Carbon-climate feedbacks: global dynamics and key processes

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In this talk I'll show new trends in global carbon sources and sinks, with particular focus on major shifts occurring since 2000 when the growth rate of atmospheric CO_2 has reached its highest level on record. The acceleration in the CO_2 growth results from the combination of several changes in properties of the carbon cycle, including: i) acceleration of anthropogenic carbon emissions, ii) increased carbon intensity of the global economy, and iii) decreased efficiency of natural carbon sinks.

In the second part of the talk I'll discuss in more detail some of the possible causes of the reduced efficiency of natural carbon sinks and processes which are likely to play a key role in carbon-climate feedbacks during the 21^{st} century including CO_2 and N fertilization effect, forest regrowth, disturbances, and emissions from organic soils.