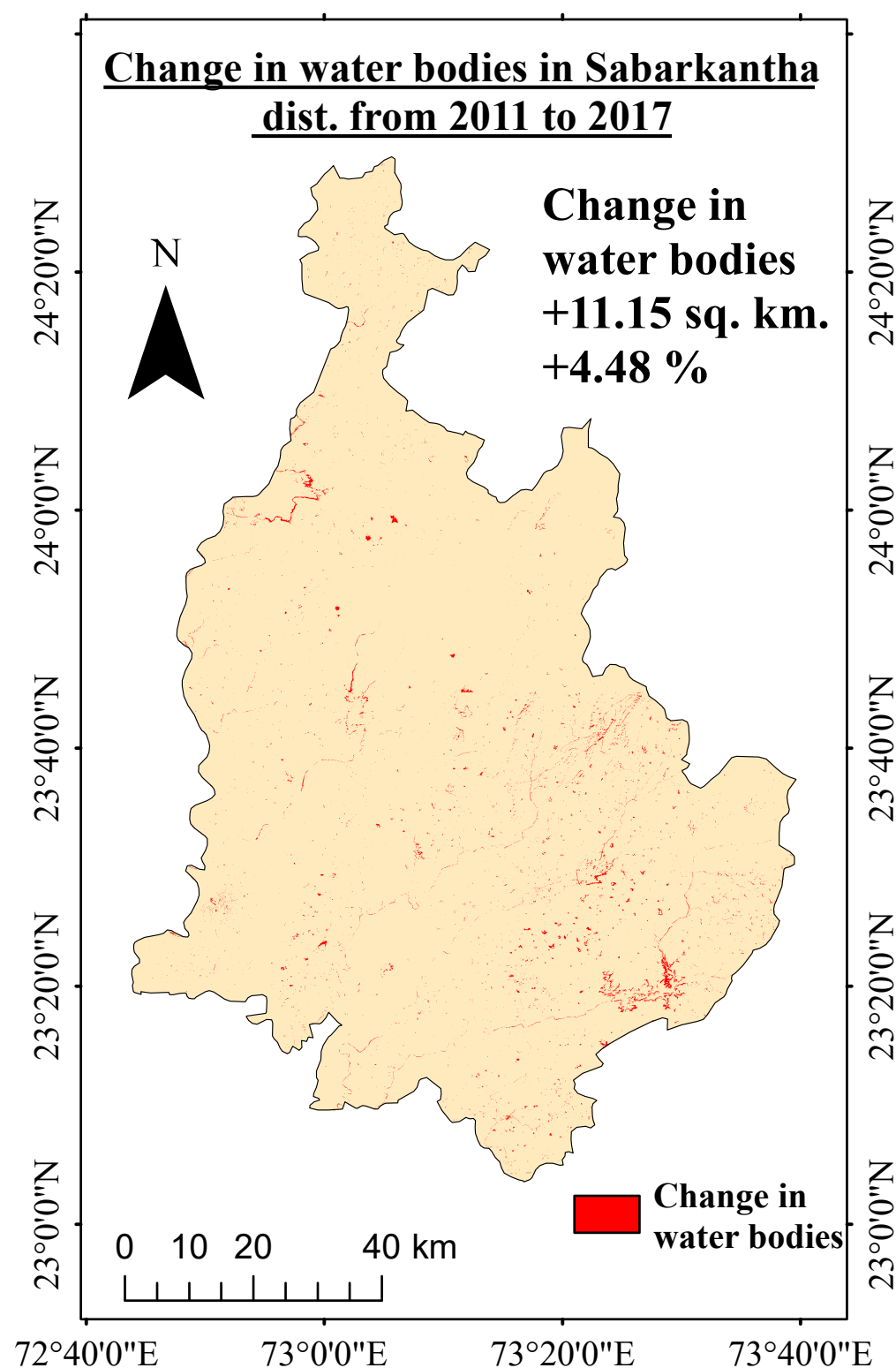
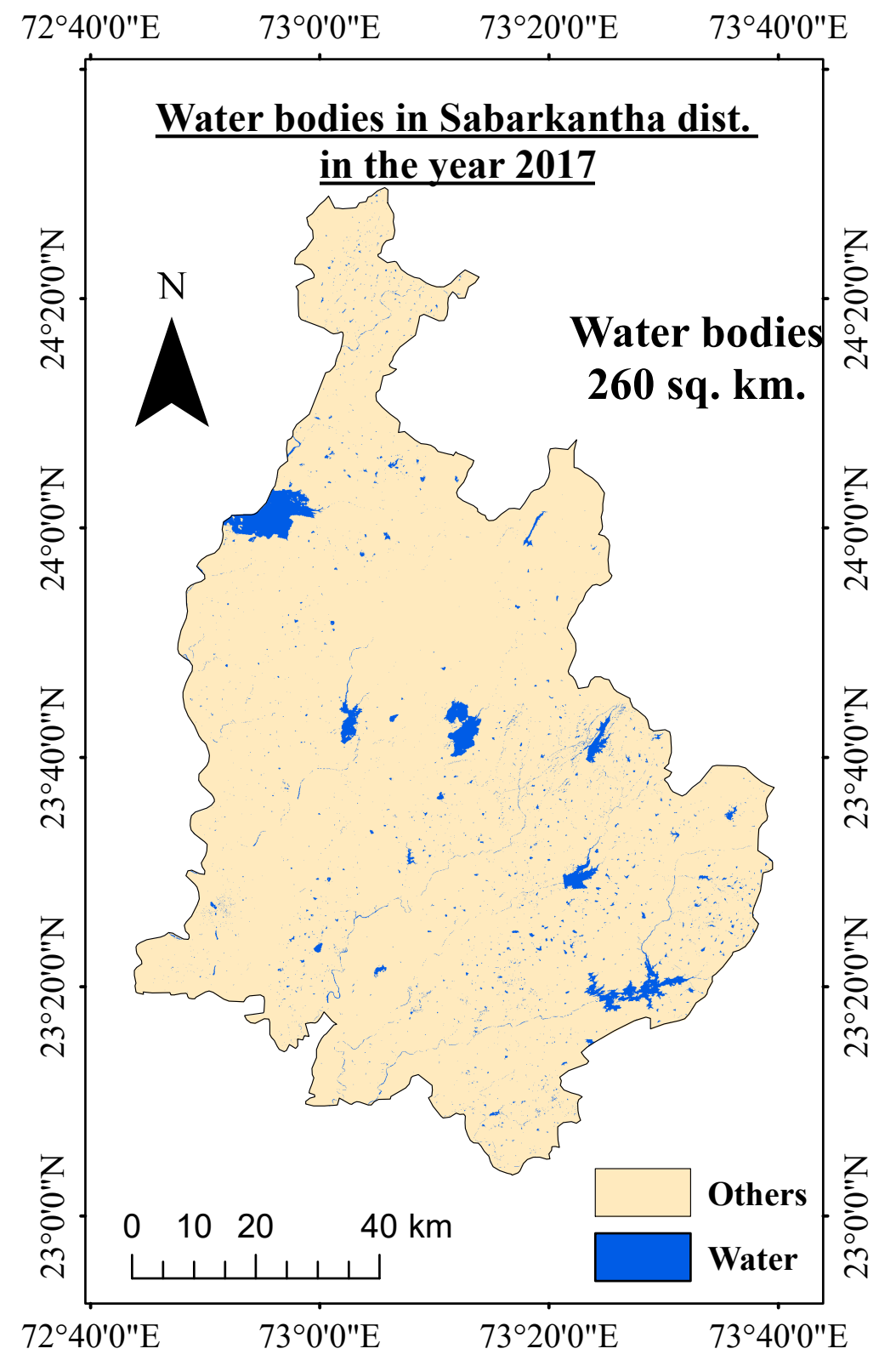
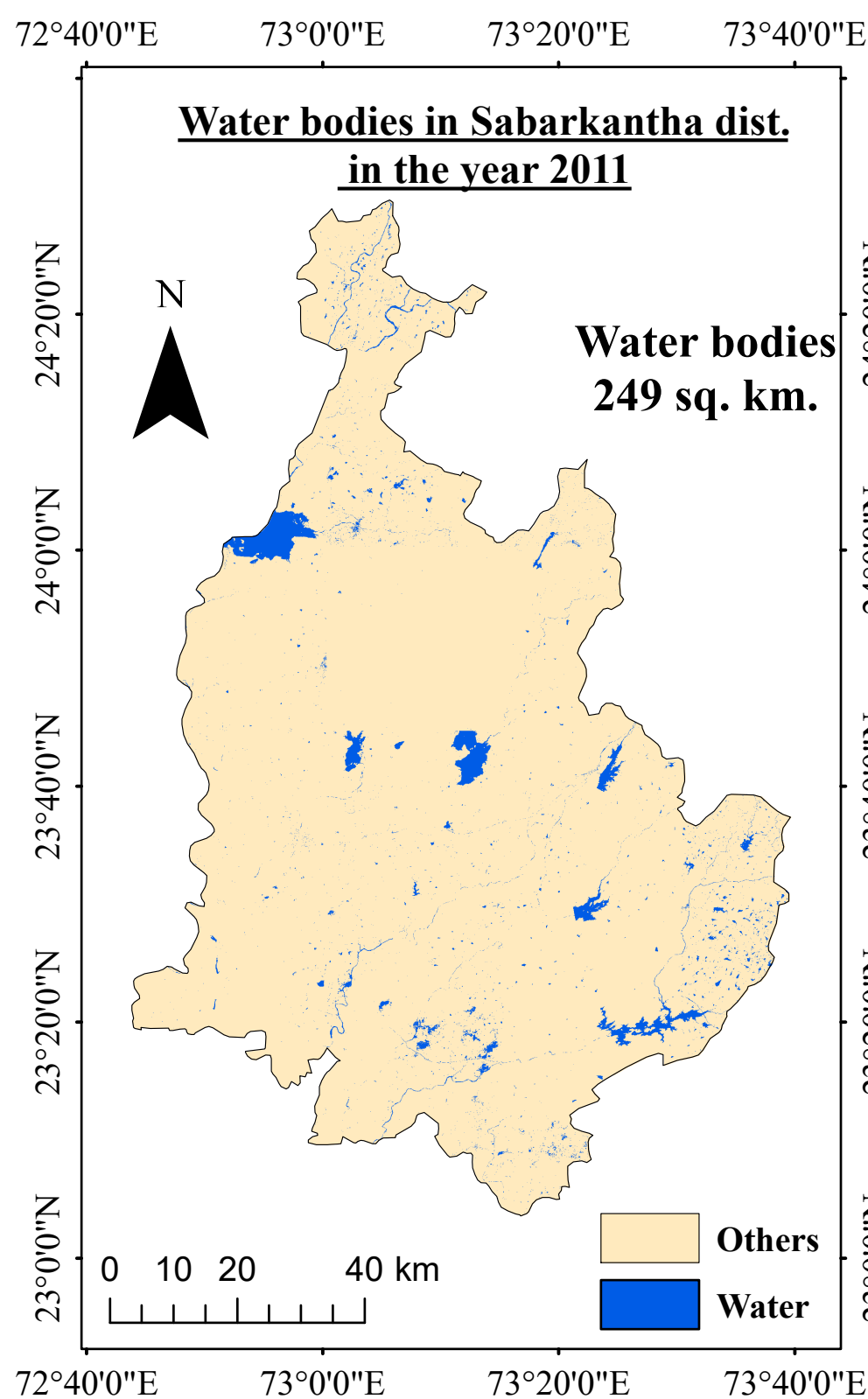
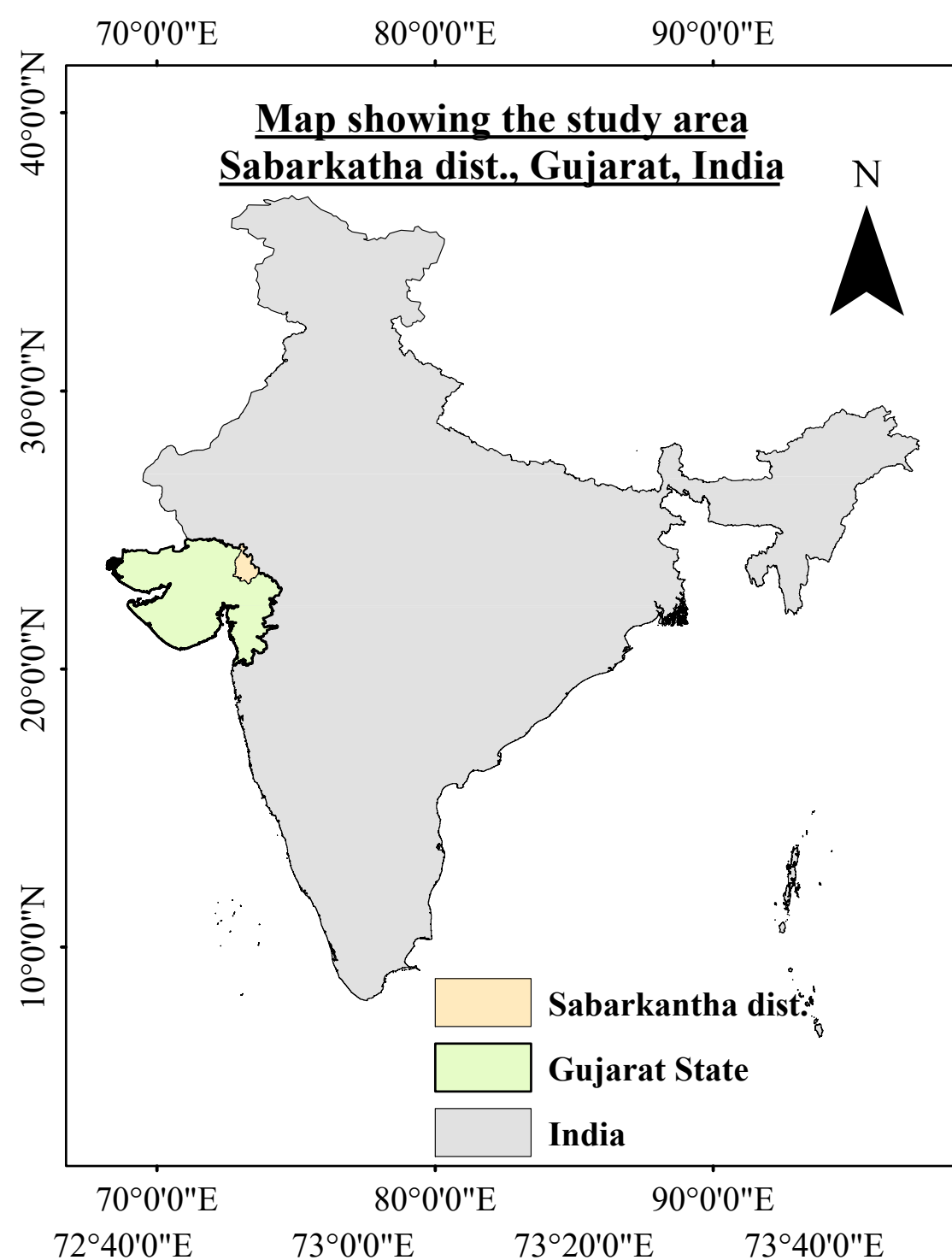


Detection of change in water bodies: Sabarkantha district, Gujarat

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Team:
Mapathon 4309



Problem statement	Detection of change in water bodies in Sabarkantha district, Gujarat.
Study Area	Sabarkantha district (area of 5390 sq. km) is one of the major runoff contributing area in Sabarmati basin. The topographic and geographic features of Sabarkantha district is such that it completely lies in Sabarmati basin.
Data Source	Post-Monsoon LISS-III images of Resourcesat satellite downloaded from Bhuvan - NRSC. https://bhuvan.nrsc.gov.in
Methodology	Modified Normalized Difference Water Index (MNDWI) has been calculated for all the images and optimum MNDWI thresholds to the derived raster images were established using Otsu's (1979) thresholding technique to extract water bodies.
Softwares used	Image processing software - QGIS Statistical software for thresholding - R
Results	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 & 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.
Application	Mapping water bodies at district-level can provide assistance for efficient water resources management. The derived maps help the policy maker 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.
References	<ul style="list-style-type: none"> Joshi, G. S., and Makhasana, P. (2020). Assessment of seasonal climate transference and regional influential linkages to land cover–Investigation in a river basin. <i>Journal of Atmospheric and Solar-Terrestrial Physics</i>, 199, 105209. Otsu, N. (1979). A threshold selection method from gray-level histograms. <i>IEEE transactions on systems, man, and cybernetics</i>, 9(1), 62-66.

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