

Project 001



Machine-learning-empowered Dynamic Wildfire Risk Assessment for Supply Chain Management

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Cost Share Partner(s): Academic Year Salary

Objective:

This study develops an integrated, dynamic wildfire risk assessment tool for supply chain management that incorporates (near) real-time data through various machine learning (ML) and computer vision techniques.

Project Benefits:

This advanced tool will greatly improve the understanding of wildfire impacts on supply chain performance and provide a quantitative basis for risk-informed decisions on supply chain management, ultimately reducing wildfire-induced delays and costs.

Research Approach:

This tool integrates three sequential modules: wildfire simulation, vulnerability assessment, and supply chain analysis. To advance our understanding of the fire vulnerabilities of supply chain nodes and links, satellite images captured during historical wildfire events are used and analyzed using deep learning techniques. To improve computational efficiency and accuracy in dealing with dynamic data collected from multiple sources, a set of ML models is developed for wildfire ignition and growth modeling.

Major Accomplishments (to date):

In preparation for one journal paper

Future Work / Schedule:

The team will give a presentation about the use of satellite imagery in wildfire risk assessment at the NHERI SimCenter Symposium in February 2024. We will complete and finalize this study and submit a journal paper in April 2024.