Seminar: “Eocene climates and carbon isotope ratios of single organic microfossils”

05/04/2018 - 16:00

AMGC Seminar Thursday April 5 2018 – 16.00 h – **Room D.0.05**

By Appy Sluijs “Eocene climates and carbon isotope ratios of single organic microfossils”

The Eocene marks the transition of extremely warm global climates in the early Eocene towards much cooler climates with an ice sheet on Antarctica in the earliest Oligocene. Moreover, particularly the early Eocene is marked by episodes of rapid warming, ocean acidification and ocean deoxygenation, on a time scale of millennia. Although deep sea and high latitude surface climates are reasonably well characterized, a lack of high-quality tropical data has emerged. I will present new paleotemperature reconstructions from the equatorial eastern Atlantic Ocean that provide the opportunity to assess global climate and global climate change across the Eocene and the superimposed 'hyperthermal’ events. This ultimately allows quantification of polar amplification of climate change in the generally ice-free Eocene.
For estimates of climate sensitivity to changes in CO2, also relevant for future projections, better reconstructions of atmospheric CO2 concentrations are required. To this end, we aim to develop a new proxy for CO2 based on the carbon isotopic fractionation of marine dinoflagellates and their cysts. We developed a new analytical setup using laser ablation that can measure stable carbon isotope ratios on particulate organic carbon yielding tens of nanograms of carbon. I will show that this technique is suitable to measure single fossil dinoflagellate cysts with reasonable precision and accuracy, paving the way for ultimate CO2 reconstructions.