This paper presents an interesting and potentially very useful application of the previously developed ASOADeK method, which allows the regionalization of hydrometeorological observations. The approach has previously been shown to give more robust results than simple multiple regression analysis and in contrast to purely geostatistical methods it has the advantage to identify dominant geographical and topographical controls on the variable of interest.
The paper is in general well structured and the results are presented in a clear way and seem to be adequately discussed. As the authors have already addressed a few major concerns highlighted also by the other reviewers, such as the derivation of the uncertainty map (Fig.7d) and the assumption of spatial independence for the hypothesis tests, I have only some minor additional comments and suggestions:

1) Although the paper is in general well written, I would nevertheless encourage the authors to have it proof read by a native speaker as there seem to be several grammar and typing mistakes.

2) P.5853, L.9-10: rephrase "…breaking down…"

3) P.5854, L.1-2 and L.14-16: Maybe try to combine the two sentences into one as they somehow seem to say the same thing.

4) P.5854, L.27: Applicability of kriging not only depends on an appropriate sampling density but also on a sufficiently large sample size.

5) P.5855, L.17-19: While the results suggest that the mentioned variables control chloride deposition, it might be worth toning the sentence down a bit, especially in the light of the relatively small sample size and associated relatively high p-values.

6) P.5856, L.7-8: Is this the long term mean annual precipitation or the annual precipitation during the observation periods? Perhaps include a reference.

7) P.5856, L.10 and Fig.2: are these instantaneous measurements of wind direction or are these the dominant wind directions over e.g. 12 hours? Please specify!

8) P.5856, L.14 and elsewhere in the manuscript (e.g. P.5862, L.26): I am not sure if the chloride concentration measured from bulk precipitation samples is really the "bulk precipitation chloride concentration". Would we not expect at least a proportion of dry deposition to end up in the rain samplers as well? I would thus suggest calling it "bulk chloride concentration" or even "bulk total chloride concentration" instead.

9) P.5856, L.15-17: to increase sample size, the authors chose to include samples from two different observation periods. This is, in general for their purpose, not too problematic. However, I think it would be good to include an estimate for interannual variability in chloride deposition. I am aware that these data are obviously not available

for the region of interest. Are there any estimates of interannual variability for regions not too far from the project region in South Australia available in literature?

10) P.5856, L.18-19: The authors mention that some chloride concentrations were obtained from multiple month cumulative rainfall samples. Except for the oil layer that does to a certain extent reduce evaporation, did the authors correlate the rainfall totals of their multiple month samples to higher resolution rainfall totals from nearby precipitation gauges to make sure that the evaporation losses are not significant?

11) P.5856, L.23-24: Please state the method, precision and possibly detection limits for the chloride analysis.

12) P.5856, L.26: Although not the focus of this paper, are nevertheless some crude estimates of dry deposition in the area available from literature? It would be good for illustrative reasons for the reader.

13) P.5856, L.26: Was the wind speed mentioned here used in any of the subsequent analysis? If not, it can be removed. In any way, it would be interesting to see how wind speed might affect the distribution patterns of chloride.

14) P.5857, L.5-11: Although I appreciate detailed descriptions of methods, I think the Pearson product-moment correlation coefficient should be well known and the description could be shortened or left out.

15) P.5857, L.19: Should r not rather be rxy(z)?

16) P.5858, L.7: Should maybe read “geographic and orographic effects”, as X and Y are not orographic effects per se?

17) P.5859, L.6: Not entirely clear how the de-trended residual map was produced. Should maybe read “…a de-trended residual map by kriging”.

18) P.5859, L.12: General comment for kriging: 17 points seem relatively few for the generation of a variogram (cf. n>50, Burrough and McDonnell, 1998). It might be worth acknowledging this fact and highlighting that the limited sample size is likely to cause uncertainties in the kriging procedure.

19) P.5859, L.21: This reads a bit too definitive – consider toning it down a bit, e.g. “…both wet and dry chloride deposition in the study area tend to come from westerly direction.”

20) P.5859, L.23-26: Sounds a bit speculative – maybe leave out.

21) P.5860, L.1-3: I am not convinced by excluding sites 16 and 17 which seems quite an arbitrary decision even if it is speculated that some short range effects might dominate at these sites.

22) P.5860, L. 17: maybe rephrase to "…show a highly significant ($p<0.01$?) relationship"

23) P.5860, L.20: should read "…with a significance level of $p=0.04$"

24) P.5861, L.3: should read "…significant factors…"

25) P.5861, L. 17-18: Sentence seems a bit awkward.

26) P.5861, L.24-27: Sentence not entirely clear, please rephrase.

27) P.5862, L.21-23: Not entirely clear which MAE the authors refer to here and what the difference is to the one mentioned at P.5861, L.27. Please rephrase sentence and provide a more clear explanation.

28) P.5862, L.29: Please indicate how precipitation was regionalized and what the approximate uncertainty is.

29) P.5863, L.23-25: Has this effect been observed previously? If so, please provide references.

30) P.5864, L.3: Maybe more useful to provide p-value instead of r.

31) P.5853, L.2: Regarding the application of chloride as an environmental tracer it might be worth including some more recent references, e.g.
Hrachowitz M, Soulsby C, Tetzlaff D, Dawson JJC, Malcolm IA. 2009b. Regionalization of transit time estimates in montane catchments by integrating landscape controls, Water Resources Research 45, W05421, doi:10.1029/2008WR007496.
Shaw, S.B., Harpold, A.A., Taylor, J.C., Walter, T.M., 2008. Investigating a high resolution, stream chloride time series from the Biscuit Brook catchment, Catskills, NY. Journal of Hydrology 348:245-256.
Dunn, S.M., Bacon, J.M., 2008. Assessing the value of Cl- and δO18 data in modeling the hydrological behaviour of a small upland catchment in north-east Scotland. Hydrology Research 39:337-358.

32) Table 1: It would be useful for the reader to include elevation, slope, aspect, distance to coast and precipitation for the individual observation points

33) Table 2: To make the correlation matrix easier readable, please mark significant correlations, e.g. with asterisk and indicate significance level in caption

34) Figure 1: It might be worth including an outline of Australia with the approximate location of the project region. Furthermore, I think it would be good to use different colour schemes for elevation and precipitation (possible both on a graded scale, so that the map can also be easily read in black and white print outs). Also, please include the

Site numbers or IDs for the chloride observation sites and highlight the 4 wind observation sites used in Figure 2.

35) Figure 3: Please include Site numbers or IDs and the p-value

36) Figure 7: Although the individual figures are quite small, would it be possible to include the chloride observation sites? Maybe in at least on figure, e.g. in the uncertainty plot (7d).