

CLIFF-GRADS Alumni Profiles

Round 5

Argentina Edition

Argentina Alumni

Ezequiel J. Terán, Argentina (Universidad Nacional del Centro de la Provincia de Buenos Aires) hosted by The Arctic University of Norway.



I am delighted to have the opportunity to work on key research and development topics for advancing society, such as climate change adaptation and mitigation. Given its global scope, this task is only possible with the collaborative efforts of people from different disciplines and parts of the world. That's why I appreciate the opportunity to establish connections with other national and international research

groups to contribute to the development of research networks and promote international collaboration.

Key learning from experience includes various new microbiology techniques and handling that I need to get used to applying because of the ecological approach of my PhD Project. However, it also provides knowledge about the implications of microbiological processes in soil and the microorganisms' sensitivity.

It will help me to be more accurate. At the same time, I try to explain methane oxidation in soil and understand how vital the different environmental factors are by driving the CH₄ oxidation in soil, even masking microbiological ones notorious in pure culture. An example is pH, which -as proposed in the literature- is an essential driver of the growth in the pure culture of MG08. However, in samples from different climatic zones of Argentina (my PhD project), this parameter is masked by temperature and local rain regimes.

Flavia Olguin (Argentina, Institute of Plant Physiology) was hosted in 2023 by INIA – Madrid, Spain.



During my stay, I had access to a skilled technical team with extensive expertise in techniques related to soil carbon studies, both in laboratory analyses and field sampling. Throughout the entire period, the technical team of the INIA accompanied me and provided protocols and everything necessary to carry out the measurements. Fortunately, INIA allowed me to participate in several academic learning activities, including seminars conducted by the group and other working groups within the institution, where I learned about and became acquainted

with other research areas, updates, and cooperative projects that enrich my professional career.

In addition to the field and laboratory experience, the INIA provided me with access to various software and statistic tools that allowed me to conduct data analysis and acquire skills for future work.

The research involved extensive field sampling across various zones in the Community of Madrid, using two protocols: the EU-standard LUCAS method and a previously established systematic approach. Each sampling site was georeferenced and characterized based on land use and coverage. Soil samples were collected and prepared by separating fine soil and rocks, measuring fresh and dry weights, and determining bulk density. Further processing included washing samples and grinding them for laboratory analysis using Agatha mills.

Laboratory analyses focused on key soil properties, including organic carbon, nitrogen, phosphorus, mercury content, pH, and conductivity. These results supported calculations of soil carbon stock at multiple scales—point, local, and regional—accompanied by geostatistical analyses to generate carbon content maps and assess the influence of land use practices. While sampling and determinations continue, I am currently collaborating remotely with the research team to analyze and process data for future publication, integrating it with other databases and related research initiatives.

Iván Daniel Filip (National University of Mar del Plata) hosted by Algarve University (Portugal)



I have a deep appreciation for the outdoors, since I have been raised in a small town surrounded by rural landscapes. Furthermore, I enjoy exploring new destinations and cultures, a consequence of my international experiences. In addition, confronting challenges such as learning new languages, adapting to new diverse work environments, and collaborating with people from different backgrounds has enriched my life, developed my creativity and adaptability. I enjoy these experiences and continuously try to find opportunities to learn about new things.

During this experience, I gained practical skills in measuring and processing nitrous oxide emissions, as well as in soil sampling techniques specifically designed for microbiological analysis. I also received training in using simulation software like GAMPS, which models scenarios based on economic and environmental indicators. This technical training was complemented by ongoing interaction with local producers, helping me develop the ability to communicate complex scientific concepts in a clear and accessible way—an essential skill for effective knowledge transfer and stakeholder engagement.

Additionally, my participation in technical workshops, scientific discussions, and fieldwork alongside local researchers and farmers significantly deepened my understanding of nitrous oxide emissions in extensive livestock systems. These interactions also helped improve my language skills in both Portuguese and English, enhancing my ability to operate in diverse, international research environments. Altogether, this experience has meaningfully strengthened my research capabilities and broadened my professional competencies.

Karen Debora Ponieman (University of Buenos Aires) hosted by Bangor University



I am fascinated by nature and understanding how it works, including the processes beneath what we can see. I am interested in learning and working on how to make more sustainable production systems. That is why I decided to study my Bachelor's degree in Environmental Sciences and then continue specialising in Agricultural Sciences. I enjoy activities like hiking, scrambling, rowing and playing sports. Additionally, I value the experiences gained from immersing myself in diverse cultures, learning from them and broadening my perspectives.

During my CLIFF-GRADS research visit, I developed expertise in creating Marginal Abatement Cost Curves (MACC), a valuable methodology for evaluating climate mitigation strategies—an area with limited exposure and training opportunities in my home country. A major highlight was presenting the first chapter of my PhD thesis at the 6th Symposium on Agri-Tech Economics for Sustainable Futures at Harper Adams University, UK. This experience not only improved my public speaking and presentation skills in English but also significantly enhanced my overall proficiency in the language through six months of immersive academic and professional engagement.

The programme offered a rich learning environment where I acquired a new methodological tool directly relevant to my research and strengthened my communication abilities. I also had the chance to interact with researchers from around the world, exchanging knowledge, discussing research topics, and gaining insights into different cultural and scientific perspectives. These experiences broadened my academic network and deepened my understanding of global research contexts, leaving a lasting impact on both my professional and personal development.

Mercedes Busto (Buenos Aires University) hosted by the Columbia Plateau Conservation Research Center USDA ARS (Climate Change Information Centre & Renewable Energy & Export system, Ministry of Agriculture & Land Reclamation)



The research stay was a highly enriching experience that significantly contributed to my professional and personal growth. Professionally, I gained valuable knowledge on managing agricultural systems in arid, irrigated climates, particularly the benefits of wheat/legume intercropping to reduce nitrogen fertilizer use. I also learned various methodologies for collecting and analyzing greenhouse gas emissions data and participated for the first time in sample analysis using gas chromatography.

Personally, the opportunity to live abroad—particularly in North American and Mexican cultural contexts—was transformative. As a researcher from a public university in Argentina, this scholarship enabled me to access experiences and environments that would otherwise be out of reach, fostering both resilience and adaptability.

Throughout the stay, I acquired practical skills in greenhouse gas sampling and data analysis, specifically using Linear, Quad, and Hutchinson/Mosier Regression (HMR) methods. I also learned how to better organize sampling strategies and streamline complex field and lab tasks. Importantly, this was my first experience working directly with agricultural crops, broadening my expertise beyond my background in pasture systems and molecular biology. Overall, the experience taught me to adapt to diverse work environments, enhanced my communication abilities in a second language, and reinforced the value of flexibility and resilience in a research career.

Nadia Testani (CIMA- Atmosphere and Ocean Science Research Center – Argentina) hosted by LUKE (Natural Resources Institute Finland)



Nadia Testani has a degree in Atmospheric Sciences from the University of Buenos Aires. She is currently a PhD student in Atmospheric and Oceanic Sciences at University of Buenos Aires working at the CIMA UBA (UBA-CONICET). Her work focuses on studying the impacts of climate variability and climate change on rice yields in the province of Corrientes in northeastern Argentina. She participates in interdisciplinary and knowledge co-production projects to develop community-based monitoring strategies with researchers and

local stakeholders, both in northeastern Argentina and in the Province of Buenos Aires.

The CLIFF-GRADS programme had a profound impact on my academic and professional development. During my six-month research stay at LUKE in Finland, I focused on applying and calibrating the APSIM grass model for a specific region, which significantly advanced my modeling and analytical skills. Although working with APSIM was challenging, it proved to be a highly rewarding experience. I received strong guidance from my supervisor and colleagues, which improved my proficiency in crop modeling, scripting (especially in Python), and working with unfamiliar datasets such as soil, climate, and experimental farm data. This hands-on experience deepened my understanding of data integration and interpretation, critical skills for complex research.

Beyond the technical expertise, this experience taught me how to work in a transdisciplinary environment by bridging my background in climate science with new knowledge in agriculture and computer science. I gained practical experience in using GitHub for collaborative work and improved my ability to communicate and problem-solve across disciplines. The research stay not only expanded my academic capabilities but also transformed the way I approach scientific challenges, encouraging a more holistic and integrative perspective. I am truly grateful to the CLIFF-GRADS programme for this enriching opportunity.

Alumni hosted in Argentina

Caleb Sagwa Barasa (Stellenbosch University) was hosted by the National Institute of Agricultural Technology (INTA)



The project focused on exploring nutritional strategies for mitigating methane emissions in beef cattle. I actively participated in various aspects of the research, including animal monitoring, data collection, sample preparation for laboratory analysis,

loading green feed with concentrates, and contributing to manuscript writing.

During the research visit, I gained hands-on experience with advanced equipment such as the Open Circuit Gas Quantification System (GreenFeed) and the Automatic Supplementer. I also developed practical skills in methane emission measurement, rumen liquor collection using the stomach tube technique, and urine and fecal sample collection. Additionally, I became proficient in digital data collection methods, including weight measurement, radio frequency electronic identification (RFID), and ultrasound techniques for evaluating carcass traits like ribeye area and muscle thickness.

Key learnings from this experience included training in animal nutrition, greenhouse gas quantification and mitigation in ruminants, and the design and implementation of animal trials. I enhanced my data analysis capabilities and developed a deeper understanding of research methodologies relevant to sustainable livestock systems. This opportunity not only improved my technical and analytical skills but also broadened my perspective on climate-smart agriculture and the role of nutrition-based interventions in reducing environmental impacts in livestock production.

Charleni Crisóstomo (University of São Paulo) was hosted by the National Institute of Agricultural Technology (INTA)



This internship was a very rewardable both professional and personal experience. I had the opportunity to expand my network, getting in direct contact with very prestigious researchers and students from

the INTA, learning new methodologies and immersing in the Argentinian culture. In the same week that I arrived, we carried out an *in vitro* gas production assay using industrial co-products from the Córdoba region: peanut skin, grape (Malbec, Torrontés) and olive pomaces. After preparing and identifying the samples, I helped the research team organizing the assay schedule, participating, and accompanying the entire incubation and readings events. In addition, I also prepared spreadsheets and contributed with the pre- and post-assay processes.

The data obtained will be submitted to statistical analysis, but initial results of organic matter degradability and gas production indicate that including these co-products in beef cattle diets may contribute to the sustainability of livestock production while also reducing the methane intensity related to this activity. These findings will be a chapter in my doctorate thesis at CENA-USP, and continuing our research partnership, more analysis will be performed at my home Institute aiming to determine content of condensed tannins and isotopic composition of ruminal fermentation gases in diets with the inclusion of these co-products and tropical grasses for feeding sheep and beef cattle.

Finally, I reported my research activities with an oral presentation for INTA researchers and recorded a radio interview that will soon be available at INTA social media, while in the following months manuscripts will be prepared for submission in scientific journals.

Emmanuella-Doeko'os Zachariah Awang (University of Agriculture, Makurdi) hosted by the National Institute of Agricultural Technology (INTA)



I was trained in the measurement of greenhouse gases (GHG) at the EEA INTA Balcarce and everything related to its collection. However, I also learned about pecan physiology and pecan management. This training helped me to understand the pecan system as a platform to integrate other productive systems.

The second aspect I learned about was pecan management, phenology, and growth. In a parallel process, while our experiment was ongoing, we took measurements in the pecan trees. I

learned to recognize reproductive stages in the pecan trees that were varying according to the different cultivars present at the site. This phenology observation was accompanied by trunk diameter measurements and tree height measurements.

Among the skills I learned during my stay, I can mention: setting up temperature and moisture sensors, building non-steady state chambers, how to deploy chambers in the field, extracting gas samplings, how to follow a gas sampling round according to time, how to recognize pecan male flowers, how to recognize pecan female flowers, how to measure tree trunk perimeter and calculate trunk diameter, how to measure tree height, and how to process pecan nuts at the lab.

The key learning was "timing," and that allowed me to better face complex research questions related to greenhouse gas emissions. Another learning was weather conditions, which eased my understanding of the nature of nutrient cycling in the pecan orchard and helped me approach a better agroecosystems design to go zero-carbon. Most of the time, my work at the Research Station was divided between office days and field/lab days. I had access to non-steady state chambers, tools, nut crackers, a laptop, and soil samplers.

Ibitoye Rotimi George (Obafemi Awolowo University) Universidad Nacional del Centro de la Provincia de Buenos Aires (UNICEN)



The CLIFF-GRADS research visit exposed me to numerous training and research opportunities, which are highlighted below. It allowed me to learn how to measure GHGs, especially methane flux at the soil atmosphere interface (SAI) using the static chamber method in

the field (Plate 2). With the help of my supervisors and other members of the research group, I was able to understand how the chamber was to be managed in field conditions to measure methane to obtain accurate results.

During the research visit, I was able to learn the practical aspects of Fick's law under field conditions. Myself and members of the research group including my supervisors measured methane diffusion from the soil surface to the 10 cm depth. I was also trained on the important calculations to be carried out using the data obtained from the gas chromatograph after using the machine to read gas samples obtained from the field.

Furthermore, using the static chamber method, I was able to learn how to estimate methane flux from the determination of Sf6 concentration in the laboratory. I learned how to skillfully transfer the chamber from the field to the laboratory, ensuring that the soil inside the chamber was intact to obtain accurate results. In the laboratory, I was trained on how to measure the Sf6. Also, I was taught how to estimate the methane flux from the Sf6 data obtained from the gas chromatograph using the recommendation of von Fisher *et al.* (2009).

During my stay in Argentina, I enrolled to learn Spanish. I believed this is part of the objectives of the scholarship that awardees could learn the language of their host countries. Before I left Argentina, I did a video in Spanish with the support of my teacher. In the video, I expressed my gratitude to CLIFF-GRADS for the scholarship. The video was widely circulated in Tandil and I believe it gave wide publicity to the scholarship as well. The video can be found in the link below:

https://drive.google.com/file/d/1-Gke_7UZ2t77n0nvSwq50EQjo_6UJv0S/view?usp=drive_link

Livia Chagas de Lima (Universidade Federal do Rio Grande do Sul) hosted by the National Institute of Agricultural Technology (INTA)



My academic background is in Agronomy and Production Engineering. I am part of the Grazing Ecology Research Group, where I learned about how understanding the plant animal interface and applying its principles at the systems level can change farmers' lives. I'm a very positive and

calm person who adapts easily to new situations. Traveling and meeting people are my hobbies. Generating knowledge on how to mitigate externalities of agricultural systems while improving farm efficiency is what motivates me.

The aim of the research was to create marginal abatement cost curves for cow-calf systems in the southwestern Pampean region. To achieve the goals, we first selected the production models according to Argentina's national Greenhouse Gas Inventory. I visited farms to get to know the model systems, and to visualize in real life, along with farmers and professionals, the difficulties and opportunities for increasing the efficiency of calf production. We visited farmers ranging from the low-tech and inefficient to the high-tech farmers with the vision of reducing externalities.

I had the opportunity to attend a national meeting on greenhouse gas emissions and carbon capture in agricultural and forestry systems, which brought together researchers from all regions of Argentina (from desert and Patagonian climates to very intensive productive regions). At the meeting I was able to learn about the different forms of food production, their respective stages of research into GHG measurements and future prospects.

Wondimagegne Bekele Adera (a PhD student in a sandwich program between Addis Ababa University in Ethiopia and the Swedish University of Agricultural Sciences in Sweden) hosted by the National Institute of Agricultural Technology (INTA)



My name is Wondimagegne Bekele, and I am an Ethiopian citizen residing in Ethiopia. I am currently a Ph.D. student enrolled in a sandwich program between Addis Ababa University in Ethiopia and the Swedish University of Agricultural Sciences in Sweden. Prior to my doctoral studies, I worked as a lecturer at Debre

Berhan University, Ethiopia, where I specialized in Animal Nutrition, Forage Production, and Range Management. My research interests revolve around studying methane emissions from the livestock sector, focusing on the combined influence of the rumen microbiome.

I learned about SF₆ devices such as the inflow regulator, protector for the inflow regulator, canisters, yolk, and flow meter. I received hands-on training in rumen protozoa count using an optical microscope and learned how to identify different species of protozoa, which was an eye-opener for rumen microbiome research. I also had molecular laboratory training that included hands-on DNA extraction using different kinds of kits, gel electrophoresis, and Nanodrop analysis to assess the quality and quantity of DNA from rumen liquor, as well as PCR analysis of samples.

I also had an opportunity to visit INTA Balcarce, one of INTA's research institutes, where I had a pleasant day pertaining to my research career and social life. I participated in respiration chamber calibration, worked in the animal feed laboratory with an experienced scientist, and observed a new crude protein analysis apparatus.

Additionally, I became familiar with the molecular laboratory and apiculture facility. Key learnings from my experience included how to calibrate the SF₆ tracer technique and the respiration chamber, how to count protozoa, and how to perform molecular laboratory activities such as DNA extraction, gel electrophoresis, and Nanodrop analysis. Finally, I am grateful to those who made this experience come true for the CLIFF-GRADS Programme. The program should continue to produce global networking with science and development.