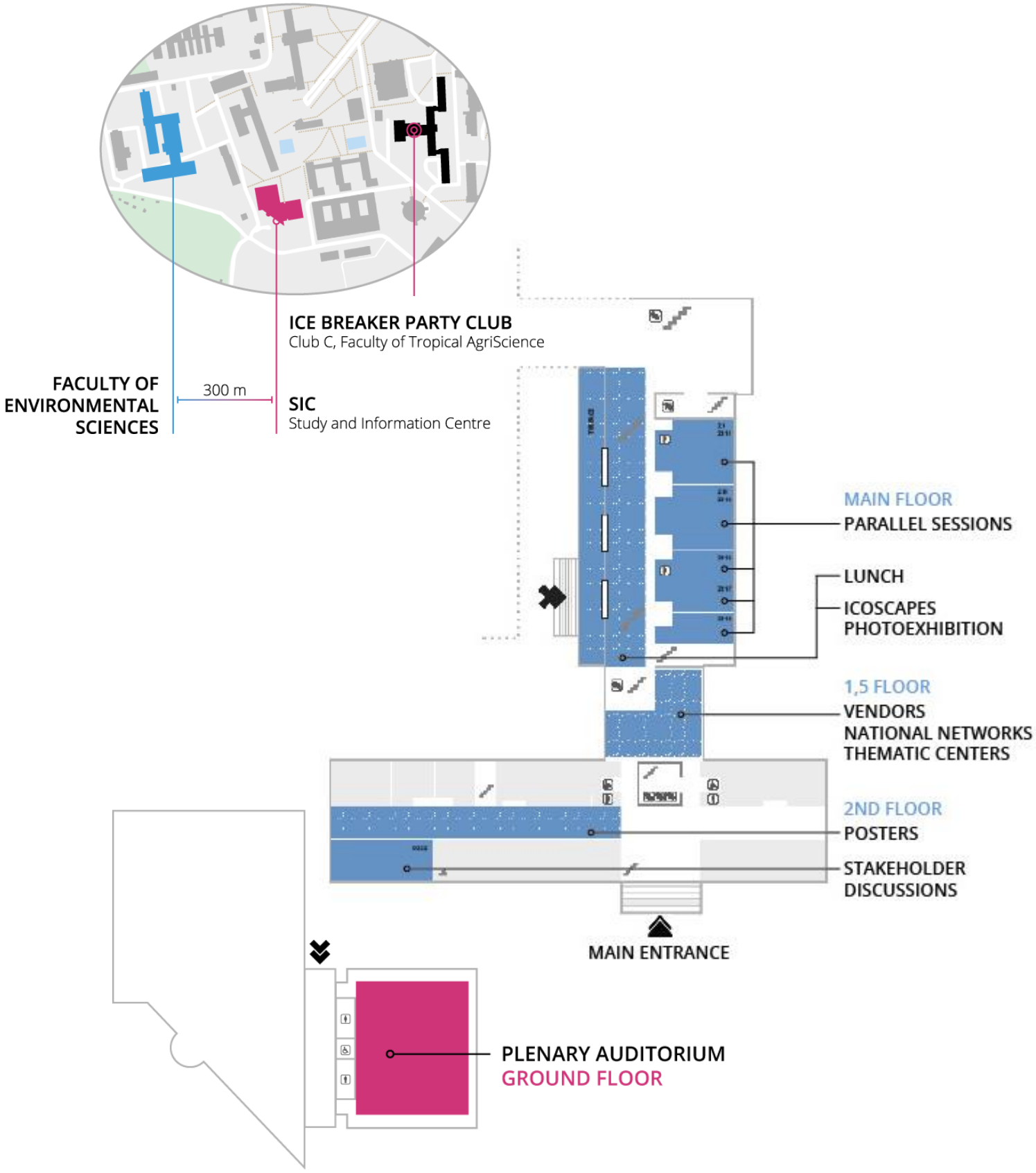

ICOS
INTEGRATED CARBON OBSERVATION SYSTEM
SCIENCE CONFERENCE
PRAGUE 2018
11–13 SEPT
The 3rd ICOS Science Conference
CONFERENCE PROGRAMME
ICOS
INTEGRATED CARBON OBSERVATION SYSTEM

Table of Content

Schematic of the Conference Venue



Conference Programme in short

Time	Monday 10 Sept.	Tuesday 11 Sept. 'From data to services'	Wednesday 12 Sept. 'Integration between scientific domains'	Thursday 13 Sept. 'Integration towards remote sensing and modeling'	Friday 14 Sept.
09:00-10:15		• Opening (TBA) • Giacomo Grassi: *Bridging gaps between policy-making and science: the case of forest GHG estimates*	• Dennis Baldocchi: *Viewing ICOS in a global context: lessons learned from the global network, FLUXNET* • Maciej Telszewski: *Viewing ICOS in a global context from coordinated ocean observations, through high quality data products to global ocean carbon fields and fluxes*	• Philippe Ciais: *The global carbon balance of forests based on flux towers and forest age data* • Adrian Leip: *Bottom-up and top-down methods in national GHG emission reporting*	Excursions
10:15-10:45		Coffee break			
10:45-12:00		• Joanna Post: *Paris Agreement and implications to Earth Observation science* • Alex Vermeulen: *'Services and products provided by ICOS'*	• Róisín Commane: *Data-constrained annual carbon fluxes for Arctic and Boreal ecosystems* • Mathew Williams: *Constraining terrestrial carbon balance through assimilation of remotely sensed biomass data into CARDAMOM* • Stefan Schwietzke: *Recent developments in using isotopic measurements for constraining methane sources and sinks*	• Ana Bastos: *Connecting global & regional carbon budgets to support policy-making* • Holger Lange: *Combining remote sensing earth observations and in situ networks: detection of extreme events and optimal network size and design* • Jocelyn Turnbull: *Quantification of urban CO_2 emissions in Indianapolis and Auckland*	
12:00-13:00		Lunch	Lunch	Lunch	
12:00-14:00	Registration starts, side events	POSTER SESSION	POSTER SESSION	POSTER SESSION	
14 :00-15 :30		PARALLEL SESSIONS • Session 1	PARALLEL SESSIONS • Session 7	PARALLEL SESSIONS • Session 13	

		Climate change mitigation – closing the gap between science, inventories and policy making	Reactive gases	Bridging the gap between bottom-up and top-down methods	
		• Session 2 From data to useful services with societal meaning	• Session 8 Newest new in research – scientific and technical developments	• Session 14 Urban greenhouse gas budget – from novel monitoring networks to source identification	
		• Session 3 Major research questions in Earth Observations	• Session 9 Land sink – from residual to direct estimates	• Session 15 In-situ and remote sensing observations	
15:30-16:00		Coffee break		15:45-16:30 Closing session	
16:00-17:30		PARALLEL SESSIONS	PARALLEL SESSIONS		
		• Session 4 Globally integrative studies	• Session 10 Decadal variability in biogeochemical cycles		
		• Session 5 Data management and quality	• Session 11 The identity and societal impact of a researcher within ICOS		
		• Session 6 Regional efforts to constrain the global C cycle	• Session 12 ICOS-TCCON Integration Workshop (15:30-18:00)		
Evening 18:00 ->	Ice Breaker Reception	ICOScapes Photo Exhibition Opening	Banquet		

Conference Programme in detail

Monday 10 September 'REGISTRATION AND RECEPTION'	
12:00->	Registration desk opens in SIC Hall
13:00->	Side Events
18:00	Ice Breaker Reception (at Club C: Kamýcká 961/129, 165 00 Praha-Suchdol)
Tuesday 11 September 'FROM DATA TO SERVICES'	
09:00-10:15	**Plenary session** (Chair: Michael Marek) in SIC Hall
09:00-09:30	Opening of the conference
09:30-10:05	Keynote, Giacomo Grassi: *Bridging gaps between policy-making and science: the case of forest GHG estimates*
10:05-10:15	Questions
10:15-10:45	Coffee break
10:45-12:00	**Plenary session** (Chair: Emmanuel Salmon) in SIC Hall
10:45-11:15	Keynote, Joanna Post: *Paris Agreement and implications to Earth Observation science*
11:15-11:45	Alex Vermeulen: *Services and products provided by ICOS*
11:45-12:00	Questions for speakers
12:00-13:00	Lunch
12:30-13:00	**Side event**: ERC funding scheme and tips (Inés Marín Moreno, European Research Council Executive Agency) in Z111
13:00-14:00	POSTER SESSION
	PARALLEL SESSIONS
14:00-15:30	**Session 1**: **Climate change mitigation – closing the gap between science, inventories and policy making**. Conveners: Joanna Post, Lucia Perugini. In SIC Hall
14:00-14:10	Jouni Heiskanen: *Updates from the GEO Carbon and Greenhouse Gas Initiative*
14:10-14:30	Wang Yilong: *Potential of continental CO_2 and $^{14}CO_2$ observational networks to estimate fossil fuel CO_2 emissions via atmospheric inversions*
14:30-14:50	Petrescu Ana Maria Roxana: *Assessing the full greenhouse gas balance of EU countries and ecosystems: a first look at different emission estimates and their uncertainties*
14:50-15:10	Kurz Werner: *Disaggregating the impacts of human activities and natural disturbances on reported greenhouse gas emissions and removals in Canada's managed forest*
15:10-15:30	Kruijt Bart: *Assessing GHG exchange at landscape scale: quantifying field-scale fluxes using low-cost methods as well as regional scale fluxes using flux aircraft*
14:00-15:30	**Session 2**: **From data to useful services with societal meaning**. Conveners: Mikko Strahlendorff, Jean-Noël Thépaut. In Room Z111
14:00-14:15	Hutchins Maya: *Urban Onroad CO2 emissions and population density: tipping points and saturation effects*
14:15-14:30	Lefevre Nathalie: *Anomalous Sea-Air CO2 flux in the north tropical Atlantic during 2010 evidenced by modelling and observations*
14:30-14:45	Kowalska Natalia: *Floodplain forest greenhouse gas fluxes in changing climate*
14:45-15:00	Mikko Strahlendorff: *Model for climate services development*

15:00-15:20	Jean-Noël Thépaut: *Towards an anthropogenic CO2 emissions monitoring system*
15:20-15:30	Questions for all speakers?
14:00-15:30	**Session 3**: **Major research questions in Earth Observations**. Conveners: Pavel Kindlmann, Beryl Morris. In Room Z113
14:00-14:15	Korkiakoski Mika: *Performing a partial harvest instead of clearcutting causes less greenhouse gas emissions in a peatland forest*
14:15-14:30	Chi Jinshu: *The greenhouse gas balance of a managed boreal forested landscape measured from a tall tower in northern Sweden*
14:30-14:45	Kalliokoski Tuomo: *Decomposition of the climate change scenario uncertainty effect on primary production of boreal forests*
14:45- 15:00	Rehder Gregor: *BONUS INTEGRAL: Using ICOS and related infrastructure to improve biogeochemical monitoring and ecosystem assessment for the Baltic Sea*
15:00- 15:15	Mäkelä Jarmo: *Quantification of different uncertainty sources on modelled climate change indicators in future climate scenario estimates*
15:15-15:30	Questions for all speakers?
15:30-16:00	Coffee Break
16:00-17:30	**Session 4: Globally integrative studies. Convener: Leonard Rivier**. In SIC Hall
16:00- 16:15	Sitch Stephen: *Regional changes in land-atmospheric CO2 exchange over recent decades using trendy DGVMS*
16:15-16:30	Kirschbaum Miko: *Important omissions in the quantification of the global carbon cycle*
16:30-16:45	Andrews Arlyn: *Top-down constraints on the North American carbon cycle from the first decade of the North American Carbon Program*
16:45-17:00	Sha Mahesh Kumar: *Comparing first results of the Sentinel-5 Precursor methane and carbon monoxide using TCCON data: ESA AO project TCCON4S5P*
17:00-17:15	Dañobeitia Juanjo: *EMSO ERIC (European Multidisciplinary Seafloor and water-column Observatory European Research Infrastructure Consortium) A pan-European Distributed Research Infrastructure from Data to Services*
17:15-17:30	Questions for all speakers?
16:00-17:30	**Session 5: Data management and quality**. Conveners: Per Öster, Zhiming Zhao. In Room Z111
16:00- 16:20	Yver-Kwok Camille: *ICOS ATC labeling process: helping stations to reach ICOS standards through quality control and two-way communication*
16:20-16:40	Agarwal Deb: *The AmeriFlux Network Data Management System*
16:40-17:00	Zhao Zhiming: *Development of the ICOS data portal integration into the cloud in the framework of the ENVRIplus 'Data for Science' Theme*
17:00-17:20	Jocher Georg: *Forest net ecosystem CO_2 exchange in sloping terrain as derived by eddy covariance*
17:20-17:30	Questions for all speakers?
16:00-17:30	**Session 6: Regional efforts to constrain the global C cycle**. Conveners: Ana Bastos, Philippe Ciais. In Room Z113
16:00-16:15	Treat Claire: *Tundra landscape heterogeneity, not inter-annual variability, controls the decadal regional carbon balance in the Western Russian Arctic*
16:15-16:30	Becker Meike: *Regional maps of ΔfCO2 and ocean acidification along the Norwegian coast*
16:30-16:45	Shrestha Gyami: *Networking in Carbon Observations: Looking back, Scoping Forward*
16:45-17:00	Steinbacher Martin: *Continuous atmospheric greenhouse gas measurements in a semi-remote area in the Kyrgyz Republic – first scientific findings towards policy making*
17:00- 17:15	Ohno Hajime: *Quantification of materially utilized carbon in our society: the case of Japan*

17:15-17:30	Questions for all speakers?
18:00	Evening Programme: ICOScapes Photo exhibition!
18:00	Light refreshments served
Wednesday 12 September 'INTEGRATION BETWEEN SCIENTIFIC DOMAINS'	
09:00-10:15	**Plenary session** (Chair: Reinhart Ceulemans) in SIC Hall
09:00-09:35	Keynote, Dennis Baldocchi: *Viewing ICOS in a global context: lessons learned from the global network FLUXNET*
09:35-10:10	Keynote, Maciej Telszewski: *Viewing ICOS in a global context from coordinated ocean observations, through high quality data products to global ocean carbon fields and fluxes*
10:10-10:15	Questions for both speakers?
10:15-10:45	Coffee Break
10:45-12:00	**Plenary session** (Chair: Ute Karstens) in SIC Hall
10:45-11:10	Keynote, Commane Róisín: *Data-constrained annual carbon fluxes for Arctic and Boreal ecosystems*
11:10-11:35	Keynote, Williams Mathew: *Constraining terrestrial carbon balance through assimilation of remotely sensed biomass data into CARDAMOM*
11:35-12:00	Keynote, Schwietzke Stefan: *Recent developments in using isotopic measurements for constraining methane sources and sinks*
12:00-13:00	Lunch
13:00-14:00	POSTER SESSION
	PARALLEL SESSIONS
14:00-15:30	**Session 7: Reactive gases**. Conveners: Christian Brümmer, Silvano Fares. In Room Z111
14:00-14:15	Ammann Christof: *Emissions of NO and N_2O from a pasture ecosystem measured by eddy covariance*
14:15-14:30	Kranenburg Richard: *Establishing nitrogen deposition over Germany using modelling and observations*
14:30-14:45	Gerosa Giacomo: *Characterisation of ozone deposition to a mixed oak-hornbeam forest. Flux measurements at 5 levels above and inside the canopy and their interactions with nitric oxide*
14:45-15:00	Fares Silvano: *Ozone deposition effects on carbon assimilation in a Mediterranean forest*
15:00- 15:15	Juráň Stanislav: *Ozone fluxes in the spruce forest at Bily Kriz, Czech Republic*
15:15-15:30	Questions for all speakers?
14:00-15:30	**Session 8: Newest new in research – scientific and technical developments**. Convener: Timo Vesala. In SIC Hall
14:00-14:15	Grelle Achim: *A new technology for measuring greenhouse gas fluxes from organic agricultural soils provides ground for more informed decisions on mitigation*
14:15-14:30	Erkkilä Kukka-Maaria: *OS as a GPP proxy: Five years of COS flux measurements over a boreal forest*
14:30-14:45	Meier Philip: *The Flying Tree Top Sampler - Sampling foliage from the uppermost canopy of trees using a drone*
14:45-15:00	Grossi Claudia: *^{222}Rn as tracer for quantifying greenhouse gases fluxes: need of high quality and harmonized measurements of atmospheric concentrations and fluxes*
15:00-15:15	Steur Farilde: *Simultaneous measurement of δ13C-CO2, δ18O-CO2 and δ17O-CO2 in atmospheric samples by the Aerodyne Quantum Cascade Dual-Laser Absorption Spectrometer at the Centre for Isotope Research*
15:15-15:30	Questions for all speakers?
14:00-15:30	**Session 9: Land sink – from residual to direct estimates.** Convener: Markus Reichstein. In Room Z113

14:00-14:15	Lohila Annalea: *Increasing soil respiration has threatened the carbon sink at a northern boreal fen*
14:15-14:30	Schindler Thomas: *Flooding-induced N_2O and CH_4 fluxes from soil to tree level*
14:30-14:45	Machacova Katerina: *Nitrous oxide (N_2O) and methane (CH_4) fluxes of boreal tree species and their seasonal dynamics*
14:45-15:00	El-Madany Tarek: *Imprint of nutrient availability on ecosystem functional properties*
15:00-15:15	Griffith David: *Water-atmosphere exchange of greenhouse gases (CO_2, CH_4, N_2O) in two major river systems - the Elbe (Europe) and the Murray (Australia)*
15:15-15:30	Questions for all speakers?
15:30-16:00	Coffee Break
16:00-17:30	**Session 10: Decadal variability in biogeochemical cycles.** Conveners: Ute Schuster, Frank Berninger. In SIC Hall
16:00-16:15	Aubinet Marc: *Carryover impacts on Net Ecosystem Productivity in a temperate mixed forest*
16:15-16:30	Gharun Mana: *Twenty years of evapotranspiration measurement over a sub-alpine coniferous forest in Switzerland*
16:30-16:45	Oulehle Filip: *Comparison of the impacts of acid and nitrogen additions on carbon fluxes in European conifer and broadleaf forests*
16:45-17:00	Sørensen Lise Lotte (presented by Kim Pilegaard): *Carbon Observations at an Arctic Coastal site*
17:00-17:15	Luke Gregor: *Interannual drivers of the seasonal cycle of CO_2 in the Southern Ocean*
17:15-17:30	Questions for all speakers?
16:00-17:30	**Session 11: The identity and societal impact of a researcher within ICOS*.** Convener: Katri Ahlgren. In Room Z113
16:00-16:45	Tanja Suni: *How to make an impact to society as an individual researcher*
16:45-17:15	Evi Carita Riikonen: *What is an ICOS identity? An investigation into the internally perceived identities of ICOS RI*
17:15-17:30	Katri Ahlgren: *Communicating climate science to non-scientific audience through social media – Case ICOScapes*
	*This session relies on dialogue between the participants, times are approximations.
16:00-17:30	**Session 12: ICOS-TCCON Integration (H2020 RINGO) Workshop**. In Room Z111
18:00	BUS Transport to BANQUET (ca. 19:00) venue at the National House of Vinohrady (Narodni dum Na Vinohradech Namesti Miru 9)
Thursday 13 September 'INTEGRATION TOWARDS REMOTE SENSING AND MODELING'	
09:00-10:15	**Plenary session** (Chair: Alex Vermeulen) in SIC Hall
09:00-09:35	Keynote, Philippe Ciais: *The global carbon balance of forests based on flux towers and forest age data*
09:35-10:10	Keynote, Adrian Leip: *Bottom-up and top-down methods in national GHG emission reporting*
10:10-10:15	Questions for both speakers?
10:15-10:45	Coffee Break
10:45-12:00	**Plenary session** (Chair: Gregor Rehder) in SIC Hall
10:45-11:10	Keynote, Ana Bastos: *Connecting global & regional carbon budgets to support policy-making*
11:10-11:35	Lange Holger: *Combining remote sensing earth observations and in situ networks: detection of extreme events and optimal network size and design*
11:35-12:00	Keynote: Turnbull Jocelyn: *Quantification of urban CO_2 emissions in Indianapolis and Auckland*
12:00-13:00	Lunch
13:00-14:00	POSTER SESSION
	PARALLEL SESSIONS

14:00-15:30	**Session 13: Bridging the gap between bottom-up and top-down methods**. Convener: Dominik Brunner. In Room Z111
14:00-14:15	Andersen Truls: *Quantifying methane emissions from coal mining shafts in Silesia, Poland*
14:15-14:30	Helfter Carole: *Country-scale mass balance budgets of greenhouse gases from shipborne observations: a 4-year study of the British Isles*
14:30-14:45	Gerbig Christoph: *CarboScope decadal inversions of NEE over Europe at regional scale: towards a pre-operational system*
14:45-15:00	White Emily: *Quantifying the UK's carbon flux: a hierarchical Bayesian inversion approach using a national tall tower measurement network and comparing the use of two biosphere models as prior information*
15:00- 15:15	Galkowski Michal: *Airborne in-situ sampling over Europe during CoMet*
15:15-15:30	Questions for all speakers?
14:00-15:30	**Session 14: Urban greenhouse gas budget – from novel monitoring networks to source identification.** Conveners: Leena Järvi, Andreas Christen. In Room Z113
14:00-14:15	Sargent Maryann: *Anthropogenic and biogenic CO2 fluxes in the Boston urban region*
14:15-14:30	Santaren Diego: *A city to national-scale inverse modeling system to assess the potential of spaceborne CO2 measurements for the monitoring of anthropogenic emissions*
14:30-14:45	Hoheisel Antje: *Characterisation of carbon isotopic source signature from CH_4 sources in Germany using mobile measurements*
14:45-15:00	Bowman Kevin: *Investigation of fossil fuel emission detection in the presence of natural carbon cycle variability across the globe*
15:00- 15:15	Brunner Dominik: *A low-cost sensor network to monitor the CO2 emissions of the city of Zurich*
15:15-15:30	Questions for all speakers?
14:00-15:30	**Session 15: In-situ and remote sensing observations.** Conveners: Corinna Rebmann, Marko Scholze. In SIC Hall
14:00-14:15	Ceschia Eric: *A strategy for estimating yield and the components of the carbon and water budgets for croplands at plot scale over large areas*
14:15-14:30	Lund Magnus: *Measurement-based upscaling of pan-arctic net ecosystem exchange*
14:30-14:45	Yakir Dan: *Exotic observational sites: nuisance or critical test beds*
14:45-15:00	Raj Rahul: *Integration of flux tower data and remotely sensed data into the SCOPE simulator: A Bayesian approach*
15:00- 15:15	Fischer Milan: *Quantifying evapotranspiration from satellite retrievals of land surface temperature over a mosaic landscape in the Czech Republic*
15:15-15:30	Questions for all speakers?
15:45-16:30	**CLOSING SESSION** in SIC Hall
	Friday 14 September 'EXCURSIONS'
8:00-18:30	**Excursion to Wetland Ecosystem Station, Třeboň**
8:00	Transport (2.5 hrs) leaves from the Conference venue
10:30	Visit to CzechGlobe Wetland station (proposed as Associated ICOS station) Lunch in the city of Třeboň Free time in Třeboň
16:00	Transport back
18:30	Return to Prague
8:00-16:00	**Excursion to Atmospheric station, Křešín u Pacova**
8:00	Transport (2 hrs) leaves from the Conference venue
10:00	Visit to CzechGlobe Atmospheric station (proposed as Class 1 ICOS station) Lunch in the city of Humpolec

14:00	Transport back
16:00	Return to Prague

Description of Poster Sessions

(presented on Tue – Thu; 13:00 – 14:00)

Posters are available for the audience for the whole duration of the conference. Participants are encouraged to visit them also during other times.

Tue 11th of Sept.	Posters related to **Parallel Session 1**	• *Bioenergy with carbon capture and storage at regional scales: interactions with the food-energy water nexus, regional climate, and biodiversity conservation* Stoy Paul • *ICOS works towards harmonized and societally relevant data and services* Heiskanen Jouni • *Findings from SEACRIFOG Stakeholders Consultation Workshops* Krkoška Lorencová Eliška • *Restoring a tired pasture: what impact on greenhouse gases exchanges?* Lognoul Margaux • *Implications of carbon emissions from Chinese cities* Wang Haikun • *The devil in reducing emissions in the long-term: The underestimated "now" versus the overestimated "then"* Jonas Matthias
	Posters related to **Parallel Session 2**	• *ICOS ATC Metrology Lab: Evaluating different GHG sampling systems for background atmosphere monitoring station* Laurent Olivier • *Regional Carbon Budget of Saxony (Germany) Based on Flux Measurements and Inventories* Grünwald Thomas • *Substomatal conductance of Scots pine is driven by vapour pressure deficit: leaf chamber measurements of COS fluxes* Krupková Lenka • *Seasonal and diurnal variability in temperature dependence of stem CO_2 efflux from Norway spruce trees* Darenova Eva
	Posters related to **Parallel Session 3**	• *Estimating carbon gas exchange with inland waters of the USA* Striegl Robert • *Neural network estimation of CO_2 partial pressure in surface seawater of the Mediterranean Sea* Guglielmi Véronique • *The Netherlands is subsiding whilst sea level is rising* Tanya Lippmann
	Posters related to **Parallel Session 4**	• *Retrieval of methane vertical information from TCCON FTIR spectra* Zhou Minqiang • *Cabauw 25 years of GHG measurements* Hensen Arjan • *Longterm eddy covariance measurements in Basel, Switzerland* Vogt Roland • *First measurements of CO2, CH4, CO, and 222Rn at the new Atmospheric Observatory Tower in Ispra, Italy* Manca Giovanni • *ICOS Finland – Observations and key results* Vesala Timo • *The Long-Term Micrometeorological and Boundary Layer Measurement Program at the ICOS-D Atmospheric Observatory Lindenberg* Rummel Udo • *Combined balloon, aircraft, surface and remote sensing greenhouse gas measurements at Traînou supersite, France* Lopez Morgan • *Global terrestrial carbon sink in recent 36 years simulated using a remote sensing driven process-based diagnostic model* Ju Weimin • *The Ruisdael Observatory and ICOS: A surface- atmosphere research Infrastructure in The Netherlands 2018 – 2027* Kruijt Bart • *ICOS Carbon Portal: Elaborated products and services to support European carbon budget estimates* Karstens Ute • *Measuring atmospheric argon at Jungfrau East Ridge to estimate the oceanic influence on atmospheric oxygen using a mass spectrometer* Schibig Michael F. • *An update on CarbonTracker Europe: Global carbon fluxes up to 2018 and coupling with the ICOS Carbon Portal* Smith Naomi • *The CzeCOS ecosystem stations network* Pavelka Marian • *Pan-Eurasian Experiment (PEEX) program and GlobalSMEAR initiative* Lappalainen Hanna (presented by Päivi Haapanala) • *Contribution of fire decline to the global carbon budget over the last decade* Yi Yin
	Posters related to **Parallel**	• *Homogeneous data-reprocessing and full synthesis of eddy-flux measurements in French ecosystems: 1999 – 2015* Moreaux Virginie

	Session 5	• *Travelling cylinders as a quality control tool in ICOS atmospheric station network* Aaltonen Hermanni (presented by Tuomas Laurila) • *ICOS: where the hack is my/your data?* Hellström Maggie • *ICOS Data Model to FAIR Information* D'Onofrio Claudio • *Diurnal patterns, seasonality and ebullition: A comparison of gap-filling strategies for closed-chamber CH4 measurements to derive a "best-practice" approach and give implications for future studies* Hoffmann Mathias • *Flagging efficiency of different eddy covariance quality control schemes* Šigut Ladislav • *N2O flux response to meteorological solicitations and farming practices in a sugar beet crop* Lognoul Margaux
	Posters related to **Parallel Session 6**	• *Evaluating year-to-year anomalies in tropical wetland methane emissions using satellite CH_4 observations* Parker Robert • *Long-term socio-ecological carbon budget analyses enable tracing emissions shifts from land use to energy use* Gingrich Simone • *Systems analysis as a background to constrain regional carbon budget* Shvidenko Anatoly • *Model-data fusion framework to constrain Australia's terrestrial carbon and water budgets* Trudinger Cathy • *Air-sea CO_2 fluxes from pCO_2 continuous measurements in a coastal area: the role of atmospheric forcing under different wintry seasons* Cantoni Carolina • *Net terrestrial ecosystem carbon fluxes in China during 2009 - 2015 constrained by both surface and satellite CO2 observations* Jiang Fei • *Local situations identification in GHG atmospheric hourly time series using statistical methods vs atmospheric approaches* Conil Sebastien • *A Representative Application of Future NPP Estimation by Combining Remote Sensing and Spatial Modelling* Donmez Cenk
Wed 12th of Sept.	Posters related to **Parallel Session 7**	• *Coupled biosphere-atmosphere exchange modelling of NH_3 and CO_2* Schrader Frederik • *Reactive nitrogen exchange between biosphere and atmosphere – lessons learned from applying novel measurement techniques during NITROSPHERE and FORESTFLUX campaigns* Brümmer Christian • *Evaluation of gap-filling strategies for ammonia flux measurements* Lucas-Moffat Antje M. • *Budget of ammonium in the Southern Ocean: implication for the interpretation of ammonium ice core data* Paulot Fabien • *Emissions of biogenic volatile organic compounds from boreal peatlands* Männistö Elisa • *An eddy covariance system for simultaneous flux measurements of total reactive nitrogen, ammonia, and nitrogen oxides (NOx)* Shorter Joanne
	Posters related to **Parallel Session 8**	• *When soil water is not enough: using electric resistivity tomography as a proxy for the total water available to ecosystems* Simioni Guillaume • *Improved eddy fluxes with Multi-Path sonic anemometry* Kirtzel Hans-Jürgen • *High-resolution inverse modelling of CH_4 emissions around monitoring station Ispra, Italy - first result* Bergamaschi Peter • *From Measurements to Analysis: New Tools for Time- and Space-Synchronized Flux and Optical Sensor Network* Sakowska Karolina • *Atmospheric GHG measurements onboard voluntary observing ships (VOS) - approaches for improved atmospheric sampling* Steinhoff Tobias • *Flux partitioning plus – joint constraints by carbon dioxide and carbonyl sulfide increase inferred gross primary productivity estimates* Spielmann Felix M. (presented by Karolina Sakowska) • *Integration of a new ICOS compliant soil chamber with a five species Cavity Ring-Down Spectrometer for soil flux measurements* Hofmann Magdalena • *Automatized Soil Evapo-Respiration Chamber (ASERC)* Zawilski Bartosz • *Novel method of extraction for atmospheric $^{14}CO_2$ samples for determination of CO_2 emissions from fossil fuel* Pugsley Katherine • *Versatile Glider, Atmospheric and Ship pCO2 Analyser - VeGAS-pCO2 - A Novel compact and high precision pCO2 sensor for Terrestrial and Ocean Observatories* Monteiro Pedro • *Initial characterisation of low-cost GHG sensors* Cropley Ford

		• *Quantification of methane emissions from dairy cows in the Netherlands* Vinkovic Katarina • *Outcomes of the ongoing improvement work to develop and increase the Readiness of ICOS for Necessities of Integrated Global Observations* Rintala Janne-Markus • *CloudRoots – an integrated measurement and modelling approach for soil-plant-atmosphere interactions applied to an ICOS site* Graf Alexander • *Finding the best way to sample using an Ecotech Spectronus FTIR instrument* Yver-Kwok Camille • *Developing a $^{14}CO_2$ sampling system and strategy to verify fossil fuel emissions from Rotterdam area, the Netherlands* Nguyen Nhu Tung Linh • *Investigating the limitations of frequency response correction methods for eddy covariance fluxes with low signal-to-noise ratio* Aslan Toprak • *Characterisation of tall tower source areas using concentration footprints for periods of typical air flow regime* Komínková Katerina • *Resilience to draught and carbon gain tradeoffs in semi-arid ecosystems* Madi Amer • *Carbonyl sulfide and sun-induced fluorescence as joint constraints on terrestrial carbon cycling* Sakowska Karolina
	Posters related to **Parallel Session 9**	• *Aerenchymous plant species differ in their CH_4 transport in Siikaneva boreal peatland* Korrensalo Aino • *Disentangling soil water movements to improve the forecast of drought impact on forest ecosystems* Gennaretti Fabio • *Response of wetland GHGs exchange to climatic extremes – results of 5-year EC measurements of H_2O, CO_2, CH_4 fluxes in Biebrza National Park, Poland* Fortuniak Krzysztof • *An assessment of differences in Carbon Sequestration capacities of selected tree species in the rainforest belt of Southwestern Nigeria* Oderinde Folasade • *Integrating remote sensing and eddy covariance to assess net ecosystem carbon balance in a Mediterranean cork oak woodland* Boavida-Portugal Joana • *Multi-year regional terrestrial ecosystem carbon flux inferred from GOSAT XCO_2 data* Wang Hengmao • *Assessing spatial patterns of ecosystem productivity and diversity in grasslands using Sentinel-2: is it feasible?* Sakowska Karolina • *Compilation and analysis of carbon balance of a six-year-old Scots pine (Pinus sylvestris) stand by using two different methods* Soosaar Kaido • *Investigations on the energy balance closure and energy partition over cropland with long-term experimental data* Brut Aurore • *Factors determining transpiration of five main European tree species grown in various forest ecosystems* Szatniewska Justyna • *Carbon budget of a temperate-climate vineyard: three years of observations at IT-Lsn* Vendrame Nadia • *Water limitation can negate the effect of higher temperatures on the carbon sequestration potential of Swedish forests* Zanchi Giuliana • *Image classification to improve the estimation of GHG emissions through mapping of archetypical vegetation in the savannahs of Brazil* Brito Alan de • *CO_2 fluxes before and after partial deforestation of a spruce forest* Graf Alexander • *Can the restoration of bogs drained for forestry-use contribute to climate change mitigation?* Schlaipfer Martina • *Response of soil CO2 emissions to different wetting intensities in a grassland ecosystem* Amanuel Valdeselassie Gebremichael
	Posters related to **Parallel Session 10**	• *Trends and anomalies in over twenty years of flux observations in the mid-latitude Scots Pine forest Loobos* Kruijt Bart • *Long-term soil CO_2 efflux measurements in a Norway spruce forest: DOY as variable to improve model of soil emissions* Acosta Manuel • *CO_2 uptake and ocean acidification in the North Atlantic and Southern Indian Oceans over the last two decades* Leseurre Coraline • *Inter-annual variability of carbon fluxes at the FR-Gri ICOS crop site as influenced by meteorology and management* Buysse Pauline

		• *Global indicators of ocean carbon uptake: a pilot study* Lauvset Siv K. • *Long-term assessment of croplands carbon budgets: effects of climate and management in southwestern France* Ceschia Eric
Thu 13th of Sept.	Posters related to **Parallel Session 13**	• *EUROCOM project: collaborative reanalysis of European CO2 fluxes over the period 2006-2015* Monteil Guillaume • *Towards a data-driven estimate of northern wetland CH_4 emissions using artificial neural networks and a set of CH4 flux sites* Peltola Olli • *Linking photosynthesis F_{760} and PRI at daily to seasonal scales* Wieneke Sebastian • *Using 6-year of SMOS soil moisture data in combination with CO2 flask samples to constrain terrestrial carbon fluxes with CCDAS* Wu Mousong (presented by Marko Scholze) • *Synthesising terrestrial and atmospheric models and data into national-scale estimates of UK nitrous oxide emissions* Levy Peter • *Constraining Greenhouse Gas fluxes at Four Corners, Amazon, California and Alaska using Remote Column Observations* Dubey Manvendra • *Inverse Modelling of Swiss CH4 and N2O Emissions* Brunner Dominik • *Non-growing season methane emissions are a significant component of annual emissions across northern ecosystems* Treat Claire • *Using long-term high precision isotope measurements to characterise sources of atmospheric methane at various European locations* Menoud Malika • *The impact of an imperfect anthropogenic prior knowledge at KIT ICOS-D atmospheric station in regional CO2 inversions* Koch Frank-Thomas • *Contribution of terrestrial carbon budget to atmospheric CO_2 in South Korea* Yun Jeongmin • *First eddy covariance flux analysis at the tall tower site Beromünster, Switzerland* Leuenberger Markus • *"MEMO²: MEthane goes MObile – MEasurements and Modelling Walter Sylvia* • *Preliminary results of ground - based column greenhouse gases retrieval using FTIR spectroscopy, influence of the temperature profiles in the forward model* Dandocsi Alexandru • *Spatio-temporal attribution of forest contributions to country-scale variations in atmospheric CO2* Dubber Wilhelm
	Posters related to **Parallel Session 14**	• *Spatial modelling of carbon dioxide emissions in central Helsinki – the effect of different planning scenarios* Järvi Leena • *Eddy Covariance measurements and source partitioning of CO_2 emissions in urban environment: application for Heraklion, Greece* Stagakis Stavros • *The carbon dioxide emissions of U.S. cities* Gurney Kevin • *GHG fluxes measurements in Lodz, Poland – selected results from the period 2006-2018* Pawlak Wlodzimierz • *Methane Emission Mapping and Evaluation across Utrecht City, the Netherlands* Maazallahi Hossein • *The GROOF project: Greenhouses to Reduce CO2 on Roofs in urban area Sabrea Maeva,* • *MExico city's Regional Carbon Impacts (MERCI-CO2)* Ramonet Michel • *CH4 from waste: constraints on captured and fugitive emissions from isotopic analysis* Bakkaloglu Semra • *Urban flux monitoring in a Mediterranean city* Marras Serena • *Investigating the urban climate using Radon-222 – Lodz, Central Poland case study* Podstawczynska Agnieszka • *Nocturnal area fluxes of CH_4, CO_2 and CO for a suburb of Saint-Petersburg Foka Stefani* • *Mobile measurement of methane in Ile de France region* Defratyka Sara • *Implications of carbon emissions from Chinese cities* Wang Haikun • *Urban Ecosystem Services: Climate Change Mitigation and Resilience of Cities* Štecová Iveta • *Evaluation of Satellite-Derived Versus Bottom-Up Fossil Fuel CO2 Emissions at the Urban Scale in Four US Urban Domains* Liang Jianming • *The isotopic signature of carbon dioxide emissions from an urban surface measured using eddy covariance and flux gradient approaches* Andreas Christen

		• *Assessing atmospheric CO2 variability in the Aix-Marseille metropolis area (France) and its coastal Mediterranean Sea at different time scales within the AMC project* Irène Xueref-Remy
	Posters related to **Parallel Session 15**	• *Standardised, precise and unbiased measurements of above-ground biomass with terrestrial LiDAR* Demol Miro • *Combining airborne and ground based remote sensing (lidar, spectrometer) as well as in-situ techniques to determine CH_4 emissions of a European CH_4 emission hot spot area – initial results from COMET* Bovensmann Heinrich • *A comparison of AirCore observations from the intensive RINGO campaign at Sodankylä, Finland* Brownlow Rebecca (presented by Huiling Chen) • *First mission – towards a global harmonised in-situ data repository for forest biomass datasets validation* Schepaschenko Dmitry • *Two decades of ecosystem CO2 gas exchange above a sub-alpine coniferous forest in Switzerland* Hörtnagl Lukas • *Airborne measurements of GHG fluxes over northern wetlands* Holst Jutta • *Upscaling greenhouse gas fluxes on adjacent peatland, lake and forest ecosystems within a subarctic catchment* Heiskanen Lauri • *Spatio-temporal mapping of daily photosynthesis in drought conditions using remote sensing observations and in-situ measurements* Bayat Bagher • *Effects of Arctic sea-ice and biogeochemical drivers and storms on under-ice water fCO2 from winter to spring: implications for sea-air CO2 fluxes* Fransson Agneta • *Methane fluxes and isotopic signatures from plant community to ecosystem scale* Rinne Janne • *FTS and AirCore measurements of greenhouse gases at Sodankylä, Finland* Kivi Rigel • *Vertical profiles of GHG concentrations at Tall Towers* Lindauer Matthias • *Estimating pan Arctic net ecosystem exchange based on remotely sensed data: the PANEEx project 2018* Kusbach Antonin • *IT-SR2 – monitoring GHG fluxes at a Mediterranean pine forest within ICOS* Gruening Carsten • *The Flanders Marine Institute (VLIZ) ICOS Ocean Stations. Marine Inorganic Carbon and GHGs observations in the southern part of the North Sea* Gkritzalis Thanos • *The AmeriFlux Management Project: overview, outreach, tech updates and online activities* Biraud Sebastien • *Optical synergies for spatiotemporal sensing of scalable ecophysiological traits: SENSECO COST Action CA17134* Sakowska Karolina • *How microclimate conditions changed within the last 40 years on a sedge-grass marsh?* Dušek Jirí • *Lake-atmosphere heat flux dynamics in arctic Siberia – in-situ observations and parameterization* Daniela Franz

Presentation of Key Note Speakers

Giacomo Grassi

Giacomo Grassi has been acting as a Senior Scientific Officer at the Joint Research Centre (JRC) of the European Commission since 2005. Dr Grassi holds a PhD in Forest Ecology. He also leads the group on 'Land Use, Land Use Change and Forestry' (LULUCF) within the Directorate on Sustainable Resources, which is dealing with the estimation of CO2 fluxes from managed terrestrial ecosystems – mainly forests – and their reporting to the UN Framework Convention on Climate Change (UNFCCC).
Dr Grassi is focused on coordinating the LULUCF sector of the EU greenhouse gas inventory and the modeling of forest carbon dynamics at EU level using the Carbon Budget Model. He provides scientific support in the design of policies at EU level (e.g. the forest reference levels under the post-2020 LULUCF Regulation) and under the Paris Agreement. Dr Grassi is an expert reviewer of LULUCF GHG inventories for the UNFCCC and a lead author of several IPCC reports, such as "2013 Supplementary Guidance under the Kyoto Protocol", "Methodological Refinement of the 2006 Guidelines for GHG inventories" and "Special Report on Climate Change and Land". He has published 50 papers in peer-reviewed journals, mostly focused on the carbon balance and the mitigation potential of forest ecosystems.

Giacomo Grassi gives a keynote on Tue 11th Sept titled: 'Bridging gaps between policy-making and science: the case of forest GHG estimates'.

Joanna Post

Joanna Post has been working with the United Nations Framework Convention on Climate Change (UNFCCC) secretariat since 2014. Since 2015 she has been based in the Science and Review Unit of the Adaptation Programme where she supports negotiations under the UNFCCC and its Paris Agreement on research and systematic observation. She is a programme officer working on issues related to Earth observation, research, climate services and developing dialogue at the science/policy interface. She is also the thematic focal point on oceans and adaptation.
Prior to joining the secretariat, Dr. Post managed a number of national and international scientific research and educational programmes and projects in both the UK and Germany. She holds a Ph.D. in environmental biochemistry from the University of Newcastle Upon Tyne, UK.

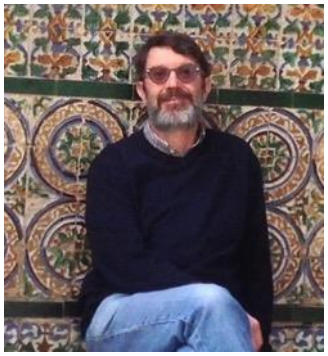
Joanna Post gives a plenary talk on Tue 11th Sept titled 'Paris Agreement and implications to Earth Observation science'.

Alex Vermeulen

Alex Vermeulen is director of the ICOS Carbon Portal. He has a strong background in (micro)meteorology, air quality modelling, observation techniques and data acquisition and ecosystem science. He has authored or co-authored more than 60 peer-reviewed scientific publications (current H-index 24). He has been involved as PI or coordinator in international cooperation projects since 1994. He started as junior scientist on a project on ammonia deposition and acidification research at ECN (Energy Research Center of the Netherlands). Since 1990, he worked in climate research in the field of GHG emission and concentration measurements and transport modelling. He has been project leader since 1994 and has been assistant group leader (~20 people) from 2005-2012. Since June 2014, he is Director of the Carbon Portal, leading a group of 12 scientists and technicians at Lund and Wageningen University. As ECN project leader, he participated in European projects like European Methane (FP4), AEROCARB, RECAB (FP5), CarboEurope-IP, IMECC, GEOMON, EuroHydros, GHG-Europe, and ACTRIS (FP7). He coordinated the CHIOTTO (FP5, RTD, 5 M€, 10 partners) and the InGOS (FP7, IA, 12 M€, 38 partners) project. Currently he is involved as PI and task leader in the H2020 projects EUDAT2020, ENVRIplus and RINGO. He is chair of the WMO GAW Greenhouse Gas Scientific Advisory Board. He also initiated, acquired and coordinated the ESF research networking program TTORCH. Besides the activities on climate change research, he worked in the fields of local air pollution, specifically measurement and modelling of highway dispersion; dry deposition flux measurements and high-resolution modelling of deposition loads. He was Focal Point for ICOS-NL and coordinated the ECN observations at Cabauw tall tower from 2000-2014. At ECN, he was project leader for several big national projects on climate change in the field of GHG exchange and coordinator of the Dutch network on GHG observation in the national ME-2 project.

Alex Vermeulen gives a plenary talk on Tue 11th Sept titled 'Services and products provided by ICOS'.

Dennis Baldocchi



Dennis Baldocchi is a professor of biometeorology at the University of California, Berkeley. He and his research group conduct experimental and theoretical studies on the physical, biological and chemical control of trace gas exchange between vegetation and the atmosphere. Goals of his work are to predict fluxes of carbon, water and energy, mechanistically, everywhere, all of the timelines of inquiry have been along understanding how fluxes of mass and energy between ecosystems and the atmosphere vary along a spectrum of time and space scales in accordance with structure, function, weather and climate and management. Methods used include use of the eddy covariance method to measure net fluxes of mass and energy across the atmosphere-ecosystem interface. Data are interpreted and distilled through the lens of the CANVEG family of models, physiological measurements at the leaf scale and flux measurements across the soil-atmosphere interface.
His current work focuses on: 1) the roles of management and ecological restoration on greenhouse gas fluxes of crops and wetlands; 2) the impact of weather, climate trends and variability, physiological stress, and structure and function on the greenhouse gas fluxes of savanna woodlands and annual grasslands; and 3) the upscaling and interpretation of fluxes across climatic and ecological gradients with the AmeriFlux and FLUXNET networks.
Prof. Baldocchi has been the principal investigator of FLUXNET since 1997 and is co-investigator of Ameriflux. He is a fellow of the American Geophysical Union, recipient of the American Meteorological Society Award for Outstanding Achievement in Biometeorology and a Clarivate Analytics Highly Cited Scientist over multiple years in Agricultural Science and once in Ecology/Environment.
He served as Editor in Chief of the Journal of Geophysical Research, Biogeoscience, as subject editor of Global Change Biology and on the editorial boards of numerous other journals. He has served on numerous

science advisory panels including the Max Planck Institute for Biogeochemistry and the Department of Energy, Biological and Environmental Research Division.

Dennis Baldocchi gives a keynote on Wed 12th Sept titled 'Viewing ICOS in a global context: lessons learned from the global network, FLUXNET'.

Maciej Telszewski

Maciej Telszewski holds a PhD in Marine Biogeochemistry from the University of East Anglia (Norwich, UK), where he worked with surface ocean carbon data to develop an efficient neural network algorithm allowing basin scale mapping of this parameter in the North Atlantic. He then moved to Japan, where he joined a research group at the National Institute for Environmental Studies (Tsukuba) to further improve the statistical computing approach. His work resulted in successful mapping of surface carbon and nutrients fields in the North Pacific accompanied by fluxes estimates included in the RECCAP synthesis (http://www.globalcarbonproject.org/reccap/). Throughout his research carrier he was actively involved in field campaigns, contributing surface measurements to the Surface Ocean CO2 Observing Network (SOCONET) and ocean interior measurements to the Global Ocean Ship-based Hydrographic Investigations Program (GO-SHIP, http://www.go-ship.org/). He contributed research outputs to major projects like EU CARBOOCEAN IP (2005-2009) focused on marine carbon sources and sinks assessment and EU CARBOCHANGE (2011-2015) focused on the ocean's quantitative role in the uptake of carbon under changing climate conditions. In 2011, Maciej joined the Intergovernmental Oceanographic Commission of UNESCO (Paris, France) initially as a Deputy Director of the International Ocean Carbon Coordination Project (IOCCP, http://www.ioccp.org/index.php) and since mid-2012 as IOCCP's Project Director (and Global Ocean Observing System (GOOS) Biogeochemistry Expert Panel Executive Officer). In this role he coordinates the highly diverse set of ocean carbon and biogeochemistry activities through extensive collaboration and dialogue with the scientific community via national and international organizations, scientific steering committees, scientific workshops, and expert meetings. Specifically, he is tasked to:

Organize and implement targeted workshops to promote the development of a global network of marine biogeochemistry observations, including workshops to reach agreements on global strategies, data sharing practices, and best practices and standards, and to ensure that data from individual programs are comparable globally.

Facilitate data collection, management, data product development, and archival of ocean carbon and related data. During the past decade IOCCP played a fundamental role in development of the Surface Ocean Carbon Atlas (SOCAT, https://www.socat.info/) and the Global Ocean Data Analysis Project (GLODAPv2, https://www.glodap.info/).

Maintain an international directory of ocean carbon activities through the development and maintenance of web-based compilations and syntheses of ocean carbon observations and research activities, and through e-mail and web-based newsletters and other publications.

Work with national and international research and observation programs to promote and document the development and status of a sustained marine biogeochemistry observing system in the framework of the Global Ocean Observing System.

Liaise with atmospheric and terrestrial carbon programs to promote the integration of ocean carbon into earth system studies and global integrated observations (e.g. Integrated Carbon Observation System (ICOS)).

Maciej Telszewski gives a keynote on Wed 12th Sept titled: 'Viewing ICOS in a global context from coordinated ocean observations, through high quality data products to global ocean carbon fields and fluxes'.

Róisín Commane

Róisín Commane is an Assistant Professor in the Dept. of Earth and Environmental Sciences at Columbia University in New York City and the Lamont-Doherty Earth Observatory in Palisades, NY. Her work combines aircraft, tall tower and eddy flux measurements, with process-based models to understand the atmospheric budget of a range of trace gases, with a focus on carbon in the Arctic. She is co-leader of the NASA Arctic and Boreal Vulnerability Experiment (ABoVE) Carbon Dynamics Working Group and a member of the Science Leadership Group of the North American Carbon Project (NACP). As part of NASA's Atmospheric Tomography Mission (ATom), she recently made airborne measurements of CO2, CH4, N2O and CO on the NASA DC8 on flights in the remote atmosphere above the Pacific and Atlantic oceans 2016-2018.

Before moving to Columbia University in July 2018, Róisín was a Research Associate at Harvard University, where she also developed quantum cascade laser spectrometers to measure fluxes of carbonyl sulfide (OCS) in collaboration with Aerodyne Research Inc. She deployed these instruments at a mid-latitude forest (Harvard Forest) for three years and found OCS fluxes were a good indicator of ecosystem scale stomatal conductance. Róisín obtained her PhD in Atmospheric Chemistry from the University of Leeds, where she studied oxidation of trace gases above tropical forests and in the marine and arctic boundary layers, using Laser-induced Fluorescence techniques.

Róisín Commane gives a plenary talk on Wed 12th Sept titled 'Data-constrained annual carbon fluxes for Arctic and Boreal ecosystems'.

Mathew Williams

Mathew Williams is Chair of Global Change Ecology at the University of Edinburgh. His research is on quantifying and understanding the terrestrial carbon cycle and its links to global change. He has studied the interactions of plant and soil processes across environmental and biodiversity gradients from the tropics to the Arctic. He uses process-based modelling and data assimilation methods to extract information from detailed ecosystem measurements on feedback processes between soil, vegetation and the atmosphere, over timescales from days to years. Linking to remote sensing data, his group uses models to upscale process information to investigate landscape processes. He focuses particularly on issues relating to the drought sensitivity of forests and croplands, the role of disturbance (fire or anthropogenic) on forest biomass, and the sensitivity of Arctic ecosystems to warming. Understanding and simulating the non-steady state behaviour of ecosystems is a current focal interest. Mathew is a PI for the UK National Centre for Earth Observation, Director of the NERC Field Spectroscopy Facility, a member of NERC Science Board, and on the science team for the ESA Earth Explorer Biomass Mission.

Mathew Williams gives a plenary talk on Wed 12th Sept. titled 'Constraining terrestrial carbon balance through assimilation of remotely sensed biomass data into CARDAMOM'.

Stefan Schwietzke

Dr. Schwietzke is a Research Scientist at the National Oceanographic and Atmospheric Administration's Global Monitoring Division and the University of Colorado's Cooperative Institute for Research in Environmental Sciences in Boulder, CO. His research focuses on methane emissions from different sources at different scales: from local to global, which requires the application of different quantification methods in terms of measurement platforms and data analysis. In addition to academic positions, Dr. Schwietzke has worked in large corporations and business consulting. He holds B.S. and M.S. degrees in Mechanical Engineering and Technology Management, respectively, from the University of Stuttgart, Germany, and a Ph.D. in Engineering and Public Policy from Carnegie Mellon University.

Stefan Schwietzke gives a plenary talk on Wed 12th Sept titled 'Recent developments in using isotopic measurements for constraining methane sources and sinks'.

Philippe Ciais

Philippe Ciais has received a PhD in 1991 for a topic titled "Holocene climate record of Antarctic ice cores". In 1992, Dr Ciais was a post-doctoral fellow at the National Oceanic and Atmospheric Administration (NOAA) in Boulder, Colorado, where he investigated how 13C and 18O isotopes in atmospheric CO2 can be used to constrain terrestrial carbon fluxes. He also designed the first three-dimensional simulation model of 8O in CO2, an isotopic tracer of the water cycle coupled with CO2 uptake by plant photosynthesis.
From 2005 to 2013, Philippe Ciais devoted his time to the coordination of the preparation of the Integrated Carbon Observation System (ICOS), being part of the national and European auditions, technical preparation work, and the negotiation of the governance and funding leverage. At that time, Philippe Ciais also acted as a co-chair of the Group on Earth Observations (GEO) task force on integrated carbon observations.
In addition, Dr Ciais was co-chair of the Global Carbon Project during 2009-2014. He also acted as a Convening Lead Author of the IPCC Working Group 1 for the Carbon Cycle chapter of the 5th IPCC Assessment Report.
Dr Ciais' research activities during the last twenty years has mainly included the relationship between ecosystem CO2 fluxes and climate, combining terrestrial biosphere models with satellite and eddy-covariance observations. By the age of 52, Philippe Ciais has contributed to more than 600 publications in A-ranking journals over the past 17 years. He was ranked as the most productive scientific author in the field of climate change, and among the authors who contributed to 5 of the 100 most influential papers in this field.

Philippe Ciais gives a keynote on Thu 13th Sept titled 'The global carbon balance of forests based on flux towers and forest age data'.

Adrian Leip

Adrian Leip is a Senior Scientific Officer at the Joint Research Centre (JRC) of the European Commission since 2001. Dr Leip holds a PhD in Geo-ecology (University of Bayreuth, Germany). His work focuses on modelling of emissions and mitigation options of GHGs and reactive nitrogen using process-based and agro-economic models, life cycle assessment including nitrogen and carbon footprint analyses; assessment of food systems in Europe; and development of sustainability indicators.
Within the Food Security Unit of the Directorate on Sustainable Resources, he leads the activities related to emissions of greenhouse gases from agricultural sources and nitrogen flows in agricultural systems and beyond (national nitrogen budgets). This includes also the work within the EU GHG inventory system, where he is responsible for the sector agriculture, in particular QA/QC of agricultural emission estimates, including methodological assessments of uncertainties in GHG emission estimates. Dr Leip is co-chair of the Expert Panel on Nitrogen and Food under the Task Force on Reactive Nitrogen (UN-ECE LRTAP Convention) and currently chairs the Technical Advisory Group on Nutrient Cycles Assessment of the Livestock Environmental Assessment and Performance Partnership (LEAP, FAO). He is a lead author of the IPCC "Methodological Refinement of the 2006 Guidelines for GHG inventories" for the agriculture sector and the IPCC "6th Assessment Report – WG-III Mitigation". Dr Leip has published over 50 papers in peer-reviewed journals mainly on the nitrogen cycle and agricultural GHG emissions.

Adrian Leip gives a keynote on Thu 13th Sept titled 'Bottom-up and top-down methods in national GHG emission reporting'.

Ana Bastos

Ana Bastos obtained her PhD in Geophysical and Geoinformation Science in 2015, in which she studied the links between atmospheric and ocean variability and anomalies in the terrestrial carbon cycle, combining satellite-, measurement- and model-based estimates of terrestrial CO2 fluxes and ecosystem productivity. She worked as a Post-Doc at the Laboratoire des Sciences du Climat et de l'Environnement (LSCE, France) where she focused on understanding the gap in the CO2 budget estimates during the 20th century, particularly the contribution of inter-annual to decadal variability in climate and changes in land-use to the uncertainty in the terrestrial global CO2 budget. Recently, Dr. Ana moved to the Geography Department of the Ludwig-Maximilians University in Munich where she intends to extend her focus to the impact of natural disturbances and human activities in terrestrial C-stocks.
Dr. Ana is currently involved in several projects aiming at improving estimates of ecosystem productivity and biomass stocks and in a project funded by the European Space Agency Climate Change Initiative to support the second phase of the "REgional Carbon Cycle Assessment and Processes (RECCAP-2) promoted by the Global Carbon Project.

Ana Bastos gives a plenary talk on Thu 13th Sept titled 'Connecting global and regional carbon budgets to support policy-making'.

Holger Lange

Remote sensing observations provide important information about vegetation and carbon dynamics on large scales, flux towers in situ measurements at the plot scale. Events important for ecological processes, such as hydrometeorological extremes, often happen at spatiotemporal scales between those covered by these two data sources. We discuss the event detection rates of ecological in situ networks as a function of their size and design. Using extreme reductions of the Fraction of Absorbed Photosynthetically Active Radiation (FAPAR), available from satellite missions, as a proxy for substantial losses in Gross Primary Productivity (GPP), we rank historical events according to their severity, and show how many would have been detected with a given number of randomly placed sites, discuss the problem of clustering of sites, and compare the theoretical results with the existing networks FLUXNET and NEON. The further spatio-temporal expansion of the ICOS network should carefully consider the size distribution of extreme events in order to be able to monitor their impacts on the terrestrial biosphere.

Holger Lange gives a plenary talk on Thu 13th Sept titled 'Combining remote sensing earth observations and in situ networks: detection of extreme events and optimal network size and design'.

Jocelyn Turnbull

Jocelyns' research is focused on the atmospheric carbon cycle, with a particular interest in the source and fate fossil fuel CO2 emissions. She is investigating fossil fuel emissions at scales from individual point sources, to urban areas, to regions. Some of her current research projects are: the Indianapolis Flux Project (INFLUX), where we aim to develop and assess methods for determining urban scale emissions; Auckland's Carbon Emissions, whereby we investigate not only the urban emissions, but the extent to which the urban ecology mitigates those emissions; Southern Ocean atmospheric radiocarbon, which uses radiocarbon measurements to investigate the mechanisms of Southern Ocean carbon exchange.

Jocelyn Turnbull gives a plenary talk on Thu 13th Sept titled 'Quantification of urban CO_2 emissions in Indianapolis and Auckland'.

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