

## ***Interactive comment on “H<sub>2</sub>O and HCl trace gas kinetics on crystalline and amorphous HCl hydrates in the range 170 to 205 K: the HCl/H<sub>2</sub>O phase diagram revisited” by R. Iannarelli and M. J. Rossi***

### **Anonymous Referee #1**

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Comments on the manuscript entitled: “H<sub>2</sub>O and HCl trace gas kinetics on crystalline and amorphous HCl hydrates in the range 170 to 205 K: HCl/H<sub>2</sub>O phase diagram revisited” Author(s): R. Iannarelli and M.J. Rossi MS No.: acp-2013-856-

General comments:

This paper reports kinetic results for evaporation and condensation of HCl and H<sub>2</sub>O system for crystalline and amorphous HCl hydrates using a multi-diagnostic approach. I was impressed by how thorough the authors were in their experiments and analysis

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to obtain the results. I have very minor suggestions that authors need to clarify before the manuscript goes to publication:

1. This paper is very long, and due to its length some of the very important information can be missed by the readers, so I suggest that the authors move the appendix section to the supplements also some of the details in their calculations in the experimental section can be moved to the supplement. Just important experimental details can stay in the main manuscript.
2. Figures like figure 3 and even fig10 (basically the same information are in figure 11) can be moved to supplement section.
3. P 30782 (Lines 1-3) the authors states that in the presence of additional flow of H<sub>2</sub>O, the HCl coverage was lower. But in Figure 4 it looks like the coverage in the black trace is higher than that of the blue trace. I was confused in the explanation for the different traces in Fig 4, may be the authors can explain it better in the text.
4. The explanation of steady state vs pulsed experiments was a little bit confusing since in both experiments they used HCl pulses. So may be the authors can clarify the two experiments in a simpler way. I recommend this manuscript for publication in ACP.

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