

Claudio Durán-Alarcón

Polar meteorology, glaciology, remote sensing

EDUCATION

- Université Grenoble Alpes** Grenoble, France
Ph.D. in Earth Sciences 09/2016-10/2019
- Thesis: “Ground-based remote sensing of Antarctic and Alpine solid precipitation.”
- Université Grenoble Alpes** Grenoble, France
M.S. in Earth Sciences 09/2015-06/2016
- Thesis: “Comparative analysis of extreme rainfall in the Cévennes-Vivarais region, using rain gauges and weather radar data.”
- Universidad de Chile** Santiago, Chile
Renewable Natural Resources Engineering 03/2012-01/2014
- Thesis: “Spatio-temporal trend analysis of NDVI and Land Surface Temperature over the Arctic tundra.”
- Universidad de Chile** Santiago, Chile
B.S. in Renewable Natural Resources 03/2007-01/2012
- Internship report: “Inventory of glaciers in the basins between Biobio and Puelo rivers, Chile.”

EXPERIENCE

- Université Grenoble Alpes** Grenoble, France
PhD student at the Institute for Geosciences and Environmental research (IGE) 09/2016–12/2019
- Studying Antarctic and Alpine precipitation using ground-based remote sensing observations and in-situ data.
 - Preparing and executing a field campaign at the French Antarctic base Dumont d’Urville.
 - Processing radar, lidar and meteorological observations from Antarctica and the French Alps.
 - Preparing peer-reviewed publications and participation in international conferences.
- Université Grenoble Alpes** Grenoble, France
Master internship at the Laboratory of Transfers in Hydrology and Environment (LTHE) 01/2016–06/2016
- Study of the added value of weather radar data in the extreme quantitative precipitation estimation in the Mediterranean region, Cévennes-Vivarais, France.
- Universidad de Chile** Santiago, Chile
Research assistant at the Laboratory for the Analysis of the Biosphere (LAB) 02/2012–08/2015
- Study of temperature and vegetation trends in the Arctic tundra using remote sensing and reanalysis data.
 - Analysis of the Tropical Glaciers retreat in Andes Mountains.
 - In-flight calibration of the first Chilean Satellite (FASAT-C) in collaboration with the Chilean Air Force.
 - Application of an optical-passive microwave synergic method to estimate surface soil moisture.
 - Preparing peer-reviewed publications and participation in international conferences.
- General Directorate of Water, Ministry of Public Works** Santiago, Chile
Bachelor internship at the Snow and Glaciology Unit 12/2010–01/2011
- Elaboration of the inventory of glaciers between Biobio and Petrohue rivers using optical remote sensing, for the National Inventory of Glaciers.

- Vignon, É., Picard, G., **Durán-Alarcón, C.**, Alexander, S.P., Gallée H. and Berne, A. Gravity wave excitation during the coastal transition of an extreme katabatic flow in Antarctica. *Journal of the Atmospheric Sciences*, 77(4): 1295–1312, <https://doi.org/10.1175/JAS-D-19-0264.1>, 2020.
- **Durán-Alarcón, C.**, Boudevillain, B., Genthon, C., Grazioli, J., Souverijns, N., Lipzig, N. P. M. Van, Gorodetskaya, I. V. and Berne, A.: The vertical structure of precipitation at two stations in East Antarctica derived from micro rain radars, *Cryosph.*, 13, 247-264, <https://doi.org/10.5194/tc-13-247-2019>, 2019.
- Lemonnier, F., Madeleine, J., Claud, C., Genthon, C., **Durán-Alarcón, C.**, Palerme, C., Berne, A., Souverijns, N., Lipzig, N. P. M. Van, Gorodetskaya, I. V., Ecuyer, T. L. and Wood, N.: Evaluation of CloudSat snowfall rate profiles by a comparison with in situ micro-rain radar observations in East Antarctica, *Cryosph.*, 13, 943-954, <https://doi.org/10.5194/tc-13-943-2019>, 2019.
- Retamales-Muñoz, G., **Durán-Alarcón, C.** and Mattar, C.: Recent land surface temperature patterns in Antarctica using satellite and reanalysis data, *J. South Am. Earth Sci.*, <https://doi.org/10.1016/j.jsames.2019.102304>, 2019.
- Genthon, C., Berne, A., Grazioli, J., **Durán-Alarcón, C.** and Praz, C.: Precipitation at Dumont d’Urville, Adélie Land, East Antarctica : the APRES3 field campaigns dataset, *Earth Syst. Sci. Data*, 10, 1605-1612, <https://doi.org/10.5194/essd-10-1605-2018>, 2018.
- Souverijns, N., Gossart, A., Lhermitte, S., Gorodetskaya, I. V., Grazioli, J., Berne, A., **Durán-Alarcón, C.**, Boudevillain, B., Genthon, C., Scarchilli, C. and Lipzig, N. P. M. Van: Evaluation of the CloudSat surface snowfall product over Antarctica using ground-based precipitation radars, *Cryosph.*, 12, 3775-3789, <https://doi.org/10.5194/tc-12-3775-2018>, 2018.
- Grazioli, J., Genthon, C., Boudevillain, B., **Durán-Alarcón, C.**, Del Guasta, M., Madeleine, J.-B. and Berne, A.: Measurements of precipitation in Dumont d’Urville, Adélie Land, East Antarctica, *Cryosph.*, 11, 1797-1811, <https://doi.org/10.5194/tc-11-1797-2017>, 2017.
- Olivera-Guerra, L., Mattar, C., Merlin, O., **Durán-Alarcón, C.**, Santamaría-Artigas, A. and Fuster, R.: An operational method for the disaggregation of land surface temperature to estimate actual evapotranspiration in the arid region of Chile, *ISPRS J. Photogramm. Remote Sens.*, <https://doi.org/10.1016/j.isprsjprs.2017.03.014>, 2017.
- Rivera, C., Mattar, C. and **Durán-Alarcón, C.**: Trend in vegetational cover affected by fire in the Torres del Paine National Park, *Rev. Teledetec. (Scopus indexing)*, 2017(50), <https://doi.org/10.4995/raet.2017.7422>, 2017.
- Mattar, C., Santamaría-Artigas, A., **Durán-Alarcón, C.**, Olivera-Guerra, L., Fuster, R. and Borvarán, D.: The LAB-Net Soil Moisture Network: Application to Thermal Remote Sensing and Surface Energy Balance, *Data*, 1, 1-6, <https://doi.org/10.3390/data1010006>, 2016.
- Mattar, C., **Durán-Alarcón, C.**, Jiménez-Muñoz, J.-C., Santamaría-Artigas, A., Olivera-Guerra, L. and Sobrino, J. A.: Global Atmospheric Profiles from Reanalysis Information (GAPRI): a new database for earth surface temperature retrieval, *Int. J. Remote Sens.*, 36(19–20), 5045-5060, <https://doi.org/10.1080/01431161.2015.1054965>, 2015.
- **Durán-Alarcón, C.**, Gevaert, C. M., Mattar, C., Jiménez-Muñoz, J.-C. and Santillan-Portilla, N.: Recent trends on glacier area retreat over the group of Nevados Caullaraju-Pastoruri (Cordillera Blanca , Peru) using Landsat imagery, *J. South Am. Earth Sci.*, 59, 19–26, <https://doi.org/10.1016/j.jsames.2015.01.006>, 2015.
- Mattar, C., Hernández, J., Santamaría-Artigas, A., **Durán-Alarcón, C.**, Olivera-Guerra, L. and Inzunza, M.: A first in-flight absolute calibration of the Chilean Earth Observation Satellite, *ISPRS J. Photogramm. Remote Sens.*, 92, 16-25, <https://doi.org/10.1016/j.isprsjprs.2014.02.017>, 2014.
- **Durán-Alarcón, C.**, Santamaría-Artigas, A., Valenzuela, N. and Mattar, C.: RSR Calculator, a tool for the Calibration / Validation activities, *Rev. Teledetec. (Scopus indexing)*, (42), <https://doi.org/10.4995/raet.2014.3230>, 2014.
- Santamaría-Artigas, A., Mattar, C., **Durán-Alarcón, C.**, Olivera, L., Inzunza, M., Tapia, D. and Escobar-Lavín, E.: First application of FASAT-Charlie Imagery for the assessment of semiarid prairies in Chile, *Rev. Teledetec. (Scopus indexing)*, (40), http://www.aet.org.es/revistas/revista40/Numero40_07.pdf, 2013.
- Mattar, C., Santamaría-Artigas, A. and **Durán-Alarcón, C.**: Estimating the burned area of the Torres del Paine National Park using remote sensing data, *Rev. Teledetec. (Scopus indexing)*, (38), http://www.aet.org.es/revistas/revista38/Numero38_04.pdf, 2012.

CONFERENCES AND WORKSHOPS

- **Durán-Alarcón, C.***, Boudevillain, B., Berne, A., Genthon, C. and APRES3 team. Antarctic Precipitation, Remote Sensing from Surface and Space (APRES3) project and ground-based lidar observations at Dumont d'Urville, Antarctica. EECLAT (Expecting Earth-CARE, Learning from A-Train) workshop, Avignon, France, 21-23 January 2020. (Oral)
- **Durán-Alarcón, C.***, Boudevillain, B., Berne, A. and APRES3 team. Ground-based radar remote sensing of Antarctic solid precipitation. Radars: Technologies, Methodologies et Applications, Toulouse, France. 19-20 November 2019. (Oral)
- **Durán-Alarcón, C.**, Berne, A., Boudevillain, B., Simeonov, V., Lemonnier, F., Madeleine, J.-B., Teisseire, A.*, Jumelet, J., Genthon, C. and Listowski, C. Study of mixed-phase clouds using ground-based lidar observations at the coast of Adelie Land, Dumont d'Urville station, East Antarctica. 11th edition of the International Symposium on Tropospheric Profiling (ISTP), Toulouse, France. 20-24 May 2019. (Oral)
- **Durán-Alarcón, C.***, Berne, A., Boudevillain, B., Simeonov, V., Veron, D., Teisseire, A., Jumelet, J. and Genthon, C. Characterizing tropospheric clouds and precipitation using LIDAR in Antarctica. Polar2018, Davos, Switzerland. 15-27 June 2018. (Poster)
- **Durán-Alarcón, C.***, Boudevillain, B., Souverijns, N., Lipzig, N. P. M. Van, Gorodetskaya, I., Grazioli, J., Genthon, C. and Berne, A. Vertical structure of precipitation using K-band radar observations in East Antarctica. 10th European Conference on Radar in Meteorology and Hydrology, Ede, Netherlands. 1-6 July 2018. (Oral)
- Lemonnier, F.*, Madeleine, JB., Claud, C., Wood, N., L'Ecuyer, T., Krinner, G., Berne, A., **Durán-Alarcón, C.**, Palerme, C. and Genthon, C. Comparison Between Cloudsat and In-situ Radar Snowfall Rates in East Antarctica. Polar2018, Davos, Switzerland. 15-27 June 2018. (Oral)
- Lemonnier, F.*, Madeleine, JB., Claud, C., Hourdin, F., Krinner, G., Berne, A., **Durán-Alarcón, C.** and Genthon, C. Parameterizing Antarctic Snowfall in the IPSL Climate Model Using Radar Data. Polar2018, Davos, Switzerland. 15-27 June 2018. (Oral)
- Retamales-Muñoz, G.*, **Durán-Alarcón, C.** and Mattar, C. Antarctic Surface Temperature Variability and its Relation to ENSO. Polar2018, Davos, Switzerland. 15-27 June 2018. (Poster)
- Souverijns, N.*, Gossart, A., Lhermitte, S., Gorodetskaya, I.V., Crewell, S., Mech, M., Grazioli, J., Berne, A., **Durán-Alarcón, C.**, Boudevillain, A., Genthon, C., Scarchilli, C. and Lipzig, N.P.M. Van. A High-resolution Climatological Snowfall Map for Antarctica. Polar2018, Davos, Switzerland. 15-27 June 2018. (Oral)
- **Durán-Alarcón, C.***, Berne A., Boudevillain B., Genthon C. and Grazioli J. Multi-instrumental observations of solid precipitation at Dumont D'Urville, Antarctica. 13èmes Journées Scientifiques - CNFRA (Comité National Français des Recherches Arctiques et Antarctiques), Paris, France. 11-12 May 2017. (Oral)
- Delrieu, G.*, Wijbrans, A., **Durán-Alarcón, C.**, Blanchet, J., Nord, G. and Boudevillain, B. Heavy precipitation events in the Cévennes-Vivarais region, France: analysis of precipitation maxima and of the within-catchment rainfall variability over a range of spatial and temporal scales. 15th Plinius Conference on Mediterranean Risks, Giardini Naxos, Italy. 08-11 June 2016. (Oral)
- **Durán-Alarcón, C.***, Mattar, C., Jiménez-Muñoz, J.C. and Sobrino, J.A. Recent land surface temperature trend over the Antarctic Peninsula. 4th Recent Advances in Quantitative Remote Sensing conference, Torrent, Spain. 22-26 September 2014. (Poster)
- Mattar, C., **Durán-Alarcón, C.***, Jiménez-Muñoz, J.C. and Sobrino, J.A. Global Atmospheric Profiles from reanalysis Information (GAPRI): for forward simulations in the thermal infrared region. 4th Recent Advances in Quantitative Remote Sensing conference, Torrent, Spain. 22-26 September 2014. (Poster)

- **Durán-Alarcón, C.**, Mattar, C*, Jiménez-Muñoz, J.C. and Sobrino, J.A. Recent vegetation trends over the arctic tundra using MODIS data. 4th Recent Advances in Quantitative Remote Sensing conference, Torrent, Spain. 22-26 September 2014. (Poster)
- Mattar, C.*, **Durán-Alarcón, C.**, Jiménez-Muñoz, J.C. and Sobrino, J.A. Analysis of the land surface temperature and NDVI using MODIS data on the arctic tundra during the last decade. ESA Living Planet Symposium, Edinburgh, UK. 09-13 September 2013. (Poster)

PUBLISHED DATABASES

- **Durán-Alarcón, C.**, Boudevillain, B., Genthon, C., Grazioli, J. and Berne, A.: Effective reflectivity, vertical velocity, spectral width and snowfall rate estimates derived from a micro rain radar (MRR) at the Dumont d’Urville station, Adelie Land, East Antarctica. PANGAEA, <https://doi.org/10.1594/PANGAEA.897614>, 2019.
- Mattar, C., Santamaría-Artigas, A., **Durán-Alarcón, C.**, Olivera-Guerra, L. and Fuster, R.: LAB-net the First Chilean soil moisture network for Remote Sensing Applications. International Soil Moisture Network (ISMN), https://www.geo.tuwien.ac.at/insitu/data_viewer/, 2014.

TEACHING

- **Teaching Assistant** at Universidad de Chile 04/2015
Workshop of Physical principles of Remote Sensing. Diploma in Applied Geomatics.
- **Junior Teaching Assistant** at Universidad de Chile 07/2011-01/2013
Course of Remote Sensing. Engineering in renewable natural resources.
- **Junior Teaching Assistant** at Universidad de Chile 07/2011-01/2012
Course of Environmental Physics. Engineering in renewable natural resources.
- **Junior Teaching Assistant** at Universidad de Chile 07/2009-01/2013
Course of Numerical Calculus. Engineering in renewable natural resources.
- **Junior Teaching Assistant** at Universidad de Chile 07/2010-01/2013
Course of Integral Calculus. Engineering in renewable natural resources.
- **Junior Teaching Assistant** at Universidad de Chile 03/2008-06/2010
Course of Algebra and Trigonometry. Engineering in renewable natural resources.

SKILLS

- **Programming Languages:** Advanced in Python, R, IDL
- **Development tools:** VB.NET, Django, HTML
- **Modeling:** Beginner in WRF, LMDz
- **Other tools:** CRBasic, LoggerNet/CR1000, L^AT_EX

LANGUAGES

- **English:** Advanced knowledge
- **Spanish:** Native language
- **French:** Intermediate

PROJECTS

- 2016–2019. Antarctic Precipitation Remote sensing from Surface and Space (APRES3). ANR, Ref. C7H-ANR15B29-1, France. (PhD student)
- 2016–2019. Surface temperature anomalies over Antarctica: the role of ENSO during the last decades. INACH-Regular, Ref. RG 07 16, Chile. (Co-Investigator)
- 2013–2015. Dynamic model of water demand applicable to the management of water resources in the basin. CONICYT-FONDEF IDeA, Ref. CA13I10102, Chile. (Assistant Engineer)
- 2013–2015. Estimating the surface soil moisture at regional scale by using a synergic optical-passive microwave approach and remote sensing data. FONDECYT-Initiation, Ref. 10133359n Chile. (Research Assistant)

- 2012–2014. Application of an optical-passive microwave synergic method to estimate surface soil moisture. U-INICIA program, Ref. 4/0612, Chile. (Research Assistant)

FIELD WORK EXPERIENCE

- January-February 2017. APRES3 Antarctic mission at the Dumont d’Urville (DDU) station, Adélie Land. The main activities included the deployment of a micro rain radar (K-band), a depolarization lidar (532 nm), disdrometers, a high-resolution multi-angle snowflake camera (MASC) and meteorological observations.
- Support to Météo-France team at DDU in the launch of multiple radiosondes during the arrival of two different atmospheric rivers, contributing to the observations of the Antarctic Circumnavigation Expedition (ACE) in February 2017.
- 2012-2015. Multiple weekly field campaigns in Copiapó (Atacama Desert), Chimbarongo (Central Chile) and Oromo (Southern Chile), Chile. The main activities included the deployment and maintenance of the first soil moisture network in Chile; meteorological observations; soil and vegetation sampling; lysimeter and spectroradiometer measurements for satellite products (MODIS and SMOS) evaluation.

INTELLECTUAL PROPERTY RIGHTS

- 2013. **Durán-Alarcón, C.**, Mattar C., Santamaría-Artigas, A. and Valenzuela. N. RSR Calculator: Free software for filtering spectra. University of Chile. National Institute of Intellectual Property (INAPI-Chile), Ref. 228209. [Link](#).

SCHOLARSHIPS AND AWARDS

- Chilean Scholarship for Master program 2015–2016
- Ranked 1st out 35 graduating students. GPA: 6.6/7 2014

OTHER ANTECEDENTS

- Winter school: Climate science at high latitudes: Modeling and model evaluation, 22 October-02 November 2018. Andøya Space Center, Norway.
- Training course: Open-path eddy covariance Training, Campbell Scientific Inc. 02-05 November, 2015. Logan, Utah, EE.UU.
- Reviewer for Remote Sensing journal (ISSN: 2072-4292) and Journal of Ecology and The Natural Environment (ISSN: 2006-9847).
- Founding member (2013) of the Laboratory for the Analysis of the Biosphere at the Universidad de Chile ([LAB UChile](#)). Currently, research collaborator (Ad honorem).
- Elected member of the Laboratory Council at the Institute for Geosciences and Environmental research (IGE, Grenoble), representative of doctoral students and post-doctoral researchers. Period 2018-2019.