

## **A. MARCELA SUAREZ**

Curriculum Vitae

Department of Geography, The Pennsylvania State University  
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### **ACADEMIC APPOINTMENTS**

- 2021 Assistant Teaching Professor of Spatial Data Science  
Department of Geography  
The Pennsylvania State University
- 2020 - 2021 Research Associate  
Center for Spatial Studies  
University of California, Santa Barbara

### **EDUCATION**

- 2020 **Doctor of Philosophy in Geography**  
University of California, Santa Barbara (UCSB)  
Committee: Keith Clarke (Chair), Dan Montello & Leila Carvalho  
*Dissertation*: "Tweets as information for emergency response during weather-related disaster events: Methods, constraints and a geographical perspective"
- 2011 **Master of Science in Disaster Risk Management and Emergency Response**  
Department of Geology  
University of Costa Rica, San Jose, Costa Rica  
*Thesis*: "Landslides Susceptibility Mapping Based on Technical and Social Approaches in the Viejo River Basin, Puriscal- Costa Rica"
- 2005 **Bachelor of Engineering in Cadastral Engineering and Geodesy**  
Department of Engineering  
Distrital University "Francisco Jose de Caldas." Bogota, Colombia

### **PUBLICATIONS**

#### **Peer-reviewed Papers**

- 2009 **Suarez, A. M.**, Peraldo, G., Badilla, E & Obando, L. Geomorphological zonation for landslide susceptibility assessment in the basin of the Viejo River, Puriscal, Costa Rica. *Revista Geológica de América Central. Edición N. 41. (In Spanish)*.

- In rev. **Suarez, A. M.** & Clarke, K. C. A Geographic and Content-based Approach to Prioritize Relevant and Reliable Tweets for Emergency Management?
- In rev. Goto, E. A., **Suarez, A. M.**, Ye, H. Spatial Analysis of Social Vulnerability in Sao Paulo city, Brazil.
- In prep. **Suarez, A. M.** & Clarke, K. C. Spatio-temporal filtering of tweets to improve the identification of actionable information for emergency management.

### Peer-reviewed Short Papers or Extended Abstracts

- 2017 **Suarez, A. M.** & Clarke, K. C. Leveraging Spatio-temporal Information to Enrich Thematic Clustering of Twitter Posts. *Proceedings of the International Symposium on Location-based Social Media Data and Tracking Data*. Washington, DC. July 1-2.
- 2019 **Suarez, A. M.** & Clarke, K. C. Geographic and Content-based Prioritization of Tweets During Weather-Related Disaster Events for Emergency Management. *Proceedings of the 6th International Conference on Information Systems for Crisis Response and Management*. Valencia, Spain. May 19-22. (Poster Session).

### CONFERENCE PRESENTATIONS

- 2019 **Suarez, A. M.** Using Citizen Reports and Authoritative Geographic Information to Assess Tweets Reliability: The Case of Weather-Related Disaster Events. *Association of American Geographers Annual Meeting*. Washington, DC. April 7.
- 2017 **Suarez, A. M.** Using Spatio-temporal Data to Enrich Thematic Clustering of Twitter Reports of Extreme Weather Events. *Association of American Geographers Annual Meeting*. Boston, Massachusetts. April 5-9.
- 2016 **Suarez, A. M.** & Ye, H. Spatio-temporal Analysis of Social Media Response After a Flood Event. *Association of American Geographers Annual Meeting*. San Francisco, CA. March 29 – April 2.
- 2007 **Suarez, A. M.**, González, E. & Pinzón, J. 2007. Georeferencing for Modeling and Zoning Mass Movement Hazard in the Municipality of Tena, Department of Cundinamarca, Colombia. *32th International Symposium of Remote Sensing for Environmental Uses*. Costa Rica.

### INVITED TALKS

- 2019 Leveraging Crowdsourcing and Citizen Science to Produce Volunteer Geographic Information for Hazard Science, Disaster Research, and Emergency Management. *Association of American Geographers Annual Meeting*. Washington, DC. April 6. Panelist.
- 2012 “Geographic Information Systems as a Tool for Risk Management and Emergency Response”. Regional Workshop for Response Team. Pan American Health Organization. Bogota.

2009 4th Caribbean Conference on Comprehensive Disaster Management. “Strengthening CDM through Youth and Community Empowerment”. Montego Bay, Jamaica.

## RESEARCH EXPERIENCE

- 2020 **Research Intern**  
*Pan American Health Organization (PAHO/WHO)*
- Collect and prepare geographic and non-geographic information required for emergency response (basic cartography, census, and health centers’ capacity)
  - Create maps and geo-visualizations to inform emergency response decisions
  - Provide support in the analysis of the existing information related to emergency response, hazards, and vulnerabilities
- 2014 - 2020 **Doctoral Researcher**  
*Geography Department. UC Santa Barbara.*
- Cleaned and pre-processed social media data as well as spatial data related to hazards and disasters.
  - Designed new visuals and an interactive web app to explore and analyze spatio-temporal data related to disasters and Twitter content.
  - Evaluated the role played by both the temporal evolution of the disaster and the spatial distribution of tweets in summarizing their content for emergency management.
  - Designed a geographic and content-based approach for classifying and filtering tweets during weather-related disaster events.
- 2019 **Research Assistant**  
*Ventura Heatmap Project.*  
 UCSB Transportation and Parking Services.
- Created heatmap to guide the location of new park-and-ride points for UCSB students in Ventura county. The map was created using R software.
  - Cleaned dataset with bus riders addresses and geocoded them. Fall.
- 2016 **Research Assistant**  
*Project on the UC Carbon Neutrality Initiative.*  
 Campus Sustainability Program. UC Santa Barbara.
- Determined optimum locations for solar panels on UCSB campus based on LIDAR images. Summer.
- 2006 - 2009 **Graduate Student Researcher**  
*Masters dissertation: “Landslides Susceptibility Mapping Based on Technical and Social Approaches in the Viejo River Basin, Puriscal- Costa Rica ”*  
 Department of Geology. University of Costa Rica.

2006

**Research Assistant**

*Project on the Application of Geographic Information Systems and Remote Sensing Techniques to Identify Unstable Slopes in Costa Rica.*

Department of Geology. University of Costa Rica.

- Assisted fieldwork and lab work such as: Digital image processing, satellite image classification, maps creation and aerial photos georeferencing.

**TEACHING EXPERIENCE****Instructor**

Currently teaching the following courses in the Online Geospatial Education program at Penn State:

GEOG 486 Cartography and GeoVisualization. Fall 2021

GEOG 586 Geographical Information Analysis. Fall 2021

Planned and led a hybrid class for 160 students which lectures are online and labs are in person. Created some of the labs to be taught in section, led a group of six Teaching Assistants and planned lessons and assignments for the following courses at UC Santa Barbara:

GEOG W12 Maps and Spatial Reasoning. Summer 2018 and 2019. (Fully Online)

GEOG W12 Maps and Spatial Reasoning. Spring 2019. (Hybrid version)

**Lead Teaching Assistant**

Served as lead TA for the Geography Department at UCSB during the academic year 2018-2019 and assist the following course for graduate students:

GEOG 500 Teaching Assistant Training. Fall 2018.

**Graduate Teaching Assistant**

Led weekly lab sections and discussions, graded assignments and held office hours for the following courses at UC Santa Barbara:

*Upper Division*

GEOG 183 Cartographic Design and Geovisualization. Winter 2015, and Spring 2016 and 2017.

GEOG 176B Technical Issues in GIS. Winter 2014.

GEOG 126 Maps in Science and Society. Winter 2016 and 2018.

GEOG 128 Analytical and Computer Cartography. Winter 2017.

GEOG 141A Population Geography. Winter 2019.

*Lower Division*

- GEOG W12 Maps and Spatial Reasoning. Fall 2014, 2015, 2017 and 2019; Summer 2015; and Spring 2018
- GEOG 5 People, Place, and Environment. Fall 2016 and Summer 2017.

**Course Design Assistant**

Designed the lab on “Events” as core concept of spatial information.

GEOG 176A *Introduction to Geographic Information Systems*. Spring 2015.

**Undergraduate Research Mentor**

Held regular meetings, managed and guided students activities including research design and use of tools such as ArcGIS, R, QGIS or Tableau. Also, provided recommendations and career advice as needed.

- 2016 Student: Monica Lemus Valencia  
Project Title: Mapping Mexico’s Narco Trafficking: The Spatial-Temporal Distribution of Cartel Violence and Political Control
- 2016 Student: Corrie L. Monteverde  
Project Title: 2016 Earth Day Weekend: Analysis of Environmental Tweets for California

**Undergraduate Lab Assistant**

Assisted weekly lab sections and held office hours for the following courses at the Distrital University:

- 2005 Satellite Geodesy. Engineering Department.
- 2002 Topography. Engineering Department.

**SKILLS**

- *Programming languages:* R, Python, Java, Latex and Matlab.
- *Proficiency in GIS and Remote Sensing Software:* QGIS, ARCGIS, ILWIS, Tableau, ERDAS, ENVI.
- *Other:* Linux (Ubuntu).
- *Languages:* Spanish (native speaker) and English (fluent).

**FELLOWSHIPS AND AWARDS**

- 2019 Doctoral Student Travel Grant. UCSB Academic Senate
- 2016, 2017, 2019 Jack & Laura Dangermond Travel Fellowship
- 2013 IFGI semester Scholarship. Institute for Geoinformatics, University of Münster.
- 2005 Outstanding Dissertation Award. Distrital University “Francisco Jose de Caldas”.

**RELATED PROFESSIONAL EXPERIENCE (INDUSTRY AND GOVERNMENT)****2012 GIS Team Leader**

*Institute of Planning and Promotion of Energy Solutions in the Non-Interconnected Zones –IPSE. Colombia.*

- Defined, managed and led the strengthening of the geographic information system for the institution, SIGIPSE.

**2011 GIS Analyst**

*Colombian Institute for Rural Development.*

- Created maps of natural hazards and risk zones for the areas predefined for rural development.

**2010 Senior Consultant**

*Joined Program for Ecosystem Integration and Adaptation to Climate Change in the Colombian Massif, UNDP Colombia.*

- Identified natural hazards and evaluated vulnerability and risk scenarios in the Municipality of Purace, Cauca.
- Conducted interviews with different actors in the community such as community leaders and local government involved in disaster risk management.
- Led a team of 18 field assistants to collect geographic data using GPS receivers.
- Trained community leaders to use GIS tools.
- Guided the incorporation of the risk studies into Life Plans and Environmental Plans for Indigenous Communities.
- Prepared government reports and presentations and contributed to the project publications.

**2005 Research Assistant**

*Digital Map of Bogota. Temporal Union.*

- Determined accurate geographic coordinates based on GPS data collection and Aerial Photographs for the first digital map of Bogota city.

**NON-DEGREE COURSE PROFESSIONALIZATION**

2013 Courses in the Master's programs in Geoinformatics and Geospatial Technologies. Institute for Geoinformatics. University of Münster.

2009 "Multi-criteria analysis with applications to Urban Planning and Risk Mitigation". By Dr. Lorena Montoya, Specialist in Urban Disaster Management. University of Costa Rica.

2009 Earthquake-Resistant Constructions and How to Inspect Buildings After an Earthquake. National University of Colombia.

2008 Rapid Response to Natural Disaster in the Andean Community- New Approaches to Connect Those Involved with Spatial Information. Geo-Information Science and Earth Observation International Institute (ITC). Bogota, Colombia.

2008 Landslides Alert and Risk Assessment in Central America. United Nations University and ITC School for Disaster, Antigua, Guatemala.

- 2008 Comprehensive Risk and Disaster Management. Comprehensive version using virtual technology CIMNE-Structuralia. Environmental Studies Institute, National University Manizales, Colombia.

## LEADERSHIP AND SERVICE

- 2019 *Department of History of Art and Architecture. UC Santa Barbara.*  
Co-Taught with Prof. Keith Clarke a hands-on mapping workshop as part of the Digital Image Lab Series.
- 2019 *Association of American Geographers Annual Meeting*  
Panel Organizer/Moderator/Chair –Session: Geospatial Methods and Tools for Disaster Risk Management and Hazards Mapping.
- 2018 *R-Ladies Bogota, Colombia*  
Gave a talk on how to use R for mapping and spatial analysis.
- 2017 *Schools for Scientific Thought. UC Santa Barbara.*  
Designed and taught a 5-week course for high school students entitled “Tools and Technologies to Explore the World”.
- 2016 *Clubes de Ciencia Colombia.*  
Designed and taught a week-long course for high schools students entitled “GeoClub: The Power of Geographic Information, Communities and the Web”. A description of this experience is available at: <http://geog.ucsb.edu/~amsuarez/post/2015-07-23-r-rmarkdown/>
- 2016 *Geography Awareness Week.*  
Gave a talk on maps and geospatial technologies to 5<sup>th</sup> graders at Mckinley Elementary School.
- 2014 *4-H GIS Project: Building a UCSB Scavenger Hunt.*  
Teamed up with fellow grad students to teach 4-H participants to navigate with a map, use a GPS device and visualize geographic data. An article about this project is available at: <https://goo.gl/5qrj1j>
- 2013 *Geography Awareness Week.*  
Gave a talk on natural hazards and environment to 6<sup>th</sup> graders at Mckinley Elementary School.

Peer reviewer for the *International Journal of Geographical Information Science. 2018*

Volunteer for community services

- Member of R-ladies Santa Barbara since 2018
- Member of UCSB Geography Visibility and Outreach Committee 2014
- Member of UCSB Women in Geography Club 2016.

## Professional Affiliations

Association of American Geographers (AAG)

Cartography and Geographic Information Society (CaGIS)