Designing Rapid Response Mapping System for Flood Monitoring and Damage Assessment using Geospatial Technologies

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Sequence of Presentation

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Introduction

- Pakistan faced its biggest historical disaster in the form of floods due to heavy rains in 2010.

- Many recuse and relief agencies provide their support and assistant to affected peoples. However, their work was inefficient due unavailability of timely, authentic and reliable flood and damage assessment information.

- SUPARCO took a research initiative in collaboration with UN-SPIDER & NDMA to design Rapid Response Mapping System for rapid disaster monitoring & damage assessment.
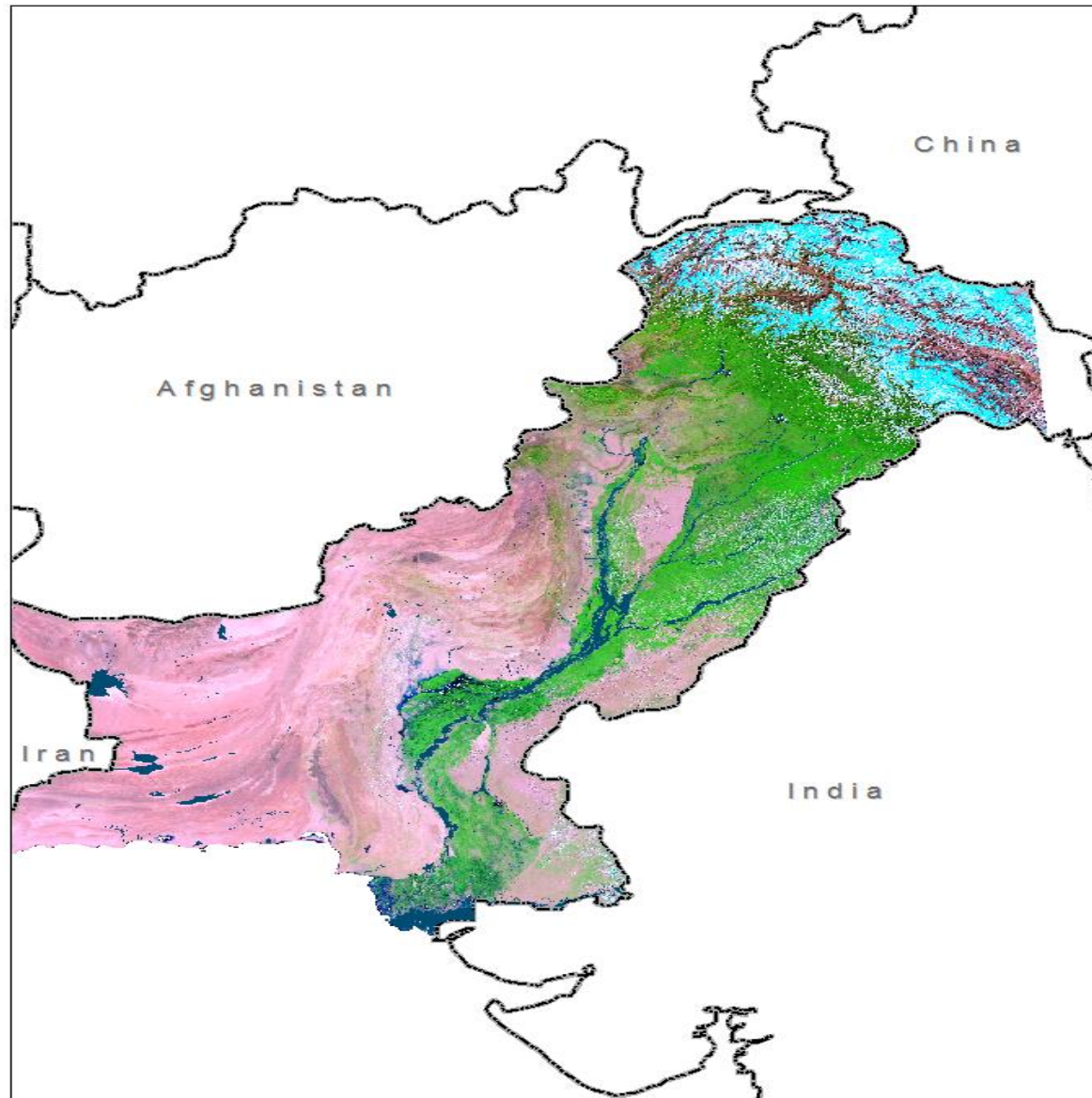
Objectives

✓ Provide latest updated maps of flood affected areas to rescue and relief agencies.

✓ Create standard & professional maps in shortest possible time.

✓ Maximize the use of geospatial technologies for rapid response mapping

Study Area

Methodology

Acquisition of latest High Resolution Satellite Image

Digitization of Flood Inundation

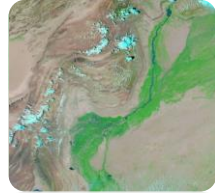Processing & Calculation on Geospatial Datasets using RRMS

Map Generation of current situation flood (District-wise & Consolidated)

Methodology

Acquisition of Satellite data

Digitization of Flood Inundation

Processing & Calculation on Geospatial Datasets using RRMS
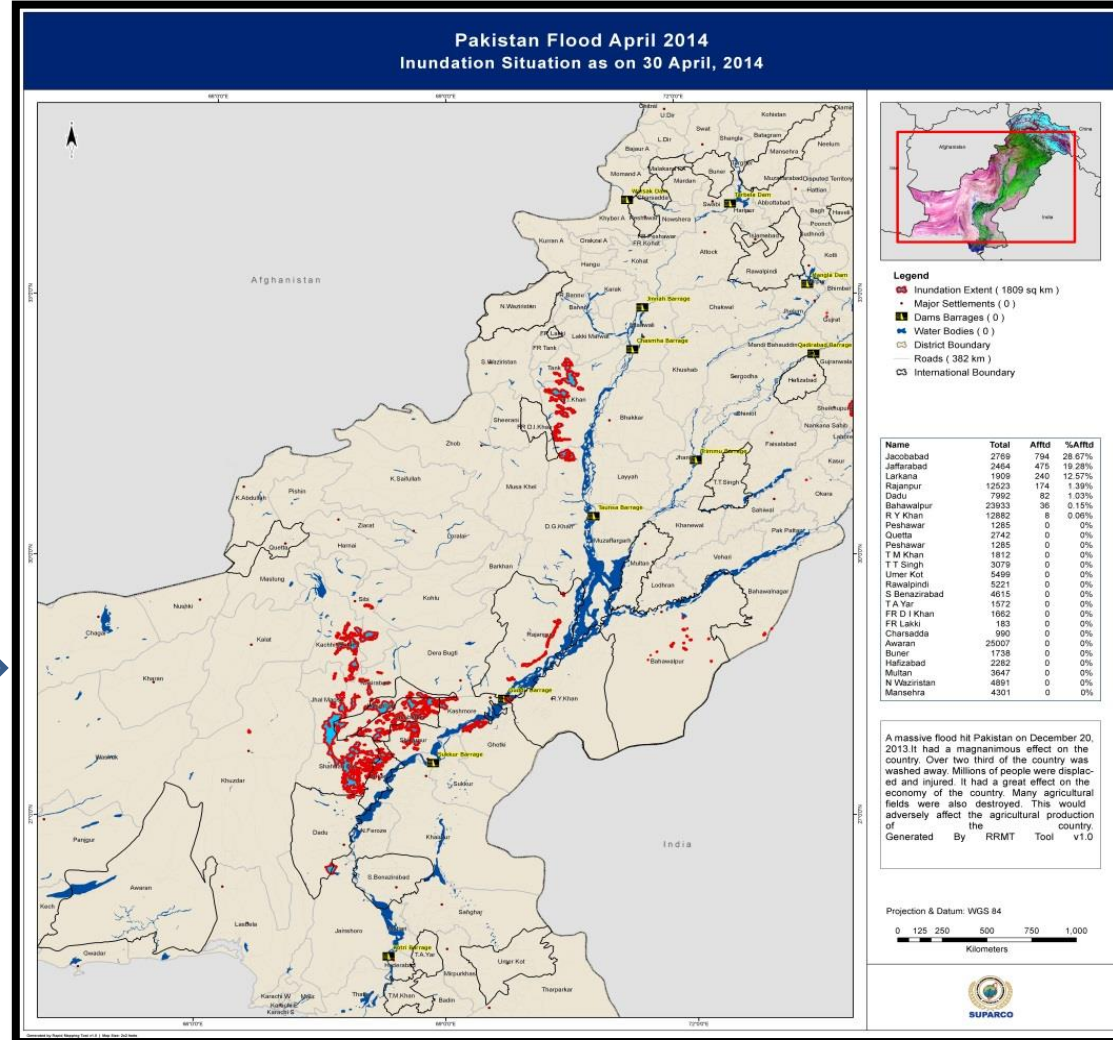
Map Generation of current situation flood (District-wise & Consolidated)

Geospatial Datasets Used

Rapid Response Mapping System uses following geospatial datasets to generate maps;

- o Satellite Image
- o Inundated Flood
- o Water Bodies
- o International Boundary (Administration Level 1)
- o District Boundary (Administration Level 3)
- o Major Settlements
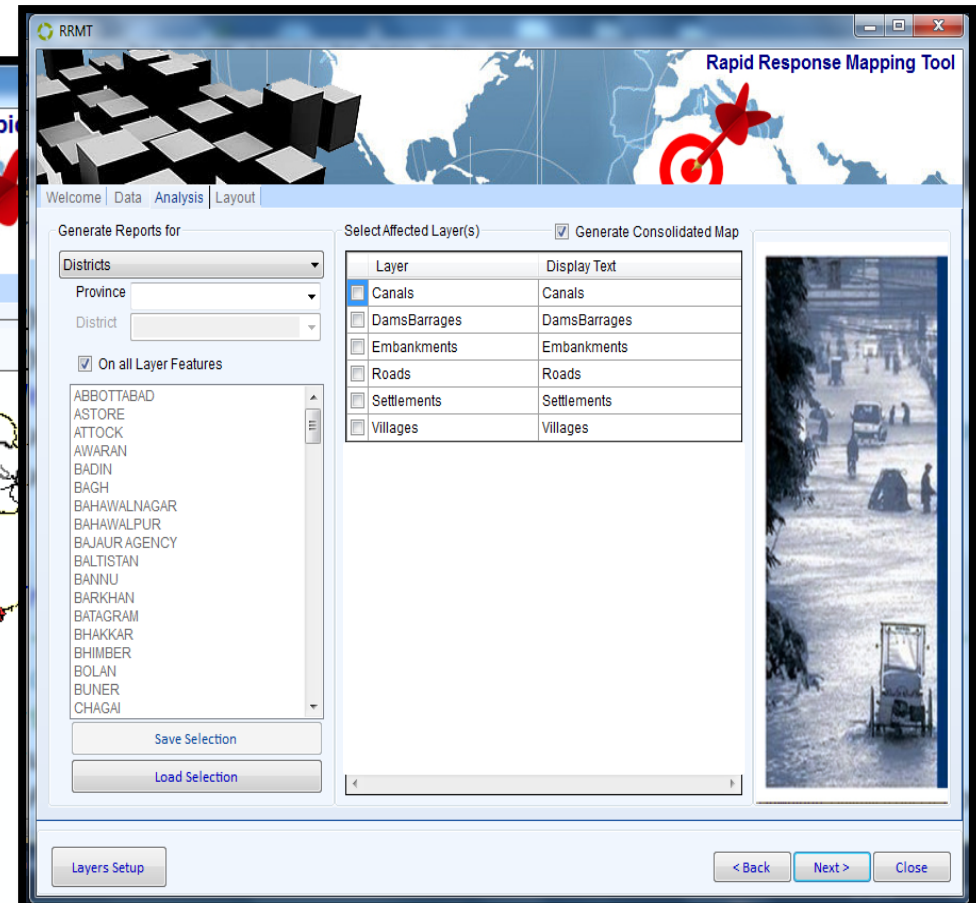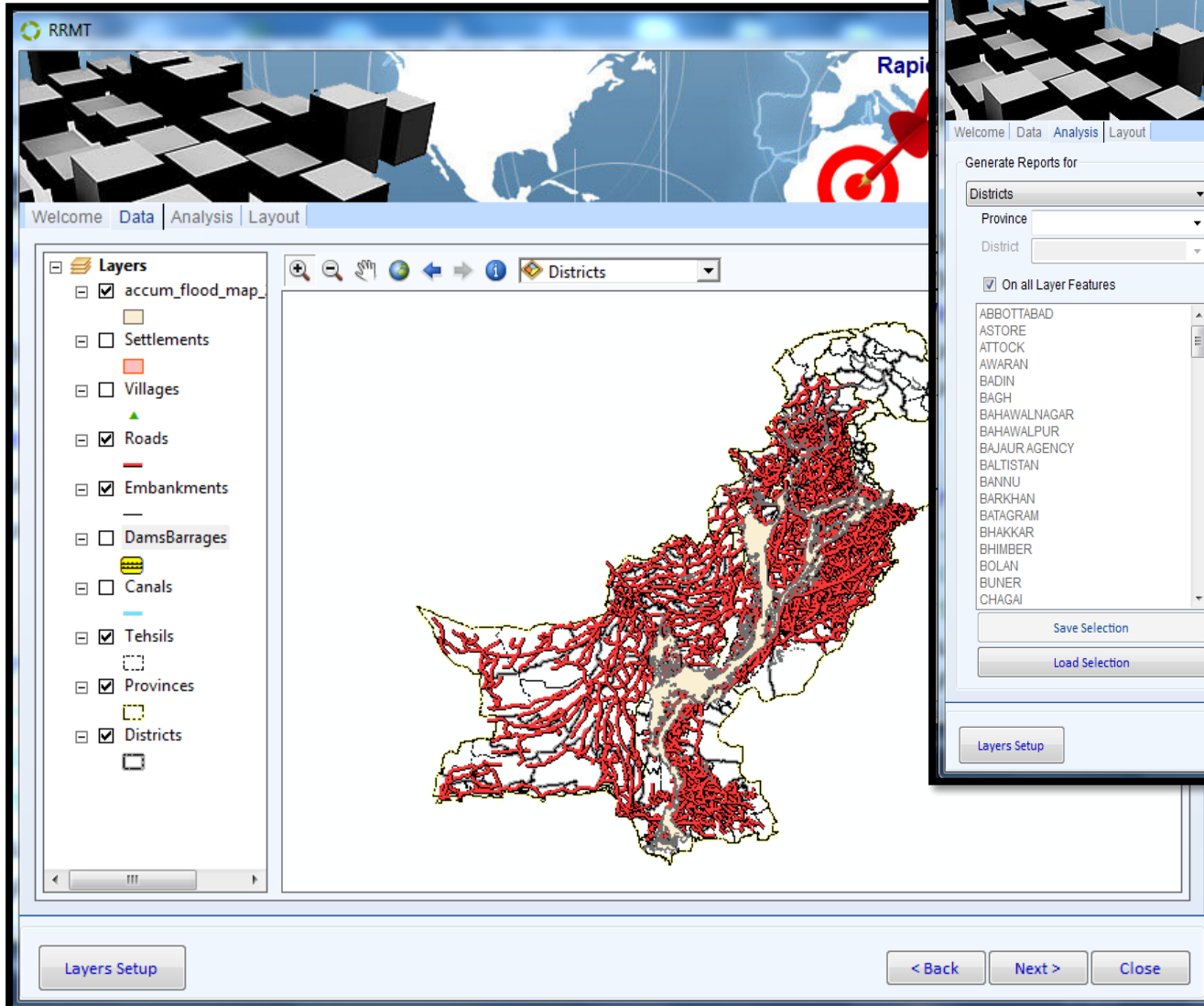- o Road Network
- o Dams & Barrages
- o etc.

Tools & Technologies Used

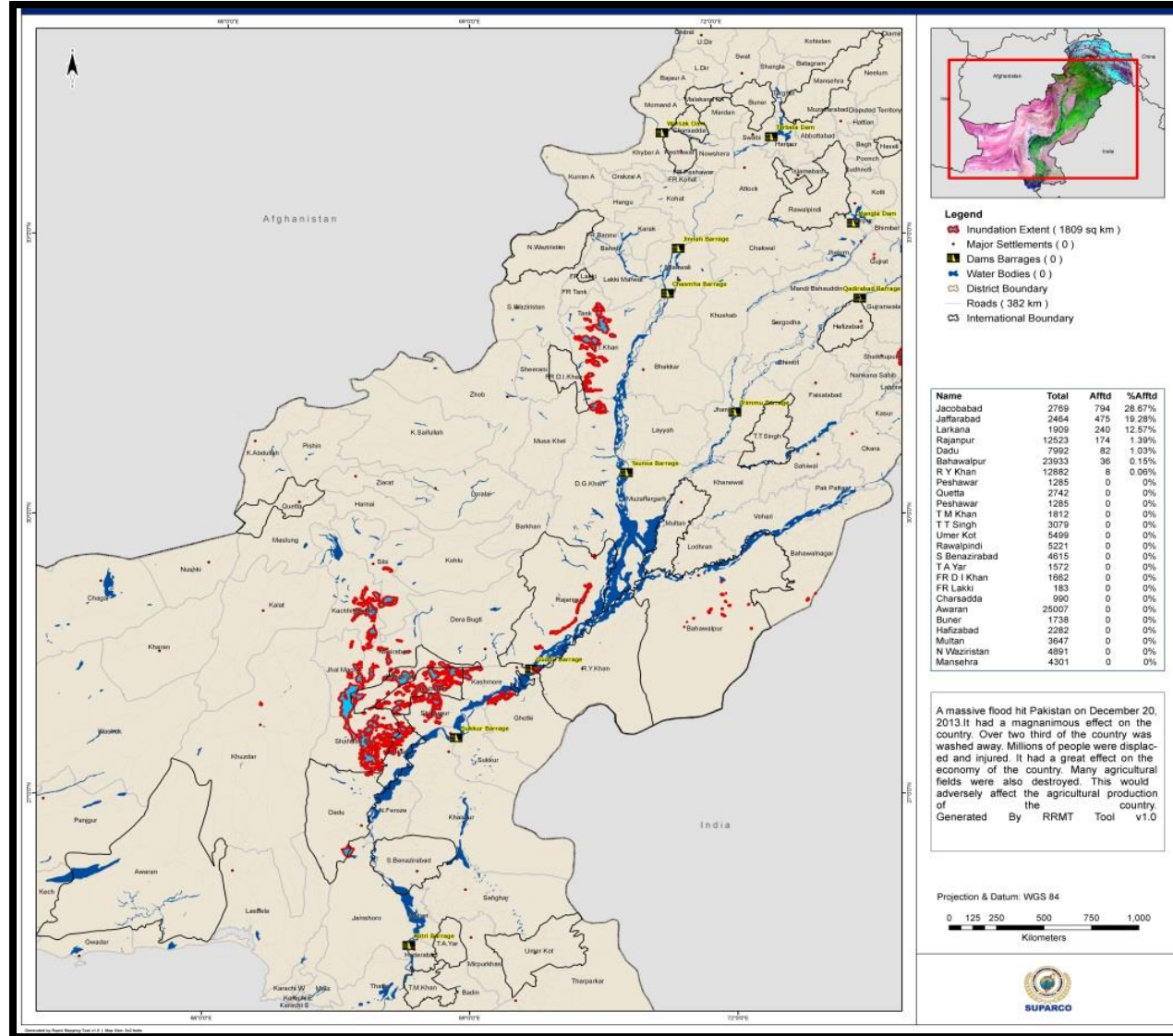Following tools & computing technologies are used to developed Rapid Response Mapping System;

- ArcObjects 10.1
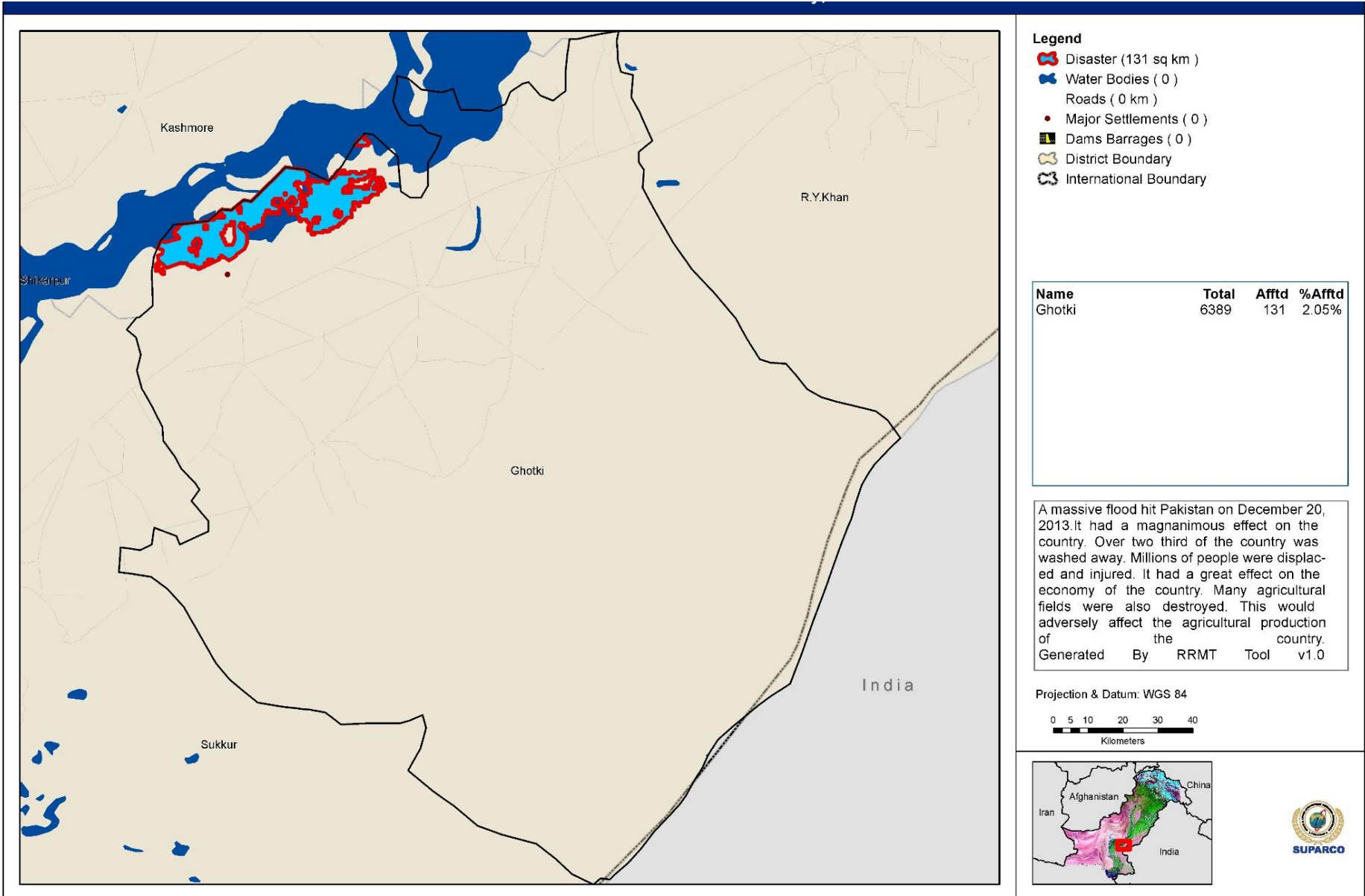- Python (ArcPy)
- .Net Framework 4.0
- SQL Server 2008

Overview of Rapid Response Mapping System

Map Reports - Consolidated
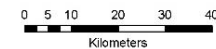
Map Reports – District-wise

Legend

- **Disaster (131 sq km)**
- **Water Bodies (0)**
- Roads (0 km)
- **Major Settlements (0)**
- **Dams Barrages (0)**
- **District Boundary**
- **International Boundary**

Name	Total	Afftd	%Afftd
Ghotki	6389	131	2.05%

A massive flood hit Pakistan on December 20, 2013.It had a magnanimous effect on the country. Over two third of the country was washed away. Millions of people were displaced and injured. It had a great effect on the economy of the country. Many agricultural fields were also destroyed. This would adversely affect the agricultural production of the country. Generated By RRMT Tool v1.0

Projection & Datum: WGS 84

0   5   10   20   30   40
Kilometers

Map labels: Kashmore, R.Y.Khan, Shikarpur, Ghotki, Sukkur, India, China, Afghanistan, Iran, India

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Conclusion

✓ Rapid Response Mapping System is a dynamic system which has the provision to support disasters such as earthquake, Cyclone, etc.

✓ Rapid Response Mapping System accelerated the emergency response capabilities of the rescue agencies

Conclusion

✓ Rapid Response Mapping System saved human lives by providing information to managers in a timely manner.

✓ SUPARCO has generated more than 350 reports during 2014 floods using Rapid Response Mapping System and successfully shared the data with NDMA, PDMA and other Government agencies for rescue and relief activities in the effected areas.

Thank You