

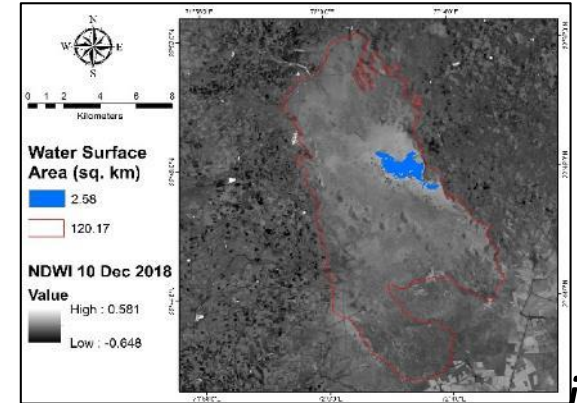
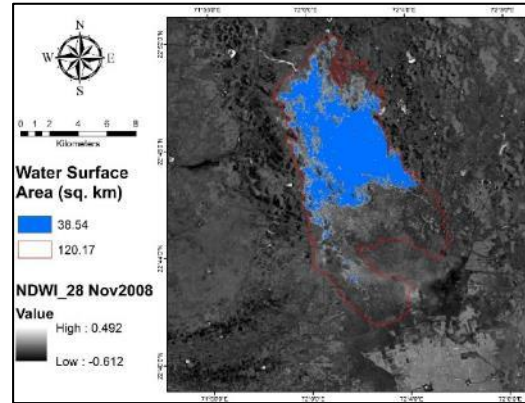
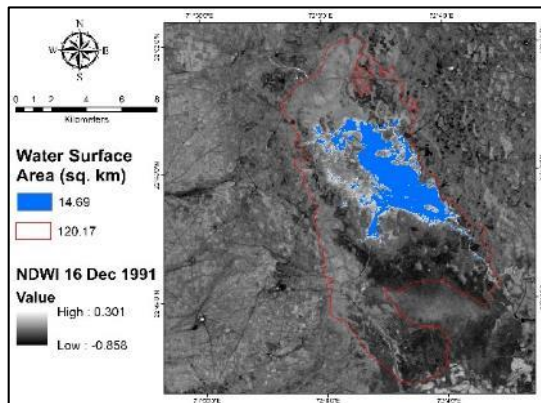
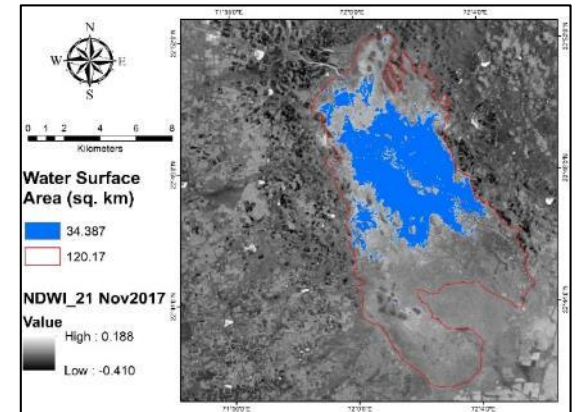
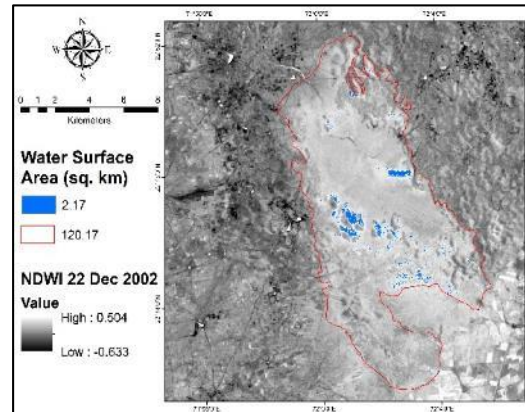
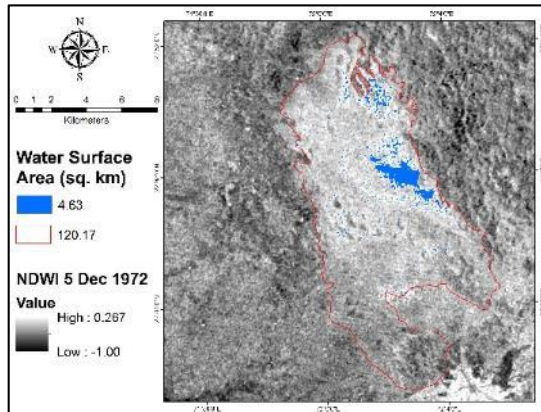
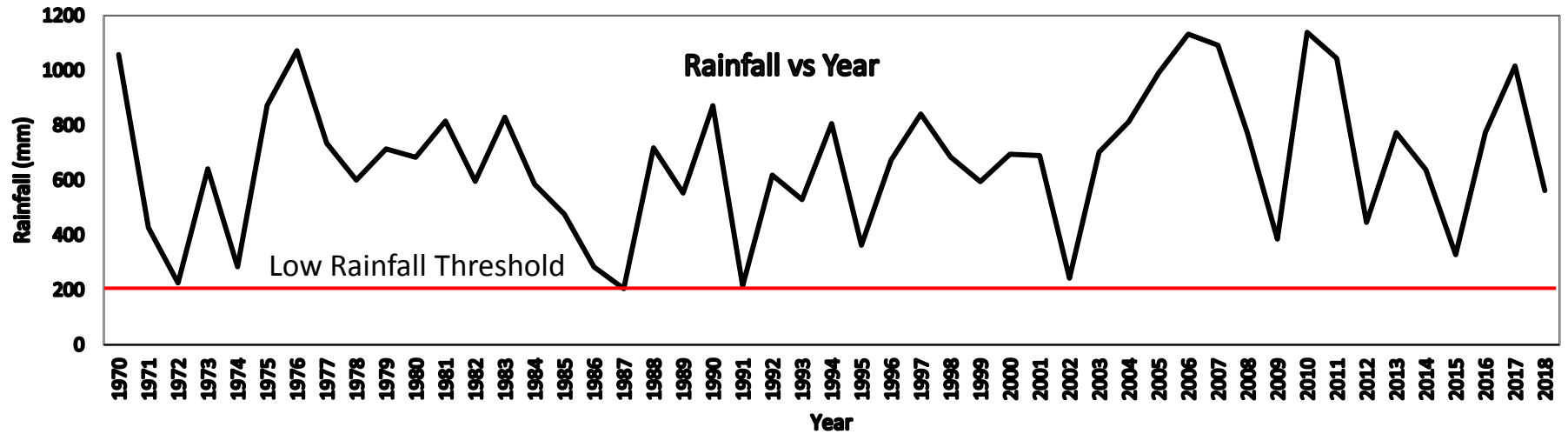
# Importance of Nal Sarovar Wetland

- **Nal Sarovar wetland and Bird Sanctuary**, consisting primarily of a 120.82-square-kilometre lake and ambient marshes, is situated about 64 km to the west of Ahmedabad near Sanand Village, in the Gujarat state of India and is mainly inhabited by migratory birds in winter and spring, it is the largest wetland bird sanctuary in Gujarat, and one of the largest in India.
- It was proposed as a "**Ramsar Convention site - Wetland of International importance**" on 24 September 2012. Nal Sarovar wetland get its water from surrounding catchment area, any changes in monsoon rainfall directly effects its water storage.
- The region experienced the **major rainfall deficit in the years 2018, 2002, 1991 & 1972**, which resulted in significant reduction in surface water extent and affected the overall ecology and tourism.
- **Remote sensing time series data analysis** help us to map & monitor such changes.



Source: <https://www.gujarattourism.com/destination/details/12/42>

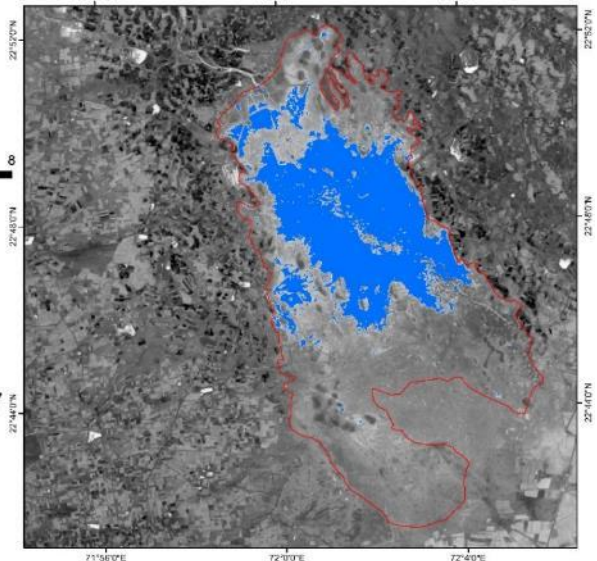
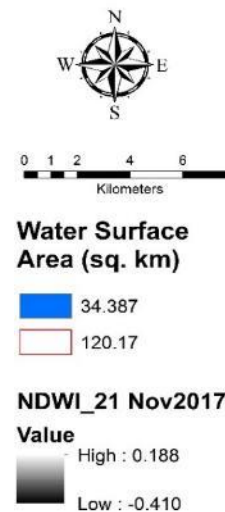
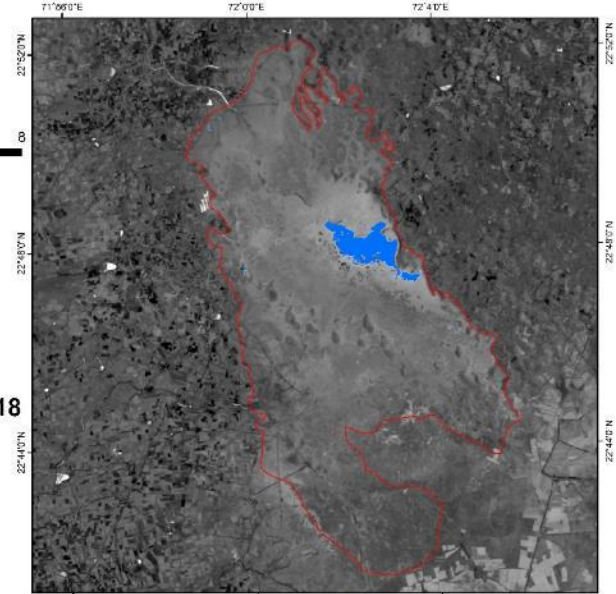
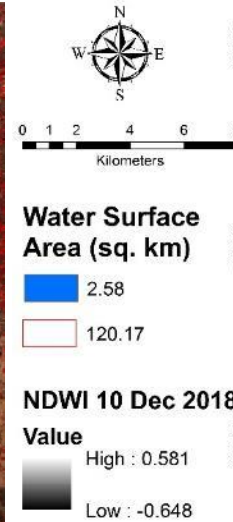
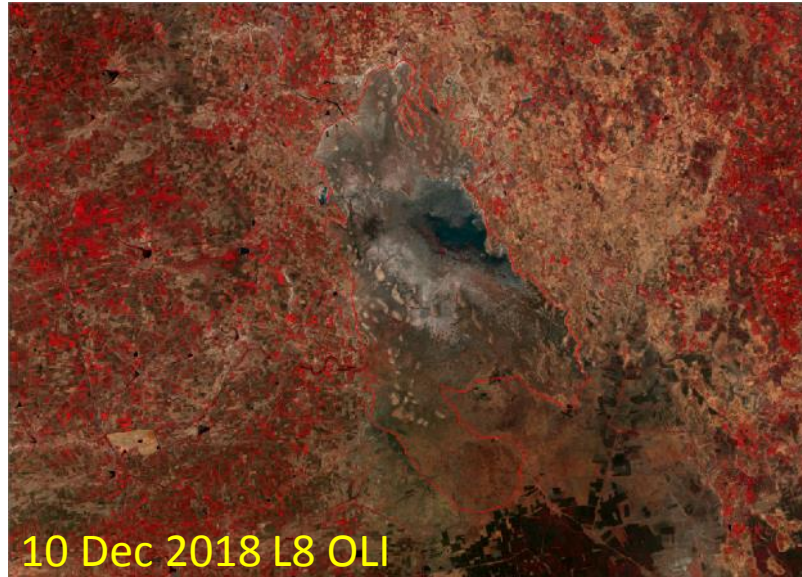
# Annual Rainfall and subsequent changes in the surface water extent of Nal Sarovar Wetland





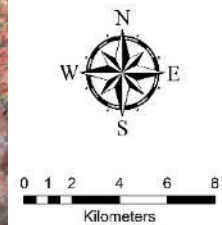
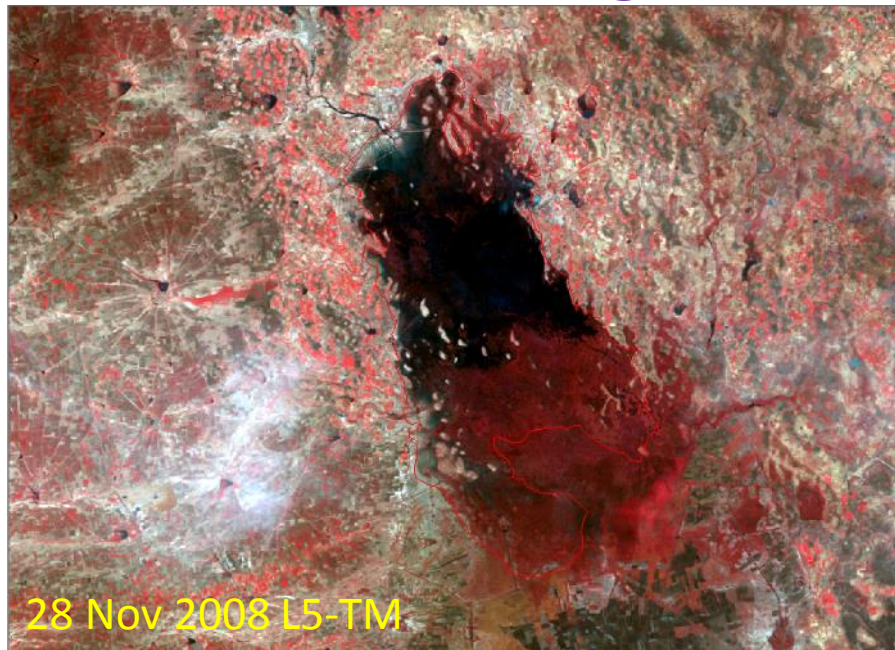
# Surface Area Changes in Nal Sarovar as seen in RS data

- In the year 2018, due to deficit rainfall, the water in wetland has reached to it minimum level/extent
- The surface area in the South of wetland remains covered by water hyacinth and other aquatic vegetation during normal monsoon years, therefore water under it could not be mapped; requires further analysis





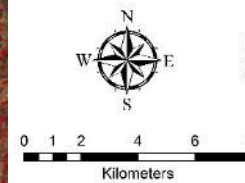
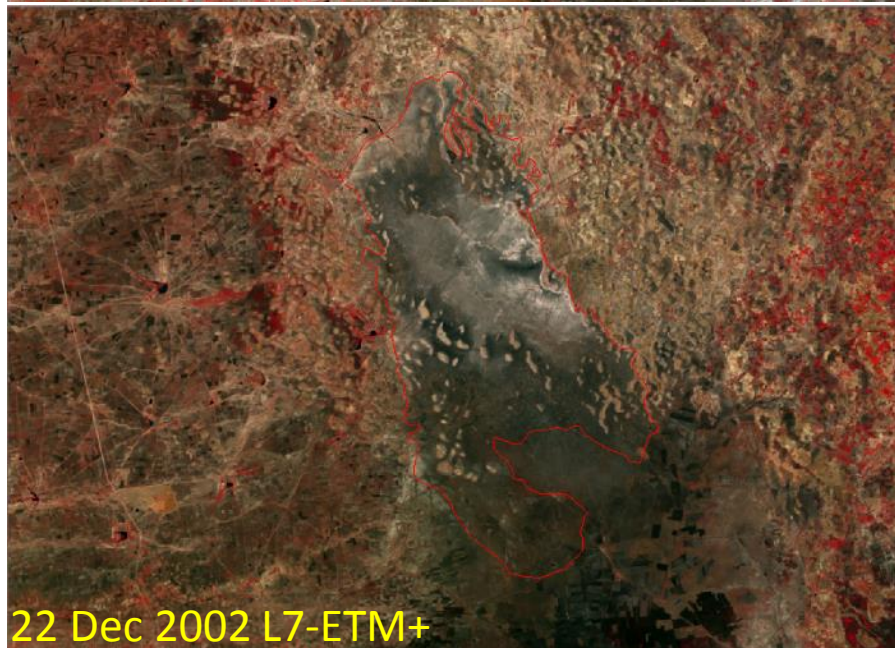
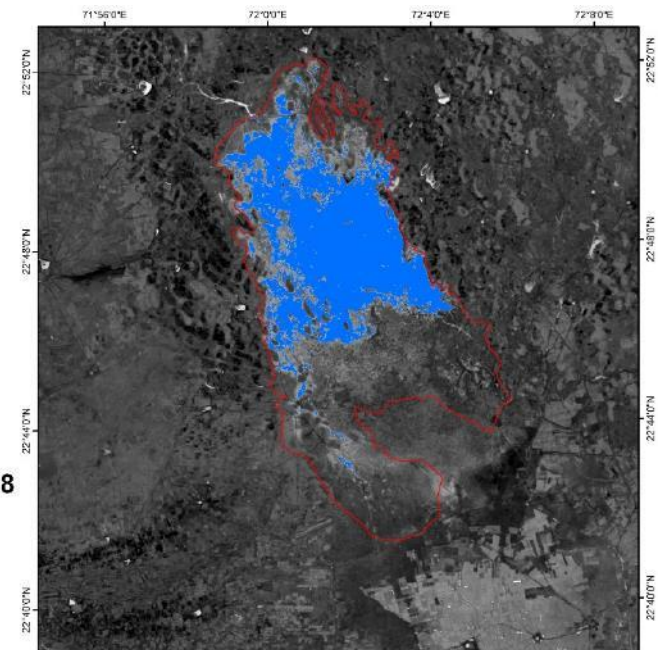
# Surface Area Changes in Nal Sarovar as seen in RS data



**Water Surface Area (sq. km)**



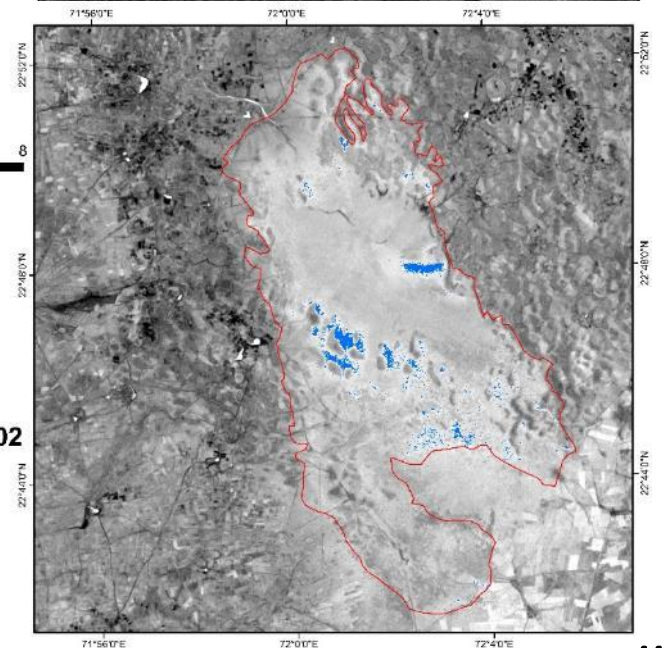
**NDWI\_28 Nov2008**



**Water Surface Area (sq. km)**

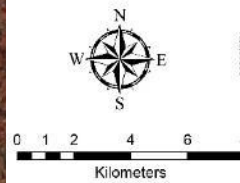
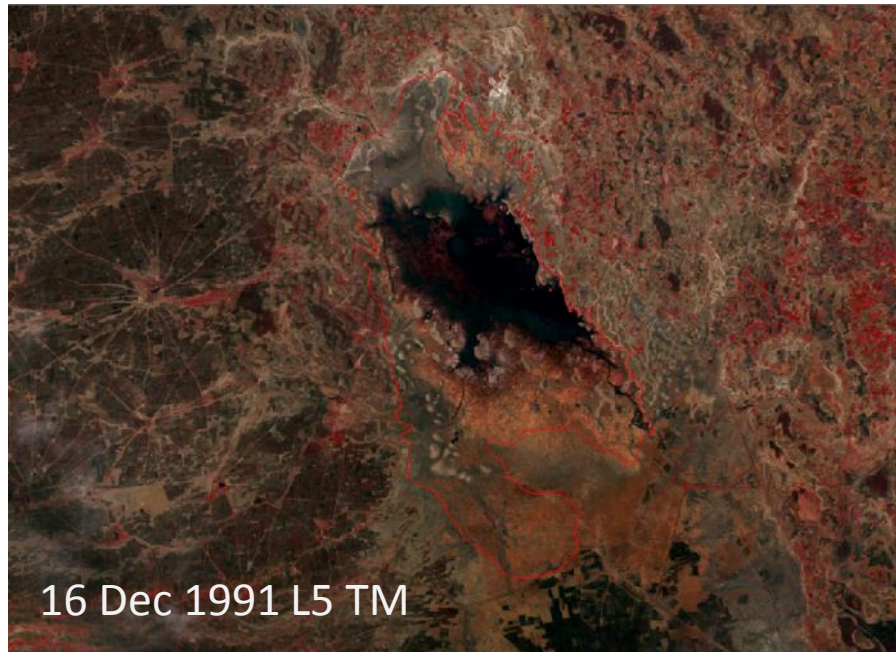


**NDWI 22 Dec 2002**





# Surface Area Changes in Nal Sarovar as seen in RS data



**Water Surface Area (sq. km)**

14.69

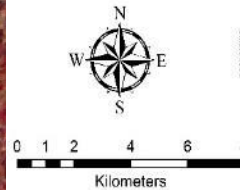
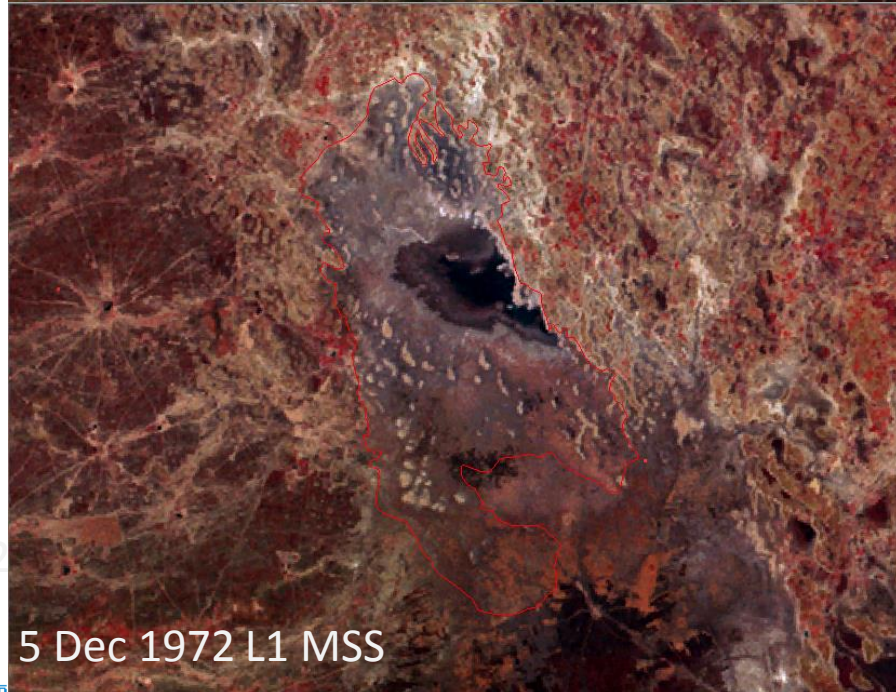
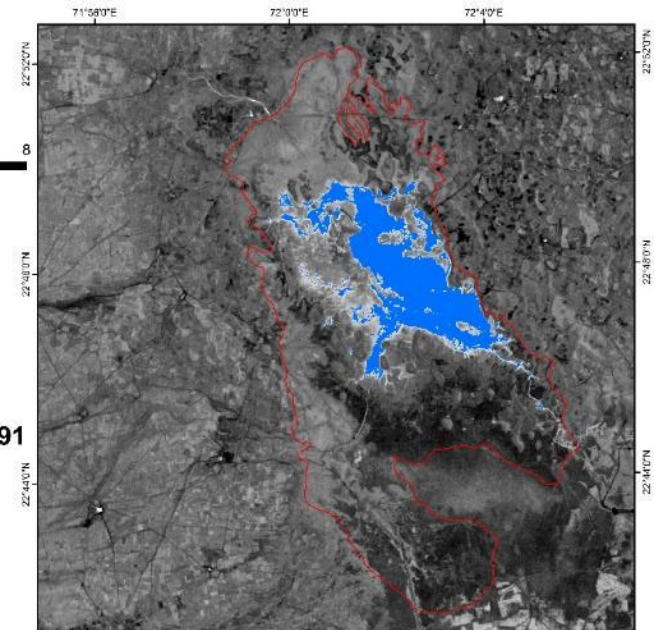
120.17

**NDWI 16 Dec 1991**

**Value**

High : 0.301

Low : -0.858



**Water Surface Area (sq. km)**

4.63

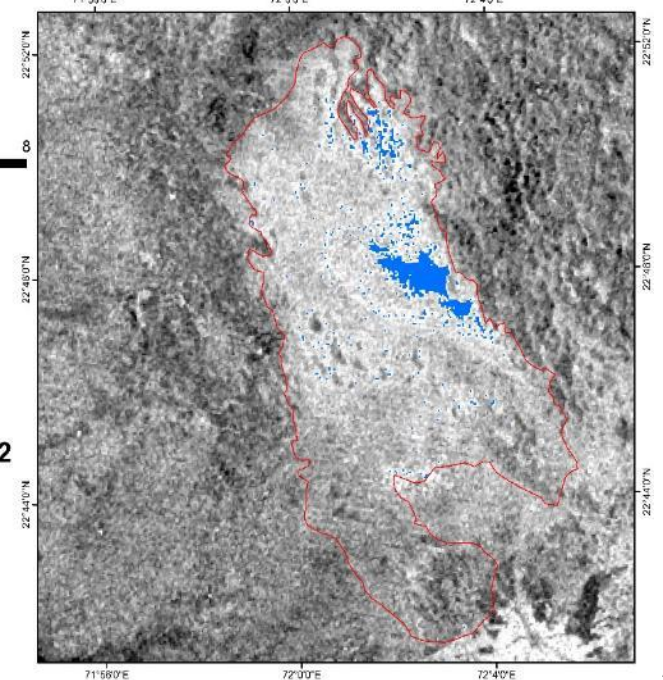
120.17

**NDWI 5 Dec 1972**

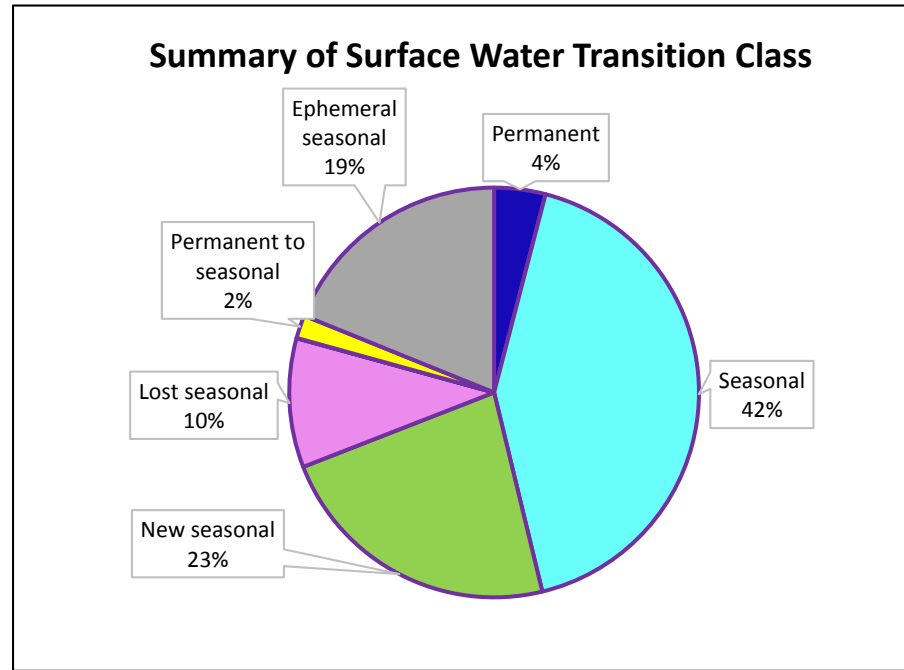
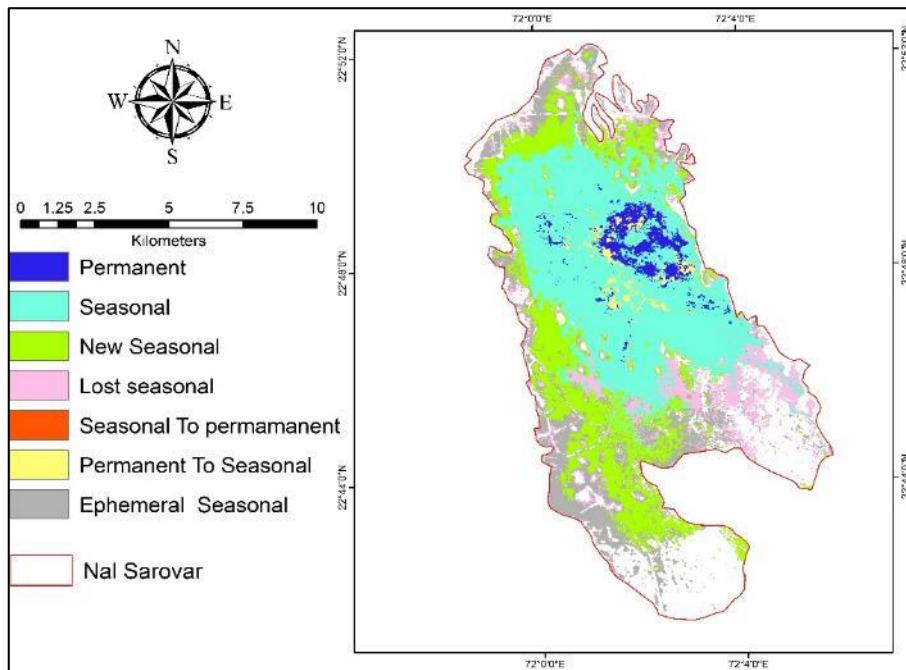
**Value**

High : 0.267

Low : -1.00



# Surface Water Transition Class (1984-2015) in Nal Sarovar Wetland



Transition Class Name	Area (sq. km)
Permanent	3.784
Seasonal	39.446
New seasonal	21.389
Lost seasonal	9.523
Seasonal to Permanent	0.023944
Permanent to Seasonal	1.710
Ephemeral Seasonal	17.660

The derived surface water transition classes are based on RS data analysis from 1985-2015, using limited cloud free data; For more accuracy, longer and SAR based time series data is required.