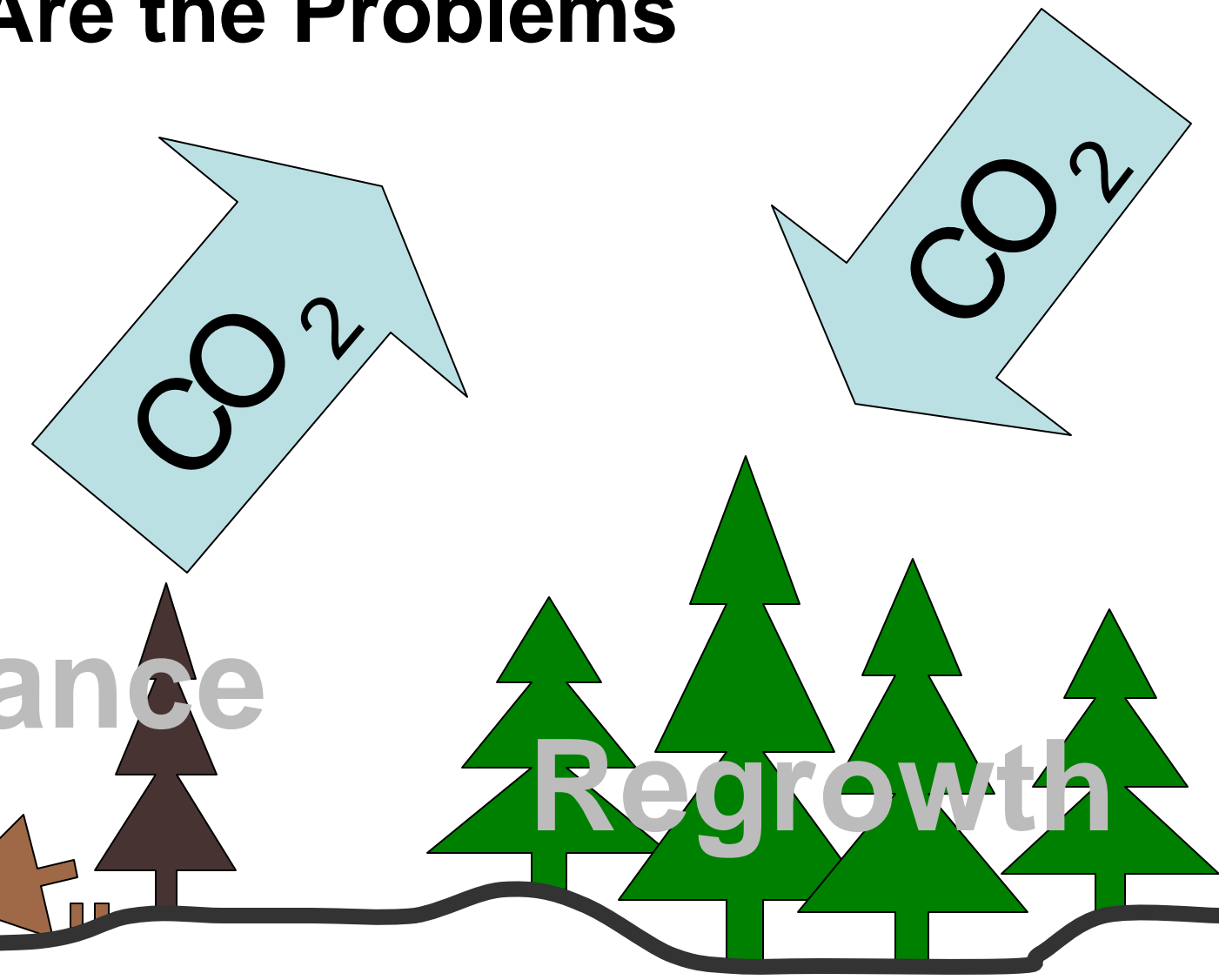
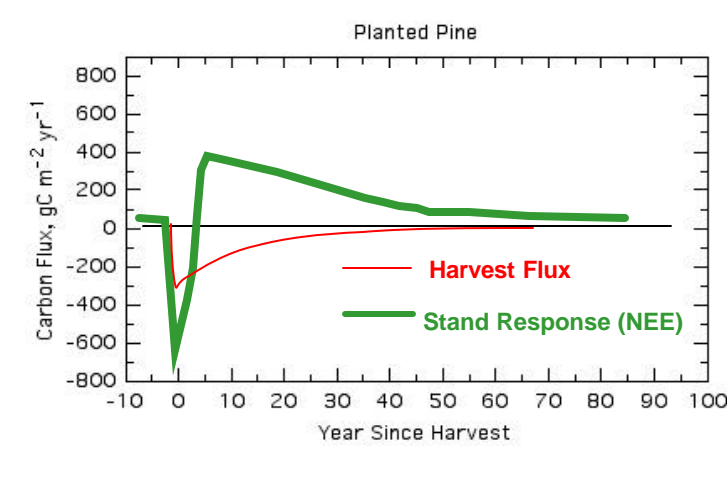


North American Forest Disturbance and Regrowth Since 1972:

Empirical Assessment with Field Measurements and Satellite Remotely Sensed Observations.
In Support of the Interagency North American Carbon Program (NACP)

What Are the Problems



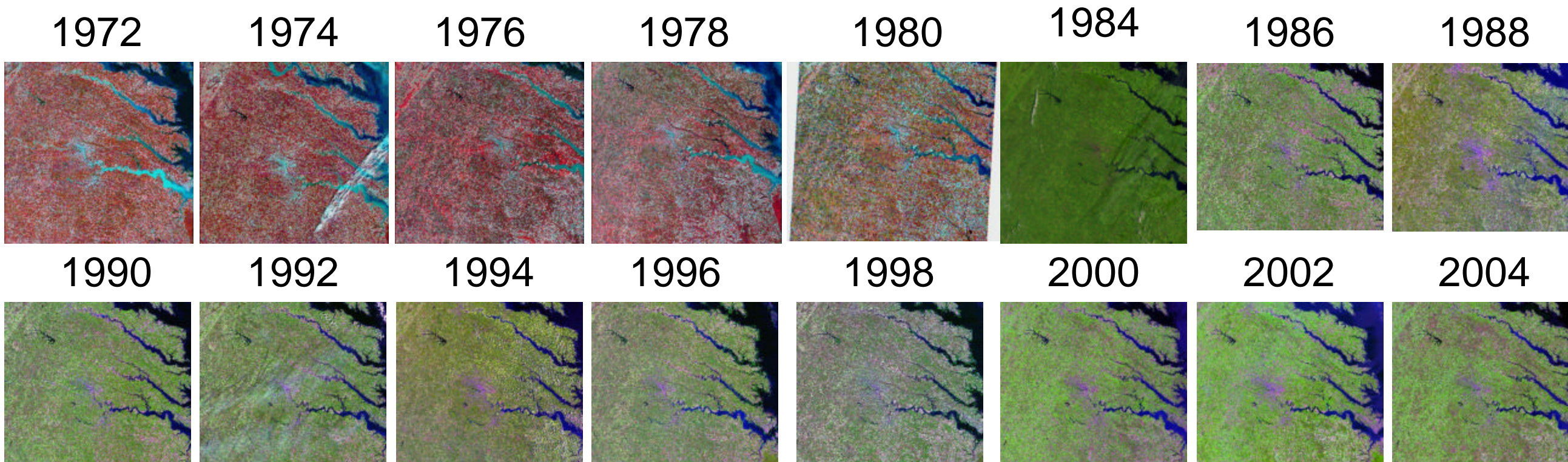
But, how much, where, and when?

Research Objectives

The primary NACP goal is to define contemporary trends in the carbon balance of the North American continent. This, in part, can be accomplished by documenting the recent history of forest disturbance and regrowth. We are combining analysis of US Forest Service field measurements and remotely sensed observations to achieve this goal. In this study we are evaluating:

- 30 + years of U.S (& Canada) disturbance regimes
- Successional regrowth in the US (& Canada) within each disturbance regime
- Transfer of these monitoring protocols to operational use in the USFS Forest Inventory and Analysis (FIA) program

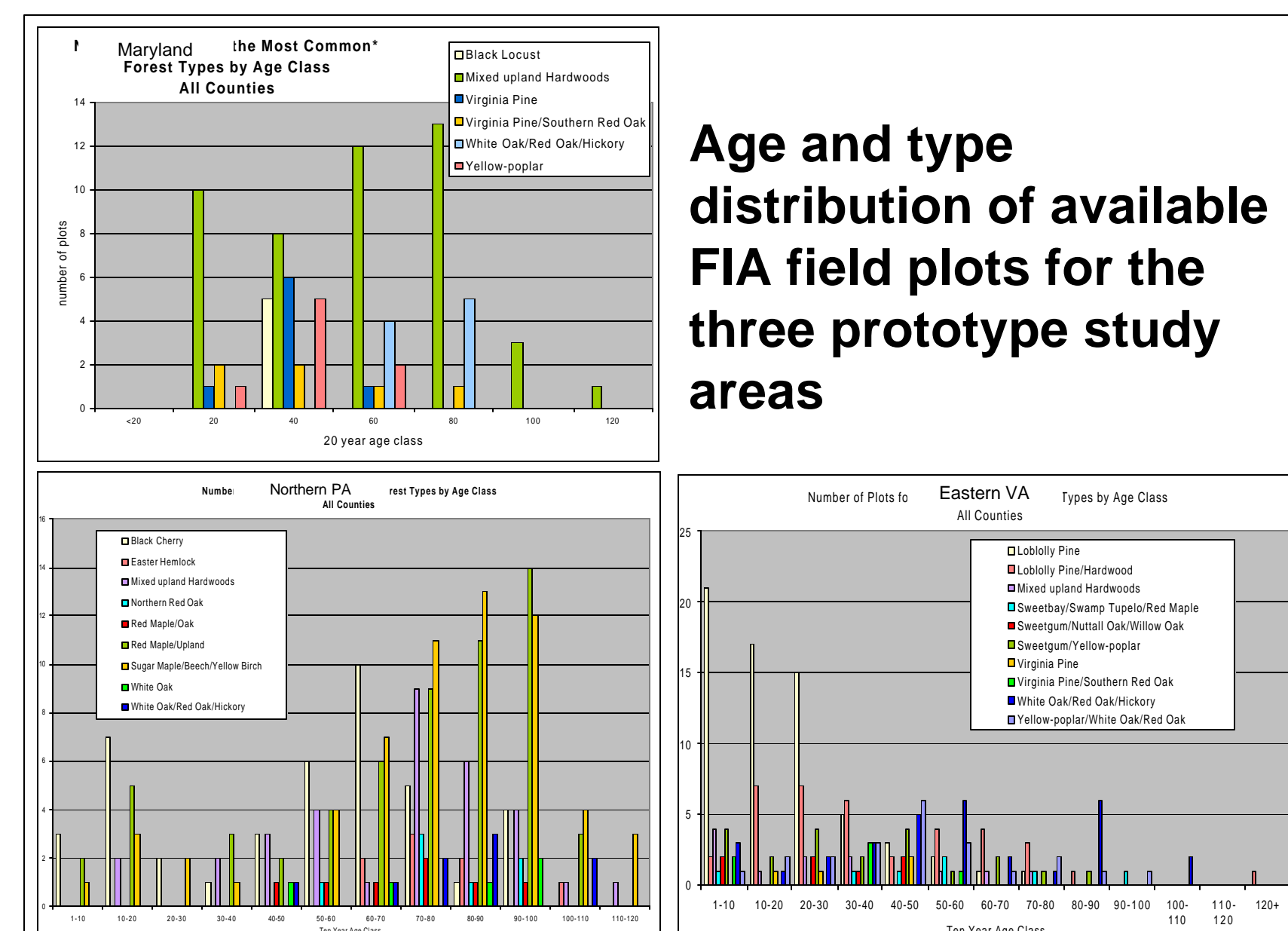
30+ Years of Landsat Observations



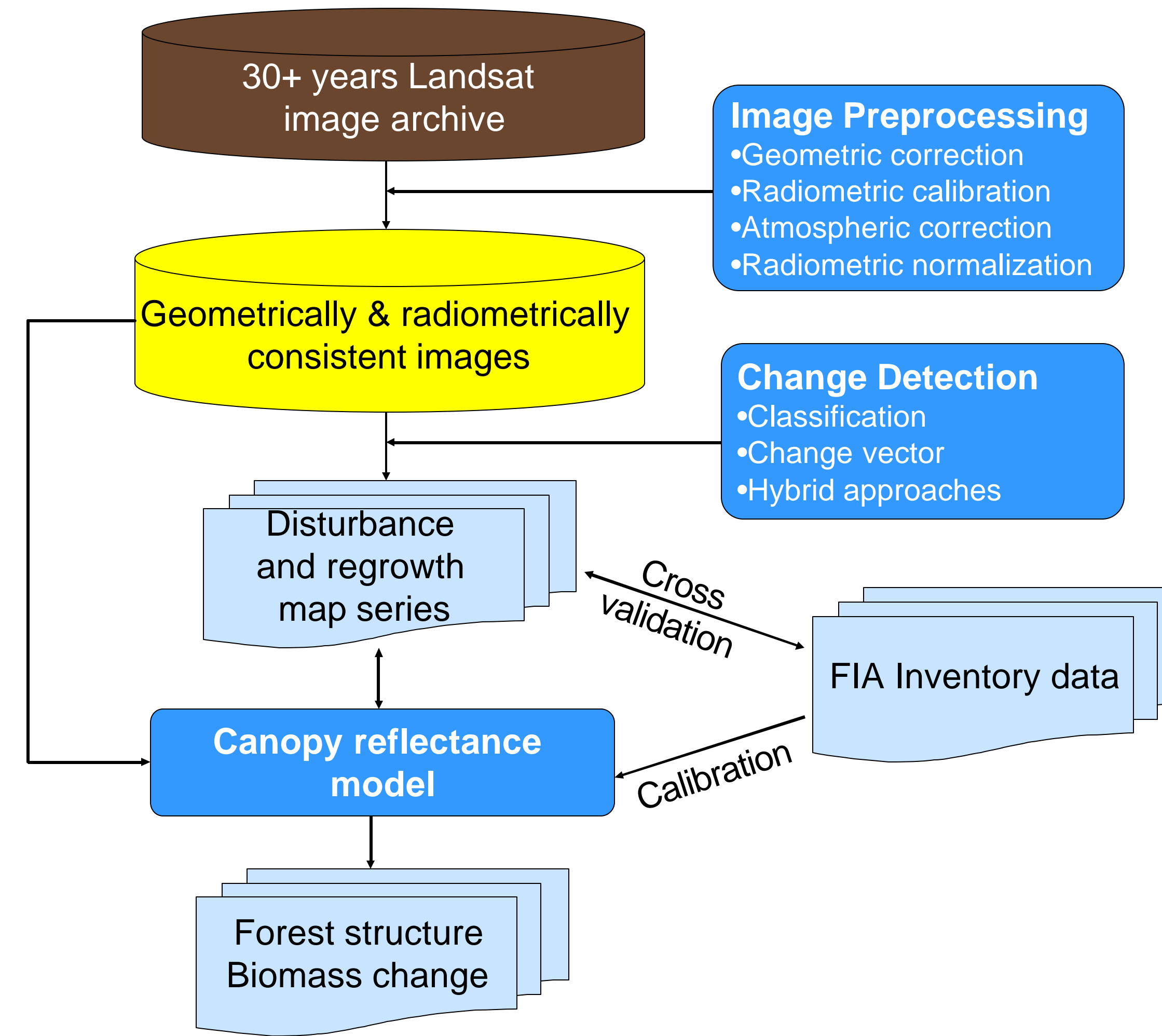
It often takes no more than 3 – 4 years before a major disturbance becomes obscured due to successional regrowth. In order to capture the major disturbances and establish the post-disturbance history, we propose to map disturbances on a bi-annual basis for selected scenes using the 30+ years of Landsat image archive.

FIA Field Inventory

FIA field data provide details on US forest conditions from plots distributed across all forests in the US. These data will be used to validate the disturbance regimes derived from the remotely sensed data as well as assist in evaluating and modeling the observed regrowth trajectories.

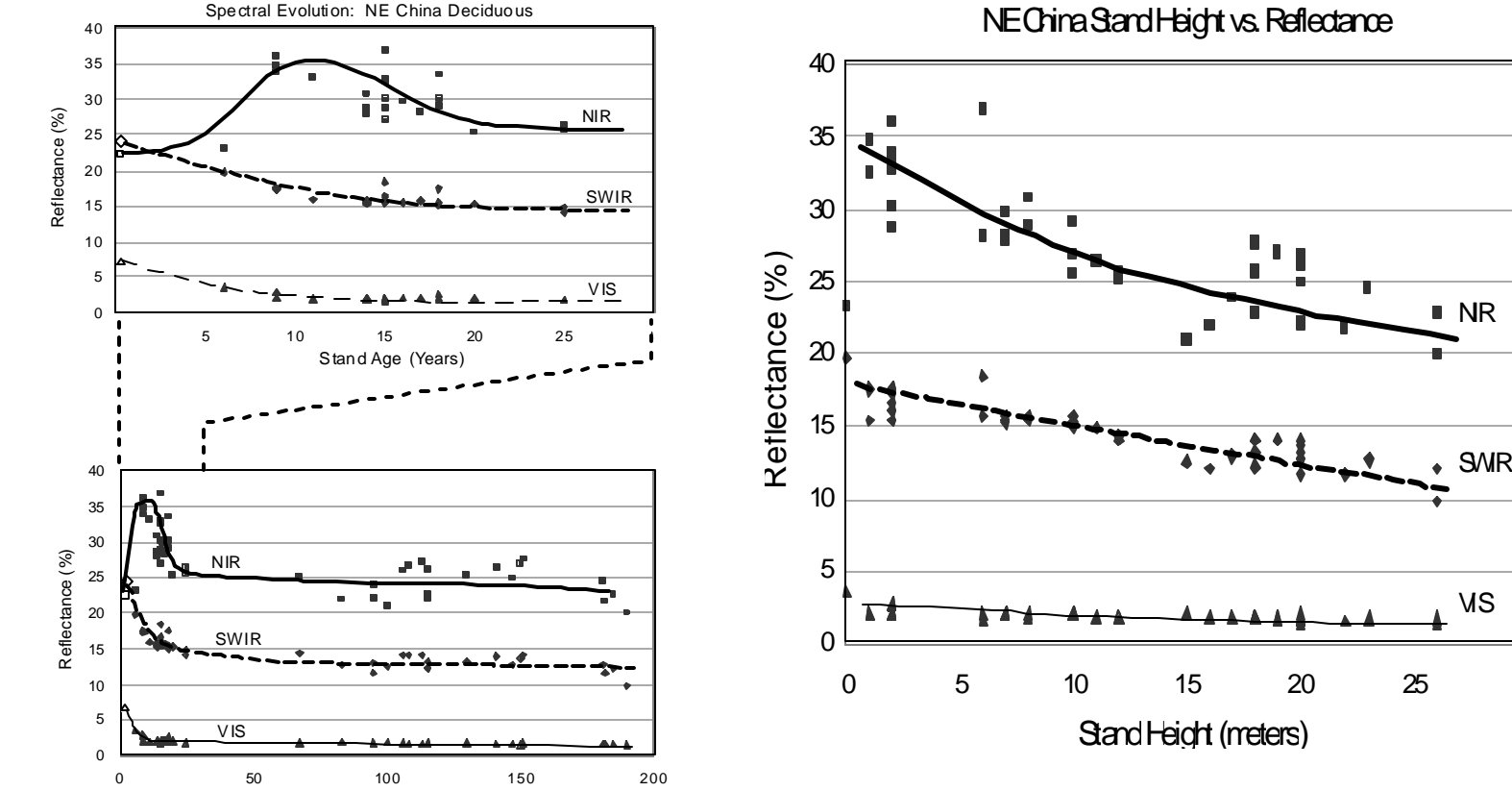


Processing Overview

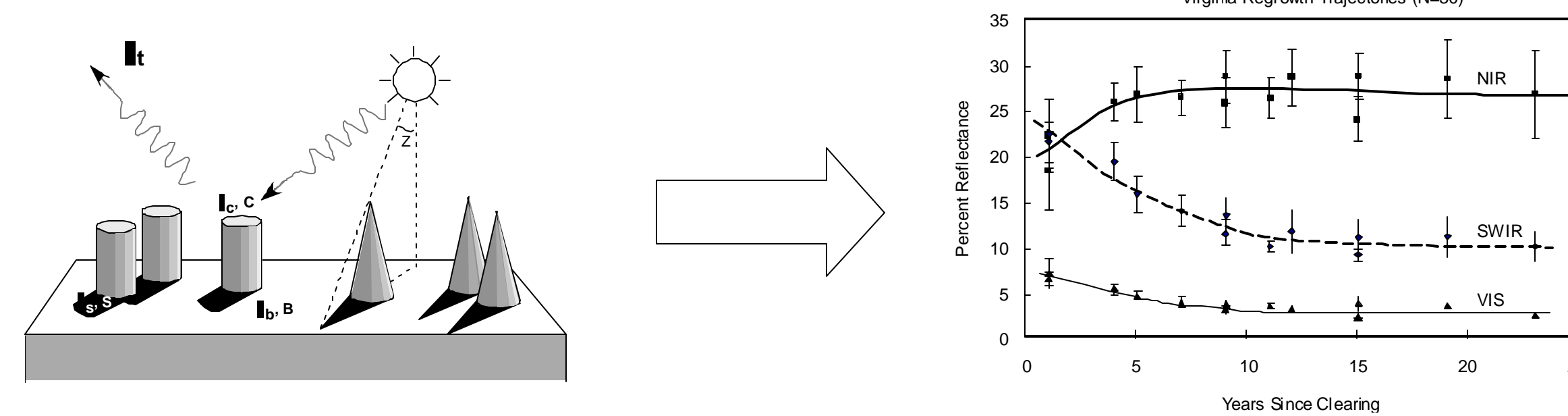


Forest Regrowth Modeling

Research has shown that forest regrowth can be remotely sensed with reflected solar measurements for at least 20 years after disturbance.

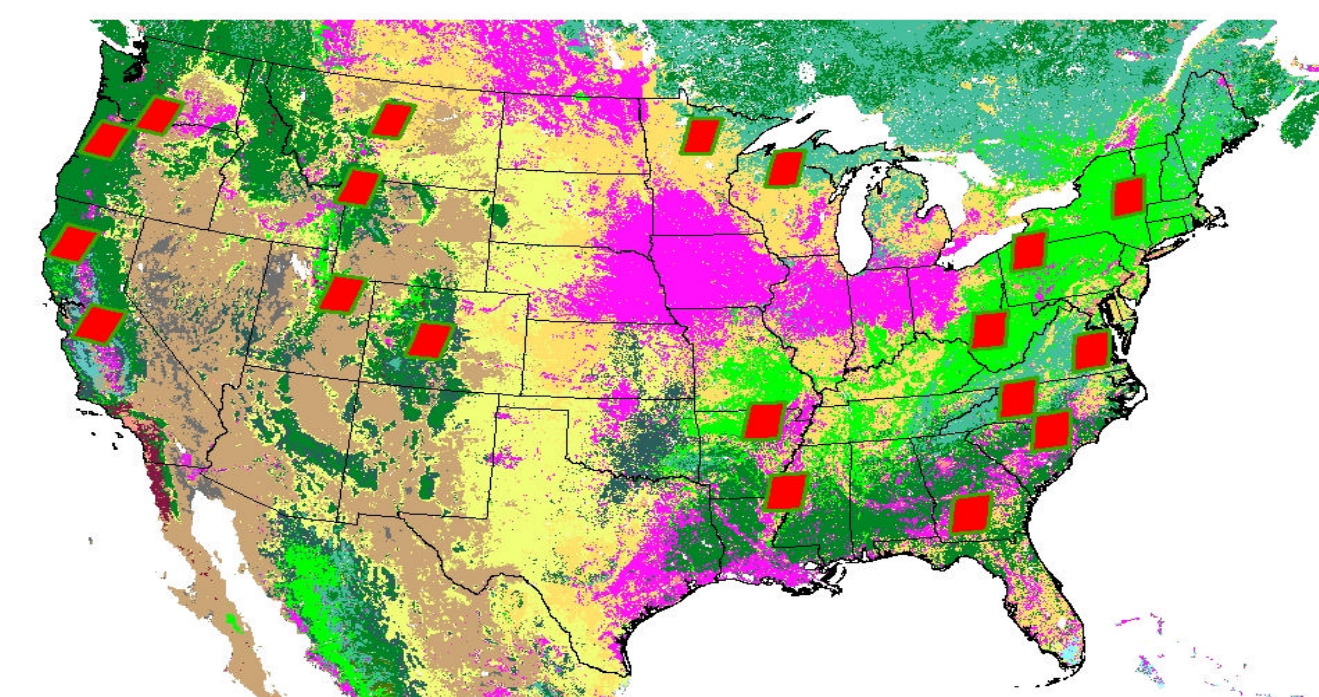


We will use the GeoSAIL model to simulate the impacts of various factors on forest regrowth and to cross validate the regrowth trajectories as observed from Landsat data.



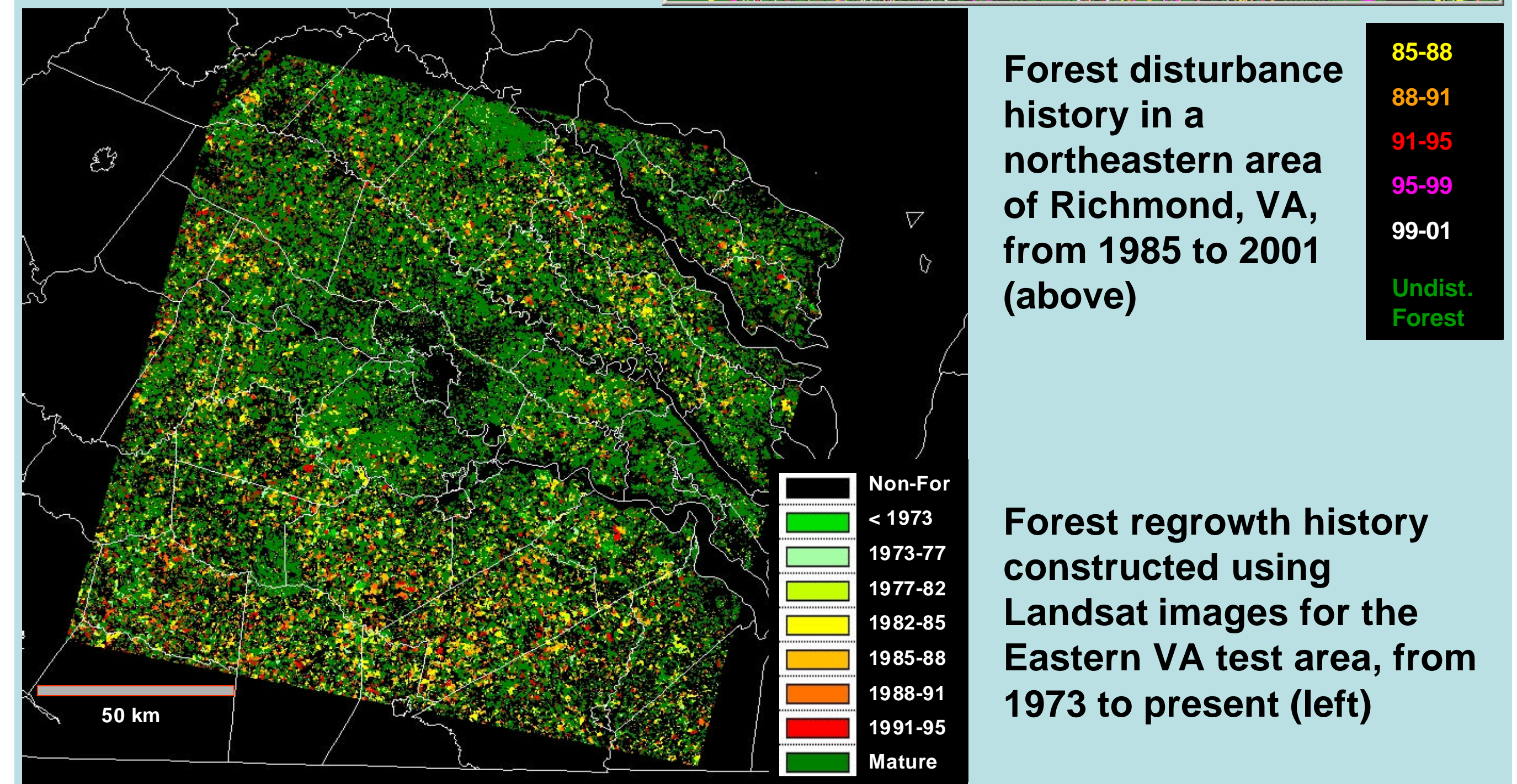
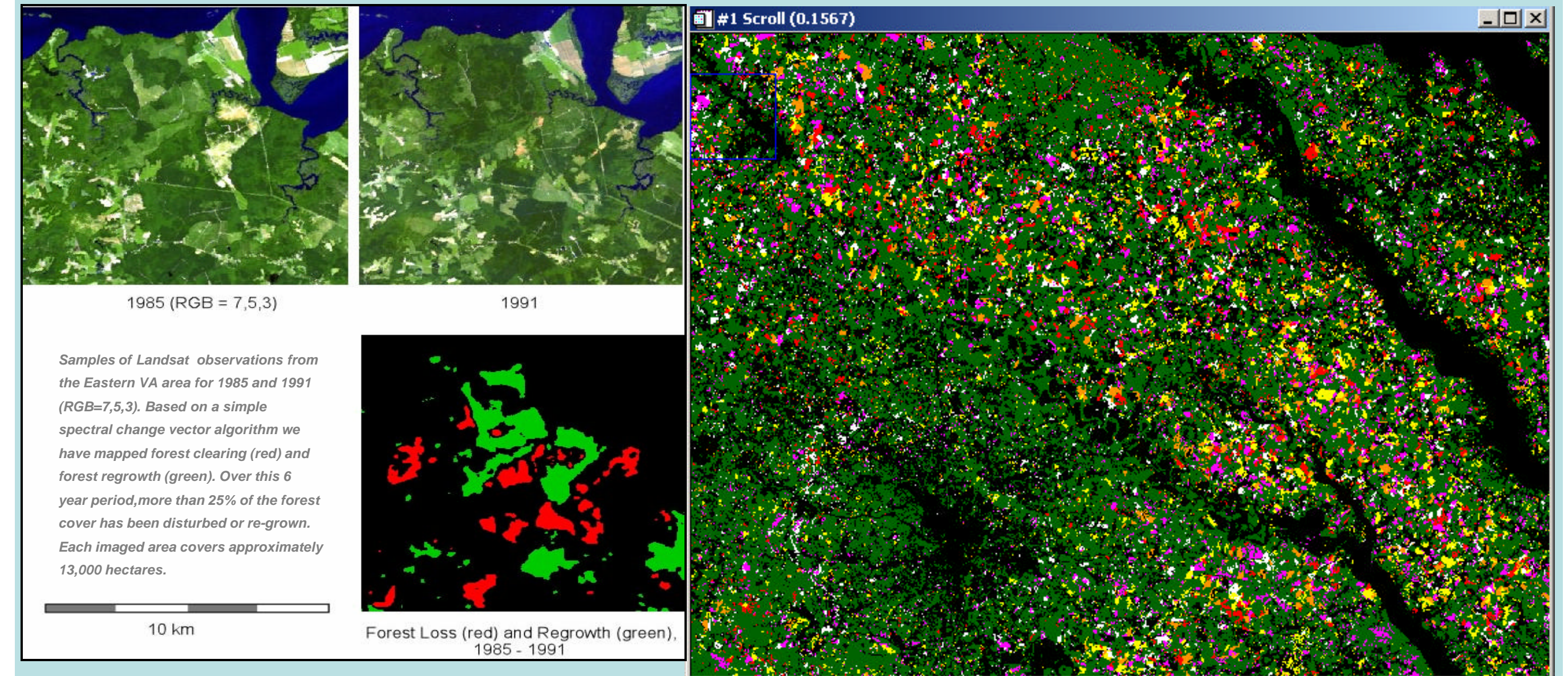
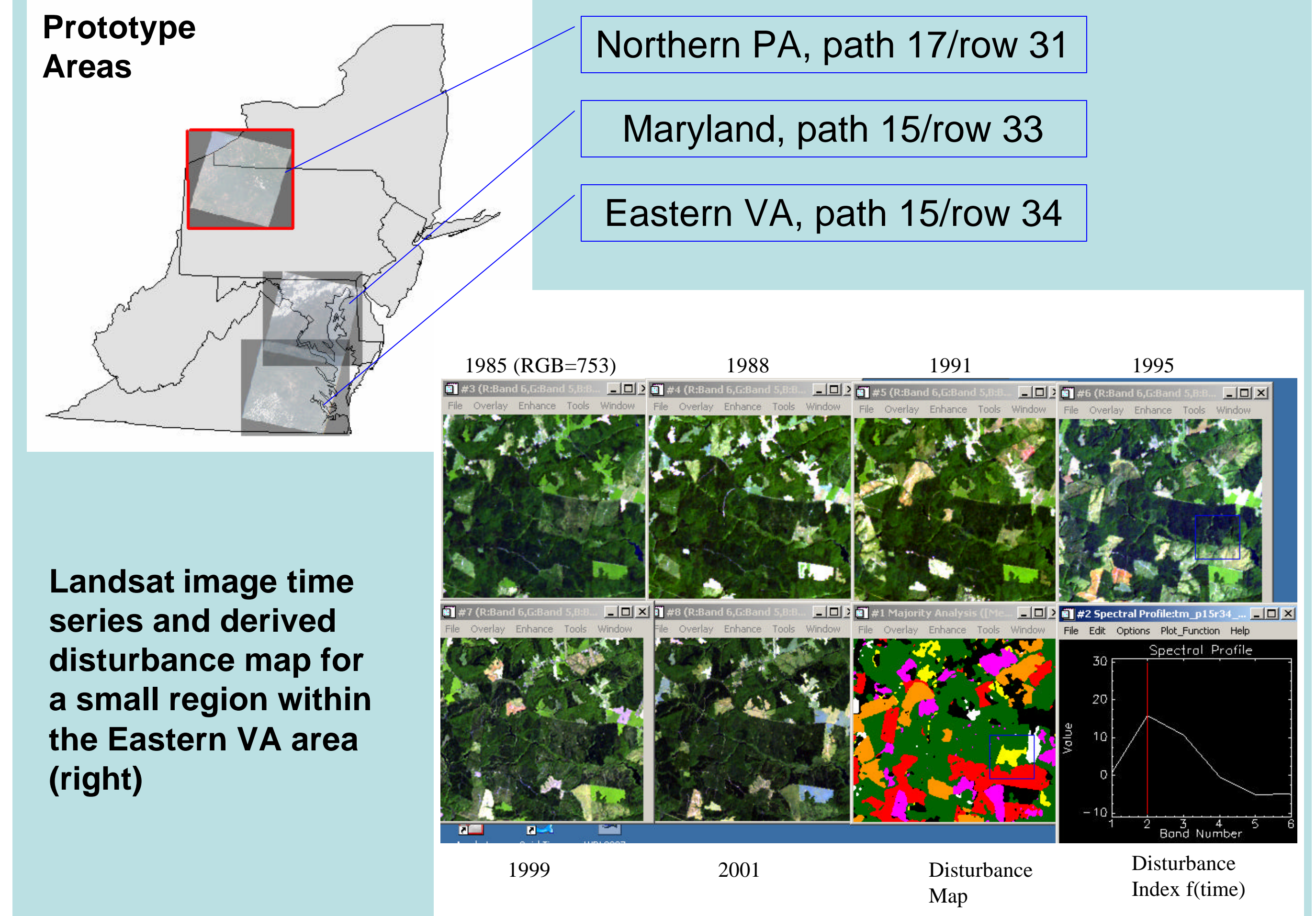
National Sampling Strategy

To achieve a statistically valid assessment of disturbance and regrowth, we will employ (a yet to be defined) stratified sample of Landsat scene locations in the coterminous US.



The stratification will consider factors such as known disturbance patterns, environmental factors and ecoregions. MODIS observations and decadal wall-to-wall Landsat (Geocover) data, in combination with DAYMET climate measurements will be employed to support the stratification.

Prototype studies



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