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Global CO_2 fluxes from GOSAT: First results from an inter-comparison of inverse models

S. Houweling (1,2), S. Basu (1,2), F. Chevallier (3), L. Feng (4), S. Maksyutov (5), P. Palmer (4), P. Peylin (3), Z. Poussi (6), and H. Takagi (5)

(1) SRON, Utrecht, The Netherlands (s.houweling@sron.nl, s.basu@sron.nl), (2) IMAU, Utrecht, The Netherlands (s.houweling@uu.nl, s.basu@uu.nl), (3) LSCE, Gif Sur Yvette, France (frederic.chevallier@lsce.ipsl.fr, peylin@lsce.ipsl.fr), (4) University of Edinburgh, Edinburgh, United Kingdom (pip@ed.ac.uk, lfeng@staffmail.ed.ac.uk), (5) NIES, Tsukuba, Japan (shamil@nies.go.jp, takagi.hiroshi@nies.go.jp), (6) CLIMMOD, Orsay, France (j.zegbeu.poussi@climmod.com)

The GOSAT instrument has been in orbit since early 2009 collecting measurements of total column CO_2. After a few groups have demonstrated highly promising agreements between their GOSAT retrievals and data from the TCCON in situ FTS network, the intriguing question remains whether the information in the GOSAT measurements can be bring us a step closer to understanding the global sources and sinks of CO_2. Several factors determine the outcome of this question including the following two, which we would like to investigate in the context of this study: 1) How good do the measurements need to be, 2) Are the transport models, that are used to translate total columns into fluxes, good enough. We have organized a model inter-comparison experiment, in which the participants are asked to submit inverse modeling results in a common format for the period June 2009 to June 2010. The aim is to investigate the robustness of these results, and the presence of common signals that are of interest in the context of open questions in C-cycle research. The experimental protocol allows full freedom in inversion set-up in order to avoid limiting the range of possible outcomes. Each participant is free to choose a preferred inversion method, set up and collection of measurements. We will present the first results of this inter-comparison, including a preliminary analysis of inversion performance, and first steps in the direction of assessing robust versus non robust results in relation with known uncertainties of the transport models and measurements.