SERVIR's efforts on application of EO and Geospatial Technologies for DRR in the HKH

Birendra Bajracharya
Chief of Party
SERVIR-HKH, ICIMOD

USAID FROM THE AMERICAN PEOPLE

NASA

ICIMOD

SERVIR HINDU KUSH HIMALAYA

What we have been reading these days .....

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

24 Jul 2020

Flooding in Assam and Nepal kills hundreds and displaces millions

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

20 Jul 2020

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

The New York Times

Dozens Feared Dead as Nepal Landslides Wipe Out Homes

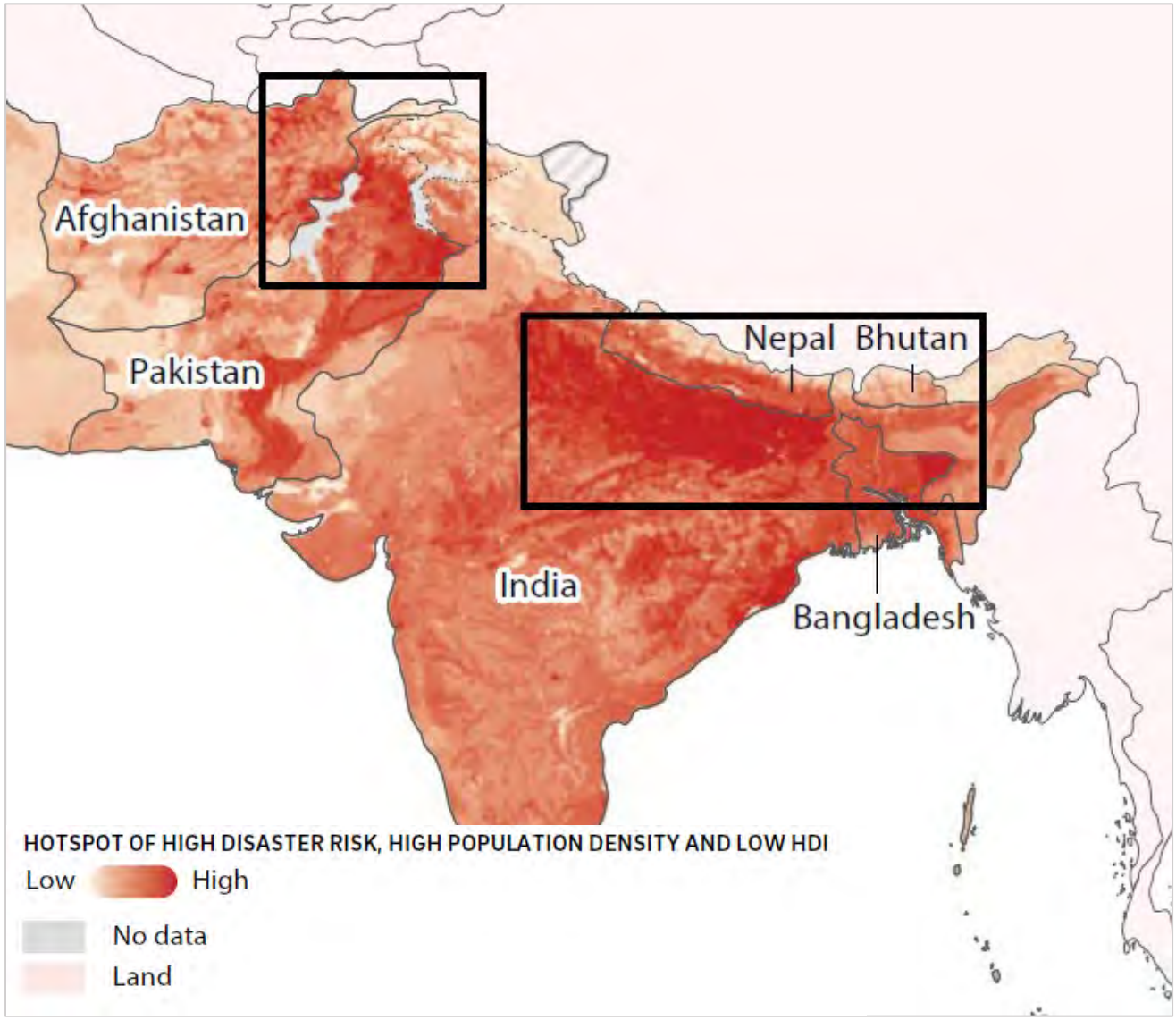
Many in the region had only just rebuilt homes that were damaged by a powerful 2015 earthquake. The country is also facing an economic crisis brought on by the coronavirus pandemic.

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

Disaster in Asia Pacific Region

- Average annual economic loss of $675 billion
- Increase in the number of people affected who require immediate assistance during a period of emergency
- Number of deaths from climate-related events is decreasing, probably due to advances in technology, as well as a growing experience and expertise for more effective early warning systems

Disaster in Asia Pacific Region: South Asia



HOTSPOT 1 **TRANSBOUNDARY RIVER BASINS**

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

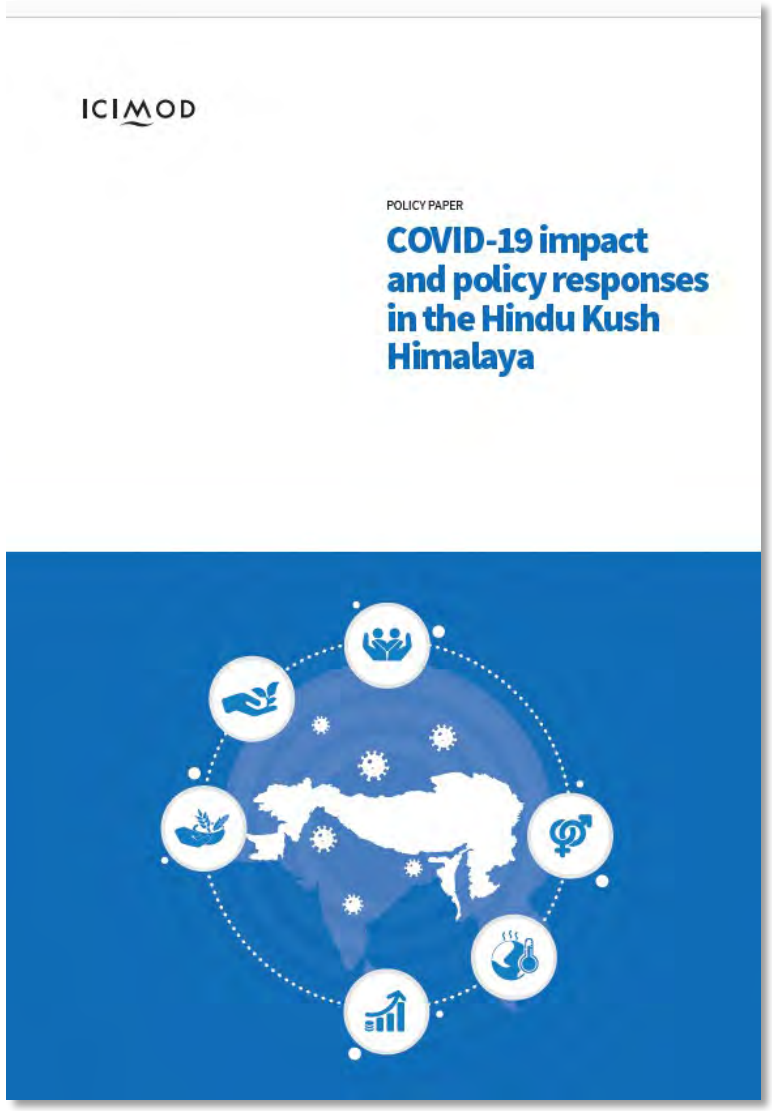
Population exposure	Very high (mostly poor)
Economic stock exposure	High
Infrastructure: energy	Low
Infrastructure: transport	Moderate
Infrastructure: ICT	Low

Hindu Kush Himalaya region

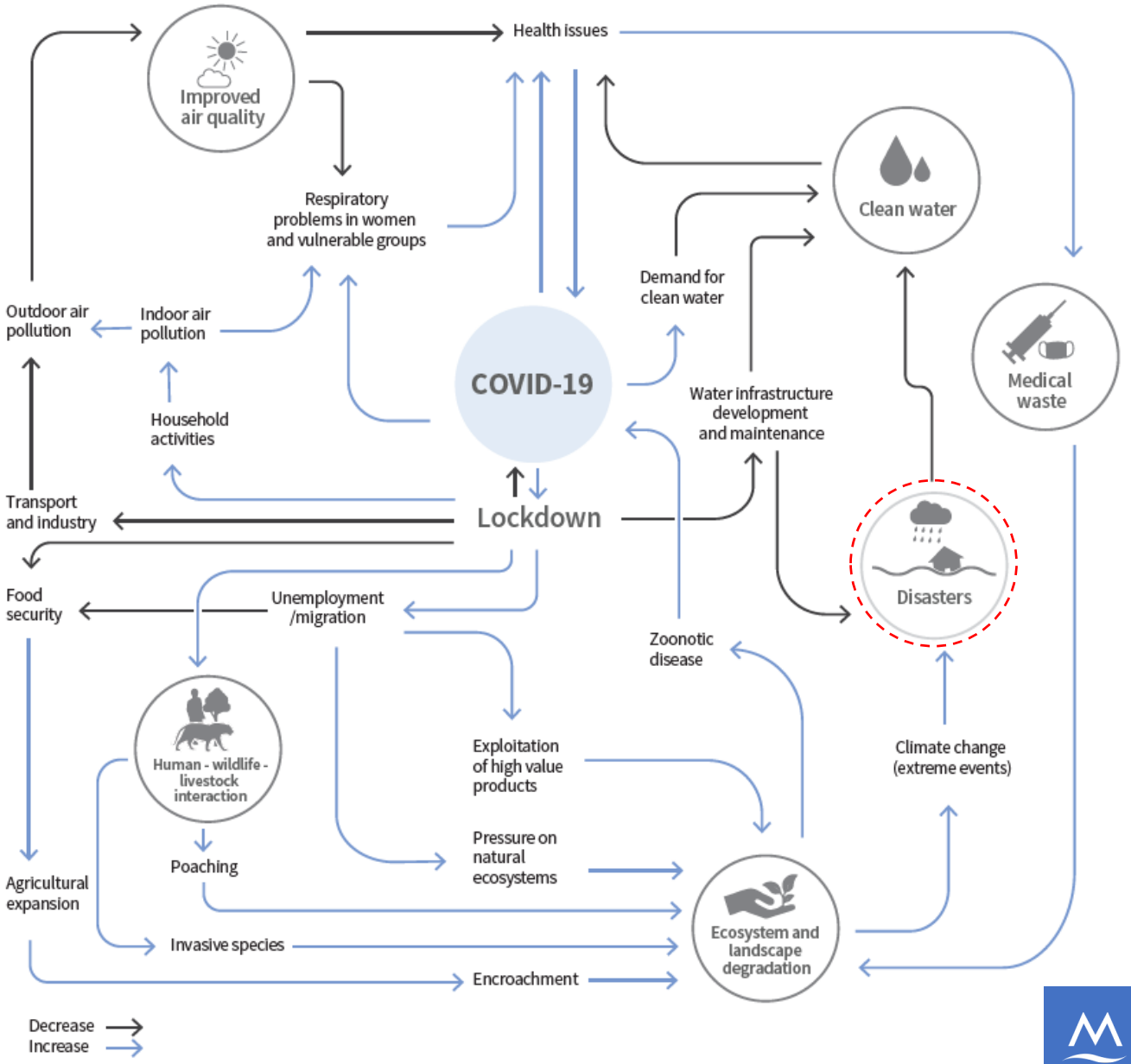
Source of
10 major Asian river systems

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

Covid-19 Scenario



Cascading impacts of covid-19 on environment in the HKH



A partnership of NASA, USAID, and leading regional organizations, SERVIR develops innovative solutions using Earth observation and Geospatial technologies to improve livelihoods and foster self-reliance in Asia, Africa, and the Americas.

SERVIR

USAID FROM THE AMERICAN PEOPLE

NASA

adpc

CIAT

ICIMOD

CILSS

RCMRD

Thematic 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

SERVIR-HKH disaster related initiatives

Floods:

- Flood forecasting and early warning
- High impact weather assessment tool
- Inundation mapping

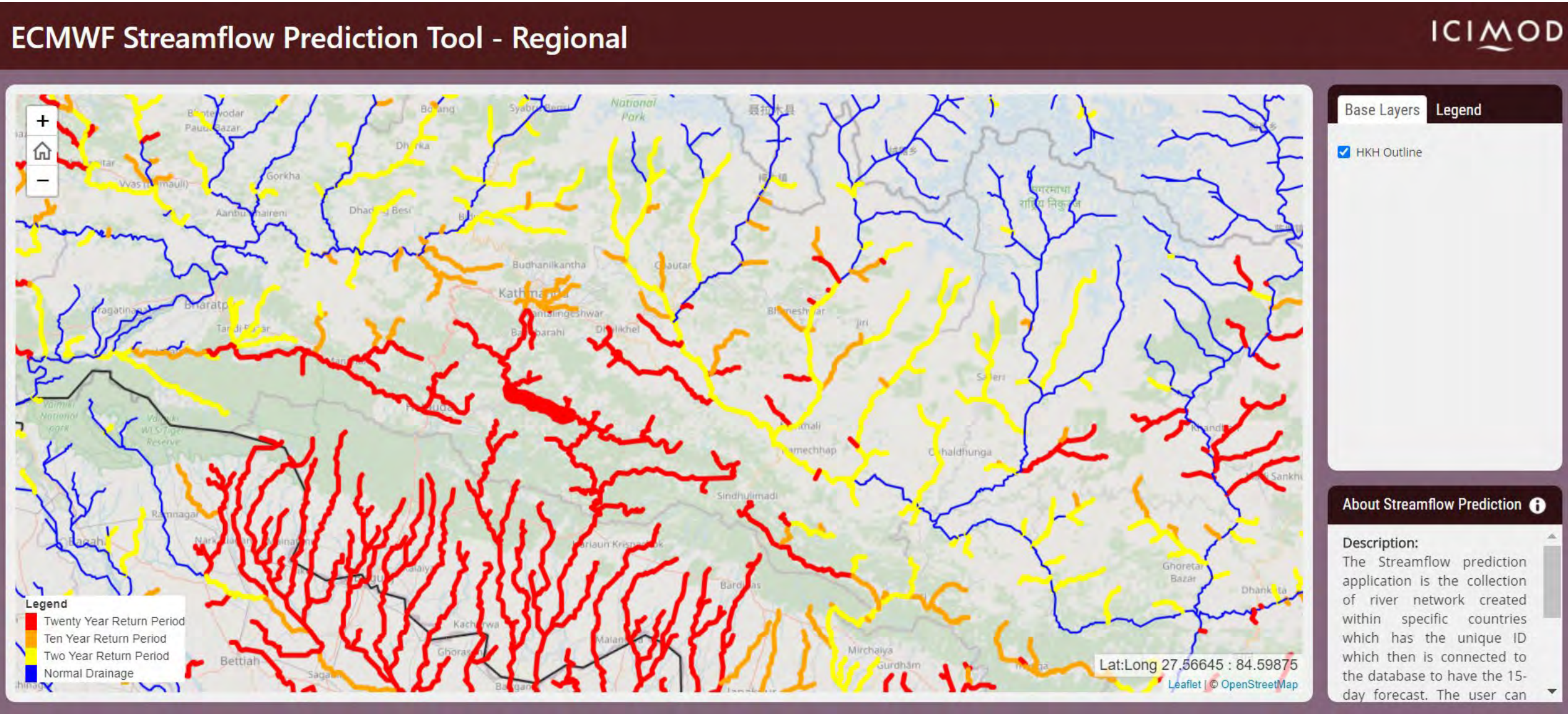
Drought

- Drought monitoring and seasonal outlook

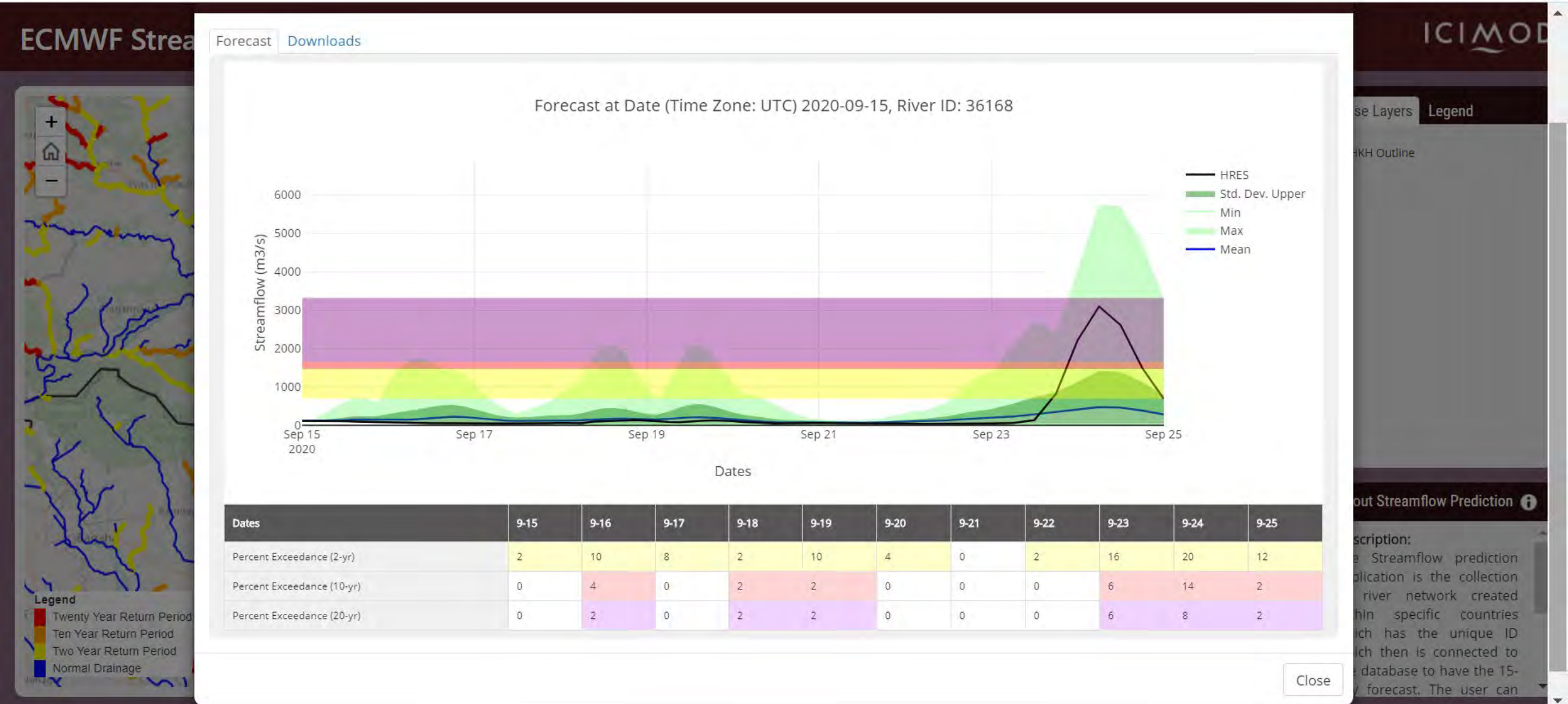
Water and Hydro-climatic Disasters

Enhancing Flood Early Warning

Co-development with Brigham Young University



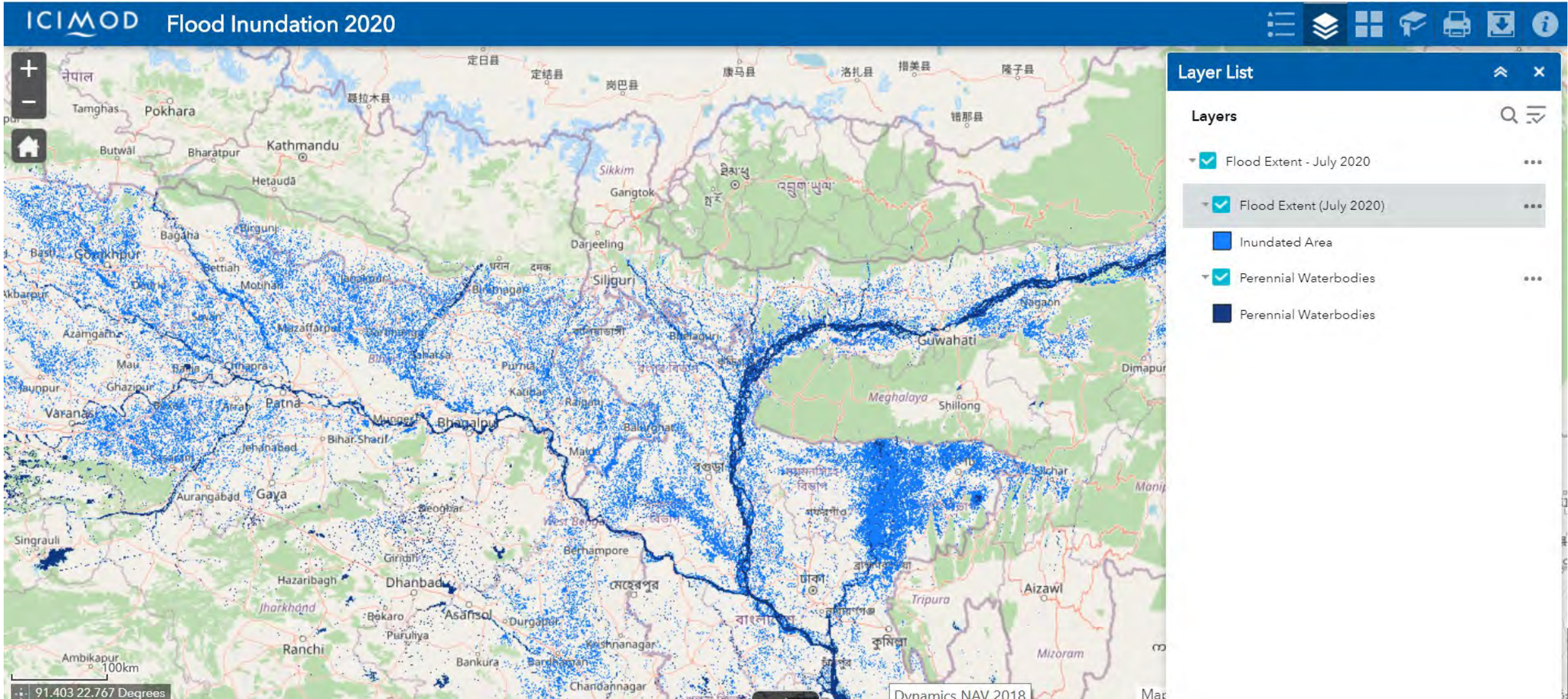
Enhancing Flood Early Warning



Dates	9-15	9-16	9-17	9-18	9-19	9-20	9-21	9-22	9-23	9-24	9-25
Percent Exceedance (2-yr)	2	10	8	2	10	4	0	2	16	20	12
Percent Exceedance (10-yr)	0	4	0	2	2	0	0	0	6	14	2
Percent Exceedance (20-yr)	0	2	0	2	2	0	0	0	6	8	2

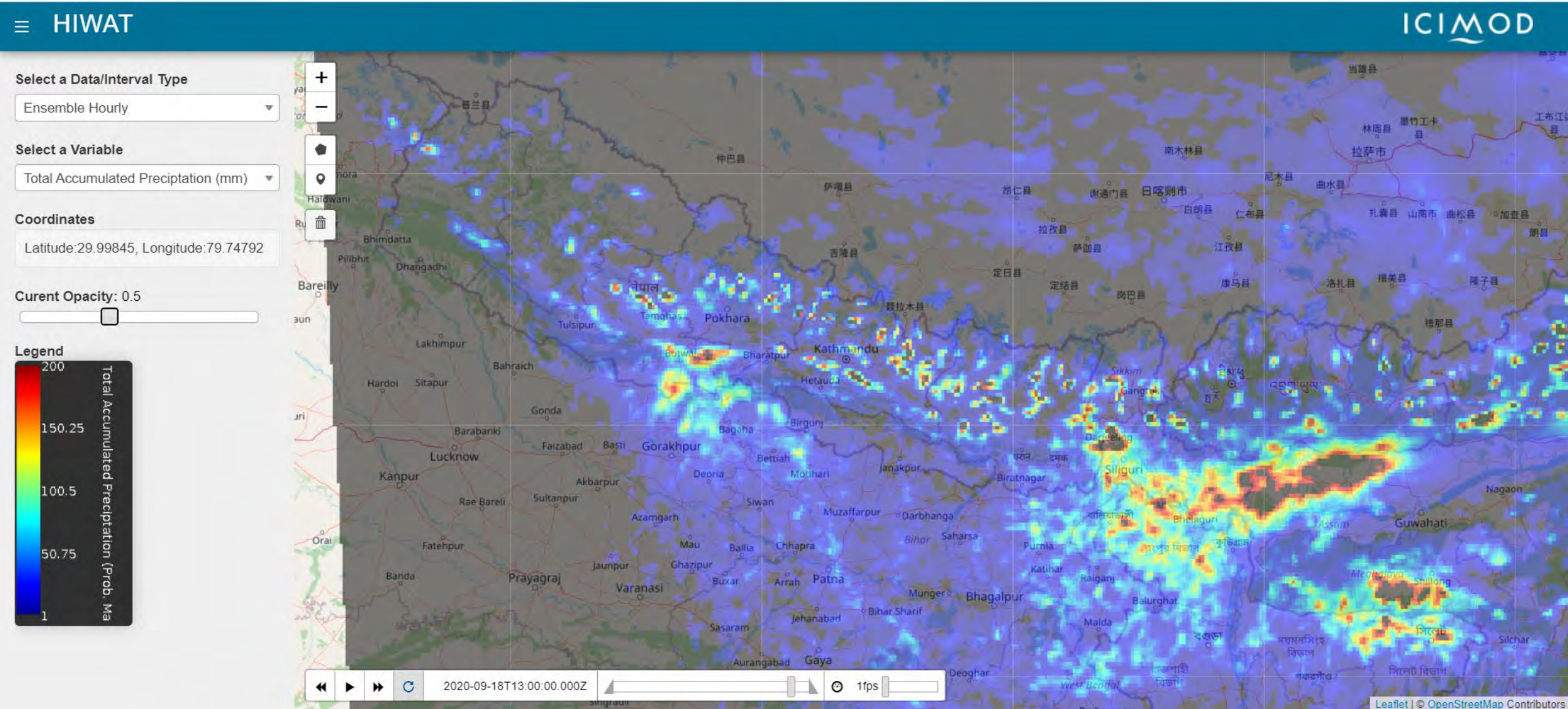
Flood inundation mapping

Co-development with University of Alaska Fairbanks



High Impact Weather Assessment Tool

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



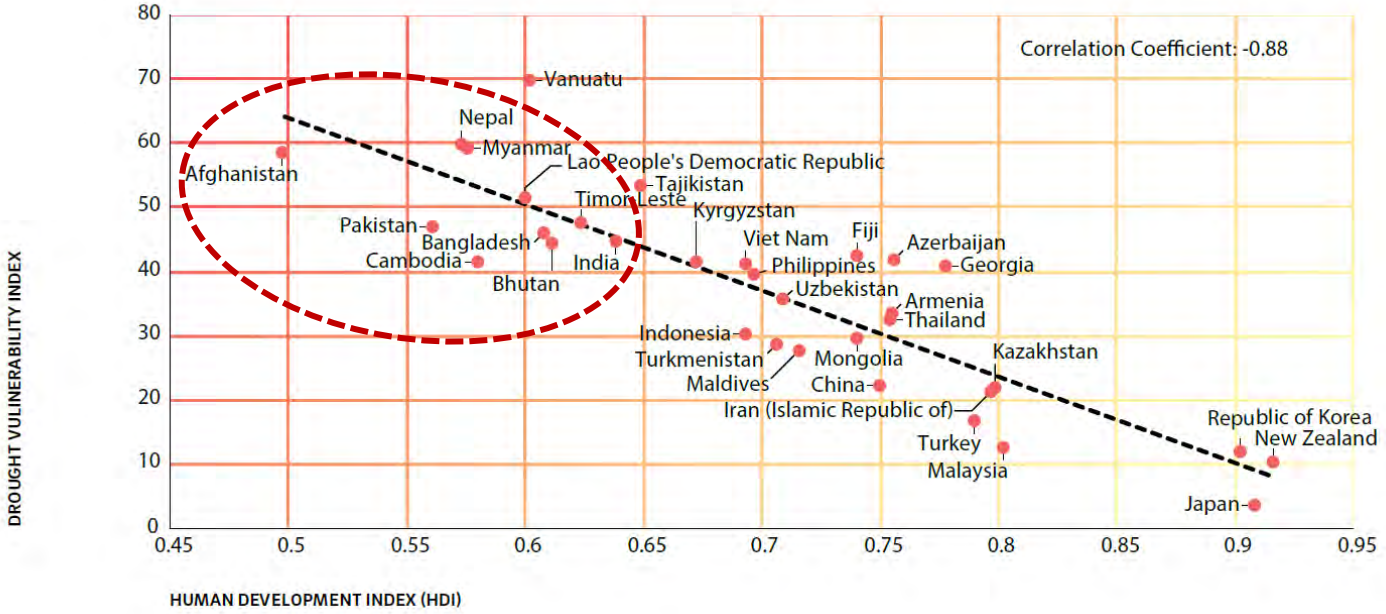
Reaching out to communities

- On-line applications developed on Tethys to visualize the forecasts
- A mobile app for disseminating Flood early warning in Bangladesh
- Integration with hydrodynamic modeling in Bangladesh

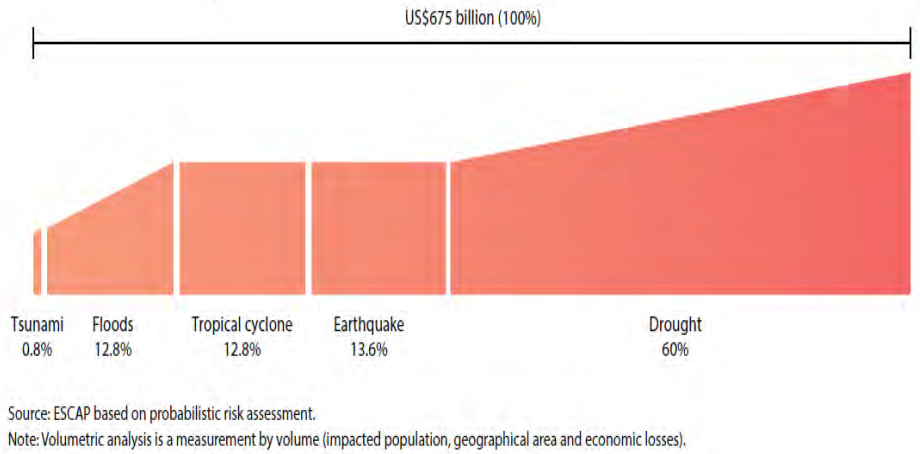
Regional Drought Monitoring

Drought in the HKH

Influence of drought vulnerability on human development index

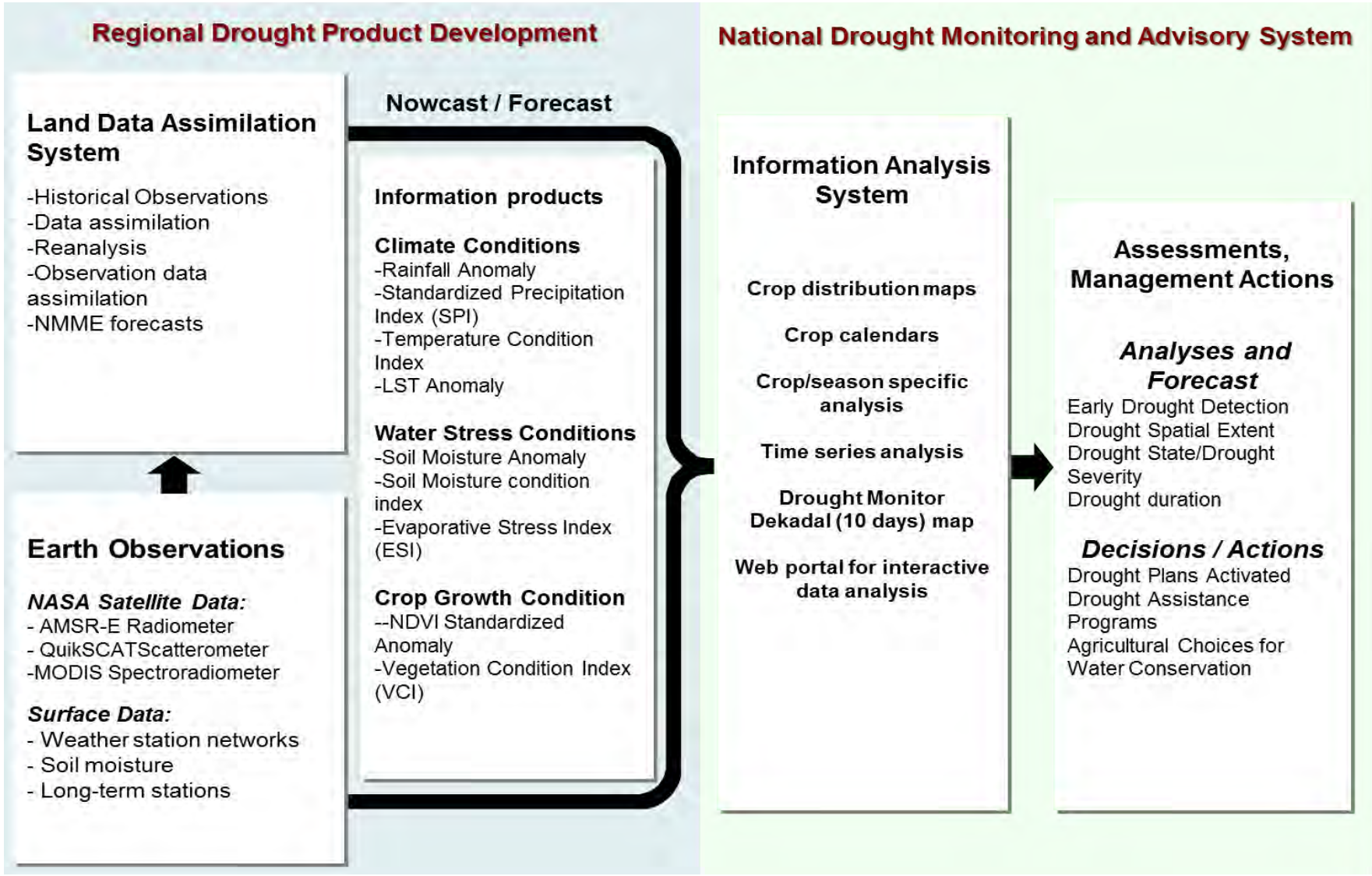


Asia-Pacific regional riskscape (average annual losses)



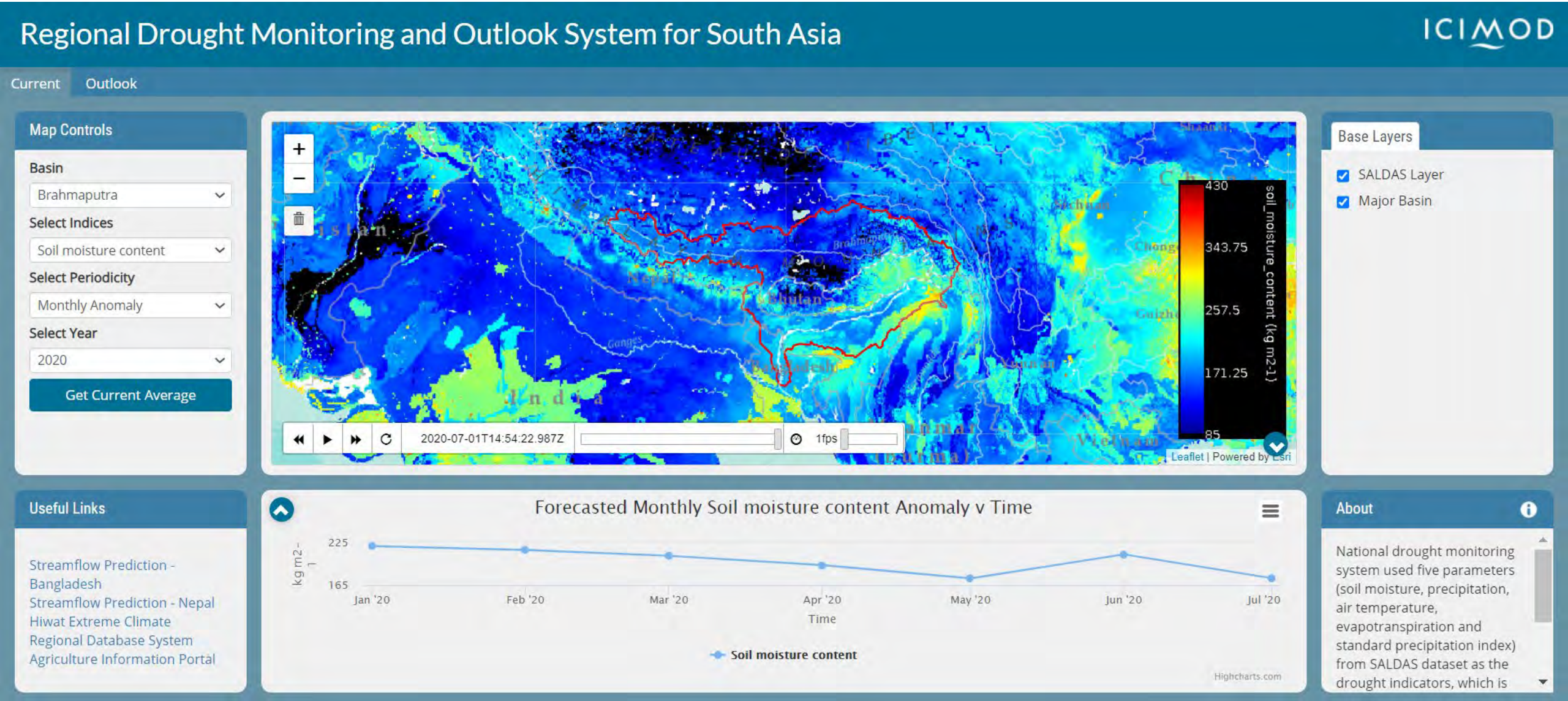
UNESCAP (2019) The Disaster Riskscape Across Asia-Pacific, Pathways for Resilience, Inclusion and Empowerment, Asia-Pacific Disaster Report 2019

Framework of Drought Monitoring and Outlook System

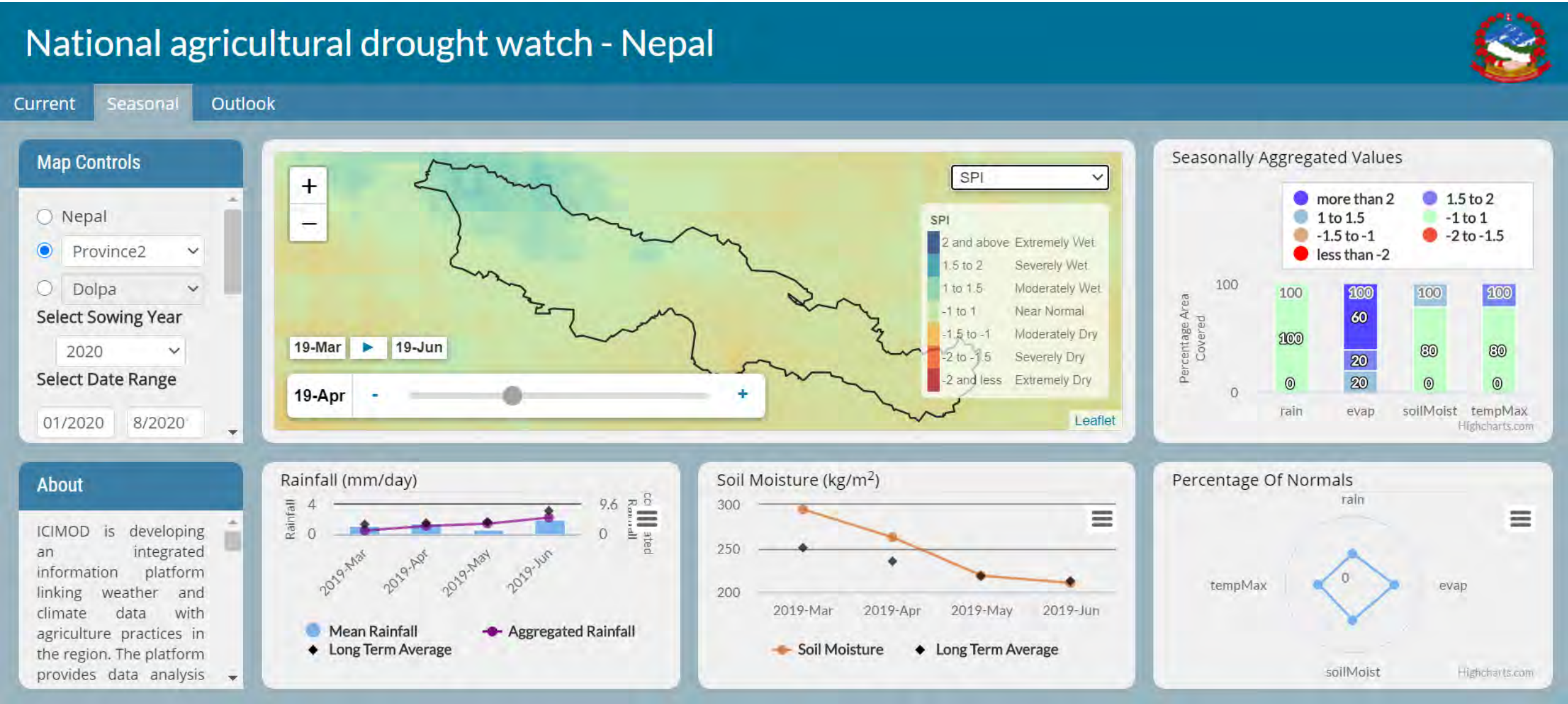


Regional Drought Monitoring and Outlook

Co-development with John Hopkins University



National Drought Monitoring and Outlook



Capacity building

- Courses designed on specific applications/ services

- Different types of trainings
  - Structured Training
  - On the Job Training
  - Training of Trainers
  - Policy dialogs

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.)

Conclusion

- More people and infrastructure are at risk of exposure to increasing frequency and intensity of natural hazards in the HKH
- Advancement in science and technology has created more opportunities to improve early warning and disaster preparedness
- Communication mechanisms to disseminate right information at right time is crucial
- Capacity building at local levels can make a big difference in saving lives and properties
- More extensive and effective regional cooperation by sharing data, information, and scientific and indigenous knowledge needed for disaster risk reduction practices


Thank you
SERVIR HKH