

Douglas C. Curl
1150 Stourbridge Rd
Versailles, KY 40383
doug@uky.edu
615.438.5487
github.com/dougcurl

PROFESSIONAL EXPERIENCE

Director, Information Management Division
Kentucky Geological Survey, University of Kentucky
July 2025 – Present

- Serve as direct report to the KGS Director, contributing to strategic planning and executive decision-making to advance the Survey's mission and organizational objectives.
- Oversee comprehensive web development, IT operations (server and desktop infrastructure), and enterprise-wide electronic data stewardship for the organization.
- Lead cross-divisional collaboration initiatives, aligning Information Management Division activities with research priorities across KGS.
- Architect, develop, and maintain mission-critical web applications and GIS services that deliver geological data to researchers, government stakeholders, and the public across multiple platforms.
- Secure external funding through grant proposal development to support ongoing data management, GIS infrastructure, and web development initiatives.

Section Head – Geoscience Information Management Section
Kentucky Geological Survey, University of Kentucky
May 2012 – July 2025

- Direct report of the KGS Director and highly involved with upper management planning and decisions to help fulfill the KGS mission.
- Manage 6 employees of the Geoscience Information Management Section.
- Oversee research and facility staff and activities at the Earth Analysis Research Library.
- Lead all IT operations and web development at KGS, including server/desktop support, electronic data stewardship, and collaboration between GIMS staff and researchers.
- Design, program, and manage web applications and GIS services for data delivery to researchers, stakeholders, and the public across desktop and mobile platforms.
- Write grant proposals to support data, GIS, and web development activities for KGS.

Geologist IV – Geoscience Information Management Section
Kentucky Geological Survey, University of Kentucky
September 2011 – May 2012

Primary designer, programmer, and manager of web applications for the delivery of GIS data to the public through tabular and map-based interfaces.

Geologist III – Geoscience Information Management Section
Kentucky Geological Survey, University of Kentucky
April 2002 – August 2011

Primary designer, programmer, and manager of web applications for the delivery of GIS data to the public through tabular and map-based interfaces, and staff geologist on the KGS/USGS cooperative program "Digital Geologic Mapping in Kentucky".

Adjunct Professor

Georgetown College, Georgetown, Kentucky

August 2000 – May 2004

Taught 8 semesters of lecture and laboratory for the Introduction to Geology course.

Geologist II - Geospatial Analysis Section

Kentucky Geological Survey, University of Kentucky

September 1998 – April 2002

Staff geologist on the KGS/USGS cooperative program “Digital Geologic Mapping in Kentucky”.

Intern Geologist

South Carolina Geologic Survey, Columbia, South Carolina

May 1996 - December 1996

Conducted detailed geologic mapping (1:24000 scale) of the Wellford and Reidville quadrangles within portions of Spartanburg and Laurens counties, South Carolina.

EDUCATION

M.S., Geological Science, 1998, University of Tennessee, Knoxville, Tennessee

Area of Specialization: Structural Geology and Geologic Field Mapping.

B.A., Geology, 1994, Guilford College, Greensboro, North Carolina

TRAINING

- University of Kentucky Experienced Leader Academy (2017)
- University of Kentucky Essential Leader Program (2025-2026)

PUBLIC SERVICE

- Kentucky River Watershed Watch Board (2014 – present)
- Kentucky Watershed Watch Science Advisory Committee (2014 – present)
- Versailles-Midway-Woodford Planning Commission: Aug, 2025 – present

PROFESSIONAL ORGANIZATIONS

- KY Geographic Information Advisory Council (GIAC): proxy for state geologist
- GIAC: KYFromAbove tech advisory committee
- American Association of State Geologists: Associate member

TECHNICAL SKILLS

GIS Applications

- **ArcGIS Pro:** Advanced geoprocessing, Python scripting and automation, cartographic design, spatial analysis workflows
- **ArcGIS Server:** Enterprise service management, REST API integration and automation, performance optimization, multi-user geodatabase administration
- **ArcGIS JavaScript SDK:** Custom web mapping application development for desktop and mobile platforms
- **ArcGIS Online:** Web map and story map creation, data sharing and collaboration
- **Field Data Collection:** ArcGIS Field Maps and Survey123 configuration and deployment
- **Legacy Platforms:** ArcMap, ArcSDE, ESRI Javascript API

- **Service Architecture:** Design and maintenance of public-facing map services, WMS/WFS standards implementation

Programming & Development

- **Web Development:** JavaScript (including ArcGIS JavaScript SDK), HTML5, CSS3, ASP Classic/VBScript, ASP.NET/VB, PHP
- **Backend & Automation:** Python (ArcGIS Pro scripting, ArcGIS Server REST API automation, data processing workflows)
- **Database:** SQL (SQL Server, PostgreSQL), T-SQL for spatial queries and data analysis
- **Modern Frameworks:** Astro, Nuxt, Texpereience with headless CMS integration (Directus)
- **API Integration:** RESTful services, ArcGIS Server management via Python and REST API
- **Standards & Accessibility:** WCAG compliance, ARIA attributes, responsive design

Database Management

- **SQL Server:** Advanced query development, spatial data management (geometry/geography types), database administration, performance optimization
- **PostgreSQL:** Database operations, data migration, schema design and management
- **Microsoft Access:** Application development and data management
- **Spatial Databases:** Expertise with geographic data types, coordinate system transformations (NAD83, Web Mercator), spatial queries and analysis
- **Database Tools:** SQL Server Management Studio, DataGrip, pgAdmin
- **Data Integration:** ETL processes, fuzzy matching algorithms for record reconciliation, automated data export workflows (shapefile, CSV, Excel formats)

Development Tools & Environment

- **Code Editors:** Visual Studio Code (primary IDE), Cursor, Visual Studio, Sublime Text, Notepad++
- **Version Control:** Git, GitHub for source code management and collaboration
- **AI-Assisted Development:** Integration of AI tools (Claude, GitHub Copilot, Cursor AI, Microsoft Copilot, ChatGPT) for code optimization, debugging, and documentation
- **Server Administration:** IIS (Internet Information Services), NGINX on Linux for web server configuration and management
- **Operating Systems:** Windows Server and Linux system administration and troubleshooting
- **Cloud Platform Management:** Microsoft Azure administration including Blob Storage, resource management, cloud-based data solutions and deployment
- **Package Management:** npm, pip for dependency management
- **Development Workflow:** Modern DevOps practices, automated testing, continuous integration

Graphics Design

- Adobe Illustrator, Adobe Photoshop, Canva, Snagit Editor, Adobe Acrobat

Productivity Applications

Expertise and vast experience using and collaborating with Microsoft and Google applications including Teams, Excel, and Word.

PUBLICATIONS & PRESENTATIONS

Peer-Reviewed Publications & Research Data

- Adams, E., Raia, N., Choe, S., Wink, I., **Curl, D.C.**, 2025, Engaging state geological surveys in implementing data stewardship practices: a pilot workshop at the Kentucky Geological Survey: Research Ideas and Outcomes, v. 11, e155393, <https://doi.org/10.3897/rio.11.e155393>
- Curl, D.C.**, Washburn, R.L., 2025, The Kentucky Microbiome Dataset [ver. 1, 2025-07]: Kentucky Geological Survey, ser. 14, research data, <https://doi.org/10.13023/kgs.data.2025.07.11>
- Lukoczki, G., Dietsch, C., Hickman, J.B., Morris, E., **Curl, D.C.**, Pulliam, C., Vicroy, S.R., Andrews, W.M., 2022, Phase I Activities of the Earth Mapping Resources Initiative (Earth MRI) in the Western Kentucky Fluorspar District: Kentucky Geological Survey, ser. 13, Report of Investigations 12, 22 p., <https://doi.org/10.13023/kgs.ri55.13>
- Dortch, J.M., Tomkins, M.D., Saha, S., Murari, M.K., Schoenbohm, L.M., **Curl, D.C.**, 2022, A tool for the ages: The Probabilistic Cosmogenic Age Analysis Tool (P-CAAT): Quaternary Geochronology, v. 71, 101323, <https://doi.org/10.1016/j.quageo.2022.101323>
- Haneberg, W.C., Wiggins, A., **Curl, D.C.**, Greb, S.F., Andrews, W.M., Rademacher, K., et al., 2020, A geologically based indoor-radon potential map of Kentucky: GeoHealth, v. 4, e2020GH000263, <https://doi.org/10.1029/2020GH000263>

Interactive Digital Products

- Haneberg, W.C., **Curl, D.C.**, 2021, Kentucky High Points Interactive Map: Kentucky Geological Survey, ser. 13, Interactive Tour 8, <https://kgs.uky.edu/kyhighpts/>
- Adams, E., **Curl, D.C.**, Lewis, C., 2021, Exploring the Digital Image Archive of Geologic Core at KGS: Kentucky Geological Survey, ser. 13, Interactive Tour 7, <https://arcg.is/0uyP0q>
- Andrews, W.M., **Curl, D.C.**, 2020, Camp Nelson National Monument: A Geologic Story: Kentucky Geological Survey, ser. 13, Interactive Tour 5, <https://arcg.is/z1qOv>
- Martin, S.L., **Curl, D.C.**, 2017, Geologic Tour for Parklands of Floyds Fork: Kentucky Geological Survey, ser. 13, Interactive Tour 2, <https://kgs.uky.edu/storymap/floydsfork/>

Conference Presentations & Abstracts

- Curl, D.C.**, Adams, E.L., 2022, Making Physical Geologic Collections Available in the Digital Realm: American Geophysical Union (AGU) Fall Meeting 2022, December 12–16, Chicago, Illinois, <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/106826>
- Curl, D.C.**, Andrews, W.M., Martin, S.L., 2022, Using Story Maps to Share Geoheritage and Connect with Communities: Geological Society of America Abstracts with Programs, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-382354>
- Andrews, W.M., **Curl, D.C.**, 2022, Four Examples of Applied Products From Compiled Detailed Published Geologic Maps in Kentucky: Geological Society of America Abstracts with Programs, v. 54, no. 5, <https://doi.org/10.1130/abs/2022AM-381737>
- Saha, S., Haneberg, W.C., Dortch, J., Crawford, M.M., **Curl, D.C.**, Koch, H.J., 2022, An Interactive Statewide Spatial Hazard Analysis, Detection, and Environmental Change Tool (SHADE-C): American Geophysical Union (AGU) Fall Meeting 2022, December 12–16, Chicago, Illinois, <https://agu.confex.com/agu/fm22/meetingapp.cgi/Paper/1156621>
- Curl, D.C.**, 2020, Delivering Kentucky geologic map information to the public: Fifteen years of an evolving web-based map service: Geological Society of America Abstracts with Programs, v. 52, no. 6, <https://doi.org/10.1130/abs/2020AM-357196>
- Curl, D.C.**, Overfield, B., Martin, S.L., Andrews, W.M., Jr., 2015, Evolution of geologic mapping data standards and collection techniques at the Kentucky Geological Survey: Geological Society of America Abstracts with Programs, v. 47, no. 2, p. 29.

- Curl, D.C.**, 2014, Development of the KY Coal Resource Information Web Application: Kentucky GIS Conference, September 17, 2014.
- Curl, D.C.**, 2014, Kentucky Coal Resource Information Web Application: ESRI International Users Conference, Software Applications Fair, July 14–17, 2014, San Diego, California.
- Curl, D.C.**, 2013, Development of the Kentucky Mobile Geologic Map Application: Digital Mapping Techniques Conference, June 3, 2013.
- Curl, D.C.**, 2011, Web-based GIS Applications for Visualizing Geologic and Hydrologic Data in Kentucky: Geological Society of America Annual Meeting, October 9, 2011.
- Curl, D.C.**, 2011, Creating Dynamic Thematic Maps: Natural Breaks Classification with ArcGIS Javascript API: UK GIS Day, November 17, 2011.
- Curl, D.C.**, Weisenfluh, G.A., Crawford, M.M., 2006, The Kentucky geologic map information service: Delivering geologic map data to the web: Geological Society of America Abstracts with Programs (SE Section), v. 38, no. 3, p. 30.
- Curl, D.C.**, 2005, The Kentucky Geological Survey online geologic map service: Kentucky GIS Conference, August 23, 2005.
- Curl, D.C.**, 2004, KYGeoPortal demonstration: Internet and Multimedia Exhibit, ESRI International Users Conference, August 9, 2004, San Diego, California.
- Curl, D.C.**, Ruthven, C.L., Weisenfluh, G.A., 2002, Communicating geoscience information to the general public: innovations in data transfer technology: Geological Society of America Abstracts with Programs (SE Section), v. 34.
- Curl, D.C.**, 2001, Beyond the map: Integration of non-spatial geologic information with geospatial geologic map data: Geological Society of America Abstracts with Programs (SE Section), v. 33.

Geologic Maps & Spatial Databases

- Peterson, W., Sparks, T., **Curl, D.C.**, 2010, Geologic map of the Kentucky part of the Huntington 30 x 60 minute quadrangle, northeastern Kentucky: Kentucky Geological Survey, Geologic Map Series 12, no. 24.
- Curl, D.C.**, Petersen, C., Sparks, T., 2010, Geologic map of the Kentucky parts of the Maysville and Ironton 30 x 60 minute quadrangles, northern Kentucky: Kentucky Geological Survey, Geologic Map Series 12, no. 26.
- Nelson, H., **Curl, D.C.**, 2006, Spatial database of the Argillite quadrangle, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 175.
- Nelson, H., **Curl, D.C.**, 2006, Spatial database of the Rush quadrangle, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 408.
- Curl, D.C.**, Stidham, M., 2006, Spatial database of the Sawyer quadrangle, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 179.
- Curl, D.C.**, Sparks, T., 2006, Spatial database of the Saxton quadrangle, and part of the Jellico East quadrangle, Whitley County, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 1264.
- Curl, D.C.**, Wente, K., Petersen, C., 2005, Spatial database of the Mount Sterling quadrangle, Montgomery County, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 1335.
- Curl, D.C.**, Petersen, C., 2005, Spatial database of the Olympia quadrangle, Bath and Menifee Counties, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 1406.
- Curl, D.C.**, 2001, Spatial database of the Lexington East quadrangle, Fayette and Bourbon Counties, Kentucky: Kentucky Geological Survey, Digitally Vectorized Geologic Quadrants, ser. 12, no. 683.