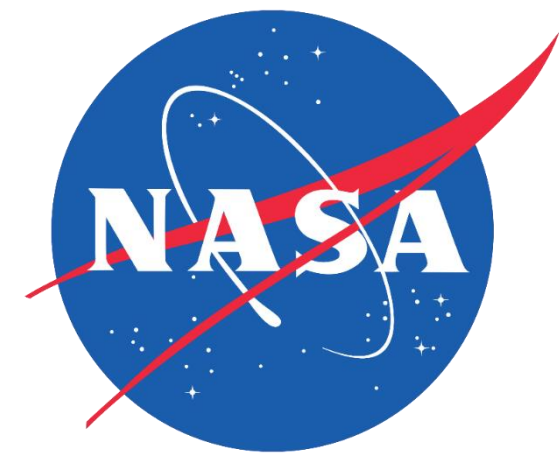


Platte River Basin Water Resources II



Predicting Land Cover Change in the Platte River Basin to Select Wetland Protection Sites Vulnerable to Urban Encroachment

Project Synopsis

Wetlands of the Platte River Basin are important for migratory birds, but these areas are threatened by anthropogenic activities, climate change, and urbanization, resulting in wetland and habitat loss in the region. The team partnered with Audubon Great Plains to analyze future development potential of the region and its potential impact on wetlands. We utilized Landsat 8 Operational Land Imager (OLI) and Suomi National Polar-Orbiting Partnership (NPP) Visible Infrared Imaging Radiometer Suite (VIIRS), as well as NASA Socioeconomic Data and Applications Center (SEDAC) data, to simulate urban growth potential up to 2050 using the open-source model FUTURES. The results show that wetlands are at risk of urban encroachment, particularly under scenarios in which they are not formally protected. The projection maps will help Audubon Great Plains lead wetland protection awareness workshops for communities and to form impactful conservation strategies.

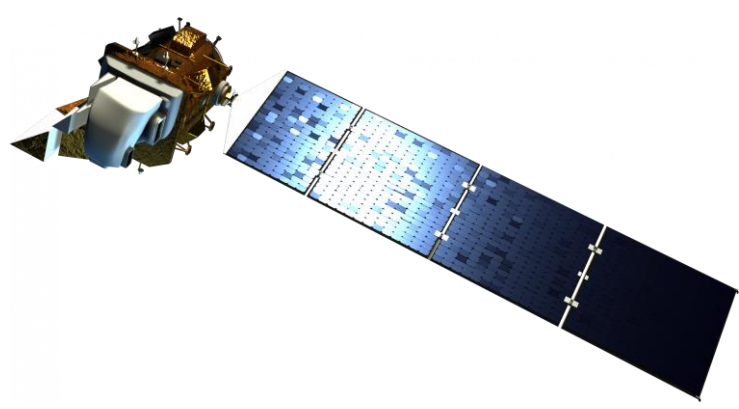
Objectives

- ▶ **Model** future urban growth in the Platte River Basin
- ▶ **Identify** wetland areas vulnerable to urban expansion
- ▶ **Produce** Land Use/Land Cover (LULC) change maps for 2030, 2040, & 2050
- ▶ **Create** protected wetlands vulnerability maps

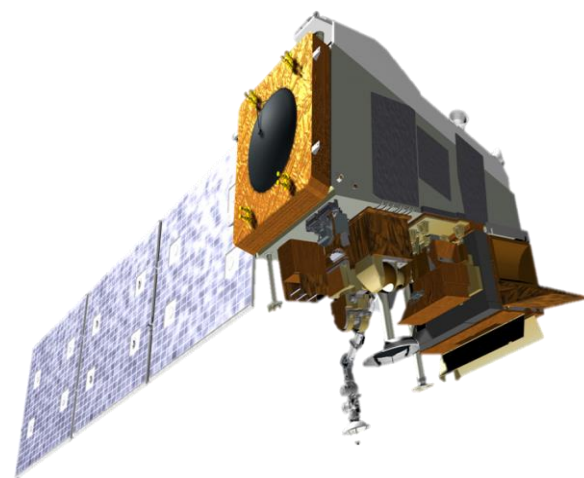
Project Partners

- ▶ Audubon Great Plains

Earth Observations

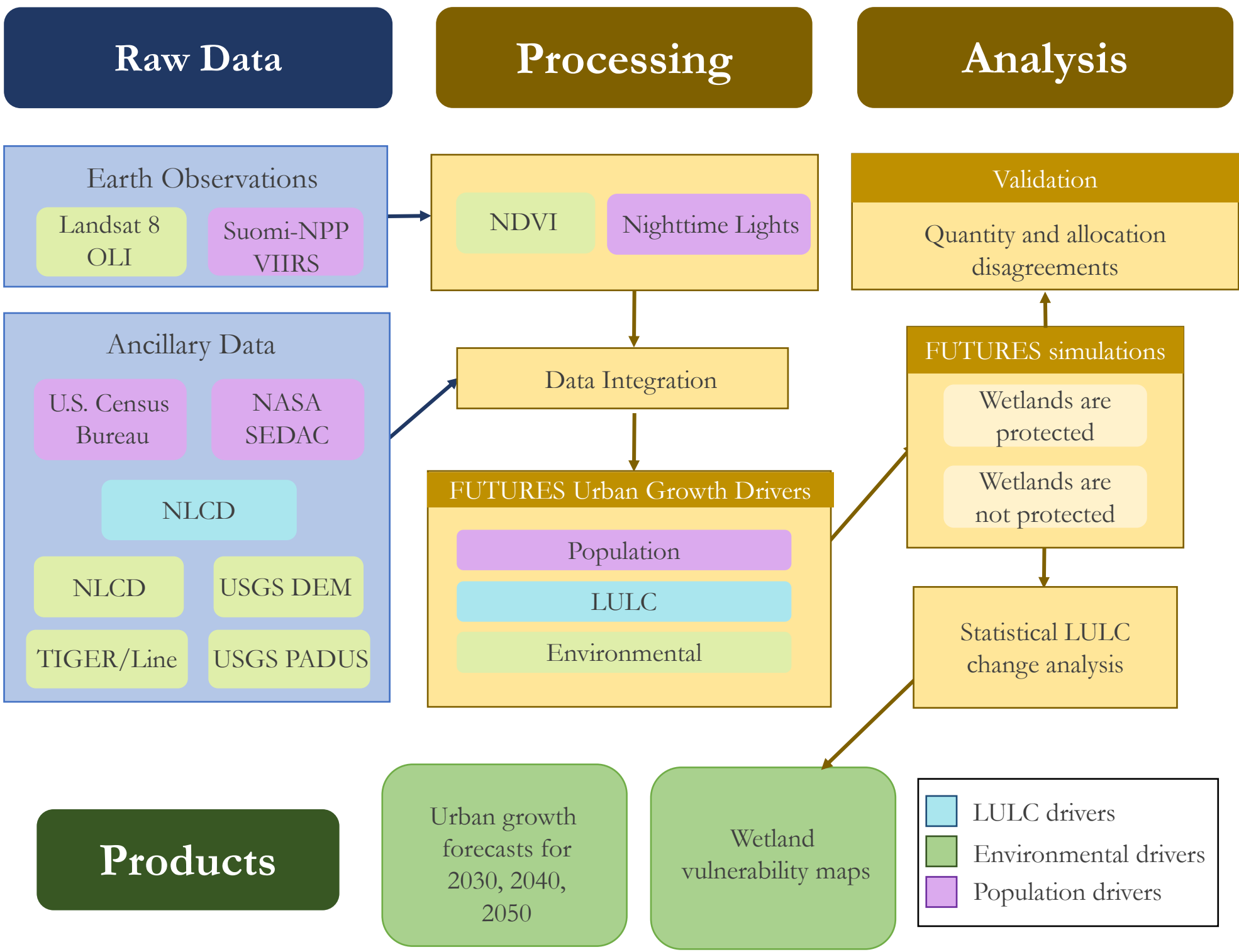


Landsat 8 OLI



Suomi-NPP VIIRS

Methodology



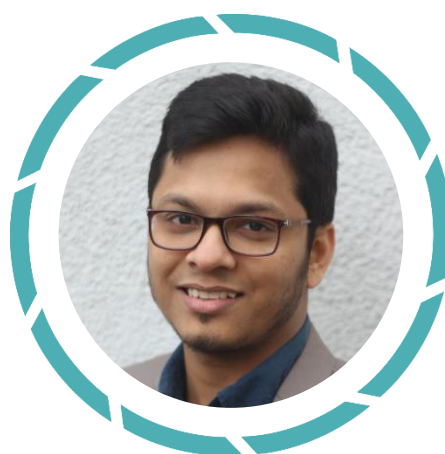
Team Members



Nancee Uniyal
Project Lead



Olivia Kirkland

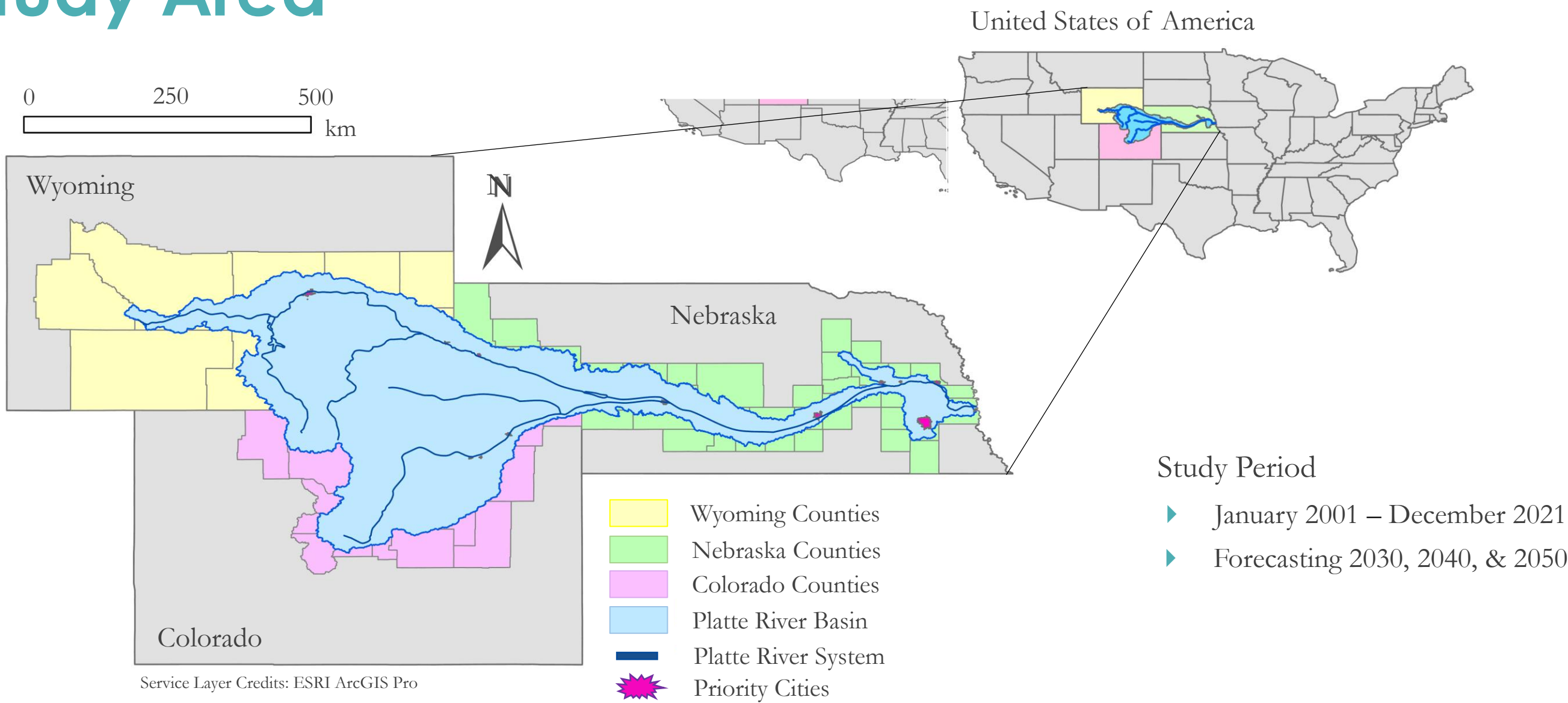


Shaibal Ahmed



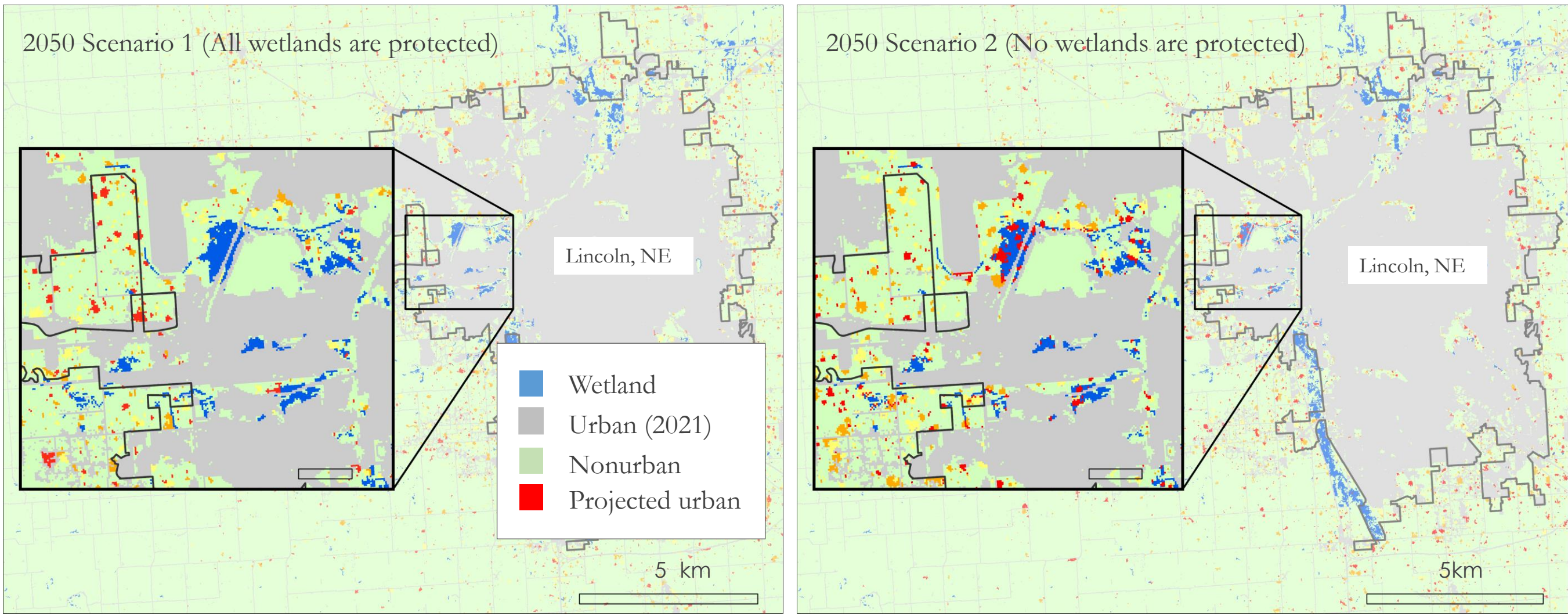
Yulia Shaffer

Study Area

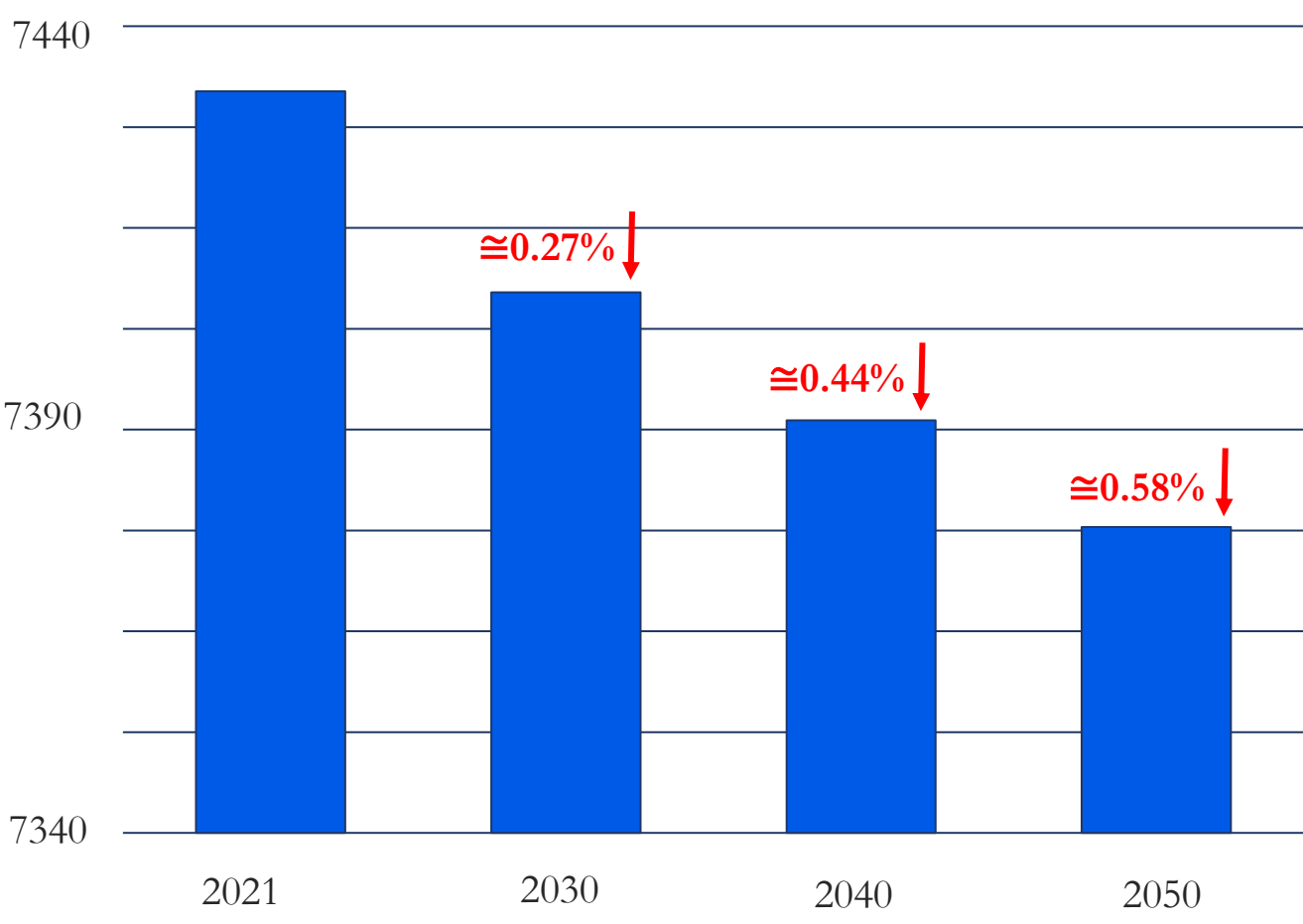


Results

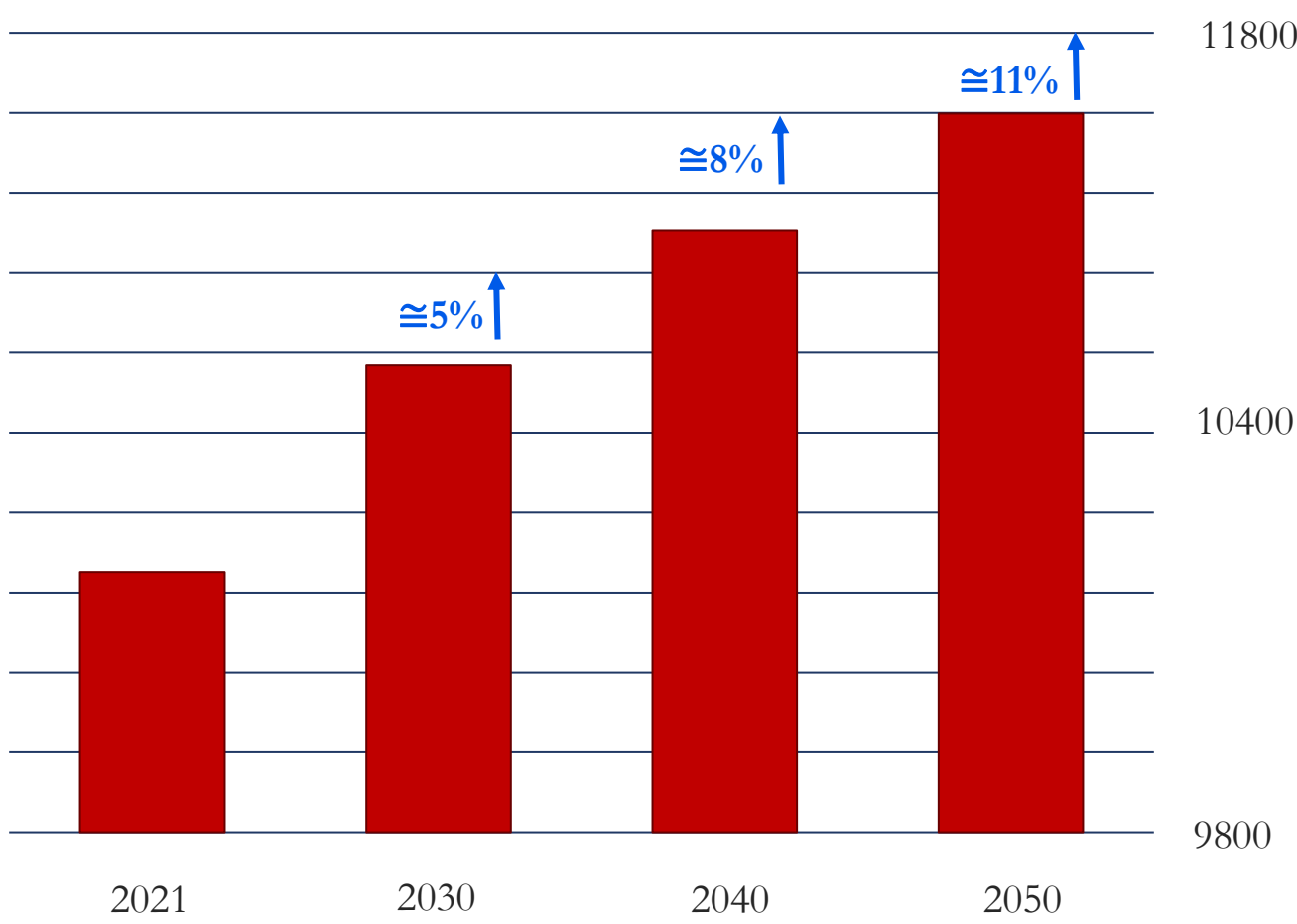
Fragment of Urban Encroachment on Wetlands in Lincoln, NE by 2050



Wetland Area Loss in PRB by 2050 (per Scenario 2) (km²)



Projected urban areas in PRB by 2050 (km²)



Conclusions

- ▶ Wetland protection status influenced the pattern of urban growth.
- ▶ Wetland loss is projected to occur across the basin and within cities.
- ▶ Audubon Great Plains can use this information to inform restoration and protection efforts.

Acknowledgments

Platte River Basin Water Resources I Spring 2024 team: Jennifer Mathis, Jackie Encinas, Emma Vail, Olivia Kirkland

Science Advisor: Dr. Marguerite Madden (University of Georgia)

Center Lead: Megan Rich (DEVELOP Georgia – Athens)

Special Thanks: Dr. Georgina Sanchez (NC State University)



Georgia – Athens | Summer 2024



This material is based upon work supported by NASA through contract 80LARC23FA024. Any mention of a commercial product, service, or activity in this material does not constitute NASA endorsement. Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Aeronautics and Space Administration and partner organizations.