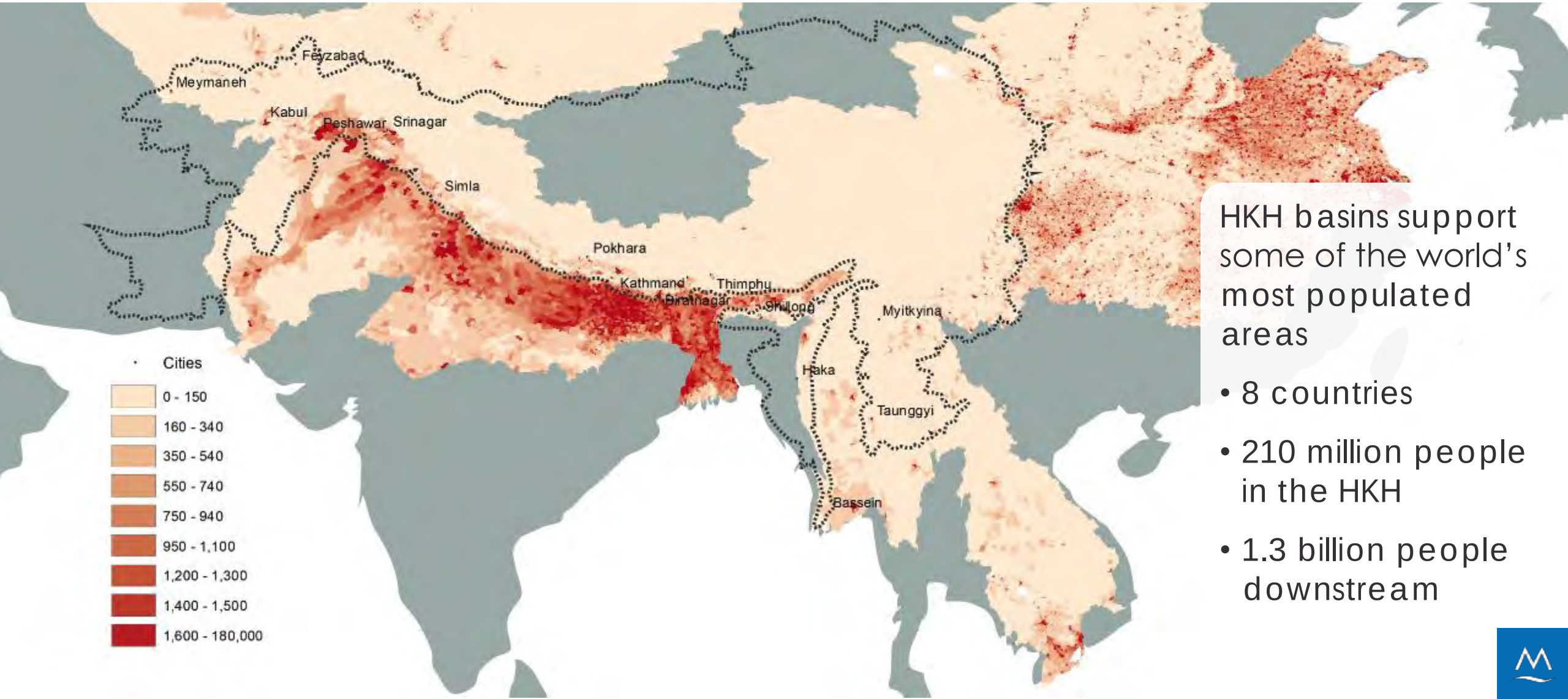
Space Applications for Disaster in the HKH

Birendra Bajracharya

Date: November 5, 2020

International Centre for Integrated Mountain Development (ICIMOD)



HKH basins support some of the world's most populated areas

- 8 countries
- 210 million people in the HKH
- 1.3 billion people downstream

The newsmakers

Natural disasters and extreme weather + South and Central Asia

August 2020

Pakistan floods: at least 90 killed in monsoon rains

26 Aug 2020

Monsoon rains driven by high winds bring flooding misery to Mumbai

6 Aug 2020

July 2020

'A critical situation': Bangladesh in crisis as monsoon floods follow super-cyclone

Despite flood planning efforts hundreds have been killed and millions hit as third of land is submerged by non-stop rain

Flooding in Assam and Nepal kills hundreds and displaces millions

Hurried evacuation of millions of residents will increase coronavirus cases, officials say

The New York Times

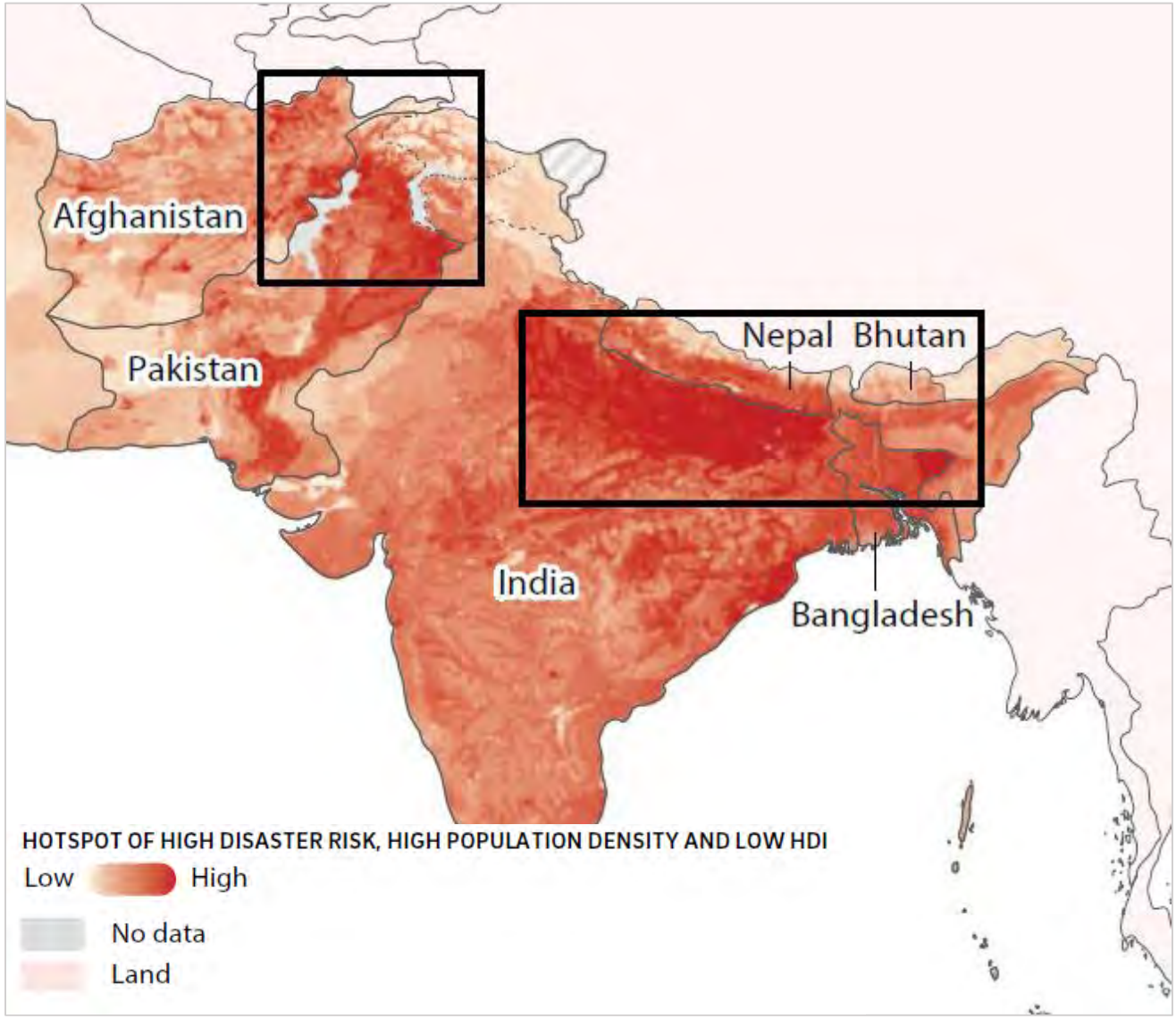
Dozens Feared Dead as Nepal Landslides Wipe Out Homes

Many in the region had only just rebuilt homes that were damaged by a powerful 2015 earthquake. The country is also facing an economic crisis brought on by the coronavirus pandemic.

Many more were still missing after heavy rains led to landslides in the hilly Sindhupalchok district of Nepal over the weekend. Niroj Chaoulagain/Agence France-Presse — Getty Images

https://www.theguardian.com/world/natural-disasters+south-and-central-asia

Disaster in Asia Pacific Region: South Asia

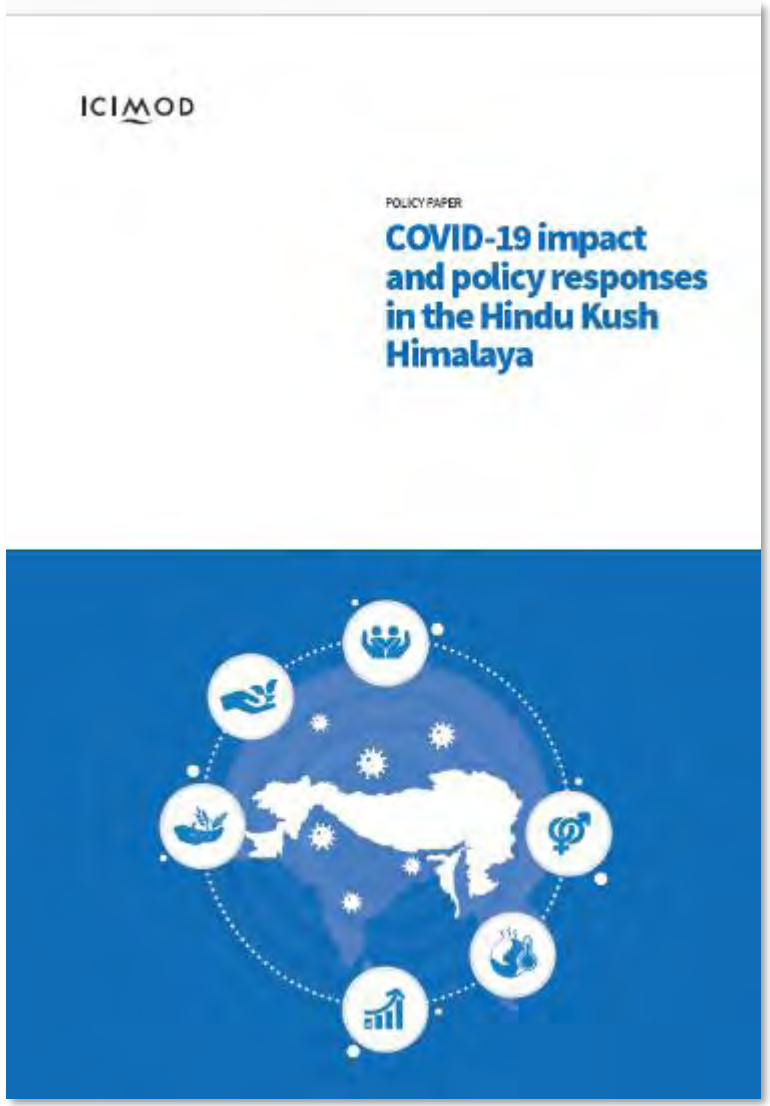


HOTSPOT 1 **TRANSBOUNDARY RIVER BASINS**

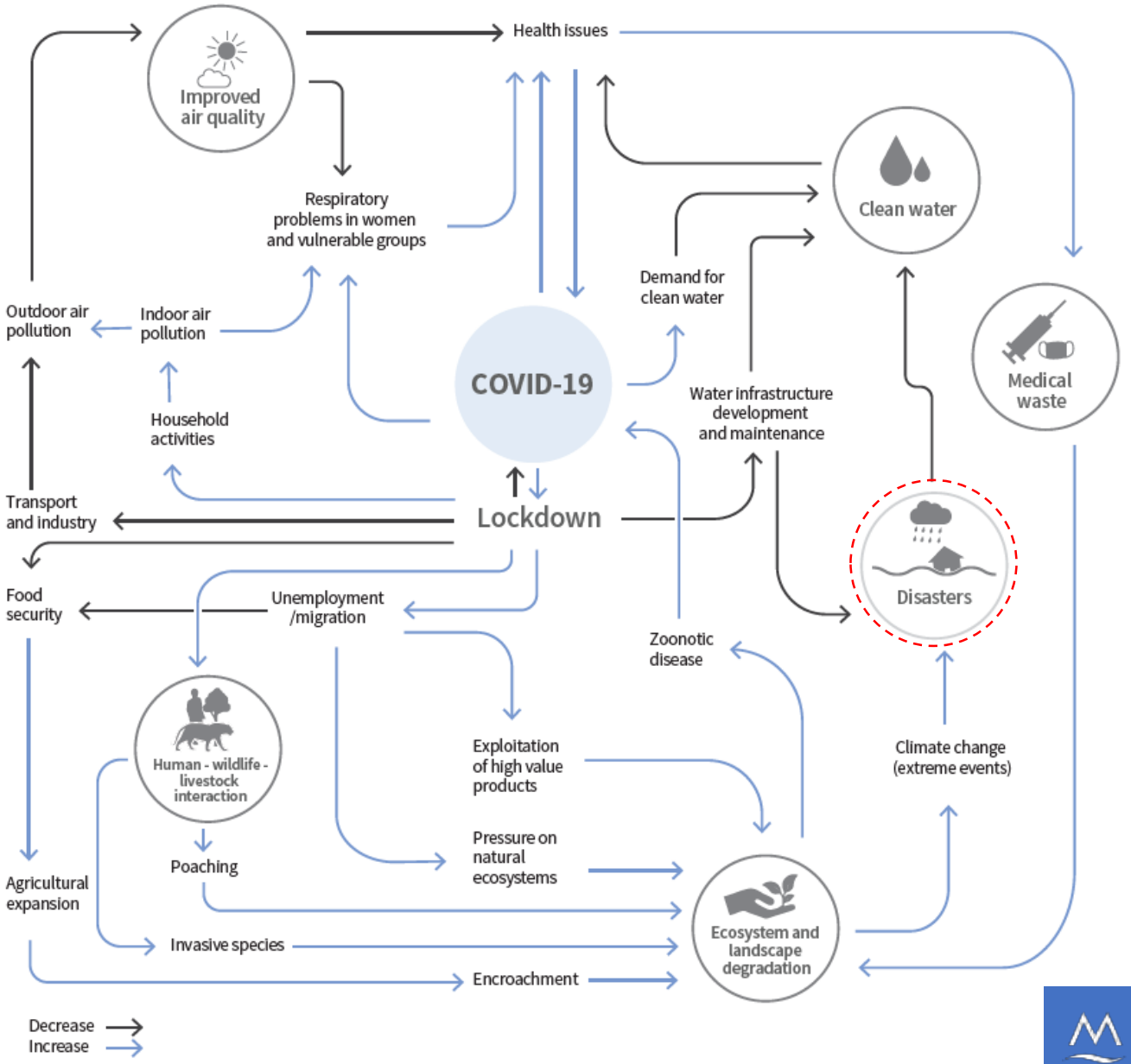
Flood and drought prone areas, South and South-East Asia

Population exposure	Very high (mostly poor)
Economic stock exposure	High
Infrastructure: energy	Low
Infrastructure: transport	Moderate
Infrastructure: ICT	Low

Covid-19 Scenario



Cascading impacts of covid-19 on environment in the HKH



Connecting space to village through innovative solutions using Earth observation and Geospatial technologies to address critical challenges, improve livelihoods and foster self-reliance in Asia, Africa, and the Americas.

SERVIR

USAID FROM THE AMERICAN PEOPLE

NASA

adpc

CIAT

ICIMOD

RCMRD

SERVIR-HKH priorities

- improve food security
- improve water resource management and preparedness for hydro-climatic disasters
- improve sustainable land use for reduced greenhouse gas emissions
- improve resilience to climate shocks and stresses
- improve air quality monitoring and management

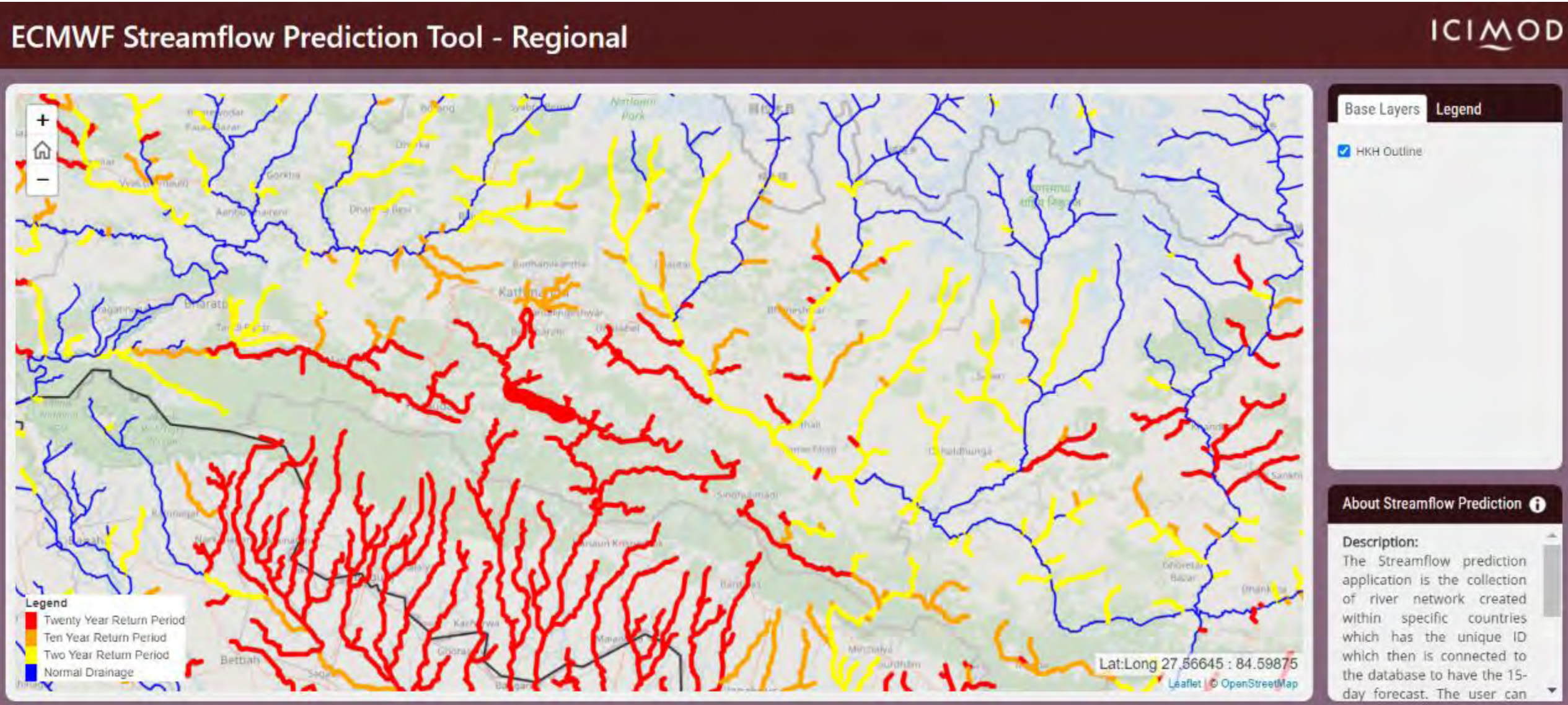




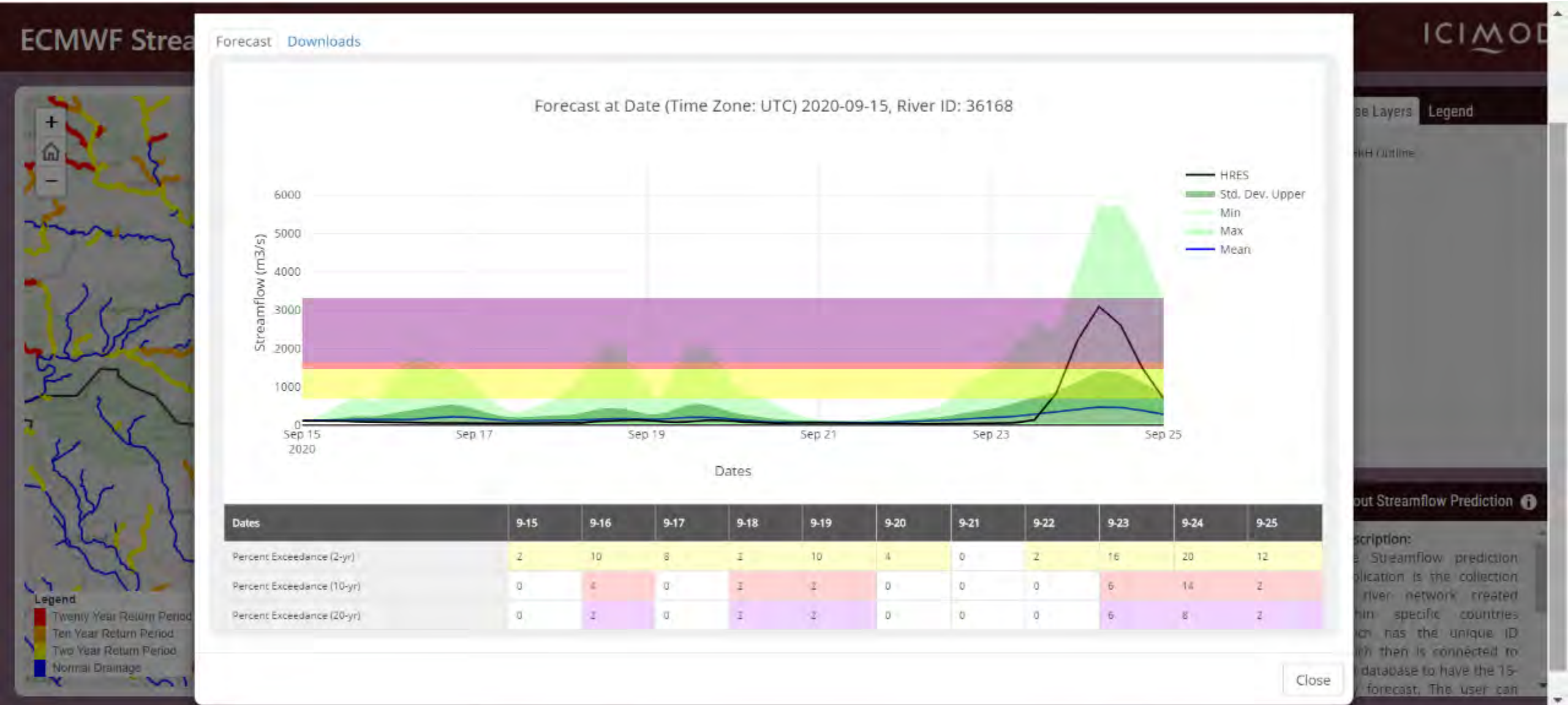
Geographic focus:
Afghanistan, Bangladesh, (Myanmar), Nepal and Pakistan

Enhancing Flood Early Warning

Co-development with Brigham Young University

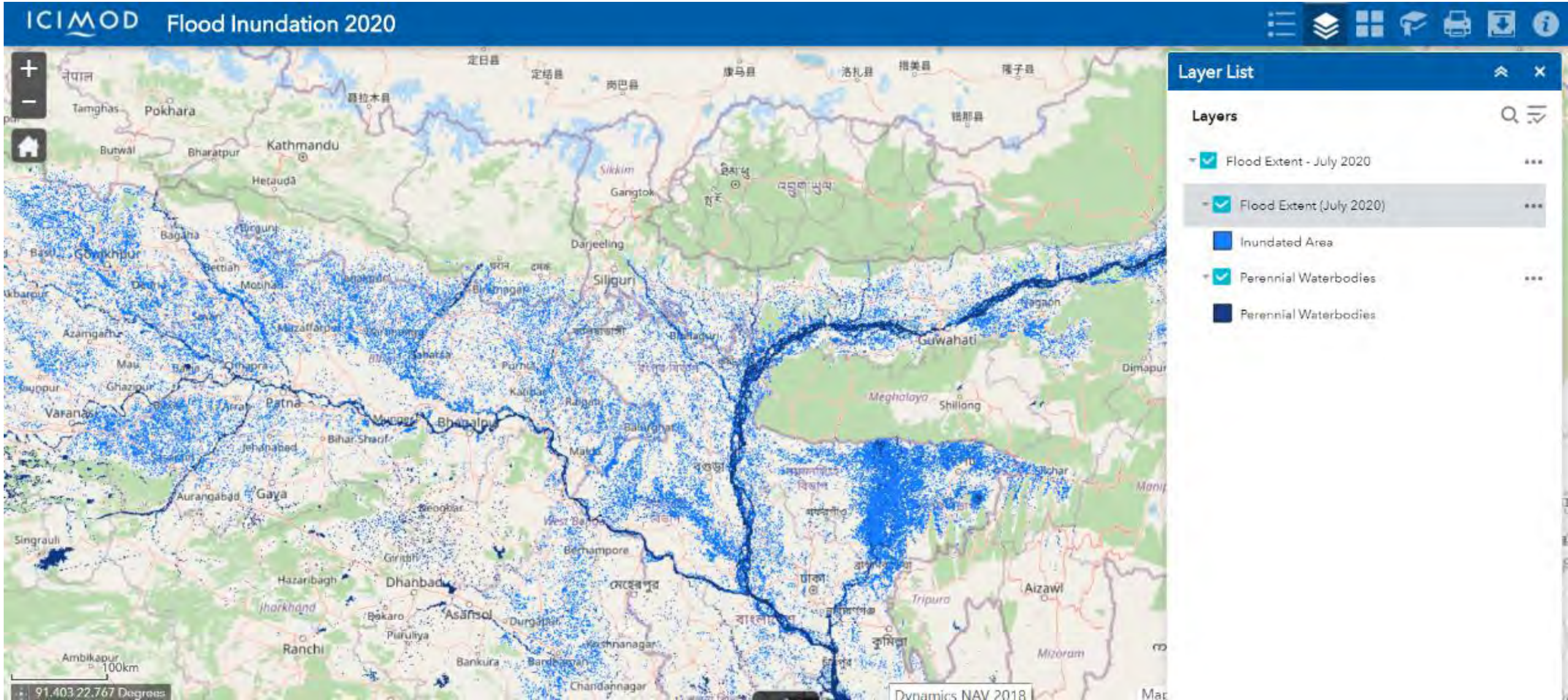


Enhancing Flood Early Warning



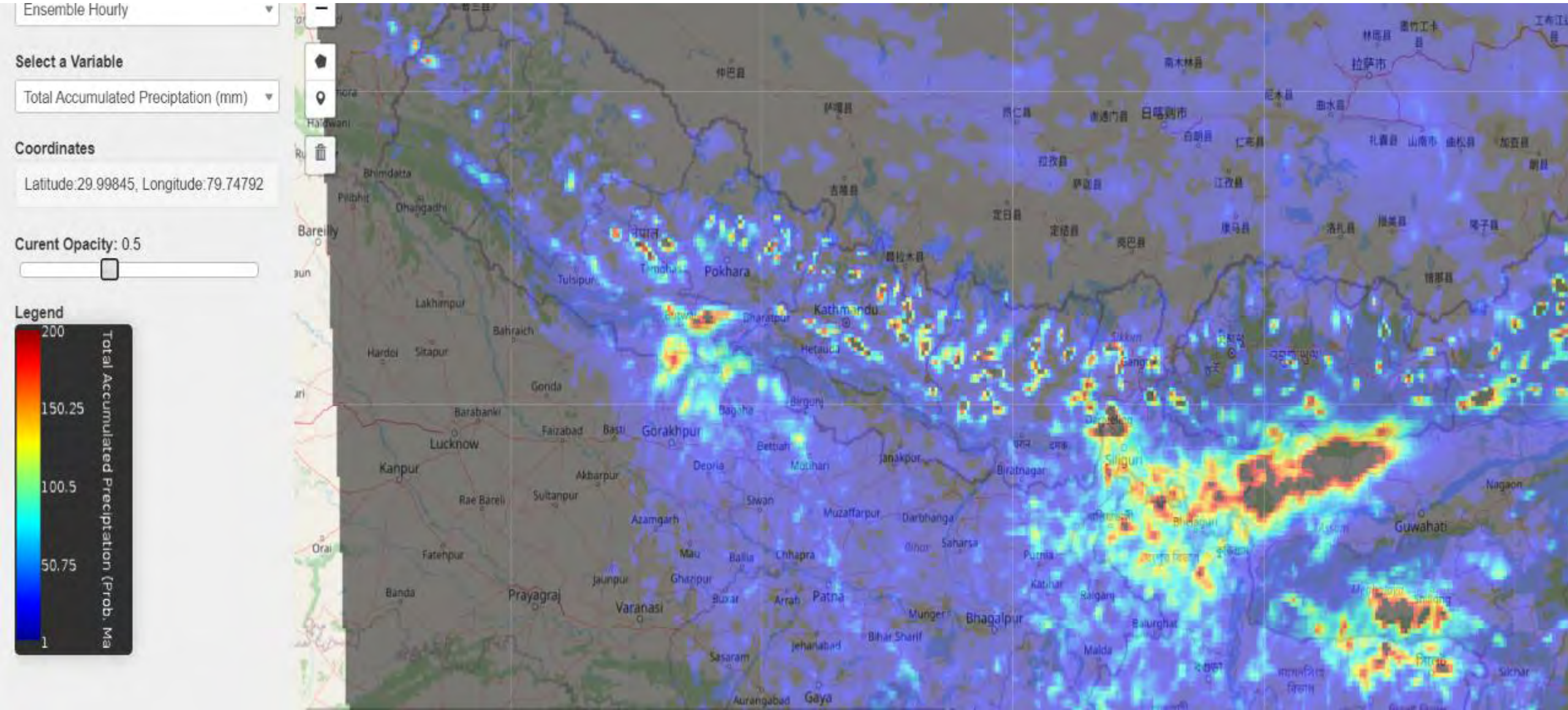
Flood inundation mapping

Co-development with University of Alaska Fairbanks



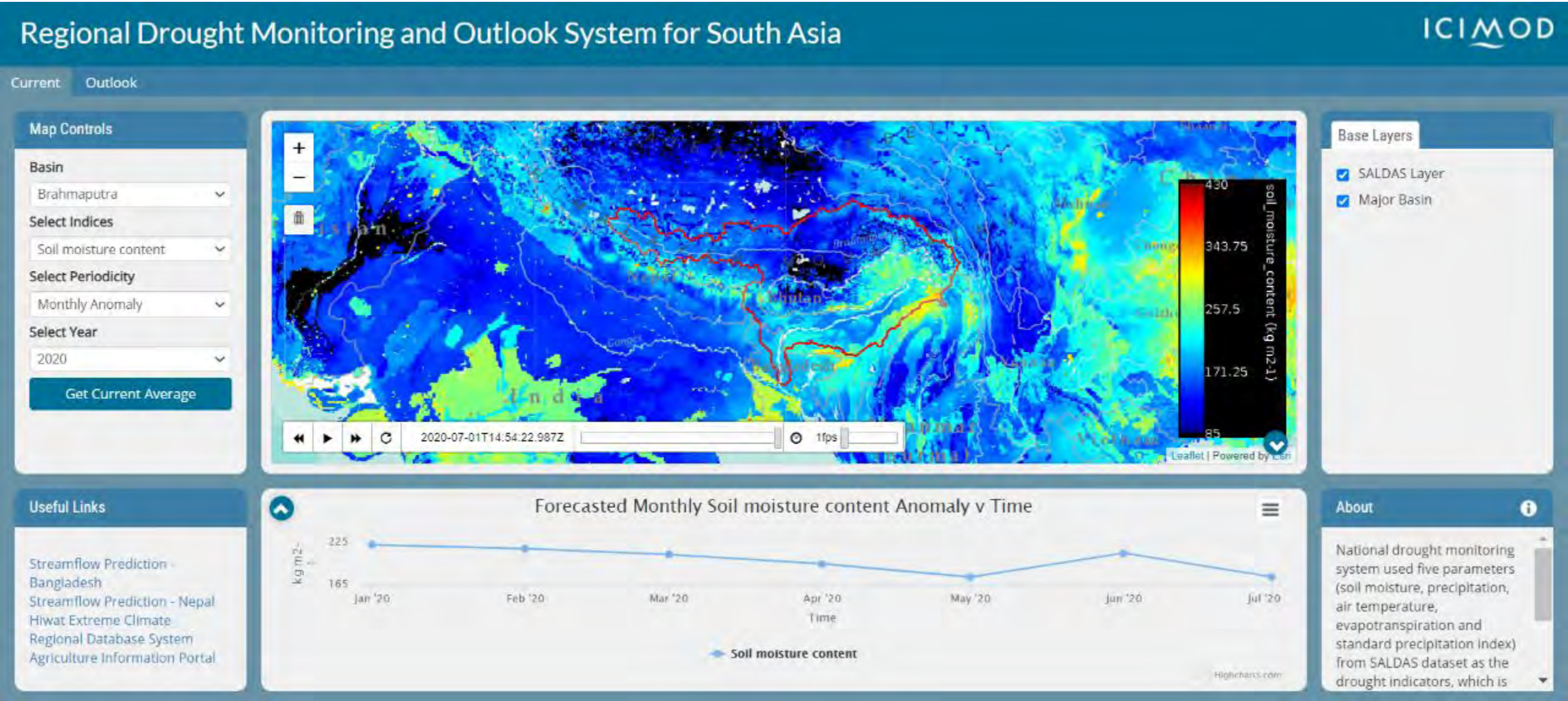
High Impact Weather Assessment Tool

Co-development with NASA-MFSC and implemented on NASA Socrates system

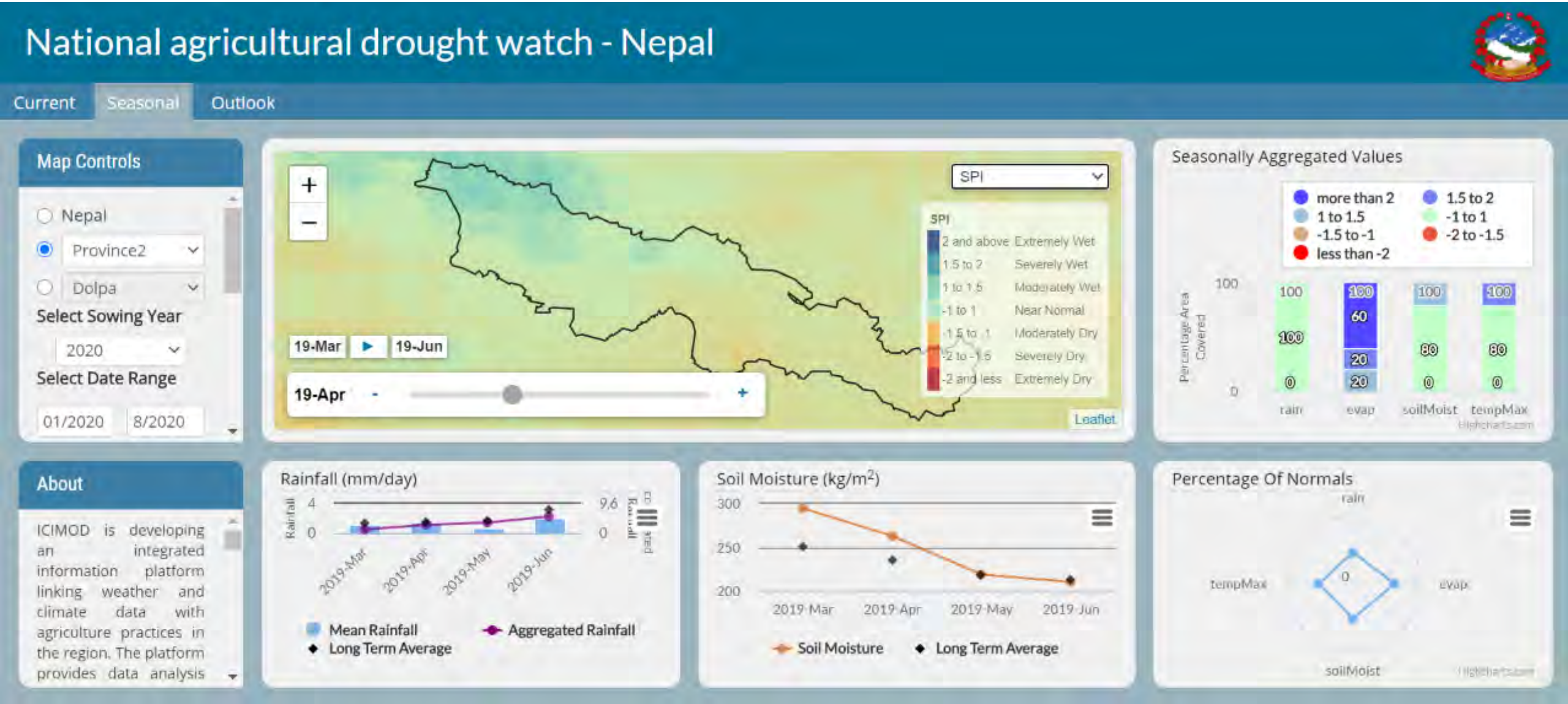


Regional Drought Monitoring and Outlook

Co-development with John Hopkins University



National Drought Monitoring and Outlook



Capacity building

"Connecting space to village"

- Training of school teachers
- Refresher training
- Supporting small projects

SERVIR HINDU KUSH HIMALAYA ABOUT THEMATIC FOCUS SCIENCE APPLICATIONS CAPACITY BUILDING FOCUS IN AFGHANISTAN

A bearer of tidings: Teacher uses ICIMOD science application to help avert disaster in Dhading, Nepal

25 Aug 2020

Ongoing remediation work in Dhading in the aftermath of the floods. (Photo received courtesy of Parashu Ram Ghimire, Information Officer, Benighat Rural Municipality.)

Collaborations with Un-SPIDER

Renewed MoU for co-operation to:

i. Promote space-based resources for disaster management and emergency response;

ii. Collaborate in capacity building initiatives in promoting space-based information technology for disaster management and emergency response;

iii. Mutually explore and share resources in the area of mutual interest.

Landslide at Jade mine in Hpakant area f Kachin State, Myanmar

Disaster event date: 2 July 2020

End User:
Emergency Operation Center,
Department of Disaster Management
Ministry of Social Welfare, Relief and Resettlement
Nay Pyi Taw, Myanmar

Rescue work follows up as Phakant jade mine landslide kills 126

AT least 126 people were killed in a landslide that occurred yesterday morning at a jade mining site of Kyaukmyet Shwe Pyi Company (locally called 111 company) in Laku Creek, Ward-6, Wahkar village in Phakant Township in Kachin State.

A total of 126 bodies had been recovered from the site of incident, and 23 others were injured, according to the report on 3:35 pm on 2 July.

"The Laku Creek is around 1,000 feet long. The bank of Laku Creek collapsed. The collapse was attributed to the local jade mining workers prospecting the jade. There is a lake in the landslide area. So, some are flowing along the strong currents," said U Ma Jee Brang Mai, a social rescue worker.

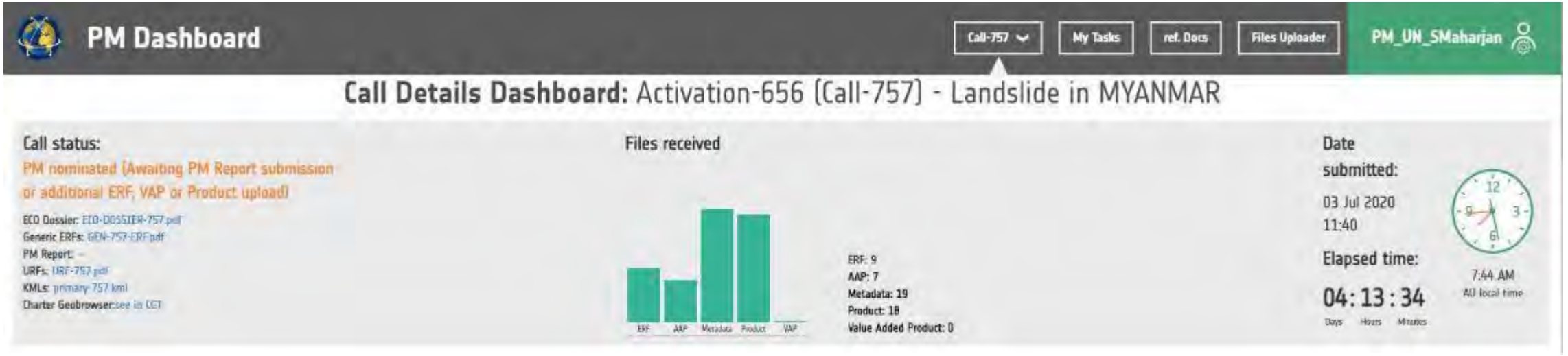
The Township Administrator, members of the Township Natural Disaster Management Team, MPs, the Township Police Force, local Red Cross workers, Civil Service Societies, and Wahkar villagers continued their search for survivors and missing bodies.

The Department of Natural Disaster Management under the Ministry of Social Welfare, Relief and Resettlement will provide necessary assistance to the family of the landslide victims.

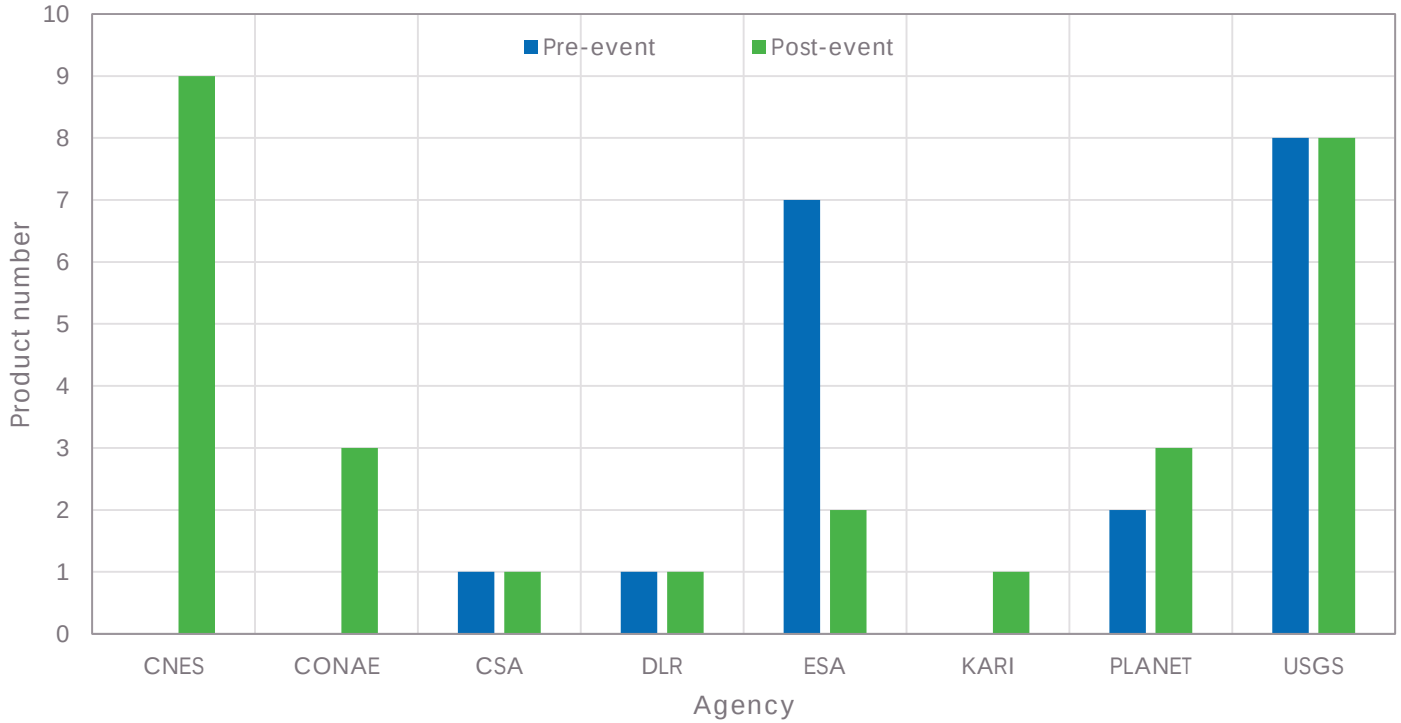
(Translated by Hay Mar)

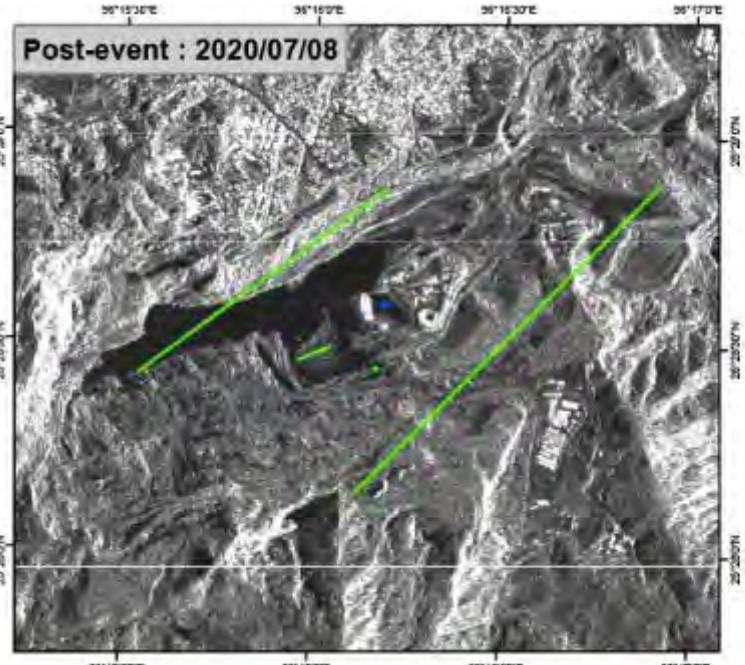
Rescue workers and Red Cross Society members are carrying bodies of victims died in landslide of jade mine in Phakant on 2 July. **PHOTO: MNA**

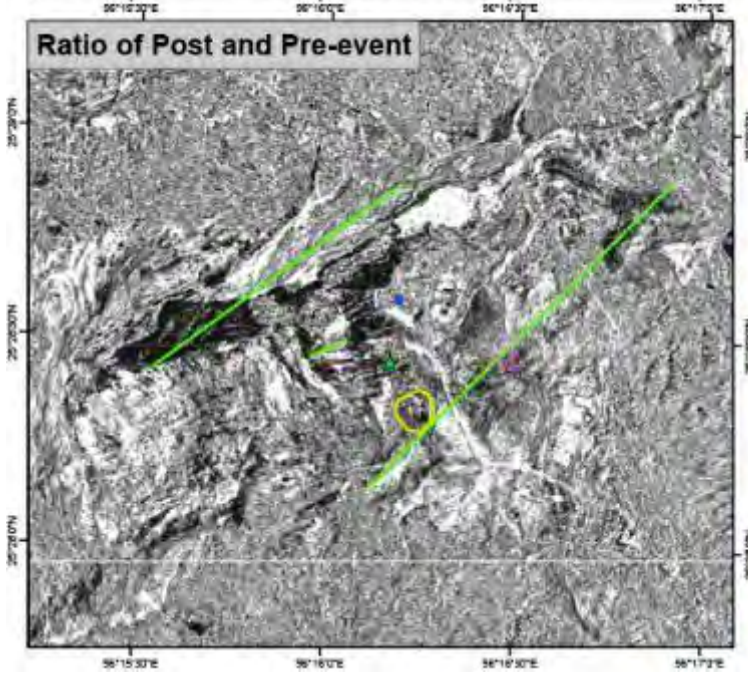
A map showing the deadly landslide incident at a jade mine near Laku Creek of Wahkar village in PhakantTownship on 2 July. **PHOTO: MNA**

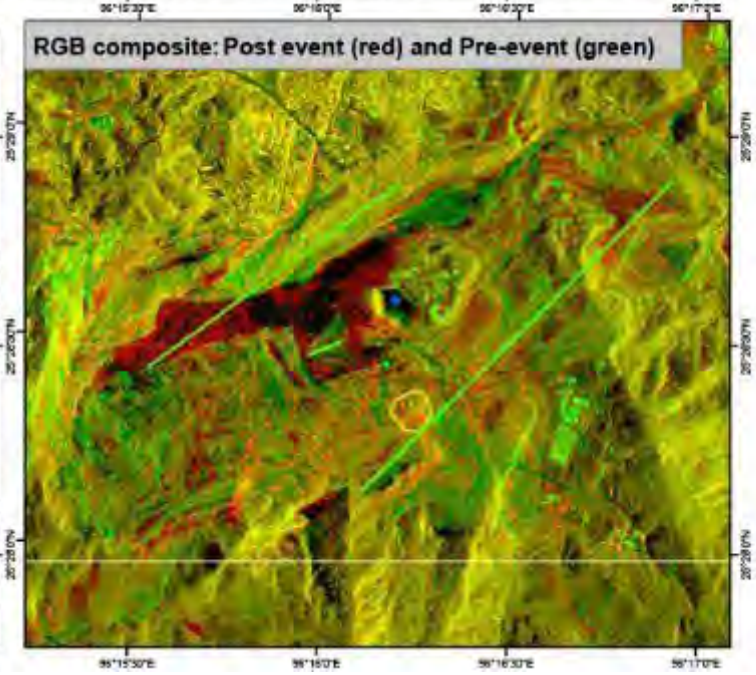


Number of product received: 47









Landslide at a Jade mine in Hpakant area of Kachin state, Myanmar

Disaster event date: 2 July 2020
Call ID: 757

Location map

About Landslide:

On 2 July, 2020, due to heavy rain, a towering pile of debris deposited in the Jade mine area in Hpakant area of Kachin state in Myanmar collapsed into the lake. A wave of mud, rocks and water was triggered and engulfed the miners into the debris. Based on the news reported on 3 July 2020, more than 160 people were killed and 54 people were injured. Most of these peoples were workers scavenging the stones in the mining area.

Data source:

TerraSAR - X : Pre-event : 2017/03/16
Post event: 2020/07/08

Observations:

Green star indicates the location of landslide collected from field.
Blue polygon is a pond.
Green long line shows the surface changes area.
Green short line indicates landslide width.
Yellow circle area indicates damaged houses.

Impact of landslide (red color) can be easily noticed, however there may other changes happened due to human activities before the landslide in the last 3 years

N

800 400 0 800

Meters

ICIMOD DLR

Challenges

- Cloud cover is the main issue on EO application during the monsoon season
- Limited pre event products – high resolution SAR product
- Time gap between pre and post event products
- Work from home due to Covid19 – limitations on image analysis

Conclusion

- Quick access to satellite data, their analysis, and information dissemination during disasters are major challenges
- Developing SOPs for different types of disaster will help in efficient and effective response
- Institutional capacity building is the highest priority
- Increased regional cooperation on access to data, information, and scientific collaboration is urgent to address the needs of DRR

Thank you

Protect the pulse