

Sunday, 27 August 2017

18:00 20:00 Ice Breaker

Monday, 28 August 201708:00 09:00 **Registration**

09:00 09:10 Welcome and Opening Remarks, *Brigitte Buchmann

09:10 09:30 News from the GAW secretariat, *Oksana Tarasova

Quality Assurance, GHG Standards & Comparison Activities**Chair: Paul Krummel**09:30 09:50 **T01- Uncertainties of NOAA GHG measurements from discrete air samples and zonal means**, *Ed Dlugokencky09:50 10:10 **T02- Efforts to separately report random and systematic measurement uncertainty for continuous measurements in the NOAA Global Greenhouse Gas Reference Network**, *Arlyn Andrews10:10 10:40 **Photo and Coffee Break****Quality Assurance, GHG Standards & Comparison Activities****Chair: Martin Steinbacher**10:40 11:00 **T03- An update of comparisons of non-CO₂ trace gas measurements between AGAGE and NOAA at common sites**, *Paul Krummel11:00 11:20 **T04- Revision of the WMO CO₂ calibration scale**, *Brad Hall11:20 11:40 **T05- An update on the WMO CO X2014A scale**, *Andrew Croswell11:40 12:00 **T06- The result of the first SF₆ inter-comparison Experiment (SICE) 2016-2017**, *Haeyoung Lee12:00 12:20 **T07- A new method to produce SI-traceable, primary calibration standards for halogenated greenhouse gases**, *Myriam Guillevic12:20 13:40 **Lunch Break****Quality Assurance, GHG Standards & Comparison Activities****Chair: Paul Krummel**13:40 14:00 **T08- Quality assurance and quality control of the upcoming ICOS-RI atmospheric dataset**, *Michel Ramonet14:00 14:20 **T09- QA/QC of IAGOS NRT GHG data**, *Christoph Gerbig14:20 14:40 **T10- WCC-Empa – Activities and Achievements**, *Christoph Zellweger14:40 15:10 **Recommendations A: QA/QC, Standards and Comparisons, Chapters 1, 2, 6, 9: Calibration of GAW Measurements, CO, CH₄ and CO₂ Calibration**
Lead: Andrew Croswell, Rapporteur: Christoph Zellweger15:10 15:40 **Coffee Break**

15:40 16:40 Speed talks for Posters "Site and Network Updates"

16:40 18:30 **Poster Session**

Tuesday, 29 August 2017

Isotope Measurements - Chair: Joachim Mohn

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| 08:30 | 08:50 | T11- Introduction: Data Quality Objectives for stable isotopes in greenhouse gases: current status and future needs, *Sergey Assonov |
| 08:50 | 09:10 | T12- Delta-13C scale realisation based on the primary Reference Materials in the form of carbonates, *Sergey Assonov |
| 09:10 | 09:30 | T13- JRAS-06: Keeping up with changing internationally-distributed, light-element stable isotopic reference materials, *Heiko Moossen |
| 09:30 | 09:50 | T14- Maintaining quality with quantity: lessons learned in the corrections and calibrations of INSTAARs large isotopic dataset, *Sylvia E. Michel |
| 09:50 | 10:10 | T15- Measurement and Calibration Uncertainty in the CSIRO atmospheric CO2 Stable Isotope Program, *Colin Allison |
| 10:10 | 10:40 | Coffee Break |

Isotope Measurements - Chair: Sergey Assonov

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| 10:40 | 11:00 | T16- On the calibration of isotopologue-specific optical trace gas analysers, *David Griffith |
| 11:00 | 11:20 | T17- Calibration strategies for FTIR and other IRIS instruments for accurate $\delta^{13}\text{C}$ and $\delta^{18}\text{O}$ measurements of CO ₂ in air, *Edgar Flores |
| 11:20 | 11:40 | T18- Gaseous reference materials to underpin measurements of amount fraction and isotopic composition of greenhouse gases, *Paul Brewer |
| 11:40 | 12:00 | T19- Using Isotopic Fingerprints to Trace Nitrous Oxide in the Atmosphere, *Joachim Mohn |
| 12:00 | 12:20 | T20- Methane isotopes – clues to the budget changes: and the need for independent isotopic measurement programs, *Euan Nisbet |
| 12:20 | 14:00 | Lunch Break (including vendor presentations for final 60 minutes) |
| 13:00 | 13:15 | Air Liquide |
| 13:15 | 13:30 | Decentlab |
| 13:30 | 13:45 | Mirico |
| 13:45 | 14:00 | LosGatos |
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14:00 17:30 *Side event: -Metrology for Stable Isotope Reference Standards (SIRS) stakeholder meeting*

Urban Networks and Megacities - Chair: Jooil Kim

14:00 14:20 **T21- Integrated urban Greenhouse Gas Information System (IG3IS): Advances in the urban GHG monitoring implementation plan and results of previous and current city-scale studies**, *Felix Vogel

14:20 14:40 **T22- Detection of trends in urban CO₂ emissions: Results from the INFLUX tower network**, *Natasha Miles

14:40 15:00 **T23- The North-East Corridor: Baltimore-Washington DC Urban Greenhouse Gas Network**, *Anna Karion

15:00 15:30 **Coffee Break**

Site and Network Updates - Chair: Lingxi Zhou

15:30 15:50 **T24- Amazon Greenhouse Gas Measurement Program**, *Luciana V. Gatti

15:50 16:10 **T25- CO₂, CH₄, and CO with CRDS technique at the Izaña Global GAW station: instrumental tests, developments and first measurement results**, *Angel J. Gomez-Pelaez

16:10 16:30 **T26- Atmospheric CO₂ and other greenhouse gases monitoring in India**, *Yogesh K. Tiwari

16:30 17:00 **Recommendations C: Urban Networks, Site and Network Updates, Chapters 11 & 12 - Lead: Felix Vogel, Rapporteur: Casper Labuschagne**

17:00 18:00 **Poster Session**

18:00 19:00 *Side event: -Discussion on Stable Isotopes Recommendations*

18:00 19:00 *Side event: -Discussion on Shipboard Atmospheric CO₂ Measurement Recommendations*

Wednesday, 30 August 2017

08:10 08:40 **Recommendations B: Isotope Measurements, Chapters 3, 4: Stable isotopes and radiocarbon - Lead: Sergey Assonov, Rapporteur: Bruce Vaughn**

Measurement Techniques & Calibration - Chair: Zoe Loh

08:40 09:00 T27- Fractionation of O₂/N₂, Ar/N₂, and CO₂ at Aircraft Sampling Inlets, *Britton Stephens

09:00 09:20 T28- Comparison of interferometric and mass spectrometric measurements of O₂/N₂ by the Scripps O₂ program, *Ralph Keeling

09:20 09:40 T29- Preparation of high precision standards (with ± 1 ppm) using a gravimetric method for measuring atmospheric oxygen, *Nobuyuki Aoki

09:40 10:00 T30- Towards the Unifying of the Detection Systems for the Measurement of the Major Greenhouse Gases and Related Tracers, *Blagoj Mitrevski

10:00 10:30 **Coffee Break**

Measurement Techniques & Calibration - Chair: Arlyn Andrews

10:30 10:50 T31- Calibration and Field Testing of Cavity Ring-Down Laser Spectrometers Measuring Methane Mole Fraction and Isotopic Ratio Deployed on Towers in the Marcellus Shale Region, *Natasha Miles

10:50 11:10 T32- Adaptation of a commercial greenhouse gas analyser for airborne measurements with expanded altitude range and application on the ORCAS and ATom campaigns, *Kathryn McKain

11:10 11:30 T33- A new lightweight active stratospheric air sampler, *Joram Hooghiem

11:30 12:00 **Recommendations D: Measurement Techniques & Calibration, Chapters 5, 7, 8, 10: Calibration of O₂/N₂, N₂O, SF₆ and H₂ Measurements Lead: Britt Stephens, Rapporteur: Brad Hall**

Emerging Techniques - Chair: Christoph Gerbig

12:00 12:20 T34- Low-cost sensors for CO₂ monitoring: calibration, characterization and assessment, *Lukas Emmenegger

12:20 14:00 **Lunch Break (including vendor presentations for final 45 minutes)**

13:15 13:30 Picarro

13:30 13:45 Aerodyne

13:45 14:00 Ecotech

14:00 14:20 T35- Measurements of atmospheric oxygen using a newly built CRDS analyzer and comparison with a paramagnetic cell and an IRMS, *Markus Leuenberger

14:20 14:40 T36- Microwave sensing column oxygen amounts for surface air pressure and greenhouse gas mixing ratio estimates, *Bing Lin

14:40 15:00 T37- The AirCore atmospheric profiler: methods, challenges, applications, and updates, *Jonathan Bent

15:00 15:20 T38- A UAV-based active AirCore system for accurate measurements of greenhouse gases, *Truls Andersen

15:20 15:50 **Coffee Break**

17:00 19:00 **City tour of historical Zurich**

19:00 **Conference Dinner**

Thursday, 31 August 2017

Emerging Techniques - Chair: Michel Ramonet

08:30 08:50 **T39- Stratospheric measurements of ozone-depleting substances and greenhouse gases using AirCores**, *E. Leedham Elvidge

08:50 09:10 **T40- APRECON-TOF-MS: A new state-of-the art instrument for the analysis of halogenated greenhouse gases**, *Martin K. Vollmer

09:10 09:40 **Recommendations E: Emerging Techniques**
Lead: David Griffith, Rapporteur: Huilin Chen

Ocean Measurements, Chapter 13 - Chair: Martin Vollmer

09:40 10:00 **T41- Medusa-Aqua System: Development of Analytical Techniques for Novel Halogenated Transient Tracers in the Ocean**, *Pingyang Li

10:00 10:20 **T42- Fifteen years of surface water CO₂ measurements from cruise ships in the Caribbean Sea**, *Rik Wanninkhof

10:20 10:50 **Coffee Break**

10:50 11:10 **T43- Towards including atmospheric CO₂ data from the oceanic community into the global high-accuracy atmospheric CO₂ network**, *Penelope A. Pickers

11:10 11:30 **T44- The PGGM measurements of atmospheric carbon dioxide concentrations over the Asia-Pacific and the Asia-Europe commercial shipping routes: The 2009-2017 results**, *Kuo-Ying Wang

11:30 11:50 **T45- Atmospheric CO₂, CH₄ and N₂O mixing ratios in the China sea-shelf boundary layer during the spring 2017 campaign**, *Lingxi Zhou

11:50 12:20 **Recommendations F: Ocean Measurements**
Lead: Rik Wanninkhof, Rapporteur: Hideki Nara

12:20 13:20 **Lunch Break**

Data Products and Policy - Chair: Alex Vermeulen

13:20 13:40 **T46- Updated Guidelines for Atmospheric Trace Gas Data Management**, *John Mund

13:40 14:00 **T47- Introduction of new WDCGG website**, *Seiji Miyauchi

14:00 16:00 **Expert group recommendations**
Lead: to be assigned, Rapporteur: to be assigned

MEETING CLOSE and Coffee

Posters Quality Assurance, GHG Standards & Comparison Activities

P01	Mobile Laboratory improving the data quality of ICOS atmospheric station network, *Hermann Aaltonen
P02	5 years of ICOS compliant in situ GHG measurements at OPE: set up, quality control and calibration system, *Sébastien Conil
P03	Optimal dry cylinder sequencing on Picarro G2301 and G2401 CRDS instruments, *Rebecca Gregory
P04	Quality control of flask sample data using Ar/N ₂ measurements, *Armin Jordan
P05	Comparison of Picarro and Los Gatos analysers for CO and N ₂ O at Hohenpeissenberg, *Dagmar Kubistin
P06	Update of Operation of the Flask and Calibration Laboratory for ICOS (Integrated Carbon Observation System), *Daniel Rzesanke
P07	QA/SAC Switzerland – Activities and Achievements, *Martin Steinbacher

Posters Isotope Measurements

P08	Methane in Hong Kong: isotopic characterisation of local and regional methane sources, *Rebecca Fisher
P09	European atmospheric 14CO ₂ activities within the ICOS-RI network, *Samuel Hammer
P10	Simultaneous field-scale in-situ measurements of the four most abundant N ₂ O isotopocules, *Erkan Ibraim
P11	High precision spectroscopic measurement of N ₂ O clumped isotopic species, *Kristýna Kantnerová
P12	Development of new N ₂ O reference materials for d15N, d18O and 15N site preference within the EMPIR project SIRS, *Joachim Mohn
P13	14CO ₂ measurements from Baring Head, New Zealand, Rowena Moss
P14	Performance of radiocarbon analysis using NIES-CAMS and initial results for air samples obtained in Indonesia, *Yumi Osonoi
P15	Towards SI traceability for CO ₂ isotope ratios: Identifying sources of error in optical spectroscopy measurements, *Craig Richmond
P16	Measurement of nitrous oxide isotopomers in air, *Peter Sperlich
P17	Stable isotope and mixing ratio measurement of atmospheric CO ₂ over India, *Tania Guha, Yogesh K. Tiwari
P18	Pilot study measuring N ₂ O mole fraction, δ ¹⁵ N _{bulk} -N ₂ O, δ ¹⁵ N _α -N ₂ O, and δ ¹⁵ N _β -N ₂ O using Picarro G-5101i instrument reveals analytical challenges, *Bruce H. Vaughn
P19	Measurement of N ₂ O isotopes at the high-altitude station Jungfraujoch, *Longfei Yu
P20	Evaluation of methane sources by isotopic analysis in central London, *Giulia Zazzeri

Posters Measurement Techniques & Calibration

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| P21 | Inter-comparison study of European atmospheric ^{222}Rn and ^{222}Rn progeny monitors, *Claudia Grossi |
| P22 | Evaluation of an OA-ICOS (Off-axis Integrated Cavity Output Spectrometer) for N_2O measurements at Schauinsland station, *Johannes Gry |
| P23 | Estimation of BG CO_2 concentration from CRDS measurements at AMY site in South Korea using Quality Assurance Flagging Codes, *Sang-Ok Han |
| P24 | Synthesis and evaluation of near real air CO_2 reference gas, *Keiichi Katsumata |
| P25 | Replacement of CH_4 calibration system for WCC-JMA, *Teruo Kawasaki |
| P26 | Stability and Material Testing Results of Aluminum Cylinders and Regulator Comparisons, *Duane Kitzis |
| P27 | Causes of Instability in the Relative Abundance of the Major Constituents of Reference Air in High-Pressure Tanks, *Eric J. Morgan |
| P28 | Investigation of adsorption / desorption behavior of high pressure small volume cylinders and its relevance to atmospheric trace gas analysis, *Ece Satar |
| P29 | 11-year statistics for in-situ CO_2 data obtained in airliner project of CONTRAIL, *Yousuke Sawa |
| P30 | A Nafion-based air sample dryer for atmospheric flask sampling allowing accurate measurements of CO_2 and its stable isotopes in humid air, *Hubertus A. Scheeren |
| P31 | Potential bias in the NOAA manometric measurement system, *Michael F. Schibig |
| P32 | Comparison of in situ N_2O and CO measurements using gas chromatography, reduction gas analysis and off-axis integrated cavity output spectroscopy, *Kieran Stanley |
| P33 | Quantifying Nafion cross-membrane CO_2 and CH_4 gas leakage and its dependence on sample mole fraction and water content, *Ann Stavert |
| P34 | Optimisation of the Spectronus FTIR instrument for tall tower greenhouse gas observations, *Alex Vermeulen |

Posters Emerging Technique

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| P35 | Developing a lower-cost medium precision urban GHG monitoring system using commercial NDIR sensors, *Emmanuel Arzoumanian |
| P36 | High-resolution Mobile Measurements of Methane Concentrations and Fluxes Using High-Speed Open-Path Technology on Cars, Ships, Airplanes, Helicopters and Drones, *George Burba |
| P37 | The automated air sampler for the ICOS network, *Markus Eritt |
| P38 | Measurement of greenhouse gases from novel ground-based remote sensing instruments; the FRM4GHG campaign at the Sodankylä TCCON site, N. Finland, *Mahesh Kumar Sha, David Griffith |
| P39 | Technical challenges of using high precision atmospheric O_2 measurements as a tracer for determining carbon fluxes in terrestrial ecosystems, *Penelope A. Pickers |
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Posters Ocean Measurements

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| P40 | Continuous observation of atmospheric oxygen concentration onboard a cargo ship sailing between Japan and North America, *Yu Hoshina |
| P41 | Japan Meteorological Agency's ship-based observations for carbonate parameters in the surface and interior ocean, *Shinji Masuda |
| P42 | Long-term monitoring of atmospheric greenhouse gases and data validation in NIES-VOS program, *Hideki Nara |

Posters Urban Networks and Megacities

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| P43 | CarboSense: a low-cost low-power CO ₂ network for the city of Zurich and Switzerland, *Antoine Berchet |
| P44 | Continuous Near-IR and Mid-IR CRDS Measurements of Atmospheric CO ₂ , CH ₄ , N ₂ O, and CO in the Megacities Los Angeles Network: Design Criteria, *Jooil Kim |
| P45 | New monitoring project of GHGs and air pollutants around Jakarta, Indonesia, *Masahide Nishihashi |
| P46 | Start of greenhouse gases and related tracer measurements at Tokyo Megacity, *Yukio Terao |

Posters Site and Network Updates

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| P47 | Trace gas mixing ratios, carbon, water, and energy exchanges measurements at ARM facilities, * Sébastien C. Biraud |
| P48 | Greenhouse Gases: Background Concentrations in Brazilian coast, *V. F. Borges |
| P49 | Observations and modelling combine to inform network developments, *Gordon Brailsford, Rowena Moss |
| P50 | "CASLab": The United Kingdom's Clean Air Sector Laboratory at Halley Research Station, coastal Antarctica, *Neil Brough |
| P51 | The Franco-Belgian greenhouse gases monitoring program at La Réunion Island, *Jean-Pierre Cammas |
| P52 | Long Term Nitrous Oxide Measurements Over Amazon Basin Using Small Aircraft, *C. S. C. Correia |
| P53 | Continuous observations of CO ₂ , CH ₄ and O ₃ in the boundary layer of the central Mediterranean basin, *Paolo Cristofanelli |
| P54 | Carbon Monoxide Measurements as a Biomass Burning Tracer at the Amazon Basin, *L. G. Domingues |
| P55 | Amazon Basin and Brazilian Coast SF ₆ Study in a 15 Years Time Series, *R. S. Santos |
| P56 | Atmospheric molecular hydrogen (H ₂) at the WMO/GAW stations in China, *Shuangxi Fang |
| P57 | Japanese observation programs of atmospheric greenhouse gases in polar regions, *Daisuke Goto |
| P58 | First results of tall tower surface-atmosphere N ₂ O flux measurements over a mixed agricultural region in Central Europe, *László Haszpra |
| P59 | Recent updates from the Cape Point long-term data records, *Casper Labuschagne |
| P60 | Atmospheric CO ₂ /CH ₄ /CO measurements at the Amazon Tall Tower Observatory (ATTO, Brazil), *Jost V. Lavric |
| P61 | Combined balloon, aircraft, and surface greenhouse gas measurements at Traînou supersite, France, *Céline Lett |
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P62	Atmospheric nitrous oxide observations at Mount Waliguan station in China, from 1995 to 2014, *Miao Liang
P63	The Australian Greenhouse Gas Observation Network – where we are and where we are heading, *Zoë Loh
P64	Atmospheric CH ₄ and N ₂ O measurements at Suva, Fiji, *Francis S. Mani
P65	MOYA and Equianos: UK methane measurement and GHG monitoring, *Euan G. Nisbet
P66	Atmospheric greenhouse gas concentrations for five years over a tropical forest in Borneo Island, *Shohei Nomura
P67	Monitoring of Greenhouse Gases with in situ FTIR in East Anglia, UK, as part of a regional sampling network, *Hannah Sonderfeld
P68	Implementation of New Greenhouse Gas Measurements in Cholpon Ata, Kyrgyz Republic, *Martin Steinbacher
Posters Data Products and Policy	
P69	ICOS ATC near real time greenhouse gases data: from collection to model validation on the importance of proper water correction and primary scale propagation, *Amara Abbaris, Léonard Rivier
P70	Data Services for Carbon Cycle Science at the ICOS Carbon Portal, *Alex Vermeulen
