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Mapping Global Agricultural History

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It is increasingly recognised that early developments in land use had implications for the global climatic system. Especially following the seminal article by Ruddiman addressing the role of early land cover for the climate, reconstructions of past land use has become an important field in of the rapidly growing field of climate and global change studies.¹ Ruddiman, proposed that the Neolithic revolution as well agricultural expansion well before the industrial revolution impacted on the emissions of green house gases and the global climate system. Ramankutty and Foley estimated global land cover changes for the period 1700 to 1992 and Klein Goldewijk has built up the HYDE data base for the same period. For the last millennium a reconstruction along the same lines has recently been published by Julia Pongratz and co-workers.² These reconstructions differ in slightly in their methods, but when it comes to reconstructions of agricultural lands, they can be broadly categorised as backprojections from the 20th century using historical population estimates. This method tends to overemphasise European and colonial agriculture and reflect to a large degree Eurocentric assumptions, rather than historical knowledge. Pongratz reconstructions show no agriculture in North America and in the Amazon before Columbus and very little agriculture in West Africa.

Historical geographers have been slow in responding to this new demand for a global synthesis. No attempt has yet been made to express the present knowledge of global agrarian history in maps. Only for the Americas has such a synthesis been achieved. Based on the works by Doolittle, Denevan and Turner and Whitmore, the popular science author Charles C Mann has summarised the evidence of pre-Columbian land use in a map. Though chronologically diffuse this map shows the power of summarising existing knowledge in a way that communicates with the global land cover science, which needs spatially well defined data. At the same time Mann asks the grand questions of macrohistory: were population figures in America at the level of Europe before Columbus?³ Also for Sub-saharan Africa a growing research frontier looks into the precolonial farming systems.⁴

A small international project has been set up to answer to these challenges on a global scale. The project is a cooperation between US and Swedish geographers and historians.⁵ It aims at global reconstructions of agricultural systems for AD 1000, AD

1500 and AD 1800. For each of these cross-sections a map will be made, comparable in scale and detail to the often quoted map by Derwent Whittlesey on the major agricultural regions of the world in the first half of the 20th century.⁶

In August 2009 the first results of the work based on maps covering different continents were presented at the World Congress of Environmental History. The presentation in Kyoto was based on these preliminary results. In comparison to Pongratz results these maps show more croplands in North America and the Amazon for the pre-Columbian era, while they show less agriculture in 1800 for the US than Pongratz has assumed. Likewise Pongratz has overestimated the areas under cultivation in some other areas of the world. The method of backcasting from 20th century distribution of croplands has for example led to overestimation of croplands for early periods in the Cape, South Africa, where agriculture only expanded from the late 18th century after the introduction of wheat and rye by European colonisation. Likewise for North-East China the backcasting method leads to high estimates. The overview has also shown that the expansion of the rice deltas in South East Asia was later than many overviews has assumed. In most cases it was only in the 19th century that these areas reached their full extent.

Notes

¹ W.F. Ruddiman, The anthropogenic greenhouse era began thousands of years ago, *Climatic Change*, 61 (2003) 261-293.

² N. Ramankutty, and J.A. Foley. Estimating historical changes in global land cover: croplands from 1700 to 1992. *Global Biogeochemical Cycles* 13 (1999) 997-1027 ; K. Klein Goldewijk, Estimating global land use change over the past 300 years: the HYDE database. *Global Biogeochemical Cycles*, Vol 15(1999): 417-434; J. Pongratz, C. Reick, T. Raddatz, T. and M. Claussen, A reconstruction of global agricultural areas and land cover for the last millennium, *Global Biogeochemical Cycles* 22 (2009).

³ W.M. Denevan, Cultivated landscapes of native Amazonia and the Andes. Oxford, 2001; W.E. Doolittle, Cultivated landscapes of native North America. Oxford, 2000; T.M. Whitmore and B.L. Turner II, Cultivated landscapes of Middle America on the eve of conquest Oxford, 2001. Whittlesey, D. 1936. Major agricultural regions of the world. *Annals of the Association of American Geographers*, 26, 199-240. See also a good summary in Charles C. Mann, *1491: new revelations of the Americas before Columbus*. 1. ed. New York, 2005.

⁴ M. Widgren & J.E.G. Sutton. (eds). 2004 *Islands of intensive agriculture in eastern Africa*. Oxford, 2004.

⁵ W.E. Doolittle, University of Texas, Austin, US (mapping North America); Ulf Jonsson, Stockholm University, Sweden & Janken Myrdal. University of Agricultural Sciences, Sweden (Eurasia) , Mats Widgren, Stockholm University, Sweden (Africa), William I. Woods University of Kansas, Lawrence, US (South America).

⁶ D. Whittlesey, Major agricultural regions of the world. *Annals of the Association of American Geographers*, 26 (1936), 199-240.