Instructions for using N-CAST – ArcGIS Explorer

The N-CAST shapefiles can be used to map and analyze the data contained within the N-CAST database. N-CAST provides shapefiles for download in a file geodatabase format (.gdb) which allows multiple shapefiles to be downloaded at once. Currently, data is aggregated and reported monthly. Users can download each month individually, or they can download all available months at once. As stated on the N-CAST webpage, by downloading any N-CAST files, the user is accepting the Terms of Use Agreement.

After determining the desired files to download, the user should click on the download link for whatever files they wish to download. Clicking on the link will prompt a download of a compressed file geodatabase (.zip) that contains one or more shapefiles. Agree to the download and store the file geodatabase on your local computer.

If you do not currently have GIS software installed on your computer you will need to download a free GIS application. ESRI's ArcGIS Explorer Desktop will be used as an example of such software.

GIS Mapping Steps *(ArcGIS Explorer required)*

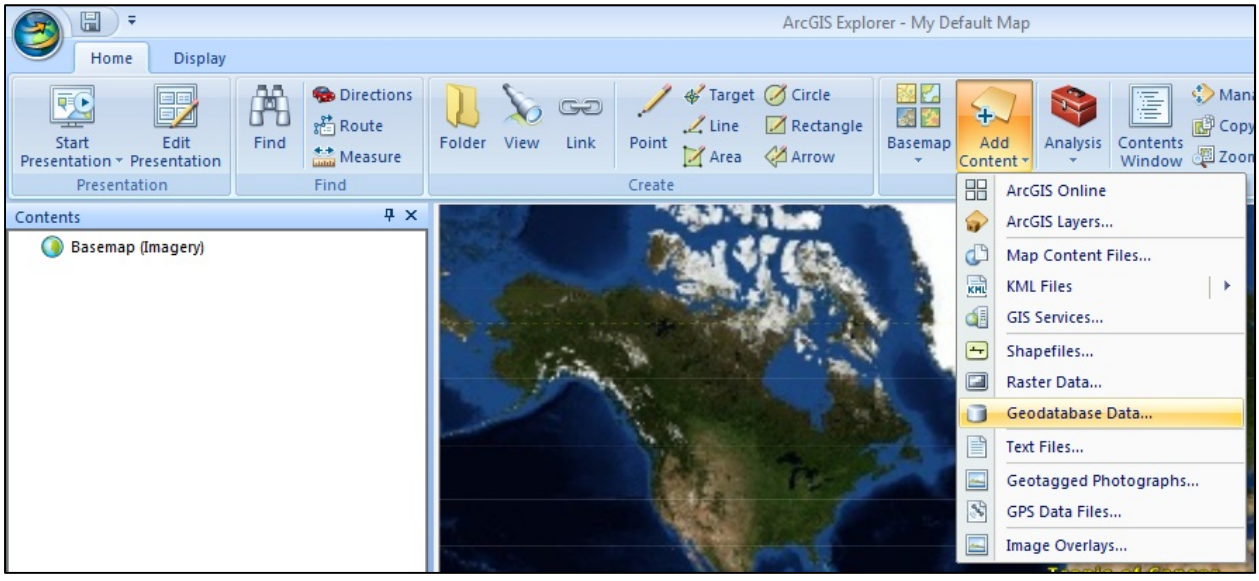
1) Dowload the ArcGIS Explorer Desktop at http://www.esri.com/software/arcgis/explorer/index.html and follow the download instructions.

2) Download the file geodatabase located at http://atri-online.org/n-cast/ to your computer.

3) Unzip the compressed file (.zip) and store the uncompressed file (.gdb) on your computer.

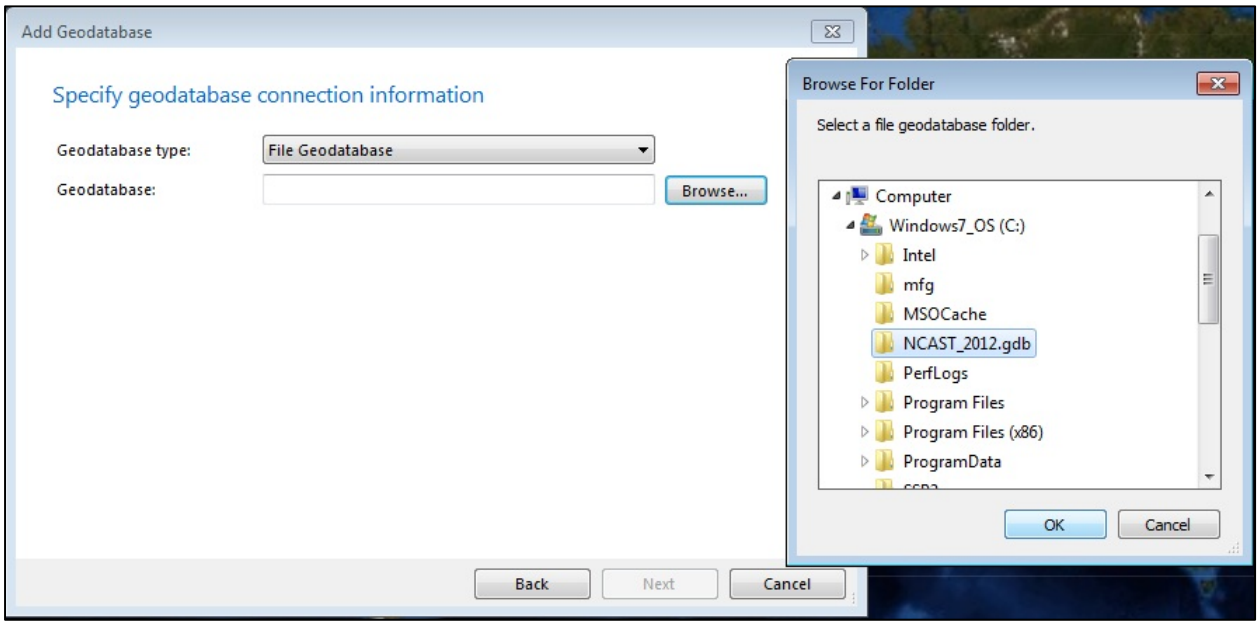
4) Open ArcGIS Explorer Desktop. Add data to the map by choosing "Add Content", then "Geodatabase Data…" from the home toolbar, as shown in Figure 1.

Figure 1 – Adding Data



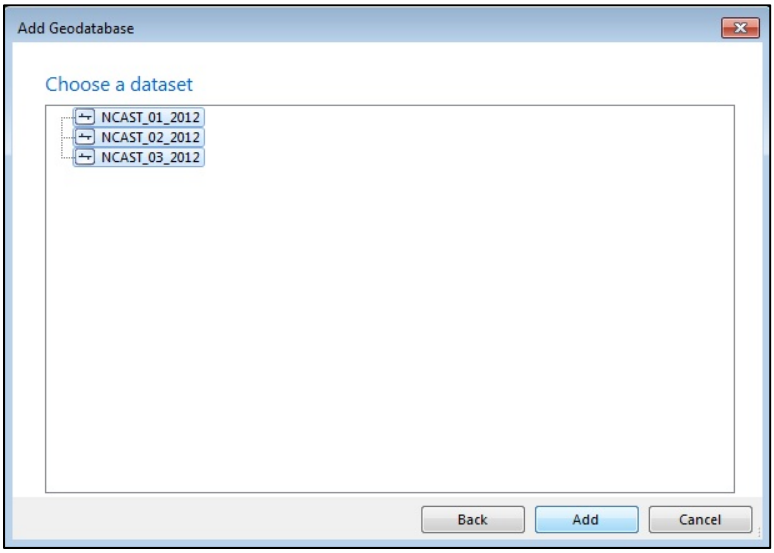
Select “File Geodatabase” from the “Geodatabase Type:” menu. Then click “Browse…” to find the downloaded files. Navigate to the location where the N-CAST files were downloaded, select the file geodatabase, and click “OK”, followed by “Next” (Figure 2).

Figure 2 – Finding Data to Add



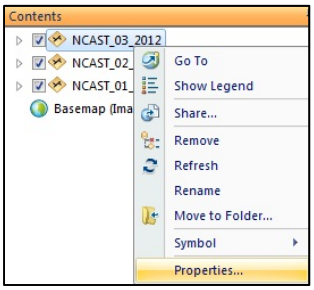
A window will open and a list of one or more shapefiles will be presented, each corresponding to a specific month of data. Click on the name of the shapefile(s) you wish to add (use CTRL key to select more than one) and then click “Add”. The example in Figure 3 shows three available shapefiles that have all been selected for addition.

Figure 3 – Selecting Data to Add



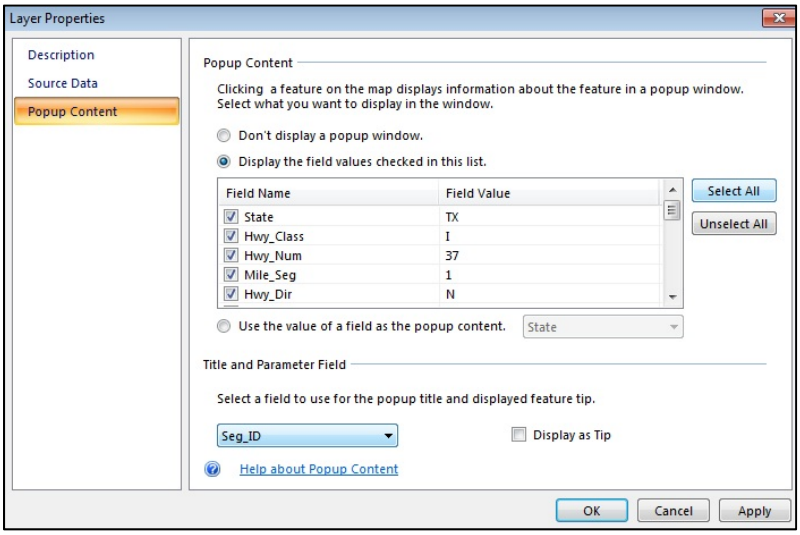
5) Right Click the N-Cast layer in the Table of Contents and choose "Properties" (Figure 4).

Figure 4 – Opening Layer Properties



In the "Layer Properties" window scroll to the right and choose "Select All". In the same window scroll to the bottom and choose "Seg_ID" from the drop down list for popup title. Then, click "OK" (Figure 5).

Figure 5 – Selecting Properties

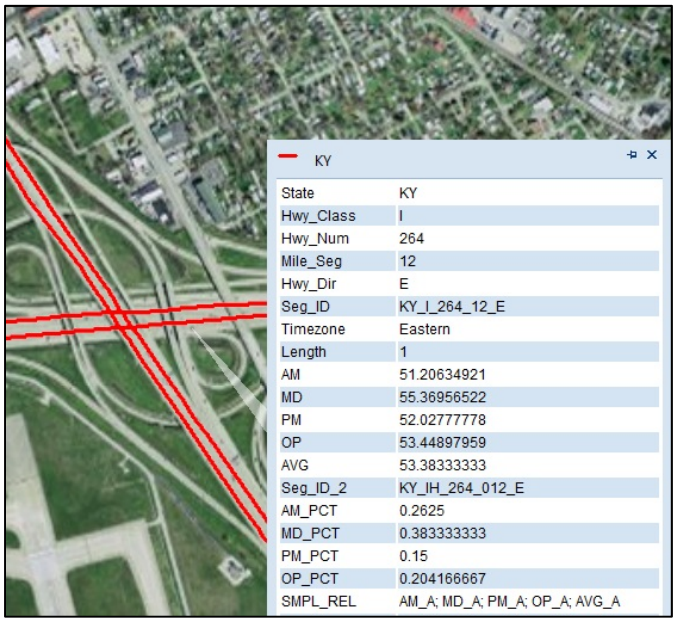


6) Use the "Zoom" tool  in the bottom left corner of the map frame to pan around the map and also to zoom in or zoom out on an area of interest (Figure 6). When you hover over the Zoom tool it when enlarge and show more options. The hand tool  can also be used to click and drag the map.

Figure 6 – Zoom and Pan Tools

7) Zoom in and double click on a segment to view attribute information for a particular segment. The attribute information will appear in pop-up window.

Figure 7 – Segment Attribute Information



8) Additional layers can be added to create maps for reports and presentations.

9) Additional help on using ArcGIS Explorer Desktop can be found at http://webhelp.esri.com/arcgisexplorer/1700//en/index.html.

N-CAST Shapefile Data Dictionary

Background:
The various shapefiles within the file geodatabase were created using ATRI FPM data from the year 2012. Please refer to the N-CAST Background document for more detail on the ATRI FPM database.

Each N-CAST shapefile has a vector spatial representation and the geographic coordinate reference GCS_WGS_1984. Please note that any "<NULL>" values that appear in the database indicate locations and/or times when there was insufficient data to conduct an analysis. Less than 0.05% of segments have insufficient data for all five time bins.

Shapefile Contents:

Field: FID

- * Field description : Internal feature number.
- * Description of values: Sequential unique whole numbers that are automatically generated.

Field: Shape

- * Field description: Feature geometry.
- * Description of values: Indicates file is a line shapefile.

Field: State

- * Field description: State Assignment.
- * Description of values: State boundary in which the roadway segment falls within.

Field: Hwy_Class

- * Field description: Highway Classification.
- * Description of values:
  - "I"- Interstate

Field: Hwy_Num

- * Field description: Highway Number.
- * Description of values: Numerical values of roadway name (i.e. 10 for I-10).
  - NOTE: For I-35W, the highway number is reported as 351

Field: Mile_Seg

- * Field description: Mile Segment.
- * Description of values: Sequential unique whole numbers that are automatically generated to uniquely name corresponding 1 mile segments on each roadway.

Field: Hwy_Dir

- * Field description: Highway Direction.
- * Description of values:
  - "N"- North
  - "S"- South
  - "E"- East
  - "W"- West
  - "B"- Both
  - "I"- Inner Loop
  - "O"- Outer Loop

Field: Seg_ID

- * Field description: Unique Segment Identifier.

- * Description of values: Combination of all naming categories to create one unique ID.

Field: Timezone
- * Field description: Time Zone.
- *Description of values: Eastern, Central, Mountain, Arizona, Pacific.

Field: Length
- * Field description: Length of segment.
- *Description of values: Numerical value with units of miles.

Field: AM
- * Field description: Average spot speed during morning peak weekday hours (6:00:00 AM to 9:59:59 AM).
- *Description of values: Numerical value with units of miles per hour.

Field: MD
- * Field description: Average spot speed during midday weekday hours (10:00:00 AM to 2:59:59 PM).
- *Description of values: Numerical value with units of miles per hour.

Field: PM
- * Field description: Average spot speed during evening peak weekday hours (3:00:00 PM to 6:59:59 PM).
- *Description of values: Numerical value with units of miles per hour.

Field: OP
- * Field description: Average spot speed during offpeak weekday hours (7:00:00 PM to 5:59:59 AM).
- *Description of values: Numerical value with units of miles per hour.

Field: AVG
- * Field description: Average spot speed during all weekday hours.
- *Description of values: Numerical value with units of miles per hour.

Field: AM_PCT
- * Field description: Share of total position reads for that particular segment that fell within the morning peak weekday hours (6:00:00 AM to 9:59:59 AM).
- *Description of values: Numerical value ranging from 0 to 1.

Field: MD_PCT
- * Field description: Share of total position reads for that particular segment that fell within the midday weekday hours (10:00:00 AM to 2:59:59 PM).
- *Description of values: Numerical value ranging from 0 to 1.

Field: PM_PCT

- * Field description: Share of total position reads for that particular segment that fell within the evening peak weekday hours (3:00:00 PM to 6:59:59 PM).
- *Description of values: Numerical value ranging from 0 to 1.

Field: OP_PCT

- * Field description: Share of total position reads for that particular segment that fell within the offpeak weekday hours (7:00:00 PM to 5:59:59 AM).
- *Description of values: Numerical value ranging from 0 to 1.

Field: SMPL_REL

- * Field description: Reliability of sample used to calculate average spot speeds for each time bin within a segment.
- *Description of values: Each of the five time bins (AM Peak, Midday, PM Peak, Offpeak, and Average) are assigned a reliability grade of A, B, or C. Time bins with a grade of A are the most reliable, indicating a sample with a relative standard error (RSE) of less than 30 and a sample size (N) of greater than 30. Bins with a grade of B are less reliable, having a RSE of less than 30 but an N that is less than or equal to 30. Time bins with a grade of C are the least reliable and have a RSE of 30 or more and an N of 30 or less.

Field: Shape Length

- * Field description: Automatically generated field by software that cannot be deleted.
- *Description of values: This value is automatically generated by the GIS software and should not be used as the shape length. Please refer to the field "Length" for the segment length in miles. To hide this field, right click on the field title and select "Turn Field Off"