How the biophysical mitigation potentials from ecosystem / land surface models are used to assess economic potential (with economic models) at different future carbon prices

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Abstract
Agricultural lands occupy about 40-50% of the Earth's land surface. Considering all gases, the global technical mitigation potential from agriculture (excluding fossil fuel offsets from biomass) by 2030 is estimated to be ~5500-6000 Mt CO2-eq. yr-1. Economic potentials are estimated to be 1500-1600, 2500-2700, and 4000-4300 Mt CO2-eq. yr-1 at carbon prices of up to 20, 50 and 100 US$ t CO2-eq.-1, respectively.

About 70% of the potential lies in non-OECD/EIT countries, 20% in OECD countries and 10% for EIT countries. In addition, agriculture can supply feed-stocks for bio-energy.

The economic mitigation potential for agricultural bio-energy in 2030 is estimated to be 70-1260, 560-2320 and 2720 Mt CO_2-eq. yr^{-1} at prices up to 20, 50 and above 100 USD t CO_2-eq.$^{-1}$, respectively.

These potentials represent mitigation of 5-90% of all other agricultural mitigation measures combined. An additional mitigation of 770 Mt CO_2-eq. yr^{-1} could be achieved by 2030 by improved energy efficiency in agriculture.

This talk will focus on how results from ecosystem / land surface models can be used to drive uncoupled economic models. Results will be compared to estimates from Integrated Assessment Models.