COASTAL HAZARD LINE MAPPING

Demarcation of Coastal Hazard Line

- The coast is vulnerable to a host of natural and manmade hazards
- In order to protect the people and their property, mapping of Coastal Hazards which includes flooding and erosion is essential
- Coast attracts development, and natural hazards put development at risk
- Delineation of “hazard Line” along the entire coast of India is currently underway

- Digital Stereo Aerial photography all along the coast covering a 7 km stretch from the shore, inter-tidal zones
- Photography using Fixed-Wing Aircraft
- Airborne Differential GNSS/GPS & IMU Control
- Large format frame camera
- Spatial resolution: 9cm GSD in panchromatic band.

HAZARD LINE WILL INCORPORATE EFFECTS OF RECURRENT COASTAL HAZARDS, INCLUDING POTENTIAL INCREMENTAL EFFECTS INDUCED BY CLIMATE CHANGE
Shoreline Change Analysis

- Aerial Triangulation (AT) of 2 old vintages of aerial Photography/High resolution satellite imagery of different vintages
- Generation of Automatic DTM and ortho-imagery
- Different time series of coastlines extracted in 2D mode from the ortho-imageries
- Digital shoreline Analysis of different time series coastline data used to arithmetically project shoreline for next 100 years

Inundation Modeling

Food line based on natural factors such as tides, storm surges and cyclones

- Collection of all available observed historical tidal data
- Quality Assurance/Quality Control of Data
- Select ports/places with minimum 10 years tidal data
- By statistical methods, extrapolate and compute tidal level with 100 years return period
- 100 year return period estimated using historical and short period tidal data available by direct/indirect interpolation
- 100 YEAR RETURN FLOOD ELEVATION OBTAINED

Computation of Tide level with 100 year Return period at Primary ports
- Annual maximum tide level for each year is ascertained.
- This tide level is reduced to IMSL (Indian Mean Sea Level)
- Tide level corresponding to 100 year return period is computed using Weibull’s distribution

Delineation of Hazard Line

- The higher the erosion and flood line, the higher the hazard line.
- This line is demarcated on the Digital Elevation Model (DEM) developed from aerial photography being carried out all along the coast up to 7 km from the coast.

Output from Hazard Line Mapping

- Contours with 0.5m (2.5 m for hills)
- Flood level with 100 years return period
- Predicted shoreline of 100 years
- Composite hazard line (the most landward of the 100–year flood line & erosion line)