

# Fast and Economic Mapping of Potential Wetlands Using Openly Available Remote Sensing Data and Artificial Intelligence

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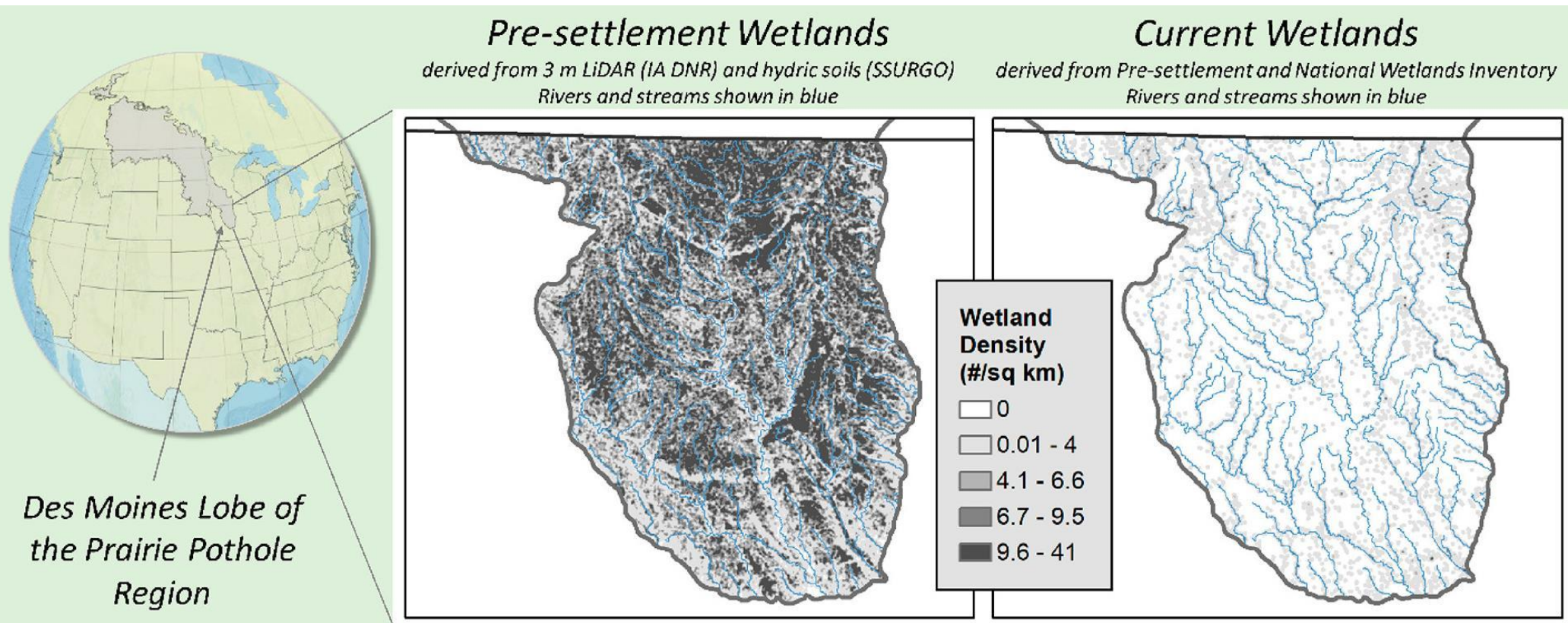
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Texas A&M University, Kingsville**



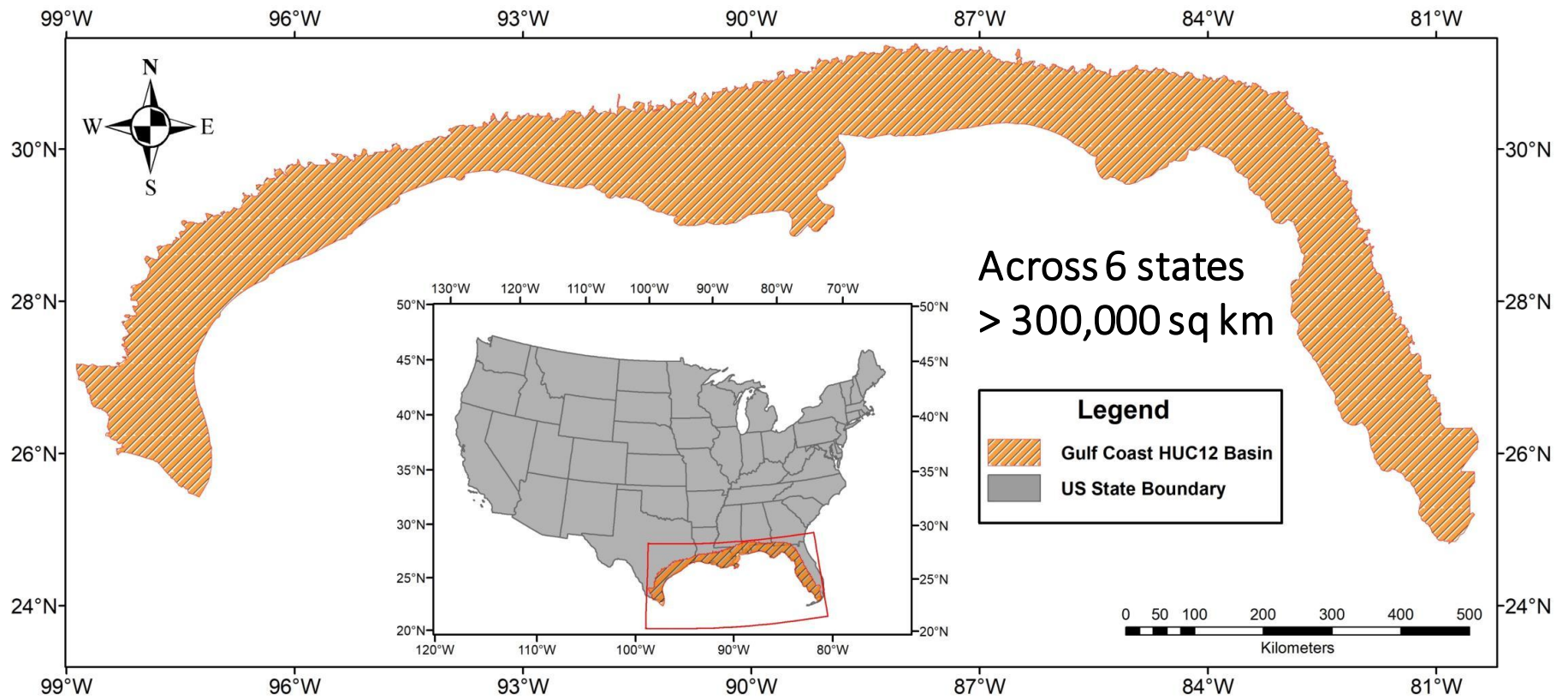
# Wetlands are being degraded, depleted, and destroyed

From Native American *Lands of Plenty* to *Lost Wetlands*



Golden et al., 2019. *ES&T*

# Study Area: U.S. Gulf Coast



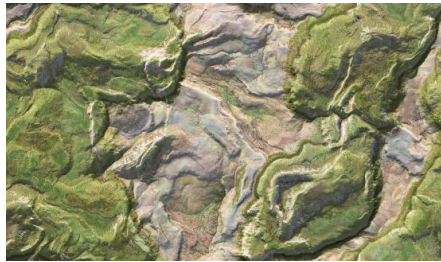


# Input Data

■ Traditionally used data in wetland mapping

■ Latest available data useful for wetland mapping

## Topography [10 – 250 m]



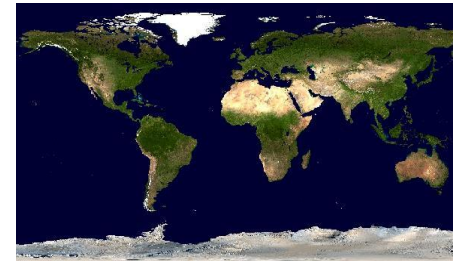
Slope, Curvature, TPI,  
**HAND**

## Soil [10 – 30 m]



Hydric Condition, Drainage Class,  
**Soil Moisture, Conductivity**

## Vegetation [30 m]



NDVI, NDWI

## Hydrology [250 m – 4 km]



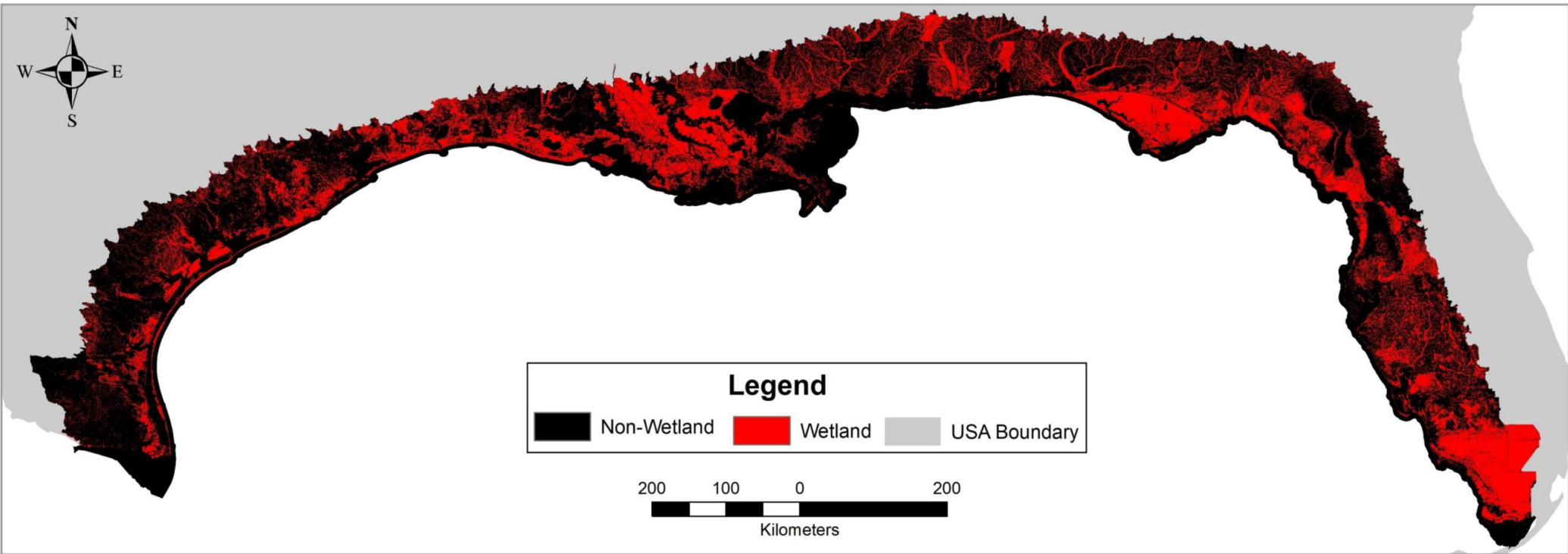
**Curve Number, Climate Water Deficit, Drought Severity**

## Climate [4 km]



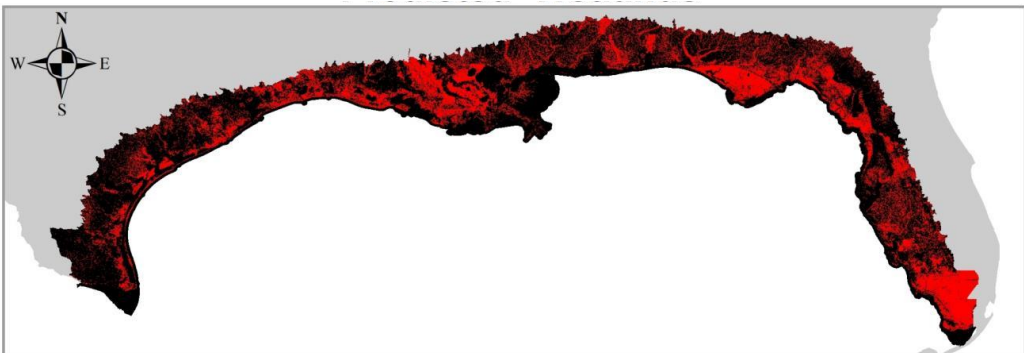
**Precipitation and Temperature Changes**

# Results: Machine Learning-based Potential Wetlands

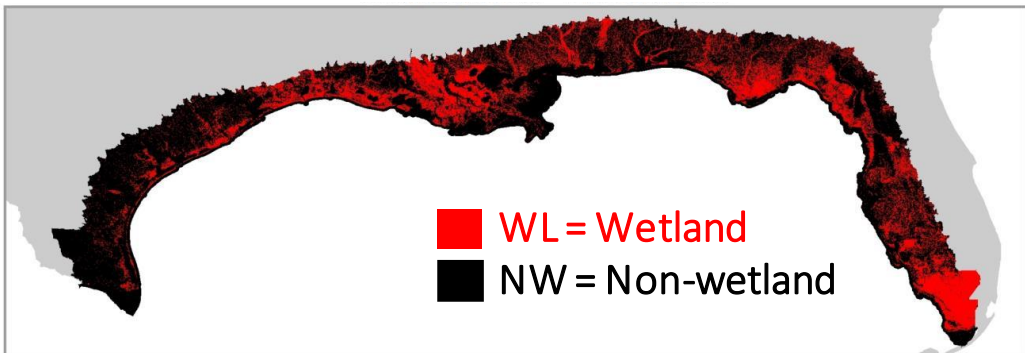


# Estimate of Prediction Accuracy

Machine Learning-based Potential Wetlands  
(97,500 Km<sup>2</sup>)



Merged NWI and Land Cover Wetland Data  
(87,500 Km<sup>2</sup>)



85.4% accurate

		Predicted Values		Total
		NW	WL	
Truth Values	NW	63.3%	8.9%	72.2%
	WL	5.7%	22.1%	27.8%
Total		69.0%	31.0%	100.0%

# Join us for live demo and training on our machine learning wetland mapping framework

<https://www.ewricongress.org/program/technical-workshops>



**2023 World Environmental & Water Resources Congress**

Henderson, Nevada | May 21–25, 2023

**2023**

**Technical Workshop: Mapping Wetlands with Machine Learning**

**Tuesday, May 23, 2023 | 1:00 pm – 4:30 pm**



## Contact Information

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