

# Richard Matthew Medina

Department of Geography  
University of Utah  
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## Areas of Specialization

Complex systems, GIS/GISc, human geography, spatial analysis, anthropogenic hazards

## Present Employment

- 2014 (August) - Assistant Professor, Department of Geography, University of Utah, Salt Lake City, UT.  
2014 (May) - Affiliate Faculty, Department of Geography and GeoInformation Science, George Mason University, Fairfax, VA.

## Previous Academic/Research Appointments

- 2011-2014 Assistant Professor, Department of Geography and GeoInformation Science, George Mason University, Fairfax, VA.  
2010-2011 Research Scientist, Oak Ridge National Laboratory, Oak Ridge, TN.  
2009-2010 Postdoctoral Research Associate, Oak Ridge National Laboratory, Oak Ridge, TN.  
2006-2007 Research Assistant, Southwest Consortium for Environmental Research & Policy (SCERP), University of Utah.  
2005-2009 Teaching Assistant, Department of Geography, University of Utah.  
2003 Teaching Assistant, Department of Geography and Urban Analysis, California State University, Los Angeles.  
2001-2002 Research Assistant, Center for Environmental Analysis – Centers of Research Excellence in Science and Technology (CEA-CREST), California State University, Los Angeles.

## Visiting and Temporary Appointments

- 2013- Associated Researcher, Network Science Center, United States Military Academy, West Point, New York.  
2012-2013 Graduate Course Instructor, Army Geospatial Center, Springfield, VA.  
2008-2009 Visiting Scholar, International Centre for Political Violence and Terrorism Research (ICPVTR), Institute of Defense and Strategic Studies, Nanyang Technological University, Singapore.

## Courses Taught

Population Dimensions of Global Change  
Geography of Terrorism and Homeland Security  
Human Terrain Analysis  
Human Geography  
Earth Environments and Global Change

World Regional Geography  
Physical Geography  
Spatial Data Structures  
Spatial Modeling with GIS (Lab Section)  
Spatial Database Design for GIS (Lab Section)

## Education

- 2009 Ph.D. (Geography), University of Utah, Salt Lake City, UT; Doctoral Dissertation – *Use of Complexity Theory to Understand the Geographical Dynamics of Terrorist Networks*.
- 2004 M.A. (Geography), California State University, Los Angeles, CA; Master's Thesis – *Solid Waste Generation: A California Case Study*.
- 2002 B.A. (Geography) & Minor (Mathematics), California State University, Los Angeles, CA.
- 2000 A.A./A.S. Pasadena City College, Pasadena, CA.

## Publications and Presentations

### Peer Reviewed Journal Articles

- In preparation Medina, R. M. Information Technologies and Islamist Terrorism: The Benefits of Geospatial Information and Social Media.
- In preparation Medina, R. M., Cervone, G., Waters, N., and Hicks, A. Characterizing and Predicting Traffic Accidents in Extreme Weather Environments.
- In review Lee, A. and Medina, R. M. The Elemental Problems Associated with Command Level Assessment Processes in Counter Insurgency Operations. *Parameters*.
- In press Medina, R. M. From Anthropology to Human Geography: Human Terrain and the Evolution of Operational Sociocultural Understanding. *Intelligence and National Security*.
- 2013 Bahgat, K. and Medina, R. M. An Overview of Geographical Perspectives and Approaches in Terrorism Research. *Perspectives on Terrorism* 7(1):38-72.
- 2012 Medina, R. M. Social Network Analysis of the Islamist Terrorist Network. *Security Journal* (Early publication online, to be printed in 2014).
- 2011 Medina, R. M., Siebeneck, L. K., and Hepner, G. F. A Geographic Information Systems (GIS) Analysis of Spatiotemporal Patterns of Terrorist Incidents in Iraq 2004-2009. *Studies in Conflict and Terrorism* 34:862-882.
- 2011 Medina, R. M. and Hepner, G. F. Advancing the Understanding of Sociospatial Dependencies in Terrorist Networks. *Transactions in GIS* 15(5): 577-597.
- 2011 Kobayashi, T., Medina, R. M., and Cova, T. J. Visualizing Diurnal Population Change in Urban Areas for Emergency Management. *The Professional Geographer* 63 (1):113-130.
- 2009 Siebeneck, L. K., Medina, R. M., Yamada, I., and Hepner, G. F. Spatial and Temporal Analyses of Terrorist Incidents in Iraq, 2004-2006. *Studies in Conflict and Terrorism* 32 (7):591-610.

- 2008 Modello, C., Hepner, G. F., and Medina, R. M. ASPRS 10-Year Industry Forecast: Phase V. *Photogrammetric Engineering & Remote Sensing* 74 (11):1297-1305.
- 2007 LaDochy, S., Medina, R., and Patzert, W. Recent California Climate Variability: Spatial and Temporal Patterns in Temperature Trends. *Climate Research* 33 (2):159-169.

#### Refereed Conference Proceedings

- 2013 Hannigan, J., Hernandez, G., Medina, R. M., Roos, P., and Shakarian, P. Mining for Spatially-Near Communities in Geo-Located Social Networks. Association for the Advancement of Artificial Intelligence - Social Networks and Social Contagion: Web Analytics and Computational Social Science, Arlington, VA. November 15-17.

#### Books

- 2013 Medina, R. M. and Hepner, G. F. *The Geography of International Terrorism: An Introduction to Spaces and Places of Violent Non-State Groups*. Boca Raton: Taylor & Francis/CRC Press.

#### Book Chapters

- 2008 Medina, R. and Hepner, G. F. Geospatial Analysis of Dynamic Terrorist Networks. In *Values and Violence: Intangible Aspects of Terrorism*, eds. I. Karawan, W. McCormack, and S. E. Reynolds. Berlin: Springer.

#### Other Publications

- 2012 Hepner, G. F. and Medina, R. M. Understanding the Geography of Terrorism. *Earth Imaging Journal*. Sept/Oct: 24-25.
- 2013 Medina, R. M. Commentary on the Boston Marathon Attacks. The Geosocial Gauge, George Mason University, April 19. Available from: <http://geosocial.gmu.edu/2013/04/live-reactions-to-the-boston-marathon-bombs/>.
- 2013 (Interview) Hagan, K. The Terrain of Terrorism: Academics from Two USGIF-Accredited Universities Collaborate on New Textbook. *Trajectory Magazine*. United States Geospatial Intelligence Foundation (USGIF), 2:8.

#### Invited Presentations

- 2013 Terrorism, Transnational Crime and Corruption Center (TraCCC), George Mason University, "The Geography of Terrorism." Arlington, VA., May 17.
- 2011 L3 Communications, "The Geographic Spread of Terrorist Organizations." Conference on International Terrorism: The Arab World and Beyond. Annapolis Junction, MD., November 30.
- 2011 National Geospatial-Intelligence Agency, "Geospatial and Temporal Characterization of Human Terrain in the Context of Terrorism Research." Reston, VA., January 25.

- 2010 The University of South Carolina, "Sociospatial Analysis of the Islamist Terrorist Network." Geography Department Colloquium. Columbia, SC., January 29.
- 2008 The International Centre for Political Violence and Terrorism Research (ICPVTR), Nanyang Technological University, "Social Network Analysis and GIS for Terrorism Research." Singapore, June 18.

#### Conference Presentations

- 2014 Medina, R. and Holby T. "The Geography of American Radicalization" Annual Meeting of the Association of American Geographers (AAG), Tampa, FL., April 8-12.
- 2011 Medina, R. and Omitaomu, O. "The Complexity of Terrorism in Nigeria." Annual Meeting of the Association of American Geographers (AAG), Seattle, WA., April 12-16.
- 2010 Medina, R., Siebeneck, L. K., Yamada, I., and Hepner, G. F. "Spatial and Temporal Analysis of Terrorist Incidents in Iraq, 2004-2009." Annual Meeting of the Association of American Geographers (AAG), Washington D. C., April 14-18.
- 2009 Medina, R. "Sociospatial Analysis of the al-Qaeda Terrorist Network." Annual Meeting of the Association of American Geographers (AAG), Las Vegas, NV., March 22-27.
- 2008 Modello, C., Hepner, G. F., and Medina, R. M. "ASPRS 10-Year Industry Forecast: Phase V." Annual Meeting of the American Society for Photogrammetry and Remote Sensing (ASPRS), Portland, OR., April 27-May 2.
- 2008 Medina, R. "Use of Complexity Theory to Understand the Geographical Dynamics of Terrorist Networks." Annual Meeting of the Association of American Geographers (AAG), Boston, MA., April 15-19.
- 2007 Kobayashi, T., Medina, R., and Cova, T. J. "Visualization of Continuous Diurnal Average Population: A Case Study in Salt Lake County, Utah." Annual Meeting of the Association of American Geographers (AAG), San Francisco, CA., April 17-21.
- 2007 Medina, R. and Hepner, G. F. "Terrorist Networks in Social and Geographic Space." *Values and Violence: Intangible Aspects of Terrorism*. Salt Lake City, UT., March 2-3.
- 2005 Medina, R., Gongora, G., LaDochy, S., and Patzert, W. "Recent California Climate Variability: Spatial and Temporal Temperature Trend Patterns." Annual Meeting of the American Meteorological Society, San Diego, CA., January 9-13.
- 2004 Medina, R. "Waste and Sustainability: A Prediction and Analysis of Tomorrow's Waste and the Turmoil it May Bring." The 100<sup>th</sup> Annual Meeting of the Association of American Geographers (AAG), Philadelphia, PA., March 14-19.
- 2004 Medina, R. and Gongora, G. "California Climate, 1950-2000: Is There a Need for Concern?" Annual Conference of the California Geographical Society, Long Beach, CA., April 22-24.

## **Funded Research**

- 2013-2014 Co-I - Assessing the Value of Neo-Geographic Information. Army Geospatial Center / ERDC Contracting Office / Army Topographic Engineering Center (\$142,548/1 yr from \$545,922/5 yr total award, option year 3 of 4) Award dates: 9/24/2013 - 9/23/2014.
- 2013-2015 Co-PI – Understanding Network Socio-Geographic Dynamics: Using Smartphones to Locate, Track, and Study Goal Directed-Team Behaviors. Army Research Institute (\$337,566/2 yrs).
- 2013-2014 PI – Monitoring Post-Fire Vegetation Recovery Five to Twenty Years after a Fire Event in Winnemucca District, NV. United States Bureau of Land Management (\$20,000/5 mo).
- 2013-2014 PI – Toward a Unified Understanding of International Terrorism: The Geography of a Definition. Center for Global Studies, George Mason University (\$2,500)
- 2011-2012 Co-PI – Modeling Long Term Population Resettlement under Climate Change Scenarios. LDRD Internal Grant, Department of Energy (\$780,000/2 yrs)
- 2011-2011 Co-PI – Sociocultural and Demographic Characterization of the Pakistan/Afghanistan Border Region. United States Strategic Command (\$280,000)

## **Honors and Awards**

- 2013 United States Geospatial Intelligence Foundation Research Achievement Award (<http://usgif.org/community/usgifAwards>)
- 2008 United States Geospatial Intelligence Foundation Graduate Scholarship (\$5,000)
- 2008 Institute of Public and International Affairs, University of Utah Travel Grant (\$4,000)
- 2005 Martin Harris Hiatt Memorial Graduate Scholarship (\$5,000)
- 2004 Thomas McKnight Professional Paper Award (\$125)
- 2004 G. Etzel Percy Memorial Scholarship (\$600)
- 2004 Excellence in Graduate Programs Initiative (\$3,200)

## **Graduate Student Supervision (Chair of Committee in Bold)**

Ph.D. Degree

- 2014 Bianca Pint (George Mason University) – When People Rebel: A Computational Approach to the Study of Violent Collective Action
- 2013 Emily Schnebele (George Mason University) – *Volunteered Geospatial Data Fusion for Improved Flood Disaster and Transportation Network Assessment*
- 2013 Carter Christopher (George Mason University) – *Migration and the Migrant in Major U.S. Metropolitan Areas during America's 'Great Recession'*
- 2013 Chris Oxendine (George Mason University) – *Multi-Objective, Multi-Criteria Dynamic Routing of Evacuees Using Volunteered and Ambient Geographic Information.*

In Progress

**Aisha Haynes** (George Mason University)

Alec Barker (George Mason University) – *Understanding Network Socio-Geographic Dynamics: Using Smartphones to Locate, Track, and Study Goad-Directed Team Behaviors*

Xi Mei (George Mason University) – *Optimizing a Bulky Waste Collection System: A Case Study of Fairfax County*

Christopher Braun (George Mason University) – *The Dynamics of Conflict and the Changing Relative Dominance of Population Groups: Understanding Geospatial Patterns in Geography and Narrative*

**Anthony Lee** (George Mason University)

Andy Eck (George Mason University)

Jason Shapiro (George Mason University)

**David Harris** (George Mason University)

Master's Degree

2014

**Christine Dougherty** (George Mason University) – Long-Term Monitoring of Post-Fire Vegetation Recovery: A Case Study in Winnemucca District, Nevada

2013

**Maria Cabassa** (George Mason University) – Comprehensive exams

2013

Jimmy Bryant (George Mason University) – *Finding the Optimal Locations for Bike Sharing Stations: A Case Study within the City of Richmond, Virginia.*

2013

**Christa Goldsborough** (George Mason University) – Comprehensive exams

2013

Elizabeth Hull (George Mason University) – Comprehensive exams

2012

John Cooke (George Mason University) – *A Linear Referencing Analysis of Traffic Incidents and Land Use Changes: A Case Study from Culpepper, Spotsylvania, and Orange Counties, Virginia.*

2012

Aisling Chapin (George Mason University) – *Implementing a Co-Location Model in Network Space.*

2011

Thomas Zumbado (University of Utah) – *Investigation of the Philosophical Changes of the Abu Sayyaf Group Using Geospatial Analysis.*

In Progress

**Thomas Holby** (George Mason University)

**Michael Rushin** (George Mason University)

**Aubrey Larsen** (George Mason University)

**Jessica Fayne** (George Mason University)

**Jason Warne** (George Mason University)

**Sabiha Qureshi** (George Mason University)

Patricia Pease (George Mason University) - A Study of the Influence of Training on Position and Attribute Accuracy in Geo-Crowdsourcing and Citizen Science Applications

Other Mentoring

2013

Matthew McCarthy – Bachelor of Individualized Study (BIS) in *Geographic Information Systems in Human Geography*. Project title:

Native American Population Decline during the Nineteenth Century.  
George Mason University.  
2011 (Summer) John Buerhaus – Student Undergraduate Laboratory Internship (SULI) at ORNL

### **Service**

#### University/College/Departmental Service

2013 Acquired web-GIS based internship for graduate student (Michael Rushin) at TransVoyant in Alexandria, VA.  
2013- GMU, Department of Geography and GeoInformation Science Associate Undergraduate Advisor  
2012- GMU, College of Science Nominations Committee  
2012- GMU, Department of Geography and GeoInformation Science Infrastructure Committee  
2012- GMU, Department of Geography and GeoInformation Science Admissions Committee (Chair of committee 2013-2014)  
2012/2013 GMU Department of Geography and GeoInformation Science GIS Day Poster Competition Committee

#### Manuscript Reviewer

Terrorism and Political Violence, International Journal of Geographic, Information Science, Water Resources Research, Security Journal, Oxford University Press, McGraw-Hill, Cartographica, Professional Geographer American Journal of Sociology, Narrative and Conflict: Explorations in Theory and Practice, Applied Mathematics and Information Sciences

### **Related non-Academic Positions**

2007-2009 GIS Analyst, Digitally Integrated Geographic Information Technologies (DIGIT) Lab, University of Utah, Salt Lake City, UT.  
2005 Cartographic Technician, Los Angeles Unified School District, Los Angeles, CA.  
2003-2005 GIS Specialist, Property ID, Los Angeles, CA.

### **Appointments and Membership in Centers and Research Study Groups**

2012- World Wide Human Geography Data Working Group  
2011-2014 Faculty - Center for Geospatial Intelligence (CGEOINT), George Mason University, Fairfax, VA.  
2005-2009 Terrorism Working Group, Institute of Public and International Affairs (IPIA), University of Utah, Salt Lake City, UT.  
2006-2009 Center for Natural and Technological Hazards (C<sup>nth</sup>), Department of Geography, University of Utah.

### **Certificates and Other Training**

2002 Geographic Information Systems Certificate, California State University, Los Angeles.

### **Membership in Professional Organizations**

2006- American Society of Photogrammetry and Remote Sensing (ASPRS),  
President of student chapter 2006-2008.

2005- Gamma Theta Upsilon (GTU)

2004- Association of American Geographers (AAG)

2004-2010 California Geographic Society (CGS)

**TS Clearance 2010-2015, DOE/ORNL**