

# Curriculum Vitae - Karl Kent Benedict

## Contact Information

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## Education

July 2004, Ph.D., with Distinction, Anthropology, University of New Mexico.  
Dissertation Title: *Settlement and Subsistence in the Western Anasazi Core Area: Development and Assessment of a Risk Response Model*

May 1995, M.A., with Distinction, Anthropology, University of New Mexico.

May, 1986, B.A., Anthropology, University of California, Berkeley.

## Employment/Professional Experience

7/14-Present, University of New Mexico, College of University Libraries and Learning Sciences: *Associate Professor*

- Director of Research Data Services (7/14-Present)
- Faculty Librarian for the Centennial Science and Engineering Library (7/15-Present)
- Subject Librarian for Geography, Earth & Planetary Sciences (7/15-Present)
- Subject Librarian for the Life Sciences (7/15-4/16)

7/04-Present, University of New Mexico, Department of Anthropology: *Adjunct Professor*

4/08-Present, University of New Mexico, Geography Department: *Affiliated Faculty*

3/14-6/14, University of New Mexico, College of University Libraries and Learning Sciences: *Associate Professor - Geospatial and Environmental Data Scientist*

7/08-6/14, University of New Mexico, Earth Data Analysis Center: *Director*

9/11-3/14, University of New Mexico, College of University Libraries and Learning Sciences: *Research Assistant Professor*

2/01-6/08, University of New Mexico, Earth Data Analysis Center: *Senior Research Scientist, Research Scientist, IT Manager*

1/06-5/06, University of New Mexico, Department of Geography: *Part-time Instructor-Geography 499*

9/05-12/05, University of New Mexico, Department of Anthropology: *Part-time Instructor-Anthropology 372/572*

9/99-2/01, University of New Mexico, Earth Data Analysis Center: *Project Assistant*

9/98-2/01, National Park Service, Pecos National Historical Park: *Data Analyst*

5/95-2/01, Applied Earthworks, Inc.: *Data Analyst*

6/00-12/00, University of New Mexico, Office of Evaluation: *Project Assistant*

1/98-5/98, University of New Mexico, Department of Anthropology: *Instructor-Anthropology 120*

8/97-12/97, University of New Mexico, Department of Anthropology: *Teaching Assistant-Anthropology 372*

8/94-12/97, University of New Mexico, Department of Anthropology: *Graduate Assistant-Computer Lab Manager*

9/93-5/96, University of New Mexico, Computer Information Resources and Technology (CIRT): *Help Desk Liaison*

4/94-3/95, Ebert and Associates, Inc.: *Data Analyst*

6/93-1/94, Applied Earthworks, Inc.: *Data Manager (part-time)*

7/90-6/93, INFOTEC Research Inc./Applied Earthworks, Inc (name change for company): *Data Manager, Archaeological Field Director, Assistant Field Director, Lead Field Technician, Crew Chief, Field Technician*

2/89-7/90, U.S.F.S, Eldorado National Forest: *Archaeologist*

7/89, Malheur Field Station, Lithic Analysis Field School: *Teaching Assistant*

11/87-2/89, U.S.F.S., Stanislaus National Forest: *Archaeologist*

6/87-11/87, U.S.F.S., Eldorado National Forest: *Archaeological Technician*

2/87-3/87, California Archaeological Consultants: *Field Technician*

2/87, Archaeological Consulting and Research Service (ACRS): *Field Technician*

12/86, INFOTEC Research, Inc.: *Field Technician*  
11/86, ACRS: *Field Technician*  
10/86-11/86, Hager/Holson and Associates: *Field Technician*  
7/86-10/86, Archaeological Resource Service: *Field Technician, Lab Assistant/database developer*  
6/86, U.S.F.S., Eldorado National Forest: *Volunteer Archaeologist*  
8/85, University Research Expeditions Program: *Volunteer Archaeologist*

## **Consulting**

7/97-2/01, Karl Benedict Data Processing and Analysis: Consultant

## **College Service**

### **UNM - College of University Libraries and Learning Sciences**

2016 - Present, *College Assessment Committee*  
2016 - Present, *Presiding Officer*  
2015 - 2016, *Presiding Officer Elect*  
2015 - 2016, *Faculty Search Committee (Chair)* for the Research Support Librarian for the Life Sciences position  
2014 - Present, *Promotion & Tenure Committee* (Chair, 2015-Present)  
2014 - 2015, *Faculty Search Committee* for three faculty positions: Research Support Librarians for Engineering, Physical Sciences and Life Sciences  
2014 - 2015, *Committee on Committees*

### **UNM - College of Arts & Sciences**

2010, *Committee Member* (as a representative of UNM's College of Arts and Sciences) of UNM's Enterprise Email Steering Committee

## **University Service**

2016, *Committee Member*, UNM Research Strategic Planning Committee  
2015, *Contributor* to the UNM's Draft Data Center and Server Room Standard  
2013 - 2016, *Planning Committee*, CI-Day/D2K Planning Committee

2011 - Present, *Leadership Team Member*, University of New Mexico Research Storage Consortium

1998 - 2000, 2011 - 2013, *Committee Member*, University of New Mexico Faculty Senate Computer/Information Technology Use Committee

2001 - 2004, *Committee Member*, University of New Mexico Student Health Center Advisory Committee

2000 - 2001, *Committee Member*, University of New Mexico Strategic Planning Task Force

2000, *Committee Member*, University of New Mexico Acceptable Computer Use Policy drafting committee

1999 - 2004, *Committee Member*, University of New Mexico Student Health Insurance Committee

1999, *Committee Member*, University of New Mexico Free Expression Policy Drafting Committee

1999, *Committee Member*, University of New Mexico Graduate Enrollment Task Force

1998 - 2000, *Chair*, Graduate and Professional Student Association Council

1997 - 1998, *Chair*, Special Projects Committee, Graduate and Professional Student Association

1996 - 1998, *Representative*, Graduate and Professional Student Association

1996 - 1998, *President*, Anthropology Graduate Student Union

1996 - 1997, *Committee Member*, Special Projects Committee, Graduate and Professional Student Association

1995 - 1996, *Vice President*, Anthropology Graduate Student Union

## **Professional Service**

### **Advisory/Steering Committee Appointments**

2015 - Present, *Technical Advisory Committee (Chair)*, Digital Preservation Network

2014 - Present, *External Advisory Board Member*, US Virgin Islands NSF EP-SCoR Track 1 Project

2011 - 2014, *Member of the Data Management and Communications (DMAC) Steering Committee* of the Interagency Ocean Observation Committee (IOOC)

2010 - 2012, *Member of the National Advisory Council for Environmental Policy and Technology* for the US Environmental Protection Agency (EPA)

## **Elected Positions**

2014 - Present, *President* of the Foundation for Earth Science Board of Directors

2010 - Present, *Board Member*, Foundation for Earth Science Board of Directors

2008 - Present, *Working Group Chair*, Tri-State NSF EPSCoR Cyberinfrastructure Working Group

2012 - 2014, *President*, Federation of Earth Science Information Partners (ESIP Federation).

2012 - 2014, *Chair* of the Foundation for Earth Science Board of Directors

2011 - 2012, *Vice President*, Federation of Earth Science Information Partners (ESIP Federation). Member of Foundation for Earth Science Board of Directors

2010 - 2011, *Type III Representative*, Federation of Earth Science Information Partners (ESIP Federation). Member of Foundation for Earth Science Board of Directors

2004 - 2010, *Committee Chair*, Federation of Earth Science Information Partners (ESIP) Information Technology and Interoperability Committee

2002-2004, *Committee Member*, Federation of Earth Science Information Partners (ESIP) Information Technology and Interoperability Committee

2000, *Western Regional Fundraising Coordinator*, National Association of Graduate and Professional Students

2000, *Western Regional Coordinator*, National Association of Graduate and Professional Students

## **Proposal Review Panels**

2016, NASA Earth Science Applications: Health and Air Quality Review Panel

2014, NASA Earth Science Applications: Health and Air Quality Review Panel

2014, NM EPSCoR Diversity Innovation Working Group Review Panel

2013, NSF EPSCoR Reverse Site Visit Panel

2012, NSF Big Data Review Panel

2012, NASA SERVIR Applied Sciences

## **Journal Peer Review**

2016, *Big Data Research*

2015, *Earth Science Informatics*

2013, *Computers, Environment and Urban Systems*

2008, 2011, *International Journal of Geographical Information Science*

### Symposia Organized

1. ‘Federation of Earth Science Information Partners Summer Meeting, 2016’ held in Durham, NC, July 19-22. Co-convenor of session *Agile Data Curation in the Wild - What’s Your Story?* <http://commons.esipfed.org/node/9112>
2. ‘American Geophysical Union Fall Meeting, 2015’ held in San Francisco, CA, December 14-18, 2015. Co-convenor of session *Agile Curation, Data Access and Infrastructure, and Data Layers: Maximizing the Value of Research Data III*
3. ‘American Geophysical Union Fall Meeting, 2015’ held in San Francisco, CA, December 14-18, 2015. Co-convenor of session *Agile Curation, Data Access and Infrastructure, and Data Layers: Maximizing the Value of Research Data I Posters*
4. ‘Research Data Alliance, Sixth Plenary Meeting’. Paris, France. September 23, 2015. Session Co-Organizer - *BoF on Agile Curation - Part 2*.
5. ‘Research Data Alliance, Fifth Plenary Meeting’. San Diego, CA. March 10, 2015. Session Co-Organizer - *Deconstructing the Data Life Cycle - P5 BOF session*.
6. ‘Summer ESIP Federation Meeting, 2014’. Copper Mountain, CO. July 8-10, 2014. Session Organizer - *Data Lifecycle Interoperability - Broadening our Perspective on What it Means to be Interoperable*. <http://commons.esipfed.org/node/2408>
7. ‘Summer ESIP Federation Meeting, 2014’. Copper Mountain, CO. July 8-10, 2014. Session Co-Organizer - *Linked Open Data, Provenance, Metadata and Standards-based Services - Strategies for Discovery, Fusion and Use*. <http://commons.esipfed.org/node/2407>
8. ‘American Geophysical Union Fall Meeting, 2013’ held in San Francisco, CA, December 9-13, 2013. Co-convenor of session (oral and poster) *IN014. Emerging Technologies in Earth and Space Science Informatics (ESSI)*
9. ‘American Geophysical Union Fall Meeting, 2012’ held in San Francisco, CA, December 3-7, 2012. Co-convenor of session *ED41A. Distributing Science Data for Reuse Posters*
10. ‘Federation of Earth Science Information Partners, 2011 Summer Meeting’ held in Santa Fe, NM, July 12-15, 2011. Served as local coordinator for the meeting.

11. ‘American Geophysical Union Fall Meeting, 2011’ held in San Francisco, CA, December 5-9, 2011. Co-convener of session *IN21. Interoperable Earth Science Data Networks*
12. ‘Federation of Earth Science Information Partners, 2010 Winter Meeting’ held in Washington, DC, January 5-7, 2010. Coordinated one afternoon session dedicated to Environmental Decision Making.
13. ‘American Geophysical Union Fall Meeting, 2010’ held in San Francisco, CA, December 13-17, 2010. Co-convener of session *IN10. Open Source Remote Sensing for Environmental Mapping and Analysis*
14. ‘American Geophysical Union Fall Meeting, 2010’ held in San Francisco, CA, December 13-17, 2010. Co-convener of session *IN19. Information Technology Infusion Success Strategies*
15. ‘Federation of Earth Science Information Partners, 2009 Summer Meeting’ held in Santa Barbara, CA, July 7-10 2009. Chair of the Technology Track Planning Committee, coordinating technical workshops held at the meeting.
16. ‘Workshop on Knowledge Technology’, held in Gaziantep, Turkey, March 13-15, 2009. Coordinated technical content for this workshop.
17. ‘Tri-State NSF EPSCoR Cyberinfrastructure Working Group Meeting’ held in conjunction with the NSF EPSCoR Tri-State Meeting, Boise, ID, March 30 - April 1, 2009. Developed agenda, and facilitated the CI Working group meeting.
18. ‘Federation of Earth Science Information Partners, 2009 Winter Meeting’ held in Washington, DC, January 6-8, 2009. Chair of the Technology Track Planning Committee, coordinating technical workshops held at the meeting.
19. ‘American Geophysical Union Fall Meeting, 2008’ held in San Francisco, CA, December 15-19, 2008. Co-convener of session *IN13: Information Technology Infusion - Successful Strategies*
20. ‘Federation of Earth Science Information Partners, 2008 Summer Meeting’ held in Durham, NH, July 15-18 2008. Chair of the Technology Track Planning Committee, coordinating technical workshops held at the meeting.
21. ‘Federation of Earth Science Information Partners, 2008 Winter Meeting’ held in Washington, DC, January 9-10, 2008. Chair of the Technology Track Planning Committee, coordinating technical breakouts that took place over the course of the meeting.
22. ‘Federation of Earth Science Information Partners, 2007 Summer Meeting’ held in Madison, Wisconsin at the University of Wisconsin, July 17-20, 2007. Chair of the Technology Track Planning Committee, coordinating the technical workshops held at the meeting.

23. 'Federation of Earth Science Information Partners, 2007 Winter Meeting' held in Portland, Oregon, January 3-5, 2007. Chair of the Technology Track Planning Committee, coordinating technical breakouts that took place over the course of the meeting.
24. 'Federation of Earth Science Information Partners, 2006 Summer Meeting' held Palisades, New York at the Lamont-Doherty Earth Observatory, July 18-21, 2006. Chair of the Technology Track Planning Committee, coordinating the technical workshops held at the meeting.
25. 'Federation of Earth Science Information Partners, 2006 Winter Meeting' held in Washington, D.C., January 3-6, 2006. Chair of the Technology Track Planning Committee, coordinating three technically focused parallel tracks over the course of the meeting.
26. 'Federation of Earth Science Information Partners, 2005 Winter Meeting' held in Washington, D.C., January 3-6, 2005. Chair of the Technology Track Planning Committee, coordinating four technically focused parallel tracks over the course of the meeting and editing and coauthoring the resultant technical report.
27. 'Western Regional Conference of the National Association of Graduate and Professional Students' held at the University of New Mexico Student Union Building, April 14-16, 2000. Chair of the Planning Committee, coordinating program development, registration activities, and conference logistics.
28. '1998 Anthropology Graduate Symposium' held at the University of New Mexico Student Union Building, March 6-7, 1998. Chair of the Planning Committee, coordinating planning efforts of all other organizing committees, including grant writing, program development, advertising and logistics.
29. '1997 Anthropology Department Symposium' held at the Albuquerque Convention Center, April 25-26, 1997. Chair of the Planning Committee, coordinating planning efforts of all other organizing committees, including grants, program development, advertising, and logistics.

## Sponsored Research

### Currently Active

1. *Collaborative Research: The Western Consortium for Watershed Analysis, Visualization, and Exploration (WC-WAVE)*. Funding Agency: National Science Foundation. Performance Period 8/1/2013-7/31/2016. Award Amount: \$833,985 (EDAC's portion of the total project budget of \$6,000,000). Co-I, William Michener (UNM) PI.



2. *Energize New Mexico*. Funding Agency: National Science Foundation. Performance Period 6/1/2013-5/31/2018. Award Amount: \$1,658,575 (EDAC's portion of the total project budget of \$20,000,000). Co-I, William Michener (UNM) PI.
3. *Measuring Up: Assessing Accuracy of Reported Use and Impact of Digital Repositories*. Funding Agency: Institute of Museum and Library Services (IMLS). Performance Period 12/01/2014-11/30/2017. Award Amount: \$31,610 + \$99,747 cost share (The University Libraries portion of the total project budget of \$500,000). Institutional PI, Kenning Arlitsch (MSU) PI.
4. *Assessment in Action - Assessing the Impacts of Research Data Management Training for Graduate Students*. Performance Period 6/1/2015-6/30/2016. Unfunded but sponsored by ACRL. PI.

### Completed

1. *Collaborative Research: CI-Team Diff: The Virtual Learning Commons: STEM Research Communities Learning about Data Management, Geospatial Informatics, and Scientific Visualization*. Funding Agency: National Science Foundation. Performance Period 9/15/11-9/30/14. Award Amount: \$133,923 (EDAC's portion: \$20,000/year). Co-I, Marjorie McConnell (UNM) PI. Co-I Role transferred to EDAC with Dr. Benedict's transfer into the College of University Libraries and Learning Sciences on 7/1/14.
2. *Earth, Life and Semantic Web (ELSeWeb): An Earth observation-driven, Semantic Web system for computational modeling of the impact of changing environments on health and disease*. Funding Agency: NASA. Performance Period: 1/12-12/13 (Award extended to 9/14). Award Amount: \$204,215 (EDAC's portion of the total project budget of \$668,233). Institutional PI, Deanna Pennington (UTEP) PI.
3. *Collaborative Research: Cyberinfrastructure Development for the Western Consortium of Idaho, Nevada, and New Mexico*. Funding Agency: National Science Foundation. Performance Period 9/18/09-8/31/12. Award Amount: \$316,161 (EDAC's portion of the total project budget of \$2,000,000). Co-I, Gayle Dana (Desert Research Institute) PI.
4. *Feasibility of Development and Deployment into Public Health Decision Support systems of a Multi-resolution Nested Dust Forecast System Enabled by Open Standards Based Model and Data Interoperability*. Funding Agency: NASA. Performance Period: 7/31/09-1/31/11. Award Amount: \$109,575.55. PI.
5. *New Mexico EPSCoR RII3: Climate Change Impacts on New Mexico's Mountain Sources of Water*. Funding Agency: National Science Foundation. Performance Period: 9/08-8/13. Award Amount: \$1,578,824 (EDAC's

portion of the total project budget of \$15,000,000). Co-I, William Michener (NM EPSCoR State Office) PI.

6. *Development of a Flexible Pavement Database for Local Calibration of MEPDG*. Funding Agency: NM Department of Transportation. Performance Period: 6/08-5/11. Award Amount: \$31,310 (EDAC's portion of the total project budget of \$439,787). Co-I for EDAC's project component, Rafi Tarifdar (UNM CE Department) PI.
7. *Application of Daily MODIS Remote Sensing Imagery to Grassland Fuels Management in Northern New Mexico*. Funding Source: Valles Caldera Trust. Performance Period 6/08-9/09. Award amount: \$33,758. PI.
8. *Joint Laboratory for Geosciences Interoperability Partnership*. Funding Source: NASA (with EDAC acting as a Subcontractor to George Mason University). Performance Period: 8/07-12/08. Award Amount: \$40,000 (EDAC's subcontract amount). PI for EDAC's activity for this project.
9. *New Mexico Environment Department, Environmental GIS (eGIS)*. Funding Source: New Mexico Environment Department. Performance Period: 10/06-6/07. Award Amount: \$66,166. PI for overall project.
10. *New Mexico EPSCoR (Experimental Program to Stimulate Competitive Research) RII (NM NEW) Grant, Hydrology Program*. Funding Source: National Science Foundation. Performance Period: 2005-2008. Award Amount: \$1,984,617, EDAC Portion: \$259,060. Served as PI for Earth Data Analysis Center (EDAC) work under the statewide EPSCoR program.
11. *National Science Foundation, Doctoral Dissertation Improvement Grant* 2003-2005. award number 0305103. \$4,357 awarded through a peer-reviewed application process. This funding was granted in support of my dissertation research.
12. *University of New Mexico, Research, Projects and Travel Grant*. 2000. \$1000 awarded through a competitive application process in which applicants are ranked by their respective departments. This funding was received in support of my Dissertation research.
13. *University of New Mexico, Student Research Allocation Committee*. 2000. \$400 awarded through a competitive application process. This funding was received in support of my dissertation research.
14. *University of New Mexico, Regent's Endowed Fellowship*. 1999. \$2000 awarded through a competitive application process in which applicants were evaluated based upon a combination of community service, academic achievement, and financial need.
15. *Grants in support of travel and research expenses related to dissertation research*. 1999. \$560 was obtained through a combination of \$500 from

the UNM GPSA Student Research Allocations Committee and \$60 from the Department of Anthropology.

16. *Grants in support of travel to the Society for American Archaeology meetings*. 1996. A total of \$560 was obtained from the following sources: Anthropology Department, Student Research Allocation Committee (SRAC), Vice-Presidents Graduate Research Fund, Anthropology Graduate Student Union.
17. *Grant in Support of Graduate Student Computing*. 1994. Proposal coauthored by Robert D. Leonard, and Ariane Oberling. Competitive \$10,000 grant from the Office of Graduate Studies, University of New Mexico, for facility improvement (hardware and software) in support of graduate student computing in the Department of Anthropology.

## Publications

### Journal Articles

1. Wheeler, Jonathan, Karl Benedict. 2015. 'Functional Requirements Specification for Archival Asset Management: Identification and Integration of Essential Properties of Services Oriented Architecture Products'. *Journal of Map and Geography Libraries* 11(2). pp. 155-179. DOI: 10.1080/15420353.2015.1035474. URL: <http://www.tandfonline.com/doi/full/10.1080/15420353.2015.1035474>
2. Brand, L. Arriana, Mark D. Dixon, Trevor Fetz, Juliet C. Stromberg, Steven Stewart, Gail Garber, David C. Goodrich, David S. Brookshire, Craig D. Broadbent and Karl Benedict. 2013. 'Projecting Avian Responses to Landscape Management Along the Middle Rio Grande, New Mexico'. *The Southwestern Naturalist*. 58(2):150-162. DOI: <http://dx.doi.org/10.1894/0038-4909-58.2.150>. URL: <http://www.bioone.org/doi/full/10.1894/0038-4909-58.2.150>
3. Qunying Huang, Chaowei Yang, Karl Benedict, Abdelmounaam Rezgui, Jibo Xie, Jizhe Xia Songqing Chen. 2013. 'Using adaptively-coupled models and high performance computing for enabling the computability of dust storm forecasting'. *International Journal of Geographical Information Science*. 27(4):765-784. DOI:10.1080/13658816.2012.715650. URL: <http://www.tandfonline.com/doi/abs/10.1080/13658816.2012.715650>
4. Qunying Huang , Chaowei Yang , Karl Benedict , Songqing Chen, Abdelmounaam Rezgui & Jibo Xie. 2012. 'Utilize cloud computing to support dust storm forecasting', *International Journal of Digital Earth*. 6(4):338-355. DOI:10.1080/17538947.2012.749949. URL: <http://www.tandfonline.com/doi/abs/10.1080/17538947.2012.749949>

5. Quinn, Todd, Karl Benedict, Jeff Dickey. 2012. 'Ligia Grischa, A Successful Swiss Colony of the Dakota Territory Frontier'. *Great Plains Quarterly*. Vol. 32 (Fall 2012):247-60.  
[http://digitaleditions.sheridan.com/publication/index.php?i=133104&m=&l=&p=5&pre=&ver=flex#%7B%22page%22:4,%22issue\\_id%22:133104%7D](http://digitaleditions.sheridan.com/publication/index.php?i=133104&m=&l=&p=5&pre=&ver=flex#%7B%22page%22:4,%22issue_id%22:133104%7D)
6. Brookshire, David G., David Goodrich, Mark D. Dixon, L. Arriana Brand, Karl Benedict, Kevin Lansey, Jennifer Thacher, Craig Broadbent, Steve Stewart, Molly McIntosh, and Doosun Kang. 2010. 'Ecosystem Services and Reallocation Choices: A Framework for Preserving Semi-Arid Regions of the Southwest'. *Journal of Contemporary Water Research & Education*. Issue 144: 60-74. <http://onlinelibrary.wiley.com/doi/10.1111/j.1936-704X.2010.00075.x/abstract>

## Book Chapters

1. Watson, Richard P., Karl K Benedict, Theresa R. (Kuntz) Watson. 2015. 'Monitoring Weather Hazards on Rural Roads Using Remote Sensing and GIS'. In *Evolving Approaches to Understanding Natural Hazards*. G.A. Tobin and B.E. Montz (eds.) Cambridge Scholars Publishing: Newcastle-Upon-Tyne. pp. 217-229. [http://karlbenedict.com/pubs/2015\\_Watson\\_et\\_al.pdf](http://karlbenedict.com/pubs/2015_Watson_et_al.pdf)
2. Huang, Qunying, Jizhe Xia, Manzu Yu, Karl Benedict, and Myra Bambacus. 2013. 'Cloud-enabled Dust Storm Forecasting', in *Spatial Cloud Computing, a Practical Approach*. Chaowei Yang and Qunying Huang, eds. CRC Press. <http://dx.doi.org/10.1201/b16106-14>
3. Leptoukh, G, R Kiang, R Soebiyanto, D Tong, P Ceccato, S Maxwell, R Rommel, G Jacquez, K Benedict, S Morain, P Yang, Q Huang, M Golden, R Chen, J Pinzon, B Zaitchik, D Irwin, S Estes, J Luvall, M Wimberly, X Xiao, K Charland, R Stumpf, Z Deng, C Tilburg, Y Liu, L McClure, and A Huff. 2012. 'Data Discovery, Access and Retrieval', in *Environmental Tracking for Public Health Surveillance*. Morain and Budge, eds. CRC Press, pp. 229-291. <http://karlbenedict.com/pubs/2012%20Environmental%20Tracking%20Chapter.pdf>
4. Watson, Richard, Manfred Ehlers, Thomas K. Budge, and Karl Kent Benedict. 2006. 'New and Emerging Instruments and Some Emerging Trends for Remote Sensing of Human Settlements'. Chapter 12 in *Remote Sensing of Human Settlements*. Manual of Remote Sensing, 3rd ed., Volume 5. Merrill Ridd and James D. Hipple eds. American Society for Photogrammetry and Remote Sensing, Bethesda, Maryland. pp. 713-738. <http://karlbenedict.com/pubs/2006%20Manual%20of%20Remote%20Sensing%20Chapter.pdf>

5. Benedict, Karl Kent, and Janet D. Orcutt. 2002. 'Settlement'. In, *From Folsom to Fogelson: the Cultural Resources Inventory Survey of Pecos National Historical Park*, Genevieve N. Head, Janet D. Orcutt, Eds., pp 165-219. Anthropology Projects, Cultural Resources Management, Intermountain Region, National Park Service, Dept. of the Interior. Santa Fe, NM.
6. Huckell, Bruce, Lisa Huckell, and Karl Kent Benedict. 2002. 'Maize Agriculture and the Rise of Mixed Farming-Foraging Economies in Southeastern Arizona During the Second Millennium B.C.' In *Traditions, Transitions, and Technologies: Themes in Southwestern Archaeology*, Sarah Schlanger, Editor. University Press of Colorado. pp 136-159.
7. Powell, Melissa, and Karl Kent Benedict. 2002. 'Ceramic Chronology'. In, *From Folsom to Fogelson :the Cultural Resources Inventory Survey of Pecos National Historical Park*, Genevieve N. Head, Janet D. Orcutt, Eds. Anthropology Projects, Cultural Resources Management, Intermountain Region, National Park Service, Dept. of the Interior. Santa Fe, NM. pp 59-98.

#### Papers in Proceedings

1. Eric Fritzinger, Sergiu M. Dascalu, Daniel P. Ames, Karl Benedict, Ivan Gibbs, Michael J. McMahon, Jr., Frederick C. Harris, Jr. 2012. 'The Demeter Framework for Model and Data Interoperability'. *Proceedings of the 2012 International Congress on Environmental Modelling and Software: Managing Resources of a Limited Planet: Pathways and Visions under Uncertainty*, R Seppelt, A.A. Voinov, S. Lange, D. Bankamp (Eds.). International Environmental Modelling and Software Society (iEMSs) Sixth Biennial Meeting, Leipzig, Germany. [http://karlbenedict.com/pubs/2012%20D6\\_1236\\_Dascalu\\_et\\_al.pdf](http://karlbenedict.com/pubs/2012%20D6_1236_Dascalu_et_al.pdf)
2. Watson, Richard, Karl Kent Benedict, Theresa R. Watson, Kurt Menke, and Robert R. Parmenter. 2006. 'Satellite Imagery and Internet Mapping Services in Support of Science-Based Adaptive management of Grasslands in the Valles Caldera National Preserve'. *Papers of the Applied Geography Conference - 2006*. 29:206-213. <http://karlbenedict.com/pubs/2006%20Applied%20Geography%20Conference%20Proceedings.pdf>
3. Watson, Richard, Louis A. Scuderi, Karl Kent Benedict, and Theresa R. Kuntz. 2004. 'Data Fusion for Environmental Assessment: Integrating MODIS Imagery and NEXRAD Weather Radar'. International Society for Photogrammetry and Remote Sensing, 20th International Congress, Istanbul, June. *Archives B-4*:906-909 <http://karlbenedict.com/pubs/2004%20Watson%20et%20al.pdf>

4. Watson, Richard, Louis A. Scuderi, Theresa R. Kuntz, and Karl Kent Benedict. 2004. 'Assessing Vegetation Response to Local Rainfall Events Using NEXRAD Weather Radar and MODIS Imagery'. *Proceedings of the ASPRS 2004 Annual Conference*, Denver, CO, May 2004
5. Watson, Richard, Karl Kent Benedict and Theresa R. Kuntz. 2003. 'Monitoring Weather Hazards on Rural Roads using Remote Sensing and GIS'. *Papers of the Applied Geography Conferences*. 26: 266-275, Colorado Springs, CO. November 2003 <http://karlbenedict.com/pubs/2003%20Applied%20Geography%20Conference%20Proceedings.pdf>

### Online Resources

"New Mexico Resource Geographic Information System". 2002. Web application developed by Karl Benedict to provide browsing, discovery and download of geospatial data published as part of the New Mexico Resource Geographic Information System Program at the Earth Data Analysis Center at the University of New Mexico. <https://web.archive.org/web/20020913053314/http://rgis.unm.edu/>

"Geographic Storage, Transformation and retrieval Engine Version 3". 2013. Geospatial data management, discovery and access platform and associated Application Programming Interface. Developed by the development team at the Earth Data Analysis Center at the University of New Mexico under the management of Karl Benedict. <https://web.archive.org/web/20130704202601/http://gstore.unm.edu>

"Human Nature" Journal Website. 2002. Web site developed by Karl Benedict for the Journal Human Nature to provide access to information about and content for the Journal *Human Nature*. <https://web.archive.org/web/20021218195723/http://www.archaeoworld.com/journals/humannature/index.cfm>

### Presented Papers

1. Benedict, Karl, Chris Lenhardt, Joshua Young. 2016. "Agile Data Curation - Conceptual Foundation". Paper presented at the Federation of Earth Science Information Partners Summer Meeting. Durham, NC. July 22, 2016. [http://karlbenedict.com/presentations/2016-07\\_ESIP/ConceptualOverview.pdf](http://karlbenedict.com/presentations/2016-07_ESIP/ConceptualOverview.pdf)
2. Benedict, Karl, Mark Servilla, Kristin Vanderbilt, Jonathan Wheeler. 2015. "Linking data repositories - an illustration of agile data curation principles through robust documentation and multiple application programming interfaces". Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 14, 2015.

3. Powers, Lindsay, Karl Benedict, Mairi Best, Sue Fyfe, Clifford Jacobs, William Michener, Jay Pearlman. 2015. 'Staying in the Light: Evaluating Sustainability Models for Brokering Software'. Oral paper presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 18, 2015.
4. Young, Joshua, Karl Benedict, and W. Christopher Lenhardt. 2015. 'Agile Data Curation: A conceptual framework and approach for practitioner data management'. Oral paper presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 15, 2015.
5. Benedict, Karl. 2015. 'Open Data Resources and Strategies - Efficient Discovery and Use of Global to Local Open Data.' Invited presentation at the Bureau of Business & Economic Research's New Mexico Data Users Conference. November 19, 2015. [http://karlbenedict.com/presentations/2015-11-BBER/2015-11\\_Benedict.pdf](http://karlbenedict.com/presentations/2015-11-BBER/2015-11_Benedict.pdf)
6. Benedict, Karl. 2015. 'Open Data: The Why and How of Contributing to and Benefitting from the Open Data Ecosystem'. Invited paper presented at the New Mexico Geographic Information Council meeting. Albuquerque, NM. October 30, 2015.
7. Benedict, Karl, Plato Smith II. "Data Management for Collaboration, Access and Interoperability - CLIR Workshop on Research Data Principles & Services". Invited Workshop Presentation for the CLIR Postdoctoral Symposium. Bryn Mawr, PA. July 28, 2015.
8. Harris, Fred, Karl Benedict. 'Data Management'. Invited presentation for GEOS 697 *Interdisciplinary Modeling: Water-Related Issues and Changing Climate* offered in conjunction with the EPSCoR Tri-State meeting. Boise, ID. June 3, 2015.
9. Benedict, Karl. "Model Integration & Visualization Through Rapid Data and Documentation Access and Assimilation". Invited presentation for the *Integrated Environmental Modeling for Estuarine System Management Workshop*. Davis, CA. May 20-21, 2015. <http://karlbenedict.com/presentations/2015-05-WC-WAVEDemo/index.html>
10. Benedict, Karl. 2015. 'The Promise and Perils of Big Data in Research'. Invited Paper presented at the *Things We Worry About* session within the 2015 UNM Shared Knowledge Conference. Albuquerque, NM. April 23, 2015.
11. Benedict, Karl, Joshua Young, W. Christopher Lenhardt, Mark Parsons. 2015. 'Deconstructing the Data Lifecycle BoF' Paper presented at the Research Data Alliance, Fifth Plenary Meeting. San Diego, CA. March 10, 2015.

12. Young, Joshua, W. Christopher Lenhardt, Mark Parsons, Karl Benedict. 2014. 'Taking Another Look at the Data Management Life Cycle: Deconstruction, Agile, and Community'. Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 19, 2014.
13. Benedict, Karl Kent. 2015. 'Data@UNM'. Invited panelist as part of the 'Data@UNM' session for the 2015 *Data to Knowledge* Conference. Albuquerque, NM. February 20, 2014.
14. Benedict, Karl Kent. 2014. 'Data Management Primer'. A workshop presented in conjunction with a 'Responsible Conduct of Research' training session held at New Mexico Tech. Socorro, NM. April 4, 2014.
15. Benedict, Karl Kent. 2014. 'The Google Maps API and OpenLayers Javascript Framework: a NMGIC Workshop'. Invited workshop for the New Mexico Geographic Information Council Spring Meeting. Albuquerque, NM. May 1, 2014.
16. Benedict, Karl Kent. 2014. 'Network Enabled Data Access and Analysis '. Invited paper for New Mexico Cyberinfrastructure Day. Albuquerque, NM. April 25, 2014.
17. Benedict, Karl Kent. 2014. 'Data Management, Discovery and Access Technology for Natural Science and Beyond'. Invited paper for New Mexico Cyberinfrastructure Day. Albuquerque, NM. April 25, 2014.
18. Del Rio, Nicholas, Deana D. Pennington, Karl Kent Benedict, Natalia Villanueva-Rosales, William B. Hudspeth, Soren Scott, Aimee M. Stewart, Cj Grady. 2013. 'Leveraging Industry-Standard Metadata to Populate a Semantic Registry Suitable for the Model Web'. Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 13, 2013.
19. Benedict, Karl Kent, Soren Scott. 2013. 'Pragmatic Metadata Management for Integration into Multiple Spatial Data Infrastructure Systems and Platforms'. Oral presentation at the American Geophysical Union Fall Meeting. San Francisco, CA. December 11, 2013.
20. Yu. Manzhur, Karl Kent Benedict, Qunying Huang, Zhipeng Gui, Jizhe Xia, Songqing Chen. 2013. 'Validating Dust Storm Model Using Satellite Aerosol Retrievals and Ground-based Observations'. Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 11, 2013.
21. Robinson, Erin, Carol B. Meyer, Karl Kent Benedict. 2013. 'ESIP Federation: A Case Study on Enabling Collaboration Infrastructure to Support Earth Science Informatics Communities'. Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 10, 2013.



22. Benedict, Karl Kent. 2013. *Invited Panelist* for ‘Connecting Data Stakeholders for a Long-term Vision of Data Stewardship’. Town Hall meeting at the American Geophysical Union Fall Meeting. San Francisco, CA. December 9, 2013.
23. Del Rio, Nicholas, Natalia Villanueva-Rosales, Deana Pennington, Karl Benedict, Aimee Stewart, C. J. Grady. 2013. ‘ELSEWeb Meets SADI: Supporting Data-to-Model Integration for Biodiversity Forecasting’. Paper presented at the Association for the Advancement of Artificial Intelligence Fall Symposium. Arlington, VA. November 15-17, 2013.
24. Benedict, Karl Kent. 2013. ‘Introduction/Refresher for the Resource Geographic Information System’. Oral presentation at the annual Bureau of Business and Economic Research (BBER) Data Users Conference. Albuquerque, NM. November 14, 2013.
25. Benedict, Karl Kent. 2013. ‘Cloud Computing and Big Data’. Paper presented at the Summer Meeting of the Federation of Earth Science Information Partners. Chapel Hill, NC. July, 2013.
26. Benedict, Karl Kent, Soren Scott. 2013. ‘Integrating a DataONE Member Node into the GSTORE API’. Poster presented at the DataONE Users Group meeting. Chapel Hill, NC. July, 2013.
27. Benedict, Karl Kent, Soren Scott. 2013. ‘GSTORE: Geographic Storage, Transformation and Retrieval Engine’. Presentation as part of the Member Node Showcase of the DataONE Users Group Meeting. Chapel Hill, NC. July, 2013.
28. Benedict, Karl Kent, Mike Camponovo, Soren Scott, and Su Zhang. 2013. ‘The Development of Data Management and Services Architecture in Support of a Geospatial Clearinghouse and Research Data Portal’. Paper presented at the Federation of Earth Science Information Partners Winter Meeting. Washington, DC. January, 2013.
29. Benedict, Karl Kent. 2012. ‘Primer on Data Management: Components of a Data Management Plan’. Data management planning workshop presentation based upon original materials developed by Robert Cook, Oak Ridge National Laboratory. American Geophysical Union Fall Meeting. San Francisco, CA. December, 2012.
30. Benedict, Karl Kent. 2012. ‘Scientific Data Preservation’. Presentation at New Mexico Cyberinfrastructure Day. Albuquerque, NM. September, 2012.
31. Benedict, Karl Kent. 2012. ‘New Mexico Resources for Data Sharing and Collaboration’. Paper presented at the fourth annual EPSCoR Tri-State Consortium Meeting. Sun Valley, ID. April 3-6, 2012.

32. Benedict, Karl Kent. 2012. 'Architecture Model for OGC Service Integration'. Paper presented at the Federation of Earth Science Information Partners Winter Meeting, Washington, DC. January, 2012.
33. Benedict, Karl Kent, Deana Pennington. 2012. 'Necessary but not Sufficient - Closing the Gap Between Data Access and Use by a Broad User Community' Poster presentation at the American Geophysical Union Fall Meeting. San Francisco, CA. December 2012.
34. Benedict, Karl Kent, and Soren Scott. 2012. 'Visualization of Observational Data in Google Earth'. Paper/Demonstration presented at the fourth annual EPSCoR Tri-State meeting. Sun Valley, ID. April 3-6, 2012.
35. Benedict, Karl Kent, Soren Scott, William Hudspeth. 2012. 'Data Management for Flexible Access - Implementation and Lessons Learned from work with Multiple User Communities' *Invited Paper* for the American Geophysical Union Fall Meeting. San Francisco, CA. December 2012.
36. Del Rio, Nicholas, Deana D. Pennington, Paulo Pinheiro da Silva, Karl K. Benedict. 2012. 'Streamlining Data Access Services and Data Analysis Services Integration' Poster presentation at the American Geophysical Union Fall Meeting. San Francisco, CA. December 2012.
37. Hudspeth, William, Karl K. Benedict, Soren Scott. 2012. 'Generation of Multiple Metadata Formats from a Geospatial Data Repository' Poster presentation at the American Geophysical Union Fall Meeting. San Francisco, CA. December 2012.
38. Benedict, Karl Kent. 2011. 'Advanced Cloud Computing for Geospatial Applications' Paper presented at the meeting of the New Mexico Geographic Information Council. Albuquerque, NM. May 13, 2011.
39. Benedict, Karl Kent. 2011. 'Key Interoperability Standards for Earth Science Research and Applications'. Paper presented at the meeting of the International Society for Remote Sensing of the Environment. Sydney, Australia. April 11-15, 2011.
40. Benedict, Karl Kent; Gregory Gollberg; Luke Sheneman; Sergiu Dascalu. 2011. 'Coordinated Earth Science Data Replication Enabled Through ISO Metadata, Version Control, and Web Services'. Poster presented at the American Geophysical Union Fall Meeting, San Francisco, CA. December 5-9, 2011.
41. Benedict, Karl Kent, William Hudspeth, Stan Morain, and Amy Budge. 2011. 'Delivery of Relevant Remote Sensing and Model Outputs to Public Health End Users Through International Interoperability Standards' Paper presented at the meeting of the International Society for Remote Sensing of the Environment. Sydney, Australia. April 11-15, 2011.

42. Huang, Qunying; Phil (Chaowei) Yang; Karl Kent Benedict. 2011. 'Utilizing High Performance Computing and Loosely-Coupled Nested Models to Enable the Computability of Dust Storm Forecasting'. Paper presented at the American Geophysical Union Fall Meeting, San Francisco, CA. December 5-9, 2011.
43. Hudspeth, William B.; Karl Kent Benedict; Laura Gleasner; Renzo Sanchez-Silva. 2011. 'New Mexico EPSCoR – Challenges of Integrating Diverse Water- Related Climate Data Into an Interoperable Geospatial Infrastructure'. Poster presented at the American Geophysical Union Fall Meeting, San Francisco, CA. December 5-9, 2011.
44. Kempler, Steven; Karl Kent Benedict; Pietro Ceccato; Meredith Golden; Susan Maxwell; Stanley Morain; Radina Soebiyanto; Daniel Tong. 2011. 'The Increasing Use of Remote Sensing Data in Studying the Climatological Impacts on Public Health'. Poster presented at the American Geophysical Union Fall Meeting, San Francisco, CA. December 5-9, 2011.
45. Patel, Jigarkumar; Sergiu Dascalu; Frederick C. Harris; Karl Kent Benedict; Gregory Gollberg; Luke Sheneman. 2011. 'Web-based Toolkit for Dynamic Generation of Data Processors'. Poster presented at the American Geophysical Union Fall Meeting, San Francisco, CA. December 5-9, 2011.
46. Goodrich, David C.; David Brookshire; Craig Broadbent; Mark D. Dixon; L. A. Brand; Jennifer Thacher; Karl Kent Benedict; Kevin E. Lansey; Juliet C. Stromberg; Steven Stewart; Molly McIntosh. 2011. 'Coupled hydrological, ecological, decision and economic models for monetary valuation of riparian ecosystem services'. Paper presented at the American Geophysical Union Fall Meeting, San Francisco, CA. December 5-9, 2011.
47. Benedict, Karl Kent. 2010. 'Interoperability 101: OGC Standards'. Workshop presented at the Federation of Earth Science Information Partners Summer Meeting. Knoxville, TN. July 20, 2010.
48. Benedict, Karl Kent. 2010. 'Delivery of Air Quality Model Data into New Mexico's Environmental Public Health Tracking System: A Services Oriented Architecture for Rapid Information Delivery'. Paper presented at the Annual Meeting of the American Thoracic Society. New Orleans, LA. May 19, 2010.
49. Benedict, Karl Kent. 2010. 'Introduction and Overview of CI Sessions'. Paper presented at the Tri-State Annual Western Consortium Meeting. Incline Village, CA. April 6, 2010.
50. Benedict, Karl Kent. 2010. 'NM EPSCoR Track 1 Cyberinfrastructure Accomplishments'. Paper presented at the Tri-State Annual Western Consortium Meeting. Incline Village, CA. April 6, 2010.

51. Benedict, Karl Kent. 2010. 'Model and Data Interoperability'. Paper presented at the Tri-State Annual Western Consortium Meeting. Incline Village, CA. April 6, 2010.
52. Benedict, Karl Kent. 2010. 'The development of standards-based geospatial applications at EDAC - perspective from 10 years of evolution'. *Invited paper* presented to the students and faculty of UTEP's CyberShare program. El Paso, TX. March 18, 2010.
53. Benedict, Karl Kent. 2010. 'RGIS 2.0 - An Interoperable, Open Source SOA for Geospatial Information Delivery'. Poster and demonstration presented at the Federation of Earth Science Information Partners Winter Meeting. Washington, DC. January 5, 2010.
54. Benedict, Karl Kent, Phil Yang, and Qunying Huang. 2010. 'Environmental Model Interoperability Enabled by Open Geospatial Standards - Results of a Feasibility Study'. *Invited paper* presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 13-17, 2010.
55. Benedict, Karl Kent, Phil Yang, and Qunying Huang. 2010. 'OGC Web Coverage and Web Feature Services (WCS & WFS) for Enabling Nested Environmental Modeling'. Paper presented at the International Congress on Environmental Modelling and Software. Ottawa, Ontario, Canada. July 5, 2010.
56. White, Amanda, and Karl Kent Benedict. 2010. 'New Mexico's Instrumentation System and Proposed Ingest Workflow into the EPSCoR Data Portal'. Paper presented at the Tri-State Annual Western Consortium Meeting. Incline Village, CA. April 6, 2010.
57. Benedict, Karl Kent. 2009. 'The Development of an Interoperable Open Source Geographic Information Technology Stack for Ingest, Management, and Delivery of Earth Observation and Geospatial Products'. Paper presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 18, 2009.
58. Benedict, Karl Kent. 2009. 'RGIS 2.0'. Paper presented at the New Mexico Geographic Information Council (NMGIC). Albuquerque, NM. November 13, 2009.
59. Benedict, Karl Kent. 2009. 'RGIS 2.0'. Paper presented at the AS-PRS/MAPPS Conference, San Antonio, TX. November 17, 2009.
60. Benedict, Karl Kent. 2009. 'Development of a modern Services Oriented Architecture (SOA) based upon REST and OGC Standards - RGIS 2.0'. *Invited colloquium* presented at the University of Nevada, Reno, Computer Science Department. October 9, 2009

61. Benedict, Karl Kent. 2009. 'Development of a persistent Federation demonstration resource for promoting Federation member products and services'. Paper presented at the Foundation of Earth Science Information Partners, 2009 Summer Meeting held in Santa Barbara, CA, July 7-10 2009
62. Benedict, Karl Kent. 2009. 'RESTful Requests for Dynamic OGC Services'. Paper presented at the Foundation of Earth Science Information Partners, 2009 Summer Meeting held in Santa Barbara, CA, July 7-10 2009
63. Benedict, Karl Kent. 2009. 'Pan-Am SDS-WAS Centre Data & Information Architecture'. Paper presented at the Foundation of Earth Science Information Partners, 2009 Summer Meeting held in Santa Barbara, CA, July 7-10 2009
64. Benedict, Karl Kent. 2009. 'Service Oriented Architectures for the Exchange of Science Information'. Workshop presented at the NSF EPSCoR UROP Kickoff, held at NM Tech, in Socorro, NM, June 5, 2009.
65. Benedict, Karl Kent. 2009. 'Knowledge Sharing and Collaboration - Technical Approaches'. Paper presented at the 5th World Water Forum held in Istanbul, Turkey, March 16-22, 2009.
66. Benedict, Karl Kent. 2009. 'Online Mapping'. Paper presented at the Workshop on Knowledge Technology, held in Gaziantep, Turkey, March 13-15, 2009.
67. Benedict, Karl Kent. 2009. 'Modeling Concepts'. Paper presented at the Workshop on Knowledge Technology, held in Gaziantep, Turkey, March 13-15, 2009.
68. Benedict, Karl Kent. 2009. 'Website Development'. Paper presented at the Workshop on Knowledge Technology, held in Gaziantep, Turkey, March 13-15, 2009.
69. Benedict, Karl Kent. 2009. 'Service Adoption Experience of the PHAiRS Project'. Paper presented at the ESIP Federation Winter Meeting, Washington, DC. January 6-8, 2009.
70. Benedict, Karl Kent. 2009. 'General-Purpose KML Generation Via XSLT for Presentation of OGC WMS Layers'. Poster presented at the ESIP Federation Winter Meeting, Washington, DC. January 6-8, 2009.
71. Benedict, Karl Kent. 2008. 'The Infusion of Dust Model Model Outputs into Public Health Decision Making - an Examination of Differential Adoption of SOAP and Open Geospatial Consortium Service Products into Public Health Decision Support Systems'. Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 15-19, 2008.

72. Benedict, Karl Kent. 2008. 'Interoperable Earth Observation Services and Their Use in a Variety of Decision Support Contexts'. Workshop presented at the EPA OEI Environmental Information Symposium. Phoenix, AZ. December 10-12, 2008.
73. Benedict, Karl Kent. 2008. 'Delivery of Time-Enabled WMS via KML'. Paper presented at the NASA Earth Science Data Systems Working Group (ESDSWG) Annual Meeting. Philadelphia, PA. October 21, 2008.
74. Benedict, Karl Kent. 2008. 'Plone Introduction'. Two-day workshop presented at the Web Access for Civil Society Initiatives (WACSI) Project Workshop. Amman, Jordan. August 11-14.
75. Benedict, Karl Kent. 2008. 'Public Health Applications in Remote Sensing'. Poster presented at the ESIP Federation Summer Meeting, Durham, NH, July 16, 2008.
76. Benedict, Karl Kent. 2008. 'The PHAiRS Project - SOA for the delivery of regionalized dust forecast data to public health professionals'. Paper presented at the ESIP Federation Summer Meeting, Durham, NH, July 15, 2008.
77. Benedict, Karl Kent. 2008. 'OGC Time-enabled WMS: an Introduction with Deployment into Google Earth'. Paper presented to the NASA DSWG Standards Process Working Group, meeting at the Summer ESIP Federation meeting, Durham, NH, July 15, 2008.
78. Benedict, Karl Kent. 2008. 'The Development of Standards-Based Services Oriented Architectures at EDAC, Lessons Learned From Three Application Contexts'. Paper presented at the AGU General Assembly, Ft. Lauderdale, FL. May 29, 2008.
79. Benedict, Karl Kent. 2008. 'Fusion of Geospatial Data Through Open Standards for Visualization and Analysis'. Paper presented at New Approaches for Computer Applications in the Archaeology and Cultural Heritage of the Levant, Ben-Gurion University of the Negev, Beer-Sheva, Israel, May 14-15, 2008.
80. Benedict, Karl Kent. 2008. 'OGC Time-enabled WMS: an Introduction with Deployment into Google Earth'. *Invited lecture* presented at Denver University. Denver, CO. April 28, 2008.
81. Benedict, Karl Kent. 2008. 'The ESIP Federation's Long Experience In the Development and Deployment of Web Services'. With contributions by: Jerry Pan, Suresh Kumar, Giri Palanisamy, Bruce Wilson, Tyler Stevens, Ken Keiser, and Sara Graves. Poster presented at the NOAA Climate Prediction Climate Science Workshop. Chapel Hill, NC, March 4-6, 2008.

82. Hudspeth, William, Karl Kent Benedict. 2008. 'Integration of Multiple OGC Standards for Delivery of Earth Science Information - Presentation of Time-Enabled WMS through KML as Implemented by the PHAiRS Project'. Poster presented at the American Geophysical Union Fall Meeting. San Francisco, CA. December 15-19.
83. Benedict, Karl Kent. 2007. 'New Mexico Cyberinfrastructure Assessment'. Presentation at the NSF EPSCoR Cyberinfrastructure Workshop. Lexington, KY, October 15, 2007.
84. Benedict, Karl Kent. 2007. "Slippy" Multi-Server WMS Client'. Workshop presented at the Summer 2007 Earth Science Information Partnership (ESIP) Federation Meeting. University of Wisconsin, Madison, Wisconsin. July 17, 2007.
85. Benedict, Karl Kent. 2007. 'Implementing the GEOSS Architecture with Open Standards'. Presentation as part of the *The User and the GEOSS Architecture XIII*, workshop at the 32nd International Symposium on Remote Sensing of Environment, San Jose, Costa Rica. June 25-29, 2007
86. Benedict, Karl Kent. 2007. 'Development of a 'Slippy-map' interface for OGC WMS services'. Presentation at the Winter 2007 Earth Science Information Partnership (ESIP) Federation Meeting. Portland, Oregon. January 3, 2007.
87. Benedict, Karl Kent. 2006. 'Implementation of OGC Web Services with MapServer'. Workshop presented at the Summer 2006 Earth Science Information Partnership (ESIP) Federation Meeting. Lamont-Doherty Earth Observatory, Palisades, New York. July 17, 2006.
88. Benedict, Karl Kent, and William Hudspeth. 2006. 'Technology Products of the PHAiRS REASoN Project – Year 2 Web Services and Demonstration Interfaces Development'. Paper presented at the NASA Earth Science Technology Conference. College Park, MD. June 27-30, 2005
89. Benedict, Karl Kent. 2005. 'The Open Geospatial Consortium Web Map, Web Feature, and Web Coverage Service Standards – An Overview'. Workshop presented at the Federation of Earth Science Information Partners (ESIP Federation) Summer 2005 Meeting. San Diego, CA. June 14-16, 2005.
90. Benedict, Karl Kent. 2005. 'GRASS GIS – An Overview of Capabilities'. Workshop presented at the Fall 2005 Meeting of the New Mexico Geographic Information Council (NMGIC).. Albuquerque, NM. September 29, 2005
91. Benedict, Karl Kent, Kurt Menke, Bill Hudspeth, and Jeff Cavner. 2005. 'EDAC's Web-based Geospatial Applications and the Open Source Technologies Behind Them'. Paper presented at the Fall 2005 Meeting of the New Mexico Geographic Information Council (NMGIC). Albuquerque, NM. September 30, 2005

92. Benedict, Karl Kent, and William Hudspeth. 2005. 'Technology Products of the PHAiRS REASoN Project – Year 1'. Paper presented at the NASA Earth Science Technology Conference. College Park, MD. June 27-30, 2005
93. Benedict, Karl Kent. 2005. 'The Open Geospatial Consortium Web Map, Web Feature and Web Coverage Service Standards - an Overview'. Workshop presented at the Federation of Earth Science Information Partners Summer Meeting. San Diego, CA., June 2005.
94. Hudspeth, W., S. Nickovic, D. Yin, B. Chandy, B. Barbaris, A. Budge, T. Budge, S. Baros, K. Benedict, C. Bales, C. Catrall, S. Morain, G. Sanchez, W. Sprigg, and K. Thome. 2005. 'PHAiRS – A Public Health Decision Support System: Initial Results'. 31st International Symposium for Remote Sensing of the Environment. St. Petersburg, Russian Federation. May 20-24, 2005.
95. Benedict, Karl Kent, and Jeff Cavner. 2003. 'WMS Implementation with Minnesota MapServer'. Workshop presented at the Winter 2003 meeting of the Federation of Earth Information Partners. Pasadena, CA. Jan. 6-9, 2003.
96. Benedict, Karl Kent. 2002. 'Context, Goals, and Results of EDAC's WMS Installation: Adding Web Map Services to an Existing Clearinghouse'. Paper presented at the XXII FIG International Conference/ACSM-ASPRS 2002 Conference and Technology Exhibition 2002. Washington, D.C. April 19-26, 2002
97. Watson, Richard P., T. R. Kuntz, Karl Benedict. 2002. 'Remote Sensing Applications for Airfield Safety, Security, and Management'. Paper presented at the Applied Geography Conference, Binghamton, NY. October 2002.
98. Benedict, Karl Kent, Richard Watson, Noreen Breeding, Richard Friedman. 2001. 'Rural Trafficability Enhancement: An Application of Remote Sensing and Geographic Information Technologies'. Paper presented at the 2001 meeting of the ESRI Southwest Users Group. 2001, Tucson, AZ. October 22-25.
99. Benedict, Karl Kent. 2000. 'Confronting Chronometric Uncertainty: Use of Chronometric Data in a Probabilistic Framework'. Paper presented at the 65th Annual Meeting of the Society for American Archaeology (SAA). Philadelphia, PA. April 5-9, 2000.
100. Huckell, Bruce B., Lisa W. Huckell, and Karl Kent Benedict. 2000. 'Maize Agriculture and the Rise of Mixed Farming-Foraging Economies in South-eastern Arizona During the Second Millennium B.C.' Paper presented at the 'Southwest Symposium 2000, At the Millennium: Change and Challenge in the Greater Southwest'. Santa Fe, NM. January 14-15, 2000.



101. Benedict, Karl Kent, and Melissa Powell. 1999. 'The Chronology of Pecos: An Application of Probabilistic Ceramic Dating'. Poster presented at the 64th Annual Meeting of the Society for American Archaeology (SAA). Chicago, IL. March 24-28, 1999.
102. Pinson, Ariane Oberling, and Karl Kent Benedict. 1999. 'Regression, Sample Size & the Shannon-Weaver Index: Rethinking the Assumptions Using Monte-Carlo Simulations'. Poster presented at the 64th Annual Meeting of the Society for American Archaeology (SAA). Chicago, IL. March 24-28, 1999.
103. Benedict, Karl Kent. 1997. 'Bedrock Milling in the Domenigoni Valley: A Morphological and Distributional Analysis'. Paper presented at the 62nd Annual Meeting of the Society for American Archaeology (SAA). Nashville, TN. April 2-6, 1997.
104. Benedict, Karl Kent. 1996. 'Outline of a Probabilistic Approach to the Interpretation of Radiocarbon Dates'. Poster presented at the 61st Annual Meeting of the Society for American Archaeology (SAA). New Orleans, LA. April 10-14, 1996.
105. Onken, Jill, and Karl Kent Benedict. 1996. 'The Application of Multiple Dating Methods in the Domenigoni Valley, an Evaluation and Discussion'. Paper presented at the 61st Annual Meeting of the Society for American Archaeology (SAA). New Orleans, LA. April 10-14, 1996.
106. Scuderi, Louis, Richard Watson, and Karl Kent Benedict. 1996. 'The Development and Application of a GIS-Based Prehistoric Resource Distribution Model in Archaeological Research'. Workshop presented at the Third International Conference/Workshop on Integrating GIS and Environmental Modeling. Santa Fe, New Mexico. January 21-25 1996.

#### **Technical Reports/Manuscripts/White Papers**

1. Benedict, Karl Kent, Deana D. Pennington. 2014. 'Final Report: Earth, Life and Semantic Web (ELSeWeb): An Earth observation-driven, Semantic Web system for computational modeling of the impact of changing climate on ecosystems and human/environmental health systems'. Manuscript submitted to NASA under Grant/Cooperative Agreement ACCESS-110018 NNX12AF52A.
2. Del Rio, Nicholas, Natalia Villanueva-Rosales, Deana Pennington, Karl Benedict, Aimee Stewart, C. J. Grady. 2013. 'ELSEWeb Meets SADI: Supporting Data-to-Model Integration for Biodiversity Forecasting'. Paper presented at the Association for the Advancement of Artificial Intelligence Fall Symposium. Arlington, VA. November 15-17, 2013. <http://www.aaai.org/ocs/index.php/FSS/FSS13/paper/viewFile/7631/7488>

3. Benedict, Karl Kent, Yang, P., Huang, Q. 2010. 'Project Final Report & Feasibility Report'. Manuscript submitted to NASA under Grant/Cooperative Agreement Number: NNX09AN53G on 11/30/2010. Project title: Feasibility of Development and Deployment into Public Health Decision Support systems of a Multi-resolution Nested Dust Forecast System Enabled by Open Standards Based Model and Data Interoperability.
4. Yang, Phil (Chaowei), Karl Kent Benedict, William A. Sprigg. 2008. 'Leverage Model Interoperability and High Performance Computing to Improve Public Health Application (Final Report.)'. Report submitted to NASA 10/15/2008 in partial fulfillment of NASA Grant: NNX07AD99G.
5. Benedict, Karl Kent. 2005. 'The Open Geospatial Consortium Web Map, Web Feature and Web Coverage Service Standards - an Overview'. Service overview document produced in support of a workshop presented at the Summer 2005 Federation of Earth Science Information Partners meeting in San Diego, CA. <http://karlbenedict.com/documents/ogcworkshop.pdf>
6. Office of Evaluation, University of New Mexico Department of Family and Community Medicine. 2000. 'Child Occupant Protection Program Evaluation. Knowledge, Attitudes, and Practices Study'. Data collection, analysis, and report funded by: New Mexico Department of Health, Bureau of Injury Prevention, Emergency Medical Services, and New Mexico Traffic Safety Bureau. Manuscript on file at the Office of Evaluation, Department of Family and Community Medicine, University of New Mexico, Albuquerque, NM.
7. Ebert, James I., Eileen Camilli, Eric Ingbar, Roger Warner, Karl Kent Benedict. 1994. 'National Science Foundation Phase I Final Report'. Project Title: A Study of the Feasibility of Developing Generally Applicable Methods and Techniques for the Conversion of Existing State Cultural Resources Databases to Geographic Information Systems. Manuscript submitted to the National Science Foundation, reporting the results of analysis conducted under award number III-9360278. James I. Ebert, Principle Investigator. On file at Ebert and Associates, Inc., 3700 Rio Grande Blvd. NW, Suite 3, Albuquerque, NM.
8. Robinson, Mark, Melinda Romano, Richard Cerrito, Adella Schroth, John Torres, Jill Onken, David Weatherby, Karl Kent Benedict, Scott Williams, Dennis McDougal, Susan Goldberg. 1993. 'Metropolitan Water District, Domenigoni Valley Reservoir Project, Prehistoric Testing and Evaluation Report'. Edited by: Lynne Ertle, Susan Goldberg, Kerry Lehto, Melinda Romano. Numbers: 1,3,4,6. Submitted to Metropolitan Water District of Southern California, P.O. Box 54153, Los Angeles, CA, by INFOTEC Research Inc.

9. Benedict, Karl Kent and Barbara Balen. 1991. 'Cultural Resource Inventory Report 05-16-296, Camp 17 Helicopter Fire Salvage Sale'. U.S. Forest Service Report. Report on file at the Stanislaus National Forest, Supervisors Office, 19777 Greenley Road, Sonora, CA.
10. Benedict, Karl Kent and John Maher. 1991. 'Archaeological Reconnaissance Report Addendum 05-03-331-53, 1990 Salvage Addendum to the South Fork of the American River Watershed Archaeological Reconnaissance Report 05-03-331'. U.S. Forest Service Report. Report on file at the Eldorado National Forest, Supervisors Office, 100 Forni Road, Placerville, CA.
11. Lebow, Clayton G., Melinda C. Romano, Christian Miss, Karl Kent Benedict, Lou Ann Speulda, Scott A. Williams, Susan K. Goldberg, Gordon A. Lothson, Richard M. Pettigrew, Randall F. Schalk, Jon M. Silvermoon, and Judith A. Willig. 1991. 'Archaeological Testing and Evaluation report, 1990-1991 Field Season and Historic Properties Treatment Plan, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California', Volume II.C: Descriptive Reports and Data Compendia, Pre-historic Sites, Oregon Appendices. Edited by: Susan K. Goldberg, Randall F. Schalk, Richard M. Pettigrew, and Michael J. Moratto. Submitted to: Pacific Gas Transmission Company, San Francisco, CA.
12. Benedict, Karl Kent and John Maher. 1990. '1989 Salvage, Iron, Meyers, Sleaf Insect Salvage Sales, Archaeological Reconnaissance Report Addendum 05-03-336-33. Addendum to Archaeological Reconnaissance Report 05-03-336, North Fork of the Cosumnes Watershed Archaeological Reconnaissance Report'. U.S. Forest Service Report. Report on file at the Eldorado National Forest, Supervisors Office, 100 Forni Road, Placerville, CA.
13. Benedict, Karl Kent. 1989. 'Addendum Form, Cultural Resource Inventory Report, CRIR 05-16-267: Matsen Fire Salvage Sale'. U.S. Forest Service Report. Report on file at the Stanislaus National Forest, Supervisors Office, 19777 Greenley Road, Sonora, CA.
14. Benedict, Karl Kent. 1989. 'Cultural Resource Inventory Report #295, Stanislaus Helicopter Fire Salvage, Cultural Resource Inventory Report 05-16-295'. U.S. Forest Service Report. Report on file at the Stanislaus National Forest, Supervisors Office, 19777 Greenley Road, Sonora, CA.

### Popular Articles

1. Benedict, Karl Kent. 2006. EDAC: Interoperability and multi-application (sic). *Invited OGC Column for GIM International*. January 2006, 20(1). p. 17

## Instruction

### Invited Lectures

1. *Social Responsibility & Research Data: a Framework and some Concepts*. Invited lecture for OILS 500. October 13, 2015. University of New Mexico. URL: [http://karlbenedict.com/presentations/2015-10\\_OILS500\\_Benedict/2015-10\\_OILS500\\_Benedict.html](http://karlbenedict.com/presentations/2015-10_OILS500_Benedict/2015-10_OILS500_Benedict.html)

### Credit Courses

1. *Introduction to Spatial Data Management* (OILS 515, University of New Mexico; Organization, Information and Learning Sciences): Spring 2014, Spring 2015 (provided as independent study for three students)
2. *Spatial Data Management in Environmental Sciences* (INFO 533 [1-week intensive course co-taught with Will Shuart], University of New Mexico, University Library): June 2011, 2012, 2013, 2014
3. *Internet Mapping* (Geography 485L/585L, University of New Mexico, Department of Geography): Fall 2009 (lecture/lab); Spring 2011 (lecture/lab); Spring 2012 (online); Spring 2013 (online); Spring 2014 (hybrid); Spring 2016 (scheduled)
4. *Women, Water and Work* (Civil Engineering 492 [Cross-listed with American Studies, Earth & Planetary Sciences and History] - contributed two class sessions relating to spatial data management and analysis): Spring 2012
5. *Open Source Geographic Information Technologies* (Geography 499, University of New Mexico, Geography Department): Spring 2006
6. *Quantitative Methods in Anthropology* (Anthropology 372/572, University of New Mexico, Department of Anthropology): Fall 2005
7. *World Prehistory* (Anthropology 120, University of New Mexico, Department of Anthropology): Spring 1998

### Non-credit Instruction

1. *Introduction to GIS* (80 hour intensive course, taught at the University of Malta, sponsored by the World Laboratory, Lausanne Switzerland): Sept. 2003, Oct. 2004
2. *Library Instruction* - single session classes: first year Library Introduction, spatial data management, Geographic Information Systems

## **Technical Skills**

### **Programming Languages**

- Python
- Perl
- BASH shell

### **Web Development**

- HTML 4, 5
- CSS
- Javascript
- AJAX web application development models
- REST web services development
- SOAP services implementation
- Google Maps API
- OpenLayers Javascript Framework

### **Statistical & Mathematical Analysis/Modeling**

- R
- SPSS
- SAS
- Mathematica

### **Database Management**

- PostgreSQL/PostGIS
- SQLite/SpatiaLite
- Filemaker Pro
- SQL Server
- MySQL
- Microsoft Access
- dBase
- Citation management databases: Endnote, Papers, Zotero
- Google Fusion Tables

### **Geographic Information Technologies**

- ArcGIS

- Quantum GIS
- MapServer
- GeoServer
- ArcIMS
- GPS
- Mapping: Transit, Compass & Tape/pacing
- Interoperability Standards: OGC WMS, WFS, WCS & CSW
- Metadata Standards: FGDC CSDGM, ISO 19115 (and related standards)

### **Information Technology**

- Information management architectures
- Services-oriented architectures
- Cloud computing
- Basic principles of computer network design
- Windows, Linux and Mac OS X
- Core productivity applications: MS Office, Apple iWork applications, Google Drive

### **Other Technical Skills**

- Human osteological analysis
- Lithic (stone tool and debitage) analysis
- Historic preservation law
- Archaeological survey and excavation methods

### **Advisors**

*Bruce Huckell*, University of New Mexico, Department of Anthropology

*James Boone*, University of New Mexico, Department of Anthropology

*Wirt Wills*, University of New Mexico, Department of Anthropology

*Louis Scuderi*, University of New Mexico, Department of Earth and Planetary Sciences

### **Committee Membership**

Linda Barril, Ph.D, Organization, Information & Learning Sciences, University of New Mexico. Committee Member. In Process.

Lijuan Jia, Ph.D, Civil Engineering, University of New Mexico. Committee Member. Completed 2014. Dissertation Title: "Toward Improved Evaluation Of

Large Scale Hydrologic Models: Estimation And Quantification Of Parameter Uncertainty”

Jigar Patel, PhD., Computer Science, University of Nevada, Reno. In process.

Eric Cox, MS, Geography. University of New Mexico. Completed 5/2013. Thesis Title “The Effect of Airport Delays on the Evolution of the U.S. Air Travel Network”.

Kelly Monteleone, PhD., Anthropology. University of New Mexico. Completed 5/2013. Dissertation Title “Lost Worlds: Locating submerged archaeological sites in southeast Alaska”

Stephen Brown, MA, Civil Engineering, University of New Mexico. Committee Member. Completed 5/2012. Thesis Title: “Data Access and Visualization Benefits from Implementation of a Hydrologic Information System”

Lisa Arnold, MA, Geography. University of New Mexico. Committee Member. Completed 5/2009. Thesis Title: “Positional Accuracy of the Wide Area Augmentation System”

## Professional Associations

International Association for Social Science Information Services & Technology (2016-present, <http://www.iassistdata.org/>)

American Library Association / Association of College and Research Libraries (2015-present, <http://www.ala.org/><http://www.ala.org/acrl/>)

American Association of Geographers (2010-present, <http://www.aag.org/>)

American Geophysical Union (2008-present, <http://sites.agu.org/>)

New Mexico Geographic Information Council (~2001-present, <http://nmgic.com/>)

Society for American Archaeology (~1995-present, <http://saa.org/>)

- revised: 2016-02-15