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Interactive comment on "Chemical Characterisation of Water-soluble Ions in Atmospheric Particulate Matter on the East Coast of Peninsular Malaysia" *by* Naomi J. Farren et al.

Anonymous Referee #1

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The manuscript by Farren et al. entitled as 'Chemical Characterisation of Water-soluble Ions in Atmospheric Particulate Matter on the East Coast of Peninsular Malaysia' presents the observation data at Malaysia. The method and data quality seem to be reasonably good. The data in the manuscript could be a good addition to the existing data set in the region. Quality of figures and descriptions could significantly be improved. I provide some comments related to the presentation quality below. It would be good if the authors could significantly improve it.

Comments

L45 'During the northern hemisphere winter, a large anticyclone forms over Siberia

each year, creating strong north-easterly monsoon winds in the South China Sea (Northeast Monsoon). These strong north-easterlies can transport air masses from rapidly developing East Asian countries (e.g. China, Japan, Taiwan, Vietnam, North and South Korea) across the South China Sea to the Maritime Continent.'

I am not sure if the statement is true. Please add references to support the description.

L185 'Figure 2 shows the 10-day backward air mass trajectories arriving at the measurement site during the demonstration campaign.'

Further details of the back-trajectory calculations, such as altitude, will be needed. It is not clear to me if a back trajectory analysis in the troposphere could provide a reliable result for such a long time-scale.

L224 'and it is likely that the remainder was comprised primarily of organic aerosol'

Please provide a supporting information on this statement.

L240 'the mean Na+ /Ca2+ ratio in the crust and mean Ca2+ /Na+ ratio in seawater have been estimated as 1.78 w/w and 0.038 w/w respectively (Bowen, 1979)' I wonder how stable these values are. The uncertainties in the values directly influence the following discussion. Please provide a detailed description, rather than simply referring one publication.

L314 'Air masses in cluster 10 passed over the megacity of Manila in the Philippines, but may have slightly lower SO42- levels due to the height of the back trajectories;'

I am unable to judge if the statement is valid, as no information about altitude is provided in the manuscript.

L351 'The uptake of SO42- is preferential to the uptake of NO3- because sulfuric acid has a lower vapour pressure than nitric acid, and aqueous or solid (NH4)2SO4 is the preferred form of sulfate'

The statement is unclear to me. Please clarify.

L402 'The ambient temperature and relative humidity data were taken from the measurements made nearby at the Sultan Ismail Petra airport.'

It seems to me that the authors assumed an internal mixing state in using the thermodynamic model. Is there any supporting evidence on this assumption?

Figure 7

Almost all the trajectories look similar to me, except for C10. Pleas provide the detailed reasoning for classfication.

Minor comments

L76 'Dominick et al. characterised ..'

I believe that it should be written as 'Dominick et al. (2015) characterized. . .' There are many similar descriptions when the authors cite other publications. Please check the recent publications of the journal carefully in preparing a manuscript.

L200 'The station is located approximately 23 km away at the Sultan Ismail Petra airport in Kota Bharu (6.17298N, 102.2928E), as shown in Fig. S1 (Supplement)'

A similar information has already appeared at L150. Please minimize duplicated descriptions.