

## **GHG-CCI QSR July-September 2015**

### **1. Overall progress**

During the reporting period the project proceeded as planned. No major issues have been identified. Focus was on generating the new Climate Research Data Package No. 3 (CRDP#3). The next progress meeting will be held at Univ. Leicester (15-16 Oct 2015), where the CRDP#3 status will be presented and near future activities w.r.t. validation and user assessments will be discussed. The validated CRDP#3 will be made publicly available in March/April 2016.

### **2. Major achievements**

#### **2.1 Overall summary**

Until now GHG-CCI has achieved the following (see also previous QSR): Generation of improved data products with higher quality and extended time coverage (see <http://www.esa-ghg-cci.org/> -> CRDP (Data)): As planned GHG-CCI has released in March 2015 the 2nd version of the CRDP (CRDP#2) based on re-processing of SCIAMACHY and GOSAT spectra to generate an improved version of the GHG-CCI core products generated with ECV Core Algorithms (ECAs). A comparison of the achieved performance w.r.t. GCOS and GHG-CCI CRG user requirements is shown in validation document PVIRv3.2 ([http://www.esa-ghg-cci.org/?q=webfm\\_send/251](http://www.esa-ghg-cci.org/?q=webfm_send/251), Table S-3). As can be seen, several user requirements have been met, but not all. For example, the comparison with the TCCON reference data indicate that the GCOS XCO<sub>2</sub> accuracy requirement of better than 1 ppm (target) has been met but not the more demanding 0.5 ppm requirement (threshold) of the GHG-CCI CRG. CRDP#2 has also been assessed by the GHG-CCI CRG, see CARv2 ([http://www.esa-ghg-cci.org/?q=webfm\\_send/256](http://www.esa-ghg-cci.org/?q=webfm_send/256)). Furthermore, significant progress has been made on the non-core (i.e., Additional Constraints Algorithm (ACA)) products. For example, new CH<sub>4</sub> and CO<sub>2</sub> stratospheric profile time series have been generated from the SCIAMACHY solar occultation measurements and the long-standing high bias of MIPAS CH<sub>4</sub> profiles in the lower stratosphere has been significantly reduced.

#### **2.2 Project outreach / promotion of data sets**

During the reporting period a new Newsletter (No. 6, [http://www.esa-ghg-cci.org/?q=webfm\\_send/2688](http://www.esa-ghg-cci.org/?q=webfm_send/2688)) has been generated and new figures and animations (see [http://www.esa-ghg-cci.org/?q=image\\_gallery](http://www.esa-ghg-cci.org/?q=image_gallery)) for various purposes including the tablet version of the CCI visualization tool. The new GHG-CCI data sets have been presented at various conferences (see previous QSR; no conference presentations during reporting period (summer break)). For new publications please see Sect. 3.1.

### **3. Technical information**

#### **3.1 Publications since last QSR**

Heymann, J., M. Reuter, M. Hilker, M. Buchwitz, O. Schneising, H. Bovensmann, J. P. Burrows, A. Kuze, H. Suto, N. M. Deutscher, M. K. Dubey, D. W. T. Griffith, F. Hase, S. Kawakami, R. Kivi, I. Morino, C. Petri, C. Roehl, M. Schneider, V. Sherlock, R. Sussmann, V. A. Velazco, T. Warneke, and D. Wunch, Consistent satellite XCO<sub>2</sub> retrievals from SCIAMACHY and GOSAT using the BESD algorithm, *Atmos. Meas. Tech.*, 8, 2961-2980, 2015.

Lindqvist, H., C. W. O'Dell, S. Basu, H. Boesch, F. Chevallier, N. Deutscher, L. Feng, B. Fisher, F. Hase, M. Inoue, R. Kivi, I. Morino, P. I. Palmer, R. Parker, M. Schneider, R. Sussmann, and Y. Yoshida, Does GOSAT capture the true seasonal cycle of XCO<sub>2</sub>?, *Atmos. Chem. Phys. Discuss.*, 15, 16461-16503, doi:10.5194/acpd-15-16461-2015, 2015.

Turner, A. J., D. J. Jacob, K. J. Wecht, J. D. Maasackers, S. C. Biraud, H. Boesch, K. W. Bowman, N. M. Deutscher, M. K. Dubey, D. W. T. Griffith, F. Hase, A. Kuze, J. Notholt, H. Ohyama, R. Parker, V. H. Payne, R. Sussmann, V. A. Velazco, T. Warneke, P. O. Wennberg, and D. Wunch, Estimating global and North American methane emissions with high spatial resolution using GOSAT satellite data, *Atmos. Chem. Phys.*, 15, 7049-7069, doi:10.5194/acp-15-7049-2015, 2015.

Worden, J. R., A. J. Turner, A. Bloom, S. S. Kulawik, J. Liu, M. Lee, R. Weidner, K. Bowman, C. Frankenberg, R. Parker, and V. H. Payne, Quantifying lower tropospheric methane concentrations using GOSAT near-IR and TES thermal IR measurements, doi:10.5194/amt-8-3433-2015, Atmos. Meas. Tech., 8, 3433–3445, 2015.

Full publication list please see: <http://www.esa-ghg-cci.org/> -> Publications (note that publications with GHG-CCI funding explicitly acknowledged are marked with (\*) on that website).

### **3.2 Number of users**

Since mid 2011 GHG-CCI is recording the number of users of the GHG-CCI core (ECA) data products. This includes users who registered via the GHG-CCI website and some other (e.g., maintained historical) websites. The number of users is (status 23-Sept-2015): 399.

\*\*\* End of Report \*\*\*