Global carbon cycle

One of the central tasks of today's climate research is to investigate the response of the Earth system to different pathways of atmospheric greenhouse gas emissions. Global climate change is driven by perturbations of the complex carbon cycling mediated by fluxes between its different compartments – the atmosphere, the lithosphere and the ocean. Here, the ocean acts as an effective carbon storage containing around 50 times more CO_2 than the atmosphere. Thus, in order to understand and forecast climate change impacts across spatial and temporal scales, it is crucial to understand the oceanic, the ocean-atmosphere and the ocean-lithosphere carbon fluxes.