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## Research output

### **Local-to-regional methane emissions from the Upper Silesian Coal Basin (USCB) quantified using UAV-based atmospheric measurements**

Andersen, T., Zhao, Z., De Vries, M., Necki, J., Swolkien, J., Menoud, M., Röckmann, T., Roiger, A., Fix, A., Peters, W. & Chen, H., May-2023, In: Atmospheric Chemistry and Physics. 23, 9, p. 5191-5216 26 p.

### **A new algorithm to generate a priori trace gas profiles for the GGG2020 retrieval algorithm**

Laughner, J. L., Roche, S., Kiel, M., Toon, G. C., Wunch, D., Baier, B. C., Biraud, S., Chen, H., Kivi, R., Laemmel, T., McKain, K., Qu  h  , P. Y., Rousogonous, C., Stephens, B. B., Walker, K. & Wennberg, P. O., 7-Mar-2023, In: Atmospheric Measurement Techniques. 16, 5, p. 1121-1146 26 p.

### **Retrieving CH<sub>4</sub>-emission rates from coal mine ventilation shafts using UAV-based AirCore observations and the genetic algorithm-interior point penalty function (GA-IPPF) model**

Shi, T., Han, Z., Han, G., Ma, X., Chen, H., Andersen, T., Mao, H., Chen, C., Zhang, H. & Gong, W., 28-Oct-2022, In: Atmospheric Chemistry and Physics. 22, 20, p. 13881-13896 16 p.

### **High-resolution inverse modelling of European CH<sub>4</sub> emissions using the novel FLEXPART-COSMO TM5 4DVAR inverse modelling system**

Bergamaschi, P., Segers, A., Brunner, D., Haussaire, J. M., Henne, S., Ramonet, M., Arnold, T., Biermann, T., Chen, H., Conil, S., Delmotte, M., Forster, G., Frumau, A., Kubistin, D., Lan, X., Leuenberger, M., Lindauer, M., Lopez, M., Manca, G., M  ller-Williams, J., & 6 others O'Doherty, S., Scheeren, B., Steinbacher, M., Trisolino, P., V  tkov  , G. & Yver Kwok, C., 17-Oct-2022, In: Atmospheric Chemistry and Physics. 22, 20, p. 13243-13268 26 p.

### **New contributions of measurements in Europe to the global inventory of the stable isotopic composition of methane**

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### **Synergetic use of IASI profile and TROPOMI total-column level 2 methane retrieval products**

Schneider, M., Ertl, B., Tu, Q., Diekmann, C. J., Khosrawi, F., R  hling, A. N., Hase, F., Dubravica, D., Garc  a, O. E., Sep  lveda, E., Borsdorff, T., Landgraf, J., Lorente, A., Butz, A., Chen, H., Kivi, R., Laemmel, T., Ramonet, M., Crevoisier, C., Pernin, J., & 14 others Steinbacher, M., Meinhardt, F., Strong, K., Wunch, D., Warneke, T., Roehl, C., Wennberg, P. O., Morino, I., Iraci, L. T., Shiomi, K., Deutscher, N. M., Griffith, D. W. T., Velazco, V. A. & Pollard, D. F., 29-Jul-2022, In: Atmospheric Measurement Techniques. 15, 14, p. 4339-4371 33 p.

### **Evaluating the use of an Unmanned Aerial Vehicle (UAV)-based active AirCore system to quantify methane emissions from dairy cows**

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### **Stable isotopic signatures of methane from waste sources through atmospheric measurements**

Bakaloglu, S., Lowry, D., Fisher, R. E., Menoud, M., Lanoisell  , M., Chen, H., R  ckmann, T. & Nisbet, E. G., 1-May-2022, In: Atmospheric environment. 276, 11 p., 119021.

### **Controlled-release experiment to investigate uncertainties in UAV-based emission quantification for methane point sources**

Morales, R., Ravelid, J., Vinkovic, K., Korbeň, P., Tuzson, B., Emmenegger, L., Chen, H., Schmidt, M., Humbel, S. & Brunner, D., 11-Apr-2022, In: Atmospheric Measurement Techniques. 15, 7, p. 2177-2198 22 p.

### **The Integrated Carbon Observation System in Europe**

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### **Evaluation of carbonyl sulfide biosphere exchange in the Simple Biosphere Model (SiB4)**

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### **Quantifying methane emissions from coal mining ventilation shafts using an unmanned aerial vehicle (UAV)-based active AirCore system**

Andersen, T., Vinkovic, K., de Vries, M., Kers, B., Necki, J., Swolkien, J., Roiger, A., Peters, W. & Chen, H., Dec-2021, In: Atmospheric Environment: X. 12, 21 p., 100135.

### **Assessment to China's Recent Emission Pattern Shifts**

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### **Monitoring Greenhouse Gases from Space**

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### **Quantification of methane emissions from UK biogas plants**

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### **Evaluation and optimization of ICOS atmosphere station data as part of the labeling process**

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### **Wildfire smoke in the lower stratosphere identified by in situ CO observations**

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### **Characterisation of methane sources in Lutjewad, The Netherlands, using quasi-continuous isotopic composition measurements**

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**Intercomparison of low- and high-resolution infrared spectrometers for ground-based solar remote sensing measurements of total column concentrations of CO<sub>2</sub>, CH<sub>4</sub>, and CO**

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**Intercomparison of atmospheric CO<sub>2</sub> and CH<sub>4</sub> abundances on regional scales in boreal areas using Copernicus Atmosphere Monitoring Service (CAMS) analysis, COllaborative Carbon Column Observing Network (COCCON) spectrometers, and Sentinel-5 Precursor satellite observations**

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**Investigating stratospheric changes between 2009 and 2018 with halogenated trace gas data from aircraft, AirCores, and a global model focusing on CFC-11**

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**Towards standardized processing of eddy covariance flux measurements of carbonyl sulfide**

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**Retrieval of atmospheric CH<sub>4</sub> vertical information from ground-based FTS near-infrared spectra**

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**TCCON and NDACC XCO measurements: Difference, discussion and application**

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**Influences of light and humidity on carbonyl sulfide-based estimates of photosynthesis**

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**LISA: a lightweight stratospheric air sampler**

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**CTDAS-Lagrange v1.0: a high-resolution data assimilation system for regional carbon dioxide observations**

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#### **A UAV-based active AirCore system for measurements of greenhouse gases**

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#### **Soil fluxes of carbonyl sulfide (COS), carbon monoxide, and carbon dioxide in a boreal forest in southern Finland**

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#### **Inverse modelling of European CH<sub>4</sub> emissions during 2006-2012 using different inverse models and reassessed atmospheric observations**

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#### **Contributions of the troposphere and stratosphere to CH<sub>4</sub> model biases**

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#### **Canopy uptake dominates nighttime carbonyl sulfide fluxes in a boreal forest**

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#### **Considerable contribution of the Montreal Protocol to declining greenhouse gas emissions from the United States**

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#### **The CarbonTracker Data Assimilation Shell (CTDAS) v1.0: Implementation and global carbon balance 2001-2015**

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#### **Assessing a new clue to how much carbon plants take up**

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#### **Interpreting continuous in-situ observations of carbon dioxide and carbon monoxide in the urban port area of Rotterdam**

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#### **Stratospheric Air Sub-sampler (SAS) and its application to analysis of Delta O-17(CO<sub>2</sub>) from small air samples collected with an AirCore**

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**Strong regional atmospheric C-14 signature of respired CO<sub>2</sub> observed from a tall tower over the midwestern United States**

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**Continued emissions of carbon tetrachloride from the United States nearly two decades after its phaseout for dispersive uses**

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**Towards constraining the stratosphere-troposphere exchange of radiocarbon: strategies of stratospheric <sup>14</sup>CO<sub>2</sub> measurements using AirCore**

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**On the representation of IAGOS/MOZAIC vertical profiles in chemical transport models: contribution of different error sources in the example of carbon monoxide**

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