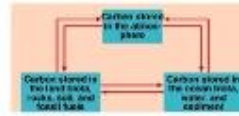


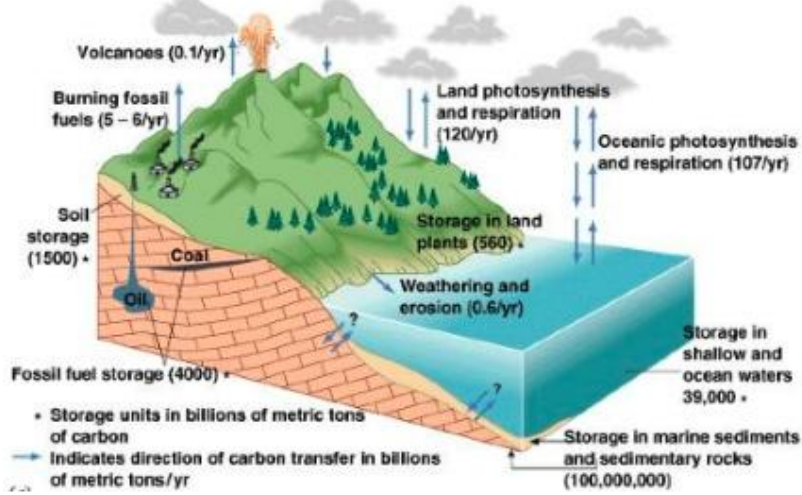
# Carbon Reservoirs

- Reservoir: In geochemistry, a reservoir is the mass of an element (such as carbon) or a compound (such as water) within a defined “container” (such as the ocean or the atmosphere or the biosphere).
- Atmosphere
  - CO<sub>2</sub> – based on a CO<sub>2</sub> concentration of 351.2 ppmv in 1988 → corresponds to 747 Pg of carbon (1 Pg= 10<sup>15</sup>g)
  - CH<sub>4</sub> – based on CH<sub>4</sub> concentration of 1.7 ppmv in 1988 → corresponds to 3 Pg of carbon (most abundant organic trace gas and 2<sup>nd</sup> most important changing greenhouse gas)
  - CO –ranging from 0.05 to 0.20 ppmv → 0.2 Pg carbon
- Hydrosphere (oceans)
  - Dissolved inorganic carbon (DIC) → 37,900 Pg C
  - Dissolved organic carbon (DOC) → 1 000 Pg C
  - Particulate organic carbon (POC) → 30 Pg C
  - Marine biota → 3 Pg C
- Terrestrial Biosphere ranging from 480 – 1080 Pg C
- Lithosphere – carbon in rocks, fossil fuels → huge reserves 20 million Pg C in rocks, 10<sup>4</sup> Pg C in extractable reserves of oil and coal

# Carbon Flux



Storage in atmosphere (720 + 3/yr due to burning fossil fuels) \*



(a) Generalized global carbon cycle. (b) Parts of the carbon cycle simplified to illustrate the cyclic nature of the movement of carbon. [SOURCE: Modified after G. Lambert, 1907, *La Recherche*, 18, pp. 782-783.]