

**Position:** Postdoctoral Researcher

**Project Title:** Improving National Forest Management Planning Using Forest Landscape Modelling

**Principal Investigator:** Professor Scott Markwith, Ph.D., Department of Geosciences, Florida Atlantic University, email: [smarkwit@fau.edu](mailto:smarkwit@fau.edu), URL: <https://geosciences.fau.edu/people/markwith.php>.

Ecological biogeographer with expertise in vegetation dynamics and disturbances, and spatial, statistical, and ecosystem modelling. He has led and collaborated on projects in National Forests in the southeastern and western US concerning climate change and the effects of wildfires on vegetation change and carbon stocks and fluxes.

**Co-Principal Investigator:** Research Ecologist Brian Sturtevant, Ph.D., Northern Research Station, US Forest Service, URL: <https://research.fs.usda.gov/about/people/sturtevant>

Research Ecologist with expertise in LANDIS-II modelling of land-use and management, vegetation dynamics, and disturbances. He has led and collaborated on projects in the northern and eastern US concerning climate change, pest outbreaks, and the effects of prescribed burning and species reintroductions on vegetation change and carbon stocks.

**Purpose:**

Forest landscape models can enable projections of potential futures in forested landscapes based on drivers and processes underlying forest dynamics, ultimately providing decision support for land managers based on the best available science. National Forest (NF) strategic planning has not taken advantage of the most complete and appropriate forest landscape modelling platform available, LANDIS-II ([www.landis-ii.org](http://www.landis-ii.org)), due to a historic reliance on state and transition models. The 2012 Planning Rule for NFs has changed the planning environment, putting a strong emphasis on ecosystem integrity and requires Forest plans to account for climate change, carbon, and provisioning of ecosystem services in addition to timber. LANDIS-II is ideally suited for such integrative strategic planning applications.

The proposed project is at the forefront of an effort to demonstrate to the USFS Planning Service Organization the utility and scientific justification for adoption of LANDIS-II and forest landscape modelling in general as a powerful tool for strategic planning for our nation's NFs. This project may result in the first incorporation of LANDIS-II results into a Forest Plan and could potentially result in agency acceptance of LANDIS-II for NF planning purposes. Such an outcome would improve the reliability and defensibility of NF Plan Revisions for decades to come. Additionally, this project will provide value for the broader scientific community, forest managers on other federal and state lands, and non-profit conservation organizations via publications and presentations at scientific conferences.

**Goal:**

Our goal is to work directly with USFS Eastern Planning Service Group (EPSG) staff, NF and Regional Office staff, and USFS R&D scientists to model and assess alternative real-world forest management strategies for their effects on forest resilience and ecosystem goods and services in the context of a changing climate to demonstrate the effectiveness of LANDIS-II as a decision-support tool for Forest planning, resulting in tool adoption by the USFS.

**Position Description:**

FAU Jumpstart Postdoctoral Program: Solving complex societal challenges increasingly requires multidisciplinary and team-based approaches. There is a pressing need to meet the demands of a growing human population while minimizing adverse impacts of habitat alteration, climate change,

invasive species, overexploitation, and pollution on human health and ecological systems. These problems operate at scales from molecules to ecosystems, and there is an urgent need to develop the science that can cross these scales to identify real-world solutions. As more and more of our approaches to science, as well as our daily activities, rely on digital and computer-based systems, issues related to the management, integration, interpretation and security of large amounts of data need to be integrated into much of this work.

The overall aim of the Charles E. Schmidt College of Science Jumpstart Postdoctoral Program is to stimulate synergistic interactions between faculty and postdoctoral associates interested in collaborating on multidisciplinary research that addresses societally relevant problems. Postdoctoral associates will be encouraged to participate in grant proposal development workshops and other professional development activities. While in residence, the postdoctoral associates will be expected to be visible members of the College of Science (COS) community, actively engaging with faculty, undergraduate and graduate students, and contributing to furthering our collaborative culture. FAU's Office of Postdoctoral Affairs supports faculty and their postdocs by offering career development, networking opportunities, and a sense of community to this group of scholars.

Applications should be submitted by teams consisting of one postdoctoral researcher and two advisors, at least one of whom must be a faculty member in the College of Science (COS). The other advisor(s) may be from a different department within COS, from any other College at FAU or from an entity external to the university (e.g., private company, government agency, NGO). Since an important aim of the program is to jumpstart the formation of new teams, the faculty advisors and/or postdoc should not have collaborated previously (as evidenced by jointly authored publications or grants).

Duties: The postdoctoral researcher will: 1) attend and participate in meetings with EPSG and USFS personnel concerning such topics as the Forest Plan alternative management strategies and parameters, model area delineation, and data availability and acquisition; 2) be responsible for LANDIS-II input data preparation and model parameterization and calibration; 3) run alternative simulation scenarios and analyze data output; 4) draft and submit manuscripts for publication as well as report and present findings to agency personnel and in public academic settings; and 5) draft and submit research proposals using LANDIS-II that dovetail with Forest unit planning processes.

Expected Start Date: Summer 2025

Timeframe: Funding for two years, contingent on positive evaluation at the end of the first year.

Salary and Benefits: Salary will be based on the NIH postdoc salary scale, dependent on number of years of Postdoc experience, URL: <https://www.niaid.nih.gov/grants-contracts/salary-cap-stipends>, plus benefits and \$5,000 per year for supplies and travel.

Requirements: PhD degree obtained by the time of appointment. Advanced degrees in Geoscience, Geography, Forestry, Ecology, Resource Management, Environmental Science, or any other relevant field. Experience with forest landscape modeling, specifically LANDIS-II, and record of publication and grant experience preferred. Prior collaborations, e.g., publication or grant funding, with the PI and Co-PI are not allowed under this Postdoc program, as the intention is to foster new collaborations.

Application: Please send a letter of interest, CV, and unofficial transcripts to Dr. Scott Markwith, email: [smarkwit@fau.edu](mailto:smarkwit@fau.edu). Applications will be reviewed on a rolling basis.