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Pollen-based biome reconstructions for Latin America at 0, 6000 and 18 000 radiocarbon years ago

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Abstract. The biomisation method is used to reconstruct Latin American vegetation at 6000 ± 500 and $18\ 000\pm 1000$ radiocarbon years before present (^{14}C yr BP) from pollen data. Tests using modern pollen data from 381 samples derived from 287 locations broadly reproduce potential natural vegetation. The strong temperature gradient associated with the Andes is recorded by a transition from high altitude cool grass/shrubland and cool mixed forest to mid-altitude cool temperate rain forest, to tropical dry, seasonal and rain forest at low altitudes. Reconstructed biomes from a number of sites do not match the potential vegetation due to local factors such as human impact, methodological artefacts and mechanisms of pollen representivity of the parent vegetation.

At 6000 ± 500 ^{14}C yr BP 255 samples are analysed from 127 sites. Differences between the modern and the 6000 ± 500 ^{14}C yr BP reconstruction are comparatively small; change relative to the modern reconstruction are mainly to biomes characteristic of drier climate in the north of the region with a slight more mesic shift in the south. Cool temperate rain forest remains dominant in western South America. In northwestern South America a number of sites record transitions from tropical seasonal forest to tropical dry forest and tropical rain forest to tropical seasonal forest. Sites in Central America show a change in biome assignment, but to more mesic vegetation, indicative of greater plant available moisture, e.g. on the Yucatán peninsula sites record warm evergreen forest, replacing tropical dry forest and warm mixed forest presently recorded.

At $18\ 000\pm 1000$ ^{14}C yr BP 61 samples from 34 sites record vegetation reflecting a generally cool and dry environment. Cool grass/shrubland is prevalent in southeast Brazil whereas Amazonian sites record tropical dry forest, warm temperate rain forest and tropical seasonal forest. Southernmost South America is dominated by cool grass/shrubland, a single site retains cool temperate rain forest indicating that forest was present at some locations at the LGM. Some sites in Central Mexico and lowland Colombia remain unchanged in the biome assignments of warm mixed forest and tropical dry forest respectively, although the affinities that these sites have to different biomes do change between $18\ 000\pm 1000$ ^{14}C yr BP and present. The "unresponsive" nature of these sites results from their location and the impact of local edaphic influence.

▣ [Final Revised Paper](#) (PDF, 3326 KB) ▣ [Discussion Paper](#) (CPD)

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