i-Tree Eco Workshop

Assessing the value of urban trees

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Overview:

- **i-Tree and Eco overview**
- **Phase I: Early decisions and objectives**
  - Creating a sample
  - Gathering general data
- **Phase II: Getting started with Eco software**
- **Phase III: Field data collection**
- **Phase IV: Running Eco**
  - Reporting results
  - Data interpretation and use
- **Considerations for international users**

What is i-Tree?

- **A suite of tools to assess urban vegetation and their ecosystem services and values**

i-Tree Eco = UFORE

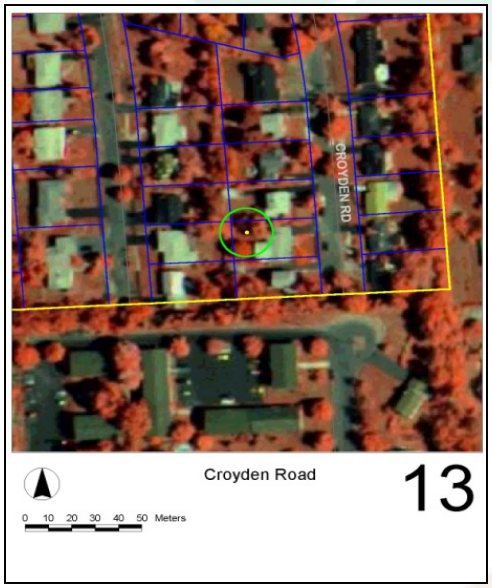
v. 3.0 programs

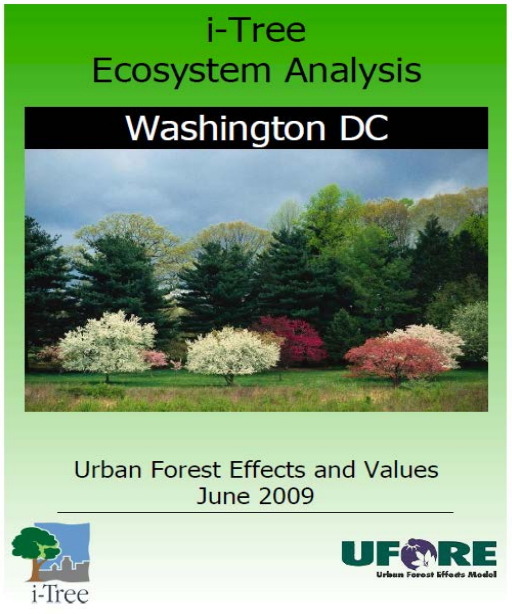
Public-Private Partnership

- USDA Forest Service
- Davey Tree Expert Co.
- National Arbor Day Foundation
- Society of Municipal Arborists
- International Society of Arboriculture
- Casey Trees

Goals

- Simple and low-cost tools and methods to aid in forest planning and management
- Complete process – start to finish





Assessing Tree Populations

i-Tree assesses:

- Structure
- Function
  - Energy use
  - Air pollution
  - Carbon
  - VOC emissions
- Value
- Management needs
  - Pest risk
  - Tree health
  - Exotic/invasive spp.

I. Tree Characteristics of the Urban Forest

The urban forest of Washington DC has an estimated 2,043,000 trees with a tree cover of 29.6 percent. Trees that have diameters less than 6-inches constitute 56.7 percent of the population. The three most common species are American beech (14.60 percent), Red maple (6.43 percent), and Boxelder (6.17 percent).

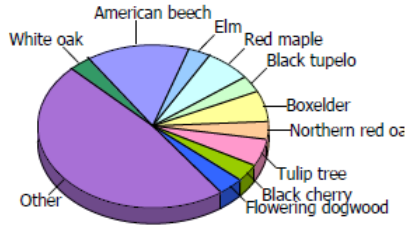


Figure 1. Tree species composition in Washington DC

Among the land use categories, the highest tree densities occur in Forest followed by Ag./Water/Wetla and Developed, open. The overall tree density in Washington DC is 128 trees / hectare (see Appendix III for comparable values from other cities).

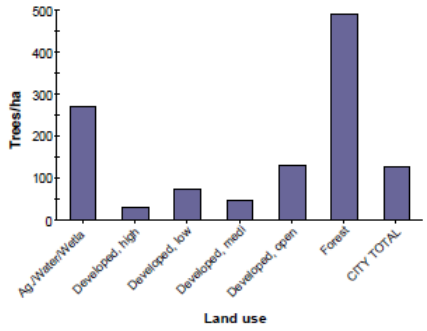


Figure 2. Number of trees/ha in Washington DC by land use

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The Foundation: Local Data

Local Sample or Inventory

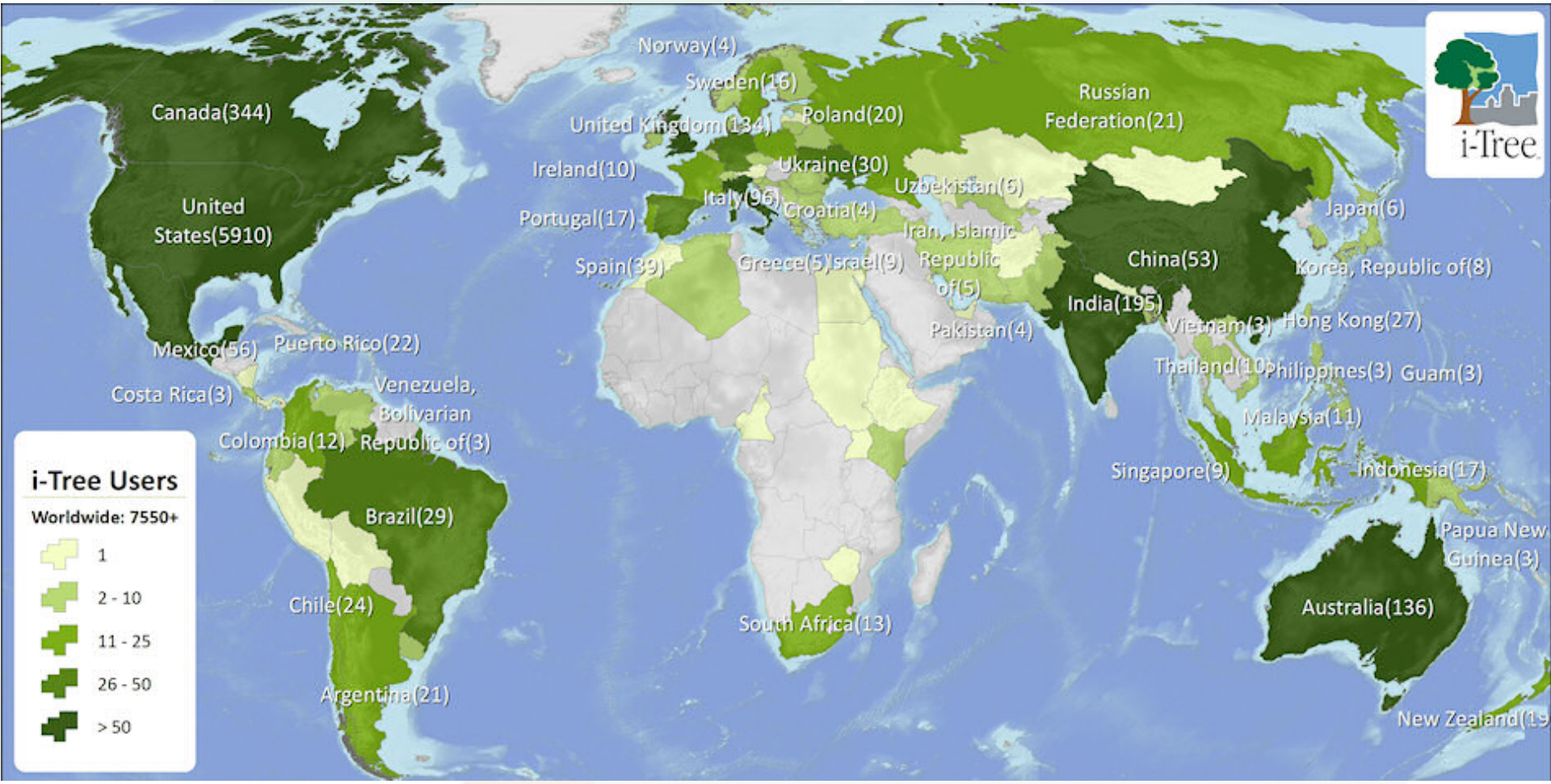
Local information:

- Weather
- Pollution
- Environmental variables

Hourly simulations

i-Tree Use

Program distribution increasing about 25% per year



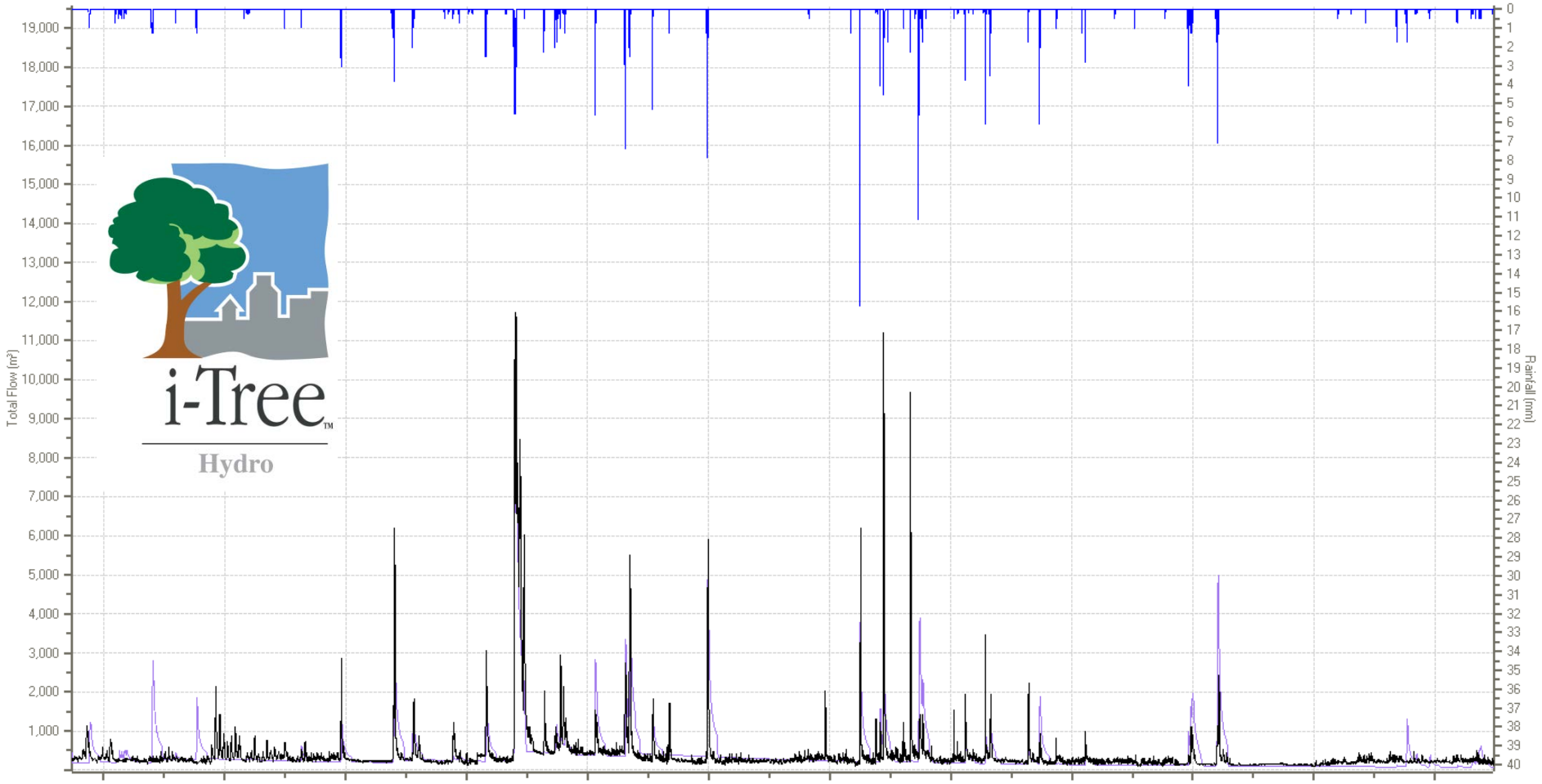
Distributed to over 90 countries

i-Tree Version 4.0

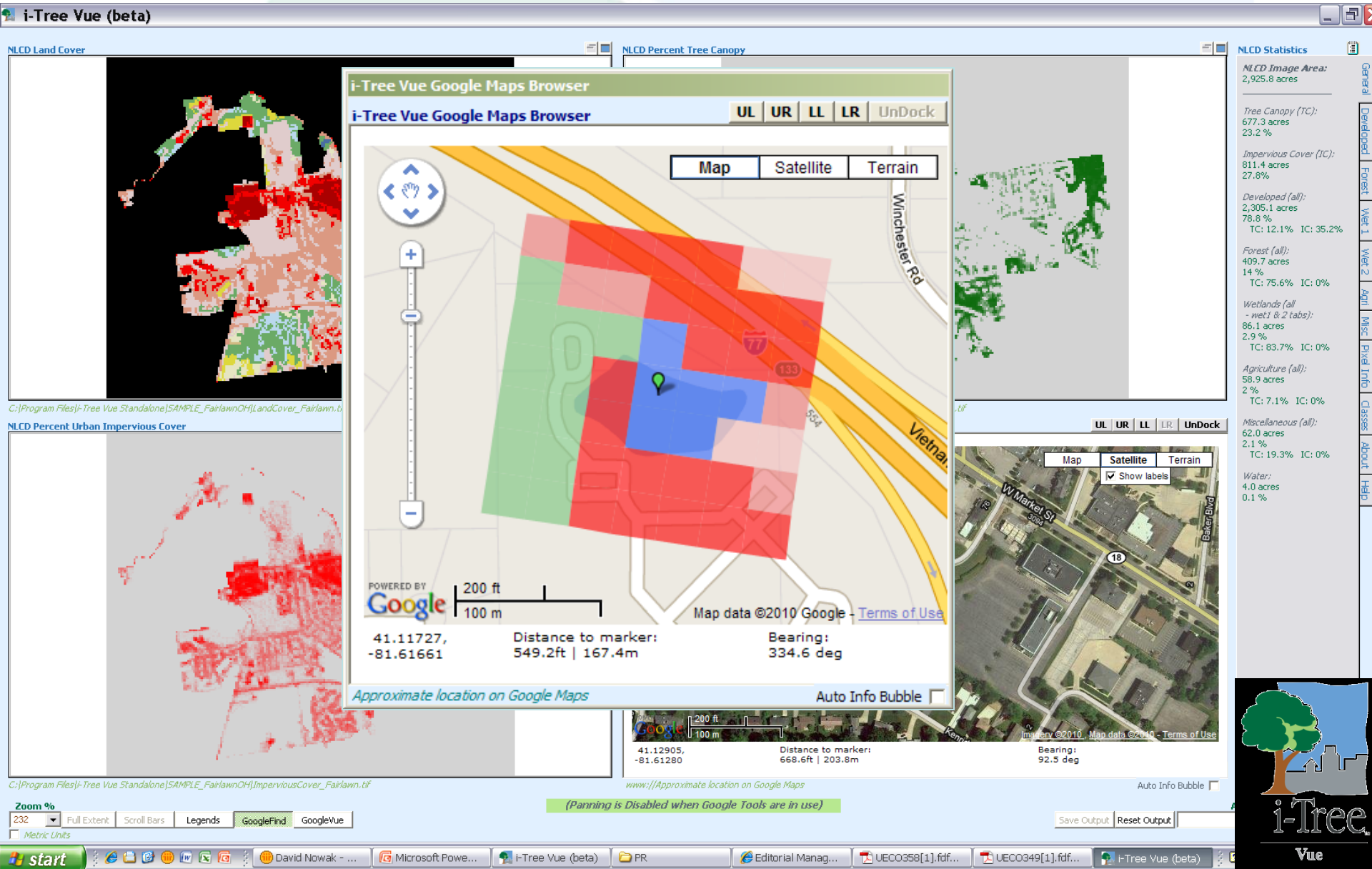
- **5 New or Enhanced Tools**

i-Tree-Hydro

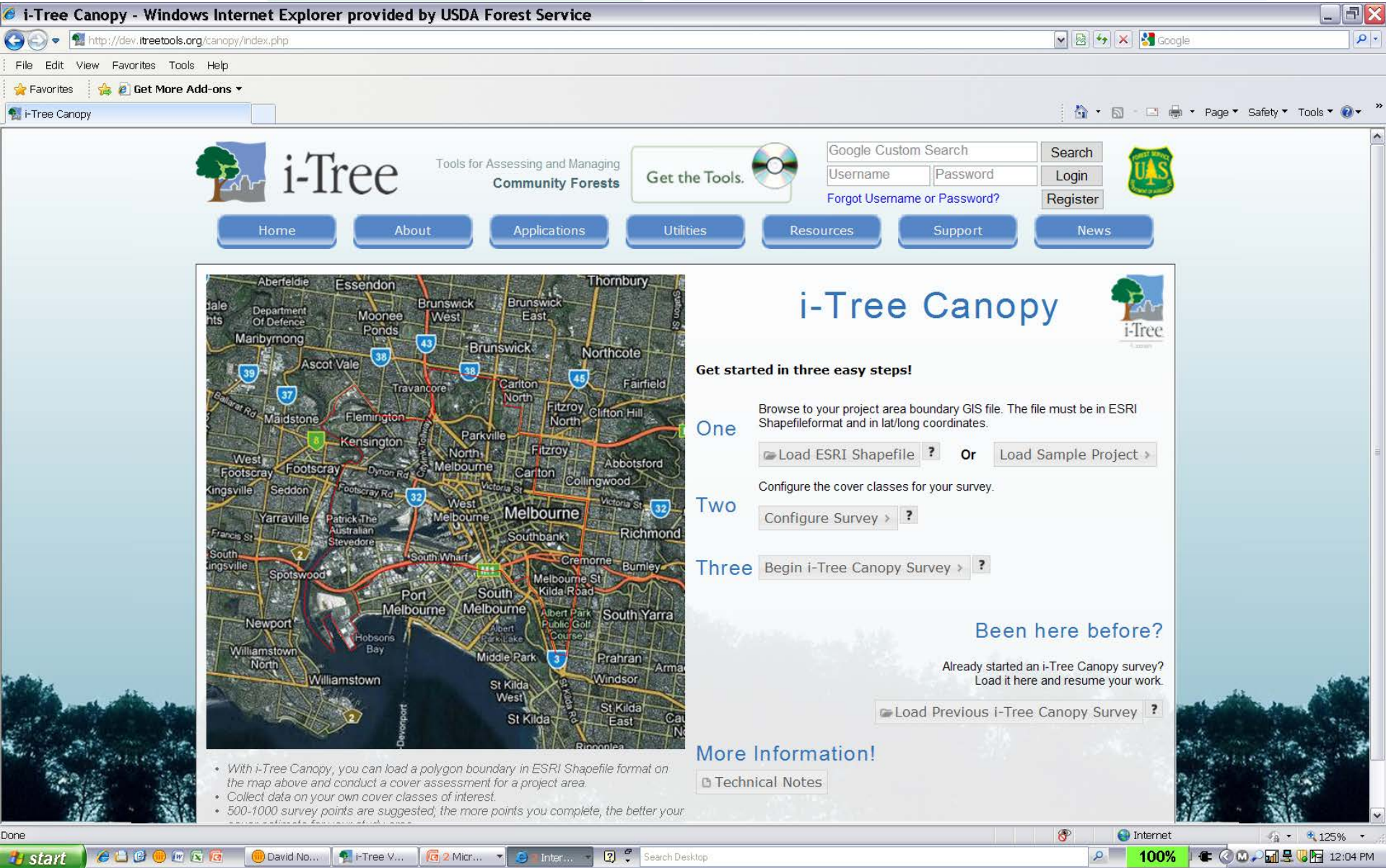
- Separate GIS program
- Calibrates against stream flow data



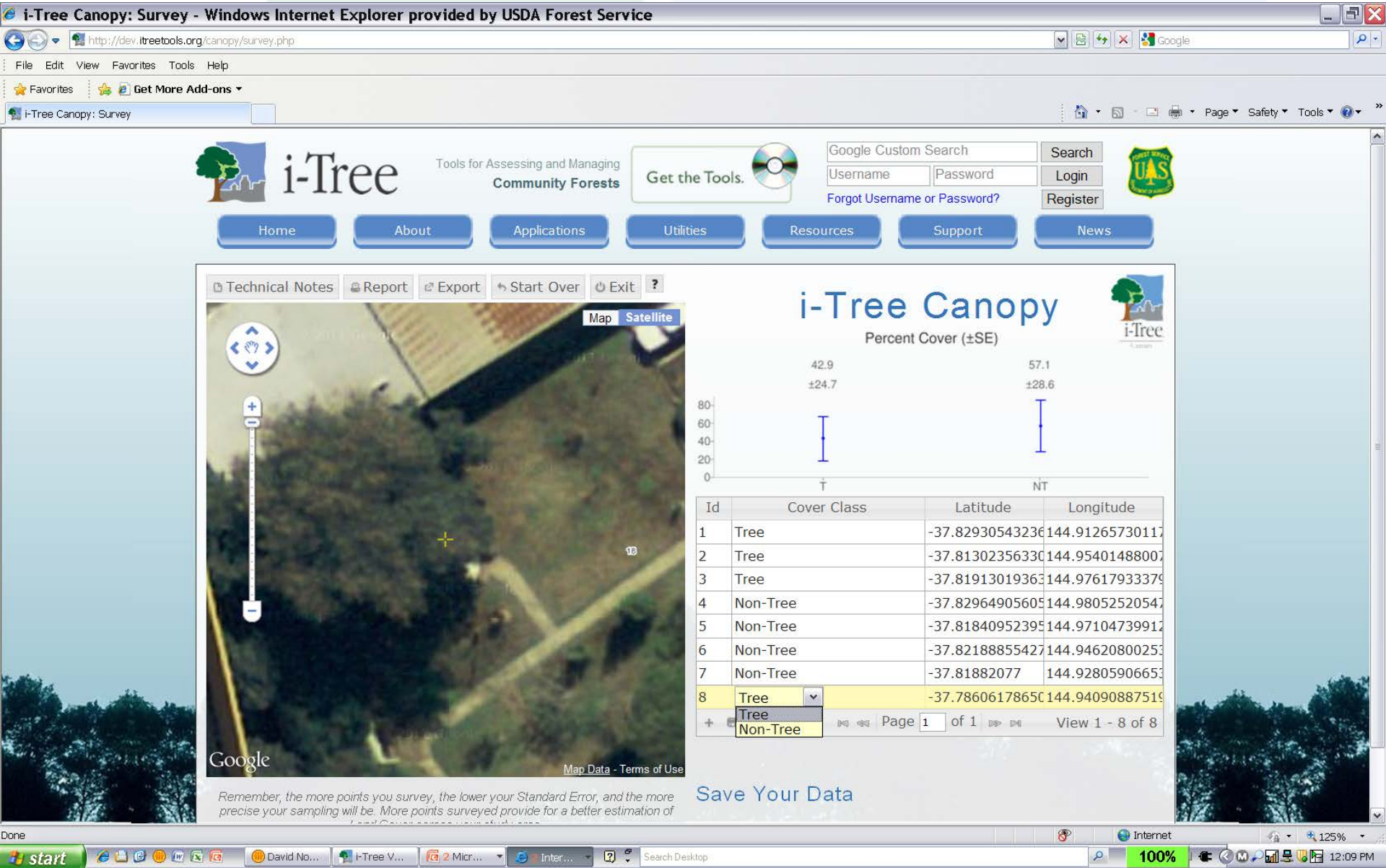
National Cover Maps and Google Maps



i-Tree Canopy

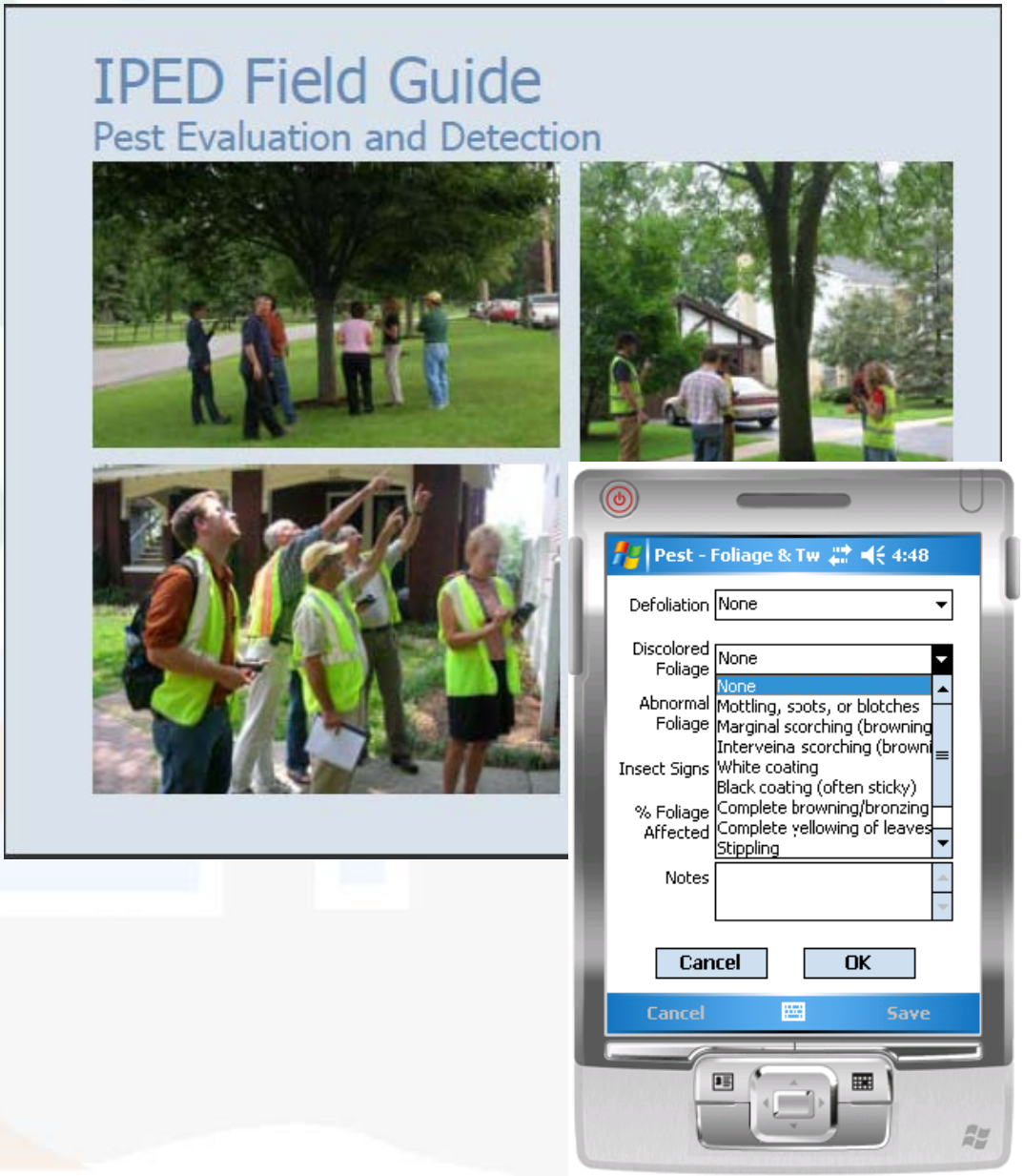


Classify random points



Pest Detection Protocol

- **Collect Pest & Disease**
  - Signs
  - Symptoms
- **Reports**
  - Associated pest & diseases
  - Trends/patterns



i-Tree Design

i-Tree

Tools for Assessing and Managing
Community Forests

Get the Tools.

Google Custom Search | Search
Username | Password | Login
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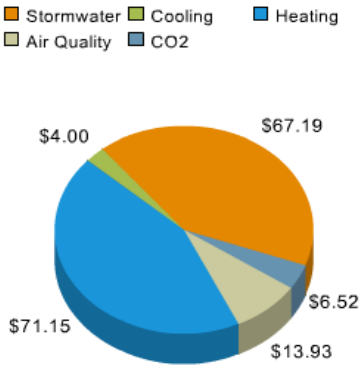
Home | About | Applications | Utilities | Resources | Support | News

i-Tree Benefit Calculator

1500 N Mantua St, Kent, OH 44240, USA

Home
Calculate another tree

Overall Benefit | Storm Water | Energy | Air Quality | CO2 | About Model



Breakdown of your tree's benefits

Click on one of the tabs above for more detail

This 21 inch Northern pin oak provides overall benefits of: $163 every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be considered initial approximations-a general accounting of the benefits produced by urban street-side plantings.

Benefits of trees do not account for the costs associated with trees' long-term care and maintenance.

If this tree is cared for and grows to 26 inches, it will provide $195 in annual benefits.

Northern pin oak
Quercus ellipsoidalis

Upcoming i-Tree Features

- **Projections of tree pop. and canopy cover**
- **Enhanced differentiation by species**
- **Invasive plant composition / risk**
- **New pest ratings (pests and range)**
- **Climate change projections**
- **GIS server and mobile apps**
- **Projected development patterns**
- **Priority planting and protection maps**
  - Temperature, pollution, eco. services, etc.

i-Tree 2nd Generation (3 Flagship Programs)

On-line Mapping tools

i-Tree Design

Google Maps

Local Scale

i-Tree Eco

Field Data

Growth / Mortality / Influx rates

Land / Tree Cover Maps

Projected Development

i-Tree Landscape

Digital Cover Maps

Regional Scale

International Considerations: Updating data bases

- **Field Data**
- **Species Data**
  - New species – botanical info, shading coeff., range, dec/evergreen, growth rate (S,M,F), height, life span (S,M,L)
- **Location Data**
  - New city – lat/long, elevation, time zone, leaf on/off dates, albedo and terrain factors
- **Weather Data**
- **Pollution Data**
  - Hourly concentration in proper format

International Considerations: Updating program information

- **Carbon**
  - Biomass formulas, growth rates
- **Air Pollution**
- **VOC emissions**
- **Energy**
  - Will not work outside U.S.
- **Valuation**
  - CTLA formula – spp factors, base values
  - Local carbon and pollution values ($/t)