

## ***Interactive comment on “MLS measurements of stratospheric hydrogen cyanide during the 2015–16 El Niño event” by Hugh C. Pumphrey et al.***

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The study highlights a record-breaking MLS HCN increase (for the Aura mission period) in the tropical lower stratosphere during 2015–2016 El-Niño event. Other two satellite datasets (ACE-FTS and MIPAS) as well as the ground based measurements show reasonable agreements with MLS, which supports sufficiently the main conclusion of the paper. The paper presents important results and should be in good shape for publication in ACP. I recommend its publication with more discussion about transport features into stratosphere related to warm ENSO events.

Specific comments:

1. The authors suggest the main driver of enhanced HCN is droughts in equatorial

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Asia during El-Niño. However, the connection between warm ENSO and transport in tropical UTLS is not mentioned. I suggest adding one paragraph to review the state-of-art about the association between ENSO and troposphere to stratosphere transport. For example, 1) the convective transport over Maritime Continents; 2) stronger TTL upwelling during El Niño winters (e.g. Randel et al. 2009, Calvo et al. 2010, Konopka et al. 2015).

2. MIPAS data shows a second maximum of HCN around 20–30 N on 100 hPa and 68 hPa firstly in boreal winter but not in MLS in Figure 5. The authors did not comment on this feature but only comment on the one in NH during summer. Could the author comment on this maximum from the third observation and from the possible source?

3. Still about the section 3.3, the author mentioned the boreal summer increased HCN in NH possibly links to ASM suggested by Randel et al. [2010] and Ploeger et al. [2017]. But why this boreal summer enhanced HCN show clear increase in 2007 and 2016, which do not experience strong AM circulation?

Technical comments:

Page 3 line 3, ‘since 1950’ instead of ‘between 1950 and now’

Page 13 line 10, ‘droughts’ instead of ‘draughts’

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