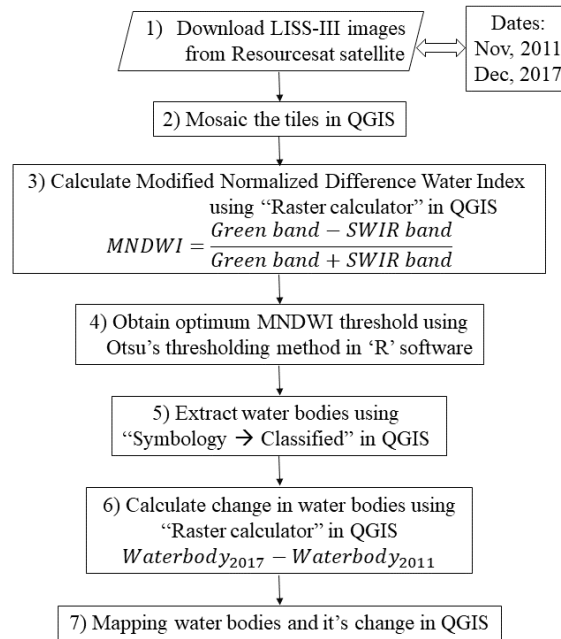


Detection of change in water bodies: Sabarkantha district, Gujarat

Methodology:



Potential Application and uses of the maps:

- Over a period of 6 years from 2011 to 2017, an increase in the water bodies upto 4.48% is observed. This may be attributed to increasing trends in rainfall over the district (Joshi and Makhasana, 2020).
- The northern part of the district forms the catchment for the Dharoi reservoir. It is observed that the streams in the upstream of the reservoir have shrunk over the years. Interestingly, in the southern Sabarkantha which is a forest area, the revival of streams is detected over a period of time. However it is to be noted that the existence of two water resources structures - Vatrak and Mazum reservoir situated in southern Sabarkantha is obstructing the flow to lower Sabarmati river.
- Even though there is an overall increase in surface water bodies in Sabarkantha district, it is observed that the tributaries from Sabarkantha to Sabarmati river have dried up due to anthropogenic activities.
- Mapping water bodies at district-level can provide assistance for efficient water resources management.
- Escalation of water bodies in Sabarkantha will have implications on management of excess water.
- The derived maps are useful for the policy makers to easily locate water deficit and surplus areas in the Sabarkantha district. Since the map shows spatial heterogeneity to the changes in water bodies, a uniform water management decision may not be applicable to the whole district.
- The prepared maps can help to check the encroachment activities in the dried up tributaries in Sabarkantha district.
- Absence of environmental flows in the mainstream as well as tributaries is noticed over the time period considered. These observations on the maps may help in the studies related to deterioration of habitat diversity and the water quality in streams.

References

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- Otsu, N. (1979). A threshold selection method from gray-level histograms. *IEEE transactions on systems, man, and cybernetics*, 9(1), 62-66.