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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Quantifying the Loss of Processed Natural Gas Within California's South Coast Air Basin Using Long-term Measurements of Ethane and Methane" *by* D. Wunch et al.

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The observed increase in methane and ethane emissions may be partially attributable to decreased oxidation of methane and ethane by soil microbes. The surface flux of natural gas leaks can be reduced by microbial oxidation. GRI/EPA 1996 reports up to 40% of leak emissions can be oxidized within the soil. Several factors including moisture content and temperature affect the methane oxidation rate of the soil microbial community. Van den Pol-van Dasselaar 1998 report that methane oxidation in sandy grassland soils is highest at intermediate soil moisture and ceases below 5% moisture content. The severe, extended drought in southern California since 2012 might cause local distribution emissions to increase if inhibited microbial oxidation allows a greater

fraction of underground leak emissions to reach the surface. It is possible that decreased microbial oxidation may also increase emissions from geologic seepage and biogenic sources. I recommend that you address this issue in your discussion.

http://link.springer.com/article/10.1007/BF00425043 https://www.epa.gov/gasstar/documents
http://link.springer.com/article/10.1023/A:1004371309361
http://droughtmonitor.unl.edu

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