### Hashtags: #earth, #printwatershed

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### Tags: Hardware

3D models help many concepts and designs come to life—why not the environment? Create a 3D model of a watershed (also called a drainage basin) so you can see rivers, streams, and different kinds of land cover like forests, farms, and impermeable surfaces.

Use elevation and other data to create outputs that can be fed to 3D printers using STereoLithography (STL) or other file formats. These maps can make a watershed feel personal and help people feel a sense of responsibility for protecting it. Brainstorm ways to use these maps and models, such as in schools, planning associations, and watershed protection organizations.

**Background**

It’s often hard for people to understand the boundaries of a watershed (drainage basin) of a river or stream. They may not understand what a watershed is or how local activities affect a watershed. A three-dimensional model of watershed can show the relationships between several issues in one place. For example, the model could show areas of a watershed where the water is clean, dirty, or vulnerable to being polluted. Or there could be several models of the same watershed at different points in time. It would also be helpful to assist people in using these models by creating learning modules and guidance documents.

**Solution Ideas**

Here are some ways for you to frame this solution:

The user can select a watershed or other area (i.e., the extent) to be printed; create an elevation model of the extent or a 3D model which could include information such as city boundaries, water table, minds, types of vegetation, levels of pollution, soil moisture levels, population density. The models could be printable in various sizes such as tabletop, 20 cm x 30 cm, or even keychains. You could create several models that show changes in a watershed over time; learning modules for students or watershed associations; and/or two dimensional printouts of your watershed to print on tee shirts or wall maps.

**Sample Resources**

* USGS National Elevation Dataset (NED) using the USGS National Map Viewer: <http://nationalmap.gov/viewer.html>
* US Interagency Elevation Inventory: <http://www.csc.noaa.gov/inventory/>
* Watershed Boundary Dataset:<http://nhd.usgs.gov/wbd.html>
* Geospatial Data Gateway: <http://datagateway.nrcs.usda.gov/>
* Density Using Land Area For States, Counties, Metropolitan Areas, and Places: <http://www.census.gov/population/www/censusdata/density.html>
* Digital Elevation data: <http://earthexplorer.usgs.gov>