Tutorial for PGIS in Accra, Ghana

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Welcome to Participatory GIS (PGIS) in Accra, Ghana (access to the PGIS website). This project is funded by NICHD Grant R01 HD054906, "Health, Poverty and Place in Accra, Ghana." In this tutorial, we will show you how to create a discourse and attach files (photos or kml files) to the project's web based map. Each user is required to register in order to access the PGIS. Please be aware that all information uploaded to the PGIS will be recorded for academic analysis. If you have any concerns, please contact Mr. Chung-Rui Lee at lee13@rohan.sdsu.edu.

Introduction

Participatory GIS (PGIS) is a web-based, group-based, and map-based process-oriented approach that focuses on sharing data among project members for the purpose of enhancing disussion and creating new knowledge. Combining Web2.0 tools, open sources, mapping Application Program Interfaces (APIs), and expert knowledge, a PGIS platform transforms the areal, contextual meanings into extended attributes of map layers. Instant and real time participation facilitates shared knowledge through web mapping services. In an urban area of a

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developing country such as Accra, Ghana, detailed information is often inaccurate or deficient. The need to obtain additional information for more precise neighborhood boundaries has become a key topic in the study of Accra's neighborhoods.

We might be able to improve our knowledge of how to define and differentiate neighborhoods by adding contextual meanings, photographs, personal observations, and other ancillary information (KML files) to map layers through a PGIS platform. Neighborhood classification in geodemographic studies utilizes geospatial techniques that rely upon georeferenced census and survey data, as well as map layers stemming from remotely sensed imagery. Where you live affects how you live; thus, the boundaries matter. PGIS can help us to address the spatial issues that arise in neighborhood classification scheme, especially the Modifiable Areal Unit Problem (MAUP).

About Accra

Ghana Statistical Service (GSS) defines its geographic boundaries as follows: (1) Regions (of which Greater Accra is one of 10); (2) Districts within Regions (of which Accra Metropolitan Assembly is one of three in its region); (3) Sub-metro areas (only in Accra, and there are 13); (4) Localities (only in urban areas; and there are 43 in Accra); and (5) Enumeration Areas (EAs), of which there are 1,731 in the Accra Metropolitan Assembly, which is the study site. More information can be found on the International

Population Center, SDSU website:

http://geography.sdsu.edu/Research/Projects/IPC/publication/publications.html

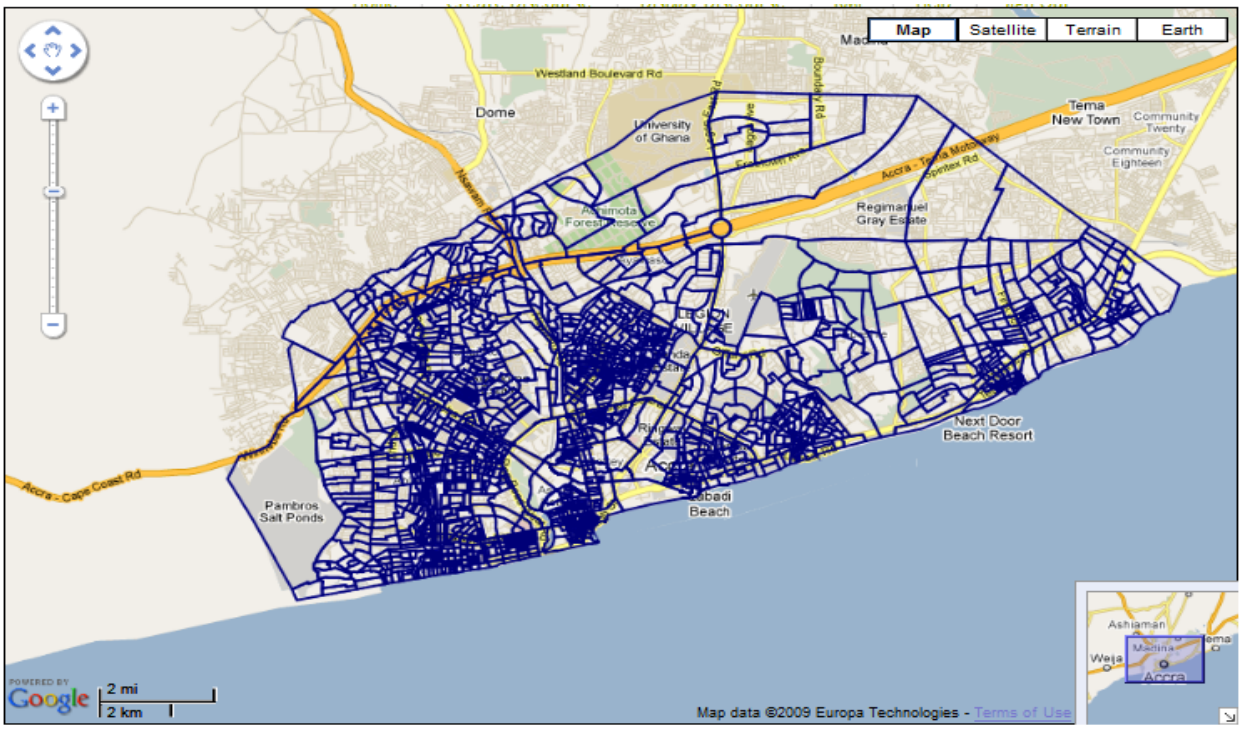

Figure 1 Embedded EA boundaries, as KML file format, of the study site (Accra, AMA) on the PGIS platform.

How do I use it?

You can access to the PGIS in Accra at http://geoinfo.sdsu.edu/accra/login.html. This is a password protected website for current project member; please contact the project team for detail information. Three major functions in the PGIS in Accra platform: Create Discourse, Display Discourses, and Search Discourses are provided.

1. Create Discourse

Create Discourse is the major service of the PGIS platform. Users can add discussions and upload files to the server. Each data entry is stored in an MS SQL database, including: Writer, Location (automatically generated), Title, Description, and File path. The steps for creating a discourse are: 1. Find the location; 2. Fill out the information. 3. Attach files. 4. Confirm.

1.1 Find the Location:

There are three methods to locate your points of interest: (1) using the search bar; (2) manually keying in the GPS points; and (3) manually locating them on the map. You can locate a point by using the search bar and keying in “Accra” and the map will fly to the centroid point of Accra. The search bar also enables searching by latitude and longitude of a place. Google Maps APIs read three different formats of a GPS point. For example (5.55, -0.2166667), (5°33' 0" N, 0°13' 0" W) , (5 degrees, 33 minutes, 0 seconds North, 0 degrees, 13 minutes, 0 seconds West) will lead you to Accra, Ghana. A user can also simply zoom in and pan to his/her point of interest, and then double click the map directly to locate it.

1.2 Fill out the Information

After locating the point of interest, a window will pop up prompting the user to insert the data and information. Latitude and longitude coordinates are saved on the database, by default. Fill out your name as the “writer.” Put in what you want this topic to be called in “Title.”

Describe your discussion/ observation for the place in the “Description” box. All users of PGIS in Accra are encouraged to fill out each box to facilitate future use of the information (see Figure 2).

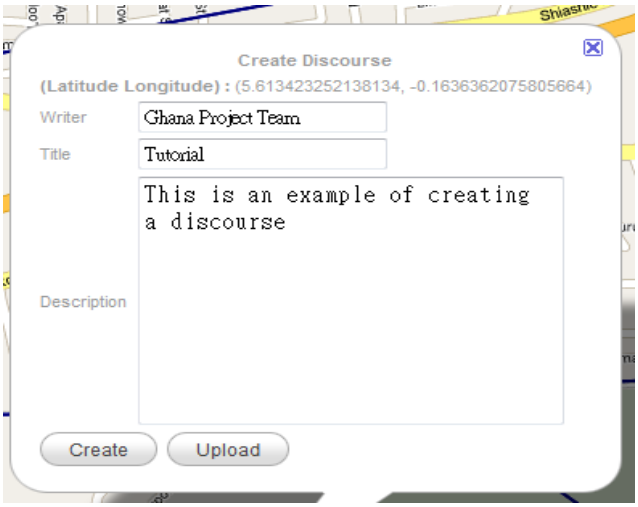

Figure 2 The information window with sample information.

1.3 Attach Files

By clicking the Upload button, a new window will pop up so that you can attach files. You can upload single or multiple pictures and kml/kmz files. By clicking Upload File, a list of available files on your local disk will show up. When a file has been uploaded to the server, its file name will be shown as Uploaded (see Figure 3). To finish the upload, click Save and the window will close.

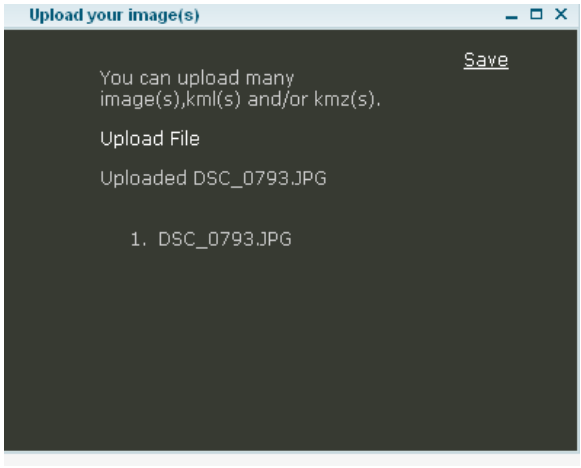

Figure 3 Upload page for attaching files to each discourse.

1.4 Confirm

A completed new discourse will contain spatial and contextual information for a place (see Figure 4). However, unless you click the “Create” button, the information will not be saved in the database. After clicking “Create,” the information will be saved and the window will close automatically. It is recommended that you go to “Display Discourse” to confirm that the discourse has been successfully saved.

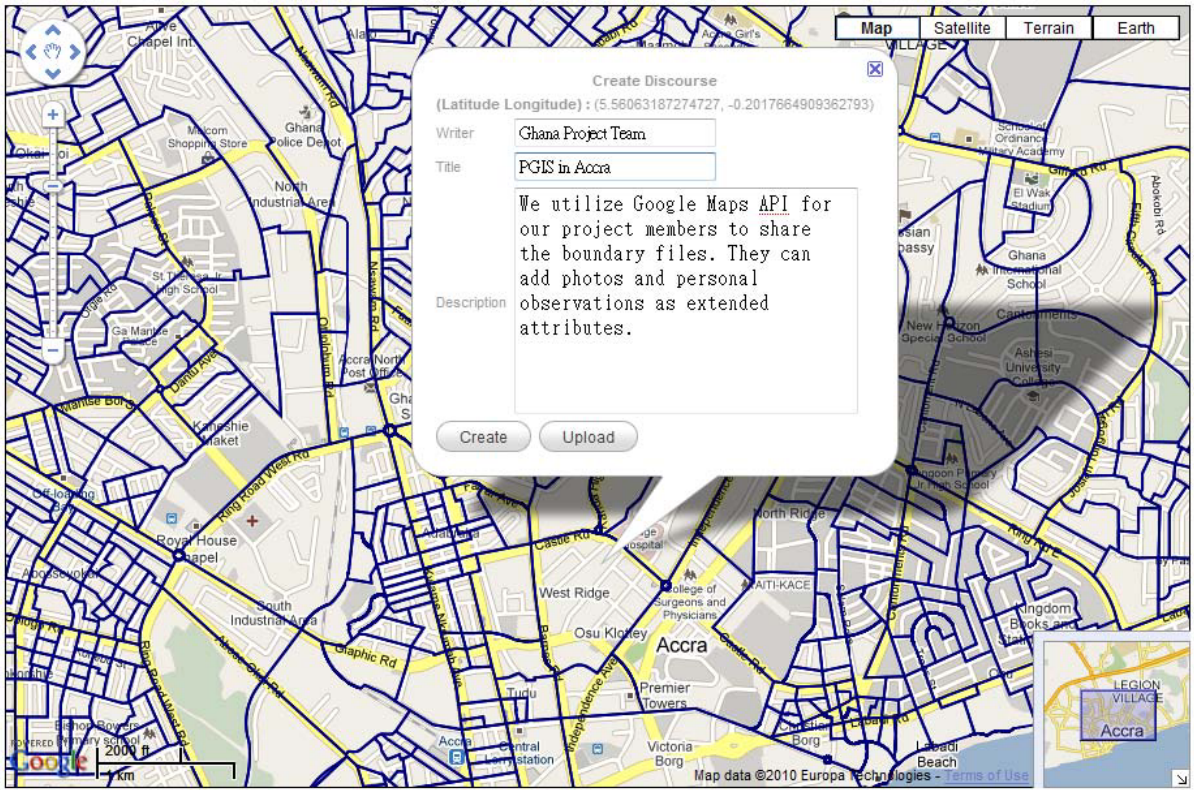

Figure 4 Data entry layout of the PGIS interface. After locating your point of interest, you can add temporal, spatial, or visual information to the database.

2 Display Discourses

This page displays all records in our database in two formats: a map with multiple points on the map viewer (see Figure 5); and a detailed table with all discourses (see Table 1). While displaying a discourse, the File Path will be shown as an image, and the location will be transformed into a place marker.

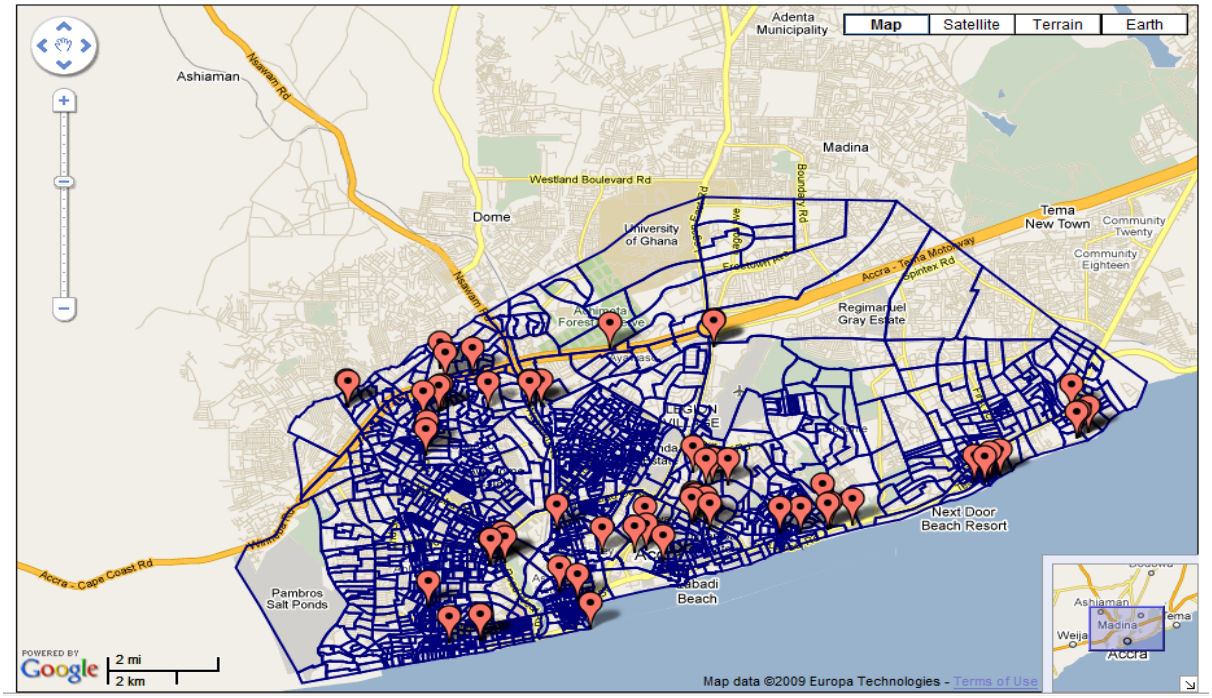

Figure 5 All discourses markers on the map viewer of the Display Discourse Page. A detailed information window will show up after clicking the place marker (see Figure 6).

The detailed discourse table shows the writer, title, description, created time, and Map It columns. If you want to know where a discourse is located, the built-in function “Map It” is the solution. By clicking the “Map It” column, the information window will pop up with the latitude, longitude, and attached files on the map (see Figure 6).

Table 1 Sample of the List of Discourses on the Display Discourses Page

Writer	Title	Description	Time	Map it
Henry	Stadium	Stadium	7/10/2009 11:36:06	Map It
Ray	Sketch maps of Accra	The kmz file was created by Justin ….	10/30/2009 9:32:40	Map It

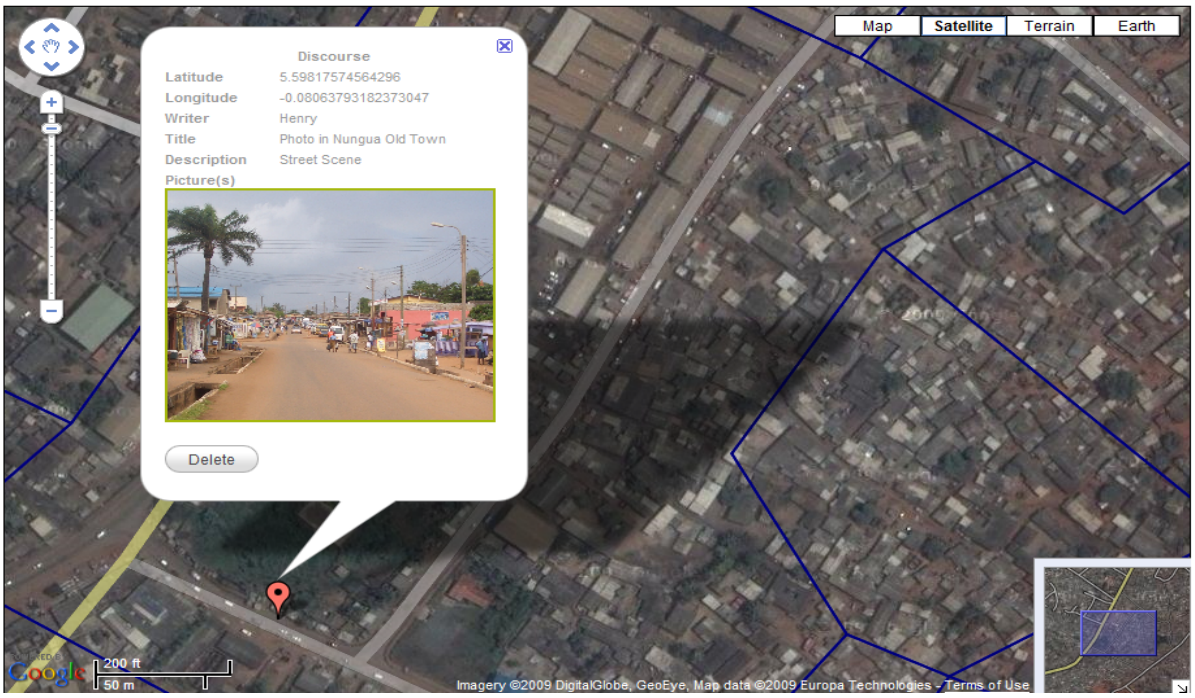

Figure 6 An actual discourse from the PGIS Platform. The blue linear feature represents EA boundaries of Accra, Ghana.

3 Search Discourses

This function facilitates researching the information loaded onto the database. The Display Discourses page lists all the information stored in the database on the same page. Note that you may have to scroll through several pages to find what you're looking for. The search dialog on the Search page allows you to search discourses by key words; however, it has to be a 100% match to the original description (key words or authors).

4 How to Reply to a Discourse

For a quicker response from the server, each discourse is saved individually. Thus, the PGIS platform does not offer instant updates for all discourses at the same time. Each discourse is independent. The participants need to create a new discourse when replying or adding to a topic. By putting RE in the reply title, all users can add information about whether the location or the descriptions are correct or not. The Steps are:

1) Find the discourse of interest (doi).

2) Copy the absolute location and paste it into the search bar, if you want to add more information.

3) Locate your doi, and a new information window will pop up. Or relocate the discourse title, if you think the discourse is mis-located and you need to change the coordinate position.

4) In the Title column on the new window, key in “Re:” following by the original title of the doi. This step helps other participants understand what you are doing.

5) Fill out the information you intended to add in the window.

6) Save. By clicking the Create button.

KML/KMZ files

A KML file is an extension of an XML file, focusing on providing annotation of maps and images for geographic visualization.

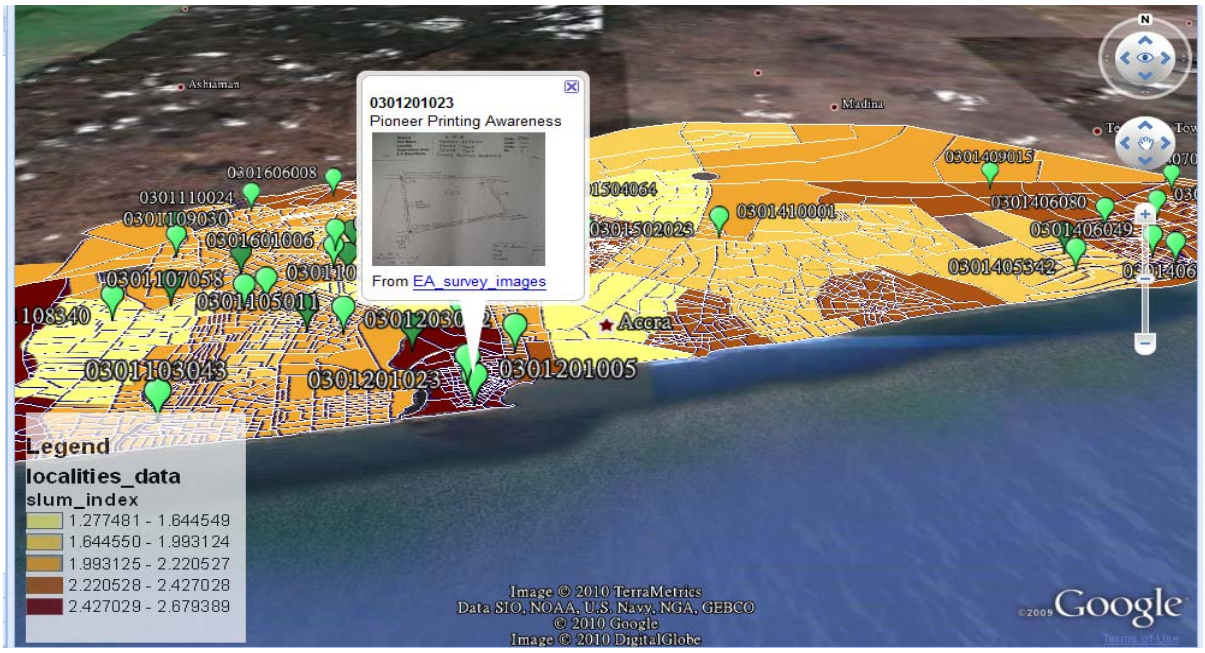

Figure 7 An example of displaying a KML file on the PGIS Platform.

There are two methods to view the kml/kmz files on the PGIS in Accra, Ghana website. The first is to render the files via a Google Earth Plug-in on a page separate from all PGIS functions. It requires you to install the Google Earth plug-in. The other is to download and open the file in Google Earth. With embedded KML files, photos, and personal descriptions, satellite imagery

and map layers work side-by-side on the PGIS platform (see Figure 7)

Google Plug-in (KML page)

The steps to view KML/ KMZ files via Google Earth plug-in are as follows:

1) Unlock the pop-up filter since the KML page is a pop-up page.

2) Click the discourse you are interested in.

3) Copy and post the file path to the page. (see figure 8).

4) Refresh the page, if you added/ removed different files.

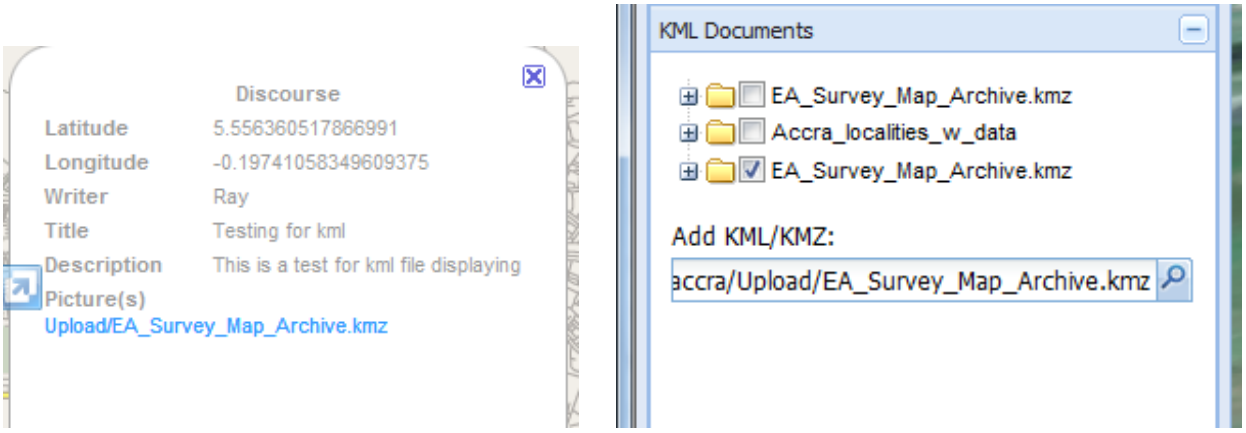

Figure 8 Copy the file path on display discourses page, and paste onto kml page.

Google Earth

Click download files in the note section and it will take you to the list of files. Save them on your local disk, and then open them Google Earth (visit http://earth.google.com/ to download it).

*** Create KML file from ArcMap**

1) Open your map in ArcMap.

2) Save the map as a picture. Go to File, then Export Map. Save as jpg format (150dpi is recommended)

File > Export Map > save as *.jpg format. Resolution 150

3) Save as KML

After you save the map file, now save it to a KML format. Go to Arc Toolbox. Select Conversions Tools. To KML. Map to KML (if you select layer to kml, the file will not be included in the lengend). Set the Output Scale as 1 (see figure 9).

Arc Toolbox> Conversion tools > to KML > Map To KML

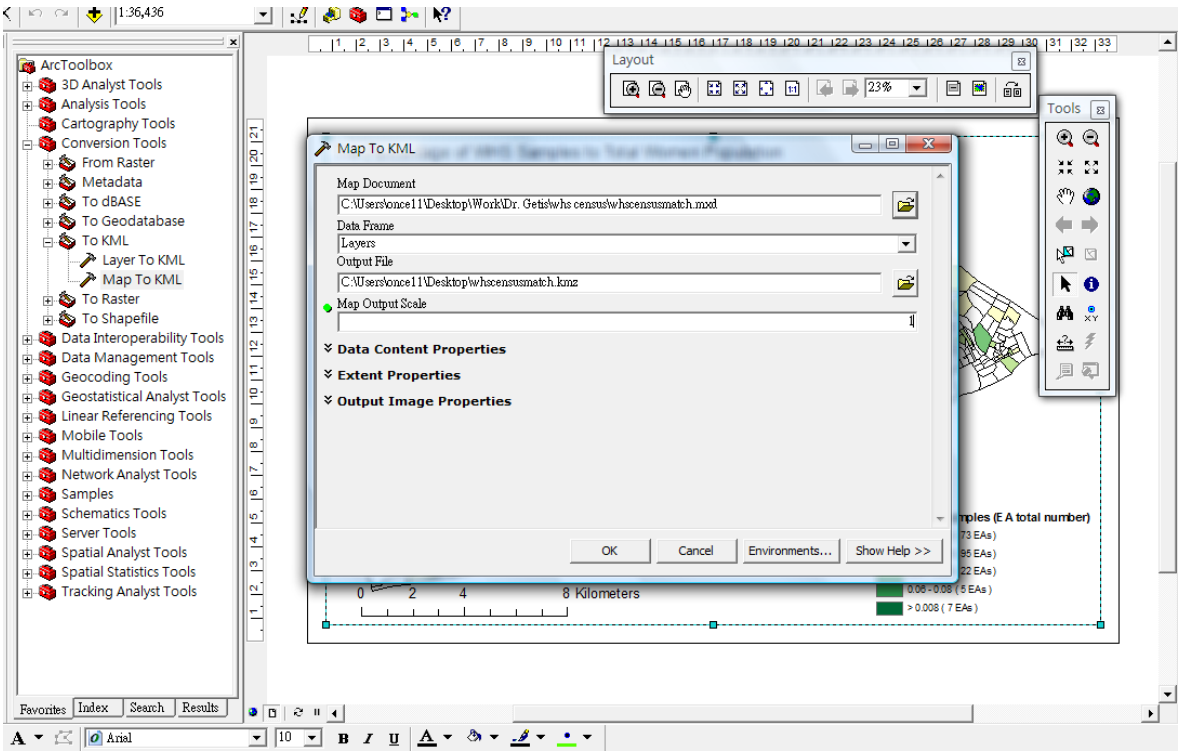

Figure 9 Map To KML toolbox window in ArcMap.

4) Login to the PGIS in Accra website.

5) Create a new discourse.

6) Attach the snapshot of the map with your kml file (see figure 10). This will help your project collaborator understand the file you have posted.

7) Display your discourse (see figure 11)

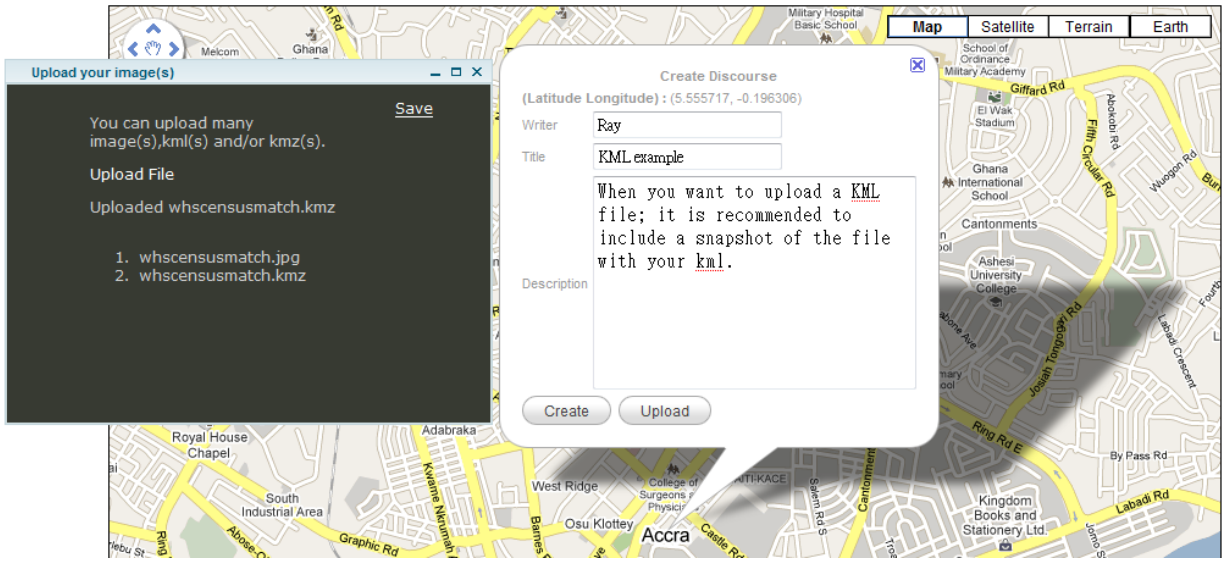

Figure 10 Attaching the jpeg and KML files generated from ArcMap.

Figure 11 sample of a discourse with KML file