

Erich Seamon

Curriculum Vitae

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<http://erich.io>

Education

Ph.D. (in progress - ABD) in Natural Resources, University of Idaho. Research focus is on the examination of climatic relationships to agriculture thru the use of machine learning techniques. Completion expected in 2019. See <http://github.com/erichseamon> for my repositories, and <http://erich.io> for more specific detail on my research.

M.S. – Geosciences. Bowling Green State University, Bowling Green, OH. Focus on GIS and surficial processes. *Thesis: A GIS Model to Calculate Sediment Yields from a Small Rural Watershed, Old Woman Creek, Erie and Huron Counties, Ohio.* *Ohio Journal of Science vol. 97 (3): 44-52, 1997.*

B.A. – Geosciences, with GIS focus. Wittenberg University, Springfield, OH.

Certifications and Awards

- Project Management Professional (PMP) 2008 - Present
- Geographic Information Systems Professional (GISP) 2007 - Present
- Information Technology Infrastructure (ITIL) Foundation Certified 2008 – Present
- Xi Sigma Xi Natural Resource Honor Society
- Phi Kappa Phi Honor Society

Professional Experience

08/2014 – present – *Ph.D. Candidate and research assistant* - Climate Impacts Research Consortium (CIRC) PNW NOAA RISA team. As part of the Regional Integrated Sciences Assessment (RISA) team for the Pacific Northwest, I work to develop data mining and machine learning models that predict agricultural outcomes, with a focus on the impacts of drought on commodity insurance loss (www.pnwcirc.org).

12/2011 – 03/2018 – [Environmental Data Manager](#) – University of Idaho. Worked as a Senior Environmental Data Manager for a USDA/NIFA funded \$20M Coordinated Agricultural Project (CAP) that worked to improve the long-term profitability of cereal production systems in the Pacific Northwest, under ongoing and projected climate change. A core focus was developing geospatially based technical systems and data architectures to integrate varying datasets (modeling, emissions analysis, cropping systems, biotics, and hydrology) for analysis, management and review. Areas of effort include: Interactive Python development, NetCDF subsetting and aggregation for climatic model data examination, javascript web server development, geospatial database development, and geospatial metadata/data catalog development for natural resource-based data. The position was highly technical with 3 direct reports over the course of five years. With over 200 individuals on the team, I managed all data architecture aspects and GIS components to facilitate research work in a multitude of areas across three institutions (University of Idaho, Washington State University, and Oregon State University). ArcGIS, ArcGIS Server, REST, ArcGIS Online, and python GIS development were key aspects. You may review more information at www.reacchpna.org.

11/2005 – 02/2011. Principal, Erich Seamon and Associates. ESA's focus is on applying the use of advanced technology systems to make organizations successful – in multiple capacities. Core areas of focus include; Enterprise GIS development, GIS assessment and strategic planning, governmental systems architectural and life/cycle business development, water utility systems development, management, and assessment. Recent areas of effort include social services analysis and GIS (Portland, OR), enterprise GIS assessment (New Orleans – City of New Orleans, LA), and political campaign mapping for state and national party efforts. Additionally, provide expert witness and geospatial forensics services (www.erich.io)

12/2000 – 11/2005. Geographic Information Officer, City & County of San Francisco. San Francisco, CA. As a senior technology analyst and GIS manager for San Francisco, my role was to manage and serve as technical lead and senior manager for several business systems, including Enterprise GIS. Specific examples of such work include capital improvement (PUC, DPW), property/real estate analysis (Assessor/Recorder), integration of tax information with spatial data (Treasurer/Tax Collector), as well as close work with many city departments (Parks & Recreation, Police, Fire, Emergency Services, Municipal Railway, etc.) in the areas of technology procurement, resource management, systems evaluation, and inventory analysis. As CCSF's Geographic Information Officer, I developed and implemented SF's first Enterprise GIS, using common geospatial methods to disseminate information. ArcGIS, ArcGIS Server, ArcIMS, geospatial database management, metadata specification development, as well as map construction were key components.

5/1997 – 12/2000 Senior GIS Analyst, Marin Municipal Water District. Corte Madera, CA. As the manager of GIS activities at Marin County's primary water utility, my focus was on four major areas: 1) Development and management of MMWD's infrastructure

and natural resources technology systems thru the use of GIS technologies on Linux and Unix. 2) Served as the political/technical representative for MMWD's technology efforts, as it relates to working with several multi-agency consortiums (Marin Telecommunications Agency). 3) Oversight of MMWD's technical architecture. These duties entailed providing oversight for all UNIX/Windows systems, and their interactions with other legacy applications (Informix 7.2.1, Informix Spatial Data Blade). 4) Served as the project manager for all natural resource GIS development. This work entailed coordination and development of all GIS applications as they relate to projects such as fire modeling, sediment streambed monitoring, soil erosion analysis, and watershed modeling. Project planning, scope management, and oversight of GIS team development work were key aspects. UNIX, system administration, ArcGIS, ArcGIS server, AutoCAD, and Maximo work order management were key software components.

01/1997 - 04/1997 Senior Analyst, Jacobs Engineering Group, Sacramento, CA. As an environmental analyst, my main duties were to manage several advanced Oracle databases, as well as to utilize UNIX systems to develop modeling processes regarding groundwater and surficial contaminant analysis. Additionally, I collected field data regarding groundwater and surficial sampling methods and incorporated this data into working hydrological models. ArcGIS, UNIX, and Oracle were key software aspects.

08/1993 - 10/1996 Senior Applications Analyst, Northern Kentucky Area Planning Commission. Cincinnati/Northern KY Metro area. While working at the Northern Kentucky Area Planning Commission, my daily activities included technology work in support of the Commission's role as the primary planning organization for the tri-county area. Specific applications used were ARC/INFO, Dbase, Foxpro. Due to the NKAPC's efforts to provide services to many public and private agencies (Kenton Co. Public Works, Boone, Kenton and Campbell Co. Property Administrators, etc.), projects ranged from soil erosion and runoff predictability/watershed modeling to parcel land use management. Other activities included system administration, internal model planning and conceptual development, essential ARC/INFO manipulation, map and poster production, as well as AML, SML, and Avenue script writing. In 1995 the NKAPC was awarded ESRI's Outstanding Government in GIS award.

Research Funding Efforts

2011-2017: Regional Approaches to Climate Change for Pacific Northwest Agriculture. USDA Grant # 2011-68002-30191. REACCH examined the relationships of climate on cereal production systems in the Pacific Northwest, by bringing together over 200 scientists from Oregon State, Washington State, University of Idaho, and the USDA ARS (<http://www.reacchpna.org>).

2015-2020: Climate Impacts Research Consortium (CIRC) NOAA RISA Grant NA15OAR4310145. Active team member, as a PhD candidate, of the data mining portion of the project, exploring relationships of drought to agricultural commodity loss, using machine learning techniques (<https://pnwcirc.org>).

2018-2020: Co-Principal Investigator, Socio-ecological feedback systems and soil health. Funded by the Socio-Environmental Synthesis Center (SESYNC), this project brings together 15 leading scientists in soil health, agricultural policy, and climate resilience to explore modeling techniques to assess human relationships to soil health (<http://www.soilhealthfeedback.org>).

Select Consultancy and Expert Witness Testimony

Expert Witness – Willits vs. City of Los Angeles – 2013. Provided data mining and geospatial technology analysis for a class action lawsuit related to the Americans with Disabilities Act (ADA). [Settlement reached in case 2015 - 1.4 billion to plaintiffs - largest disability class action lawsuit settlement in U.S. History.](#)

Expert Witness – Piper vs. RGIS – 2009. Provided data mining/geospatial technology analysis for a nationwide class action lawsuit related to employment discrimination for related to a major big box organization with locations across the United States.

Research Collaboration & Leadership

-Have participated in efforts involving large data consolidations for both academic and governmental entities in the last five years (2013-2018) (www.reacchpna.org, www.pnwcirc.org, www.soilhealthfeedback.org)

-Led data management efforts around agriculture and data science using python, R, and TensorFlow. Apache Spark, MapReduce, Tomcat.

-Active Linux administration/systems programming experience. I am extremely comfortable as an end-to-end developer in design, deployment, and construction.

-Organized training and workshop efforts for data management

-Led Python-focused scientific discovery sessions for students involved in ecological and agricultural research at the University of Idaho

-Extremely competent in all forms of GIS development and analysis. ArcGIS, Mapserver, Postgres/PostGIS, Oracle Spatial Data Blade, QGIS.

Machine Learning and Statistical Modeling Experience

- Actively develop a multitude of algorithmic models related to a variety of disciplines, including agriculture, climate, survey processing, soil health (Naive Bayes, Decision Trees/Random Forest, Support Vector Machines, Convolutional and Long/Short Term Memory (LSTM) Neural Networks.
- Am well versed in frequentist statistics techniques (linear regression, ANOVA/MANOVA, repeated measures, factor analysis, data transforms
- Use large grouping of typical ML techniques to model improvement: ensembling, all variations of cross validation (LOOCV, 10 fold, etc), probabilistic and continuous error analysis, hyper parameter tuning.
- Use R and python for machine learning model construction
- Regularly perform feature extraction/feature transformation, data normalization, imputation, dummy coding
- Am very familiar with zero-inflated modeling techniques
- Deploy using Amazon Cloud/Web Services, or on independent high performance computing systems that are local
- Provide access to model construction via my GitHub repositories at <http://github.com/erichseamon>

Project Management Experience

- PMP and ITILF certified, and have led technology project teams for academic, private sector, and government. For example, I developed and implemented the City of San Francisco's first Enterprise GIS program across 65 city agencies.
- Agile, Waterfall and Scrum methodology experienced. I apply multiple approaches based on team makeup and project type. My goals are to be flexible and malleable to drive projects forward, on time, within budget and on scope. For example – I was the project manager for the City of Pittsburgh's GIS E-911 street address data development, thru my consulting firm, Erich Seamon and Associates (2009).
- Strong presenter and conveyor of technology outcomes to leadership and customers. I pride myself on my abilities to present information in ways that are understandable, cutting thru any technology jargon. I have given many presentations on GIS technology topics for private firms as well as many conferences (ESRI, GITA, URISA, AGU).

Private Sector and Governmental Leadership

-Provided technology leadership for multiple government organizations in relation to IT (City and County of San Francisco, Marin Municipal Water District, NKAPC).

-Extremely familiar with multi-regional GIS integration and coordination. I have performed such tasks at both the Marin Municipal Water District as well as the City and County of San Francisco. I developed SF's Enterprise GIS efforts which involved facilitating a majority of city agencies to sign agreements to financially engage with an Enterprise GIS model for data sharing, application development, and content coordination.

-At the Marin Municipal Water District, served as the liaison for MMWD with the Marin Telecommunications Agency's GIS coordination effort for infrastructure GIS integration between 21 cities in Marin County, CA. We developed a Joint Powers Authority (MarinMAP) for this data sharing process.

-Supported ~20 city departments with regard to ancillary, non-GIS technology @ San Francisco (employee base of 25,000) – including SFGOV TV, assessment, tax collection, public works, public utilities.

-Extensive project management experience with GIS focused projects, +20M, PMP and ITIL certified. For example, worked with CIBER, Inc. to assist the City of New Orleans right after Katrina, traveling to the region to provide GIS expertise for emergency efforts.

-Served as analyst and manager on several long term complex technology projects – including:

- Fire Modeling, in coordination with Marin County Fire;
- Parcel/Service Meter relationship development;
- Erosion and sedimentation modeling for the Mill Valley Watershed;
- Parcel and Public works technology application development;
- Technology and project management for PUC/DPW, Assessor/Recorder, Treasurer/Tax Collector, Parks Rec, Muni @ CCSF. Technology and project management, technology liaison, interfacing with agency leadership as a DTIS representative
- Technology cost management, budget management
- Project team leading, mentoring, leading other project managers to be successful

Scientific Experience and Skills

- Experienced with all forms of Geographic Information Systems (GIS) software, including ArcGIS Desktop, ArcGIS Server, ArcSDE, ERDAS, GRASS, QGIS, MapInfo, MapReduce.
- Extensive programming experience in R and Python. Well versed in parallel processing libraries for python and R.
- Database experience: Well versed in database structures and SQL scripting using PostgreSQL, Oracle, DB2, SQL Server, MySQL, MongoDB. Strong database development and modeling, as well as UML design experience (Visio).
- Have performed extensive GIS analyses in both desktop and server-based environments. Experienced with map projections, coordinate systems, spatial statistics, georeferencing, and geo-metadata development.
- Experienced with Apache and Tomcat server technology, Java/Javascript, PERL.
- UNIX and Linux administrator experience – very knowledgeable in shell scripting, and typical UNIX interaction. I was previously certified as a UNIX systems administrator.
- Experienced in geospatial data mining with regards to large databases/systems – and providing analytical perspectives (report, presentation, data model review, etc.).
- Experienced in the day to day management and quality control of technology systems, including data management, help desk management, backup, disaster recovery and business continuity, code management, and system/application security. ITILF certified.

Classes Taught

Introduction to Geospatial Analysis for Natural Resource Management, Forestry 375. Spring 2016. 70 students, one teaching assistant.

Recent Publications

Gartstein, M.A., Seamon, E., Thompson, S.F., Lengua, L., 2018. "Community Crime Exposure and Risk for Obesity: Examining Child Hypothalamic–Pituitary–Adrenal (HPA)-Axis Response as a Moderator" *Journal of Pediatric Psychology*. doi: 10.1093/jpepsy/jsx116.

Gartstein, M.A., Seamon, E., Thompson, S.F., Lengua L. 2018. "Parenting matters: Moderation of biological and community risk for obesity" *Journal of Applied Developmental Psychology*. doi: 10.1016/j.appdev.2018.01.004

Seamon, E, Roesch-McNally, G., McNamee, L., Roth, I., Wulfhorst, J., Eigenbrode, S., & Laursen, D., 2017. "Producer Perceptions on Climate Change and Agriculture: A Statistical Atlas" University of Idaho Agricultural Economics Extension Series 17-01. Funded through award #2011-68002-30191 from USDA-NIFA.

Gartstein, M.A., E. Seamon, 2017. "Latent Profile and Cluster Analysis of Infant Temperament: Comparisons across Person-Centered Approaches" *Developmental Psychology*. doi: 10.1037/dev0000382.

Gartstein, M.A., E. Seamon, T.J. Dishion, 2013. "Geospatial Ecology of Adolescent Problem Behavior: Contributions of Community Factors and Parental Monitoring" *Journal of Community Psychology*. doi:10.1002/jcop.21610

Seamon, E. 2000 "Water Management in Marin County, CA; Development and Implementation of a Complex Water Utility GIS to Manage Both Infrastructure and Natural Resources" 2000. Environmental Systems Research Institute (ESRI) Conference Proceedings, San Diego, CA.

Evans, J.E., Seamon, E. 1997. "A GIS Model to Calculate Sediment Yields from a Small Rural Watershed, Old Woman Creek, Erie and Huron Counties, Ohio" *Ohio Journal of Science* vol. 97 (3): 44-52, 1997.

Recent Select Presentations and Posters

Seamon, E., Gessler, P.E., Eigenbrode, S., Nelson, R., Stockle, C. 2015. "REACHPNA and data management" USDA Data Harmonization Workshop, Washington DC

Seamon, E., Gessler, P.E., Flathers, E., Sheneman, L. 2015. "Climatic Data Analysis and Data Management: Regional Approaches to Climate Change for Pacific Northwest Agriculture" University of Idaho GIS Day, Presentation, Idaho Commons

Flathers, E., Gessler, P.E., Seamon, E., 2015. "Implementation of an OASIS Repository using Free, Open Source Software" AGU Fall Meeting.

Seamon, E., Gessler, P.E., Flathers, E., 2015. "Development of an Interactive Crop Growth Web Service Architecture to Review and Forecast Agricultural Sustainability" AGU Fall Meeting.

Seamon, E., Gessler, P.E., Flathers, E., Sheneman, L. 2015. "Data Management and Integration for Transdisciplinary Research: REACHPNA" *Arid Cereals International*

Conference, Minneapolis, MN. Poster

Seamon, E., Gessler, P.E., Flathers, E., Walden, V.P. 2014. "Development of an interactive crop growth web service architecture to review and forecast agricultural sustainability" Poster presentation at the American Geophysical Union Fall Meeting

Seamon, E., Gessler, P.E., Fricke, S. 2014. "Using geospatial information for agricultural climate change analysis" Presentation at the 2014 ESRI Users Conference, San Diego, CA.

Flathers, E., Gessler, P.E., Seamon, E., 2014. "Service-Based Extensions to an OASIS Archive for Science Data Management" AGU Fall Meeting

Seamon, E., Gessler, P.E., Flathers, E., Sheneman, L., 2013. "Climatic Data Integration and Analysis - Regional Approaches to Climate Change for Pacific Northwest Agriculture (REACCH PNA)" NIFA Climate Science Project Director's Meeting, Gainesville, FLA

Seamon, E., Gessler, P.E., Flathers, E., Sheneman, L., 2013. "Climatic Data Integration and Analysis - Regional Approaches to Climate Change for Pacific Northwest Agriculture (REACCH PNA)" Presentation at the American Geophysical Union Fall Meeting

Seamon, E., Gessler, P.E., Flathers, E., Sheneman, L., Goldberg, G. 2013. "Climatic Data Integration and Analysis - Regional Approaches to Climate Change for Pacific Northwest Agriculture (REACCH PNA)" Presentation at Pacific Northwest Climate Science Conference, Portland, OR

Seamon, Gessler, P.E., 2012. "Data Management and REACCH: Strategies and Implementation. University of Idaho" Poster - Annual REACCH CAP Conference

Gartstein, M.A., Dishion, T.J., Seamon, E., 2008. "Explaining Neighborhood Correlates of Adolescent Conduct Problems: the Geospatial Perspective." Presentation at the Annual Convention of the Society for Prevention Research, San Francisco, CA

Seamon, E., 2006. "Understanding Adolescent Behavior with GIS – a case study: Portland, Oregon" ESRI Users Conference, San Diego Convention Center, San Diego, CA

Seamon, E., Gartstein, M.A., Dishon, T. 2006. "Explaining neighborhood correlates of adolescent conduct problems in the Portland, Oregon metropolitan area: the geo-spatial perspective" Santa Fe, NM

Seamon, E., 2005. "Security, Privacy and GIS: Changing Perspectives in a Changing World" ESRI users conference. San Diego Convention Center, San Diego, CA

Seamon, E., 2005. "Implementing Enterprise GIS in San Francisco" American Planning Association National Conference, March 21-25, San Francisco, CA.

Seamon E., 2005. "Managing geographic information nationally: strategies for GIS governance" California GIS conference, Bakersfield, CA

Seamon, E., 2005. "SF Enterprise GIS: interactions and uses of geospatial databases" Northern California URISA presentation, Sacramento

Seamon, E., 2004. "Building a Successful Enterprise GIS in San Francisco, CA" ESRI Users' Conference 2004 - San Diego, CA

Seamon, E., 2004. "Fighting Crime in the 21st Century: Developing CrimeMAPS, SF's first dynamic crime analysis system" National Institute of Justice (NIJ) Seventh Annual Crime Mapping Conference, Boston, MA

Seamon, E., 2000. "Water Management in Marin County, California: Development and Implementation of a Complex Water Utility GIS to Manage Both Infrastructure and Natural Resources" ESRI Users Conference

Seamon, E., 1999. "Hydrological Modeling and the use of GIS as a predictive tool in environmental management" Northern Kentucky Area Planning Commission, KY