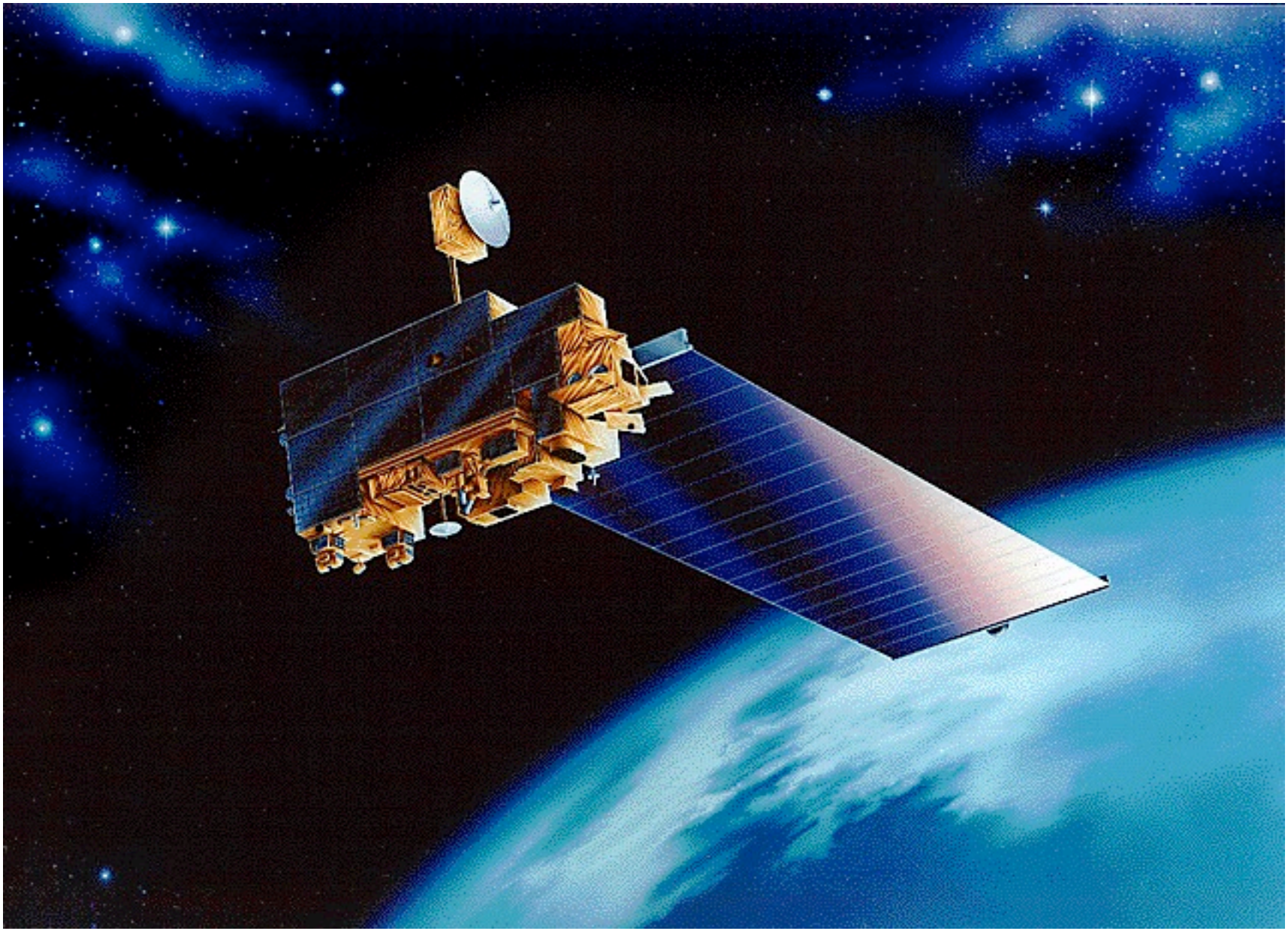
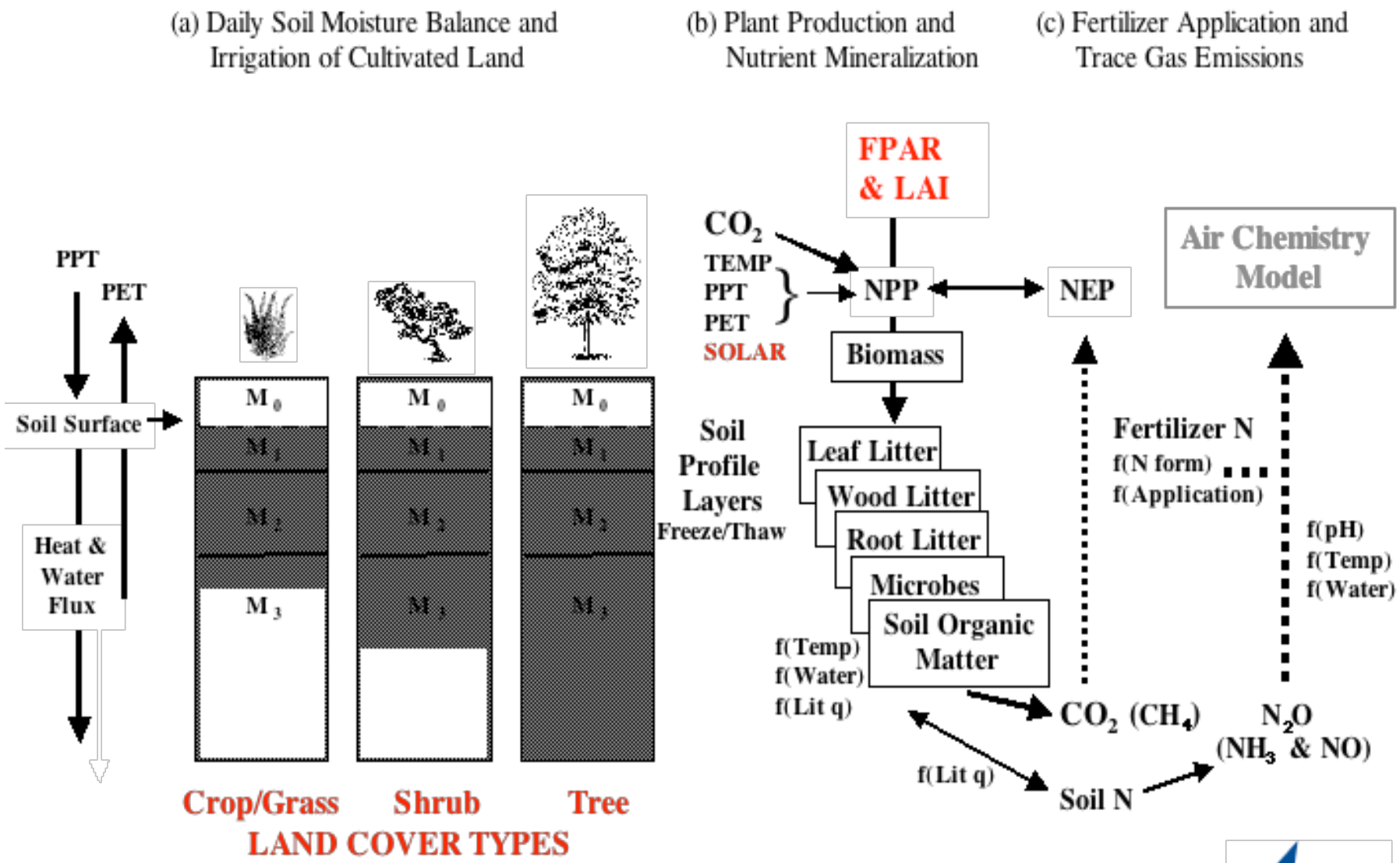
NASA *Terra* Satellite with MODIS

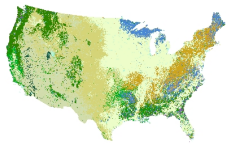


NASA-CASA Simulation Model

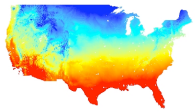
Satellite Product Inputs



NASA / NGA SRTM Elevation



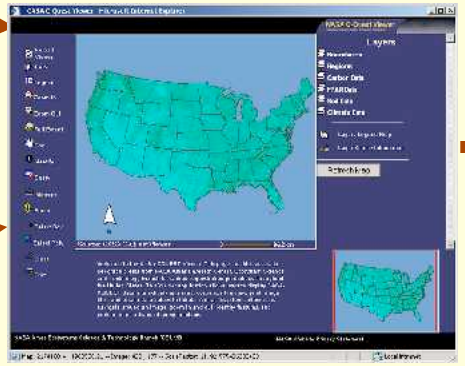
NASA MODIS Products



VEMAP & Daymet (UMT) Climate data

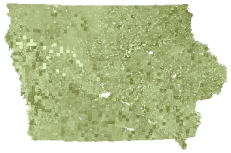
Inputs include continental-scale land cover, NDVI, FPAR, elevation, soils, and climate data …

CASA CQUEST – A Decision Support System for Carbon Accounting



User Defined Profile
Region of Interest
Time Frame
Biophysical
Management
Climate Scenario

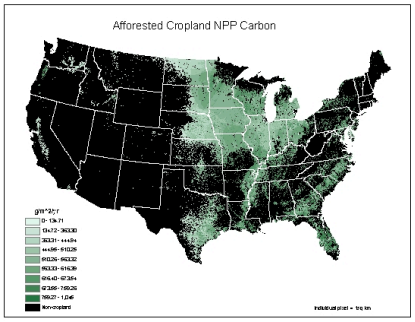
Leaf Biomass



Cropland NPP

Outputs: landscape-to continental scale predictive maps of above and below ground distributions of sequestered carbon for different climate scenarios

Carbon Sequestration Predictions



Cropland Afforestation Prediction

USFS Forest Inventory and Analysis Data

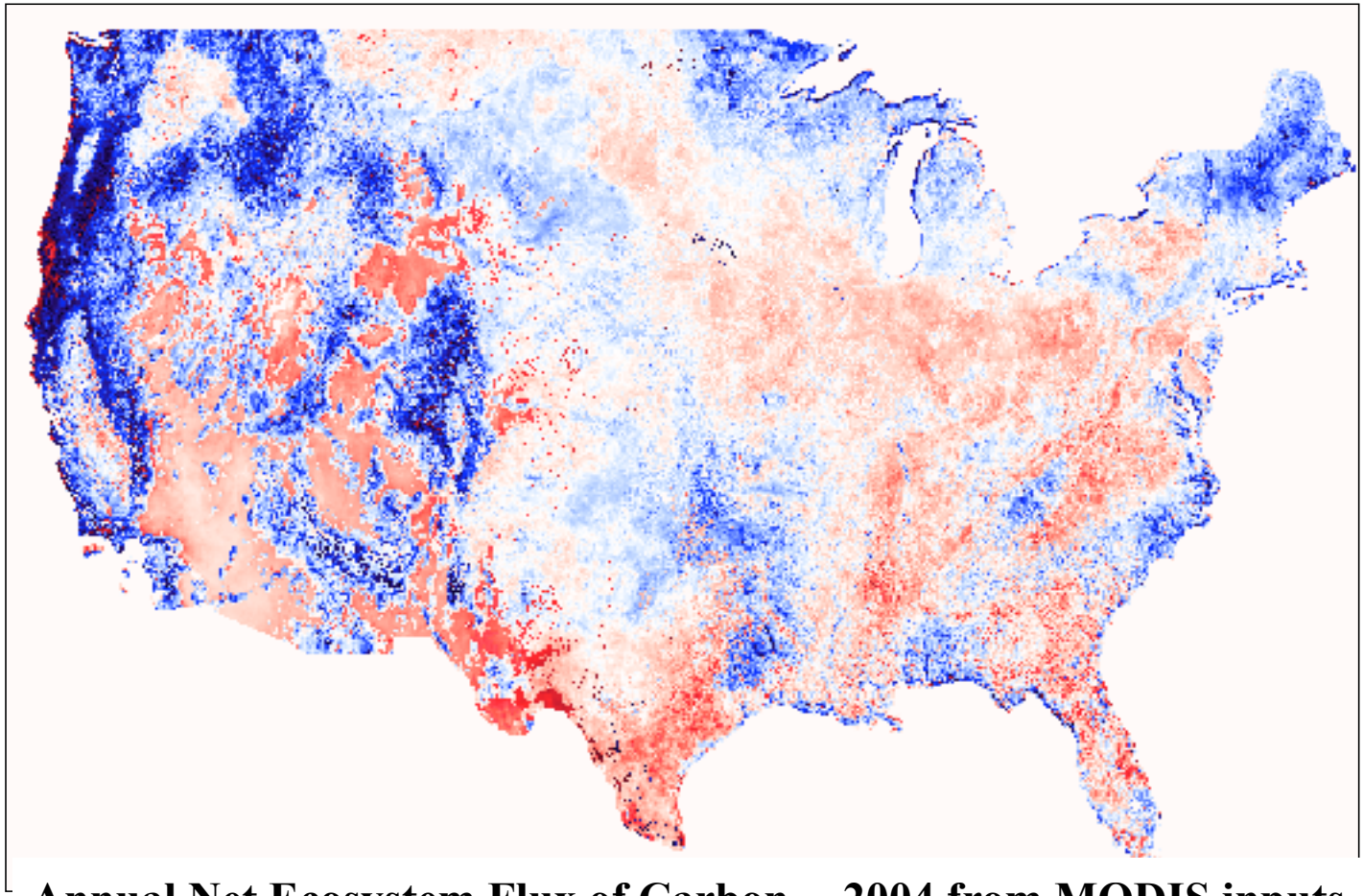
National Resource Inventory

Multi-scale Validation Information

Potter, C., S. Klooster, A. Huete, and V. Genovese, 2007:

Terrestrial carbon sinks for the United States predicted from MODIS satellite data and ecosystem modeling.

Earth Interactions, 11: 1-21.



Annual Net Ecosystem Flux of Carbon -- 2004 from MODIS inputs

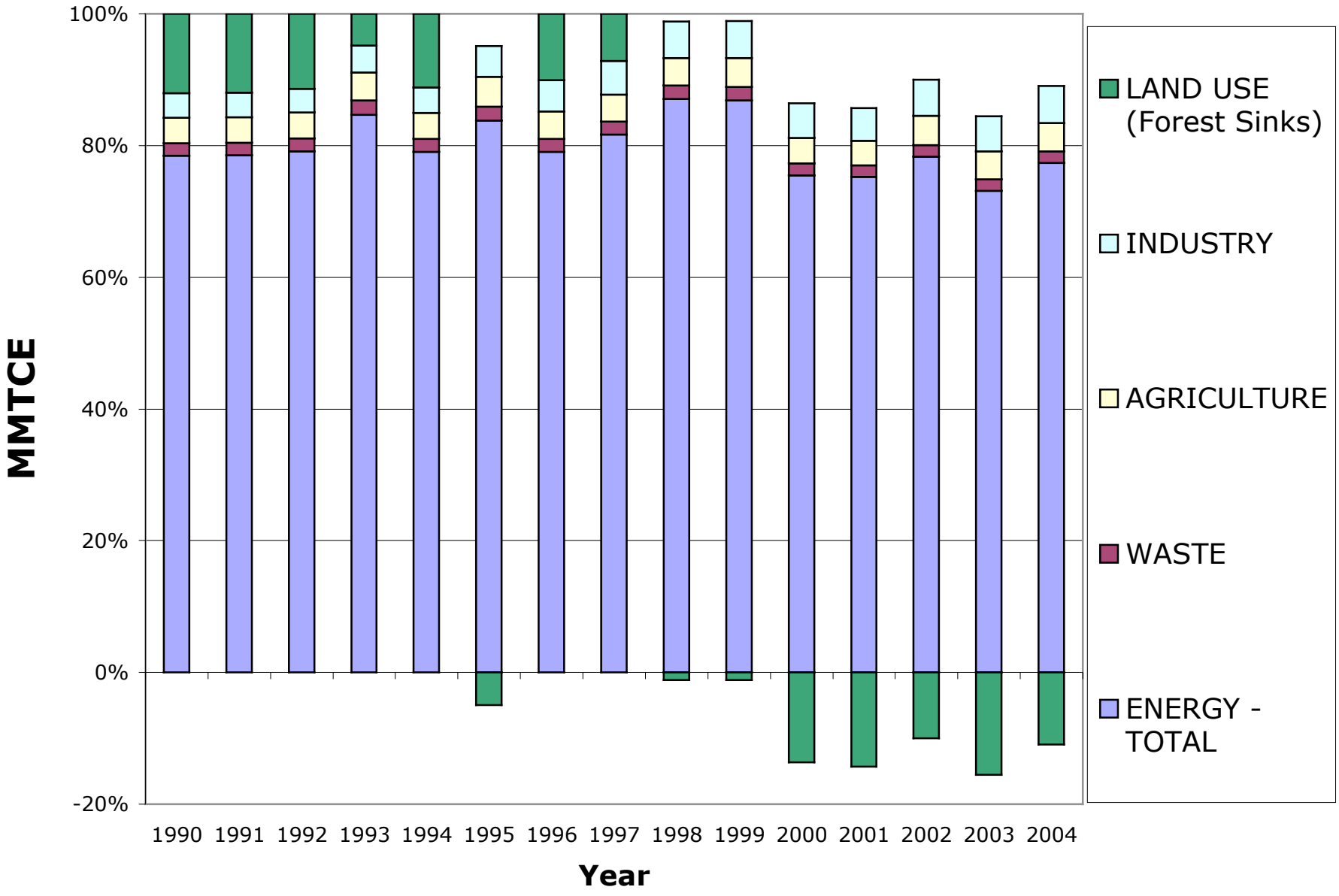
C Source **C Sink**

-250 -125 0 +125 +250

g C m^{-2} yr^{-1}

CASA Model Adjusted California GHG Inventory Summary 1990-2004.

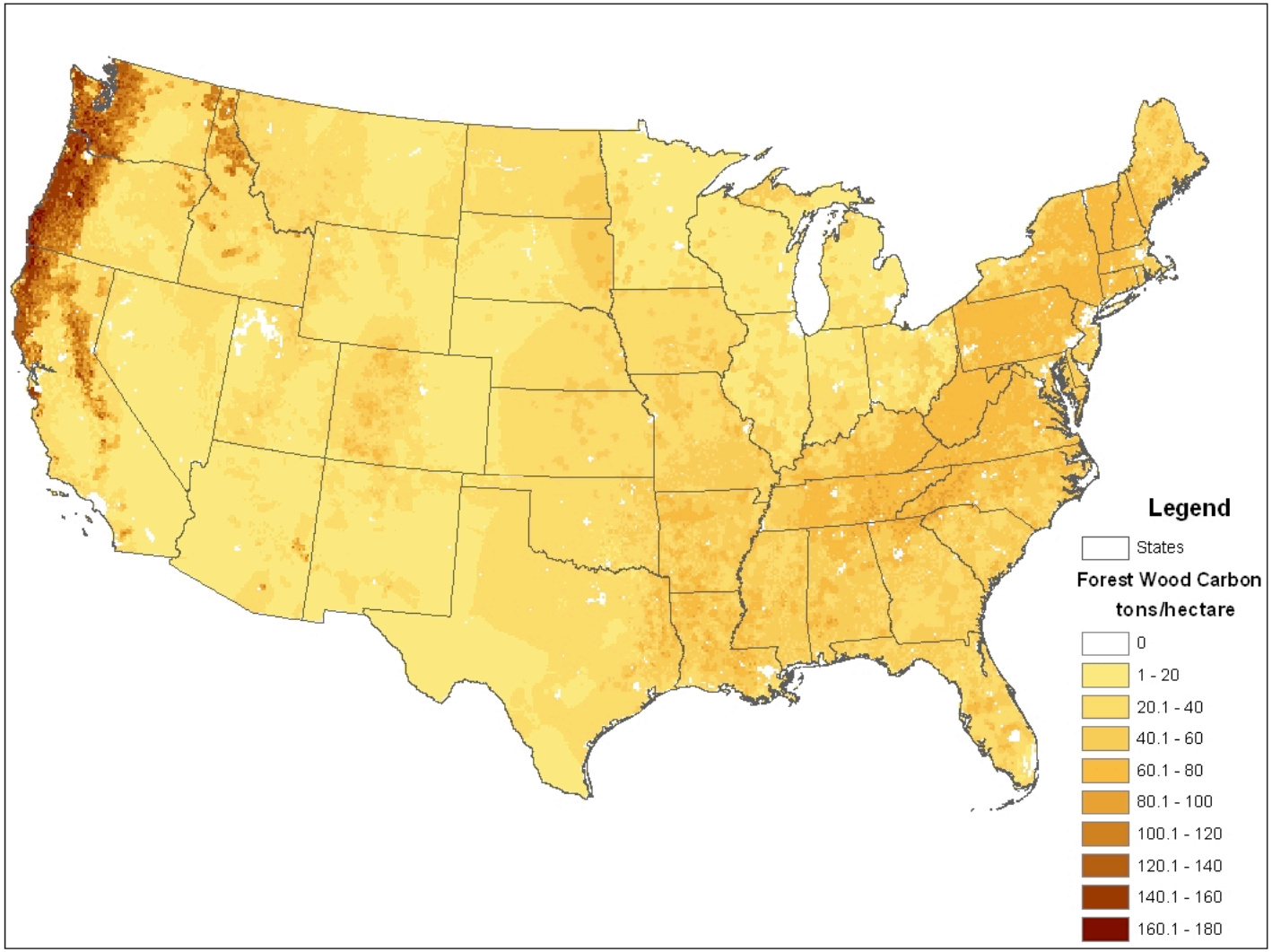
Source: Potter, C., 2009, The Carbon Budget of California, (under journal review).



Potter, C., P. Gross, S. Klooster, M. Fladeland, and V. Genovese, 2008:

Storage of carbon in U. S. forests predicted from satellite data, ecosystem modeling, and inventory summaries.

Climatic Change. 10.1007/s10584-008-9462-5.

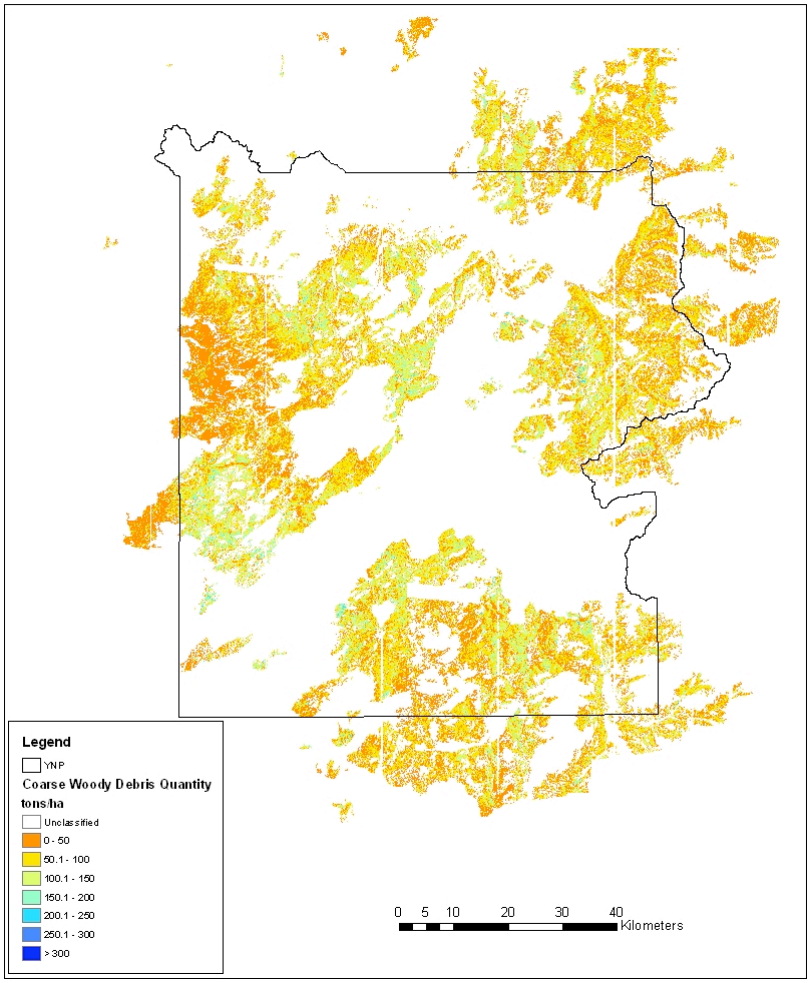


Shengli Huang, Robert Crabtree, Christopher Potter, and Peggy Gross, 2009:

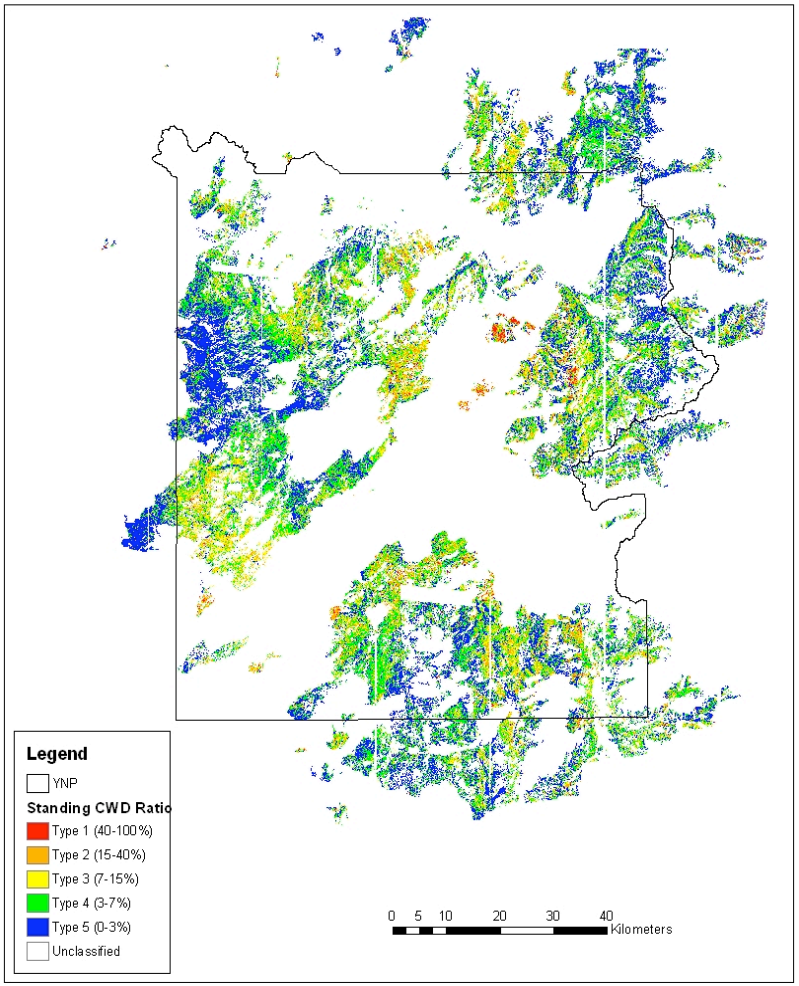
Estimating the quantity and quality of coarse woody debris in Yellowstone post-fire forest ecosystem from fusion of SAR and optical data

Remote Sensing Environment.

Coarse Woody Debris Quantity



Coarse Woody Debris Quality



California Temperate Rainforest Prototype
CASA Model Carbon Pools for Northern California

Ames Research Center

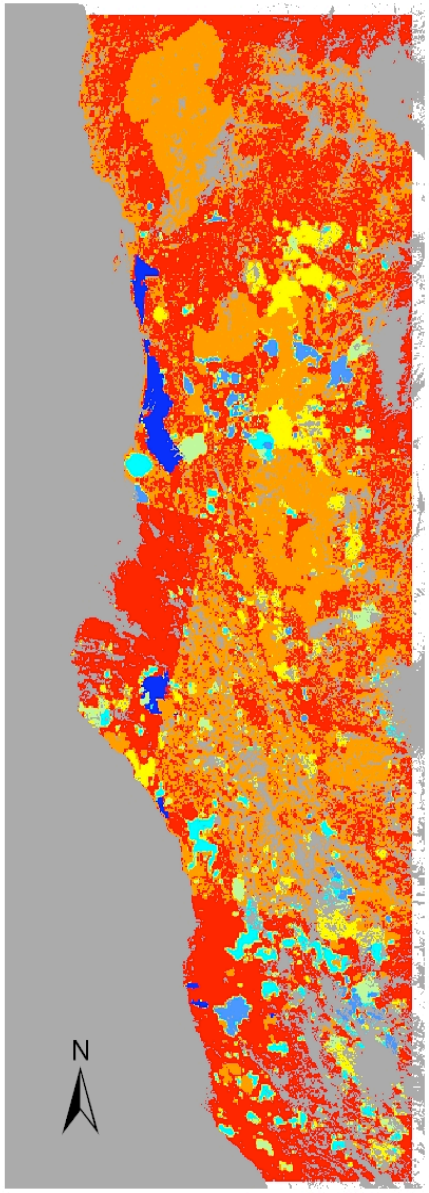
Northern California Age Map

Sources: NASA Landsat and CA Fire Perimeters

Legend

Age

- Non-forest
- Default
- 1 - 15
- 15.1 - 40
- 40.1 - 55
- 55.1 - 75
- 75.1 - 109
- 1,500



Standing Wood Carbon

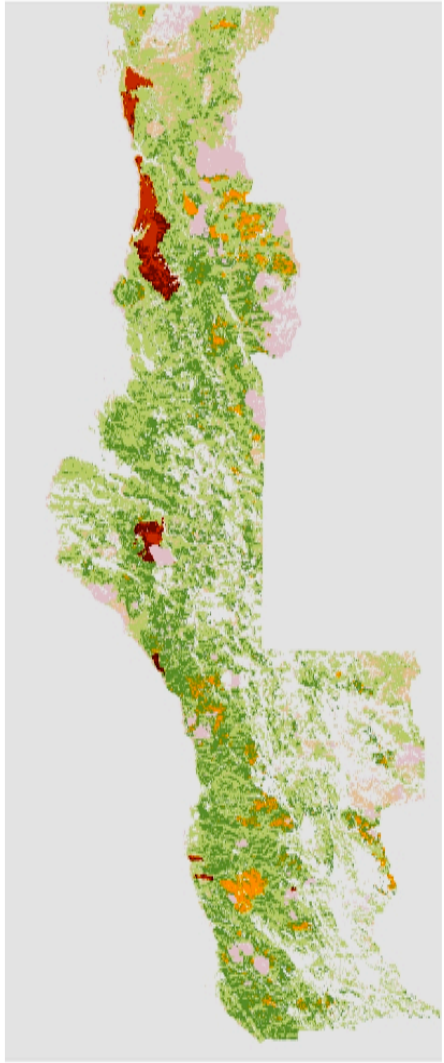
Sources: NASA MODIS Vegetation index (250-meter)

Legend

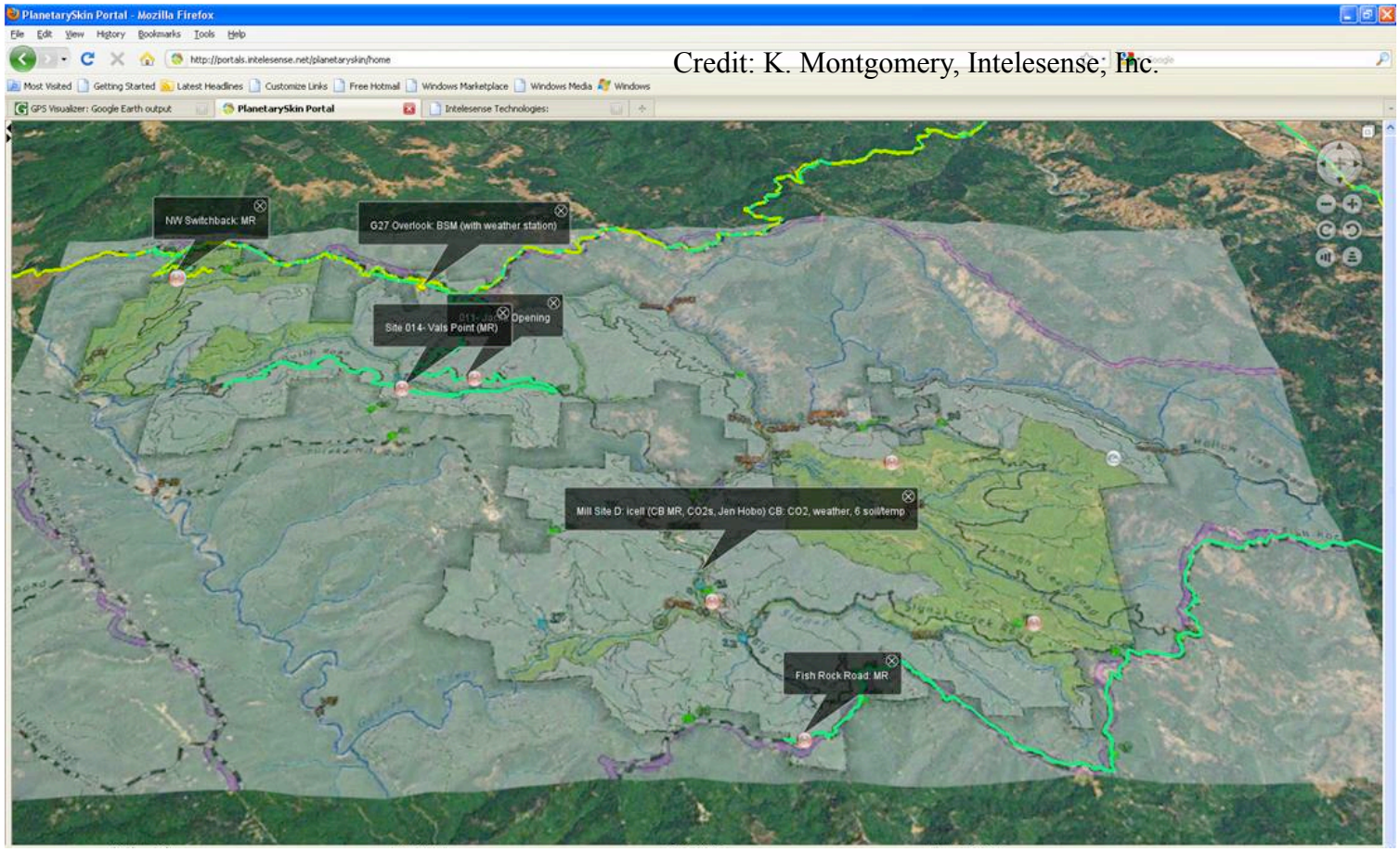
tons / ha

- 0
- 0.1 - 50
- 50.1 - 100
- 100.1 - 150
- 150.1 - 200
- 200.1 - 1,000
- 1,000.1 - 2,000
- 2,000.1 - 3,052.5

0 10 20 40 60 80 Kilometers



Cisco-NASA-Conservation Fund-Nature Conservancy Garcia River Forest Net



Credit: K. Montgomery, Intelesense, Inc.

The Gate 27 (G27) station is below and is the base station for the northern section, where it can see all the other stations (N