

## ***Interactive comment on “Limited impact of El Niño – Southern Oscillation on the methane cycle” by Hinrich Schaefer et al.***

**A. J. Turner**

alexander.jay.turner@gmail.com

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Dear editor,

I was recently pointed to this manuscript on the role of ENSO on the methane cycle. The manuscript argues for a limited role of ENSO on the methane cycle; however, the manuscript makes little mention of two important factors that impact atmospheric methane and are strongly influenced by ENSO: **(1) atmospheric transport** and **(2) loss via hydroxyl**. These factors seem particularly pertinent to a discussion of the role of ENSO on the methane cycle. There have been a number of recent papers on these two topics in the last two years that the authors seem to have overlooked. Specifically, McNorton *et al.* (2016), Turner *et al.* (2017), and Rigby *et al.* (2017) showed

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how changes in the methane loss via oxidation by hydroxyl was an important factor in the interpretation of methane trends. More directly related to ENSO, Corbett *et al.* (2017) showed the influence of ENSO on the spatial distribution of methane via changes in atmospheric transport while Turner *et al.* (2018) showed how ENSO can strongly influence the methane lifetime.

- **McNorton *et al.*, ACP (2016):** “Role of OH variability in the stalling of the global atmospheric CH<sub>4</sub> growth rate from 1999 to 2006”, <https://doi.org/10.5194/acp-16-7943-2016>.
- **Corbett *et al.*, GRL (2017):** “Modulation of midtropospheric methane by El Niño”, <https://doi.org/10.1002/2017ea000281>.
- **Turner *et al.*, PNAS (2017):** “Ambiguity in the causes for decadal trends in atmospheric methane and hydroxyl”, <https://doi.org/10.1073/pnas.1616020114>.
- **Rigby *et al.*, PNAS (2017):** “Role of atmospheric oxidation in recent methane growth”, <https://doi.org/10.1073/pnas.1616426114>.
- **Turner *et al.*, PNAS (2018):** “Modulation of hydroxyl variability by ENSO in the absence of external forcing”, <https://doi.org/10.1073/pnas.1807532115>.

Regards,  
Alexander J. Turner

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