

# Using Satellite Data with on Site Measurements to Create Estimates of Biomass as a Baseline for Future Studies of Caribbean Pine

Jeanne'le Roux, Kaitlyn Pate, Jonathan Chenault, Robert Rossell  
Earth System Science, College of Science

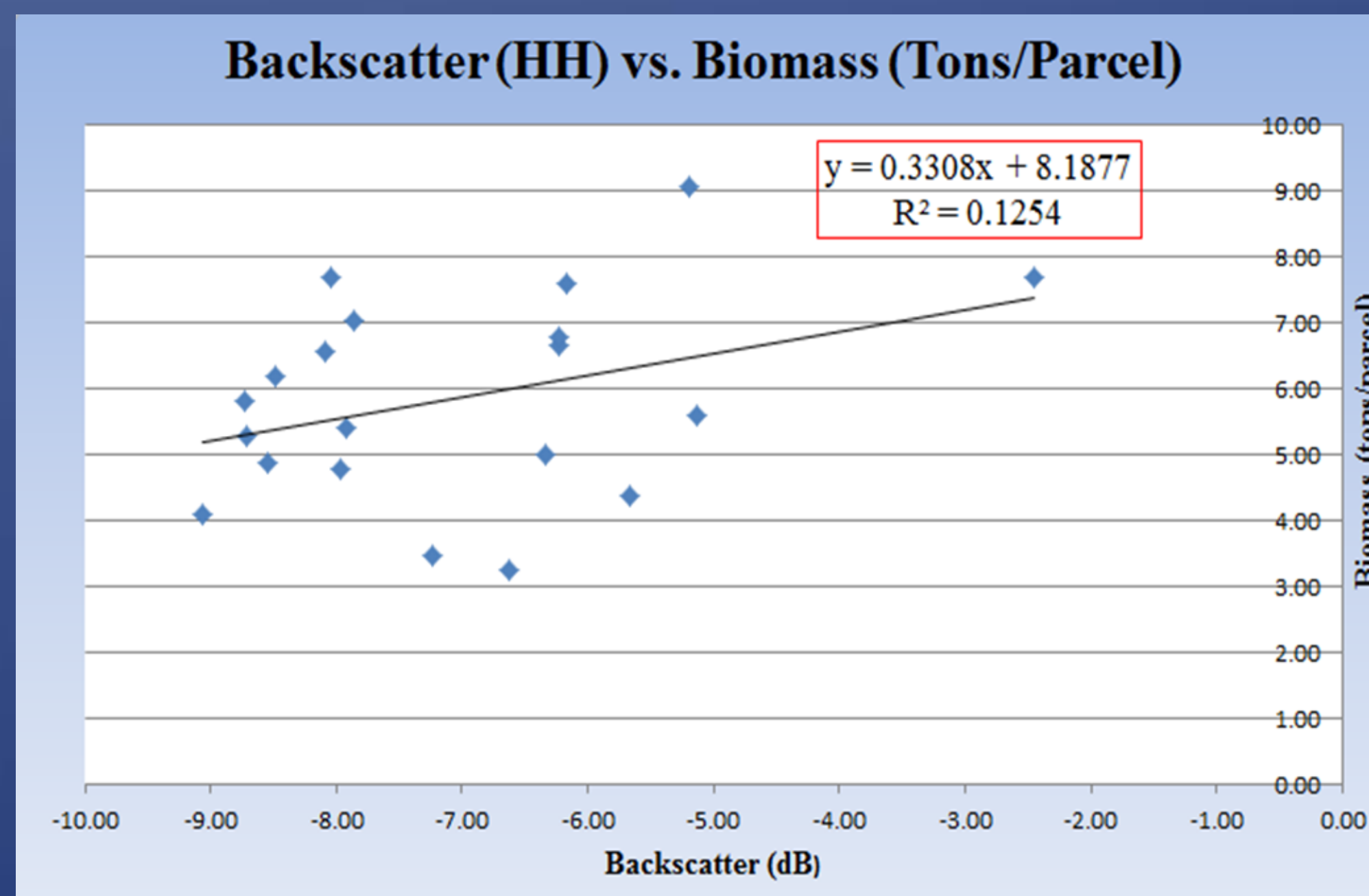
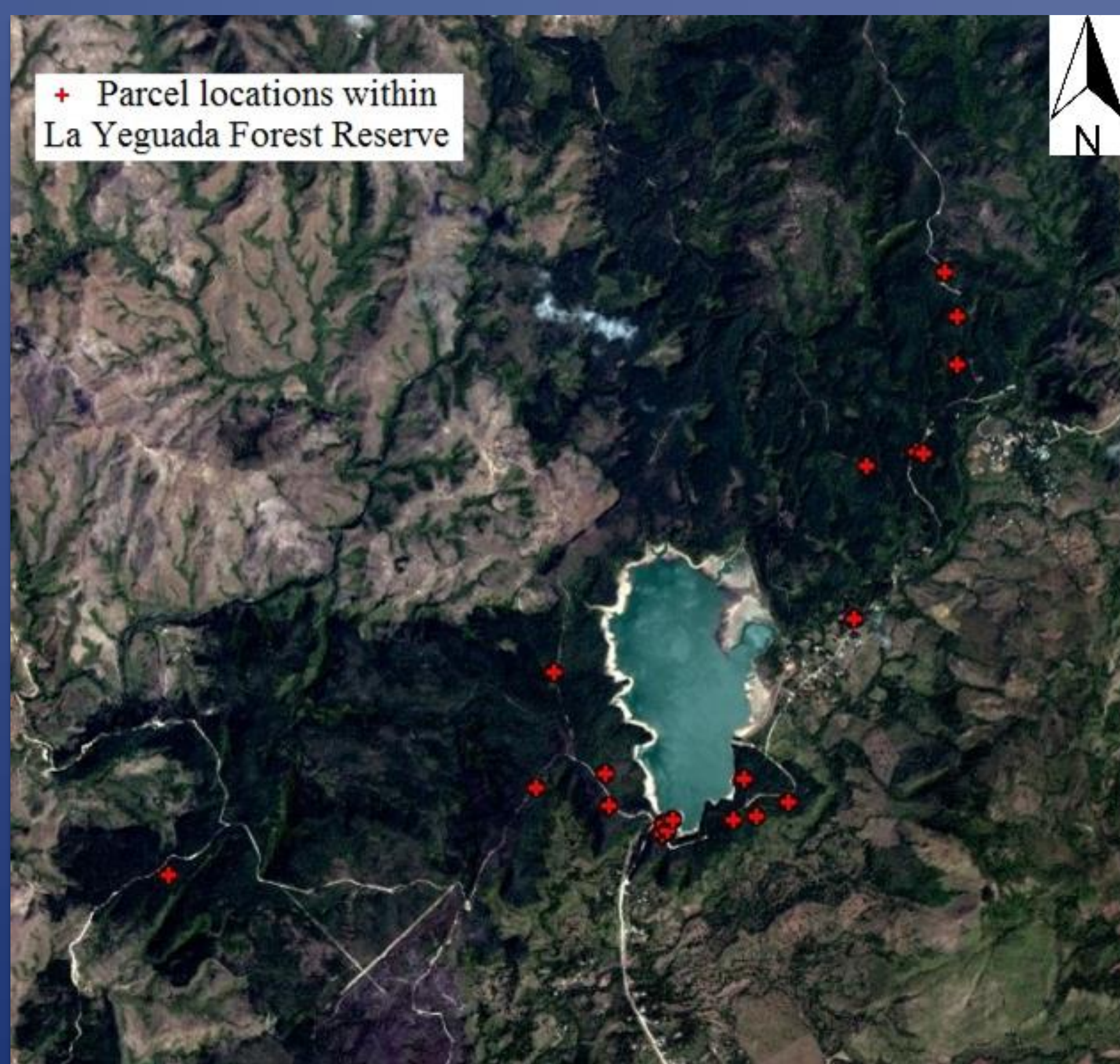
## Overview

The sequestration of carbon has become a key interest in Central and South American countries due to the vast amount of forested land in these regions. In order to place monetary value on carbon stocks there must be viable methods for estimating the amount of biomass of these areas. Traditional methods of estimating biomass are time consuming and costly. This project, conducted by a student research team from the Earth System Science department at UAH, looks at the feasibility of using ALOS PALSAR L- Band satellite imagery to estimate biomass of La Yeguada Forest Reserve, in Veraguas Province, Panama. Regression analysis was performed with HH and HV polarizations of backscatter and *in situ* biomass measurements expressed using  $Y(\text{kg}) = \exp\{-1.170+2.119*\ln(D)\}$ .



## Key Findings

L-Band ALOS PALSAR backscatter data provided a weak correlation with *in situ* biomass calculations of *pinus caribaea*. L-Band ALOS PALSAR backscatter is particularly susceptible to pixel saturation from excess environmental moisture and to interference from surrounding undergrowth. This relationship is displayed in the correlation graph with an  $R^2$  value of 0.1254 with respect to HH backscatter.



## Impact

This project helped to determine the effectiveness of using radar satellite imagery to measure carbon levels in tropical forests. This technique is important to mitigation efforts such as UN REDD+ which aim to prevent and reverse deforestation.



## Acknowledgements

Dr. Rob Griffin, Dr. Tom Sever, Dave Cook, CATHALAC staff, ANAM

## Explanation

- Highlights various strengths and weaknesses of Earth observation from space.
- Highlights potential areas of improvement for future satellite platform developments.