

# Learning from the existing records

# BG3 Land

- Challenge is to better estimate turnover times in different carbon pools in the land and the atmosphere
- Synthesizing and standardizing experimental ecosystem data (EG, FACE, nutrient data)
- Combining existing data in innovative ways

# BG3 Land

- How to better estimate turnover times in different carbon pools in the land and the atmosphere?
  - $^{14}\text{C}$  measurements in soil, vegetation and atmosphere
- How to synthesize and standardize experimental ecosystem ?
  - Compile FACE and flux data for comparison with CMIP6 model simulation
- How to combine existing data?
  - Compiling  $^{13}\text{C}$  data in vegetation and tree rings. Combining eddy flux data with atmospheric inversions
  - Looking for fertilization effects in satellite data and others.

# BG3 Ocean

- Lack of process knowledge regarding ocean physics and biology – limited observations
- Biology (e.g. export production, remineralisation depth plus their controls) and sediment processes are identified as key observations needed to better constrain ocean models
- Lack of understanding of high frequency/extreme events – data(bases) in use usually cover large scales

# BG3 Ocean

- Can we produce a reliable decadal prediction with the lack of understanding of physical and biological processes?
  - Foster collaboration with the observation communities and use available data(-products) to constrain models (e.g. MAREDAT)
- Will we be able to include correct sediment modules in our models, given the lack of observations?
  - Follow-up on available data products and raise awareness about their importance
- Can we get a better understanding about high frequency variability and the effect of extreme events in the ocean?
  - Work towards a global database from measurements taken from autonomous vehicle