

## Response to Reviewer's Comments

We thank the reviewer for his/her helpful comments. We have incorporated as many of the reviewer's suggestions as possible into the revised manuscript.

Replies to specific comments follow.

### Reviewer #2

*#1. Overall a potentially good contribution to the paper, although the title is a little broader than the paper actually is.*

The title now reads "Influence of Measurement Uncertainties on Fractional Solubility of Iron in Dust Aerosols Over the Oceans."

*#2. It is unclear why the authors only consider dust: the same problem should exist for other sources of iron as well, or probably even worse, especially finer particles from combustion? Why not consider those? You could presumably do this rather easily, just assuming BC has Fe, and including the size distribution of BC? There are recent reviews of the size of combustion iron particles (e.g. Wang et al., 2015, ACP).*

We agree with the reviewer that similar problems may exist for biomass burning and fossil fuel (coal burning, ship plumes, automobile exhaust, etc.) sources of Fe-laden aerosols (although to lesser extent due to higher fractional solubility of Fe in these sources compared to mineral dust). Unfortunately, we cannot use the data compiled by Wang et al. (2015) because it only reports the fraction of total Fe (not sol-Fe) in combustion sources. We also cannot compare our modeling results with Wang et al. (2015), because instead of an explicit modeling of the atmospheric processing of Fe emitted from mineral dust and combustion sources the authors prescribe a constant Fe solubility irrespective to transport time, source location and pollutant load.