# Tracing the influence of Mediterranean climate on Southeast Europe during the past 350,000 years

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Although global patterns of past climate change are relatively well established at the scale of orbital forcing, local responses in various regions are still not understood. Loess-paleosol sequences (LPS) are valuable archives of past environmental changes in Southeast Europe. However, most LPSs seem to be limited in their sensitivity to paleoclimate due to an overall imprint of enhanced dryness in the region during loess sedimentation. Here we present the results from the Stalać section in the Central Balkans, one of the first high-resolution multiproxy LPS records spanning the past ~350,000 years in Southeast Europe. Stalać LPS developed under stronger Mediterranean influence than most of the LPSs studied so far in Southeastern Europe. The results show a different climate evolution of the Central Balkans compared to the more northern environments in the Carpathian Basin. The Mediterranean influence strongly prevailed from Marine Isotope Stages (MIS) 10 to 6. However, a general trend of progressively weaker Mediterranean climate influence can be observed over the entire Southeastern Europe. An abrupt shift in general climate conditions over the interior of the Balkans to more continental conditions from MIS 5 is evident, possibly connected to a Greenland ice-sheet retreat. The different conditions over the Balkans during the last glacial can be inferred from the absence of a stronger glacier expansion over the region in this period. The absence of large glaciers probably enables stronger penetration of Mediterranean moist air from the south-west into the interior of the Balkans, causing higher humidity and precipitation during the last glacial compared to previous glaciations. This may explain why the Balkan Peninsula was a Quaternary floristic refugium, showing that the sharp and narrow climatic boundary between the Balkans and surrounding areas sustained to protect the Balkan Peninsula from the adverse climatic conditions in the North. Especially the observed enhanced humidity during the last glacial explains the importance of the Balkan Peninsula as a unique European biodiversity hotspot. Generally mild last glacial conditions by glacial standards and harsh conditions during the Heinrich event 4 combined with a sudden climatic change after the Campanian Ignimbrite - Y5 ashfall may be related to the anatomically modern human dispersal trough the Balkans and Europe.