INTRODUCTION

Over the last few years, many new GIS-based products have been created using Python at the Midwestern Regional Climate Center (MRCC). Many of these products have been created on a daily or hourly basis, hence the need for automation. The Python scripts written to create these products take advantage of ESRI’s ArcPy module and its geoprocessing and mapping capabilities. MRCC GIS Specialist Zoe Zaloudek shows how these python scripts take climate data in formats such as CSV, textfile, and JSON objects, make GIS data out of these inputs, and then create a wide variety of static and dynamic maps.

Python-Powered GIS Products at the Midwestern Regional Climate Center

Zoe Zaloudek, GISP, CFM | Illinois State Water Survey, Prairie Research Institute at University of Illinois at Urbana-Champaign
GIS Specialist, zaloudek@illinois.edu

CLIMATE WATCH WEBSITE

http://mrcc.isws.illinois.edu/cliwatch/watch.htm

VISIT THE
MRCC WEBSITE:

http://mrcc.isws.illinois.edu/cliwatch/watch.htm

1. First the script will use ACIS web call to get COOP/CoCoRaHS station
   points and their observation data.
2. Then it gathers data from the input CSV files and creates a point
   shapefile.
3. Next, the script joins the CSV file to the shapefile and makes
   a point feature class out of it.
4. Finally, the script creates a variety of maps, including 4-inch bare
   ground Soil Temperature and Potential Evapotranspiration.

REGIONAL MESONETS AND PARTNERS PROJECT (REMAPP) WEBSITE

http://mrcc.isws.illinois.edu/cliwatch/mesonets/soilTemp.html

1. First the script will use ACIS web call to get station data
   and attributes it to a set of site points that have
   already been made.
2. The script reads it as a CSV file and interpolates
   rasters on these polygons for each of the 5
   sites. The script figures out the most recent day's
   values in addition to calculating averages.
3. Then it creates the ESRI shapefiles, polygonal single files for
   CSV database and creates a CSV.
4. Next, the script makes the CSV to be used for the
   ClimateWatch website.

VIP FROST/FREEZE GUIDANCE WEBSITE

http://mrcc.isws.illinois.edu/VIP/indexFrost.html

1. First the script will use ACIS web call to get COOP/CoCoRaHS station
   data and attributes it to a set of site points that have
   already been made.
2. Then it gathers all input-guidance data from our SQL
   database and creates a CSV.
3. Next, the script joins the CSV file to the shapefile and makes
   a point shapefile.
4. The point shapefiles are clipped to the necessary extent.
5. That data is then attributed to county polygons.
6. Finally, the script makes the maps to be used for the VIP Frost/Freeze Guidance website. The above maps are a selection of the 22 types of static maps.

VIP — OTHER PRODUCTS WEBSITE

http://mrcc.isws.illinois.edu/VIP/indexOtherProds.html

1. First the script will use ACIS web call to get COOP/CoCoRaHS station
   data and attributes it to a set of site points that have
   already been made.
2. The script reads it as a CSV file and interpolates
   rasters for both of these polygons around each station,
   on these polygons for each of the 5 sites. The script figures
   out the most recent departure values.
3. Next, the script collects data made in-house daily by the
   regional climatologist.
4. Finally, the script creates a variety of maps, including 4-inch bare
   ground Soil Temperature and Potential Evapotranspiration.
5. The spatial data shown in our interactive map is also updated
   by the script.

MRCC website:

Visit the
CLIMATE WATCH WEBSITE
MRCC website:

http://mrcc.isws.illinois.edu/cliwatch/watch.htm

CLIMATE WATCH WEBSITE

http://mrcc.isws.illinois.edu/cliwatch/watch.htm

VIP FROST/FREEZE GUIDANCE WEBSITE

http://mrcc.isws.illinois.edu/VIP/indexFrost.html

VIP — OTHER PRODUCTS WEBSITE

http://mrcc.isws.illinois.edu/VIP/indexOtherProds.html