

# **TAC-5 detailed** **AGENDA**

**Schedule of presentations**

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**Oral programme and poster**

## TAC-5 AGENDA

Sunday, 26 June 2022	
17:00	Registration
19:00	<i>End of Sunday registration time</i>

## ORAL PRESENTATIONS

Monday, 27 June 2022	
09:00	Registration / Coffee
Opening ceremony	
Chair: R. Sausen	
11:00	Robert Sausen (DLR): <i>Opening Address</i>
11:10	Markus Fischer (DLR): <i>DLR research for a sustainable aviation and transport</i>
11:40	Robert Sausen (DLR): <i>Information on the venue and technical information</i>
Mitigation of transport impacts by operational means	
Chair: R. Sausen	
12:00	<u>Zengerling Zarah</u> (DLR), Florian Linke, Christian Weder and Sigrun Matthes: <i>Flying low and slow: Climate mitigation potential of reduced cruise altitudes and speeds in different seasons</i>
12:15	Lim Ling, <u>Kaushik Radhakrishnan</u> (Hamburg University of Technology), Thomas Rötger, Gabriel Casas, Ayce Celikel, Hans Dorries, Florian Linke, Benjamin Lührs, Marco Lutz, Bethan Owen, André van Velzen: <i>Theoretical potential of CO<sub>2</sub> emissions reduction through fleet and flight network optimization</i>
12:30	<u>Dietmüller Simone</u> (DLR), Sigrun Matthes, Hiroshi Yamashita, Volker Grewe, Katrin Dahlmann, Christine Frömming, Patrick Peter, Feijia Yin and Federica Castino: <i>Investigation of weather, altitude and season dependency of non-CO<sub>2</sub> aviation effects by using algorithmic climate change functions</i>
12:45	Lunch
POSTER SESSION A – F Authors in Attendance	
Chair: K. Gierens	
14:00	<i>Poster groups A – F</i>
15:45	Poster / Coffee

<b>Mitigation of transport impacts by operational means (continued)</b>	
<b>Chair: R. Pouzolz</b>	
16:10	<u>Linke Florian</u> (DLR), Benjamin Lührs, Maximilian Mendiguchia Meuser, Manuel Soler, Abolfazl Simorgh, Federica Castino, Feijia Yin, Volker Grewe, Hiroshi Yamashita, Sigrun Matthes, Sabine Baumann and Simone Dietmüller: <i>Robust climate-optimized flight planning of intra-European flights considering meteorological uncertainties</i>
16:25	<u>Matthes Sigrun</u> (DLR), Katrin Dahlmann, Simone Dietmüller, Hiroshi Yamashita, Volker Grewe, Patrick Peter, Sabine Baumann, Florian Linke, Benjamin Lührs, Maximilian M. Meuser, Feijia Yin, Federica Castino, Manuel Soler, Abolfazl Simorgh, Daniel González Arribas: <i>Concept for integrating uncertainties when identifying climate-optimized aircraft trajectories: FlyATM4E</i>
16:40	<u>Niklaß Malte</u> (DLR), Katrin Dahlmann, Martin Plohr, Volker Grewe, Ekkehard Gutt, Bernhard Katzer, Michael Kluge, Alexander Lau, Florian Linke, Sven Maertens, Sigrun Matthes, Janina Scheelhaase, Robin Thor, Florian Woznz and Zarah Zengerling: <i>Testing of a Monitoring, Reporting &amp; Verification (MRV) Scheme for the integration of non-CO<sub>2</sub> aviation effects into EU ETS</i>
16:55	<u>Bussell Elliott</u> (Satavia), Greg Thompson, and Adam Durant: <i>Contrail prevention exercises through commercial flight planning</i>
17:10	<u>Sausen Robert</u> (DLR), Sina Hofer, Klaus Gierens, Luca Bugliaro, Rüdiger Ehrmantraut, Ilona Sitova, Kacper Walczak, Anja BurrIDGE-Diesing, Milena Bowman and Nick Miller: <i>A real life trial for avoiding contrails</i>
<b>Mitigation of transport impacts by technological changes in vehicles and engines</b>	
<b>Chair: C. Voigt</b>	
17:25	<u>Arunachalam Saravanan</u> (University of North Carolina), Calvin Arter and Jonathan Buonocore: <i>Air quality and health-related impacts of traditional and alternate jet fuels from airport aircraft operations in the U.S.</i>
17:40	<u>Deck Kathrin</u> (TU Delft), Volker Grewe, Feijia Yin, Irene Dedoussi, Roelof Vos, Pieter-Jan Proesmans, Florian Linke, Kaushik Radhakrishnan, Malte Niklaß and Benjamin Lührs: <i>Model development for climate optimized aircraft design</i>
17:55	<i>End of presentations</i>
18:15	Welcome Reception
19:00	Dinner
20:00	Evening lecture by Hans Volkert (DLR) <i>Sun, moon, and atmosphere –a short stroll through two centuries of astronomic and atmospheric research in upper Bavaria</i>

Tuesday, 28 June 2022	
08:30	Registration
<b>Vehicle emissions</b>	
Chair: S. Meilinger	
09:00	<p><u>Muller, Mathieu</u> (ONERA): <i>Comparison of CEDRE and LASPORT plumes for a single aircraft engine at ground</i></p>
09:15	<p><u>Durdina Lukas</u> (ZHAW), Jacinta Edebeli, Curdin Spirig, Manuel Roth, Benjamin Brem, David Schönenberger, Miriam Elser and Julien Anet: <i>Certification versus research measurements: Investigating the variability of particle emissions of commercial jet engines from a long-running series of emission tests</i></p>
09:30	<p><u>Yazdani Miad</u> (Raytheon Technologies Research Center), Steve Zeppieri and Med Colket: <i>A Predictive modeling framework for post-inception growth soot particles in aero-engine combustors</i></p>
09:45	<p><u>Baughcum Steven</u> (Boeing), Richard H. Moore, and Richard C. Miake-Lye: <i>Overview of On-Wing Emissions Testing on the Boeing ecoDemonstrator using SAF Fuels</i></p>
10:00	<p><u>Moore Richard H.</u> (NASA), Steven L. Baughcum, Matthew D. Brown, Elizabeth B. Wiggins, Edward L. Winstead, Luke D. Ziemba, Joshua DiGangi, Michael A. Shook, Kevin J. Sanchez, Benjamin Nault, Richard C. Miake-Lye, Andrew Freedman, Francisco Guzman, Jennifer L. Klettlinger, and the Boeing ecoDemonstrator Science and Engineering Team: <i>Particle and Trace Gas Emissions Indices Measured During the 2021 Boeing ecoDemonstrator Emissions Ground Test</i></p>
10:15	Posters / Coffee (group photo)
10:40	<p><u>Voigt Christiane</u> (DLR), D. Sauer, R. Märkl, T. Harlaß, S. Kaufmann, R. Dischl, F. Sakellariou, V. Hahn, M. Scheibe, A. Marsing, L. Tomsche, T. Bräuer, C. Röttger, A. Dörnbrack, U. Schumann, A. Roiger, P. Le Clercq, B. Rauch, K. Seeliger, G. Le Chenadec, J. Moreau, D. O’Nions, C. Renard, L. Darbois, E. Greslin, D. Delhaye, P. Mambré and the VOLCAN team: <i>In-flight measurements of particle emissions and contrails from an A319neo with lean burn engine technology</i></p>
10:55	<p><u>Schripp Tobias</u> (DLR), G. Smallwood, P. Williams, F. Gass, A. Kulathasan, A. Armand, E Requena Esteban, M. Johnson, T. Grein, L. Bondorf, P. Lobo, J. Corbin, B. Smith, M. Schafai, T. Harlaß, D. Sauer, C. Voigt and P. LeClercq: <i>Overview of gas and particle emissions during ground measurements with an Airbus A350 burning conventional and 100% sustainable jet fuel</i></p>

<b>Excursion to Wendelstein</b>	
<b>Chair: R. Sausen</b>	
11:10	Riffeser A. (LMU): <i>The Wendelstein Observatory</i>
11:40	Naoum Petra: <i>Technical information on the excursion</i>
11:45	Lunch
13:00	Departure of bus at Hotel St. Georg
13:30	Scientific Excursion to Wendelstein Observatory
18:45	Return to Hotel St. Georg
19:00	Dinner
20:00	Evening lecture by Sigrun Matthes (DLR) <i>Collaborative and inter-disciplinary Aeronautics Research in Europe on aviation and climate change</i>

<b>Wednesday, 29 June 2022</b>	
08:30	Registration
<b>Emission inventories and scenarios</b>	
Chair: S. Matthes	
09:00	Mathes Teresa, P. Eger, <u>Alexander Zavarsky</u> (Federal Institute of Hydrology), T. Ternes and L. Duester: <i>Measuring the contribution of inland shipping on air pollution along the federal waterways in Germany</i>
09:15	<u>Thomsen Nina</u> (DLR), Armin Aulinger, Volker Matthias, Thirza van Laar: <i>Forecasting the Spatial Distribution of Road-Based Transport Emissions – A Modeling Framework for Central Europe</i>
09:30	<u>Grobler Carla</u> (MIT), Thibaud Fritz, Sebastian D. Eastham, Florian Allroggen, Steven R.H. Barrett: <i>Commercial civil aviation emissions from 1980 to the present day</i>
09:45	<u>Aulinger Armin</u> (Hereon), M. Otten and P. Scholten: <i>Current and future scenarios of NO<sub>x</sub> emissions from inland navigation</i>
10:00	<u>Badeke Ronny</u> (Hereon), Matthias, V., Karl, M., Ramacher, M.O.P., Schwarzkopf, D.A. and Grawe, D.: <i>Application of a flexible plume approach for ship emissions in a city-scale air quality model</i>
10:15	<u>Kurchaba Solomiia</u> (Leiden University), Jasper van Vliet, Fons J. Verbeek, Jacqueline J. Meulman and Cor J. Veenman: <i>Towards quantification of NO<sub>2</sub> emission from individual seagoing ships using machine learning on TROPOMI satellite data</i>
10:30	Posters / Coffee
<b>POSTER SESSION G &amp; H Authors in Attendance</b>	
Chair: K. Dahlmann	
11:00	<i>Poster groups G &amp; H</i>
12:45	Lunch
<b>Contrails and contrail cirrus</b>	
Chair: S. Stromatas	
14:00	<u>Bräuer Tiziana</u> (DLR), C. Voigt, D. Sauer, S. Kaufmann, V. Hahn, M. Scheibe, J. Kleine, T. Jurkat-Witschas, C. Heckl, H. Schlager, U. Schumann, R. Teoh, M. Stettler, G. S. Diskin, J. B. Nowak, J. P. DiGangi, P. Le Clercq, T. Schripp, R. H. Moore and B. E. Anderson: <i>Airborne Contrail Measurements from Sustainable Aviation Fuels during the ECLIF II/NDMAX experiment</i>

14:15	<u>Jurkat-Witschas Tina</u> (DLR), Christiane Voigt, Stefan Kaufmann, Martina Krämer, Silke Groß, Luca Bugliaro, Elena de la Torre Castro, Andreas Dörnbrack, Sarah Grawe, Theresa Harlaß, Bernhard Mayer, Emma Järvinen, Stephan Mertes, Andreas Minikin, Mira Pöhlker, Markus Rapp, Johannes Röttenbacher, Anke Roiger, Christian Rolf, Daniel Sauer, Andreas Schäfler, Johannes Schneider, Laura Tomsche, Frank Stratmann, Manfred Wendisch, Heini Wernli, Martin Wirth, Andreas Zahn, Helmut Ziereis, Martin Zöger and the CIRRUS-HL Team: <i>CIRRUS-HL – the HALO mission on cirrus and contrail cirrus measurements in mid and high latitudes</i>
14:30	<u>Miake-Lye Richard</u> (Aerodyne Research) and Stephen H. Jones: <i>Microphysical Analysis of ND-MAX/ECLIF2 Contrails</i>
14:45	<u>Bier Andreas</u> (DLR), Unterstrasser Simon, Mattia Righi, and Johannes Hendricks: <i>Contrail formation on ambient aerosol particles for aircraft with hydrogen combustion</i>
15:00	<u>Rosenow Judith</u> (TUD), Jakub Hospodka and Hartmut Fricke: <i>Validation of a Contrail Life Cycle model in Central Europe</i>
15:15	<u>Burkhardt Ulrike</u> (DLR) and Andreas Bier: <i>Impact of parameterizing contrail formation processes on global contrail cirrus radiative forcing and its dependency on soot number emissions</i>
15:30	<u>Verma Pooja</u> (DLR) and Ulrike Burkhardt: <i>Cirrus perturbations due to contrail formation within cirrus</i>
15:45	Poster / Coffee
<b>Contrails and contrail cirrus (continued)</b>	
Chair: F. Yin	
16:15	<u>Li Yun</u> (FZ Jülich), Christoph Mahnke, Susanne Rohs, Andreas Petzold, and Martina Krämer: <i>Airborne observations of contrail cirrus over Europe and the Northeast Atlantic</i>
16:30	<u>Ponsonby Joel</u> (Imperial College London), Jade Low, Edward Gryspeerd, Roger Teoh, Marc Shapiro, Marc Stettler: <i>Comparing Ground-based Contrail Observations with Flight Data and Model Forecasts</i>
16:45	<u>Wolf Kevin</u> (IPSL), Nicolas Bellouin, and Olivier Boucher: <i>Contrail formation distributions derived from a 10-year radiosonde data set: Climatologies, model representation, and prospective effects of alternative fuels</i>
17:00	Lena Wilhelm (DLR, University of Berne), <u>Klaus Gierens</u> , and Susanne Rohs: <i>Towards a better prediction of persistent contrails using dynamical proxy variables</i>
17:15	<u>Shapiro Marc</u> (Orca Sciences), Zebediah Engberg, Branko Zugic, Roger Teoh, Marc Stettler, Ulrich Schumann, Ian McKay: <i>Forecasting Contrail Climate Forcing for Flight Planning and Air Traffic Management Applications</i>
17:30	<u>Meijer Vincent</u> (MIT), Sebastian D. Eastham and Steven R.H. Barrett: <i>Using satellite-based observations of contrails to inform contrail avoidance strategies</i>
17:45	<u>Teoh Roger</u> (Imperial College London), Ulrich Schumann, Christiane Voigt, Tobias Schripp and Marc Stettler: <i>Targeted Use of Sustainable Aviation Fuels to Minimise Contrail Climate Forcing</i>
18:00	<i>End of presentations</i>

19:00	Conference Dinner
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<b>Thursday, 30 June 2022</b>	
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08:30	Registration
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<b>Indirect cloud effects</b>	
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Chair: N. Bellouin	
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09:00	<u>Sauer Daniel</u> (DLR), C. Voigt, F. Sakellariou, R. Dischl, T. Harlaß, R. Märkl, M. Scheibe, S. Kaufmann, C. Röttger, T. Bräuer, V. Hahn, A. Marsing, L. Tomsche, A. Roiger, T. Schripp, T. Grein, G. Le Chenadec, A. Kulathasan, F. Gass, E. Requena Esteban, C. Renard, R. Jimenez De Los Galanes, P. Madden, P. Swann, P. Le Clercq and the ECLIF3 team: <i>Inflight measurements of particle emissions and contrails of passenger aircraft at cruise altitudes burning 100% sustainable jet fuel</i>
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09:15	<u>Testa Baptiste</u> (ETHZ), Lukas Durdina, Jacinta Edebeli, Curdin Spirig, Julien Anet and Zamin A. Kanji: <i>Ice nucleating properties of aircraft turbine engine soot particles with respect to cirrus clouds formations</i>
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09:30	<u>Mahnke Christoph</u> (FZ Jülich), Rita Gomes, Ulrich Bundke, Marcel Berg, Helmut Ziereis, Monica Sharma, Mattia Righi, Johannes Hendricks, Andreas Zahn, and Andreas Petzold: <i>Aviation induced aerosol within the UTLs: properties and processing observed from the IAGOS-CARIBIC Flying Laboratory</i>
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09:45	<u>Prashanth Prakash</u> (MIT), Raymond L Speth, Sebastian D Eastham, Jayant S Sabnis and Steven R H Barrett: <i>Aerosol formation pathways from aviation emissions</i>
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10:00	<u>Purseed Jhaswantsing</u> (IPSL), Nicolas Bellouin and Ella Gilbert: <i>Large Eddy Simulation of interactions between aviation-aerosols and cirrus clouds</i>
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10:15	<u>Tully Colin</u> (ETHZ), David Neubauer, Nadja Omanovic and Ulrike Lohmann: <i>Evaluating cirrus cloud thinning efficacy using prognostic seeding particles along flight tracks in the ECHAM-HAM GCM</i>
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10:30	<u>Righi Mattia</u> (DLR), Johannes Hendricks, and Christof G. Beer: <i>Exploring the uncertainties in the aviation soot-cirrus effect</i>
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10:45	Posters / Coffee
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<b>Ship tracks</b>	
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Chair: R. Miake-Lye	
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11:15	<u>Gryspeerd Edward</u> (Imperial College London), Manuel Louro Coelho, Tristan Smith, Santiago Suarez De La Fuente, Rodrigo Quilelli Correa Rocha Ribeiro, and Maarten van Reeuwijk: <i>Global observations of shiptrack formation and properties</i>
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<b>Transport impact on the chemical composition of the atmosphere</b>	
Chair: R. Miake-Lye	
11:30	<u>Schlager Hans</u> (DLR), G. Stratmann, M. Mertens, M. Scheibe, A. Marsing, U. Schumann, I. Tadic, R. Doerich, L. Ernie, J. Crowley, H. Fischer, A. Roiger, A. Zahn, H. Ziereis, P. Jöckel, M. Rapp, J. Lelieveld, C. Voigt: <i>Impact of reduced emissions from aviation during the COVID-19 pandemic on reactive nitrogen and ozone in the UTLS over Europe and the eastern North Atlantic</i>
11:45	<u>Hahn Josefine</u> (Hereon), Daniel Schwarzkopf, Ronny Petrik and Volker Matthias: <i>Future air quality changes due to ship emission mitigation in the North and Baltic Seas</i>
12:00	<u>Terrenoire Etienne</u> (Onera) and Didier A. Hauglustaine: <i>Impact of present and future aircraft NO<sub>x</sub> and aerosol emissions on atmospheric composition</i>
12:15	Lunch
<b>Transport impact on climate</b>	
Chair: A. Petzold	
13:15	<u>Omanovic Nadja</u> (ETHZ), Colin Tully, David Neubauer, and Ulrike Lohmann: <i>Assessing the impact of non-CO<sub>2</sub> aircraft emissions on cirrus cloud formation in ECHAM-HAM GCM</i>
13:30	<u>Thor Robin</u> (DLR), <u>Agnieszka Skowron</u> (MMU), Sigrun Matthes, Ruben Rodriguez De Leon: <i>Sensitivities of climate impact of supersonic aviation</i>
13:45	<u>Bickel Marius</u> (DLR), Michael Ponater, Ulrike Burkhardt, Mattia Righi, Johannes Hendricks and Lisa Bock: <i>Climate impact of contrail cirrus</i>
14:00	<u>Schumann Ulrich</u> (DLR): <i>The Energy Forcing Concept for Climate Optimized Flight Routing</i>
14:15	Summary & Conclusions
15:00	<i>End of conference</i>

## POSTER

A. Mitigation of transport impacts by operational means	
A.01	<u>Michael Finke</u> (DLR), Sigrun Matthes, Alessandra Tedeschi, Gustavo Alonso, Izabela Stasicka, Sabine Baumann and the ACGA team: <i>First results of EU funded aeronautic projects</i>
A.02	<u>Castino Federica</u> (Delft University of Technology), Feijia Yin, Volker Grewe, Hiroshi Yamashita, Sigrun Matthes, Sabine Baumann, Simone Dietmüller, Florian Linke, Benjamin Lührs, Maximilian Mendiguchia Meuser, Manuel Soler and Abolfazl Simorgh: <i>Eco-efficient aircraft trajectories in the European airspace</i>
A.03	<u>Elmourad Jad</u> (MIT), Sebastian D Eastham, Raymond L Speth, Florian Allroggen and Steven R H Barrett: <i>Flight level optimization for contrail avoidance</i>
A.04	<u>Frömming Christine</u> (DLR), Volker Grewe, Sabine Brinkop, Katrin Dahlmann, Simone Dietmüller, Amund S. Haslerud, Patrick Jöckel, Jesper van Manen, Sigrun Matthes, Patrick Peter and Simon Rosanka: <i>Climate Change Functions as a basis for weather dependent climate optimized aircraft trajectories</i>
A.05	<u>Rubin-Zuzic Milenko</u> (DLR), Luca Bugliaro, Ulrich Schumann, Christiane Voigt, Marc Stettler, Roger Teoh, Marc Shapiro and Zebediah Engberg: <i>Aviation induced contrails and their avoidance by flight correction</i>
A.07	<u>Sausen Robert</u> (DLR), Ralph Leemüller, Björn-Rüdiger Beckmann, Thorsten Wiesemann, Ralph Schultz, Gerrit Rexhausen, Gerd Saueressig, Urban Weisshaar, and the D-KULT Team: <i>D-KULT: A Demonstrator for Climate and Environment Friendly Aviation</i>
A.08	<u>Unterstrasser Simon</u> (DLR), K. Dahlmann, V. Grewe, T. Marks, S. Matthes, A. Stephan, H. Yamashita: <i>The mitigation potential of aircraft formation flight scenarios</i>
A.09	<u>Yin Feijia</u> (Delft University of Technology), Volker Grewe, Klaus Gierens, Florian Linke, Alexander Lau, Malte Niklaß, Roland Potthast, Björn Beckmann, Phillippe Keckhut, Pierre-Yves Lagrave, Ayce Celikel, Dave Raper, Thomas Roetger, Sigrun Matthes and Simon Blakey: <i>Research towards weather induced uncertainties for contrail persistence and mitigation strategies for contrail impact (BeCoM project)</i>
B. Mitigation of transport impacts by technological changes in vehicles and engines	
B.01	<u>Nalianda Devaiah</u> (Cranfield University), V Sethi, T Nikolaidis and P Pilidis: <i>Contrails from LH2-fuelled aircraft – what could we expect?</i>
B.02	<u>Prashanth Prakash</u> (MIT), Sebastian D Eastham, Raymond L Speth and Steven R H Barrett: <i>Post-combustion emissions control in aero-gas turbine engines</i>
C. Vehicle emissions	
C.01	<u>Miake-Lye Richard</u> (Aerodyne Research, Inc.) and Zhenhong Yu: <i>Volatile Contributions to nvPM: AMS analysis of nvPM emissions from a variety of commercial aircraft engines</i>
C.02	<u>Miake-Lye Richard</u> (Aerodyne Research, Inc.) and Stephen H. Jones: <i>Parameterization of H<sub>2</sub>SO<sub>4</sub> and Organic Contributions to volatile PM in aircraft plumes</i>
C.03	<u>Moore Richard H.</u> (NASA), Michael A. Shook, Luke Ziemba, Joshua DiGangi, Edward L. Winstead, Bastian Rauch, Tina Jurkat-Witschas, Kenneth L. Thornhill, Matthew D. Brown, Ewan Crosbie, Francesca Gallo, Carolyn Jordan, Claire Robinson, Kevin Sanchez, Taylor Shingler Elizabeth L. Wiggins and Bruce Anderson: <i>Time-Varying Aircraft Take-Off Emissions Indices Measured at Los Angeles International Airport</i>

C.04	<u>Muller Mathieu</u> (ONERA), Etienne Terrenoire and Ulf Janicke: <i>Comparison of CEDRE and LASPORT plumes for a single aircraft engine at ground</i>
<b>D. Emission inventories and scenarios</b>	
D.01	<u>Righi Mattia</u> (DLR), Angelika Schulz, Robert Sausen, Johannes Hendricks, Simone Ehrenberger, Rainer Schmid, Daniel Krajzewicz, André Twele and the ELK consortium: <i>ELK: a DLR project on global transport emission inventories</i>
<b>E. Indirect cloud effects</b>	
E.01	<u>Sharma Monica</u> (DLR), Mattia Righi, Johannes Hendricks, Christoph Mahnke, Andreas Petzold, Daniel Sauer and Volker Grewe: <i>Towards an improved estimate of aviation-aerosol effect on low level clouds</i>
<b>F. Transport impact on the chemical composition of the atmosphere</b>	
F.01	<u>Cohen Yann</u> (CNRS), Didier Hauglustaine, Nicolas Bellouin, Marianne Tronstadt Lund, Sigrun Matthes and Agnieszka Skowron: <i>Impact of aircraft NO<sub>x</sub> and aerosol emissions on atmospheric composition: a model intercomparison</i>
F.02	<u>Matthes Sigrun</u> (DLR), Patrick Peter, Mariano Mertens, Yann Cohen, Didier Hauglustaine, Patrick Jöckel, Helmut Ziereis, Andreas Zahn, Astrid Kerkweg and Andreas Petzold: <i>Comparing reactive species aircraft observations with EMAC global chemistry-climate model simulations</i>
F.03	<u>Righi Mattia</u> (DLR), Johannes Hendricks and Sabine Brinkop: <i>The global impact of the transport sectors on aerosol and climate in the Shared Socioeconomic Pathways (SSPs)</i>
F.04	<u>van 't Hoff J.A.</u> (Delft University of Technology), V. Grewe and I.C. Dedoussi: <i>Global ozone sensitivity to supersonic transport emissions above the transatlantic flight corridor</i>
<b>G. Transport impact on climate</b>	
G.01	<u>Dahlmann Katrin</u> (DLR), Volker Grewe, Sigrun Matthes, Christine Frömming, Johannes Hendricks, Florian Linke, Martin Plohr, Mattia Righi, Tobias Schripp, Daniel Sauer, Stefan Kaufmann, Christiane Voigt, Christian Weder, Mariano Mertens, Sabine Brinkop and Simon Unterstrasser: <i>Eco2Fly – Towards an aviation climate impact assessment</i>
G.02	<u>Kim Joonhee</u> (MIT), Jeong Suk Oh, Sadia Afrin, Sebastian D. Eastham, Steven R.H. Barrett: <i>Effect of aircraft altitude on tradeoffs between monetized impacts of CO<sub>2</sub> and NO<sub>x</sub></i>
G.03	<u>Matthes Sigrun</u> (DLR), Nicolas Bellouin, Irene Dedoussi, Jan Fuglestedt, Klaus Gierens, Didier Hauglustaine, Zamin Kanji, Martina Krämer, David Lee, Ulrike Lohmann, Andreas Petzold, Johannes Quaas, Mattia Righi, Bernadett Weinzierl, Sabine Baumann, Robert Sausen and Julien Anet: <i>ACACIA: Improved understanding on aviation's climate effects thru combination of numerical modelling and observations</i>
G.04	Mariano Mertens, Johannes Hendricks, Mattia Righi, Volker Grewe, <u>Sabine Brinkop</u> (DLR), Jöckel Patrick, Sigrun Matthes, Robin Thor, Vanessa Rieger: <i>The contribution of transport emissions on ozone and methane lifetime in 2015 and 2050 in the Shared Socioeconomic Pathways (SSPs)</i>
G.05	<u>Sigrun Matthes</u> (DLR), David S. Lee, Ruben Rodriguez De Leon, Ling Lim, Bethan Owen, Agnieszka Skowron, Robin N. Thor and Etienne Terrenoire: <i>The Effects of Supersonic Aviation on Ozone and Climate</i>

H. Contrails and contrail cirrus	
H.01	<u>Bickel Marius</u> (DLR), Michael Ponater, Ulrike Burkhardt, Mattia Righi, Johannes Hendricks and Lisa Bock: <i>Effective radiative forcing and rapid radiative adjustments of contrail cirrus</i>
H.02	<u>Bugliaro Luca</u> (DLR), M. Vázquez-Navarro, U. Schumann, T. Jurkat-Witschas, R. Heller, M. Wirth, J. Strandgren, S. Kaufmann, D. Sauer, H. Ziereis and C. Voigt: <i>Temporal evolution of a contrail outbreak and its effect on the radiative budget</i>
H.03	<u>Dischl Rebecca</u> (DLR), S. Kaufmann, A. Dörnbrack, C. Voigt: <i>Variation of Contrail Probability over Europe</i>
H.04	<u>Eleftheratos Kostas</u> (National & Kapodistrian Univ. of Athens), Charis Benetatos, John Kapsomenakis and Christos Zerefos: <i>Statistical analyses of cirrus cloud cover during the COVID-19 air traffic shutdown in spring 2020 and comparison with previous years</i>
H.05	<u>Gierens Klaus</u> (DLR): <i>Contrail formation conditions for various propulsion systems</i>
H.06	<u>Gryspeerd Edward</u> (Imperial College London), Marc Stettler and Roger Teoh: <i>Multi-sensor satellite observations of contrail lifecycles</i>
H.07	<u>Hahn Valerian</u> (DLR), C. Voigt, T. Jurkat-Witschas, U. Schumann, H. Ziereis, E. De La Torre-Castro, R. Baumann, R. Dischl, A. Dörnbrack, S. Groß, S. Kaufmann, J. Lucke, R. Märkl, A. Marsing, M. Moser, L. Tomsche, D. Sauer and M. Wirth: <i>Inflight measurements of the evolution of microphysical contrail properties during the CIRRUS-HL campaign</i>
H.08	<u>Lán Sébastien</u> (Czech Technical University in Prague) and Jakub Hospodka: <i>Connection of most common flight levels and contrail occurrence</i>
H.09	<u>Lottermoser Annemarie</u> (DLR), Simon Unterstrasser and A. Bier: <i>Intermediate Complexity Modelling of Contrail Formation</i>
H.10	<u>Marjani Sajedeh</u> (Universität Leipzig), Matthias Tesche, Peter Bräuer, Odran Sourdeval and Johannes Quaas: <i>Aviation impact on the number of ice crystals in already existing thin cirrus clouds</i>
H.11	<u>Peter Patrick</u> (DLR), Sigrun Matthes, Christine Frömming and Volker Grewe: <i>Investigating contrail formation in the mid latitudes with a Lagrangian approach in EMAC in order to identify climate change functions</i>
H.12	<u>Sanchez Kevin J.</u> (NASA), Tianle Yuan, David P. Duda, William L. Smith, Matthew D. Brown, Ewan C. Crosbie, Francesca Gallo, Carolyn Jordan, Claire E. Robinson, Taylor J. Shingler, Michael A. Shook, Kenneth L. Thornhill, Elizabeth B. Wiggins, Edward L. Winstead, Luke D. Ziemba, Bruce E. Anderson, and Richard H. Moore: <i>A Neural Network for Contrail Detection for Forecast Validation</i>
H.13	<u>Teoh Roger</u> (Imperial College London), Christiane Voigt, Daniel Sauer, Tiziana Bräuer, Ulrich Schumann, Tobias Schripp, Hans Schlager, Bruce Anderson and Marc Stettler: <i>Comparing In-situ Measurements of Emissions and Contrail Properties with Model Estimates</i>
H.14	<u>Verma Pooja</u> (DLR) and Ulrike Burkhardt: <i>Contrail formation within cirrus: the impact of cirrus properties on contrail formation</i>
H.15	<u>Wang Ziming</u> (DLR), Luca Bugliaro, Klaus Gierens, Christiane Voigt, and Stefan Kaufmann: <i>Improved relative humidity in the upper troposphere and lower stratosphere and application to evaluating contrails persistence</i>