



NATIONAL RESEARCH
UNIVERSITY

Geoapplications development
<http://rgeo.wikience.org>

Task 02

Antonio Rodrigues
rodrigues@wikience.org

Task – part I

Develop the geoapp that does the following:

1. Opens SHP file for Moscow administrative boundaries
 - a) see course site for SHP files
 - b) see example in worldwindx -> Shapefiles
2. Opens GeoTIFF files (bands 4 and 5) of Landsat 8 satellite that cover Moscow (take the files from EarthExplorer, see next slides)
3. Calculates pixel by pixel NDVI within each administrative boundary
4. Aggregates the NDVI values within each administrative boundary into min, max, avg values

Task – part II

5. Assign the attributes of respective min, max, avg values to each administrative boundary (vector features)
6. Saves the result as a vector file

Task – part III

Student must answer questions during the dialog student-tutor

The questions influence the marking

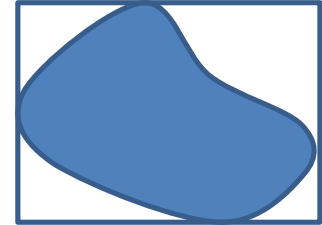
Marking – part I

The solution of steps 1-4 gives 4.5 items

The final mark is the sum of items

Marking – part II

Representing an administrative boundary as a polygon or a bounding box (calculate NDVI for pixels inside the bounding box VS the original polygon)



Polygon – 2.1 items

Bounding box – 0.4 items

Do not perform an exhaustive check of each pixel (whether it is inside a polygon or not) – this will not give you more than 1 item

Marking – part III

Save to

GeoJSON – 2.1 items

ShapeFile – 1 item

KML – 0.4 items

Practice

Example is in worldwindx -> Shapefiles

The screenshot shows the 'World Wind Shapefiles' application interface. On the left is a 'Layers' panel with a scrollable list of map layers. Below it is a 'Shapefiles' section with 'Open File...' and 'Open URL...' buttons, and checkboxes for 'Allow picking' and 'Allow dragging'. The main map area displays a satellite view of a city with numerous colored polygons overlaid, representing shapefiles. City names like 'Sergiyev Posad', 'Zelenograd', 'Mytishchi', 'Noginsk', and 'Orekhovo-Zuyevo' are labeled in yellow. A compass rose is in the top right, and a 20 km scale bar is in the bottom right. At the bottom, the status bar shows 'Altitude 285 km', 'Off Globe', and a red 'Downloading' indicator.

Layers

- Stars
- Atmosphere
- NASA Blue Marble Image
- Blue Marble May 2004
- i-cubed Landsat
- USDA NAIP
- USDA NAIP USGS
- MS Virtual Earth Aerial
- Bing Imagery
- USGS Topographic Maps 1:250K
- USGS Topographic Maps 1:100K
- USGS Topographic Maps 1:24K
- USGS Urban Area Ortho
- Political Boundaries
- Open Street Map

Shapefiles

Open File...
Open URL...

Allow picking Allow dragging

Altitude 285 km Off Globe **Downloading**

Satellite data, including Landsat 8

EarthExplorer

The screenshot displays the EarthExplorer web application interface. The browser address bar shows `earthexplorer.usgs.gov`. The page title is "EE EarthExplorer". The navigation menu includes "Search Criteria", "Data Sets", "Additional Criteria", and "Results".

2. Select Your Data Set(s)
Check the boxes for the data set(s) you want to search. When done selecting data set(s), click the *Additional Criteria* or *Results* buttons below. Click the plus sign next to the category name to show a list of data sets.

Use Data Set Prefilter ([What's This?](#))

Data Set Search:

Data Set Search Results:

- Digital Elevation
- Digital Line Graphs
- Digital Maps
- EO-1
- Global Fiducials
- Global Land Survey
- HCMM
- ISERV
- Land Cover
- Landsat Archive
 - L8 OLI/TIRS
 - L8 OLI/TIRS Pre-WRS-2
 - Landsat Surface Reflectance - L8 OLI/TIRS
 - L7 ETM+ SLC-off (2003-present)
 - L7 ETM+ SLC-on (1999-2003)
 - Landsat Surface Reflectance - L7 ETM+
 - L4-5 TM
 - Landsat Surface Reflectance - L4-5 TM
 - L1-5 MSS
- Landsat Legacy
- Landsat MRLC
- NASA LPDAAC Collections

Search Criteria Summary (Show) Clear Criteria

Map controls: Карта | Спутник | (57° 07' 51" N, 171° 02' 37" W) | Options | Overlays

Map labels: Канада, Соединенные Штаты Америки, Гудзонов зал.

Windows taskbar: 13:01, 16.09.2016

References

NDVI: <http://gis-lab.info/qa/ndvi.html>

EarthExplorer: <http://earthexplorer.usgs.gov/>

Tasks uncertainties

The lecturer reserves the right to clarify the task and make its subsequent modifications in case of any uncertainties are found by students.

Deadline

Deadline: 16 Oct 2018