

STORM SURGE PREDICTION FOR TAMILNADU USING SLOSH MODEL

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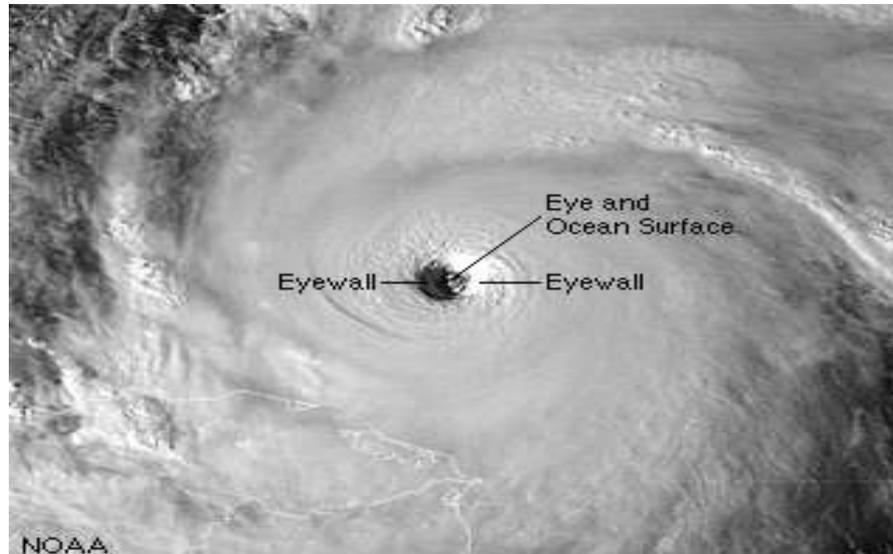
- ◉ The largest bay in the world.
- ◉ Majority of the rivers running in India empties into the Bay of Bengal.
- ◉ One of the major hotspots for occurrence of cyclones in the world.
- ◉ The cyclones that occur in this region are called tropical cyclones.

TAMILNADU

- ◉ Has the second longest coastline in the country after Gujarat (1076km).
- ◉ One among the most cyclone prone states in the country.
- ◉ More than 15 cyclones hit in Tamilnadu since 1991.
- ◉ The December 2015 floods in Chennai and Cuddalore were the effects of the formation and intensification of the deep depression areas.

CYCLONES AND THEIR CLASSIFICATION

- Cyclone is defined as system of winds rotating inwards to an area of low barometric pressure.
- Anticlockwise in the northern hemisphere and clockwise in the southern hemisphere.



System	Pressure drop (hPa)	wind speed Knots (Kmph)
Low pressure area	1.0	<17(<32)
Depression	1.0- 3.0	17-27 (32–50)
Deep Depression	3.0 - 4.5	28-33 (51–59)
Cyclonic Storm	4.5- 8.5	34-47 (60-90)
Severe Cyclonic Storm (SCS)	8.5-15.5	48-63 (90-119)
Very Severe Cyclonic Storm	15.5-65.6	64-119 (119-220)
Super Cyclonic Storm	>65.6	>119(>220)

STORM SURGE

- ◉ Abnormal rise of astronomical tide due to any activity in the sea or ocean.
- ◉ According to the Indian National Ocean Information Services, the coastal areas in tamilnadu falls under High Risk Zones(HRZ)
- ◉ Factors influencing the effects of storm surge includes Coastal elevation, forward speed of the cyclone, Landfall location.

SLOSH MODEL

- ◉ SLOSH stands for Sea, Lake and Overland Surges from Hurricanes.
- ◉ The SLOSH model computes storm surge heights from tropical cyclones using pressure, size, forward speed, and track data to create a model of the wind field which pushes the water around.
- ◉ This can thus be used for predicting the coastal flooding.

- It consists of a set of equations that is obtained by integrating newton's equation for shallow water and continuity equation.
- The vertical obstructions like roads, spoil banks near the coastal area if any are parameterized.

- ⦿ The error that might add up accounts for +/- 20% from the said storm surge heights.
- ⦿ This model has been applied only for the coastal areas of USA.
- ⦿ The application of this model for the coastal areas of India could be of immense use as emergency risk management would be more efficient and effective.

Thank You

