Goal and products of PAGES LandCover6k 2018-2020: Past Global Land Cover and Land Use for Climate Modelling

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The question of whether prehistoric human impacts on land cover (i.e. anthropogenic land cover change due to land use, LULC) were sufficiently large to have a major impact on regional climates is still a matter of debate. Climate model simulations have shown that LULC datasets can have large regional impacts on climate in recent and prehistoric time (1). But there are major differences between the available LULC scenarios/datasets such as HYDE (History Database of the Global Environment) and Kaplan’s KK10 (2), and diagnoses of inferred carbon-cycle impacts show that none of the scenarios are realistic (3). The only way to provide a useful assessment of the potential for LULC changes to affect climate in the past, is to provide more realistic LULC data based on palaeovegetation and archaeological evidence to improve the LULC datasets used in climate modelling (4). We use the REVEALS model to reconstruct LC from pollen data at a regional scale, and archaeological data to map LU types and distribution, and estimate per capita LU. The archaeology-based LU maps and per-capita LU estimates are used to improve LULC datasets. Pollen-based REVEALS LC estimates are then used to evaluate/validate the new, improved LULC datasets. These new datasets will be used to implement past land use in palaeoclimate and carbon cycle model simulations. Such simulations are necessary to assess the impact of LULC changes in the past and understand the effect of ecosystem management on future climate. We present results from five years of PAGES LandCover6k activities.

