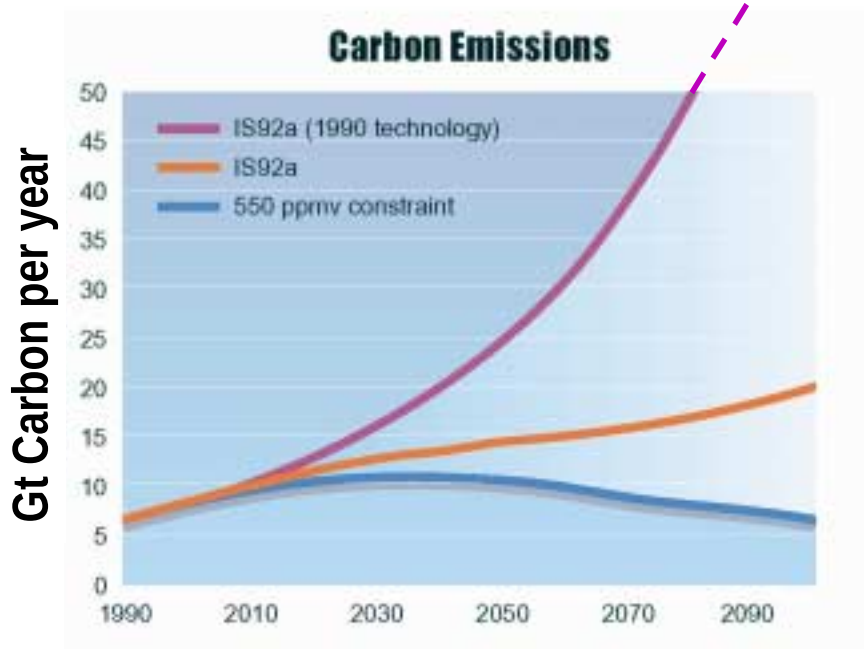
Regional Partnerships in Terrestrial Carbon Sequestration – A "Hands-On" Workshop

Workshop Objectives

- **National Climate Change Technology Initiative –** ***Improve the Science***
  Establish Government-Industry Partnerships
- **Reforestation & C Sequestration –** ***Practices & Procedures with Many Benefits***
- **Understand Regional Issues & Needs**
- **Technology & Information Exchange**

The Global Challenge*



Where today's technology will take us (~2000 Gt C over budget)

Solar
Nuclear
Efficient Fossil Electric
Advanced Transportation
End Use Efficiency
Biomass

Where our current aspirations for technology will take us (~500 Gt C over budget)

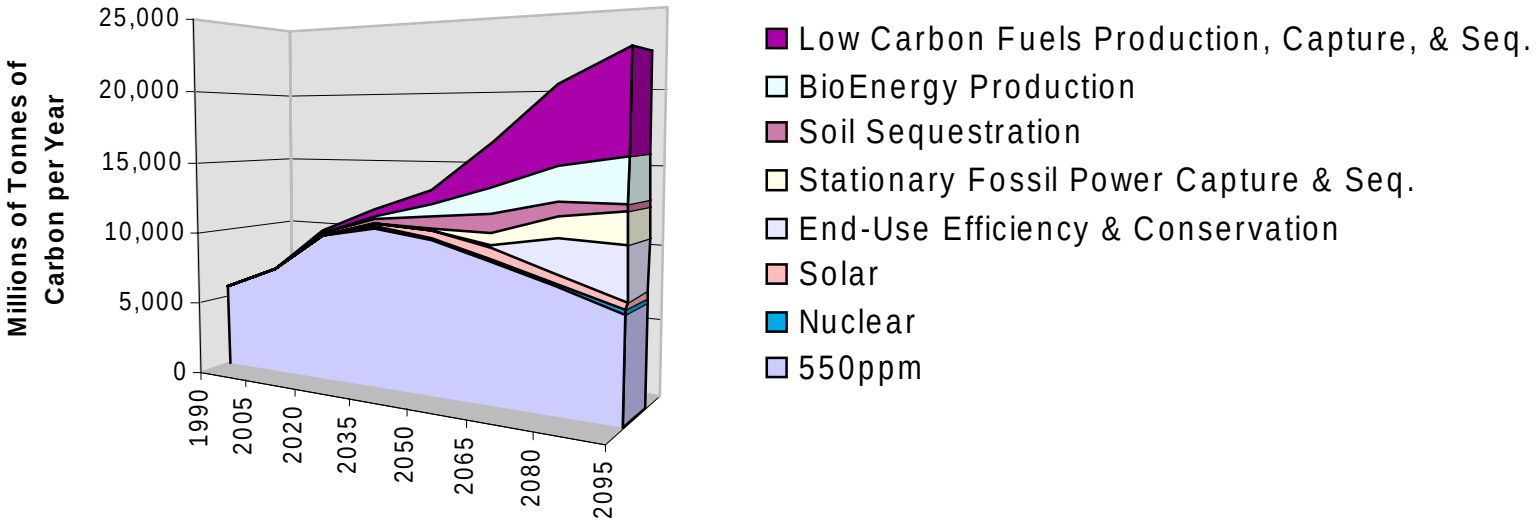
Path we need to be on to stabilize atmospheric CO_2 at 550ppm
(Carbon Budget = ~1043 Gt C)

**Information on this slide has been provided by Pacific Northwest National Laboratory.*

Carbon Management

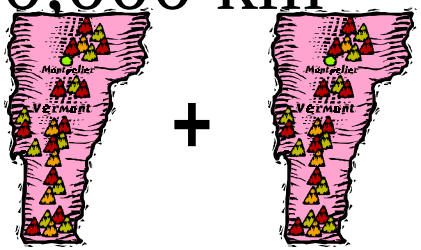
Gigaton Carbon Impact of Technology Systems

	Global	United States
Low-Carbon Fuels Production, Capture, & Sequestration	**186**	**27**
BioEnergy	**90**	**15**
Soil Sequestration	**51**	**6**
Stationary Fossil Power Capture & Sequestration	**51**	**5**
Energy Efficiency	**42**	**14**
Solar	**34**	**0**
Conservation (“Doing with Less”)	**17**	**12**
Nuclear	**13**	**0**

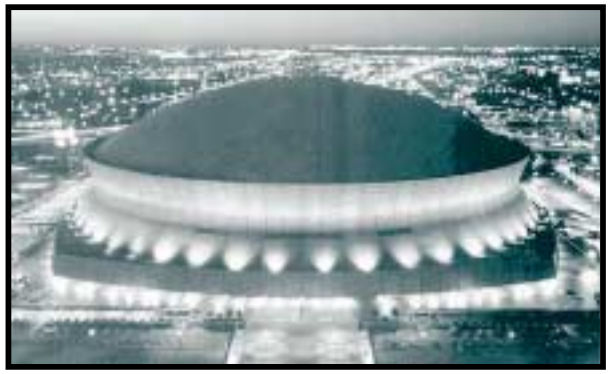


Just what is a Gigaton of Carbon?
1 Gt C = 1 billion metric tons C = 10^{15} g C

- Forest or grassland ~50,000 km^2
  - ~2× area of Vermont



- **Ca/Mg carbonate ~4 km^3**
  - **~1000 Louisiana Superdomes**



- **Liquid CO_2 ~4 billion m^3**
  - **~3 days of Mississippi River flow**
  - **~150× Lake Champlain (VT, NY)**

DOE Consortium for Research on ***Enhancing***

Carbon
Sequestration
in
Terrestrial
Ecosystems

http://csite.esd.ornl.gov

CSiTE Coordinators: ***Gary Jacobs, ORNL & Blaine Metting, PNNL***

Oak Ridge, Pacific Northwest and Argonne National Laboratories, Colorado State University, Ohio State University, North Carolina State University,

Cornell University, Texas A&M University, University of Washington,

Kansas State University, Virginia Polytechnic Institute & State University,

Rodale Institute, USDA Agricultural Research Service,

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NETL Project Participants: **Jim Amonette PNNL, Tony Palumbo ORNL,**

Jim Burger, VPI, Rattan Lal, Ohio State University,

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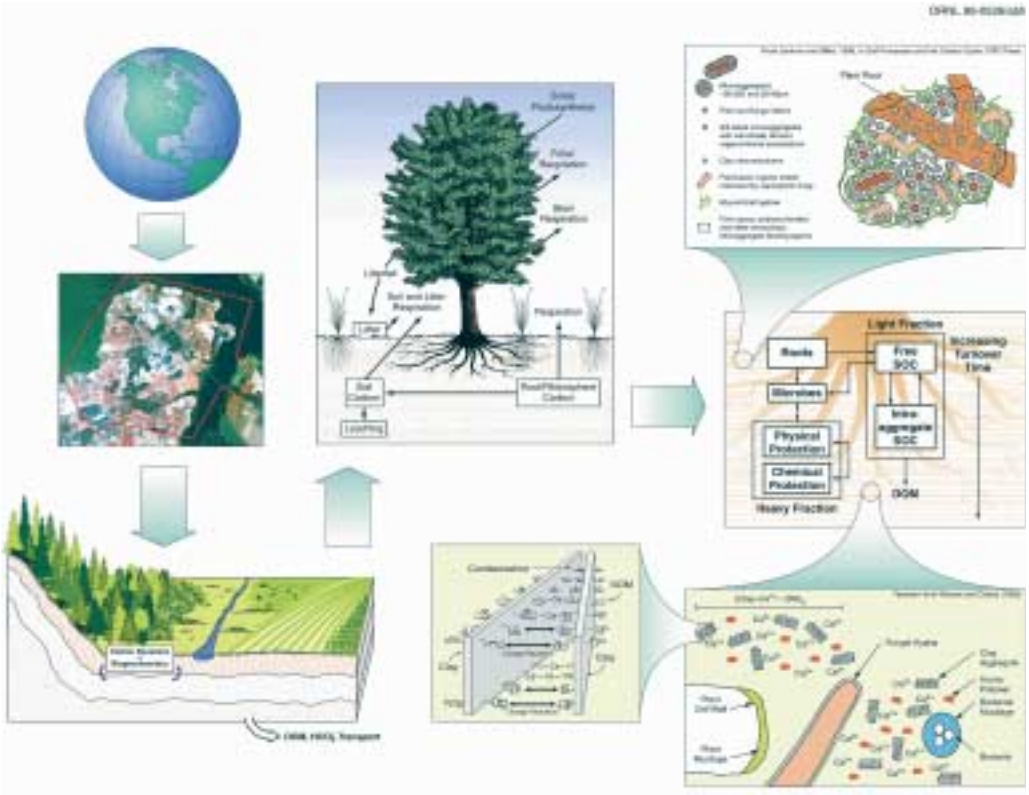
CSiTE: A research consortium developing science-based understanding to *enhance* and demonstrate carbon sequestration

Mission: **Discover & characterize links between critical pathways and mechanisms to create larger & longer-lived C pools**

Approach
Multiple-scale research, simulation, and assessment
Result **Science, partnerships, and technology transfer**



NETL – CSiTE Project

Enhancing Carbon Sequestration and Reclamation of Degraded Lands with Fossil Fuel Combustion Byproducts

Research Tasks:

- **Evaluate the Use of Soil Amendments**
- **Understand Effects on Soil N Cycling**
- **Identify Physical & Chemical Factors Affecting Soil C Sequestration**
- **Technology & Information Exchange – Partnership Building**