During the Upper-Middle Palaeolithic transition the Cantabrian Region was home to some of the last surviving Neanderthals in Europe, and during the Last Glacial Maximum the region acted as a refugium for plants, animals and human, and undoubtedly played an important role in human evolution during this time. To date little is known about the environmental conditions directly experienced by humans during the Palaeolithic in this region. This paper presents the results of stable isotope analysis from cave sites in the Cantabrian Region to explore environmental changes across this key period in human evolution from the Middle and Upper Palaeolithic to characterise what the environment was like at this time, and how it might have impacted on the changes in population, culture and diet seen in the archaeological record at this time.