Updates from Shippensburg
Winter 2016–2017
"Mapping, modeling, and monitoring land cover in the Delaware River Basin"
Supported by the William Penn Foundation

A first comparison between the new UVM High-Resolution Land Cover dataset and the NLCD (pt.1)

The National Land Cover Database (NLCD) has been a reliable source of consistent and spatially-explicit land cover information for more than a decade. These data are derived from LANDSAT satellite images and provide GIS professionals with a seamless classification scheme with 20 classes at 30-meter resolution (Homer et al., 2014, USGS, 2014a). Other data layers associated with NLCD program include Tree Canopy (USGS, 2014b) and Developed Imperviousness (USGS, 2014c).

Figure 1: 2011-vintage National Land Cover Data for Dover Township & Borough. The 30-m pixel footprints are apparent in the zoomed area.
The University of Vermont (UVM) Spatial Analysis Laboratory (2016) released a new High-Resolution Land Cover (HRLC) dataset for the portions of Pennsylvania that overlap the Chesapeake Bay and Delaware River Watersheds. The primary sources used to derive these new data were 2006–2008 leaf-off LiDAR data, 2005–2008 leaf-off orthoimagery, and 2013 leaf-on orthoimagery. Ancillary data for roads and hydrology were used to augment the mapping process. These data provide GIS professionals with a seamless classification scheme with 12 classes at an incredible 1-meter resolution.

Visit our website to see a comparison between the NLCD and UVM datasets. Through this analysis, we learned that the new High-Resolution Land Cover dataset can provide GIS professionals and others with land cover information that is much more spatially-precise than the NLCD dataset can provide. Learn more!

**Figure 2**: 2013-vintage National Land Cover Data for Dover Township & Borough. The 1-m pixel size is not apparent in the zoomed area.

**UVM High-Resolution Data Update**

We just heard from our collaborators at UVM that the high-resolution land cover for New Jersey is now complete! We are currently reviewing the data and it will soon be available on PASDA. Watch our social media for updates!
DRB2070 Modeling Update

Our modeling work ran into some bottlenecks that are quickly resolving, so expect to see some products very soon! At Shippensburg University, we have completed the calibration of the SLEUTH model for the entire basin, a process that took many days of computer processing. We are now validating the model to make sure it is working as expected, and then we will be running our forecasts out to 2070. We anticipate having completed version 1.0 forecasts by the end of January and rolling out data products in February. We are working with the SRAT team at ANS to integrate our results into that platform so that it will be easily available to users. GIS data files will also be made available.

We are working with the Institute for Conservation Leadership to coordinate a webinar in February to talk about these new data sets and how they may be useful in planning. Stay tuned for more information!

Delaware Watershed Research Fund Work Begins!

Drs. Woltemade, Hawkins, Drzyczga, C. Jantz (Shippensburg University) and P. Jantz (Northern Arizona University) have begun work to study climate change and land use change in the Delaware River Basin. In year one of this three year project, our team will be focusing on data collection and synthesis for a basin-wide gridded hydrologic model and a species distribution model, as well as performing an analysis of hydrometeorology of historic extreme floods. Data collection has already begun on this project, and we expect to present preliminary findings on historic extreme floods in the next newsletter!

Energy Infrastructure in the DRB—by the Numbers

Student analyst Caitlin Lucas is looking into current and future energy infrastructure in the basin. As a first step, she has pulled together some basic statistics on our major energy infrastructure. This information has been assembled from the U.S. Energy Information Administration’s (EIA) Energy Mapping System and most data are current as of 2016.

In the DRB there are:

- 1,058 miles of natural gas pipelines, 725 miles of petroleum product pipelines, and 52 miles of hydrocarbon gas liquid (HGL) pipelines – a total of 1,835 miles of pipeline.
- 27 coal mines
- 179 power plants
- 824 wind turbines
Visit Us in 2017!

We plan to attend the following conferences and meetings this winter and spring—make sure to stop by! Please let us know about other venues to share our work.

- **February 7–8:** Delaware River Watershed Initiative (DRWI) Winter Gathering in Macungie, PA
- **April 5–9:** [American Association of Geographers](#) Meeting in Boston, MA
- **April 9–14:** [International Association for Landscape Ecology](#) Annual Meeting in Baltimore, MD. We will be participating in *Symposia 4: Land–Change Modeling Applied to Planning and Resource Management*
- **May 4–6:** [Pennsylvania Land Conservation Conference](#) in Lancaster, PA
- **May 15–17:** 25th Annual [PA GIS Conference](#) in State College, PA

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**Steering Committee Update**

Read the minutes from our [December 2016](#) Steering Committee meeting.

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**2016 Annual Report**


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[www.drbproject.org](http://www.drbproject.org)

Stay informed about our project through our newsletters, website, and social media!

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**Please contact Antonia Price with any comments or questions:**

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