

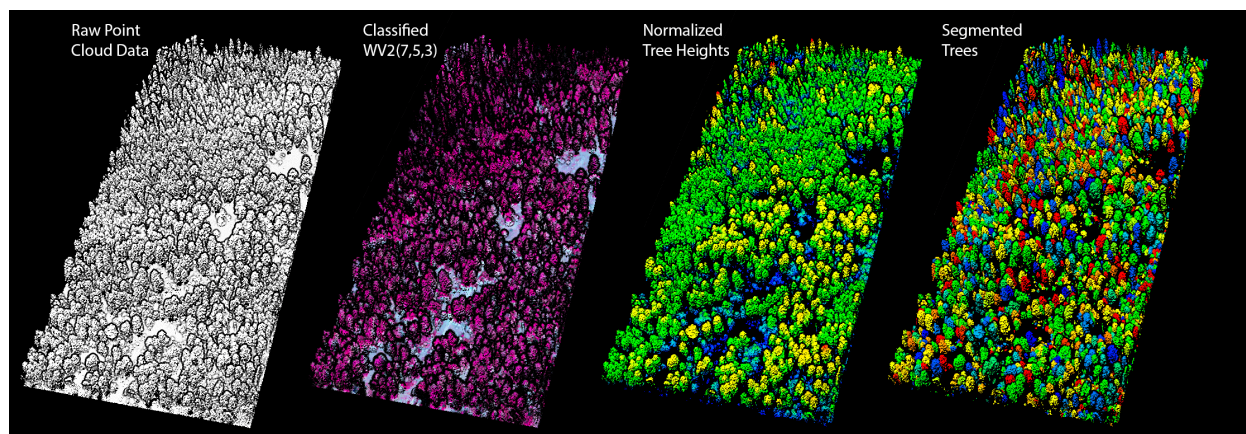


NORTHERN ARIZONA
UNIVERSITY

College of Engineering, Forestry & Natural Sciences

School of Forestry

Graduate Research Assistantship (PhD) Opportunity at Northern Arizona University in Flagstaff, AZ



Data Fusion for Forest Planning and Implementation: Ecological Restoration, Remote Sensing, and Data Analytics

Are you interested in a PhD program that will provide you an opportunity to work in the frequent fire forests of the American Southwest and influence ecological restoration practices? These forests are in dire need of restoration, mainly due to a century of fire exclusion and subsequent, undesirable changes in forest structure and function. For example, the largest collaborative forest restoration project in the US, the [Four Forest Restoration Initiative \(4FRI\)](#), has a goal of implementing restoration treatments on approximately 1M ha of U.S. Forest Service lands in northern Arizona. Fundamental to these efforts are precise data on the amount and distribution of available resources, knowledge of how resources may change over time, and hazard assessments (e.g., wildfire potential); all of which require costly and resource intensive, spatially explicit data. As a result, managers are using more remote sensing data products (e.g., [LiDAR](#)), coupled with advanced forest inventory and data analysis techniques, to quantify existing conditions and support broad-scale analysis of forest ecosystems.

A [PhD graduate research assistantship](#) is available in the [School of Forestry](#) at [Northern Arizona University, Flagstaff, AZ](#), focused on the development and assessment of data fusion techniques that will allow managers to better capitalize on major advancements in remote sensing to utilize more accurate data and enhance precision of landscape-scale analysis (e.g., >100,000 acres) project areas. Working alongside the [Ecological Restoration Institute](#), the [USDA Forest Service](#), [USDI Fish and Wildlife Service](#), [The Nature Conservancy](#), and [Campbell Global](#); the successful applicant will focus on developing and statistically validating an open source big data, remote sensing, and inventory data fusion platform. This platform will provide enhanced forest structural and compositional information in support of forest resource decision-making.

The selected student will:

1. Assess and statistically validate algorithms for identifying individual trees and species from remote sensing data of Southwestern forests using new and/or existing stem-mapped, area and tree based sample data.
2. Using these algorithms and data, design and implement a platform that integrates multiple data sources (data fusion) that are typically too large to analyze using traditional methods (big data) to provide detailed forest resource information at the tree-, stand-, and landscape levels.
3. Assess the accuracy, precision, and statistical properties of forest resource estimates such as bias, consistency, error, spatial uncertainty, and use these to provide improved information for land management decision making.
4. Apply the platform to Southwestern landscape-scale case studies to; quantify existing conditions, assess low-value biomass product availability, facilitate watershed treatment implementation, and monitor forest restoration treatments.

The position includes a full stipend, tuition waiver, health benefits and field support for four years.

Applications from quantitatively minded individuals with a practical approach to solving complex problems are welcome. Experience processing large remote sensing and inventory datasets using C++, R, and/or Python is preferred.

Qualifications:

- Master's degree in forestry, geography, ecology, computer science, or related fields.
- Demonstrable research experience, collaboration abilities, and English (written and oral) communication skills.
- Competitive GRE scores (top 40th percentile).

Information about NAU's graduate program, including eligibility requirements, is available at <http://nau.edu/CEFNS/Forestry/Degrees>

NAU's formal application deadline for Fall 2018 is Feb 15 2018 with a preferred start date of Summer 2018. However, interested candidates are encouraged to contact with Dr. Sanchez Meador as soon as possible using the information provided below or submit your CV, a brief written statement of interest, and copies of unofficial degree transcripts to initiate a dialog via e-mail. Andrew.SanchezMeador@nau.edu.

Contact Information:

[Dr. Andrew Sánchez Meador](mailto:Dr.Andrew.SanchezMeador@nau.edu)

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