

The Global Warming Potential of Hydrogen in Different Background Levels of Methane, Carbon Monoxide and VOCs

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Abstract

The atmospheric chemistry of hydrogen is sometimes compared to that of methane, primarily due to the reaction which each species has with hydroxyl (OH). As atmospheric hydrogen concentrations continue to increase, following the implementation of a larger hydrogen economy, models predict an associated decrease in OH concentrations. Carbon monoxide and volatile organic compounds also react with OH. In the future, following actions to support the Paris Agreement and other crucial climate legislation agreements, anthropogenic emission of methane, carbon monoxide and volatile organic compounds are expected to decrease in most CMIP6 scenarios. This will change the distribution and magnitude of OH available to react with hydrogen, which influences the Global Warming Potential of hydrogen. This study uses the United Kingdom Earth System Model to calculate the Global Warming Potential of hydrogen under different future scenarios for carbon monoxide, volatile organic compounds and methane.

Early Career Scientist

YES, I am an early career scientist.

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