The lecture will include results from more 40 years of Ocean Drilling and from land-based investigations - including early continental drilling - of Cretaceous marine sediments. The lecture will focus on the reconstruction of Cretaceous climate and carbon cycle. Investigations of Cretaceous climate teach us, how marine carbonate systems responded to major perturbations of the global carbon cycle and they provide insight into interactions between biosphere and climate. The lecture will provide ideas for future integrated marine and continental drilling campaigns.