**The Four Questions**

**Carbon Pools**

**Question**
Where are the carbon pools in our environment?

**Rules to Follow**
Atoms last forever! Atoms cannot be created or destroyed, but atoms can be rearranged to make new molecules. Carbon atoms stay in pools unless a process moves them in or out.

**Evidence We Can Observe**
The air has carbon atoms in CO₂. Organic materials are made of molecules with carbon atoms:
- Living and dead plants, animals, and decomposers
- Fossil fuels

**Carbon Cycling**

**Question**
How are carbon atoms cycling among pools?

**Rules to Follow**

**Evidence We Can Observe**
Evidence of carbon movement or carbon-transforming processes:
- Organisms eating, breathing, growing, moving, dying or decaying
- Burning

**Energy Flow**

**Question**
How does energy flow through environmental systems?

**Rules to Follow**
Energy flows! Energy flows through Earth systems. Carbon-transforming processes change energy from:
- Sunlight to
- Chemical energy to
- Work or motion energy and eventually to
- Heat radiated into space.

**Evidence We Can Observe**
We can observe indicators of different forms of energy:
- Chemical energy stored in organic materials
- Light energy
- Heat energy
- Work or motion energy

**Stability and Change**

**Question**
How do carbon fluxes change the size of carbon pools?

**Rules to Follow**
Fluxes change pools! A pool size only changes when fluxes into and out of that pool are unbalanced. The carrying capacity is an upper limit to the photosynthesis flux in every ecosystem.

**Evidence We Can Observe**
Disturbances such as fires, floods, droughts, or human management can change pools and fluxes. Some disturbances change the carrying capacity of ecosystems or the Earth’s biosphere.