Tsunogai et al. used the method of triple oxygen isotope analysis to quantify the contribution of atmospheric nitrate to total nitrate leaching from a forested watershed after trees and understory vegetation were removed. The authors presented that after strip-cutting, the fraction of atmospheric nitrate in total nitrate leaching from the watershed was significantly increased, in addition to the increase in total nitrate leached. The results indicate the importance of understory vegetation in preserving nitrate in forest ecosystems, especially for atmospheric nitrate. The topic is relevant to Biogeosciences, however, I think the conclusion is somewhat undermined by the inadequate discussion. I have the following comments that I consider major, and they should be properly addressed before publication.

Comment 1: Annual atmospheric nitrate flux in the research period, i.e., 2003-2005, is estimated as the mean of 2008-2011. I doubt this is suitable, because that the inter-annual variability of atmospheric nitrate flux is large, varying from 15.1 to 20.9 (Table 2), not to mention if there is a long term trend in atmospheric nitrate abundance. So how well does the average of 2008-20011 represent the flux in each year of 2003, 2004 and 2005? I understand that the authors probably don't have data covering the years of 2003-2005, but the authors at least can estimate the nitrate flux in each year of 2003-2005 based on the annual precipitation record in the research region, as the atmospheric nitrate flux is dominated by wet deposition.

Comment 2: when calculating the fraction of atmospheric nitrate in total nitrate leaching from the watershed, the authors treated $D^{17}O$ of atmospheric nitrate its annual mean of 26.2 ‰. This again is not suitable, as $D^{17}O$ of atmospheric nitrate varies seasonally, from ~20 ‰ in summer to as high as 34.5 ‰ in winter in the research region. The annual mean is suitable only if in Equation (2) C_{atm}, C_{total}, and $D^{17}O$ are all annual means, which is obviously not what the authors did. Seasonally or monthly average of atmospheric nitrate D17O should be used in Equation (2).

Comment 3: the spring nitrate concentration peaks in 2004 and 2005 (Figure 2). The authors suggested that they are due to spring snow melting, but why the flow rate is delayed compared to the nitrate peak? Presumably, snow melting will enhance nitrate concentration (atmospheric nitrate scavenged by snow) and water flow simultaneously.

Comment 4: there should at least to be a short paragraph as the conclusion to wrap up the major findings/points of this work.

I also have the following comments need to be addressed:

P7415, line 9-10: "atmospheric nitrate accounts for more than 50% of total nitrate exported...", this statement is misleading. As shown in Figure 3, every year only in a very small period (one sample point) has D17O of ~14 ‰, when atmospheric nitrate is important.

P7416, line 10: what is the difference between uptake by microbes and denitrification? Aren't they usually the same?

P7417, line 19: What does "natural" mean? I think it is "Isotopic composition", not "compositions".

P7418, line 12: it is not "international standard", it's "standard reference material", i.e., VSMOW for oxygen and N2-Air for nitrogen.

Section 2.3: I was curious about the analytical method. Why not measure d15N and D17O together after converting N2O to O2 and N2, instead of measuring d15N in N2O first? In addition, when measured d15N in N2O, were the final d15N result corrected for the interference of ^{17}O?

Section 2.4: How the flux of nitrous acid and nitrogen oxides were used to determine the flux of nitrate? I think nitrate flux is estimated from the flux of particulate nitrate and gaseous HNO3.

P7427, line 1-5: I don't agree with this argument, Because nitrate produced by nitrification in the soil will also have d15N values around -1 ‰ as shown in Figure 3 and Figure 4a. Just that d15N in the spring happens to be consistent with that of atmospheric nitrate illustrates nothing, as nitrate in the spring stream is still a mixture (about 1:1) of atmospheric nitrate and nitrate from nitrification. So ideally, d15N of nitrate in the spring stream should be different from that of atmospheric nitrate.

P7429, line 12-20: there is no need to discuss samples with D17O around or lower than 0.2 ‰, as the authors already stated that the analytical uncertainty is 0.2 ‰, it is straightforward to treat these samples as zero.

P7430, line 7-10, why high D17O will cause large errors in d18O?

P7430, line 10-26: I don't think the discussion in this part make sense at all. As stated by the author that $d15N_{re}$ represents remineralized nitrate produced in the soil through nitrification. presumably, the process of nitrification should be more important in determining $d15N_{re}$. However, in this part the authors talked only the effect of dinitrification on d15N of residual

nitrate. The residual nitrate could be also atmospheric nitrate, and which is not directly related to nitrate produced from nitrification. In addition, d15N of soil nitrate is determined by many factors, including d15N of atmospheric nitrate, nitrogen isotopes of ammonium and organic N in soil (i.e., the source of nitrogen) and the process of nitrification, and the last, the process of dinitrification. I agree it is complicated to discuss d15N, but if the authors decided to discuss d15N, it should be discussed adequately. Overall, I think the authors overstated the importance of denitrification in influencing d15N of soil nitrate, as the effects of other factors were simply ignored in this part.

P7431, line 6-12: This paragraph is an example that nitrification is also important in determining d15N of soil nitrate. In addition, 1) if T-test was used to compared the summer values against other seasons, at least t-value should be given; 2) why active nitrification reduce denitrification? Aren't they both sensitive to temperature and enhanced at higher Ts? 3) nitrification process also preferentially use lighter N (e.g., [*Rafter et al.*, 2012]), which means that nitrification produced nitrate should have relatively low d15N, could this explain the summer low d15Nre?

P7431, line 14-16: please to be consistent, the spring increase of nitrate in the stream is due to snowmelt or due to the strip-cutting, or both?

P7433, line 8-9: How does nitrification in soil affect atmospheric nitrate in soil? Only denitrification has.

Rafter, P. A., D. M. Sigman, C. D. Charles, J. Kaiser, and G. H. Haug (2012), Subsurface tropical Pacific nitrogen isotopic composition of nitrate: Biogeochemical signals and their transport, *Global Biogeochem. Cy.*, *26*, doi: 10.1029/2010gb003979.