## Project: **1112** Project title: Improve processes on regional and local climate induced by land-atmosphere feedbacks

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For the DFG project we updated the calculations of the leaf area index to be more dynamic in time and depending on environmental conditions. The algorithms for the calculation of leaf area index based on biomass evolution was implemented in COSMO-CLM v5.16 based on the CCLMv4.5 (COSMO-CLM with CLM4.5) experiment. The results are presented in Figure 1. The new implementations were then further introduced into the newest version of COSMO-CLM version 6.0.

The resources were further used for simulations for CORDEX FPS LUCAS (Flagship Pilot Studies on Land Use Change Across Scales). Here, temporal and spatial varying land cover data were used to perform hindcast simulations driven by ERA5 reanalysis data for the period 2001 to 2004. The results were processed and provided to FPS LUCAS partners.

More resources could not be used because the data exceeded the work space capacity and problems appeared due to non-availability of driving data from the archive due to archive system update by DKRZ.



Figure 1: Dynamic leaf area index (orange) compared to reference (red) and satellite based data (blue and green) for the year 2011.