**Deliverable D4.1.1: Report ‘Project Management Plan’**

From: University of Bremen, Institute of Environmental Physics

Date: 19 November 2021

To: EUROPEAN SPACE AGENCY (ESA)

The European Space Research Institute (ESRIN),

Via Galileo Galilei,

Casella Postale 64,

00044 Frascati (Roma),

Italy

***Att.: Angelika Dehn***

Subject: ESA RFP/3-17031/21/I-DT-lr

Title: Fiducial Reference Measurements for Ground-Based IR Greenhouse Gas Observation (FRM4GHG 2.0)

Category: ESA Express Procurement (EXPRO)

Our ref.: Proposal No. 0413/2021–

Proposal from June 3, 2021

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Dear Sir or Madam,

With reference to the above Request for Proposal (RFP), please find our report on the ‘Project Management Plan’ (D4.1.1). If you have further questions, please let me know.

Regards

Justus Notholt

The project management plan depends on the timely deliverable of all deliverables. Besides the deliverables all participants need to keep a logbook, noting the status of the instrumental improvements, modifications of the retrieval algorithms, modifications in the network operations of TCCON and COCCON, etc.

**Deliverable time schedule**

In the following all deliverables, their deadline, and the responsible persons are given. Each WP has its own WP leader, who has to take care of all duties within this WP. The overall responsibility lies at Justus Notholt, with the support from Mahesh Kumar Sha.

We use the following abbreviations for the table below

Technical note TN

Report R

Justus Notholt: JN

Mahesh Kumar Sha MS

Rigel Kivi: RK

Frank Hase: FH

Nicholas Jones: NJ

Damien Weidmann: DW

Huilin Chen: HC

University of Bremen UB

University of Wollongong UoW

Finish Institute of Meteorology FMI

Karlsruhe Institute of Technology KIT

University of Groningen RUG

Rutherford Appleton Laboratory RAL

Royal Belgian Institute for Space Aeronomy BIRA

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| **Deliverable** | **Responsible**  **person** | **Mo** |
| **WP1: Instrumental improvements to low-resolution spectrometers for GHG observations, Month 1-48**  WP manager: Justus Notholt, UB  Required input from other WPs:   * EM27/SUN, Vertex70, IRcube and LHR in their final configurations assessed in the FRM4GHG projects Phases 1 and 2; * All results of FRM4GHG-1 |  |  |
| D1.1.1: TN on Vertex70 instrumental improvement (BIRA & UB)  D1.1.2: TN on IRCube instrumental improvement (UoW)  D1.2: TN on LHR instrumental improvement (RAL)  D1.3.1: TN on Linefit update (KIT)  D1.3.2: R on ILS reanalysis (UoW)  D1.4.1: R on OCS profile measurements by AirCore (RUG & FMI)  D1.4.2: R on N2O profile measurements by AirCore (RUG & FMI) | JN/MS  NJ  DW  FH  NJ  HC/RK  HC/RK | 36  36  48  36  48  48  48 |
| **WP2: Improvements to retrieval algorithms for GHG and additional species from low-resolution and TCCON spectrometers, Month 1 - 48**  WP manager: Mahesh Kumar Sha, BIRA  Required input from other WPs:   * PROFFAST Ver1.0 and PREPROCESS Ver1.0 * SFIT4; SFIT4NIR * GGG2020 * Associated spectroscopic linelists * Data, retrieval tools/strategies and results inherited from FRM4GHG-1 |  |  |
| D2.1.1 R on PROFFAST update (KIT)  D2.1.2 R on Vertex and IRCube data uptake in the COCCON schema  (UB)  D2.2 Report on LHR data retrieval (RAL)  D2.3.1 Dataset Level 1(UBremen, M48)  D2.3.2 TN on enhanced retrieval products from TCCON spectra (BIRA)  D2.3.3 Dataset Level 2 (UBremen, BIRA, UoW, FMI, KIT; M48)  D2.4.1 TN on HCHO retrieval from low-resolution spectrometers (BIRA)  D2.4.2 TN on OCS retrieval from low-resolution spectrometers (UBremen)  D2.5.1 TN: AirCore retrieval procedure updates (RUG, M36)  D2.5.2 Aircore Dataset (RUG&FMI)  D2.6.1 Reprocessed L1 and L2 dataset [2017-2019] (FMI, UoW, KIT,  UBremen, RAL)  D2.6.2 R on Intercomparison update for 2017-2019 dataset (BIRA) | FH  JN  DW  JN  MS  JN, MS, NJ, RK, FH  MS  JN  HC  HC,RK  RK, NJ, FH, UB  MS | 36  36  36  48  36  48  24  48  36  48  36  48 |
| **WP3: Improvements to TCCON and COCCON network operations, consistency and data delivery, Month 1-48**  WP manager: Frank Hase, KIT  Required input from other WPs:   * GGG2020 with updated TCCON a priori profiles * Prototype EM27/SUN travelling standard instrument * Agreement with ECMWF for facilitating delivery of ECMWF/CAMS data |  |  |
| D3.1.1 TN on ECMWF data-stream (BIRA, M12)  D3.1.2 R on PROFFAST update and data-stream verification (KIT)  D3.1.3 R on comparison exercise on the data retrieval (BIRA)  D3.1.4 R on the FRM4GHG/COCCON and TCCON agreement (UB)  D3.2.1 TN on Travelling standard EM27/SUN & calibration procedure (KIT)  D3.2.2 R about calibration at TCCON sites (KIT) | MS  FH  MS  JN  FH  FH | 12  24  36  48  12  48 |
| **WP4: Project management and Outreach, Month 1-48**  WP manager: Justus Notholt, UB; Mahesh Kumar Sha, BIRA  Required input from other WPs:   * Contract * Technical Annex to contract * Website, data and results of FRM4GHG-1 |  |  |
| D4.1.1 Project Management Plan (PMP) (UB)  D4.1.2 Minutes of Meetings (UB)  D4.1.3 Semesterly Reports (UB)  D4.1.4 Final report and presentation (UB)  D4.1.5 Contract closure document (UB)  D4.2.1 Dynamic FRM4GHG Website (BIRA)  D4.2.2 Technical Report about Sentinel validation results  using FRM4GHG-2.0 data (BIRA)  D4.2.3 Provision of FRM4GHG-2.0 datasets (BIRA) | JN  JN  JN  JN  JN  MS  MS  MS | 1  3-48  6-42  48  48  cont  cont  48 |