

# Survey-based Estimation of Irrigation in India from 1950 to 2014

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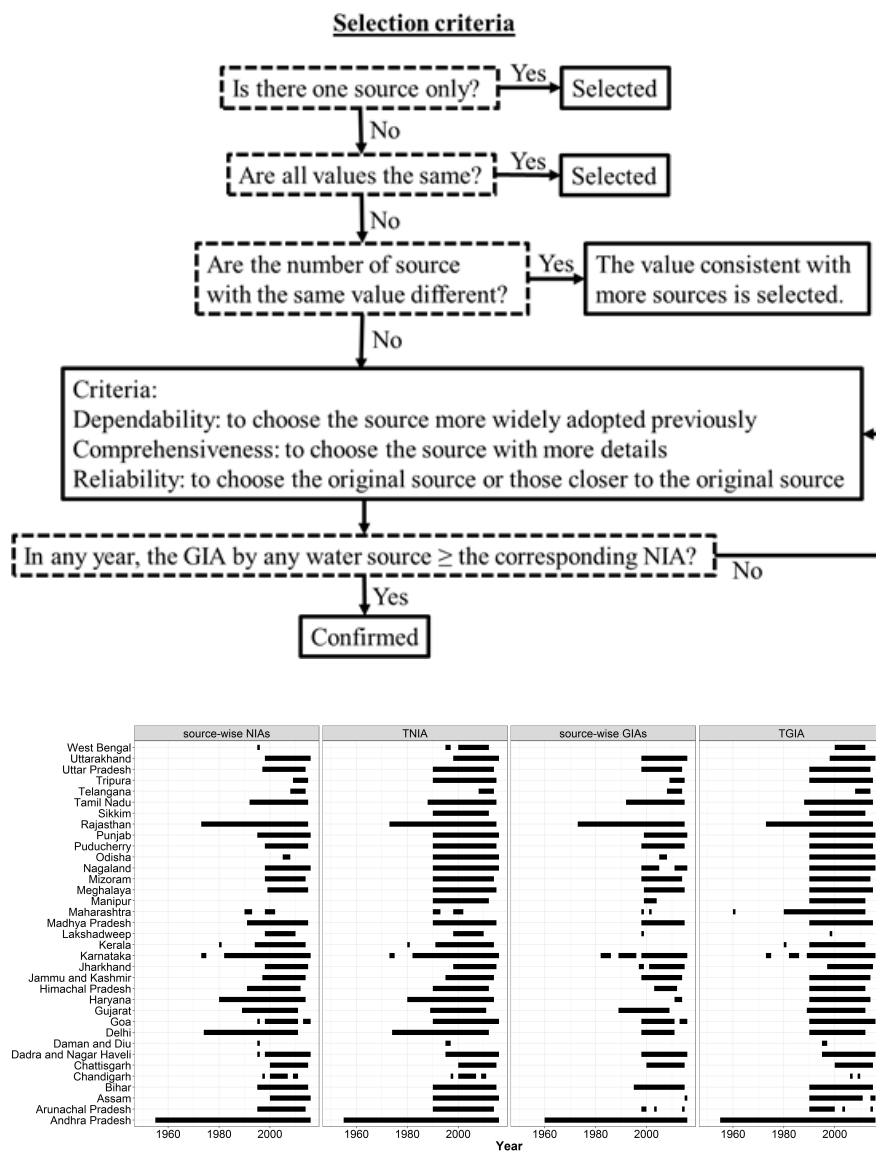
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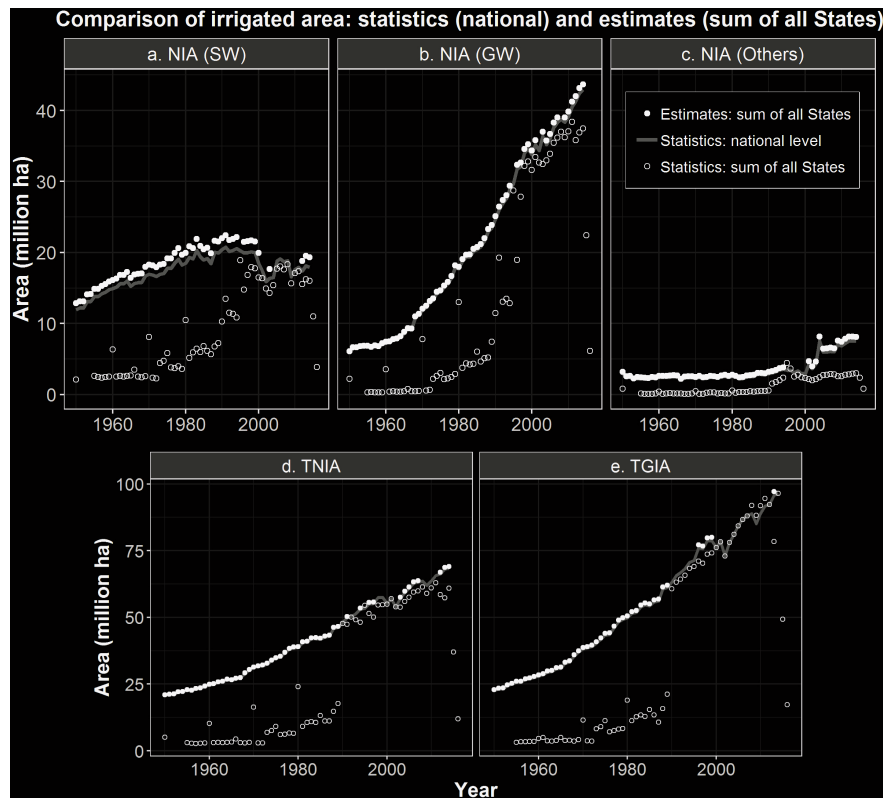
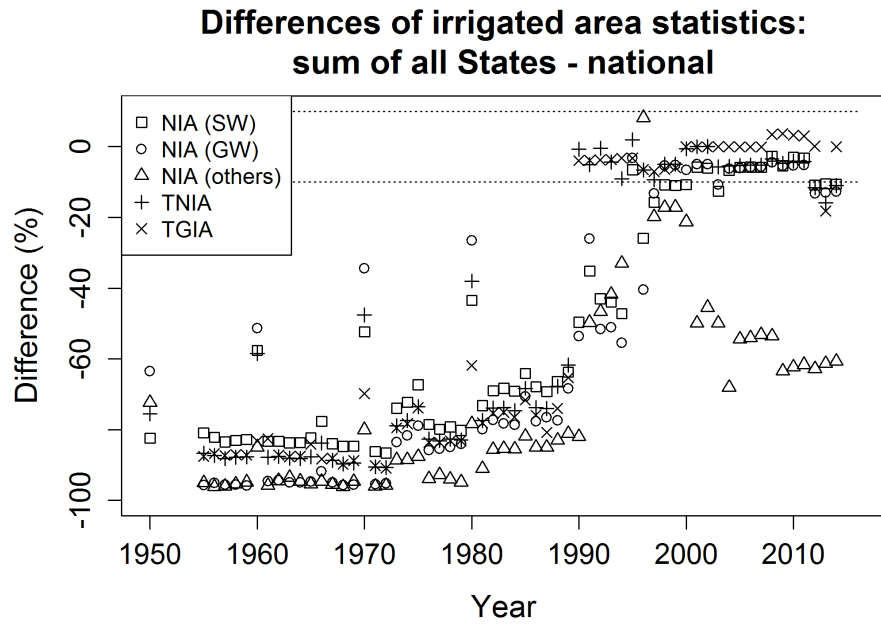
## Abstract

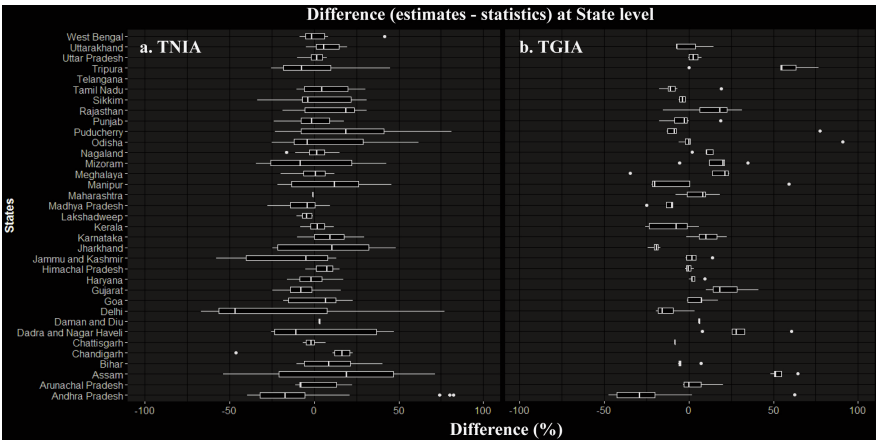
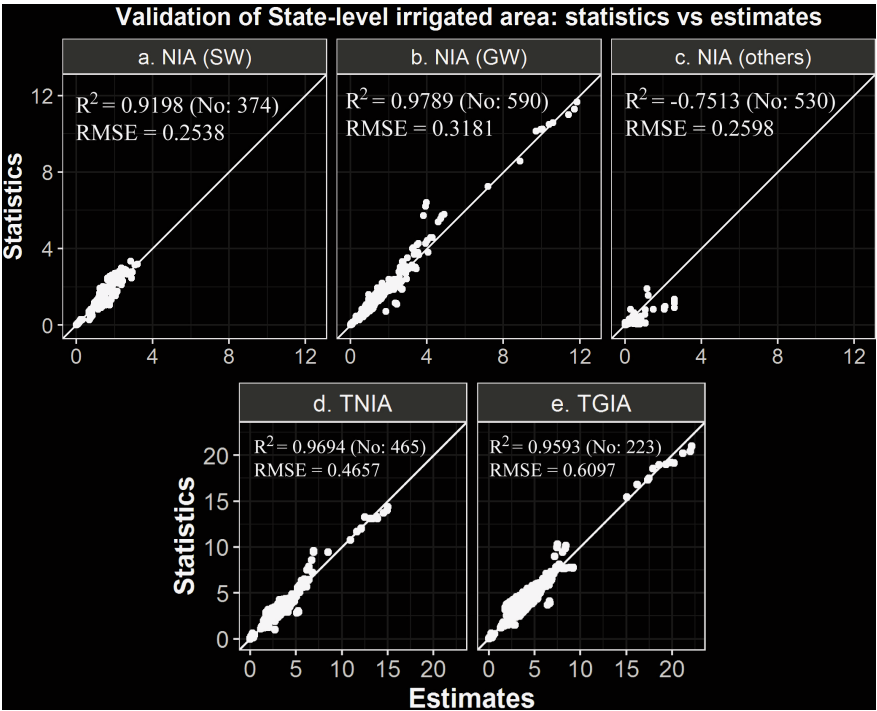
Accurate quantification of irrigation water is necessary in order to examine the realistic effect of agricultural water use on the hydrological cycle and the climate. However, due to a lack of survey-based statistics, the amount of irrigation water is often estimated by irrigation demand derived from hydrologic models without a proper ground validation. This study attempts to construct the first State-level time series of irrigation water volume over India based solely on survey statistics, with the aim of estimating historical irrigation conditions. By assuming that the ratio of irrigated area between States remained constant throughout the period, the annual statistics of the State-level irrigated area were extended from the period of 1990–2014 to the period of 1950–2014. The annual State-level irrigation water volumes were then estimated as a function of the above irrigated area data over 1950–2014 and calibrated using an independent subset of State-level irrigation water quantity statistics. The irrigation water volume data produced in the current study is compared with a widely used irrigation water demand data. The comparison suggests that the previous data might be significantly overestimated (up to 80 Billion Cubic Metre) over most States with a few States with underestimated values (up to 10 Billion Cubic Metre). The irrigation area and volume data of this study is the first State-level estimate that better represents the historical irrigation condition in India.

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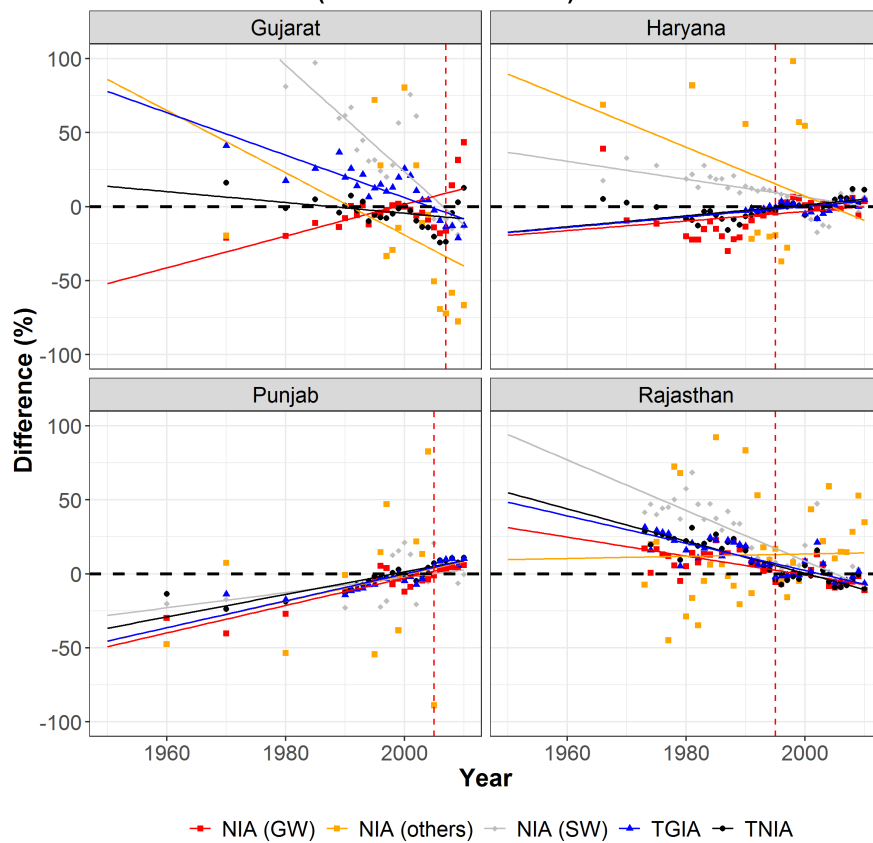
main\_text1.docx available at <https://authorea.com/users/305808/articles/436688-survey-based-estimation-of-irrigation-in-india-from-1950-to-2014>







### Differences (estimates - statistics) and the trendlines



### Annual irrigation water volume in the entirety of India

