

Multitemporal Assessment of changes in land cover associated with water transfers in dry forests: Case Study of the Chongón–El Azúcar System (Ecuador)

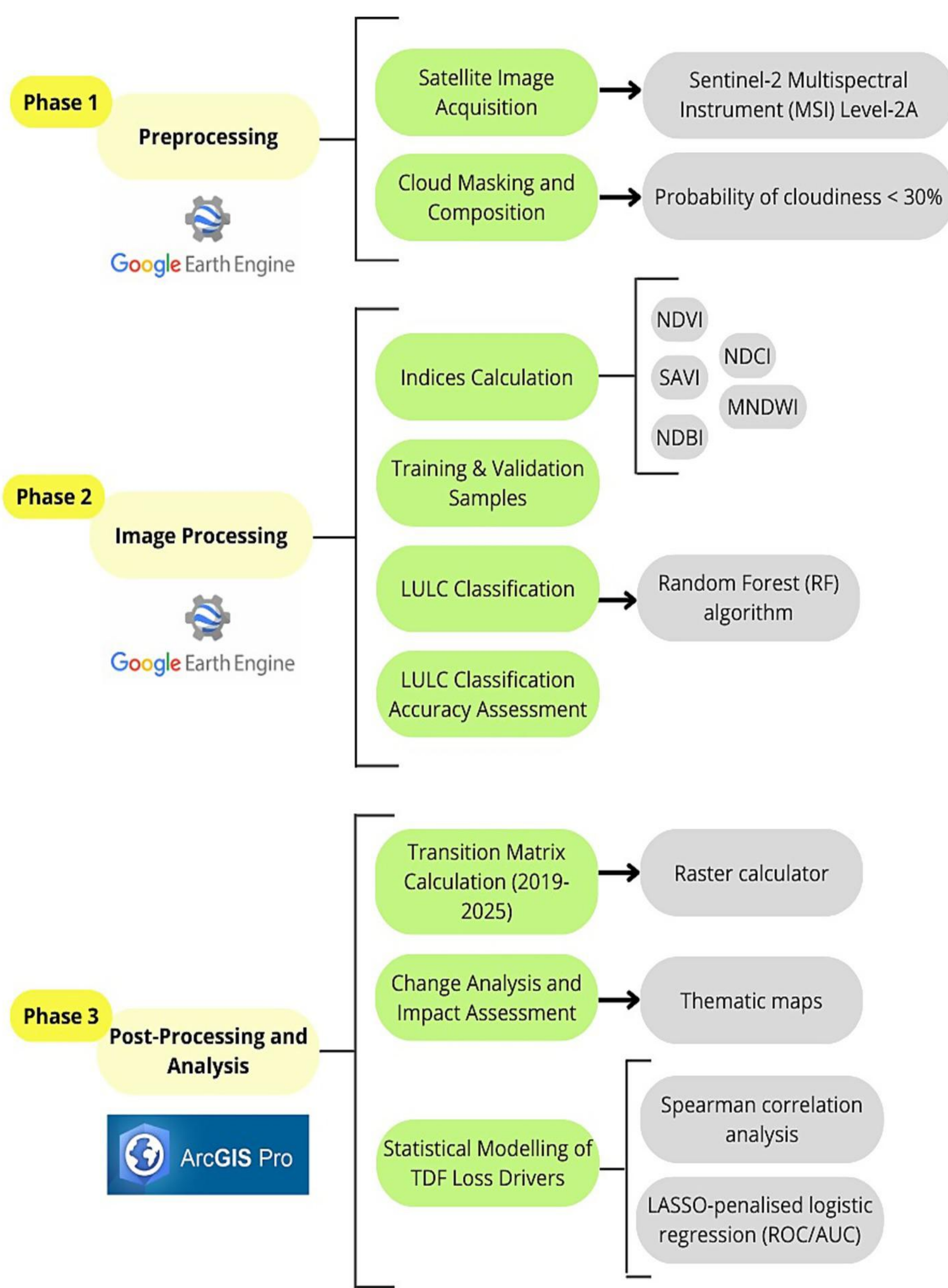
PROBLEM

Tropical dry forests in the Ecuadorian coastal region have experienced increasing land-use change in recent decades due to agricultural expansion and the development of inter-basin water transfer (IBWT) infrastructure. Although the Chongón–El Azúcar transfer system was originally designed to improve water supply for local communities, increased water availability has facilitated agricultural expansion into tropical dry forests, leading to deforestation, habitat degradation, and declining water quality. These impacts are particularly evident around the Chongón–Sube y Baja canal and the El Azúcar reservoir, where agricultural expansion has increasingly replaced native tropical dry forest.

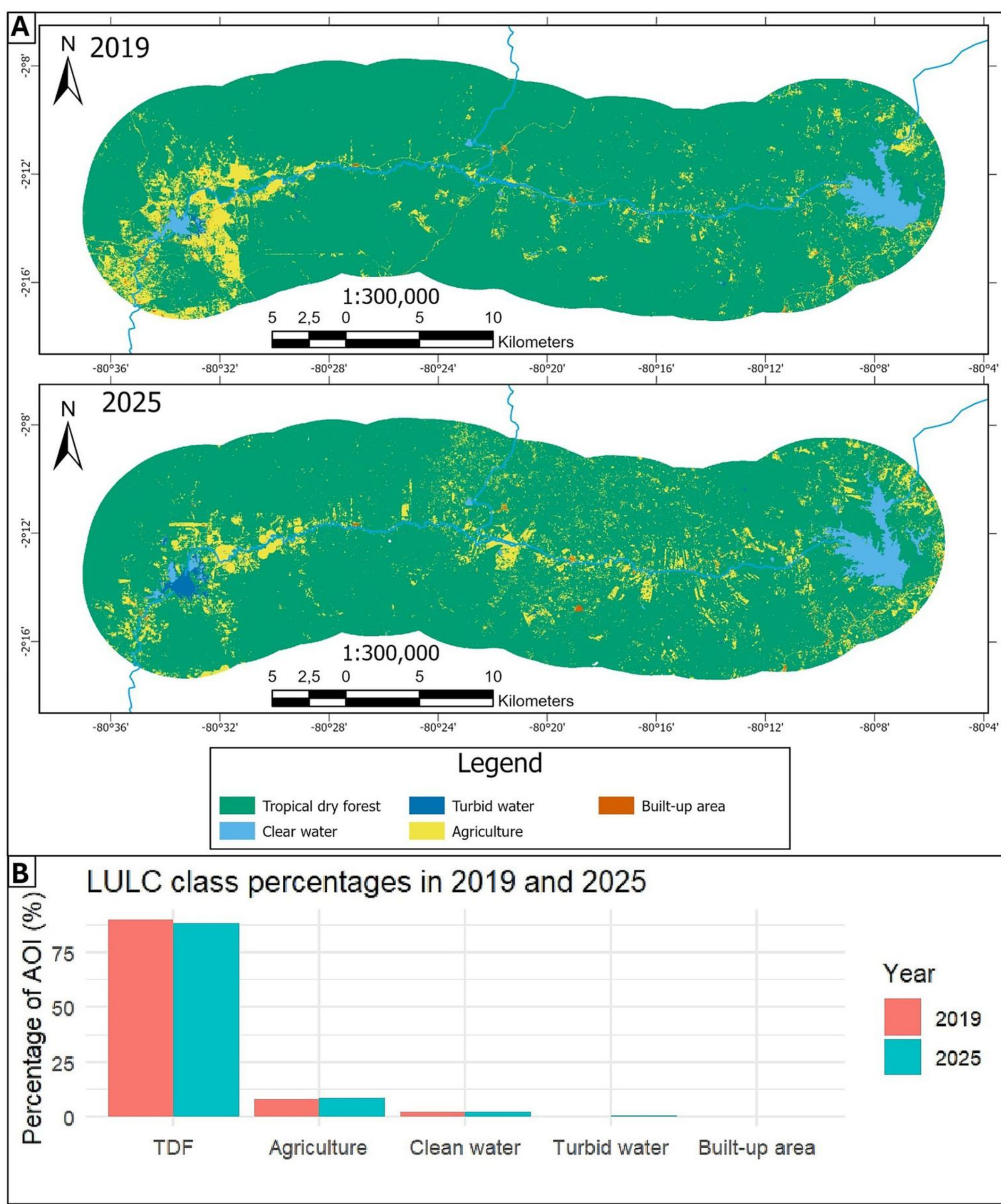
GENERAL OBJECTIVE

This study aims to assess the impacts of the Chongón–El Azúcar inter-basin water transfer system on tropical dry forests by mapping land use and land cover changes and identifying the main drivers of forest loss using remote sensing and machine learning.

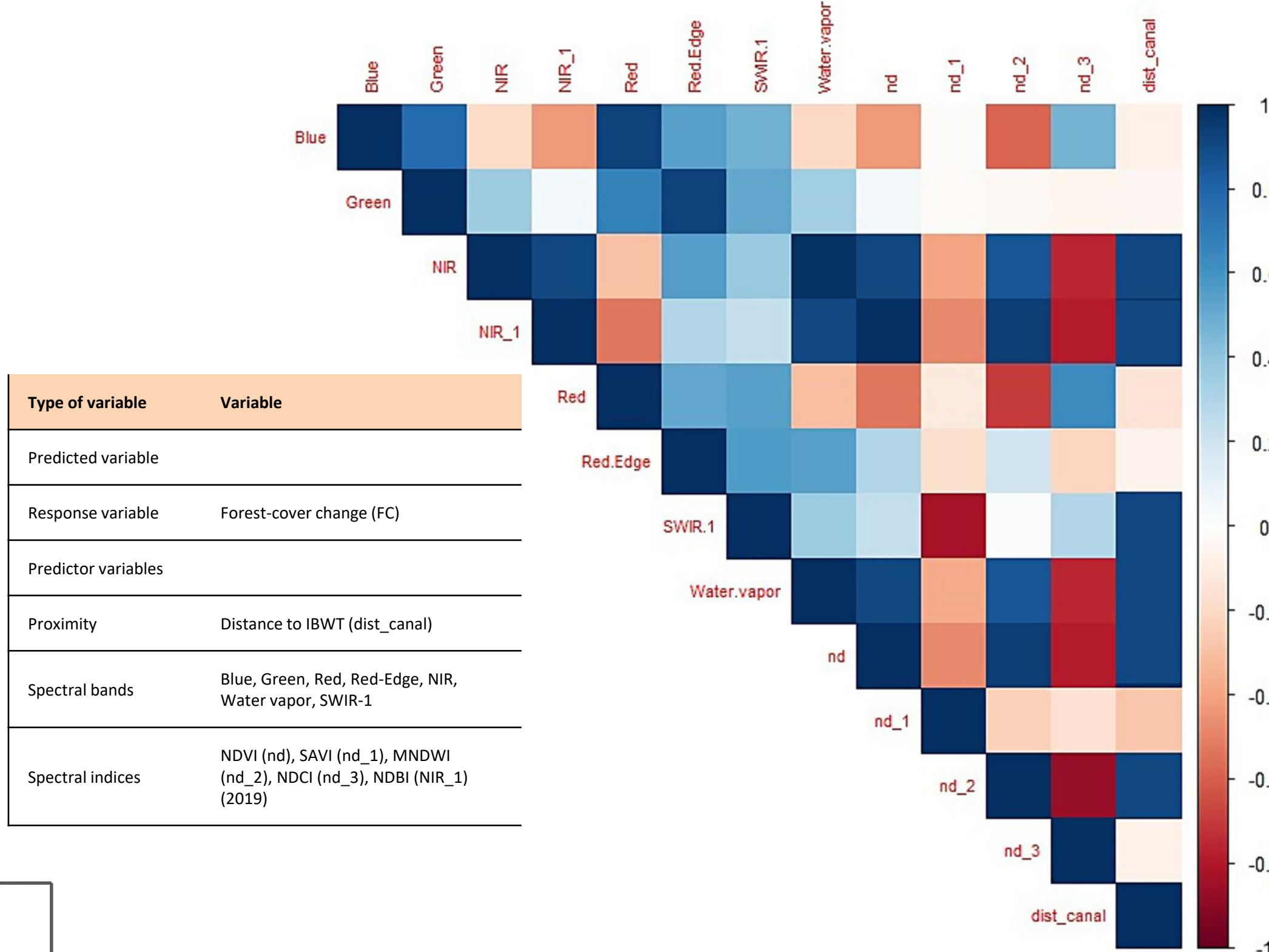
METHODOLOGY



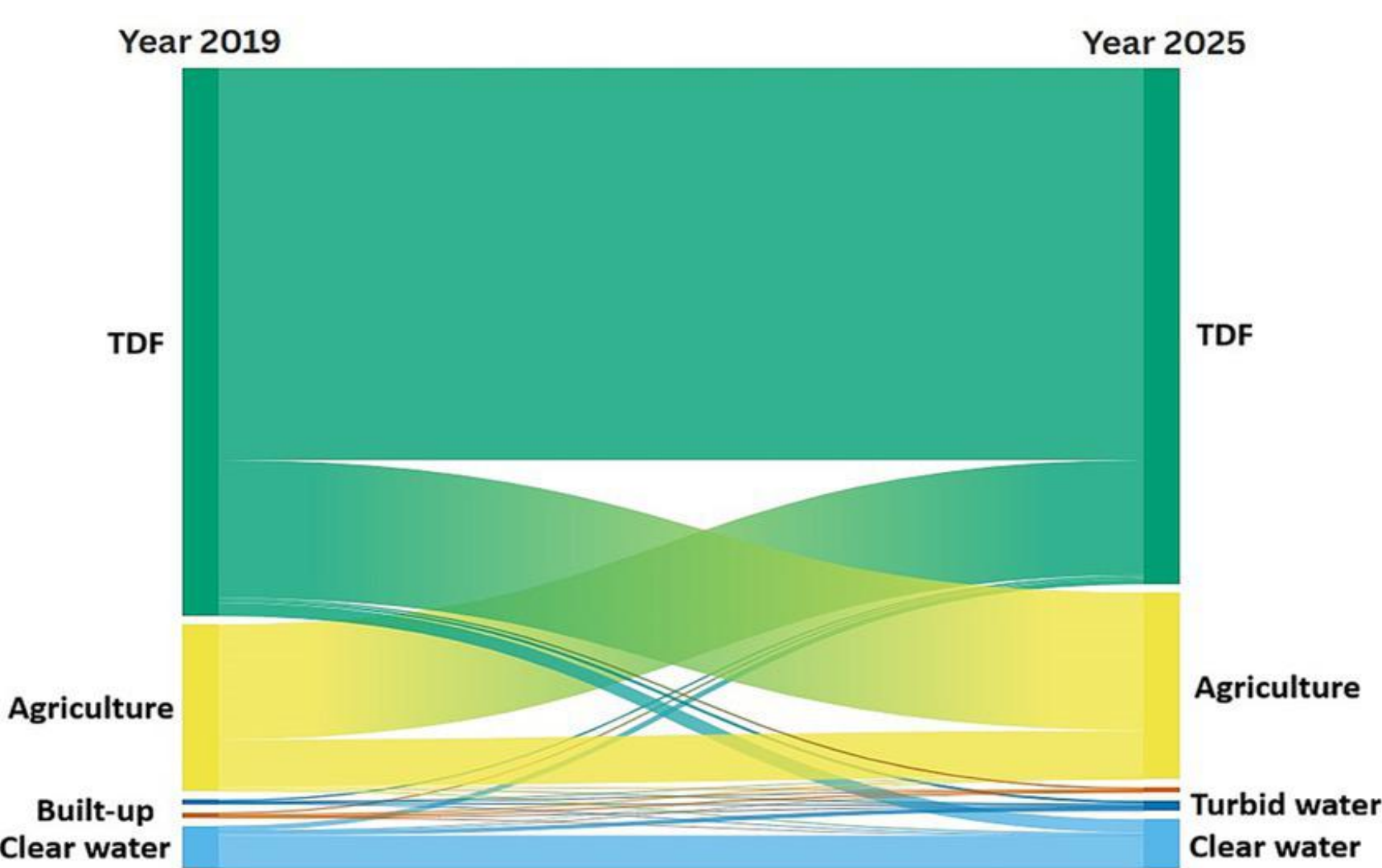
RESULTS



Spearman correlation matrix



Sankey diagram of LULC changes trajectories



CONCLUSIONS

This study provides spatially explicit evidence and operational LULC products that can support public policies aimed at restoring and preserving TDF while regulating water-dependent agricultural expansion. Although the transfer was originally conceived to supply water to local communities and the AOI was not initially planned as an irrigation area, our results suggest that increased water availability has facilitated agricultural expansion into TDF, with potential impacts on biodiversity and on the quality of water used by the population.