Review of « Snowpack nitrate photolysis drives the summertime atmospheric nitrous acid (HONO) budget in coastal Antarctica » by Amelia M. H. Bond, Markus M. Frey, Jan Kaiser, Jörg Kleffmann, Anna E. Jones, and Freya A. Squires

The manuscript of Bond et al. presents atmospheric and flux density measurements of nitrous acid (HONO) made for the first time at the coastal Antarctic Halley station over 10 days during the austral summer 2021/22. Previous studies which dealt with HONO measurements in Antarctica, revealed significant measurement problems, resulting in overestimations of HONO. The measurement technique used in the present study is a two-channel Long Path Absorption Photometer (LOPAP) which limits numerous interferences except for HNO4, a species that is mostly present in low temperature atmospheres.
Atmospheric HONO measurements at Halley were made over 10 days including around 12hours during which the measurement height was changed between two heights to estimate the HONO flux out of snow. After presenting the HONO production and destruction mechanisms, the site and the used methods are presented.
Then the newly gained HONO results are discussed against already existing HONO measurements in Antarctica and in view of what would have expected from the known production and destruction mechanisms.

This study fills an important information gap about HONO sources and sinks in the polar boundary layer at a snow-covered coastal site, a key question for the oxidative properties of the polar atmosphere. Thus, the manuscript is clearly in the scope of ACP. The study presents new data and the manuscript is structured adequately with respect to the aim of the manuscript. In my opinion the manuscript is suitable for publication after one point has been corrected.

The only real concern I have is that the authors invoke in section 4.1 (paragraph which starts at line 295) very high levels of organic matter at Halley by referencing Calace et al. (2005) and Antony et al. (2011) to explain the flux density measured during the field campaign, whereas Legrand et al. (2013) clearly demonstrated that these studies overestimate the organic matter content significantly. Instead, Legrand et al. (2013) reports much lower levels of about 10-20 ppbC of dissolved organic carbon at inner continental sites as well as near coastal sites (see also Figure 3 for HULIS species). Thus, the contribution of the production mechanism via R10 and R11 are likely too limited to explain the observed HONO flux.
On the other hand, concerning the organic matter content which should be low at both sites, snow at Halley and Dome C might not be so different, what might allow to do a first order estimation of the Halley HONO flux density via the Halley NOx flux measured during the CHABLIS campaign and the HONO to NOx production rate ratio measured in the Dome C snow photolysis experiment described by Legrand et al., 2014.
Such an exercise could give a hint whether the, to a few hours limited, HONO flux measurements conducted within this study would be representative or not.

Minor comment:

1) The method sections 2.2. and 2.4 are rather long considering that both methods (LOPAP and flux calculations) are already reported in literature. For the shake of the straightness of the manuscript, the authors might consider to shorten these topics considerably in the main manuscript and to detail them in a supporting text. On the other hand, the manuscript is not too long, as it is, therefore I leave the decision to the authors.

2) Figure 5 (line 201) is addressed for the first time before Figure 4 (line 205) is addressed for the first time. Therefore figure 4 and 5 might be inversed in their order.

3) Please let the reader know where the data of this study will be available

References:
Legrand, M., Preunkert, S., Jourdain, B., Guilhermet, J., Fain, X., Alekhina, I., Petit, J.R., (2013). Water-soluble organic carbon in snow and ice deposited at Alpine, Greenland, and Antarctic sites: a critical review of available data and their atmospheric relevance. Climate of the Past. 9. 10.5194/cp-9-2195-2013.