

# MEETING

Meeting Date:	02/02/2023	Ref.:	
Meeting Place:	WMO, Geneva CH	Chairman:	Yasjka Meijer & Mark Dowell
Minute's Date:	23/02/2023	Participants:	See Annex A
Subject:	GHG Task Team Meeting	Copy:	

Description	Action Lead	Due Date
Minutes of Meeting from the CEOS / CGMS GHG Task Team, which was held on 2 <sup>nd</sup> February 2023 at WMO, Geneva, CH		
The updated Meeting Agenda can be found in Annex B		
In a tour-de-table, each participant introduced his/her background, interest and foreseen contribution to the GHG Task Team (TT) activities.		
<b>Overview of current activities and path toward GST 2 (Mark)</b> Specifically stressed that the developments should target the situation for the GST-2 but also beyond and possibly into an era with very low GHG emissions.		
It is agreed that we need to respond to the latest GCOS implementation plan (GCOS-244, wmo.int) and update roadmap actions accordingly. This is specifically for the Action F5		
<b>New Space Discussion</b> Apparently, there is in CEOS a New Space TT, which would be relevant in our evaluation on how the commercial sector can contribute. There would be the need to define requirements for the emerging GHG information systems. There is a National Academy of Sciences (NAS) report that addresses New Space standards. One major perceived shortfall is the lack of getting the ATBDs of the retrieval leading to the provided data products. Transparency, continuity and traceability (e.g., to GCOS IP) will be required for these missions. It was pointed out that it is not a given that in this discussion forum we can deal with commercial sector aspects, which is out-of-scope for CEOS and varying for specific agencies.		
<b>Revise and AV-VC mission list splitting its focus in 4 domains; (for CO2 &amp; CH4, for large area sources &amp; hot spots), and possibly public vs commercial data</b>	AC-VC (Worden)	Q2 2023
<b>Define an action in the Roadmap to set list of standards for New Space</b>	AC-VC (Worden)	Q3 2023



<p><b>Update on WG-CV in relation to GHGs (Akihiko)</b></p> <p>The WG-CV is scheduling their next ACSG = Atmospheric Composition Sub-Group) meeting interleaved and co-located with the AC-VC annual meeting, which will likely be in Brussels (and in Fall 2023). Several activities between OCO-2/3, GOSAT &amp; S5p.</p>																
<p><b>Update of GHG Roadmap with focus on actions &amp; responsibilities (Yasjka)</b></p> <p>The proposed way forward was discussed and agreed for updating the GHG Roadmap. In general, the Roadmap main document appears fine as is and it was agreed that the main focus shall be on reviewing/updating the Annex with Actions.</p> <p>It was recognized that many current actions just require monitoring of a process (already) taking place, which is not easy to act upon nor measurable. We will rephrase them creating a SMART plan of action. NB <b>SMART stands for specific, measurable, achievable, relevant, and time-bound</b>. We will split the current column with Action Description into a <b>specific (short-term) action on the GHG Task Team</b> (preferably with lead actionee and/or person responsible to monitor &amp; report) and reflecting the overall objective and/or making it clear what needs to be monitored (if applicable). Extract elements specific for other CEOS/CGMS groups. Under “<b>Implementation Status</b>”, start the cell one of the following options: 1. action; 2. on-going &amp; monitor; 3. Completed. If the status is to monitor or actions can be split in several steps, then indicate a specific <b>Next Milestone</b> under the “<b>Due Date</b>” of that activity.</p>																
<p>The following people will take the Area Lead in updating the Actions in the following areas:</p> <table border="0"> <tr> <td>Stakeholder Engagement</td> <td><b>Mark (John)</b></td> </tr> <tr> <td>System Development Facilitation</td> <td><b>Richard (John, Kevin)</b></td> </tr> <tr> <td>Operational Preparation and Training</td> <td><b>TT discuss</b></td> </tr> <tr> <td>Sensor Development</td> <td><b>John (AC-VC) (Yasjka)</b></td> </tr> <tr> <td>L1 &amp; L2 GHG Product Development</td> <td><b>Ruediger &amp; Dave</b></td> </tr> <tr> <td>Flux Inversion Model Development</td> <td><b>Kevin (Frederic)</b></td> </tr> <tr> <td>Calibration &amp; Validation</td> <td><b>Kuze (Hiroshi)</b></td> </tr> </table> <p>Everybody is welcome to contribute by timely providing input to and iterating with the Area Lead. People here above in brackets are already identified as contributors. NB The leads can either provide inputs via an offline mentioned version of their domain or in the online <a href="#">link</a> provided by Wenying.</p>	Stakeholder Engagement	<b>Mark (John)</b>	System Development Facilitation	<b>Richard (John, Kevin)</b>	Operational Preparation and Training	<b>TT discuss</b>	Sensor Development	<b>John (AC-VC) (Yasjka)</b>	L1 & L2 GHG Product Development	<b>Ruediger &amp; Dave</b>	Flux Inversion Model Development	<b>Kevin (Frederic)</b>	Calibration & Validation	<b>Kuze (Hiroshi)</b>		
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<p><b>Update the Action list (Annex C) following the above guide and summarized here:</b></p> <ul style="list-style-type: none"> <li>- <b>Update all text in “Area” where necessary and create new if needed</b></li> <li>- <b>Specify specific GHG TT action</b></li> <li>- <b>Update overall objective</b></li> <li>- <b>Extract elements specific for other CEOS/CGMS groups</b></li> <li>- <b>Add GHG TT actionee and/or responsible for monitoring/reporting</b></li> <li>- <b>Update milestone/due date and the status starting with above options</b></li> </ul>	<p>All GHG TT, as contributor or as Area Lead</p>	<p>9 Mar 2023</p>														

<p><b>Define a Roadmap Action to collect research needs</b></p>	<p>Kevin</p>	<p>Q2 2023</p>
<p>If any update would be needed in the main Roadmap document, then it is currently insufficiently reflecting the required science and the link to AFOLU.</p>		
<p><b>Engagement with User communities (Greet Janssens-Maenhout (EC/JRC))</b>                  In the discussion on user engagement, it was suggested to also generate output specifically suitable for consumption by media and for the general audience. The financial sector was discussed and is considered in-scope by the Copernicus CO2 MVS. A major asset considered of the top-down systems is that the latency can be strongly reduced and controlled. The Non-Annex I countries are considered as low-hanging fruit with a lot of potential. Top-down also has the advantage allowing more frequent updating than the 5-yearly GSTs allowing to keep better track of progress. One clear target use of our systems are the inventory people. Reaching them is considered difficult and can be pursued via the IPPCC-TFI (new PoC is Sandro Federici), gras-root from a champion inventory and national projects.</p>		
<p><b>Propose new action along the lines of “Prepare the community for the products of new upcoming satellite missions &amp; ensure continuity to earlier/existing missions”</b></p>	<p>Area Leads</p>	<p>9 Mar 2023</p>
<p><b>GHG Roadmap link to evolving AFOLU activities (Mark)</b>                  As example, for the CO2 MVS there is the need for specific AFOLU-related products, which could be land-cover maps from satellite. In general, an alignment and combined effort will be required between the AFOLU and GHG Roadmaps.</p>		
<p><b>Define a Roadmap Action to converge AFOLU and GHG Roadmaps</b></p>	<p>Mark</p>	<p>Q2 2023</p>
<p><b>Targeted Activities on Uncertainties and Standards (John)</b>                  Within the GHG sub-group of the AC-VC, the proposal has been made to organise a workshop on how to deal with uncertainty and how to propagate this in the lux estimates. It was proposed to consider a side meeting before, after or during the upcoming IWGGMS in Paris (step 1). As follow-up, it is expected to lead to derive a standards for uncertainty reporting of flux estimates (step 2). Consider aspects of uncertainty relevant for plume mappers.</p>		
<p><b>Organise a side meeting around IWGGMS on uncertainty of flux estimates</b></p>	<p>Federic &amp; Kevin</p>	<p>Q2 2023</p>
<p><b>Generate a set of standards for uncertainty reporting of flux estimates</b></p>	<p>Federic &amp; Kevin</p>	<p>Q3 2023</p>
<p><b>WMO GMI initiative</b>                  The WMO initiative was discussed, which also held a workshop this week, and aims to develop a GHG Monitoring Infrastructure. There appears to be quite some overlap in foreseen activities to follow, monitor and pursue. The GHG TT response to it was</p>		



<p>discussed. We are welcoming the anticipated system. We concluded that for now we just take note of it until it is accepted for implementation and starts to evolve. We will be able to capitilise on it and have a future role, as the expertise for the space-borne part is contained in CEOS and its WGs.</p>		
<p><b>Follow-on Actions and Conclusions (Yasjka)</b></p> <p>In the way forward, it was concluded that we will aim to be more focused in our specific actions and clarify where we expect involvement from other WGs. It is expected that on a relatively short-term the TT would be able to update the Annex C Action list though the Area Leads.</p> <p>The TT thanked Mark Dowell for the past years in which he has lead the team.</p>		

## Annex A

### List of participants

#### In-person

Z. Andreeva	WMO
K. Bowman	NASA
D. Crisp	Crisp Spectra LLC
M. Dowell	EC-JRC
R. Engelen	ECMWF
M. Harada	JAXA
R. Lang	EUMETSAT
J. Marshall	DLR
Y. Meijer	ESA
P. Ruti	EUMETSAT
W. Su	NASA & WG-Climate deputy
H. Suto	JAXA
J. Worden	NASA & AC-VC GHG lead

#### On-line

R. Bothale	NRSC
S. Briggs	CEOS SIT Team
F. Chevallier	LSCE
C. Deniel	CNES
P. Green	NPL UK
G. Janssens-Maenhout	JRC
K. Koedkuring	GISTDA
A. Kuze	JAXA & WG-CV ACSG
S. Oza	ISRO
V.-H. Peuch	ECMWF
S. Pinnock	ESA
I. Petiteville	ESA & CEOS SIT Team
M. Rixen	EC-DEFIS
A. von Bargaen	DLR
A. Young	NOAA
P. Zhang	CMA
H. Zunker	EC-DEFIS



**Annex B**

Meeting Agenda

<b>09:00</b>	<i>Welcome and Introductions (Chairs – M. Dowell, Y. Meijer)</i>
<b>09:30</b>	<b>Overview of current activities and path toward GST 2 (Mark)</b>
<b>10:00</b>	<b>Update on WG-CV in relation to GHGs (Akihiko)</b>
<b>10:30</b>	<i>Update of GHG Roadmap with focus on actions &amp; responsibilities (Yasjka)</i>
<b>11:00</b>	<b>Break</b>
<b>11:30</b>	<b>Targeted Activities on Uncertainties and Standards (John)</b>
<b>13:00</b>	<b>Lunch</b>
<b>14:00</b>	<b>Engagement with User communities (Greet Janssens-Maenhout (EC/JRC))</b>
<b>15:30</b>	<b>GHG Roadmap link to evolving AFOLU activities (Mark)</b>
<b>16:00</b>	<b>Follow-on Actions and conclusions (Yasjka)</b>
<b>16:30</b>	<b>End</b>

**Background documents:**

Action Spreadsheet

GHG Roadmap document