ON THE ROAD TO NATIONAL MAPPING AND ATTRIBUTION OF THE PROCESSES UNDERLYING U.S. FOREST CHANGES

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Abstract—Questions regarding the impact of natural and anthropogenic forest change events (temporary and persisting) on energy, water and nutrient cycling, forest sustainability and resilience, and ecosystem services call for a full suite of information on the spatial and temporal trends of forest dynamics. Temporal and spatial patterns of change along with their magnitude and cause are all equally important when weaving together the full story of our forests' history. National statistical estimation and mapping of land use and cover changes have been progressing for decades. However, especially in the case of forest cover changes, attributing the magnitude and underlying causal processes to areas of change are newly developing endeavors. The NASA/NACP funded North American Forest Dynamics (NAFD) project has conducted nearly a decade of research in mapping U.S. forest dynamics using Landsat imagery. One part of this research is an empirical and rule-based modeling approach to attribute the casual processes underlying temporary forest changes from wind, fire, insects/stress, harvest and persisting change from land cover conversion. In this presentation we address model matters including the utility of using the outputs (temporal, spatial and magnitude) from multiple forest disturbance algorithms as predictors to reduce commission and omission among response classes, insufficient and imbalanced training data, model and map accuracy, as well as initial results from these maps of CONUS forest change causal processes over two and a half decades.

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