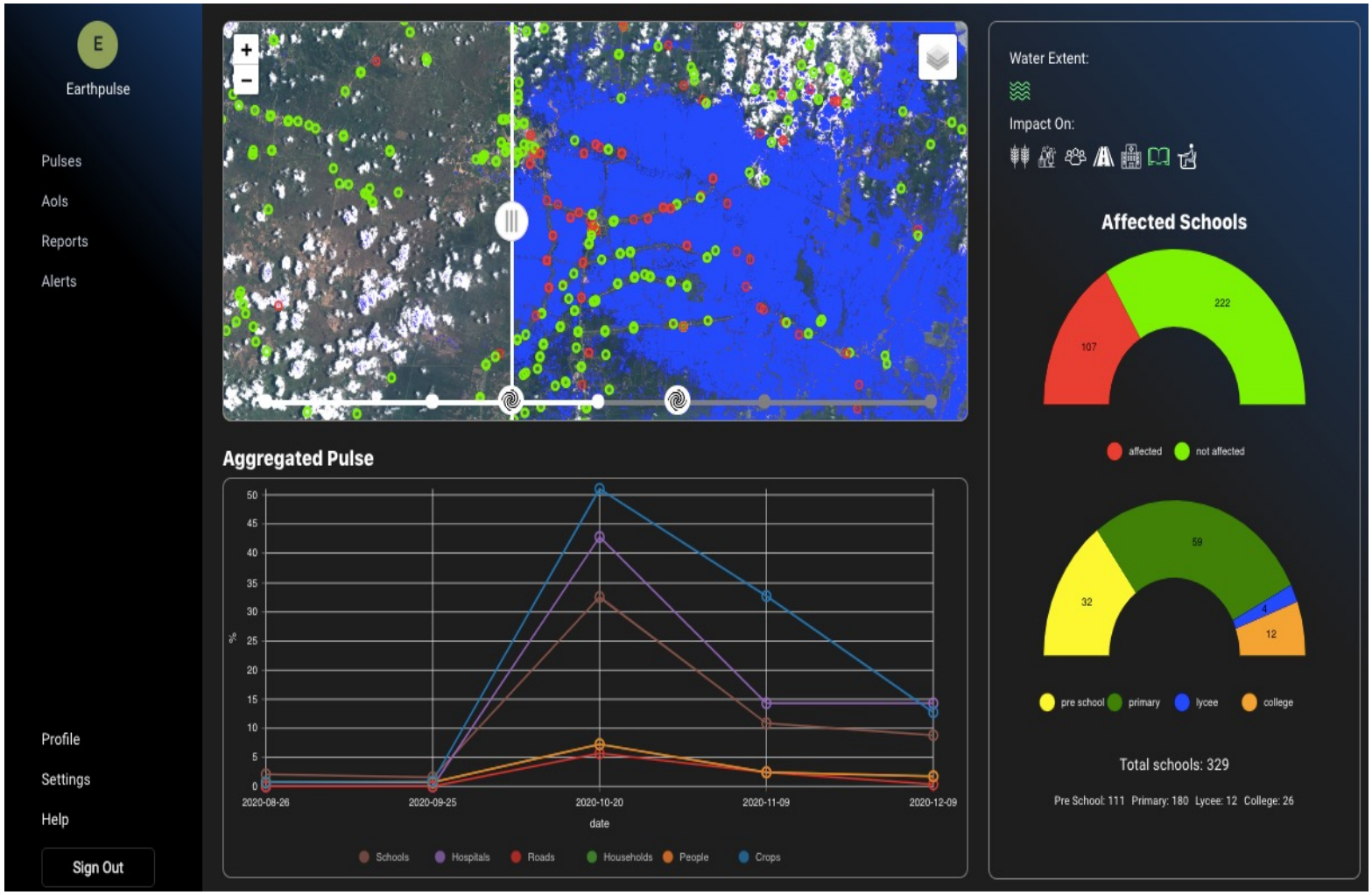
Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

DEMO



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FLOOD IMPACT PULSE

Timor Leste

Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Dili, Timor Leste

Floods April 2021

Flooded area

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Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Dili, Timor Leste

Floods April 2021

Affected roads
12%

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Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Dili, Timor Leste

Floods April 2021

● Affected hospitals
1/6

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Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Dili, Timor Leste

Floods April 2021

- Affected schools 1/19

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Conclusions

Flooding Impact Pulse

AI and Satellite to Assess Flooding Impact

Key takeaways:

✓ Satellite data provides evidences of damaged caused.

✓AI is a key element to quantify the observed impact (in a scalable way).

✓ The combination of Satellite data with other Open datasets is an innovative approach to create aggregated indicators with higher level of information, for better decision making.

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