

The Energetic Niche of Species: Lessons from the Deep Sea

Craig R. McClain

Assistant Director of Science, National Evolutionary Synthesis Center

Friday 17 of May 11:00

Sir Neil Chalmers seminar room, Darwin Centre LG16 (below Attenborough studio)

Life requires energy. Biological organization—the culmination of life in all its forms—is determined largely by the flow and transformation of energy. Three distinct types of energy affect biological systems: solar radiation (in the form of photons), thermal kinetic energy (as indexed by temperature), and chemical potential energy stored in reduced carbon compounds (i.e. food). I contend and will discuss that much like organisms possess thermal niches so do they possess chemical energetic niches (CEN). Evidence from both local and oceanic scale studies of beta-diversity, i.e. species turnover, suggests unique suites of species inhabit different regimes of carbon availability. The evolution of body size and life history strategies in molluscs appear to be linked to productivity gradients and may have promoted diversification in this group. Thus, changes in ocean productivity as a result of climate change may greatly impact biodiversity by modifying available niche space for ocean species.