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Projects and Publications

Significant Project Experience and Reports

- 2015, EarthCube Leadership Council Member-at-Large, and co-author of:
 - EarthCube Strategic Vision, June 2015. <http://earthcube.org/document/2015/earthcube-strategic-vision>
 - EarthCube Strategic Technology Plan, May 2015. <http://earthcube.org/document/2015/strategic-technology-plan>
- 2015, Project Lead and Editor, GEOSS Architecture Implementation Pilot, Phase 8 (AIP-8), GEOSS Water Services
 - Arctur D, Ed., AIP8 GEOSS Water Services presentation for GEO XII Plenary, Mexico City, Nov 2015
 - Arctur D, Ed., "AIP-8 GEOSS Water Services: National & Global Flood Forecasting", presentation for GEOSS Architecture Implementation Pilot 8 Kickoff, March 23, 2015, Norfolk VA.
 - Arctur D, Ed., AIP8 GEOSS Water Services Proposal, March 2015, 29 pages:
http://www.ogcnetwork.net/system/files/AIP8_GEOSS_Water_Services_Proposal_v06.pdf
- 2014, Project Lead and Editor, GEOSS Architecture Implementation Pilot, Phase 7 (AIP-7), GEOSS Water Services
 - Arctur D, Ed., AIP7 GEOSS Water Services presentation for GEO XI Plenary, Geneva Switzerland, Nov 2014 (57mb):
http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP7/documents/SBA/Water/AIP7-GEOSS_Water_Services_Overview-Arctur.pptx
 - Arctur D, Ed., AIP7 GEOSS Water Services Proposal, March 2014, 29 pages:
http://www.ogcnetwork.net/system/files/AIP7_GEOSS_Water_Services_Proposal_v5.pdf
- 2013-2014, Project Lead and Editor, GEOSS Architecture Implementation Pilot, Phase 6 (AIP-6), GEOSS Water Services
 - Arctur D, Ed., AIP6 GEOSS Water Services presentation for GEO X Plenary, Geneva Switzerland, January 2014 (26mb):
http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP6/documents/SBA/Water/AIP6_WaterSBA_Complete_v10.pptx
 - Arctur D, Ed., AIP6 GEOSS Water Services Engineering Report, March 2014, 30 pages:
http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP6/documents/SBA/Water/AIP6_Water_SBA_ER_v6.pdf
- 2012, Project Lead and Editor, GEOSS Architecture Implementation Pilot, Phase 5 (AIP-5), Water Societal Benefit Area
 - Arctur D, GEOSS AIP5 Water Scenario and Engineering Report, November 2012, 20 pages:
http://www.ogcnetwork.net/pub/ogcnetwork/GEOSS/AIP5/documents/AIP5Docs/SBA/Water/AIP5_Water_SBA_ER_final.docx,
 - Arctur D, GEOSS AIP5 Water Scenario presentation, November 2012, GEO IX Plenary, Foz do Iguacu, Brazil (47mb):
http://www.opengeospatial.org/pub/ogcnetwork/GEOSS/AIP5/documents/AIP5Docs/SBA/Water/AIP-5_Water_SBA_Salas_v7-long.pptx, and video: http://youtu.be/LFy_3g2ML1M .
- 2012, participant in EarthCube Cross-Domain Interoperability Test Bed Concept Group, and co-author of EarthCube Cross-Domain Interoperability Roadmap, August 2012, 113 pages:
<http://earthcube.org/document/2012/earthcube-cross-domain-interoperability-roadmap>
- 2011-2012, participant in EarthCube Governance Community Group, and co-author of two reports:
 - EarthCube Governance Roadmap, version 2, August 2012, 238 pages:
<http://earthcube.org/document/2012/earthcube-governance-roadmap>
 - EarthCube Governance Framework: A Proposal to the Community, September 2012, 200 pages:
<http://earthcube.org/document/2012/earthcube-governance-framework-proposal-community>
- 2011-2012, Initiative Director, OGC Web Services Testbed, Phase 8 (OWS-8), overview: <http://www.opengeospatial.org/projects/initiatives/ows-8>, final reports and videos: <http://www.opengeospatial.org/pub/www/ows8/index.html> .
- 2009-2010, Initiative Director, OGC Web Services Testbed, Phase 7 (OWS-7), overview: <http://www.opengeospatial.org/projects/initiatives/ows-7>, final reports: <http://www.ogcnetwork.net/ows-7>, and videos: <http://www.opengeospatial.org/pub/www/ows7/index.html>

David K. Arctur, Ph.D.

- 2008-2009, Initiative Director, OGC Web Services Testbed, Phase 6 (OWS-6), overview: <http://www.opengeospatial.org/projects/initiatives/ows-6>, final reports: http://www.ogcnetwork.net/ows6_reports, and videos: <http://www.opengeospatial.org/pub/www/ows6/index.html>

Books, Journal and Magazine Articles

- Gonzalo E Espinoza-Dávalos, **David K Arctur**, William Teng, David R Maidment, Irene García-Martí, and Georges Comair, “Studying Soil Moisture at a National Level through Statistical Analysis of NASA NLDAS Data”, submitted to Journal of Hydroinformatics, 2015 (review in progress).
- Farzad Kamalabadi, Basil Gomez, Yolanda Gil, **David Arctur**, Steve Richard, Jay Pearlman, “EarthCube Strategic Vision”, EarthCube Vision and Scope Team, June 11, 2015: <http://earthcube.org/document/2015/earthcube-strategic-vision>
- **David Arctur**, “OGC-led team demonstrates global/local water data resource at GEO Ministerial Summit”, Directions Magazine, Vol 22:1, April 2, 2014: <http://www.directionsmag.com/entry/ogc-led-team-demonstrates-global-local-water-data-resource-at-geo-mini/387127>
- Bolukbasi B, Berente N, Cutcher-Gershenfeld J, Dechurch L, Flint C, Haberman M, King JL, Knight E, Lawrence B, Masella E, Mcelroy C, Mittleman B, Nolan M, Radik M, Shin N, Thompson CA, Winter S, Zaslavsky I, Allison ML, **Arctur D**, Arrigo J, Aufdenkampe AK, Bass J, Crowell J, Daniels M, Diggs S, Duffy C, Gil Y, Gomez B, Graves S, Hazen R, Hsu L, Kinkade D, Lehnert K, Marone C, Middleton D, Noren A, Pearthree G, Ramamurthy M, Robinson E, Percivall G, Richard S, Suarez C, and Walker D. *Open Data: Crediting a Culture of Cooperation*. Science, Vol.342:6162, pp.1041-1042, 2013. DOI: [10.1126/science.342.6162.1041-b](https://doi.org/10.1126/science.342.6162.1041-b)
- M. Lee Allison, Tim Ahern, **David Arctur**, Jim Bowring, Gary Crane, Cecelia DeLuca, Geoffrey Fox, Carroll Hood, Hannes Leetaru, Kerstin Lehnert, Chris MacDermaid, George Percivall, Mohan Ramamurthy, Erin Robinson, Ilya Zaslavsky, Genevieve Pearthree and Kim Patten. “Earthcube Governance Framework: A Proposal To The Community”. EarthCube Governance Working Group, September 4, 2012. <http://earthcube.org/document/2012/earthcube-governance-framework-proposal-community>
- M. Lee Allison, Tim Ahern, **David Arctur**, Jim Bowring, Gary Crane, Cecelia DeLuca, Geoffrey Fox, Carroll Hood, Hannes Leetaru, Kerstin Lehnert, Chris MacDermaid, George Percivall, Mohan Ramamurthy, Erin Robinson, Ilya Zaslavsky, Genevieve Pearthree, Kim Patten and Debra Winstead. “EarthCube Governance Roadmap”, Version 2.0, EarthCube Governance Working Group, August 2012. <http://earthcube.org/document/2012/earthcube-governance-roadmap>
- Ilkay Altintas, **David Arctur**, Jerry Brotzge, Alva Couch, Philip Dibner, Ben Domenico, Rick Hooper, Kerstin Lehnert, Philip Murphy, Stefano Nativi, Beth Plale, Steve Richard, Karen Stocks, David Valentine, Ilya Zaslavsky, “EarthCube Cross-Domain Interoperability Roadmap”, Version 1.1, EarthCube Cross-Domain Interoperability Test Bed Group, August 2012. <http://earthcube.org/document/2012/earthcube-cross-domain-interoperability-roadmap>
- **David Arctur**, Robert Downs, Robert Chen, Stefano Nativi, David Schell, “Governance: An OGC White Paper for NSF EarthCube”, June 11, 2012. <http://earthcube.org/document/2012/governance-ogc-white-paper-nsf-earthcube>
- Edwin Welles, S.J.S. Khalsa, Dawn Wright, Robert Chen, Robert Downs, Yong Liu, **David Arctur**, “Science Scenarios: An OGC white paper for the NSF EarthCube”, October 31, 2011. <http://earthcube.org/document/2011/science-scenarios-ogc-white-paper-nsf-earthcube>
- A. Krishna Sinha, **David Arctur**, Ian Jackson, Linda Gundersen, Ed’s. **Societal Challenges and Geoinformatics**, Geological Society of America, 2011, 191 pages, ISBN 9780813724829. <http://rock.geosociety.org/Bookstore/default.asp?catID=9&pid=SPE482>
- Kristin M Stock, Rob Atkinson, Chris Higgins, Mark Small, Andrew Woolf, Keiran Millard and **David Arctur**. “A semantic registry using a Feature Type Catalogue instead of ontologies to support spatial data infrastructures.” International Journal of Geographical Information Science, 2010, vol 24:2, pp.231-252, DOI 10.1080/13658810802570291. Abstract: <http://www.tandfonline.com/doi/abs/10.1080/13658810802570291>
- Rob Atkinson, Keiran Millard and **David Arctur**, “Standards Based Approaches for Cross-Domain Data Integration”, International Journal of SDI Research, 2008, <http://ijdir.jrc.ec.europa.eu/index.php/ijdir/article/view/62/26>.
- **David Arctur** and Michael Zeiler, **Designing Geodatabases: Case Studies in GIS Data Modeling**, ESRI Press, 2004, 408 pages, ISBN 158948021X. ([see Amazon.com listing](#))
- **David Arctur**, “Object-Orientation in GIS: Conceptual Overview”, EOM Magazine, March 1998, pp.21-22.

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- **David Arctur**, David Hair, George Timson, E. Paul Martin and Robin Fegeas, "Issues and Prospects for the Next Generation of the Spatial Data Transfer Standard (SDTS)", *Int'l Journal Geographical Information Science*, Taylor & Francis Ltd, 1998, vol 12:4, pp.403-425. DOI 10.1080/136588198241851. Abstract: <http://www.tandfonline.com/doi/abs/10.1080/136588198241851> (PDF available on request)
- Kevin Shaw, Maria Cobb, Miyi Chung, and **David Arctur**, "Managing the Navy's First OO Digital Mapping Project", *IEEE Computer Magazine*, IEEE Computer Society Press, September 1996, Vol 29:9, pp.69-74. DOI: [10.1109/2.536786](https://doi.org/10.1109/2.536786).
- **David Arctur**, "Design of an Extensible, Object-Oriented GIS Framework with Reactive Capability", Doctoral Thesis, University of Florida, May 1996, 108 pgs, ISBN 0-591-09961-6. URI: <http://ufdc.ufl.edu/AA00029868/00001>.

Conference Papers and Workshops

- **David Arctur**, Joan Starr, Stefano Nativi, Enrico Boldrini, Mattia Santoro, Robert Arko, "Data Citation: DOI-Enabling GEOSS Discovery and Access", 4th GEOSS Science and Technology Stakeholder Workshop, March 27, 2015, Norfolk VA. http://www.gstss.org/2015_Norfolk_4th/presentations/GSTSS4-Arctur-DOI-Enabling-GEOSS.pdf
- **David Arctur**, "GEOSS Water Services: Federating Data, Maps and Processing", Keynote, 3rd GEOSS Science and Technology Stakeholder Workshop, March 24, 2015, Norfolk VA. http://www.gstss.org/2015_Norfolk_3rd/presentations/GSTSS3-Arctur-GEOSS%20Water%20Services.pdf
- **David Arctur**, David Maidment, "Federating Regional and National Water Data, Maps and Services through GEOSS", American Geophysical Union Fall Meeting, Session GC11C, December 15, 2014.
- James Austin, **David Arctur**, Nathan Bangs, Suzanne Carbotte, Jon Childs, Adrian McGrail, John Snedden, "Executive Summary of the Marine Seismic EarthCube End-User Domain Workshop", December 11-13, 2014, San Francisco, CA. <http://earthcube.org/document/2014/marine-seismic-domain-workshop-report>
- **Arctur, David K.** and Maidment, David R., "Publishing And Federating Global Water Data And Maps Via Web Services" (2014). *International Conference on Hydroinformatics*. Paper 138. http://academicworks.cuny.edu/cc_conf_hic/138
- de Lathouwer, Bart; Cripe, Douglas; **Arctur, David K.**; and Maidment, David R., "GEOSS AIP And GEOSS Water Services" (2014). *International Conference on Hydroinformatics*. Paper 454. http://academicworks.cuny.edu/cc_conf_hic/454
- Jackson, Stephen; Maidment, David R.; and **Arctur, David K.**, "Harmonization - Towards A Standardized River Geometry Format" (2014). *International Conference on Hydroinformatics*. Paper 303. http://academicworks.cuny.edu/cc_conf_hic/303
- **Arctur, David K.**, "Using GEOSS for registering global water data services" (2014). American Water Resources Association Annual Meeting, May 2014.
- **Arctur, David K.** and Maidment, David R., "GEOSS Water Services for Data and Maps" (2014). European Geosciences Union General Assembly 2014, Vienna Austria. Abstract: <http://adsabs.harvard.edu/abs/2014EGUGA..16.1461A>
- Lehnert, Kerstin; Allison, Lee; **Arctur, David**; Klump, Jens; Lenhardt, Christopher, "Geosamples.org: Shared Cyberinfrastructure for Geoscience Samples" (2014). European Geosciences Union General Assembly 2014, Vienna Austria. Abstract: <http://adsabs.harvard.edu/abs/2014EGUGA..1611611L>
- **Arctur, David K.** and Maidment, David R., "World Water Online (WWO) Status and Prospects" (2013). European Geosciences Union General Assembly 2013, Vienna Austria. Abstract: <http://adsabs.harvard.edu/abs/2013EGUGA..1513684A>
- Philip Dibner and **David Arctur**, "Addressing Cultural and Institutional Barriers to Data and Model Interoperability", Proceedings of the International Environmental Modelling and Software Society, September 2008, Barcelona Spain. <http://iemss.logismi.co:8080/xmlui/handle/iemss/8086>
- Alexey Voinov, **David Arctur**, Ilya Zaslavsky and Saleem Ali, "Community-based software tools to support participatory modelling: a vision", Proceedings of the International Environmental Modelling and Software Society, September 2008, Barcelona Spain. <http://iemss.logismi.co:8080/xmlui/handle/iemss/8093>
- Alexey Voinov, Ilya Zaslavsky, **David Arctur**, Chris Duffy and Ralf Seppelt, "Community modeling, and data-model interoperability", Proceedings of the International Environmental Modelling and Software Society, September 2008, Barcelona Spain. <http://iemss.logismi.co:8080/xmlui/bitstream/handle/iemss/8262/w1.pdf?sequence=2>
- **David Arctur**, Philip Dibner and David Schell, "Achieving Interoperability In Geosciences", Proceedings of the Geoinformatics 2007 Conference, San Diego CA. https://gsa.confex.com/gsa/2007GE/finalprogram/abstract_122334.htm

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- **David Arctur** & Doug Adams, "Best Practices for Developing Geographic Information Models", URISA Certified one-day workshop offered at ESRI International User Conference 2005, URISA 2004, 2005, 2006, 2007, 2008 national conferences; GeoTec 2005, 2006; Geo-Alberta 2006; and Government Technology Conference-Southwest 2006, 108 pgs. Published by Urban & Regional Information Systems Association, Park Ridge, Illinois.
- **David Arctur** & Carl Reed, "Introduction to Object-Oriented Modeling for GIS", URISA Certified one-day workshop offered at URISA 2000, 2001, 2002, 2003 national conferences, 120 pgs. Published by Urban & Regional Information Systems Association, Park Ridge, Illinois.
- **David Arctur**, "Introduction to Object-Oriented GIS Technology", one-day workshop updated each year and presented at industry conferences GIS/LIS'96, GIS/LIS'97, GIS/LIS'98, GITA'98, GITA'99, URISA'97, URISA'98, and URISA'99, 100 pgs. Published by Urban & Regional Information Systems Association, Park Ridge, Illinois.
- **David Arctur**, Eman Anwar, Sharma Chakravarthy, Maria Cobb, Miyi Chung, Kevin Shaw, and John Alexander, "Implementation of a Rule-Based Framework for Managing Updates in an Object-Oriented VPF Database", Proceedings of GIS/LIS'95 Conference, Nashville, Tennessee, November 1995, pp. 1-10. ([Download PDF file.](#))
- Miyi Chung, Maria Cobb, Kevin Shaw, and **David Arctur**, "An Object-Oriented Approach for Handling Spatial Topology in VPF Products", Proceedings of GIS/LIS'95 Conference, Nashville, Tennessee, November 1995, pp. 163-174. ([Download PDF file.](#))
- **David Arctur**, Eman Anwar, John Alexander, Sharma Chakravarthy, Miyi Chung, Maria Cobb, and Kevin Shaw, "Comparison and Benchmarks for Import of Vector Product Format (VPF) Geographic Data from Object-Oriented and Relational Database Files", Proceedings of the Fourth International Symposium on Advances in Spatial Databases, SSD'95, Portland, Maine, August 1995, Springer-Verlag, pp.368-384. ([Download PDF file.](#))

Naval Research Laboratory Reports

Note: Some of the following are internal research reports. Contact Kevin Shaw at Stennis Space Center, Mississippi USA, for information on the OVPF Project, which has been principally funded by the US National Geospatial Intelligence Agency (NGA), formerly National Imagery and Mapping Agency (NIMA).

- Miyi Chung, Maria Cobb, Kevin Shaw, **David Arctur**, "Exploitation of World-Wide Web to Support Network Updating of VPF Mapping Database at a Feature Level," Technical Report No. NRL/MR/7441--95-7713, Naval Research Laboratory, May 1996.
- Maria Cobb, Miyi Chung, Kevin Shaw, and **David Arctur**, "Object-Oriented Database Design and Implementation Issues for Object Vector Product Format (OVPF)," Technical Report No. NRL/FR/7441--95-9641, Naval Research Laboratory, July 1996.
- **David Arctur**, John Alexander, Miyi Chung, Maria Cobb, Kevin Shaw, Survey of Spatial Topology: Issues and Approaches," Technical Report No. NRL/MR/7441--96-7719, Naval Research Laboratory, September 1996.
- Kevin Shaw, Miyi Chung, Maria Cobb, **David Arctur**, John Alexander, and Eman Anwar, "Object-Oriented Database Exploitation Within the GGIS Data Warehouse," Research Report to NRL and DMA, April 1995.
- Kevin Shaw, John Alexander, **David Arctur**, and Robert E. Williams, "Development of an Object-Oriented Digital MC&G Database System for Modeling and Simulation Support," Research Report to NRL, DMA and DMSO, September 1994.

Programming Instruction Manuals

Note: These are the property of the respective companies listed. In most cases the versions I helped write are no longer available.

- Momenta Education Services (1991, 1992) Application Programming for the Momenta Computer. Principal author of course materials published by Momenta Corp., Mountain View, CA.
- ParcPlace Systems Education Services (1990, 1991) Introduction to Smalltalk Programming. Coauthor of course materials published by ParcPlace Systems, Sunnyvale, CA.
- Informix Customer Training (1987, 1988) Advanced Informix 4GL Programming. Principal author of course materials published by Informix Software, Inc., Menlo Park, CA.
- ___(1987, 1988) Advanced SQL Programming. Coauthor of course materials published by Informix Software, Inc., Menlo Park, CA.

AAAS – American Association for the Advancement of Science, www.aaas.org
ACM – Association for Computing Machinery, www.acm.org
AGU – American Geophysical Union, www.agu.org
DBMS – database management system ([Wikipedia entry](#))
DMA – US Defense Mapping Agency, now called National Geospatial Intelligence Agency (NGA)
EGU – European Geosciences Union, www.egu.eu
EPRI – Electric Power Research Institute, <http://my.epri.com>
FIT – Florida Institute of Technology, www.fit.edu
FP7 – European Union "Framework Programme 7" research agenda, http://ec.europa.eu/research/fp7/index_en.cfm
GEOSS – Global Earth Observation System of Systems, www.earthobservations.org
GIS – geographic information system ([Wikipedia entry](#))
GML – OGC Geography Markup Language, <http://www.opengeospatial.org/standards/gml>
GSA – Geological Society of America, www.geosociety.org
H2020 – European Union "Horizon 2020" research agenda, <http://ec.europa.eu/programmes/horizon2020/>
ICSU – International Council for Science, www.icsu.org
IEEE – Institute of Electrical and Electronics Engineers, www.ieee.org
MoU – Memorandum of Understanding ([Wikipedia entry](#))
NASA – US National Aeronautics and Space Administration, www.nasa.gov
NRL – US Naval Research Laboratory
NSF – US National Science Foundation, www.nsf.gov
OGC – Open Geospatial Consortium, www.opengeospatial.org
OWS – OGC Web Services test bed initiatives, <http://www.opengeospatial.org/ogc/programs/ip>
SIF – GEOSS Standards and Interoperability Forum, www.earthobservations.org
SQL – Structured Query Language, used by many commercial DBMS's ([Wikipedia entry](#))
SRI – Stanford Research Institute, www.sri.com
WMO – World Meteorological Organization, www.wmo.int