Notes from Geospatial/GIS Meetup
April 4, 2024

Rivera Library, Room 140 and Zoom

Attendees: Janet Reyes, facilitator;

In person: Amelia Schoch, Ariel Texis Munoz, Bolu Daodu, Cynthia Curiel Raygoza, Daniel Khan, Natalie Chan
Via Zoom: Andrew Haglund, Citlali Rosas Jimenez, Cristina Gonzalez, Daisy Herrera, Jay Spencer, Luis Barrios, Lynn Sweet, Siddarth Kishore

Announcements

This meeting was recorded; video is available here. The passcode to view is h*XBj1O@

The Eventbrite is now available for the remaining **Spring 2024 meetups** on May 9 and June 13.

Esri is hosting a meeting of the **Young Professionals Network** tonight starting at 6:00 pm in the Esri Cafe in Redlands.

The **AAG conference** is being held in Honolulu April 16-20. There is a virtual option for attending.

Janet will be presenting an **Introduction to ArcGIS Pro workshop** on Tuesday, April 30.

Registration for **DroneCamp 2024** is now open. The training will be held June 24-28 at CSU Monterey and also virtually.

Lily Barger, Director of Campus Support Services with ITS, spoke about the recent **change in the virtual lab platform at UCR**. For the last few years many in our user group have been using Apporto to access ArcGIS Pro and ArcGIS Desktop. The campus has now switched, unfortunately abruptly, to itopia. There will be an office hours session on April 8 at 11:00 for an overview and to address questions and concerns. (An outline of the office hours agenda is attached as an appendix to these notes.) Users are also welcome to contact Lily directly.

> Andrew mentioned that ArcGIS Desktop is end-of-life; however, it was clarified that UCR will continue to have access to it through Spring 2025 (most institutions are losing ArcMap this year). Andrew asked about single sign-on. Lily mentioned that the license server for ArcGIS Desktop will be ready very soon. ArcGIS Pro can be accessed through single sign-on.

Shared links

Janet shared a link to a MapLab article about the use of deep learning to detect beaver dams on aerial imagery: https://www.bloomberg.com/news/newsletters/2024-03-27/maplab-ai-that-gives-a-dam

Presentation

Ariel Texis Munoz, an archaeologist and PhD student in Anthropology at UCR, presented on **Extending Teotihuacan's Past: Ceramic Insights from Lidar-Based Surface Survey.** Ariel has been working at the Teotihuacan site for several years under Anthropology professor Nawa Sugiyama.

The ancient city of Teotihuacan is in a valley an hour's drive northeast of Mexico City. Volcanoes in the vicinity erupted significantly during the precolonial time Teotihuacan was occupied (100-600 AD). Researchers in the mid-20th century created a detailed map of the main part of the settlement. Lidar data covering 165 km^2 of the Teotihuacan Valley was acquired in 2015. A few years later, a research team looked for mounds, depressions, structures, and agricultural terraces in much of the wider valley area covered by Lidar, and then checked in the field whether these landscape modifications were attributable to either Spanish occupation or modern land use practices. Significant modifications in the valley have occurred since 2015 due to mining activity.

The researchers in the 1960s and 1970s had also used contours to map the density of ceramic pieces found. Ariel and his team georeferenced this information to be compatible with the Lidar map. They then created hexagon bins measuring 250m x 250m (they also created 400m x 400m bins) to show the density of ceramics.

This data combined in a GIS with findings from the Lidar survey give a more complete view of early occupation in the area, including how the distribution of inhabitants changed over time. Evidence of early population growth corresponds in part to the need of people to move from areas impacted by volcanic eruptions. The dynamics of population change between the core area and the outskirts can also be assessed from the changes in ceramics distribution as mapped by the earlier and current researchers respectively. Ariel's methods were a test of how best to merge geospatially the data from the two periods of research.

The maps show that the peak of occupation was between 350-550 AD; the collapse of Teotihuacan occurred around 550-650 AD. People returned to occupy the ruins between 650-850 AD. Between 1050-1521 AD the population grew significantly once more.

Discussion

One question was about the remote sensor platforms used. The Lidar data in 2015 was acquired from an airplane flyover. With recent surveys, a high-precision GPS is used in the field along with Lidar to improve the precision of Lidar data.

Another question asked about data sources for the different time periods. The studies from the 1970s included maps of occupation in 13 time periods from 500 BC to 1521 AD. Ariel georeferenced all of those maps, which included only ranges of numbers of ceramic pieces found, and converted the information to estimated pieces per hectare. The GIS map included this information plus the results of the field survey that was guided by the Lidar data.

The ceramics collected in the current study were fragments, not intact pieces. Only fragments on the surface were collected; no digging was involved. Their time period was assessed by styles (brown vs. dark, shape of vessel, etc.) that had been previously established using radiocarbon dating.

The area was mostly rural during the studies from the 1960s-1970s. Doing the same types of surveys now would be close to impossible due to urbanization around the core of theTeotihuacan settlement. Disturbance by mining activity is a problem for archaeologists in this and other parts of Mexico. In areas of prehispanic occupation where no structures are apparent, mining companies can get permits relatively easily. It is possible to request a special archaeological study by the National Institute of Anthropology and History if significant evidence of occupation is likely with a more thorough investigation; it could lead to restricting or preventing mining activity.

In excavations, carbon dating in a lab is done typically using charcoal or seeds found in the pit, and sometimes bones or teeth.

Ariel commented that forms that can be created in ArcGIS Online for use in the field can streamline the data collection process significantly.

Contact

ariel.texismunoz@email.ucr.edu

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–Appendix–

UCR vLab Office Hours
Information Technology Solutions
April 8, 2024

- **Welcome & Intros**
- **Purpose of Change**
  - User Feedback
  - User Survey
  - New User Experience
  - Caveats
  - License Server
- **How to Access the vLabs**
- **How to link your Google Drive (1:04)**
- **Saving and retrieving your work**
- **How to create a class**
  - Canvas Integration (start at step 3)

- Managing Classes
- Session Scheduler - Demo

- **Resources**
  - UCR
    - KB Articles
    - BearHelp / STS
    - Request a Virtual Lab
  - Itopia
  - Esri
- **Future**
  - Hands On/Collaboration Sessions
  - Reporting Tools
  - User Group Quarterly Meetings