This paper utilizes satellite measurements to show evidence for a decrease in tropical ozone near 30 km since 1991, and proposes a relatively simple explanation due to changes in circulation and reactive nitrogen. This is a novel and interesting paper. The results show straight-forward analyses of ozone measurements from HALOE (1991-2005) and MLS satellites (2004-2013), which highlight the middle stratosphere ozone decreases; the authors note similar results in other recent observational studies. The proposed mechanism for ozone decreases involves an increase in reactive nitrogen (NOy), linked to decreases in N_2O (possibly related to a decreased tropical upwelling circulation). The evidence for this mechanism is: 1) positively coupled ozone – N_2O from MLS data, (2) consistent changes in ozone – N_2O – NOy from ACE-FTS measurements, (3) observed trends in ozone and NOx from HALOE, and (4) results from an idealized chemical transport model with imposed circulation changes (which explains the altitude dependence and approximate magnitude of ozone – NOy changes). All of this evidence is consistent with the hypothesis of variations in NOy causing the observed ozone decrease, and overall a convincing case is made. This paper is appropriate for ACP, and makes an important contribution to understanding long-term ozone variability. Overall the paper is well written and clear, although I have a few comments for the authors to consider in revision.

1) The authors might include a reference to Bourassa et al (ACP, 2014), who derive a similar ozone decrease in the tropics from combined SAGE II – OSIRIS data.
2) I think it would be useful to include a figure showing the latitude-height structure of linear trends in MLS N_2O measurements, to complement the ozone trends (Fig. 3) and bolster the arguments regarding links in ozone – N_2O trends. Note that the strong correlations in Figs. 4-6 could mainly reflect QBO variations (which appear to dominate in Fig. 5).
3) I like the arguments regarding estimated sensitivities of delta (ozone) / delta (NOy) in lines 316-327. But I would like to see a more simple comparison of the different results. I find several issues: (a) line 320: (~ 20 ppbv) is not a ratio, and not clear how this compares to the MLS trends. (b) delta (ozone) / delta (NOy) from HALOE is about (1 ppmv / 2.6 ppbv); from ACE ~ 1 ppmv / 3 ppbv (Fig. 6b; the authors should include this), and from the model: 1 ppmv / 6 ppbv. These are close enough to be reasonably convincing, but this should be clearly spelled out (and discuss the factor of two difference from the model sensitivity, if I have done the algebra correctly).
4) The authors make a convincing case of decreasing tropical stratospheric N_2O leading to ozone decreases, with a suggestion that this can result from decreasing tropical upwelling circulation. This is an especially interesting conclusion given the general result from model simulations of increasing trends in tropical upwelling (e.g. Butchart, Rev. Geophys., 2014, and references therein). I think this conclusion should be discussed in more detail in regards to other recent work evaluating trends in stratospheric circulation, including: Engel et al (Nat. Geo., 2009), Ray et al (JGR, 2010), Stiller et al (ACP, 2012), Diallo et al (ACP, 2012), Mahieu et al (Nature, 2014) and Ploeger et al (JGR, 2014).