The Global Carbon Project

www.GlobalCarbonProject.org

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Global Carbon Project (IGBP-IHDP-WCRP-Diversitas)
Earth System Science Partnership
Global Carbon Project

**Research Goal**

To develop comprehensive, policy-relevant understanding of the global carbon cycle, encompassing its natural and human dimensions and their interactions

**Theme 1: Patterns and Variability**
- Carbon budgets
- Models and Model-Data Fusion
- Enhancing Observations

**Theme 2: Processes and Interactions**
- Vulnerabilities
- Mechanisms and feedbacks
- The carbon-climate-human system

**Theme 3: Carbon management**
- Urban and Regional Carbon Management
- Windows of opportunity for intervention
- Factoring out influences on land GHG sinks
Joint effort on global C research and observations

Research: GCP
(Focus on regional integration)

Observations IGCO
(includes GTOS/TCO)
The changing carbon cycle, 1850-2100

The coupled carbon-climate system is vulnerable under climate change

Present carbon sinks may become future carbon sources (especially land)

This vulnerability is comparable with uncertainty from physical climate models and emission scenarios

C4MIP experiment: Friedlingstein et al. 2006, in press
Vulnerable land and ocean carbon pools (2000-2100)

Gruber et al. (2004)
Urban and regional carbon management:

**Diagnosis:** carbon metabolism, drivers, possible development pathways

**Solutions:** synergies (energy, transport, water, environmental design)

**The response spectrum:** Mitigation <----- Adaptation
- Finding new, sustainable ways of life at urban and regional scales
Urban and Regional Carbon Management

Diagnosis (past, present, future)

- Carbon metabolism
  [Carbon balances, footprints, product cycles]
- Drivers
  [Population, Organisation, Environment, Technologies, Institutions, Culture]
- Possible development pathways
  [Regional and global scales]

Solutions

- Trade-offs and synergies
  [Energy, buildings, transport, water, waste, urban environments]
- Windows of opportunity
  [Reorienting institutions, incentive systems, cost sharing systems]

- The response spectrum: Mitigation <----- Adaptation
  [finding new, sustainable ways of life at urban and regional scales]
International Project and Affiliate Offices

IOC/SCOR-CO₂ Panel
Paris, France

CarboEurope, Germany
GHG CA, Italy

NIES,Tsukuba
Japan

Beijing, China

CSIRO,Canberra
Australia

NACP, DC, USA
Products (examples) and further information

Framework

Synthesis: natural and human dimensions

...many more... see www.GlobalCarbonProject.org

Canadell JG, Dickinson R, Hibbard K, Young O, Raupach MR (eds.).
ESSP Report No. 1; GCP Report No. 1, Canberra, 69 pp

(with SCOPE)
Integrating Humans, Climate and the Natural World.
Island Press, Washington D.C.