

Tentative Agenda for the WMO GHG symposium

(Tentative start time will be 9:00 Monday 30 January 2023, and end time will be 17:00 Wednesday 1 February 2023)

Time	Agenda Items	
Day 1, Opening Moderator: Dr. Oksana Tarasova/WMO Secretariat		
9:00-9:30	Introductory Remarks	
	Prof. Petteri Taalas/WMO Secretary-General	
	Prof. Gerhard Adrian/WMO President	
	Mr. Masanori Obayashi/Permanent Representative of Japan with WMO	
	Mr. Hugo Zunker/ European Commission	
	Mr. Michel Jean/Chair of the Program Committee of the GHG Monitoring Symposium	
Session 1: Global Greenhouse Gas Monitoring – Setting the Scene Chair: Prof. Stephen Briggs		
9:30-10:30	Presentation of the Initiative (15 min)	Lars Peter Riishojgaard/WMO
	Keynote #1 (15 min) – Towards near real time carbon budgets	Philippe Ciais/LSCE
	Keynote #2 (15 min) – The Copernicus CO2MVS: towards operational greenhouse gas emission monitoring at global and local scales	Richard Engelen/ECMWF
	Keynote #3 (15 min) – Multiple observation platforms and inverse/transport simulations for monitoring GHGs around Asia	Yosuke Niwa/NIES
Coffee Break (30 minutes)		
11:00-12:10 (10-min for each speaker)	NASA's Carbon Monitoring System, a precursor to the new WMO GHG activity	Ken Jucks/NASA
	Integrated observation network of greenhouse gases in Korea	Daegeun Shin/KMA
	Developing an observational network to monitor Australian GHG emissions by top-down methods	Ray Langenfelds/CSIRO
	Terrestrial carbon and remote-sensing in near-real-time – a view from the Global Carbon Budget	Stephen Sitch/University of Exeter
	The global nitrous oxide budget 2022	Hanqin Tian/Boston College
	Greenhouse Gas Emissions Information for Decision Making: A Framework Going Forward	Irène Xueref-Remy/University of Aix-Marseille

	Linking regional to global greenhouse gas budgets in RECCAP2	Ana Bastos/Max Planck Institute for Biogeochemistry
12:10-13:00	<p>Panel Session 1:</p> <ul style="list-style-type: none"> • What additional information regarding greenhouse gases is required to support climate action? • How can GHG information help drive international policy? • What are the key required attributes (transparency, consistency, accessibility, sustainability,...) of such information, and who should be providing it? • What are the climate risks associated with a lack of GHG information? 	<p>Moderator: Prof. Stephen Briggs</p> <p>Panelists: Ana Bastos, Mark Dowell Ken Jucks, Yousuke Niwa, Irène Xueref-Remy</p>
Lunch Break (90 min)		
Day 1, Session 2: Greenhouse gases in Earth System modelling and data assimilation Chair: Susanne Mecklenburg		
14:30-15:00	Keynote #1 (15 min) – Toward sub-degree-resolution for global atmospheric inverse modelling	Frédéric Chevallier/LSCE
	Keynote #2 (15 min) – The ocean carbon sink: Status quo, uncertainties and known unknowns in the Global Carbon Budget	Judith Hauck/AWI
15:30-16:00 (10-min for each speaker)	Development of a prototype operational greenhouse gas emissions estimation system	Christopher P Loughner/NOAA
	CEOS CO2 dataset: Pilot top-down CO2 Budget constrained by the v10 OCO-2 MIP	Kevin Bowman/JPL
	Low latency greenhouse gas monitoring based on NASA's quasi-operational GEOS modeling and data assimilation system	Lesley Ott/NASA
	Chinese atmospheric inversion system GONGGA	Xiangjun Tian/ITPCAS
	Measuring the impacts of climate policy in predicted changes of atmospheric CO2 growth rate	Tatiana Ilyina/Max Planck Institute for Meteorology
	Opportunities and uncertainties in monitoring CO2 sequestration by terrestrial ecosystems at high latitudes using remote sensing	Rui Cheng/MIT
Coffee Break (20 minutes)		
16:20-16:40 (10-min for each speaker)	Constraining regional and global ocean carbon fluxes in RECCAP2	Jens Daniel Müller/ETH
	Monitoring the "Health" of Global Carbon Cycle with NASA's Orbiting Carbon Observatory missions	Junjie Liu/JPL
16:40-17:30	<p>Panel Session 2:</p> <ul style="list-style-type: none"> • What is the current status of GHG modeling? • What are the limitations facing more truly integrated Earth System models for GHG applications? And which 	<p>Moderator: Susanne Mecklenburg</p> <p>Panelists: David Crisp,</p>

	<p>processes drive the largest uncertainties and how can they be improved?</p> <ul style="list-style-type: none"> • What are the current capabilities regarding spatial and temporal resolutions of flux estimation using GHG models and associated uncertainties at different scales? • How can the performance be evaluated and used to improve prediction skills? 	Richard Engelen, Judith Hauck, Felix Vogel (virtual)
17:30 – 19:00	Poster Sessions and Opening Reception (<i>Sponsored by Copernicus</i>)	
Day 2, Session 3: Observations, data exchange and data management Chair: Jennifer Watts		
9:00-9:30	Keynote #1 (15 min) – A case for significant enhancement of the vertical profiles in the WMO GHG network	Colm Sweeney/NOAA
	Keynote #2 (15 min) – Operationalize surface ocean carbon observations to better constrain the global carbon budget	Andrew J. Watson/University of Exeter
9:30-10:40 (10-min for each speaker)	Leveraging ESA Climate Data Management In Support of GHG Monitoring Infrastructure	Eduardo Pechorro/ESA
	FAIR and open data access, the ICOS experience	Alex Vermeulen/ICOS
	Building an Effective Global Atmospheric Monitoring Network: Critical Lessons from the AGAGE Experience	Ray F. Weiss/University of California San Diego
	The Total Carbon Column Observing Network (TCCON)	Thorsten Warneke/University of Bremen
	Measurements and models of CO ₂ fluxes from Critical Zone observatories in high-altitude and high-latitude environments	Marta Magnani /CNR
	ICOS - The Integrated Carbon Observation System in Europe	Elena Saltikoff/ICOS
	Accounting for GHGs Observational Needs in NOAA's Current Monitoring System and in the Next-Gen Space Architecture Planning	Sid Boukabara & Mitch Goldberg /NOAA
Coffee Break (20 minutes)		
11:00-11:30 (10-min for each speaker)	GLODAP – An interior ocean data product	Toste Tanhua/GEOMAR Helmholtz Centre for Ocean Research Kiel
	JAXA's Greenhouse Gases Monitoring Activities in Support of Emission Estimate	Hiroshi Suto/JAXA
	Is the Arctic-boreal permafrost region a carbon sink or source? State-of-knowledge and key uncertainties in high latitude carbon budgets and how this impacts global policy	Jennifer Watts/Woodwell Climate Research Center
11:30-12:30	Panel Session 3: • What are the most critical observational gaps in the	Moderator: Jennifer Watts

	<p>various domains (atmosphere, ocean, land), both geographically and in terms of variables?</p> <ul style="list-style-type: none"> • How do we make GHG observations sustainable over time? • What can we do to improve current data exchange practices for GHG observations? • What are the emerging observational capabilities in the area of GHGs in all domains? 	<p>Panelists: Elena Saltikoff, Hiroshi Suto, Maciej Telszewski, Andrew Watson</p>
Lunch Break (90 min)		
<p>Day 2, Session 4: Research and innovation Chair: Kevin Cossel</p>		
14:00-	Keynote #1 (15 min) – The Global Atmosphere Watch Greenhouse Gas and Related Activities.	Greg Carmichael/GAW
14:30	Keynote #2 (15 min) – Has Termination Zero begun? – the urgent need to monitor methane isotopes.	Euan G Nisbet/University of London
14:30- 15:20 (10-min for each speaker)	Sparse data and imperfect models to quantify and project the ocean carbon sink	Galen McKinley/Columbia University
	Integration of Vantage Points and Approaches in NASA's Greenhouse Gas Research	Jack Kaye/NASA
	Climate TRACE: Harnessing remote sensing, artificial intelligence, and collective data to provide open and transparent estimations of greenhouse gas emissions	Deborah Gordon/Climate TRACE
	The role of non-growing season processes in the CH ₄ and N ₂ O budgets in pristine northern ecosystems	Lona van Delden/Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research
	Deforestation represents direct and indirect Amazonia Carbon emissions	Luciana Vanni Gatti/INPE
Coffee Break (20 minutes)		
15:40- 16:10 (10-min for each speaker)	Decreasing lifetime of N ₂ O over the past two decades	Michael Prather/University of California Irvine
	Increase in wetland emissions and decrease in atmospheric sink explain the recent high growth of atmospheric methane	Xin Lin/LSCE
	US fossil fuel-CO ₂ emissions and land sinks based on monitoring of atmospheric carbon dioxide and radiocarbon	John B. Miller/NOAA
16:10- 17:10	<p>Panel Session 4:</p> <ul style="list-style-type: none"> • What are the most critical gaps in the understanding of GHG cycles? • How will coordinated, sustained, routine GHG monitoring facilitate research? • Which modeling, assimilation and observational 	<p>Moderator: Kevin Cossel</p> <p>Panelists: Luciana Gatti, Galen McKinley,</p>

	techniques are at the stage of research to have a potential for fast transition to operations?	Detlef Stammer, Toste Tanhua
17:10 – 19:00	Poster Sessions and Reception (<i>Hosted by WMO</i>)	
Day 3, Session 5: Application of GHG Monitoring Information and related services Chair: Mark Dowell		
9:00- 9:30	Keynote #1 (15 min) – UNFCCC/Global stock take	TBC
	Keynote #2 (15 min) – Using satellites to assist countries in monitoring their methane emissions	Daniel Jacob/Harvard University
9:30- 10:40 (10-min for each speaker)	Integrating actionable methane emissions data	Daniel Zavala-Araiza/International Methane Emissions Observatory
	A fit-for-purpose GHG monitoring capacity towards net zero	Mark Dowell/EC-JRC
	Satellite observations for monitoring greenhouse gas in correlation with anthropogenic activities in Egypt	Naglaa Zanaty/National Authority for Remote Sensing and Space Sciences
	Satellite-derived atmospheric CO ₂ to estimate carbon sources and sinks from different land-cover types in Indonesia	Alberth Naha/Indonesian Agency For Meteorology, Climatology, and Geophysics
	Marching Toward a Characterization of Urban Methane Emissions	Israel Lopez-Coto/NIST
	Progress and outcomes of the carbon monitoring project on the Beijing-Tianjin-Hebei (JJJ) City Cluster	Pengfei Han/IAP-CAS
	UK GHG Inventory Verification System	Alistair Manning/UK Met Office
Coffee Break (20 minutes)		
11:00- 11:30 (10-min for each speaker)	Using atmospheric monitoring tools to understanding methane emissions in Canada from local to national scale	Felix Vogel/ECCC
	Encouraging the Use of Remote Sensing Observations of Greenhouse Gases by the Policy and Inventory Communities	David Crisp/Crisp Spectra LLC
	Towards Enhanced Use of Atmospheric Inversions for QA/QC and Verification of National Emission Inventories in support of UNFCCC	Tomohiro Oda/Universities Space Research Association
11:30- 12:30	Panel Session 5: • What are the main applications of GHG monitoring output on different scales (e.g., global stocktake, urban applications, sectorial mitigation strategies)? • How do we identify user requirements for GHG information and engage with the end user community?	Moderator: Mark Dowell Panelists: Jorn Herner, Andrea Kaiser-Weiss, Kimberly Mueller (TBC),

	<ul style="list-style-type: none"> • What are the challenges in tailoring the GHG monitoring outputs to the needs of users? • What factors may limit the uptake of the GHG monitoring infrastructure output? 	Kiyoto Tanabe (TBC)
Lunch Break (90 min)		
<i>Day 3, Session 6: Summary and What We Do Next</i> <i>Co-Chairs: Michel Jean, Greg Carmichael</i>		
14:00- 15:40	Round Table Summaries - 20 min. each	
	- Panel Session 1	
	- Panel Session 2	
	- Panel Session 3	
	- Panel Session 4	
	- Panel Session 5	
Coffee Break (20 minutes)		
16:00- 17:00	Way forward and closure	
End of Symposium		