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Stiring soil C pools out of equilibrium in response to climate and land-use changes

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Although global ecosystems currently absorb each year one third of fossil CO_2 dumped into the atmosphere by human activities, most of this C sink seems to lie in live biomass. Knowing how this C accumulation in biomass with eventually be delivered or not to the soil is essential to assess the long term C sequestration potential of the land biosphere. Further, carbon which is cycling slowly within the soil pools may also be lost quickly following human intervention (land use change, erosion...) and climate change. We will analyze the output and the uncertainties of global ecosystem models used for the IPCC 4th assessment report, to assess by how much soil C pools have already been "mined" by land use change, and driven either above or below their pre-industrial equilibrium level by changes in vegetation productivity and respiration throughout the past century. Future projections of soil C changes will be discussed.