

## Climate sensitivity at the Eocene-Oligocene boundary as recorded by fossil plant stomata

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The role of – and crucially the sensitivity of the climate to –  $p\text{CO}_2$  is a critical research question, still unsolved for the Cenozoic, as well as for present and future climate change. Here we present a terrestrial stomatal proxy-based  $p\text{CO}_2$  record from Saxony, Germany, derived from the extinct fossil plant species *Eotrigonobalanus furcinervis*, spanning the mid–late Eocene, the earliest Oligocene, as well as the late Oligocene. The Saxony record suggests that  $p\text{CO}_2$  decreased continuously throughout the late Eocene, parallel to marine isotope temperature records, but does not record the precipitous fall in temperatures and/or increase in ice growth that characterizes the Eocene–Oligocene boundary in the marine records. This could be related to the “tipping point” effect previously proposed – where a certain threshold of  $p\text{CO}_2$  change was crossed before the cumulative climate change effects caused a rapid decline in temperatures and thus climate mode. Terrestrial stomatal proxy-based  $p\text{CO}_2$  record can thus help solve the question of climate sensitivity in the Cenozoic by providing records independent of the marine isotope temperature and  $p\text{CO}_2$  records.