DR. ILIUSI DONAJI VEGA DEL VALLE

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Physicist with more than 15 years of experience in cutting-edge research, mainly in the areas of health, climate change and sustainability. I have extensive experience in promoting and managing international collaborations and leading interdisciplinary projects that have produced high-impact results in academic institutions as well as non-governmental organizations and companies.

As an expert in modeling complex systems, database management and big data analysis (e.g. data mining and topological data analysis), I use advanced analysis tools, including Python and GIS software. I am deeply committed to combating climate change through scientific excellence and data-driven solutions, with an interdisciplinary approach.

I am passionate about sustainable practices and my goal is to build and support projects that create positive environmental and social change.

SKILLS

- **Personal strengths:** Holistic thinking, creativity, teamwork, natural leadership, networking, high language skills and intercultural understanding
- **Specializations:** Complex networks, Machine learning algorithms, Agent-based models, Time series analysis, Computational topology, Boolean models, Data management, Project management, Science communication
- **Languages:** Spanish (Native), English (Fluent), German (Advanced), Arabic (Intermediate)
- **Programming languages:** Bash (Advanced), Python (Advanced), Java (Advanced), SQL (Intermediate), Matlab (Intermediate), R (Elementary)
- **Operating systems:** Linux (Advanced), Mac OSX (Advanced), Windows (Intermediate)
- **Project management:** Asana, Trello, Slack, Mailchimp, Github
- **Productivity & Typesetting systems:** Microsoft Suite, iWork, LaTeX
- **Web content management (user):** Wordpress, Wagtail, Django

PROFESSIONAL EXPERIENCE (SELECTION)

Independent researcher

iliusi.com | since August 2023

- Proven track record in modeling complex systems, data analysis and data management.
- Experienced in managing large international projects.
- Focused in designing impactful research and advice policies and practices on Climate Change and Sustainability

Researcher & Founding member

Observatorio Agroindustrial en México (OBSAM) | since January 2023

- Analyze the impact of governmental policies and agricultural practices associated to oil palm in Mexico
- Design and manage the OBSAM platform, displaying geolocated data for monitoring the expansion of oil palm.

Cross-Sectoral Science Team (CSST)

Inter-Sectoral Impact Model Intercomparison Project (ISIMIP), Potsdam Institute for Climate Impact Research (PIK) | Potsdam, Germany, 03.2021-07.2023

- Restructured the ISIMIP health research sectors, establishing the labor and the food security and nutrition (FS-N) research sectors.
- Restructured operations and communications processes between the CSST, the health and labor research sector coordinators and scientists worldwide to discuss and determine ISIMIP scenario setups, research protocols, and definitions such as climate change hotspots on health.

Junior Scientist

Inter-Sectoral Impact Model Intercomparison Project (ISIMIP), Potsdam Institute for Climate Impact Research (PIK) | Potsdam, Germany, 09.2022-07.2023

- Developed cross-sectoral questions to assess climate risks and explore indicators of climate change impacts (EU project "Cascades", BMBF project "PIK_Change"), under the supervision of Dr. Katja Frieler and Dr. Matthias Mengel.
- Identified inconsistencies in climate impact simulations within the forestry sector (Mahnken et al., 2022), under the supervision of Dr. Christopher Reyer.

Postdoctoral Researcher

Inter-Sectoral Impact Model Intercomparison Project (ISIMIP), Potsdam Institute for Climate Impact Research (PIK) | Potsdam, Germany, 09.2017-08.2022

- Conducted climate impacts simulations for drought estimation under various scenarios (Lange et al, 2020) as part of the PRIMAP project, supervised by Dr. Katja Frieler.
- Represented ISIMIP and ISIpedia at the SBSTA 50 UNFCCC Intersessionals, highlighting the projects' relevance in climate negotiations as part of the EU-H2020 project "ENGAGE". under the supervision of Dr. Katja Frieler,

Data Manager

Inter-Sectoral Impact Model Intercomparison Project (ISIMIP), Potsdam Institute for Climate Impact Research (PIK) | Potsdam, Germany, 09.2017-07.2023

- Developed and implemented quality checks and standards in Python and Bash for processing, managing and distributing the over 100TB ISIMIP database, ensuring synchronization across four servers.
- Provided technical and conceptual support to over 200 climate researchers worldwide; e.g. recorded tutorials to understand the ISIMIP scenario setups, the ISIMIP repositories, and handling NetCDF data.
- Created the initial data management plan for the new ISIMIP repository, which obtained the BMBF funding, project 16QK05 "ISI-Access", led by Dr. Katja Frieler and Dr. Matthias Mengel.

Project Manager, "Open Financial Modelling Program"

OpenOil UG | Berlin, Germany, 2016-2017

- Provided training support in Excel and the FAST financial modeling standard to around 100 participants.
- Collected financial and legal data, and guided the development of cashflow models for 12 oil & mining projects of public interest worldwide, under the guidance of organization founder Johnny West.
- Co-organized the "Modelling Global Summit" in Brandenburg, Germany which consolidated a network of around 30 practitioners worldwide and produced impactful reports that attracted significant media attention for revealing resource misuse, leading to changes in trade agreements and financial reporting frameworks.

Data Scientist

Division of Clinical-psychological intervention, Department of Education and Psychology, Free University of Berlin | Berlin, Germany, 04.11.2015-31.03.2016

- Developed models for the prediction of psycho-pathological trajectories in depression using machine learning algorithms on medical data, under the supervision of Prof. Dr. Christine Knaevelsrud and Dr. Tim Conrad.

ACADEMIC EDUCATION

PhD in Bioinformatics

International Max Planck Research School on Computational Biology and Scientific Computing (IMPRS-CBSC). Free University of Berlin (FU) & Max Planck Institute for Molecular Genetics | Germany, 2010-2016.

- Created algorithms using complex networks and computational topology to identify and predict transitions in multidimensional dynamical systems.

MSc in Physics

Physics Department. National Autonomous University of Mexico (UNAM) | Mexico, 2007-2010

- Developed a boolean model simulating cell differentiation in Arabidopsis thaliana roots, within a team of biologists and physicists from the Institute of Ecology, the Physics Institute and the Center for Complexity Sciences (C3)

BSc in Physics

National Autonomous University of Mexico (UNAM) | Mexico, 2002-2007

CONTINUOUS PROFESSIONAL DEVELOPMENT

- **Documenting human rights violations during internet shutdowns.** WITNESS in partnership with Advocacy Assembly | 22.02.2024
- **Engaging with the Private Sector to End Internet Shutdowns.** Global Network Initiative in partnership with Advocacy Assembly | 20.03.2024
- **Introduction to Internet Shutdowns.** Access Now in partnership with Advocacy Assembly | 15.02.2024
- **Measuring Internet Censorship with OONI tools and Open Data.** Open Observatory of Network Interference (OONI) in partnership with Advocacy Assembly | 27.02.2024
- **Mitigating Internet Shutdowns.** Ve Sin Filtro in partnership with Advocacy Assembly | 07.03.2024
- **Mitigating Online Censorship.** Ve Sin Filtro in partnership with Advocacy Assembly | 07.03.2024
- **Microsoft Power BI Data Analyst.** Microsoft | 04.03.2024
- **Corporate Finance: Environment, Social, and Governance (ESG)** LinkedIn Learning & PMI® certificate | 22.01.2024
- **Machine Learning with Python: Foundations.** LinkedIn Learning certificate | 13.12.2023
- **Agile Foundations.** LinkedIn Learning & PMI® certificate | 13.12.2023
- **Transitioning from Waterfall to Agile Project Management.** LinkedIn Learning & PMI® certificate | 13.12.2023
- **Scrum: The Basics.** LinkedIn Learning & PMI® certificate | 13.12.2023
- **Foundations on Geographic Information Systems (GIS).** LinkedIn Learning certificate | 11.12.2023
- **Fundamentals of Sustainable Supply Chains.** LinkedIn Learning & PMI® certificate | 12.09.2023
- **Sustainable and ESG Supply Chains.** LinkedIn Learning & PMI® certificate | 12.09.2023
- **Introduction to ESG: Environmental, Social, and Governance.** LinkedIn Learning & PMI® certificate | 16.08.2023
- **Workshop: How to write a competitive proposal for Horizon 2020.** Leibniz-Gemeinschaft | Berlin, 14.11.2019
- **Deep Learning in Python.** Datacamp, Certificate #2947779 | 10.06.2017
- **Microsoft Excel - Basic and Advanced.** GoSkills, Exam score: 94% | 8.12.2016
- **31-day taster FAST modelling course.** F1F9 | 2016
- **Complex Networks Thematic School.** École de physique des Houches | Les Houches, 7-18.04.2014

HONORARY POSITIONS

First Chairperson of the Board

México vía Berlín e.V. | Berlin, Germany, since 05.07.2022

- Oversee organizational finance, governance and strategic planning, fostering collaboration among organizations and policymakers in Germany and Mexico to address human rights and environmental challenges.
- Represent MvB at the German Coordination for Human Rights in Mexico (DMRKM e.V.), advocating for the interests of Mexican partnering organizations before parliamentarians and other political leaders in Germany.

Diversity Representative

Potsdam Institute for Climate Impact Research (PIK) | Potsdam, Germany, 2021-2023

- Organized meetings with staff, administration and directives to identify challenges related to discrimination.
- Implemented solutions: designed and applied the first survey to assess diversity at PIK, tendered and held the first training on subconscious biases for staff in leading positions at PIK, drafted the first accessibility map of all PIK buildings, and developed a new Diversity Mission Statement of PIK, which obtained endorsement by the directors.

AWARDS

- Konrad-Zuse-Stipendium, scholarship for doctoral studies | Germany, 01.10.2014-31-03.2015.
- Scholarship for PhD studies by the Free University of Berlin | Germany, 01.01.2014-31.08.2014.
- IMPRS-CBSC scholarship for PhD studies | Germany, 01.09.2010-31.08.2013.
- CONACYT scholarship for MSc studies | Mexico, 2007-2009.
- DGAPA scholarship for research project: "Spherical blackholes simulation" | Mexico, 2005.
- Selected participant for the EDUMAR-II teaching campaign for the sampling of plankton, nekton and benthos on board of the UNAM B/O "Justo Sierra" | Veracruz, Mexico, 2-4.07.2001

ACADEMIC AFFILIATIONS

- Cost Action CA19139 - Process-based models for climate impact attribution across sectors (PROCLIAS) | 2022-2023.
- Cost Action CA17132 - European Network for Argumentation and Public Policy Analysis (APPLY) | 2018-2023.

PUBLICATIONS (SELECTION)

- Frieler, K., Volkholz, J., Lange, S., Schewe, J., Mengel, M., Rivas López, M. R., **et al.** (2024). Scenario setup and forcing data for impact model evaluation and impact attribution within the third round of the Inter-Sectoral Model Intercomparison Project (ISIMIP3a). Geosci. Model Dev., 17, 1–51, https://doi.org/10.5194/gmd-17-1-2024
- de la Vega-Leinert, A. C., Sandoval Vázquez, S. D., and **Vega del Valle, I. D.** (2023). Mapping the expansion of Oil Palm (Elais guineensis Jacq.) in Mexico - Methodology and development. Agrociencia. https://doi.org/10.47163/agrociencia.v57i7.2998
- Mahnken, M., Cailleret, M., Collalti, A., et al. (2022). Accuracy, realism and general applicability of European forest models. Global Change Biology, 28, 6921–6943. https://doi.org/10.1111/gcb.16384
- Grant, L., Vanderkelen, I., Gudmundsson, L. et al. (2021). Attribution of global lake systems change to anthropogenic forcing. Nature Geoscience, 14, 849-854. https://doi.org/10.1038/s41561-021-00833-x
- Lange, S., Volkholz, J., Geiger, T., Zhao, F., **Vega, I.**, Veldkamp, T., et al. (2020). Projecting exposure to extreme climate impact events across six event categories and three spatial scales. Earth's Future, 11, e2020EF001616. https://doi.org/10.1029/2020EF001616
- Reyer, C. P. O., Silveyra-Gonzalez, R., Dolos, K., Hartig, F., Hauf, Y., Noack, M., **et al.** (2020). The PROFOUND database for evaluating vegetation models and simulating climate impacts on forests. Earth System Science Data Discussions 12: 1295-1320. https://doi.org/10.5194/essd-2019-220
- **Vega, I.**, Schütte, C., and Conrad, T. O. C. (2016) Finding metastable states in real-world time series with recurrence networks. Physica A. 445:1–17, doi:10.1016/j.physa.2015.10.041
- **Vega, Iliusi D.** Reconstruction and analysis of the state space for the identification of dynamical states in real-world time series. Refubium - Repositorium der Freie Universität Berlin, 2015. http://dx.doi.org/10.17169/refubium-11339
- Azpeitia, E., Benítez, M., **Vega, I.D.**, Villarreal, C., and Alvarez-Buylla, E.R. (2010). Single-cell and coupled GRN models of cell patterning in the Arabidopsis thaliana root stem-cell niche. BMC Systems Biology, 4:134. https://doi.org/10.1186/1752-0509-4-134
- **Vega del Valle, Iliusi D.** Modelos dinámicos continuos para la red de regulación genética del nicho de células madre del meristemo apical de la raíz de Arabidopsis thaliana [Continuous dynamical models for the genetic regulatory network of the stem cell niche of the apical meristem in the root of Arabidopsis thaliana]. Repositorio Institucional UNAM, 2010. https://repositorio.unam.mx/contenidos/ficha/265040

LECTURES (SELECTION)

- Speaker at stakeholder panel. Closing conference & Management Committee meeting of the CA 17132 European Network for Argumentation and Public Policy Analysis | Lisbon, Portugal, 24.03.2023. https://publicpolicyargument.eu/events/cost-action-17132-apply-closing-conference-management-committee-meeting/
- Online training provider. Use of the ISIMIP repository tutorial for PhD students. inventWater Training School of the Dundalk Institute of Technology (DkIT) | 16.06.2022. https://www.dkit.ie/centre-freshwater-environmental-studies/recent-news/inventwater-training-dkit-june-2022
- Online presenter. Talk: Rewilding home. Online Seminar Series 2021/22, Research Centre for Migration, Diaspora and Exile (MIDEX), University of Central Lancashire | 10.11.2021. https://www.imiscoe.org/news-and-blog/news/news-from-members/1479-midex-seminar-series-2021-22-programme
- Guest. Episode: Worrying about and acting on climate change, "Tenemos tarea" [We have homework] radio show at Radio Educación (XEEP) | Mexico City, Mexico, 27.01.2020. e-radio.edu.mx/Tenemos-tarea/820-Preocuparnos-y-ocuparnos-del-cambio-climatico
- Poster presentation: "ISIMIP & ISIpedia - Inter-sectoral impact modeling and communication of national impact assessments". SBSTA 50 UNFCCC Intersessionals | Bonn, Germany, 20.06.2019. http://unfccc.int/sites/default/files/resource/RD11_draftagenda13.06.19.pdf
- Organizer. "Modelling global summit". OpenOil | Brandenburg, Germany, 24-28.10.2016.
- Poster presentation: "The structural consequences of willing to conform" (work developed with Victor Mireles and Dr. Tim O. F. Conrad.). NetSci 2015 | Zaragoza, Spain, 1-5.06.2015. https://netsci2015.com/images/site/booklet_NetSci2015_web.pdf
- Workshop organiser and leader. "Mathematics for society". México vía Berlín e.V. | Institut für Sozialwissenschaften Humboldt-Universität zu Berlin, Berlin, Germany, 12-13.07.2014. https://mathforsociety.wordpress.com/
- Speaker. Talk: "Method for tuning the threshold for recurrence plots and its efficiency in recognizing different dynamical states through recurrence network analysis". Fourth international symposium in Recurrence Plots | Hong Kong, China, 5-7.12.2011. http://www.recurrence-plot.tk/ws2011/index.php?a=programme