

Interactive comment on “Atmospheric chemistry of nitrogenous aerosols in Northeast Asia: biological sources and secondary formation” by C. M. Pavuluri et al.

Anonymous Referee #1

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In this manuscript, the authors measured concentrations and $\delta^{15}\text{N}$ of TN and WSTN at Sapporo, Japan for one year. The authors examined seasonal variations of WSON and WION in relation with organic tracers and analyzed sources of these species. This manuscript is well written, clearly organized and gives useful information about atmospheric behaviors of WSON and WION. This reviewer recommends for publication after the following modification.

p.12622, line 8-10: "The analytical uncertainties": Can you change this term more specific? (1 or 3 standard deviations?)

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p.12624, line 14-16: In the midlatitude regions, transient cyclone/anticyclone often occurs and changes wind direction within a timescale of several days. This reviewer doubts this description and considers that this line is unnecessary.

p.12625, line 11-12: It seems there are clear seasonal patterns. (also for TN/TSP ratio, WSON, and WION).

p.12626, line 13-14: In this section, rationale that chemical aging had influence on ON loadings is not provided. Do the authors mean that the chemical aging reduce ON/TN ratio during the chemical aging? Even so, how chemical aging affect ON loadings? Methodical explanation is necessary.

p.12628, line 13-25: Are there any literatures about WION in urban areas? The authors suggested that biogenic sources had important contributions to WION. This suggestion would be partly validated from comparison with WION in other urban areas.

p.12635, line 6-10: This description should be more modest considering that the discussion about sources of aerosol N in Section 3.5.2 is not quantitative.

Table 3: The authors only applied simple linear regression analyses. Apparently, WSON and WION are influenced by multiple emissions sources, and thus, this reviewer recommends the authors to conduct multiple regression analyses.

Interactive comment on Atmos. Chem. Phys. Discuss., 15, 12617, 2015.

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