Fernando G. Chouza-Keil

CONTACT
INFORMATION

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PROFILE

Atmospheric scientist with strong background in electronic engineering. Eight years of hands-on experience in ground-based and airborne lidar systems for atmospheric research. Several publications in the field of atmospheric phyisics and lidar retrieval techniques, with focus in atmospheric composition and transport studies.

PROFESSIONAL
EXPERIENCE

LIDAR group, JPL Table Mountain Facility, California, USA

Research scientist II **August, 2020 - Present**

- Ongoing investigation on Los Angeles basin pollution impact on Table Mountain facility air quality and long-range transport.

Postdoctoral researcher **August, 2017 - August, 2020**

- Optimization and troubleshooting of lidar systems, including Nd:YAG and Excimer laser repairs.
- Developed an ozone near-range receiver for boundary-layer ozone studies. The performance of this receiver was validated by means of an intercomparison with an UAS-borne ozonesonde.
- Developed and implemented a new Python-based acquisition software, web-based interface and automation for all lidars currently operated by the TMF JPL lidar group.
- Research on long-term stratospheric aerosol trends based on colocated lidars at Mauna Loa, Hawaii, and several spaceborne-based datasets.

Aerosol Physics and Environmental Physics, University of Vienna, Vienna, Austria

Postdoctoral researcher **January, 2017 - July, 2017**

- Guest researcher at the Lidar Department of the German Aerospace Center (DLR)
- Participation in the A-LIFE field campaign
- Developed and demostrated a novel lidar technique for the simultaneous retrieval of aerosol optical properties, temperature and wind (Heterodyne high-spectral-resolution lidar).

LIDAR Department, German Aerospace Center (DLR), Munich, Germany

PhD candidate **October, 2013 - December, 2016**

- Developed a calibration technique for the retrieval of aerosol backscatter and extinction coefficient from airborne coherent Doppler wind lidars.
- Developed a state-of-the-art vertical wind retrieval algorithm from airborne doppler wind lidar systems that greatly reduced the impact of of the platform movement on the systematic uncertainty.
- Research on the modulation of aerosol distribution by orography-induced gravity waves based on airborne wind lidar observations and large-eddy simulations.
- Research on Saharan dust long-range transport based on wind lidar measurements and models.
- Participation in GW-LCYCLE and DEEPWAVE field campaigns

University of Buenos Aires, Buenos Aires, Argentina

Propagation and radiating systems - Teaching Assistant **January, 2012 - August, 2013**

- Prepared Lab asignments and assisted students during its execution.

- Assisted students with lesson assignments.

LIDAR Division, CITEDEF, Buenos Airesn Argentina

Research Assistant   **October, 2011 - August, 2013**

- Assistance in the construction and deployment of several aerosol lidar observation stations across Argentina for volcaninc ash detection.
- Assistance in the design and construction of a multi-wavelength scanning Raman lidar to observe night sky atmospheric transmission.

EDUCATION

Ludwig-Maximilian Universität, Munich, Germany

Ph.D., Meteorology, October 2013 - December 2016
- Dissertation Topic: "Saharan dust transport studied by airborne Doppler wind lidar and numerical models"
- GPA: 4.0/4.0 (Magna Cum Laude)
- Advisor: Prof. Dr. Bernadett Weinzierl

University of Buenos Aires, Buenos Aires, Argentina

Electronic Engineering (MS-level, 6-year degree), 2006-2012
- Thesis Topic: "Quadpector: A low-cost UAV for remote observation"
- GPA: 8.1/10.0

HONORS AND AWARDS

JPL Voyager Award, 2019

Green Photonics Young Talent Award, 2017

DAAD-DLR PhD scholarship, 2013

Honors diploma, University of Buenos Aires, 2012.

PUBLICATIONS

Chouza, F., Leblanc, T., Brewer, M., Wang, P., Piazzolla, S., Pfister, G., Kumar, R., Drews, C., Tilmes, S., Emmons, L., Johnson, M.: The impact of Los Angeles basin pollution and stratospheric intrusions on the San Gabriel Mountains as seen by surface measurements, lidar, and numerical models, Atmos. Chem. Phys., under review, 2021.

Steinbrecht, W., Kubistin, D., Plass-Dülmer, C., Davies, J., Tarasick, D. W., Gathen, P., ..., **Chouza, F.**, et al.: COVID-19 crisis reduces free tropospheric ozone across the Northern Hemisphere, Geophysical Research Letters, 48, https://doi.org/10.1029/2020GL091987, 2021.

Chouza, F., Leblanc, T., Barnes, J., Brewer, M., Wang, P., Koon, D.: Long-term (1999-2019) variability of stratospheric aerosol over Mauna Loa, Hawaii, as seen by two co-located lidars and satellite measurements, Atmos. Chem. Phys., 20, 6821–6839, https://doi.org/10.5194/acp-20-6821-2020, 2020.

Knepp, T. N., Thomason, L., Roell, M., Damadeo, R., Leavor, K., Leblanc, T., **Chouza, F.**, Khaykin, S., Godin-Beekmann, S., and Flittner, D.: Evaluation of a method for converting Stratospheric Aerosol and Gas Experiment (SAGE) extinction coefficients to backscatter coefficients for intercomparison with lidar observations, Atmos. Meas. Tech., 13, 4261–4276, https://doi.org/10.5194/amt-13-4261-2020, 2020.

Leblanc, T., **Chouza, F.**, Taha, G., Khaykin, S., Barnes, J., Vernier, J.-P., and Rieger, L.: A 25-year high in global stratospheric aerosol loading [in "State of the Climate in 2019"]. Bull. Amer. Meteor., 101 (8), S88–S89, https://doi.org/10.1175/BAMS-D-20-0104.1, 2019.

Chouza, F., Leblanc, T., Brewer, M., and Wang, P.: Upgrade and automation of the JPL Table Mountain Facility tropospheric ozone lidar (TMTOL) for near-ground ozone profiling and satellite validation, Atmos. Meas. Tech., 12, 569-583, https://doi.org/10.5194/amt-12-569-2019, 2019.

Chouza, F., Witschas, B., and Reitebuch, O.: Heterodyne high-spectral-resolution lidar, Applied Optics, 56(29), 8121-8134, doi:10.1364/AO.56.008121, 2017.

Weinzierl, B., Ansmann, A., Prospero, J., Althausen, D., Benker, N., **Chouza, F.**, Dollner, M., Farrell, D., Fomba, W., Freudenthaler, V., Gasteiger, J., Groß, S., Haarig, M., Heinold, B., Kandler, K., Kristensen, T., Mayol-Bracero, O., Müller, T., Reitebuch, O., Sauer, D., Schäfler, A., Schepanski, K., Spanu, A., Tegen, I., Toledano, C., and Walser, A.: The Saharan Aerosol Long-range Transport and Aerosol-Cloud-Interaction Experiment (SALTRACE): overview and selected highlights, Bull. Amer. Meteor. Soc., 98, 1427–1451, doi: 10.1175/BAMS-D-15-00142.1, 2016.

Wagner, J., Dörnbrack, A., Rapp, M., Gisinger, S., Ehard, B., Bramberger, M., Witschas, B., **Chouza, F.**, Rahm, S., Mallaun, C., Baumgarten, G., and Hoor, P.: Observed versus simulated mountain waves over Scandinavia – improvement by enhanced model resolution?, Atmos. Chem. Phys., 17, 4031-4052, doi:10.5194/acp-2016-765, 2016.

Chouza, F., Reitebuch, O., Benedetti, A., and Weinzierl, B.: Saharan dust long-range transport across the Atlantic studied by an airborne Doppler wind lidar and the MACC model, Atmos. Chem. Phys., 16, 11581-11600, doi:10.5194/acp-16-11581-2016, 2016.

Chouza, F., Reitebuch, O., Jähn, M., Rahm, S., and Weinzierl, B.: Vertical wind retrieved by airborne lidar and analysis of island induced gravity waves in combination with numerical models and in situ particle measurements, Atmos. Chem. Phys., 16, 4675-4692, doi:10.5194/acp-16-4675-2016, 2016.

Jähn, M., Muñoz-Esparza, D., **Chouza, F.**, Reitebuch, O., Knoth, O., Haarig, M., and Ansmann, A.: Investigations of boundary layer structure, cloud characteristics and vertical mixing of aerosols at Barbados with large eddy simulations, Atmos. Chem. Phys., 16, 651-674, doi:10.5194/acp-16-651-2016, 2016.

Chouza, F., Reitebuch, O., Groß, S., Rahm, S., Freudenthaler, V., Toledano, C., and Weinzierl, B.: Retrieval of aerosol backscatter and extinction from airborne coherent Doppler wind lidar measurements, Atmos. Meas. Tech., 8, 2909-2926, doi:10.5194/amt-8-2909-2015, 2015.

Chouza, F., Dworniczak, C., Otero, L., Pallotta, J., Proyetti, M., Quel, E., Ristori, P., Sugimoto, N., Vilar, O., Wolfram, A.: Monitoring volcanic ash in the atmosphere, SPIE, 2013.

CONFERENCE PRESENTATIONS

Chouza, F., Leblanc, T., Brewer, M., Wang, P.: Upgrade of the JPL Table Mountain Facility ozone lidar for near-ground ozone profiling and validation with in-situ measurements, 29th ILRC, Hefei, 2019.

Chouza, F., Leblanc, T., Brewer, M., Wang, P.: Tropospheric Ozone Lidar Upgrade and Automation at JPL Table Mountain Facility, 99th AMS Annual Meeting, Phoenix, 2019.

Chouza, F., Witschas B., Reitebuch, O.: Heterodyne high-spectral-resolution lidar, 19th CLRC, Okinawa, 2018.

Chouza, F., Reitebuch, O., Rahm, S., and Weinzierl, B.: Retrieval of aerosol backscatter and vertical wind from airborne coherent Doppler wind lidar measurements, 18th CLRC, Boulder, 2016.

Chouza, F., Reitebuch, O., Rahm, S., and Weinzierl, B.: Dust Transport Across the Atlantic Studied

by Airborne Doppler Wind Lidar During the Saltrace Experiment in 2013, 27th ILRC, New York, 2015.

Chouza, F., Reitebuch, O., Groß, S., Rahm, S., Freudenthaler, V., Toledano, C., and Weinzierl, B.: Transport of mineral dust derived from airborne wind lidar measurements during SALTRACE, EGU General Assembly 2015, Vienna, 2015.

COMPUTER SKILLS
- Programming: Most experienced with Python and LabVIEW. Some knowledge of C and VHDL.
- CAD Tools: AutoCAD, Altium Designer, KiCad, OrCAD. Some knowledge of SolidWorks and Zemax.
- Operating Systems: Unix/Linux, Windows.

MISCELLANEOUS
Argentine and Spanish citizenship. Currently in the USA in a J-1 status.

Languages
- Spanish - Mother tongue.
- English - Fluent.
- German - B2/C1 level.