

Karnataka State Natural Disaster Monitoring Center Deploys ArcGIS to improve disaster management capabilities

Client

Karnataka State Natural Disaster Monitoring Center (KSNDMC)

Website

<https://www.ksndmc.org/>

Location: Bengaluru, Karnataka

Industry

Government

Organization Profile

Karnataka State Natural Disaster Monitoring Center (KSNDMC) is a common platform for various response players in the area of natural disaster management. The Center provides timely and proactive science and technology inputs to help relevant agencies prevent and actively deal with disasters.

Solution

The ArcSDE Spatial Database, ArcGIS Desktop, ArcGIS Server and Web GIS Technology (Presently ArcGIS JavaScript API)

Highlights

Esri India helped KSNDMC by:

- Enabling it to capture weather data in real time
- Inserting and retrieval of large amounts of data
- Sending weather alerts
- Minimizing human intervention
- Reducing report generation time

Project Summary

Karnataka State Natural Disaster Monitoring Centre (KSNDMC) is a common platform for various response players in the area of natural disaster management. The centre provides real-time weather related information, forecasts, early warning and advisories for management of natural disasters in the state.

KSNDMC harnesses the power of ICT, including installation of various sensors to monitor natural hazards and provide scientific input for preparedness and management of disasters.

In order to ensure high response times during natural disasters and proactively prepare its customers for them, KSNDMC needed to automate its weather data collection methods and use database technology that supported quick analysis and generated reports and maps on time.

Esri India developed an internal and external GIS portal for KSNDMC which helped it perform data analysis, data visualization and data retrieval.

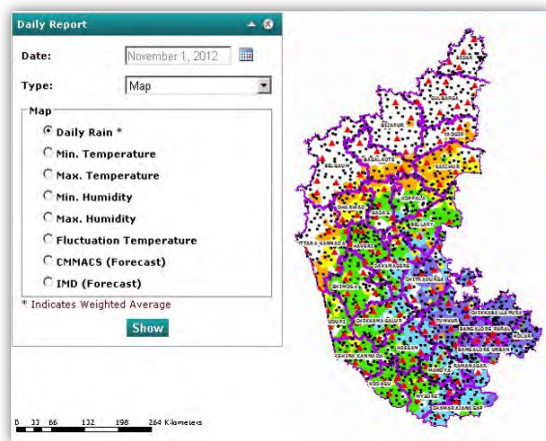
Challenges

KSNDMC had installed over 6,000 Telemetric Rain Gauges (TRGs) and more than 750 Telemetric Weather Stations (TWSS) to transmit data every 15 minutes (24x7x365). Prior to using technology solutions, KSNDMC collected weather data manually and stored it in an MS-Access database. The database however, was unable to support quick analysis owing to limitations of size and performance.

The data furthermore, was available in different formats such as MS Word, MS Excel, MS Access, DBF, etc. and there were data redundancies in different machines. Also, the time taken to generate reports and maps ranged from 7.5 man hours to 20 man hours! The Daily Report generation process involved data downloads, data verification, data processing, map generation, formulation of the final report and dissemination of data to users via SMSes. The process was cumbersome and time consuming, especially during the monsoon season.

Solution

Esri India provided a real-time data inserting solution and developed the internal and external GIS portal on top of the ArcGIS Server technology. The solution was capable of handling large amounts of data, supporting real-time analysis of weather information and disseminating it in the form of alerts, reports, maps, charts, etc. and through emails, SMSes and websites to end users. The aim was to automate and speed up processes to avoid errors due to manual interference.



In order to capture weather data in real-time from different parts of the state including remote locations, KSNDMC deployed the following:

- The ArcSDE Spatial Database
- ArcGIS Desktop
- ArcGIS Server
- Web GIS Technology

The RDBMS was implemented to handle large data sets. While the ArcSDE database maintained the large volume of spatial data like feature classes, join layers, actual TRGs and TWSs locations and administration, the ArcGIS Desktop allowed internal users of the organization to perform GIS data analysis, data visualization and data retrieval.



Benefits

The real-time data inserting technology and the application developed by Esri India has enabled KSNDMC to:

- Insert or retrieve large amounts of data within milliseconds
- Send alerts like 'high intensity rainfall' to end users on-the-fly
- Minimize human intervention (physical presence of scientists) in report generation through the automation of applications
- Reduce the time taken for report generation, which was earlier around 20 man hours, to less than 30 minutes!
- Provide multiple users access from various locations to a centralized database server in the new system
- Scale the system, incorporating the Gram Panchayat, Cadastral level information etc.
- Send lakhs of automated SMSes and reports through the automated applications

The real time weather dashboard developed by the team is enabling users to visualize real-time weather parameters such as rainfall, temperature, relative humidity and wind speed and direction. The ArcGIS portal meanwhile, is helping public users to query the weather database.

Customer speak

“ The use of technology developed by the Esri India team has been immensely helpful in efficiently handling ever growing data sets, checking errors in the reports/maps owing to manual interference and increasing the pace of data processing, report generation and information dissemination. KSNDMC's use of technology has been appreciated by many national and international agencies working in similar areas. **”**

-Dr. G.S. Srinivasa Reddy
Director, KSNDMC