Translation of CLUMondo output to LPJmL input

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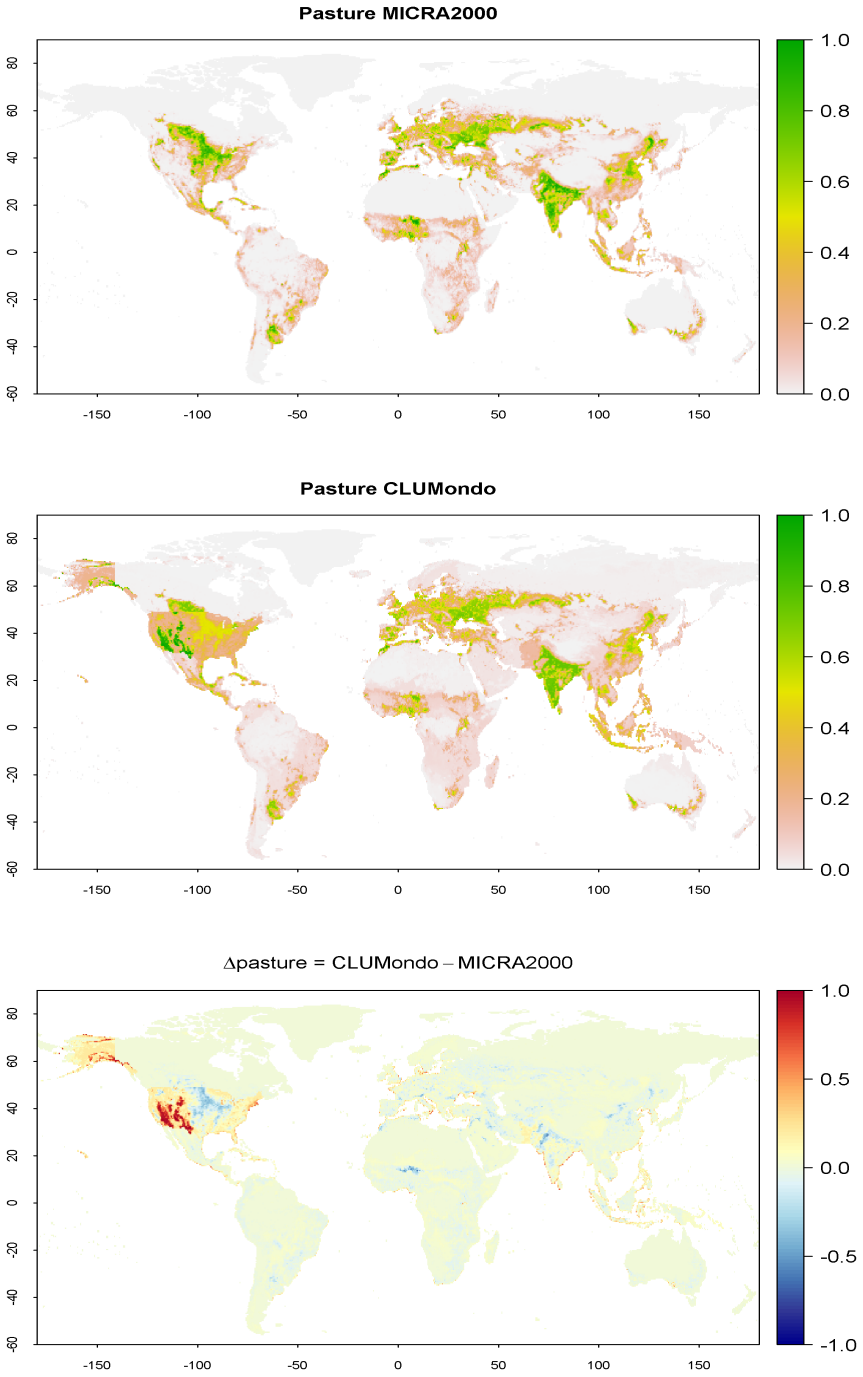
1 Comparing CLUMondo's areas of cropland and pasture with reported maps

CLUMondo land use systems of the year 2000 were aggregated to the basic landuses: cropland, pasture and area for natural vegetation and compared to the maps used by LPJmL as standard input. For the aggregation 24 land system lookup tables, one for each of the CLUMondos world regions, were used.

LPJmL's standard landuse data set is based on Portmann et al. (2010). These MICRA2000 maps of Portmann et al. (2010) reduced the 175 defined crops of Monfreda et al. (2008) to a number of 26 groups of crops. For the use with LPJmL, modification were done to the maps as described by Bondeau et al. (2007) and Fader et al. (2010).



Fractions of the area covered with pasture as provided by Portmann et al. (2010) (MICRA2000) and by CLUMondo for the year 2000. The difference map reveals areas where both maps deviate from each other.

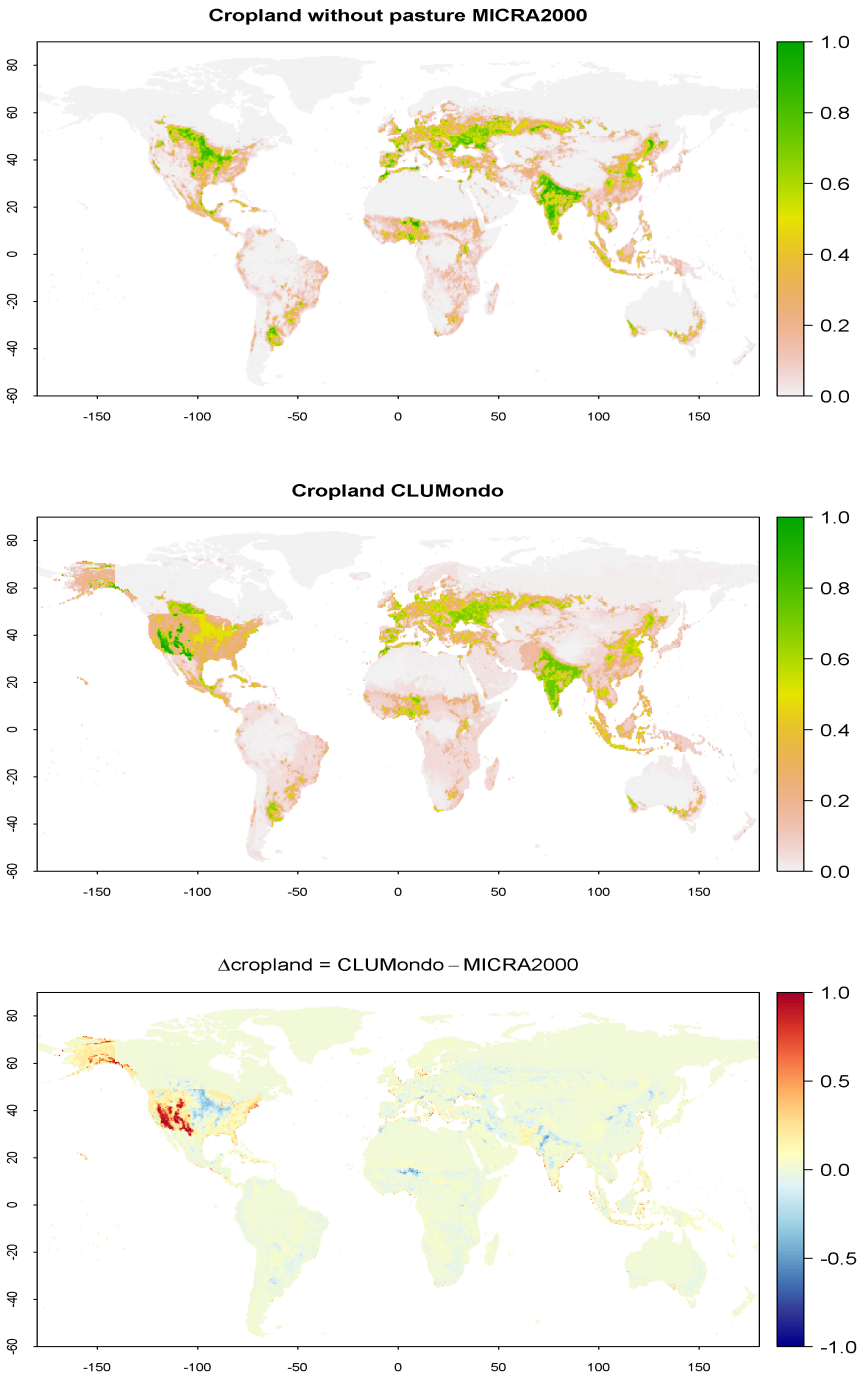


Figure 1: Fractions of the area covered with cropland as provided by Portmann et al. (2010) (MICRA2000) and by CLUMondo for the year 2000. The difference map reveals areas where both maps deviate from each other.

2 Comparing translation of CLUMondo cropland in specific crops with reported maps

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References

Bondeau, A., Smith, P. C., Zaehle, S., Schaphoff, S., Lucht, W., Cramer, W., Gerten, D., Lotze-Campen, H., Mueller, C., Reichstein, M., and Smith, B. (2007). Modelling the role of agriculture for the 20th century global terrestrial carbon balance. *Global Change Biology*, 13(3):679–706. LPJmL.

Fader, M., Rost, S., Müller, C., Bondeau, A., and Gerten, D. (2010). Virtual water content of temperate cereals and maize: Present and potential future patterns. *Journal of Hydrology*, 384:218–31.

Monfreda, C., Ramankutty, N., and Foley, J. A. (2008). Farming the planet: 2. geographic distribution of crop areas, yields, physiological types, and net primary production in the year 2000. *Global biogeochemical cycles*, 22(1).

Portmann, F. T., Siebert, S., and Döll, P. (2010). 2010 MIRCA2000-global monthly irrigated and rainfed crop areas around the year 2000: A new high-resolution data set for agricultural and hydrological modeling. *Global Biogeochemical Cycles*, 24.