SPACE BASED SUPPORT TO NDMA/PDMAS DURING FLOOD 2022

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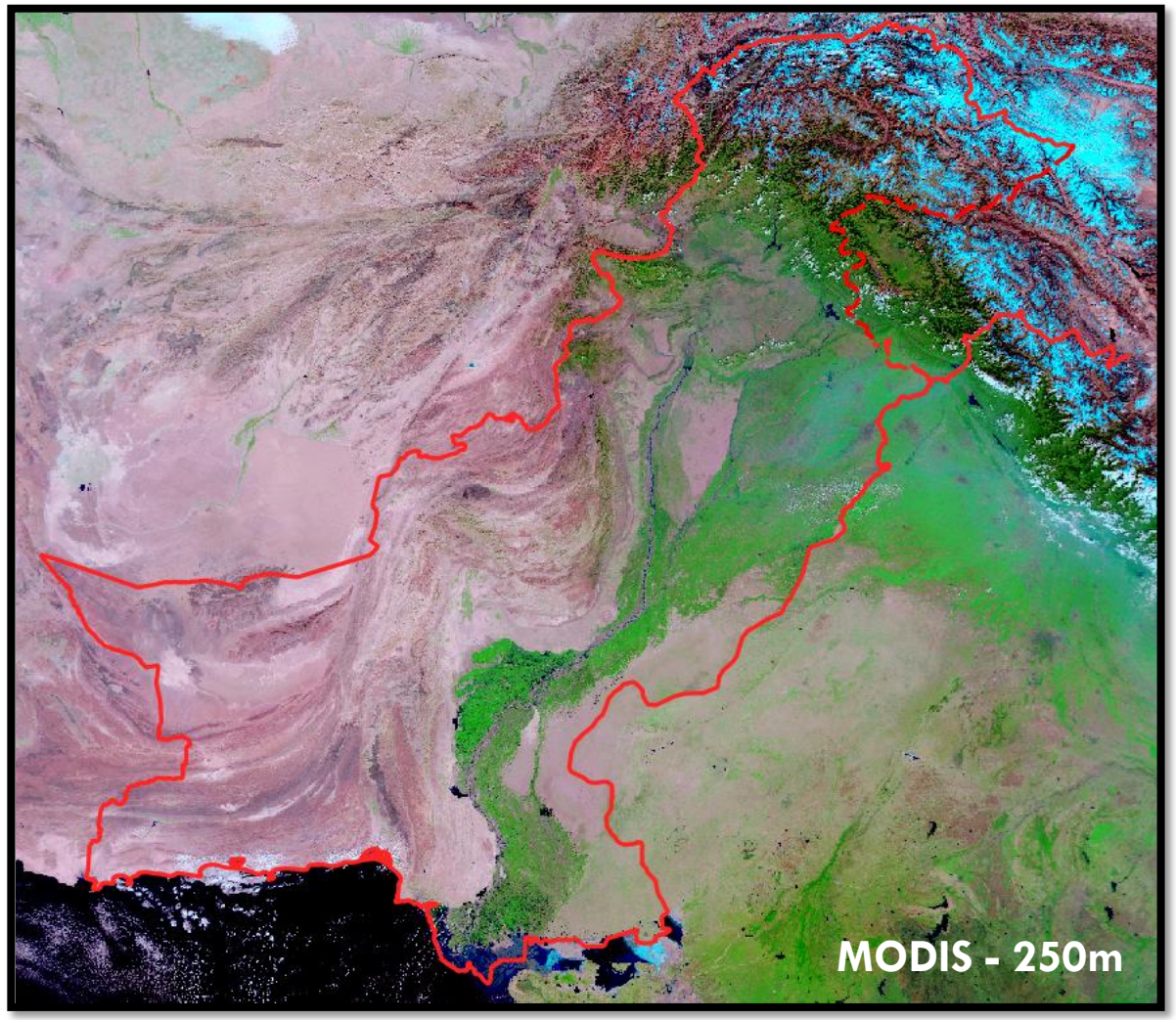
Space Application Centre for Response in Emergency and Disasters (SACRED)

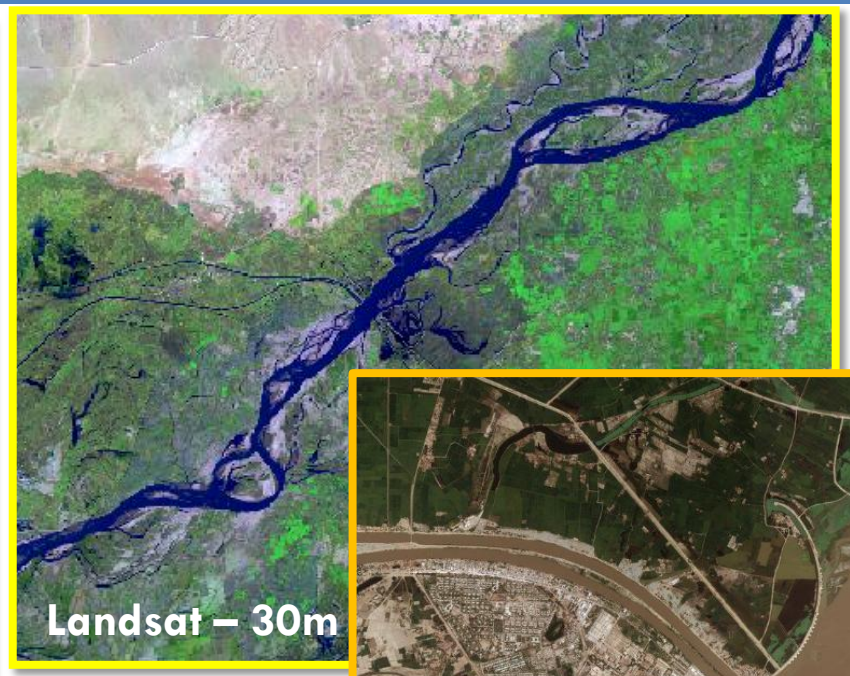
- THE CENTRE PROVIDES SPACE BASED INFORMATION TO NATIONAL/PROVINCIAL DISASTER MANAGEMENT AGENCIES TO RAPIDLY ASSESS THE EXTENT OF NATURAL DISASTERS AND DAMAGES TO HUMAN LIVES, PROPERTY AND INFRASTRUCTURE.
- THE CENTRE ALSO PROVIDES ASSISTANCE TO REGIONAL COUNTRIES IN CASE OF NATURAL DISASTERS.

Support to National / Provincial Departments

- Ministry of Planning Development and Special Initiatives
- Ministry of Water
- National Disaster Management Authority
- Chief Secy, Govt of Balochistan
- Punjab, Sindh, Khyber Pakhtunkhwa and Balochistan Provincial Disaster Management Authorities
- Chairman Senate Standing Committee on Climate Change

Space in Aid





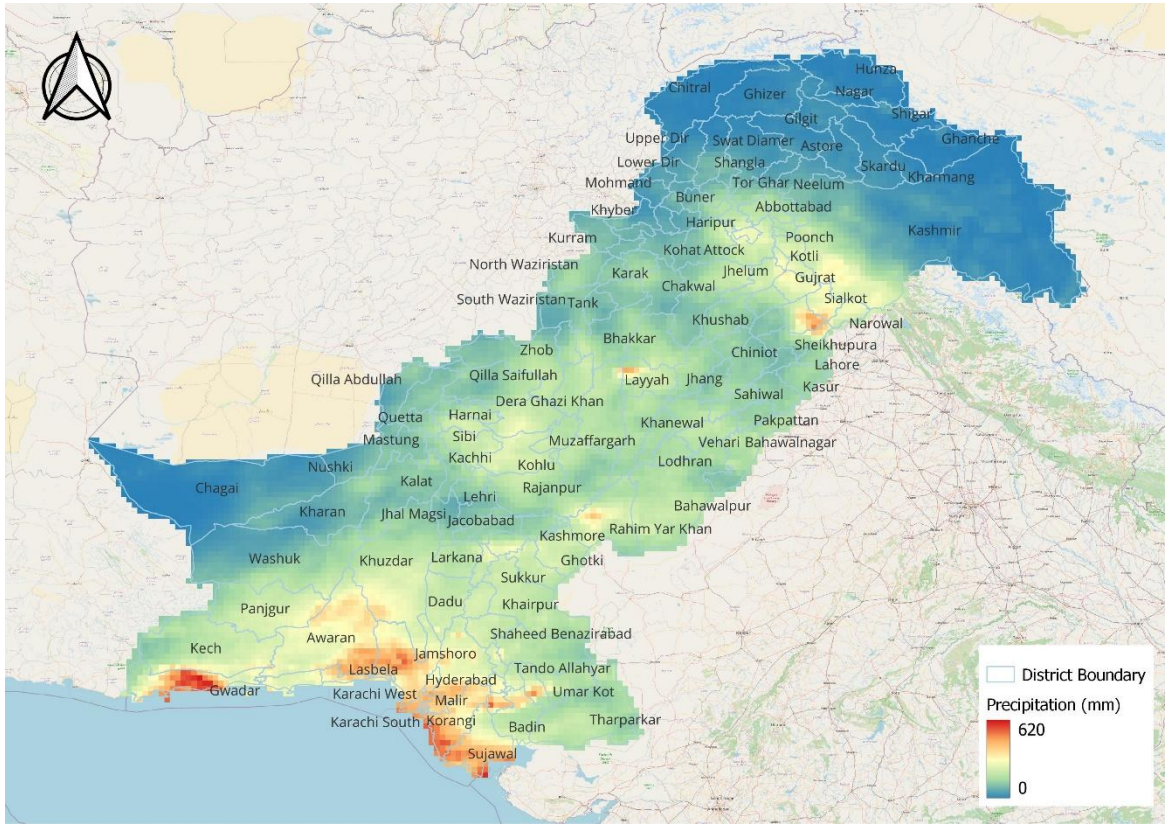
Satellites can provide information at Regional, National and Local level

Space based support to NDMA/PDMAs

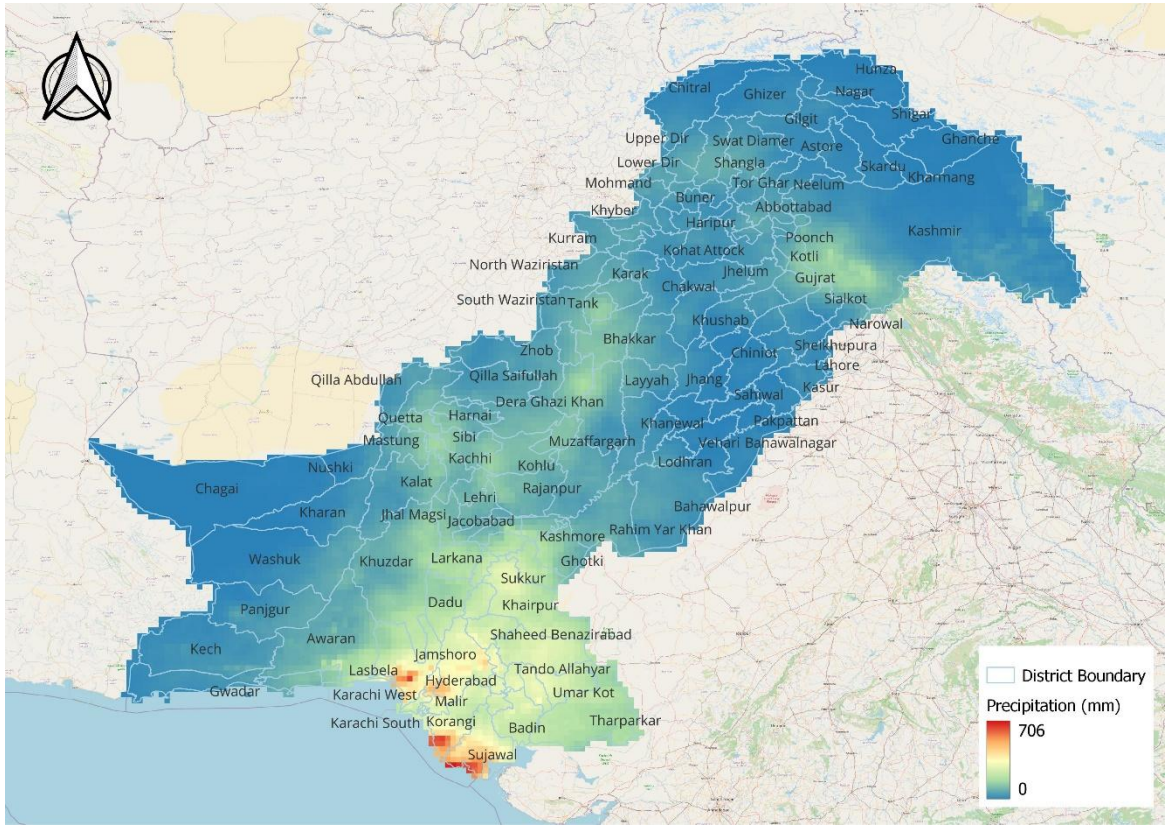
- Regular monitoring of Rivers, Trans-boundary dams, Glaciers
- Torrents / Flash floods – Balochistan, DG Khan, Dl Khan, Rajanpur
- House / settlements damage assessment
- Road / bridges damage assessment on major highways
- Crops damage assessment
- Dams breach assessment / identification in Balochistan

SUPPORT TO NATIONAL / PROVINCIAL DEPARTMENTS DURING FLOOD 2022

Monsoon Rains – GSMaPs

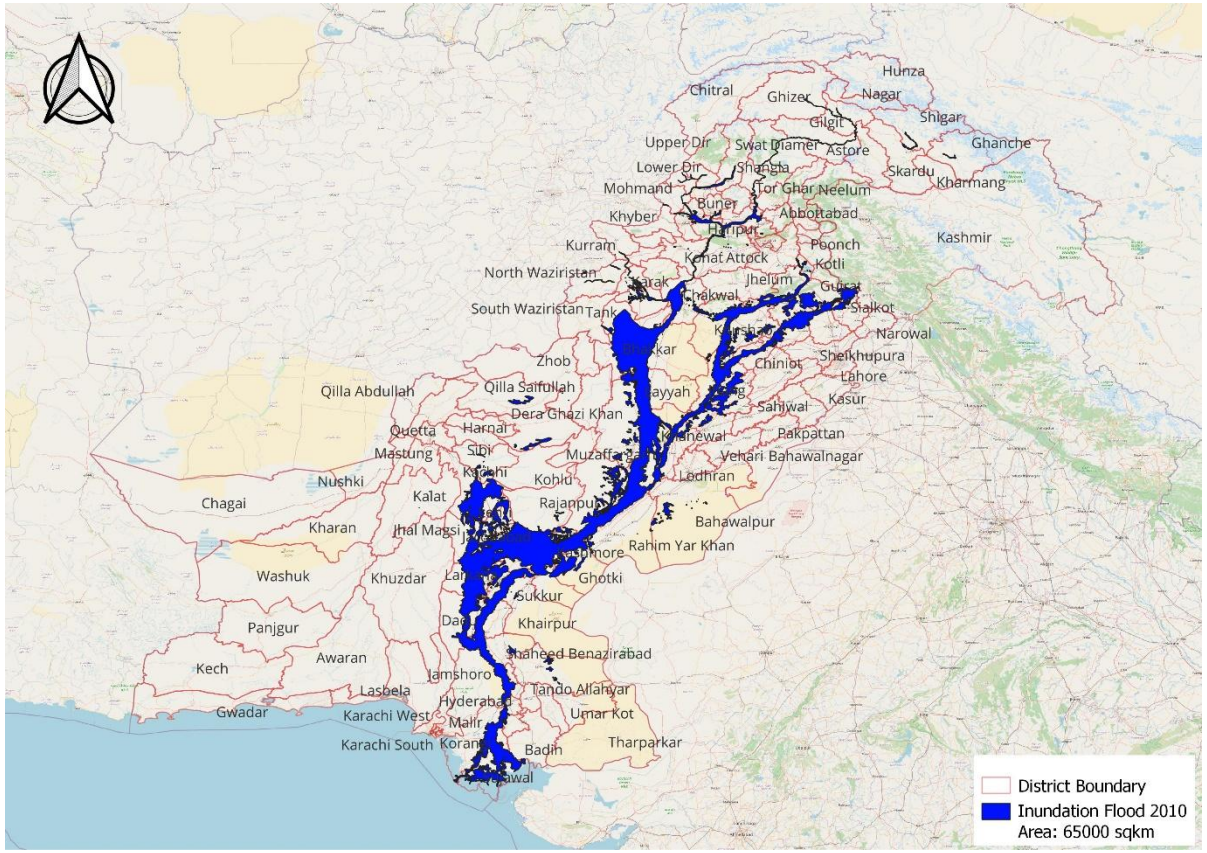


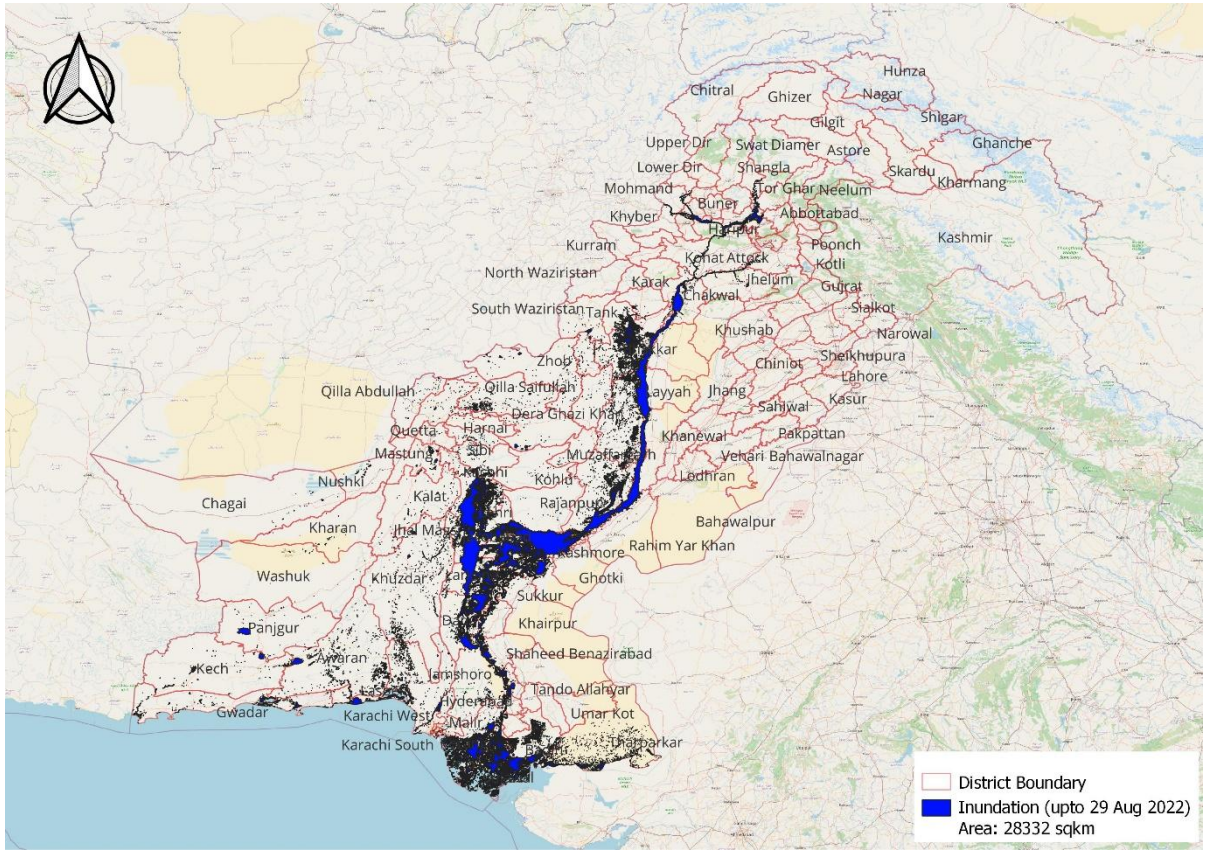
First Spell (01 July till 07 Aug 2022)



Second Spell (08 Aug till 29 Aug 2022)

Inundation Situation - Flood 2022 vs Flood 2010



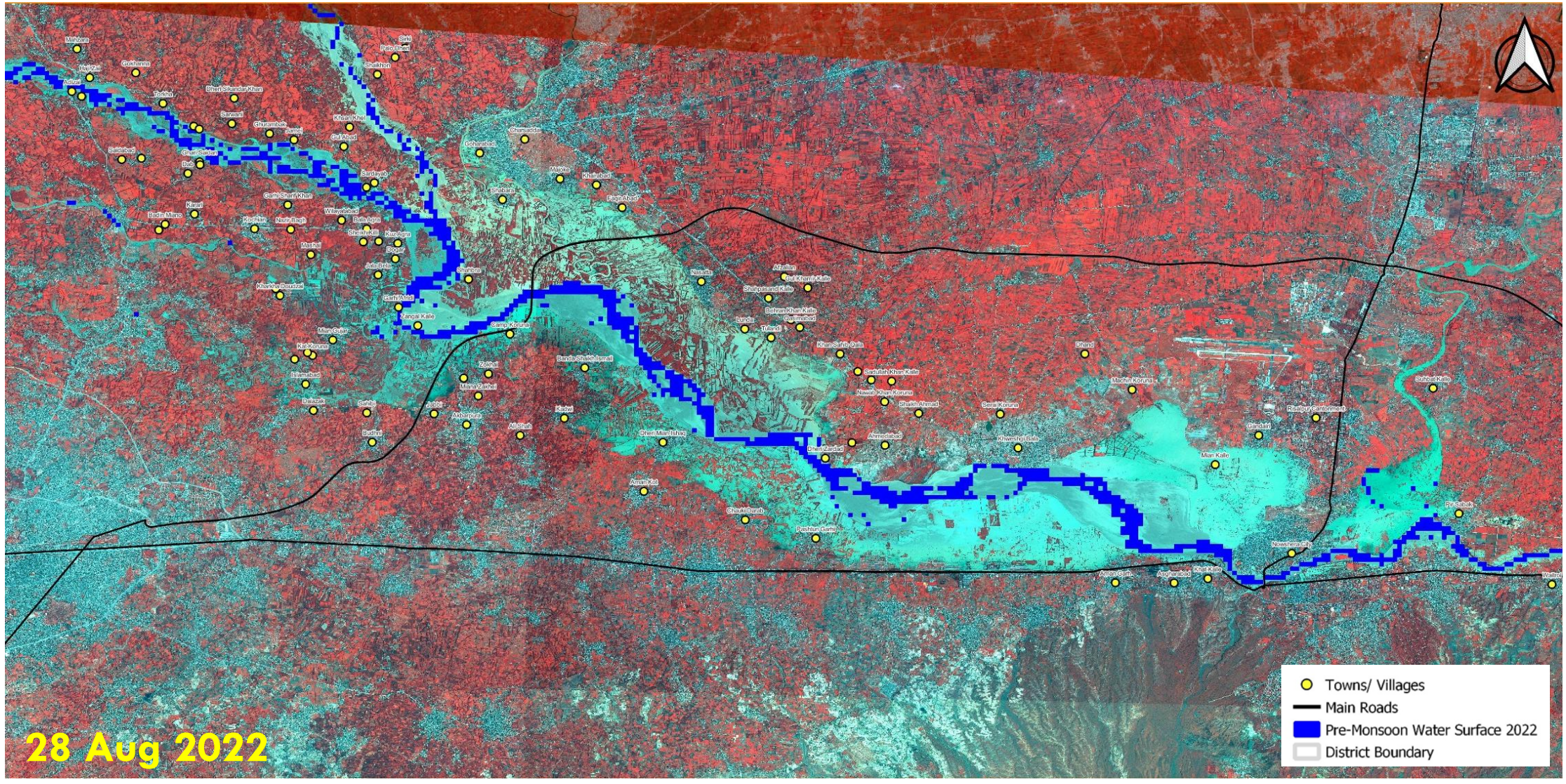


2010

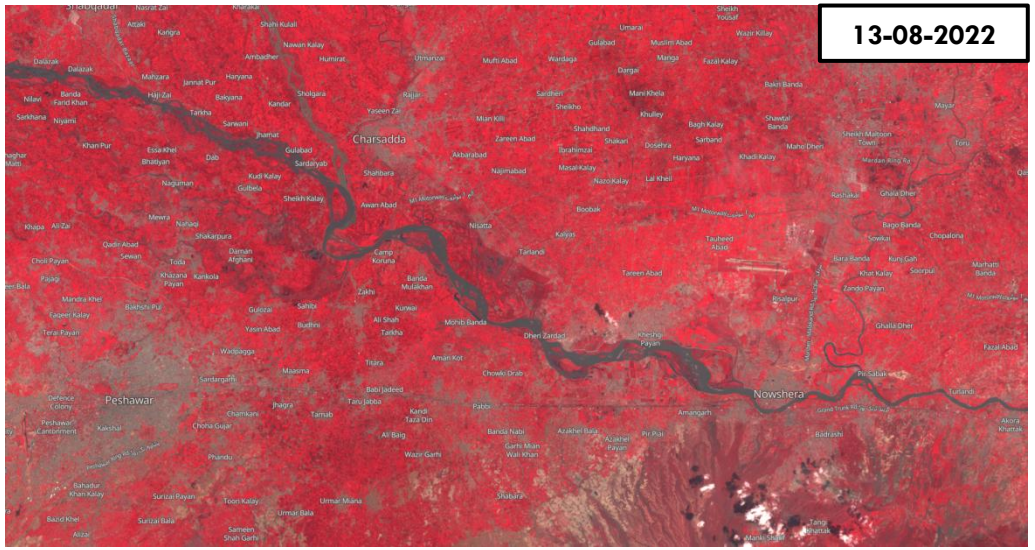
2022

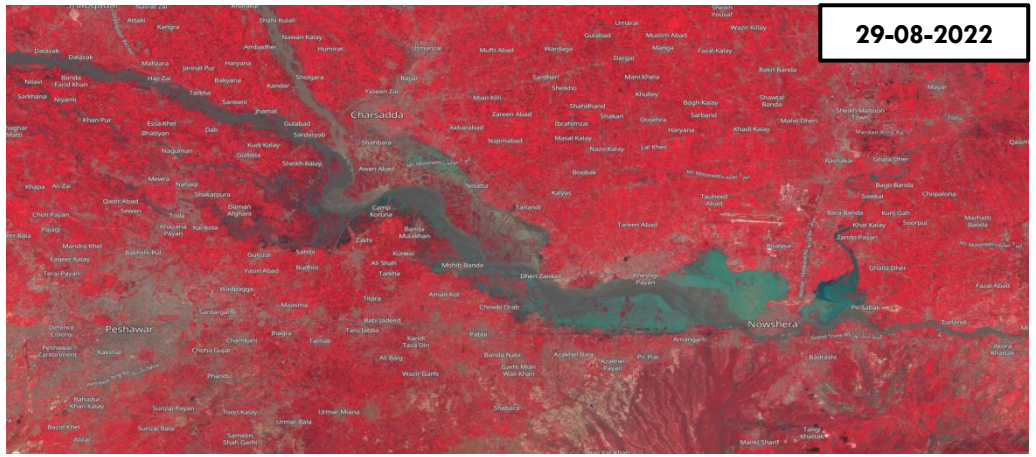
Rapid Flood indundation Mapping

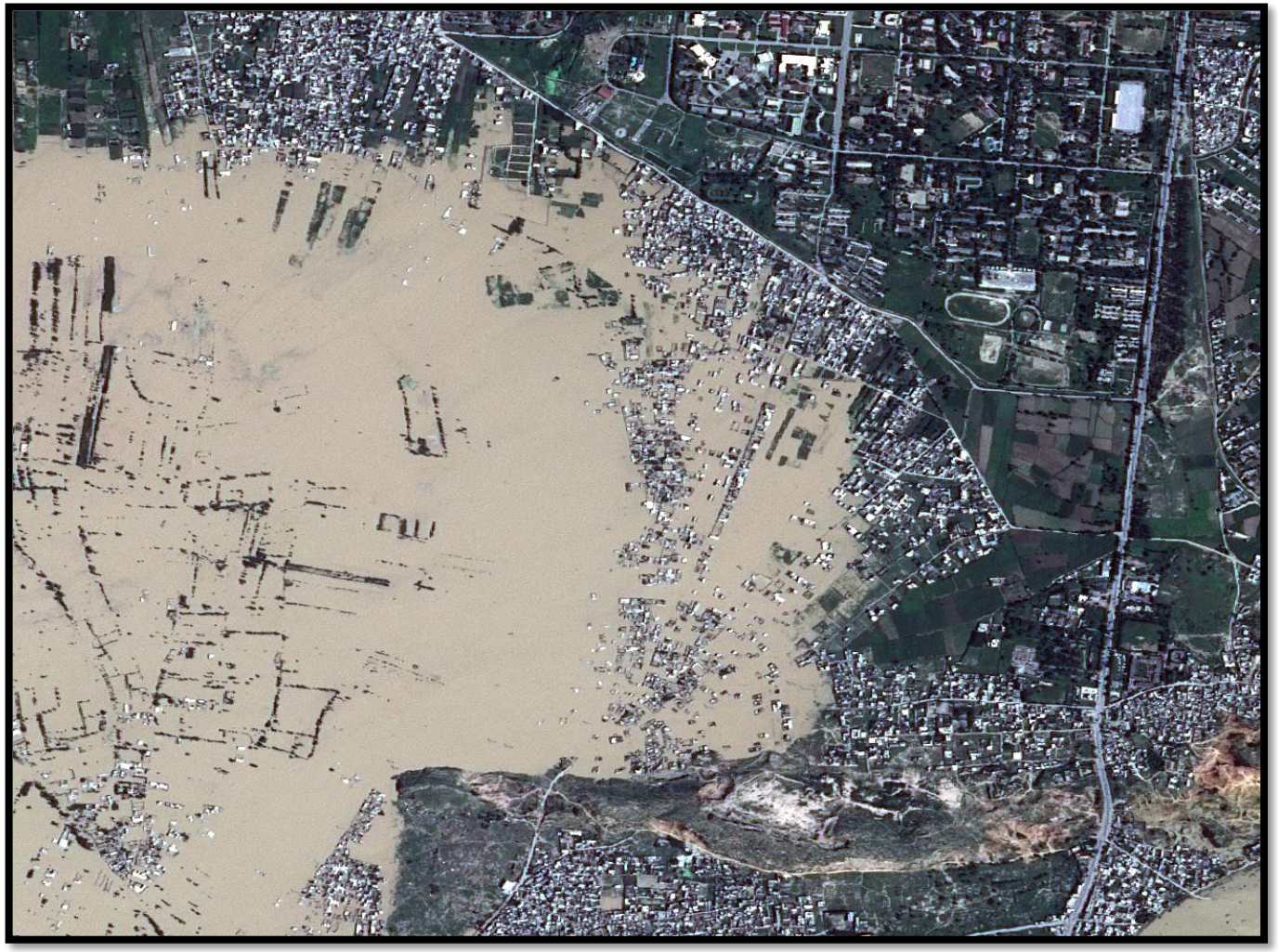
Flooding in Kabul and Swat Rivers at Nowshera



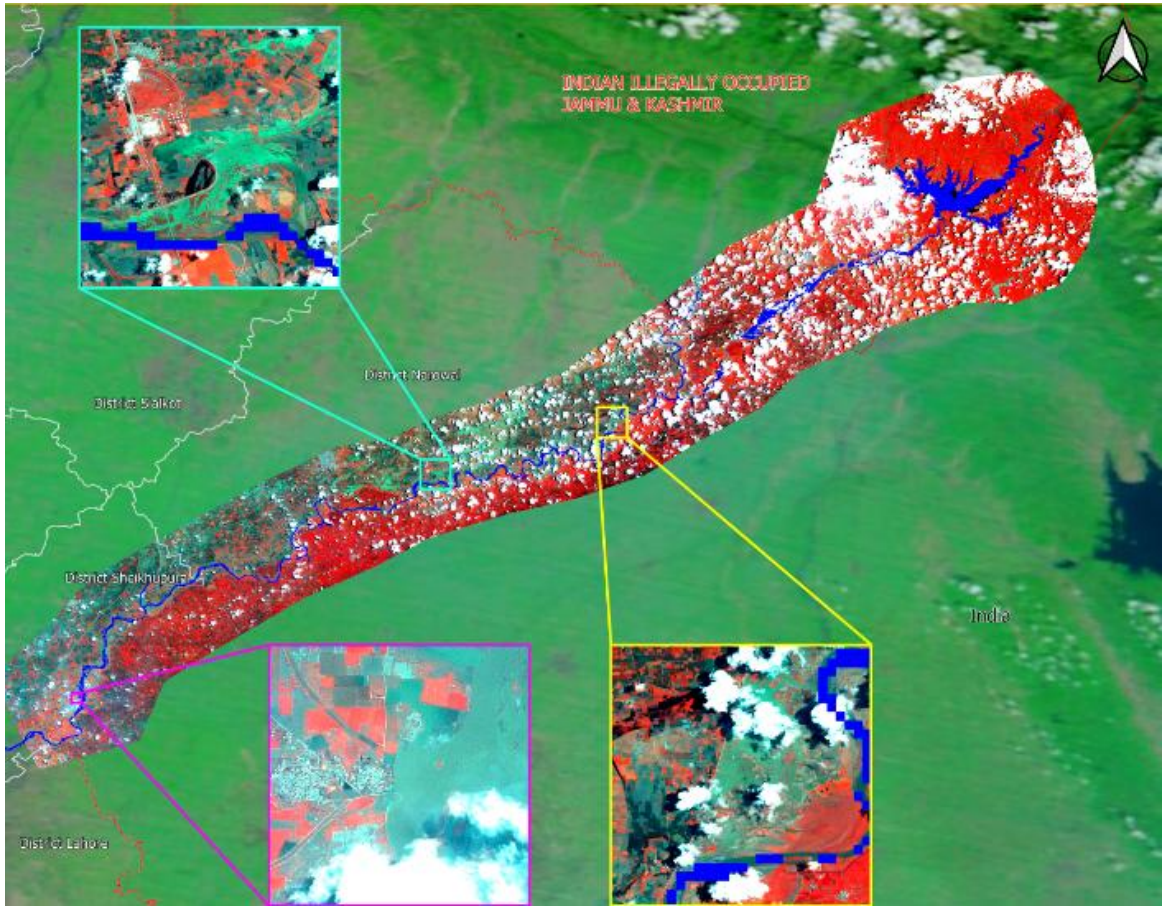
Flooding in Kabul and Swat Rivers at Nowshera



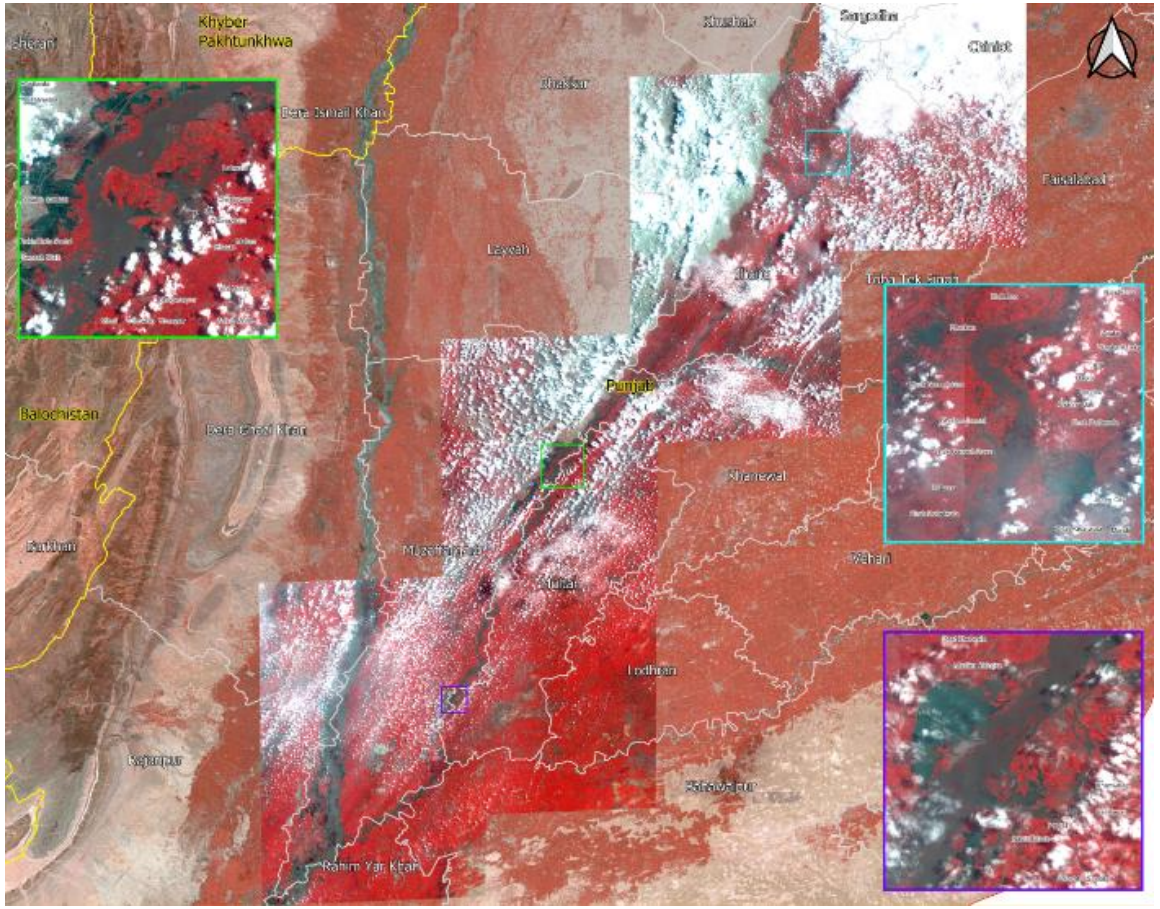




Regular monitoring of Rivers – Chenab and Ravi

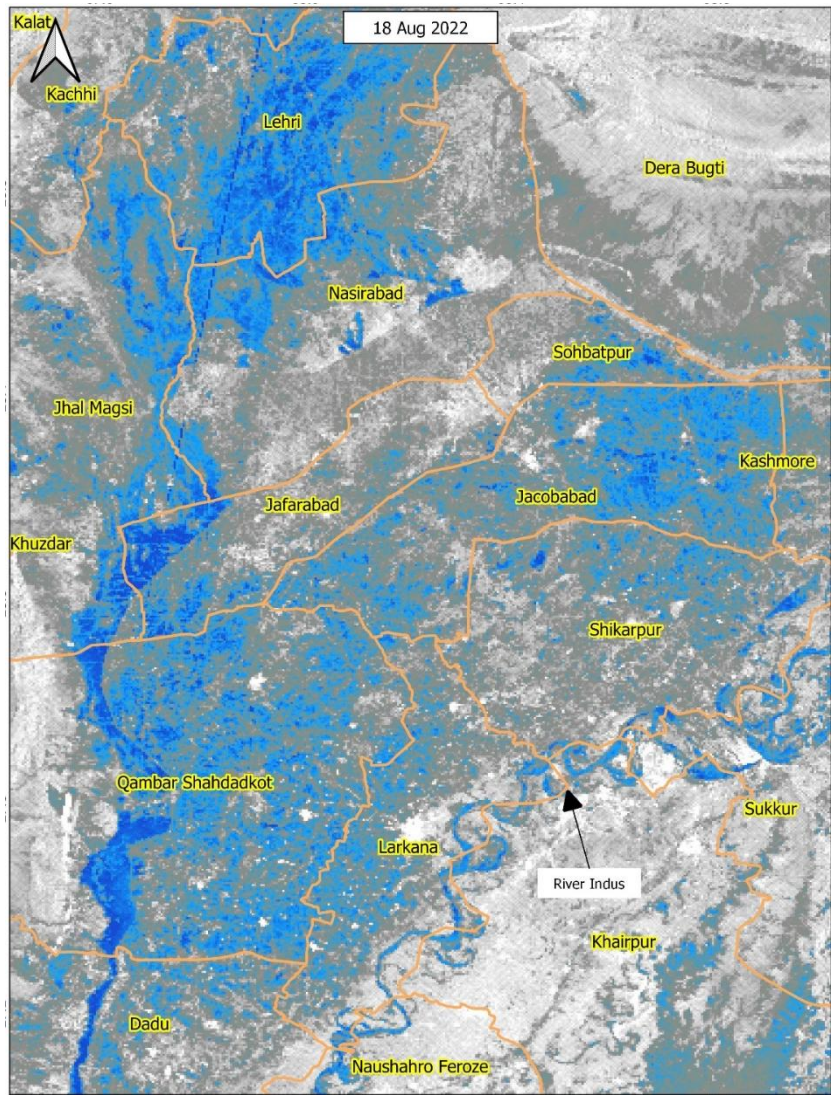


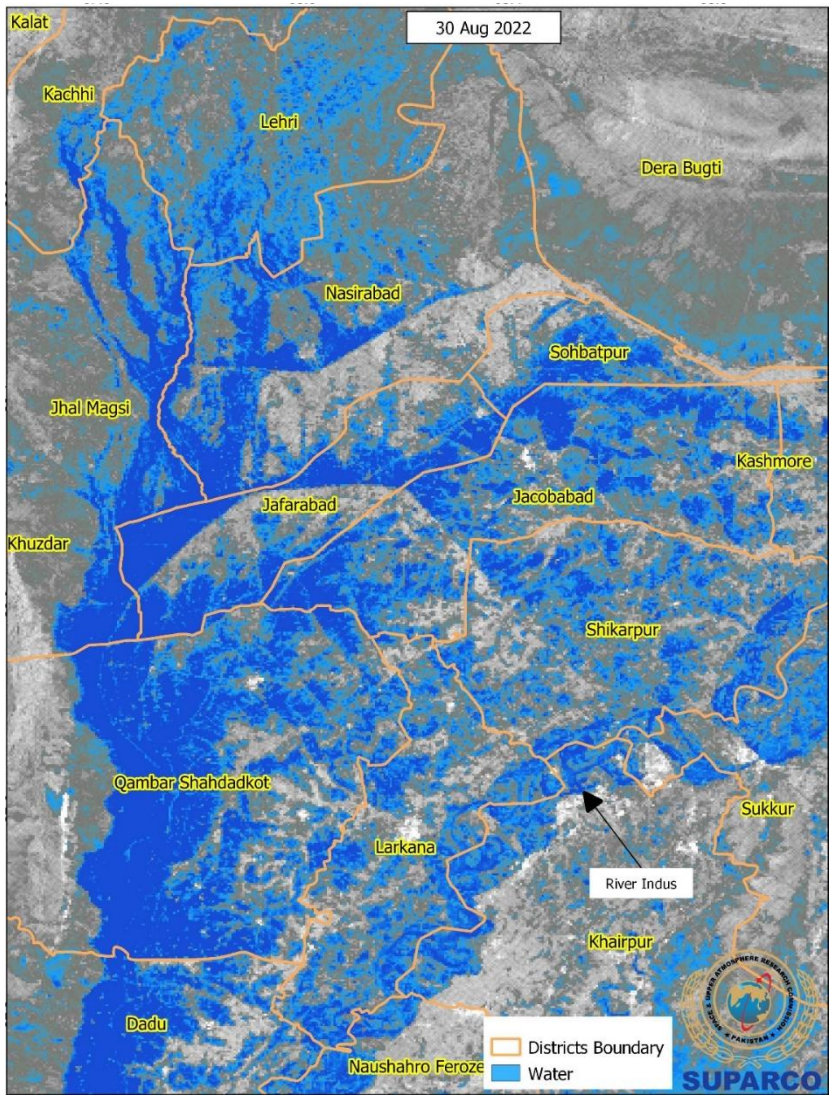
River Ravi – 02 Aug 2022



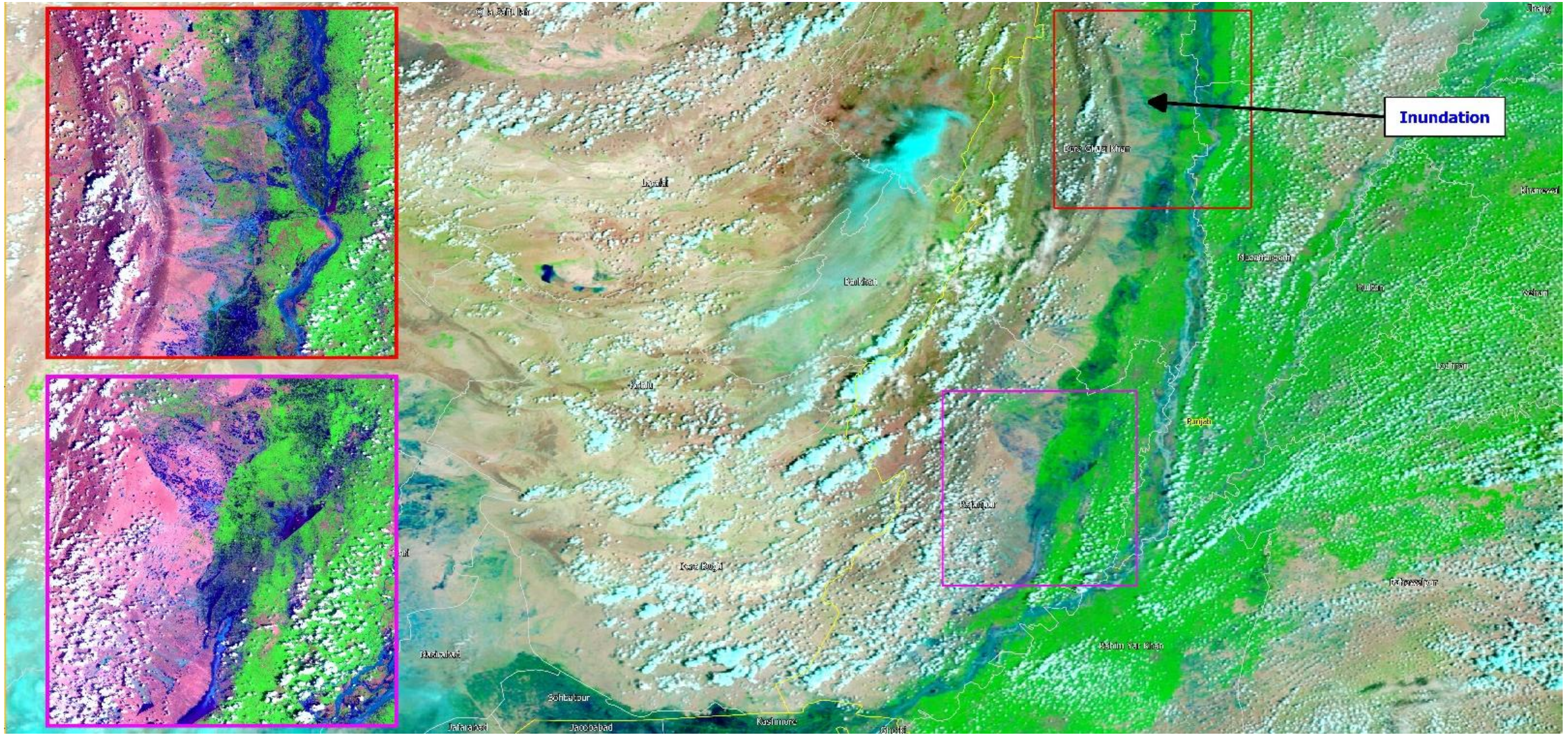
River Chenab – 30 July 2022

Flood/Rain Inundation- Sindh & Balochistan

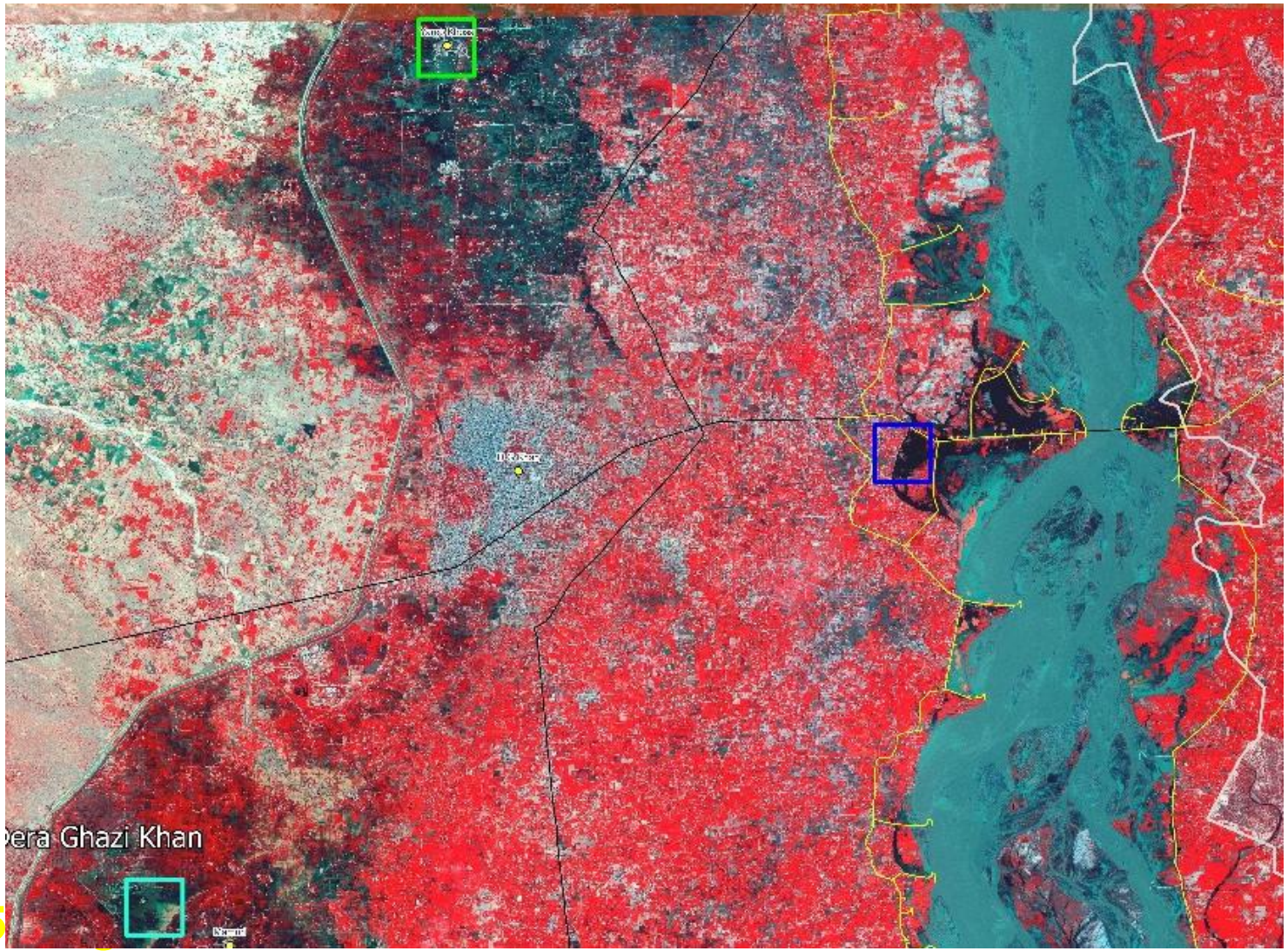


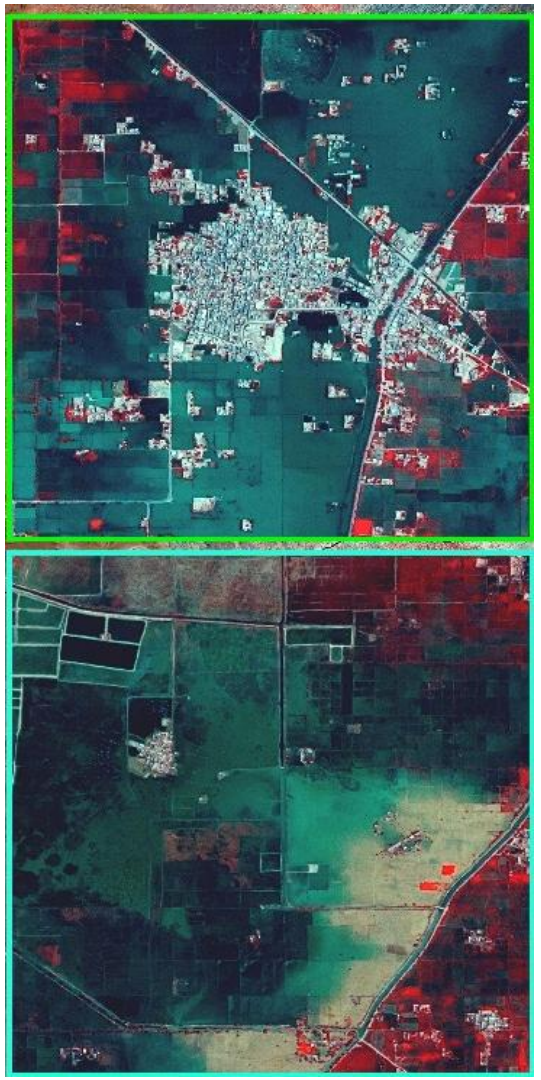


Flash Flooding in Dera Ghazi Khan and Ranjanpur, Punjab



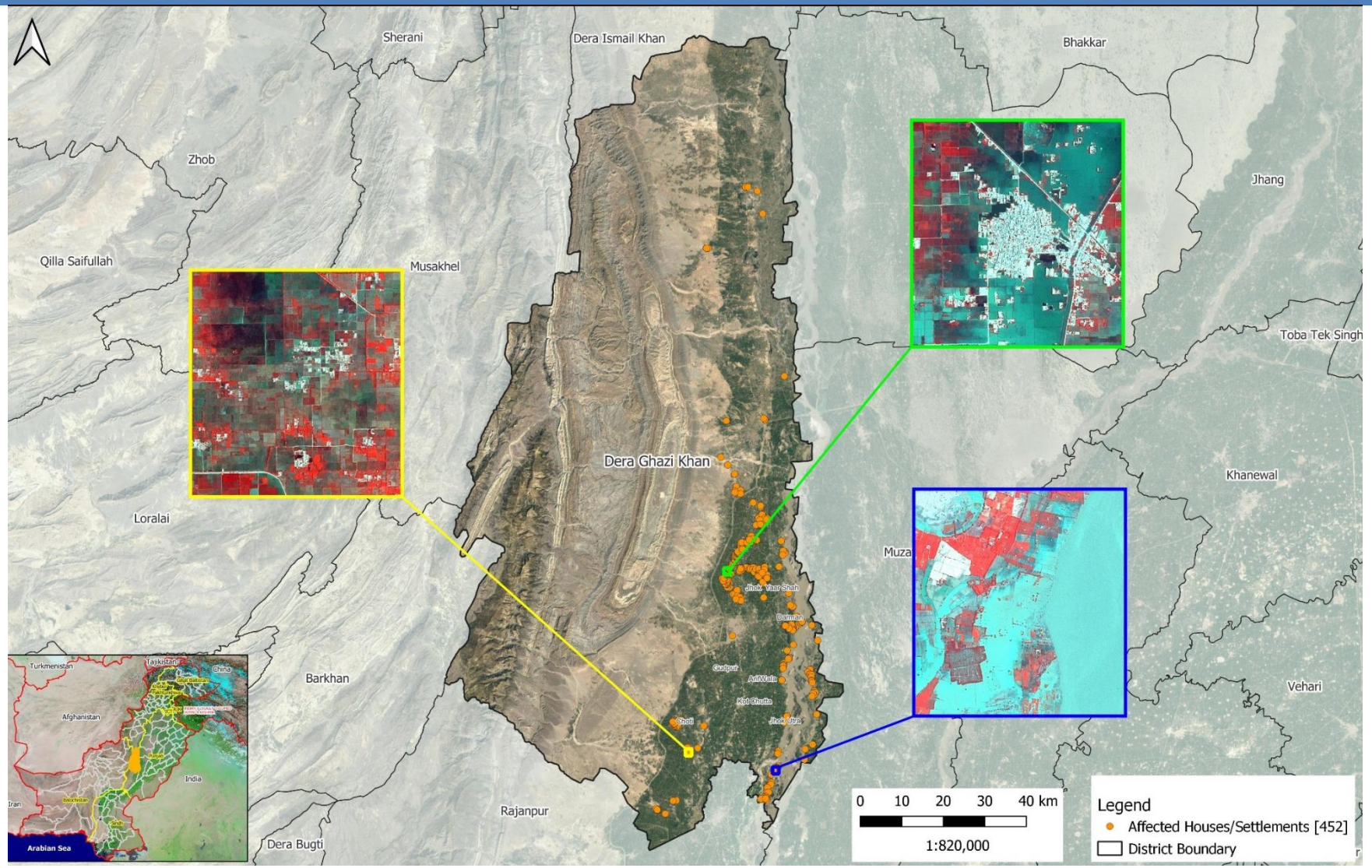
Flash Flooding in Dera Ghazi Khan, Punjab



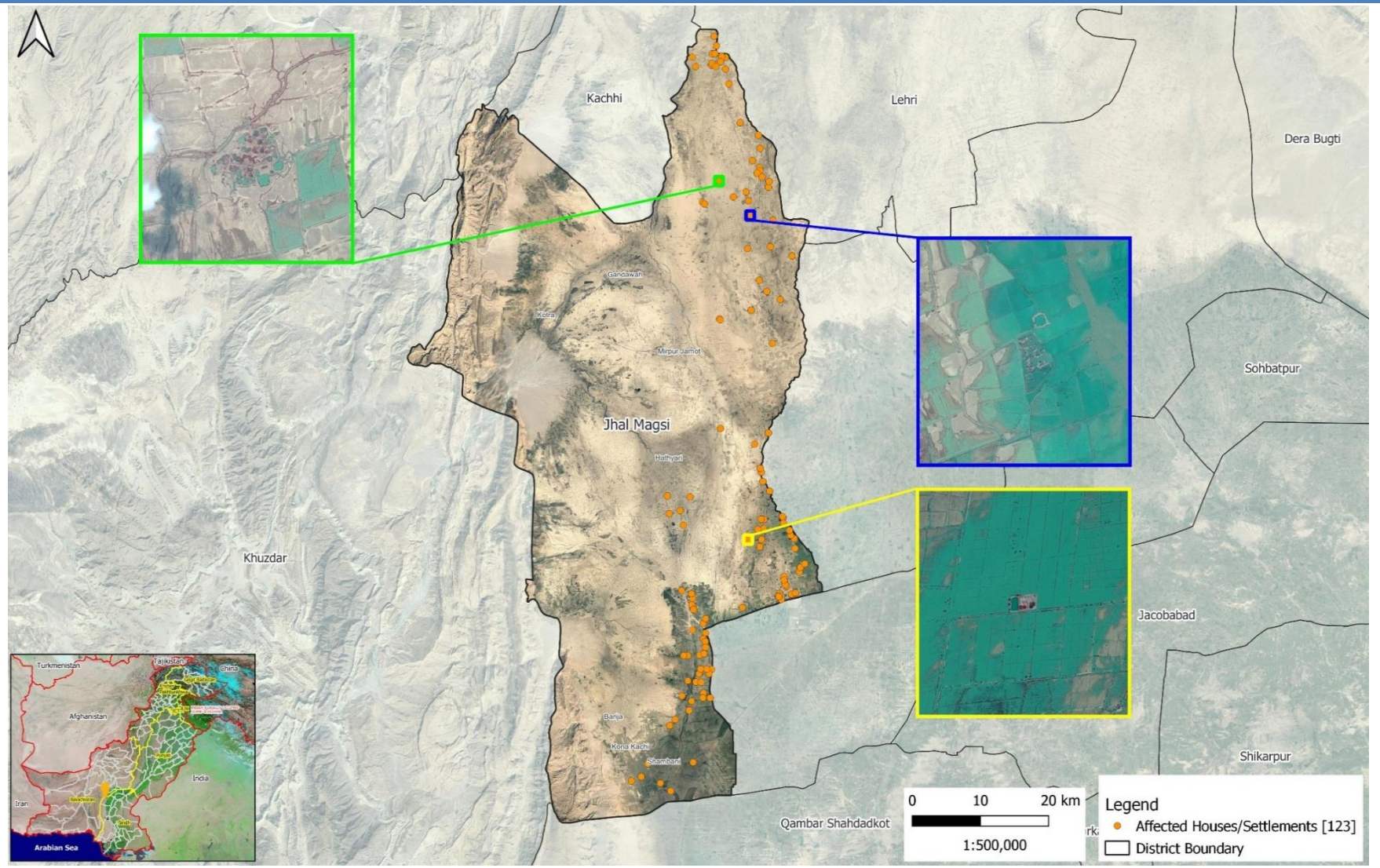


Houses/Settlements Damage Assessment

Rapid Damage Assessment – DG Khan



Rapid Damage Assessment – Jhal Magsi



Infrastructure Damage Assessment

Flooding in Swat Rivers at Mohmand Dam Site

Flooding in Swat Rivers at Munda Headwork

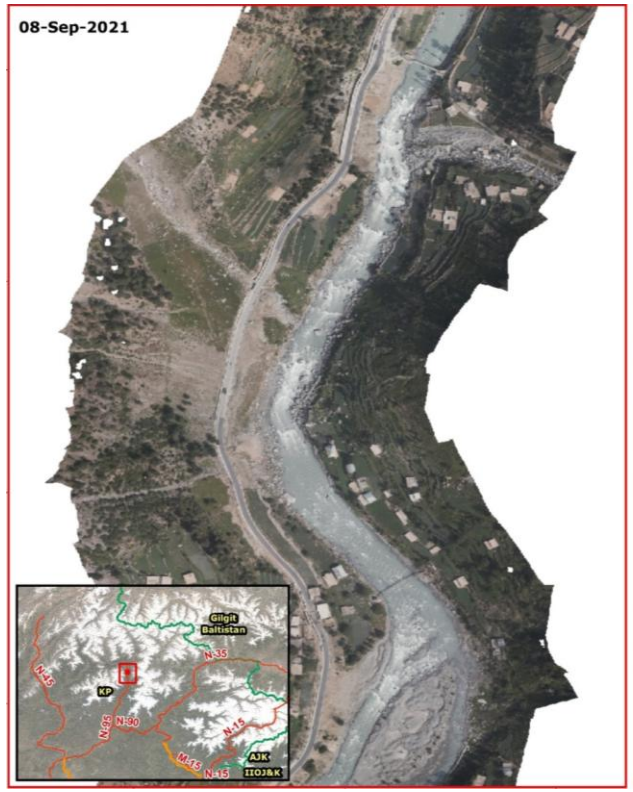
Flooding in River Swat – Bridge Damages

Collapsed Bridge on N-35

Hub River Bridge on N-25, Lasbela

Flooding in River Swat – Building Damages

Flooding in River Swat – Road Damages



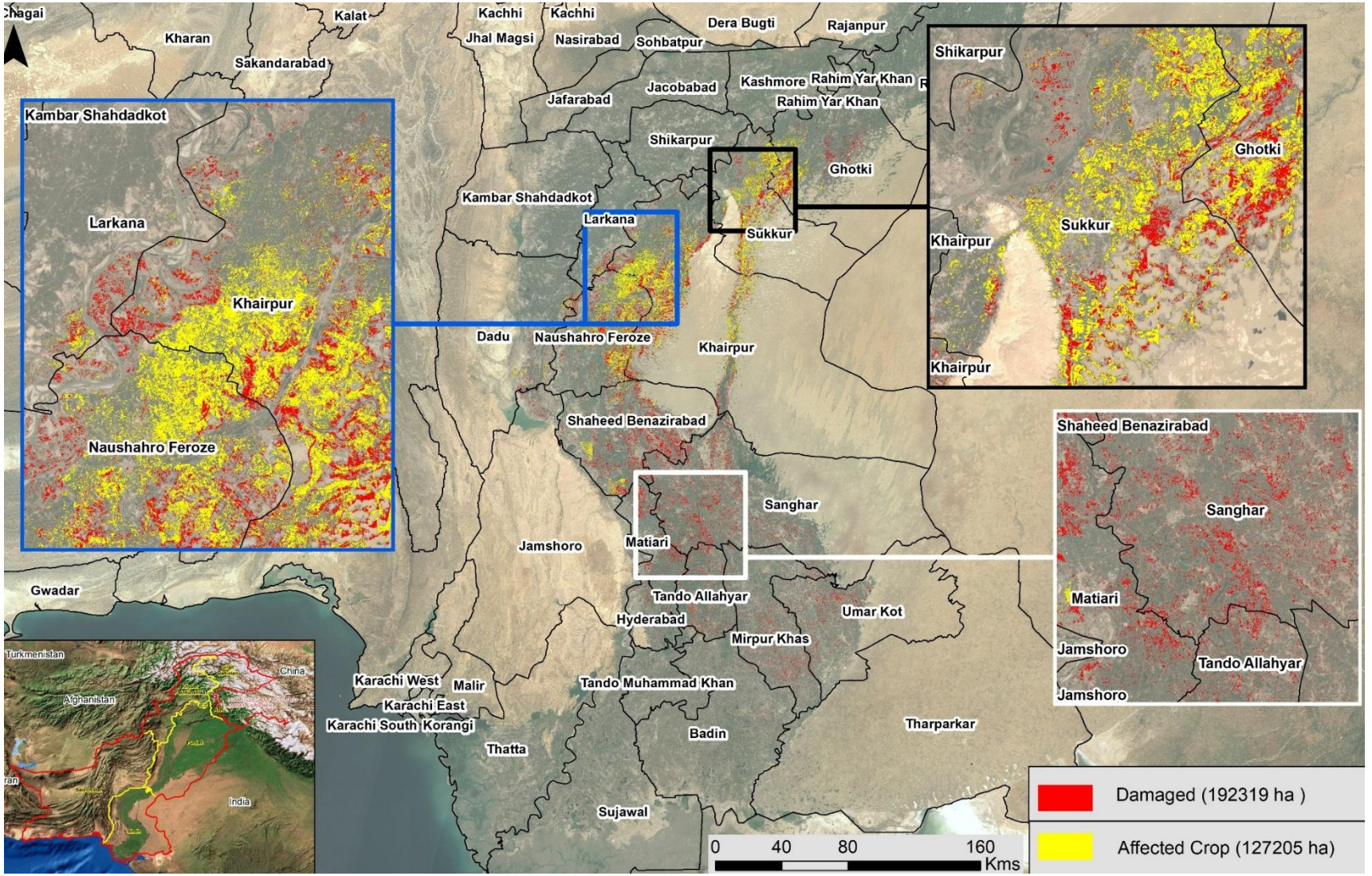
Small Dam Breaches in Balochistan

Sherjan Khadda Dam – Loralai, Balochistan

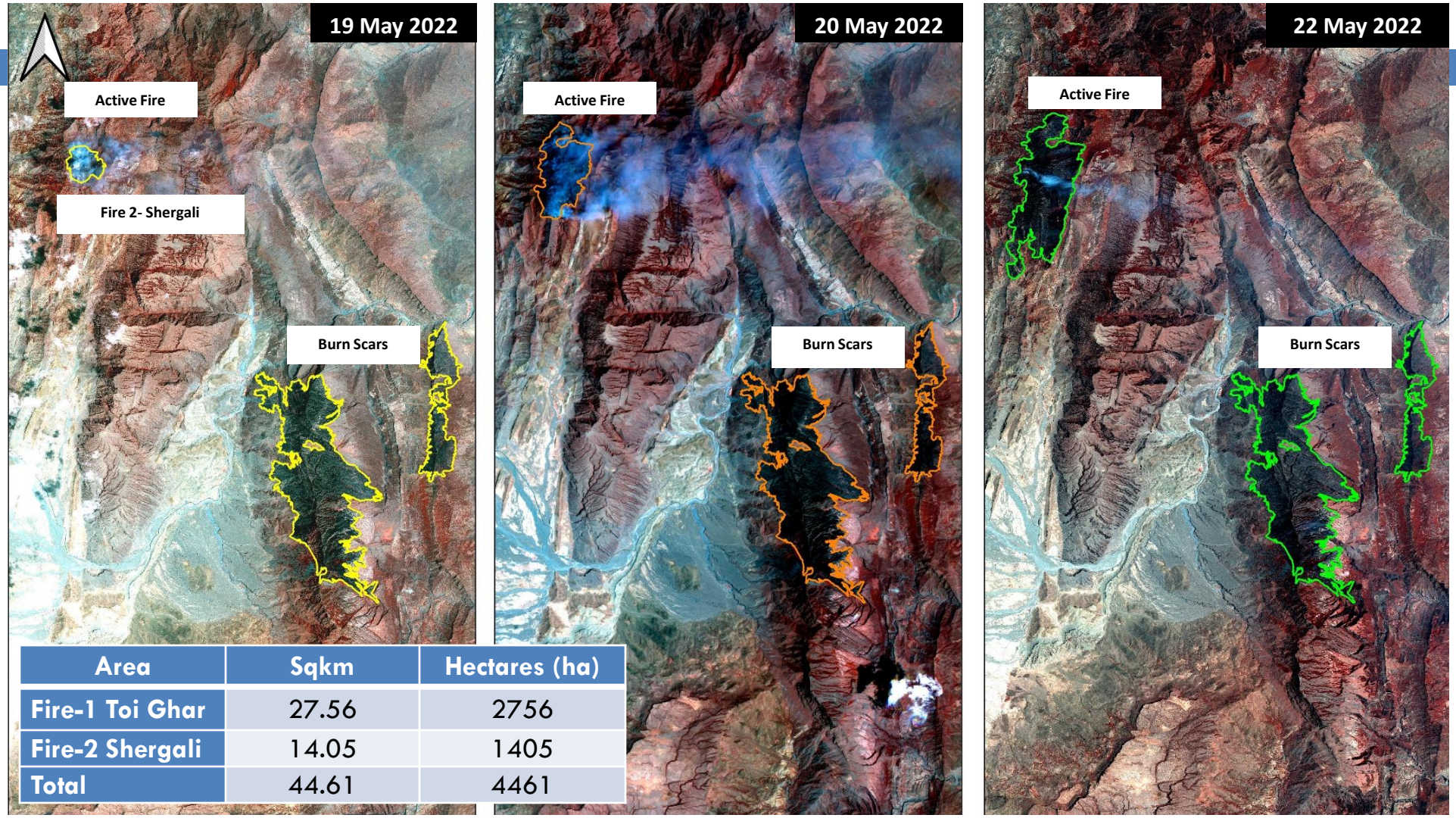
Dam Breach – Qilla Abdullah, Balochistan

Crops Damage Assessment

Cotton Crop Damage Assessment - Sindh



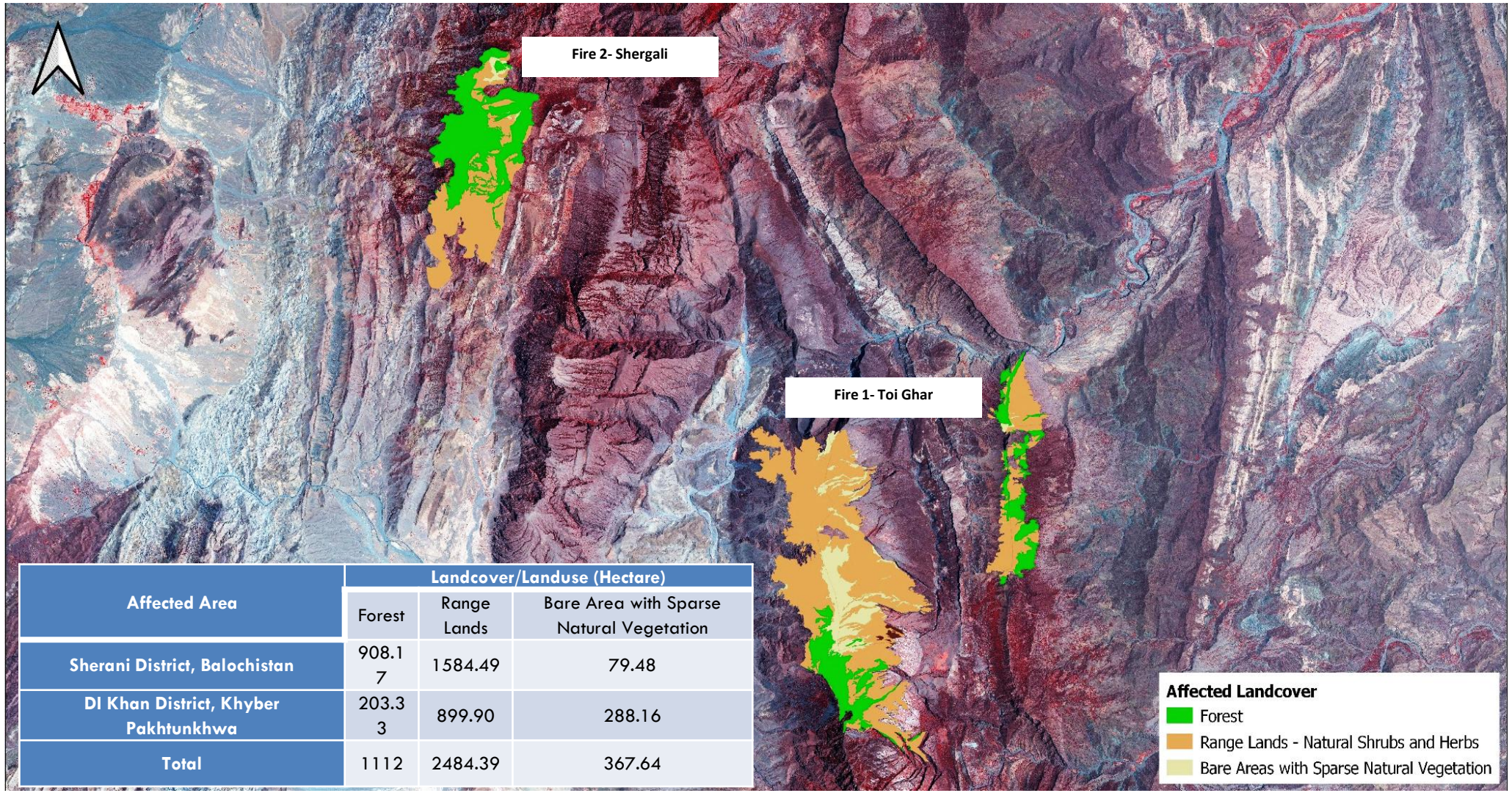
Balochistan Forest Fire 2022 - Toi Ghar and Shergali Forest



Area	Sqkm	Hectares (ha)
Fire-1 Toi Ghar	27.56	2756
Fire-2 Shergali	14.05	1405
Total	44.61	4461

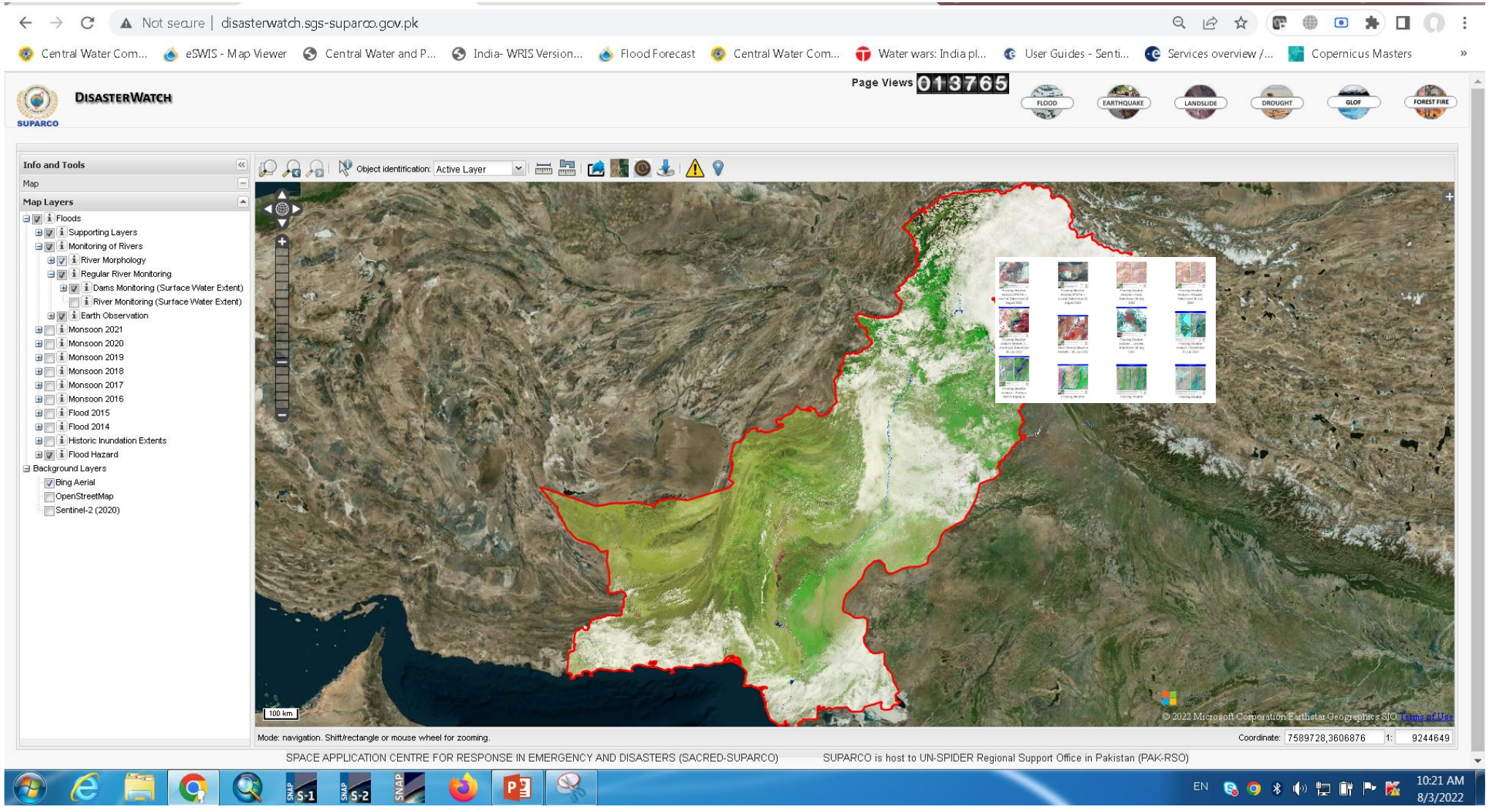
SPOT 1.5m satellite imagery acquired on 19, 20 and 22 May 2022

Balochistan Forest Fire 2022 – Affected Landcover

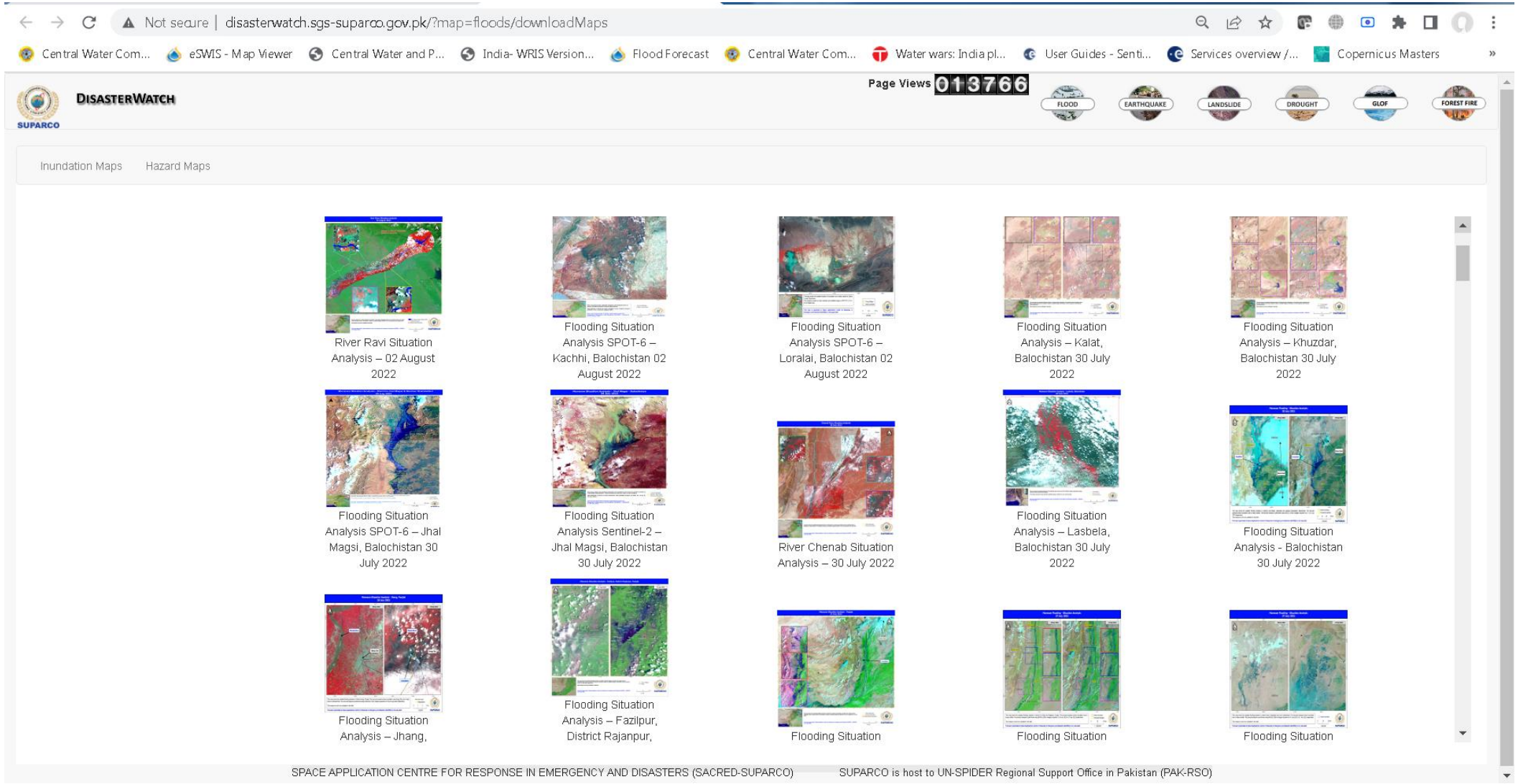


Affected Area	Landcover/Landuse (Hectare)		
	Forest	Range Lands	Bare Area with Sparse Natural Vegetation
Sherani District, Balochistan	908.17	1584.49	79.48
DI Khan District, Khyber Pakhtunkhwa	203.33	899.90	288.16
Total	1112	2484.39	367.64

Near Real Time Support via DisasterWatch



Near Real Time Support via DisasterWatch



Global Agenda's - Shifting of focus from Reactive to Proactive Approach

- Sendai Framework for Disaster Risk Reduction 2015-2030 Priorities for action

  1. Understanding disaster risk;

  2. Strengthening disaster risk governance to manage disaster risk;

  3. Investing in disaster risk reduction for resilience;

  4. Enhancing disaster preparedness for effective response, and to "Build Back Better" in recovery, rehabilitation and reconstruction.

- Climate Change Agreement (COP21) – **Article 8**

- Sustainable Development Goals (SDGs) 2015-30 – **SDGs 6, 13, and 15**

  SDG13: TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

- National Disaster Management Plan (NDMP) Implementation Roadmap **2015-30**

National Catastrophic Model (NatCat) for NDRMF

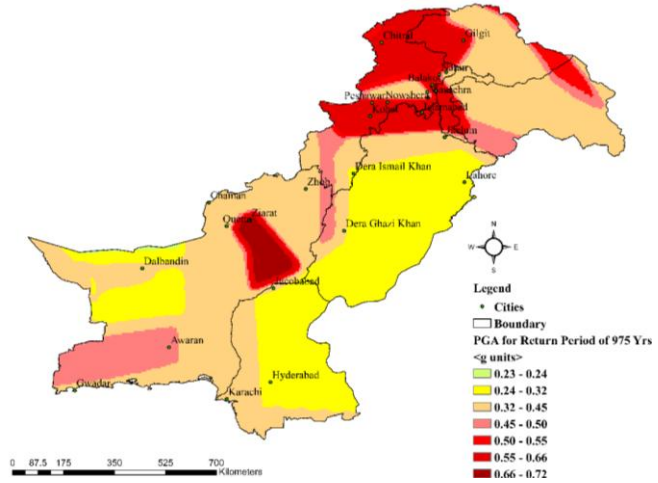
Scope of Work

- Development of Database and Web Application
- Hydro-meteorological Hazard Assessment (Flood, Drought, Cyclone)
- Geo-physical Hazard Assessment (Seismic)
- Exposure of Landcover, Crops and Infrastructure to Hydro-meteorological and Geo-physical Hazards
- Loss and Risk Assessment Model for Hydro-meteorological and Geo-physical Hazards
- Integrated Risk Assessment

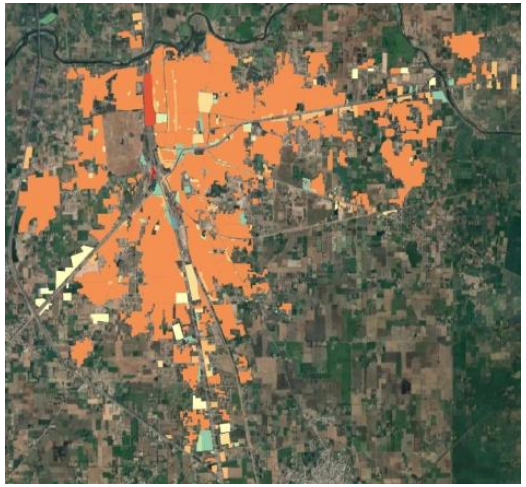
Project Significance

- The risk modeling work will provide quantitative information on the expected levels of loss for hazard events of varying types, intensities, and return periods
- It will provide the basis for a national DRF strategy for Pakistan and pilot disaster risk financing products

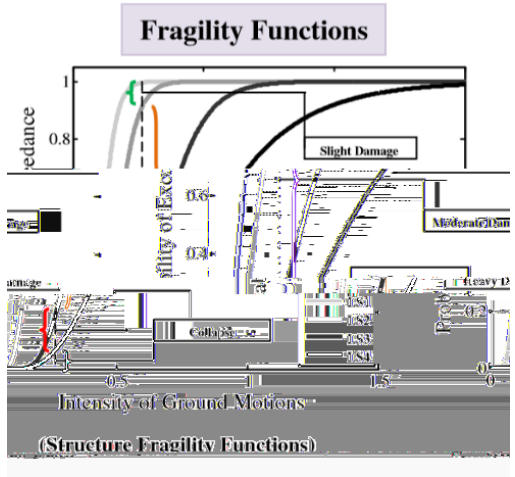
NatCat Model Overall Approach



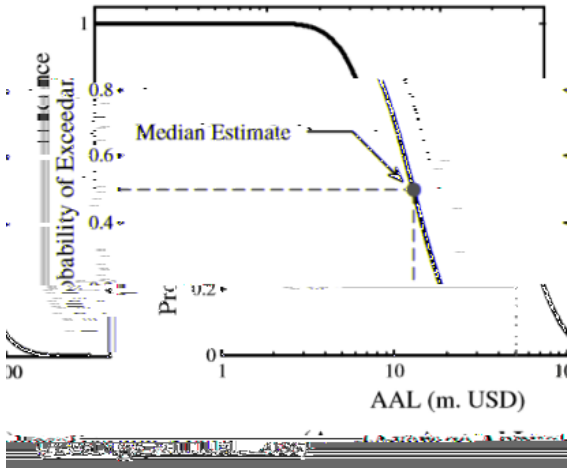
Hazard



Exposure



Vulnerability



Loss/Risk

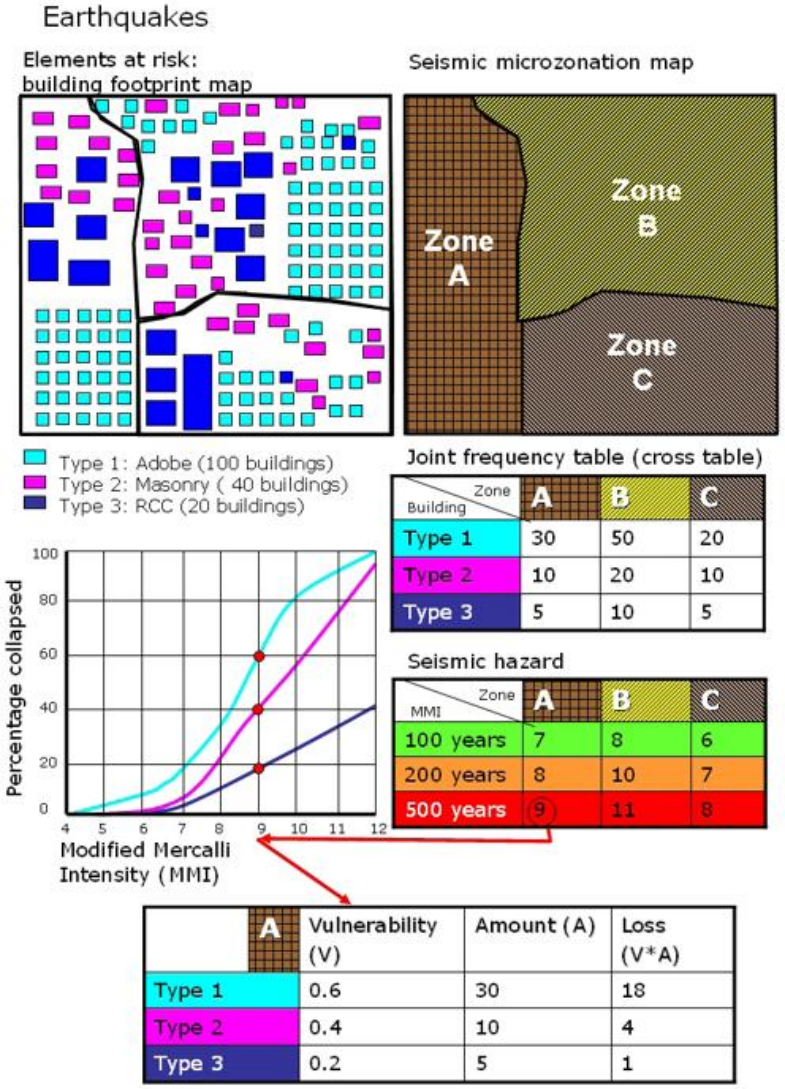
Complete Spatial Picture

- NatCat Model will provide baseline data for exposure, vulnerability and loss assessment at Tehsil level against 4 x natural disasters namely earthquake, flood, drought and cyclone

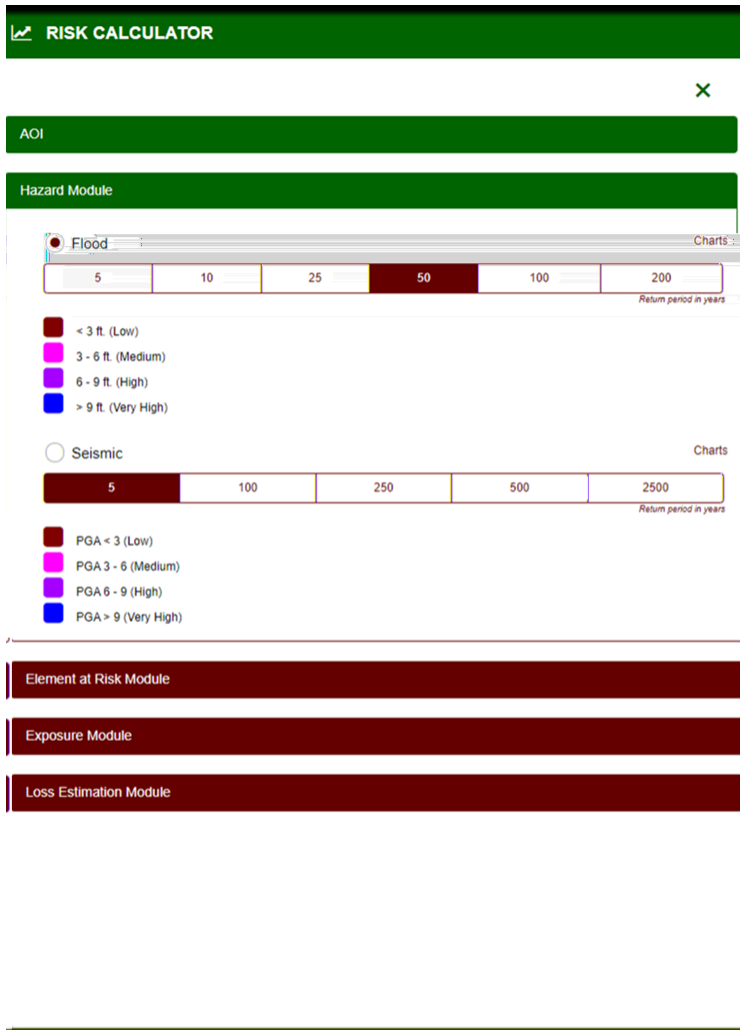
- NatCat Model Risk Calculator will help in identification of potential vulnerable population and infrastructure against future events

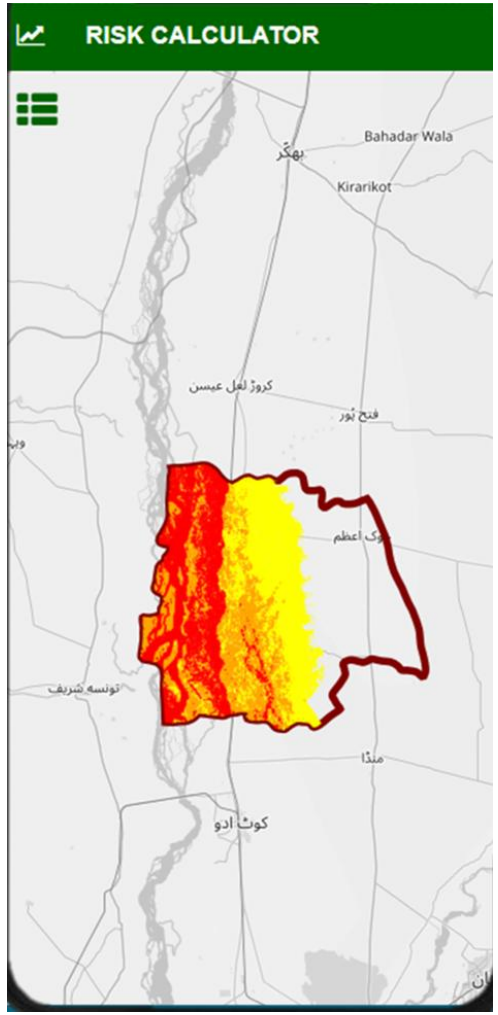
- Insurance industry will be able to assess losses for estimation of premium via NatCat Model Risk Calculator

- NatCat Model will help in assessment of reconstruction / rehabilitation cost

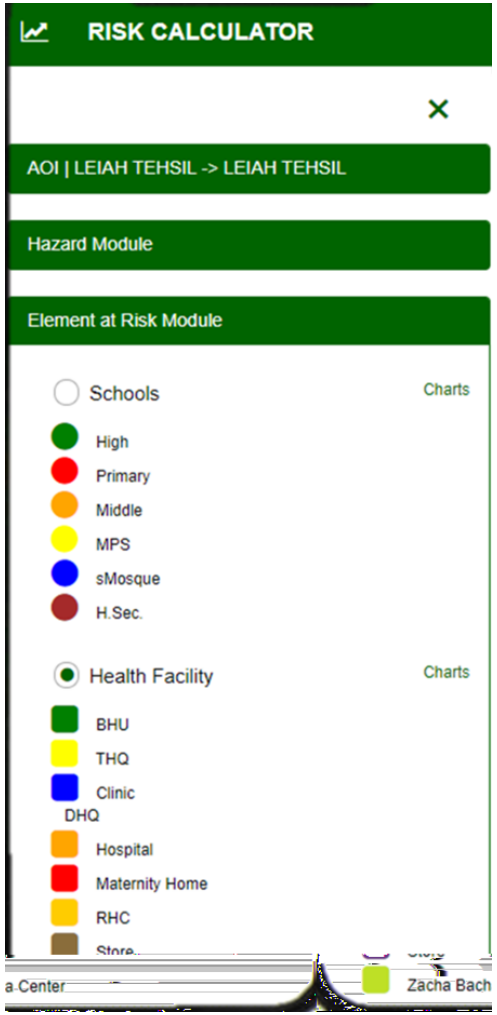


NatCat Risk Calculator - Demo Version

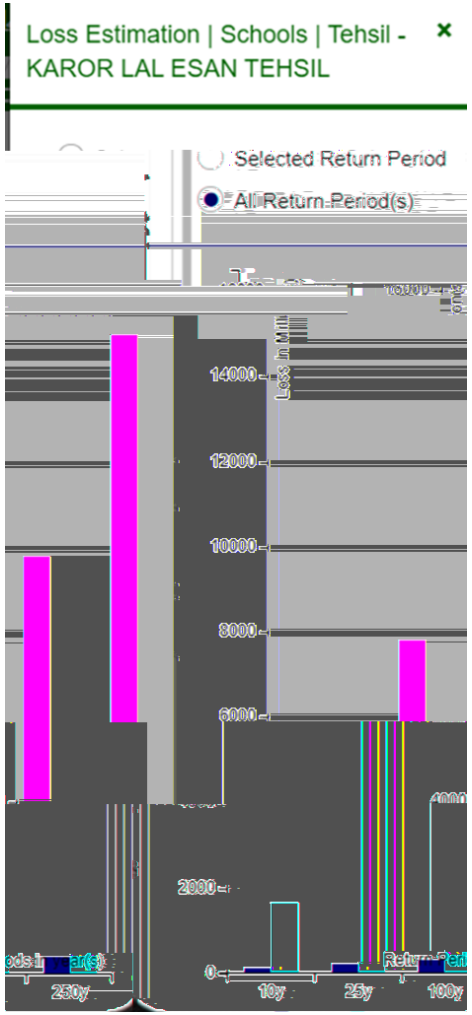




Hazard Module



Exposure Module



Loss Module

Conclusion

"Disaster Management is the shared responsibility"