

# Monitoring Coastline Water Quality in Cartagena, Colombia using GIS Technology and Spanish Students- A hybrid Study Abroad Program Between MCC and Fundación Universitaria Tecnológico Comfenalco



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June 25, 2020

# Collaborators

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# Hybrid Study Abroad in Cartagena, Colombia (Spring 2019)



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- **Goals:** Increase cultural awareness, develop mapping app to monitor water quality along the Caribbean Sea, lead a humanitarian mapping workshop, and more!
- **When?** If accepted, you will work with fellow MCC students in students in Colombia remotely for 4-5 weeks spring 2019 before travelling to Colombia. Travel to Colombia will be determined by the project director and will likely be spring break (April 13-21). This date may change based on availability in Colombia.
- **Where?** MCC (4-5 weeks) & enroute/Cartagena, Colombia (4-5 days)
- **Eligibility:**
  - MCC student registered fall 2018 and spring 2019
  - United States Passport (or submit for application by Nov 13<sup>th</sup>) and up to date with routine vaccinations.
  - Interest in learning about global cultures, Spanish language, and mapping!
  - Four study abroad tracks that will require at least two of these courses: GEG 130, GEG 133, GEG 239, SPA 101 and/or SPA 102. See application for details.
- **Fully funded!** Airfare, lodging, one meal per day.
- **Important Dates:**
  - Application Due **Friday, Oct. 26, 2018!**
  - Accepted students announced November 7<sup>th</sup>
  - Selected students must accept by Noon Friday, Nov. 9<sup>th</sup>. If you do not have a Passport, you must submit for a Passport by Nov 13<sup>th</sup> as well.





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# What is GIS & Technology?

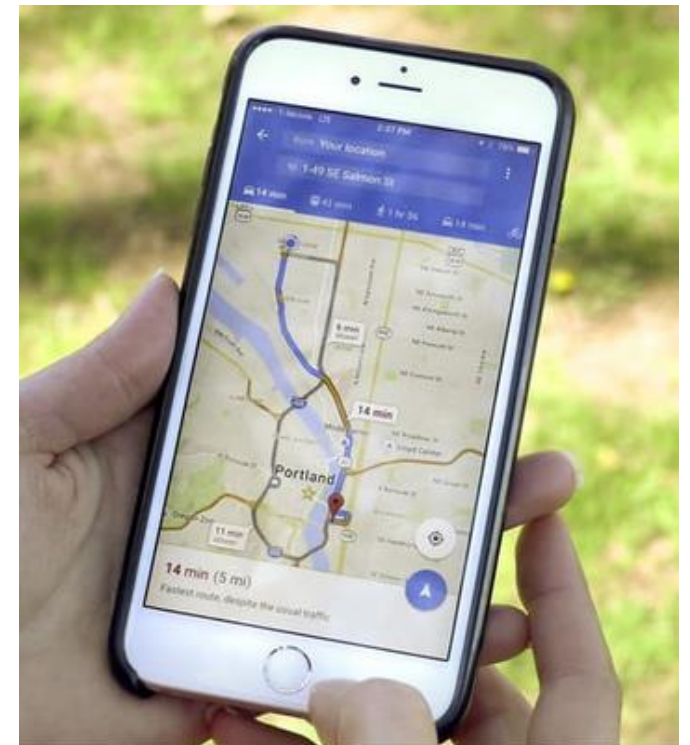
Geospatial Info Science & Technology  
Or Digital Mapping

Growing job demand! Workforce

Examples:

- Smart phone app
- Data science and BIG data!

Video: <http://geospatialrevolution.psu.edu/trailer.php>



# COLL Integration into course



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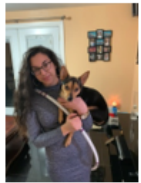
## Virtual component

-3 Zoom meetings  
Icebreaker

Project plan & GIS

-Mapping instructions

-Google Docs + WhatsApp



En mi tiempo libre, me gusta hula hooping o jugar con mi perro.



Me gusta viajar y estar con la naturaleza.

## Ice breakers:

Please tell us what is your favorite hobby (past time) and take a picture while doing that activity

- 1- Based on the picture you see, write three sentences guessing the type of personality of that person.
- 2- Read the sentence about your picture and see if the guess was correct or pretty close to being correct.

Por favor cuentanos, cual es tu pasatiempo favorito y tomate una foto hacienda esa actividad que te gusta.

- 1- Basado en la foto, escribe tres oraciones prediciendo el tipo de personalidad que la persona posee.
- 2- Lee las oraciones de tu foto y confirma si las predicciones son ciertas o ceracanas a tu personalidad.



# COIL Syllabus



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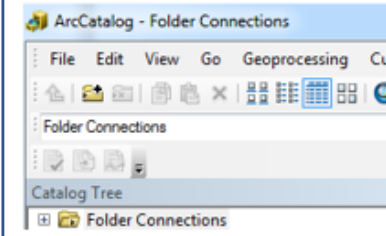
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## CALENDAR

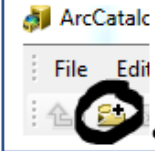
Week	Topic	Tool	Instructions
Week 1	Introduction - Getting to know each other	Google Docs +Zoom	Day 1: Students will learn about the hybrid/COIL objectives, app variables, and policies. Day 2: Students ask about their favorite hobby, music, other ideas? Students make short video about general topics before video conference! What is project goal? Mapping app variables? Day 3: Video Conference   Homework: Reading on Geodatabase. MCC/TCC students share their thoughts on reading using Google docs.
Week 2	Technical language and developing a geodatabase	ArcGIS Online, ArcGIS Desktop, Zoom and Google Docs	Day 1: Develop a geodatabase Day 2: Develop a geodatabase Day 3: MCC/TCC students meet via Zoom to discuss progress on geodatabase. Support each other. 5-minute meeting. Submit screenshot of Zoom session with 2-sentence summary.
Week 3	Geodatabase, share, & publish online.	ArcGIS, Zoom+ Google Docs	Day 1: Submit geodatabase. Screenshot of completed geodatabase. Day 2: Video conference to share geodatabase. Day 3. ArcGIS Online account and organization. Begin preparation for publishing

### Step 1: Building a new Feature Class on a new File Geodatabase (Using ArcCatalog)

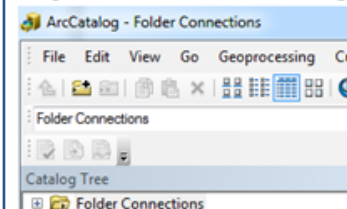
Open ArcCatalog. This is not ArcMap. You can search for ArcCatalog by typing it in the lower right search in ArcMap.



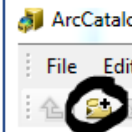
Make a folder connection to the location you want your work stored.



Abra ArcCatalog. Esto no es ArcMap. Puede buscar ArcCatalog escribiéndolo en la búsqueda abajo en la derecha en ArcMap.

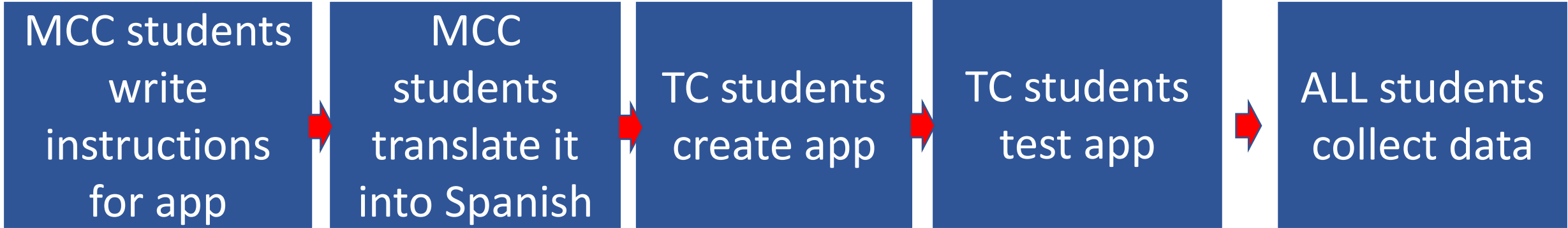


Realice una conexión de carpeta a la ubicación donde desea guardar su trabajo.

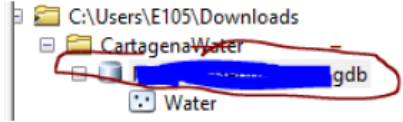




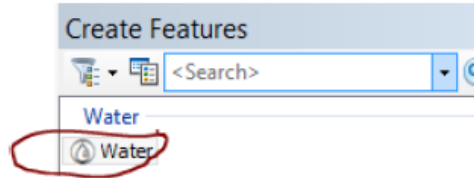
# Mapping App



Then you would go through the following directions to create domains. Right click on water.gdb and choose "properties".

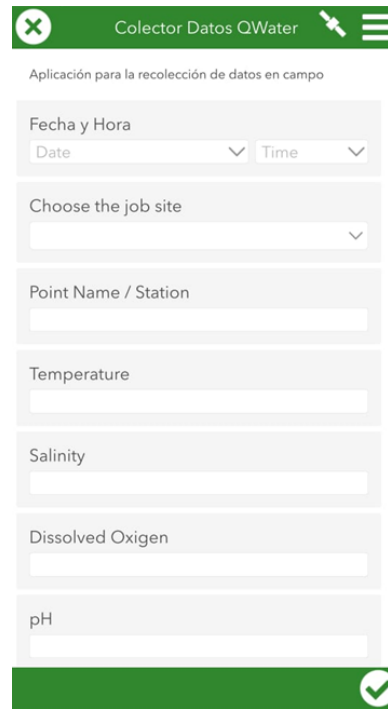


En el lado derecho, cliq "Water"



Entra a los atributos y pruébelo completando valores de temperatura y pH. Usa números

OBJECTID	1
Salinity	<Null>
Dissolved_Oxygen	<Null>
pH	77
Turbidity	<Null>
Transparency	<Null>
Temperature	29
BeachName	Bocagrande



# COIL Syllabus

<p>Week 4</p>	<p>Publish app and collect data</p>	<p>ArcGIS Online, ArcGIS Desktop, Zoom and email/<a href="#">voicethread</a>.</p>	<p>Day 1: Publish app for water quality data collection.</p> <p>Day 2: Practice collecting data at home site.</p> <p>Day 3: Video Conference to share app.</p>
<p>Week 5</p>	<p><a href="#">Tecnológico Comfenalco</a> students travel to MCC.</p>	<p>ArcGIS Online, ArcGIS Desktop, Zoom and email/<a href="#">voicethread</a>.</p>	<p><u>TC students</u></p> <p>Day 1: Travel</p> <p>Day 2: <a href="#">Tecnológico Comfenalco</a> students present Apps at MCC. MCC students attend.</p> <p>Day 2: <a href="#">Tecnológico Comfenalco</a> share about their culture at MCC. MCC students attend.</p> <p>Day 3: <a href="#">Tecnológico Comfenalco</a> students sit in on courses at MCC. MCC students attend.</p> <p>Day 3: <a href="#">Tecnológico Comfenalco</a> faculty will share their perspective as a part of the Global Education and International Services Guest Speaker Series.</p> <p>Day 4: Cultural experience?</p> <p>Day 5: Travel</p> <p><u>MCC Students</u></p> <p>Day 2: MCC students attend all events</p> <p>Day 3: Prepare for <a href="#">mapathon</a> at TC</p> <p>Day 4: Prepare for <a href="#">mapathon</a> at TC</p>
<p>Week 6</p>	<p>MCC students travel to TC</p>	<p>Open street map</p>	<p><u>MCC Students</u></p> <p>Day 1: Travel</p> <p>Day 2: MCC students lead <a href="#">mapathon</a> workshop in Colombia in Spanish.</p> <p>Day 2: MCC students share about their culture at <a href="#">Tecnológico Comfenalco</a>.</p> <p>Day 3: MCC students sit in on courses at <a href="#">Tecnológico Comfenalco</a></p> <p>Day 4: Cultural experience?</p> <p>Day 5: Travel</p>





# COIL Syllabus

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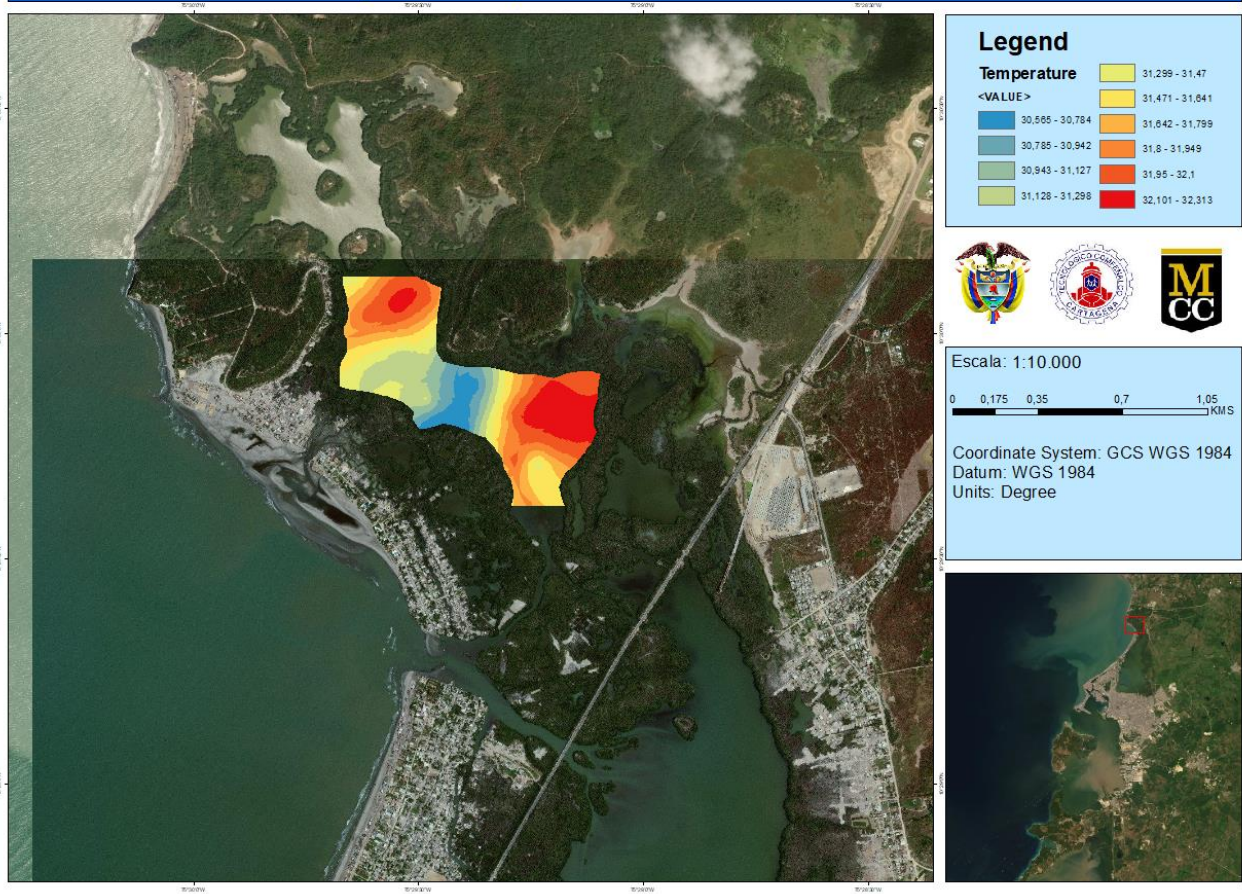
TC to ROC Video Link

<https://drive.google.com/file/d/1VoPC6X0EeYiklzORcriucVTt0zTK9eif/view>

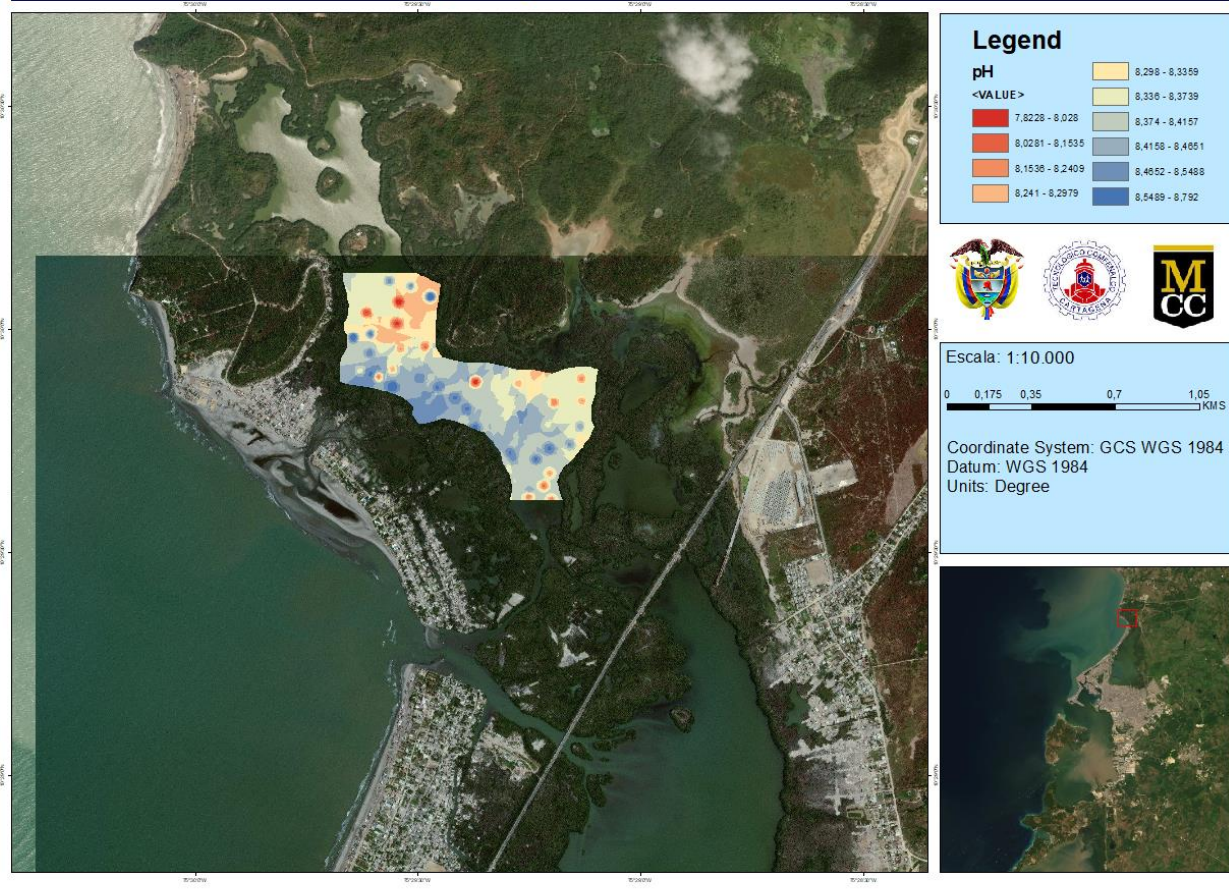


# Sample Map Products

Mapa de Temperatura - Caño Juan Polo



Mapa de pH - Caño Juan Polo



# Lessons Learned

## Exceeded everyone's expectation

-New career in GIS&T?

## Challenges

- No process to transfer grant funds of a Subaward to an international organization
- United State banking forms were foreign to TC
- TC perspective, time consuming to acquire VISA's.
- Although college took students abroad, there was not a process to use grant funds to purchase tickets.
- Give yourself a lot of time to purchase airline tickets.



# Main Impact

1) Sustained Partnership with TC.

2) Virtual Internships with TC

A) Assess changes in mangroves using remote sensing data.

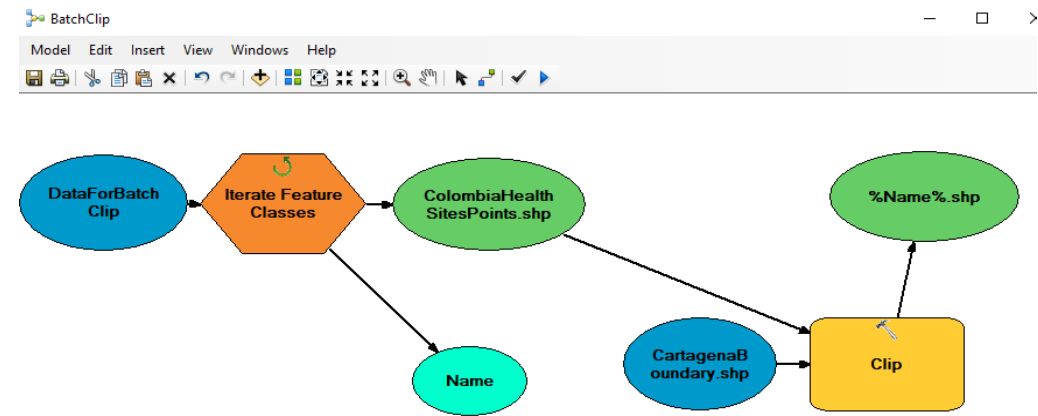
B) develop Python lab/translate

Host: Comfenalco

3) New Virtual Internship Host

Develop mapping app for citizens

Host: Benemérita Universidad Autónoma de San Luis Potosí (Mexico).



## Citizen Science of the Paisanos River

GEG 239 Capstone in Geospatial Technology, MCC GIST Program

Maggie Weisensel



**UASLP**  
Universidad Autónoma  
de San Luis Potosí



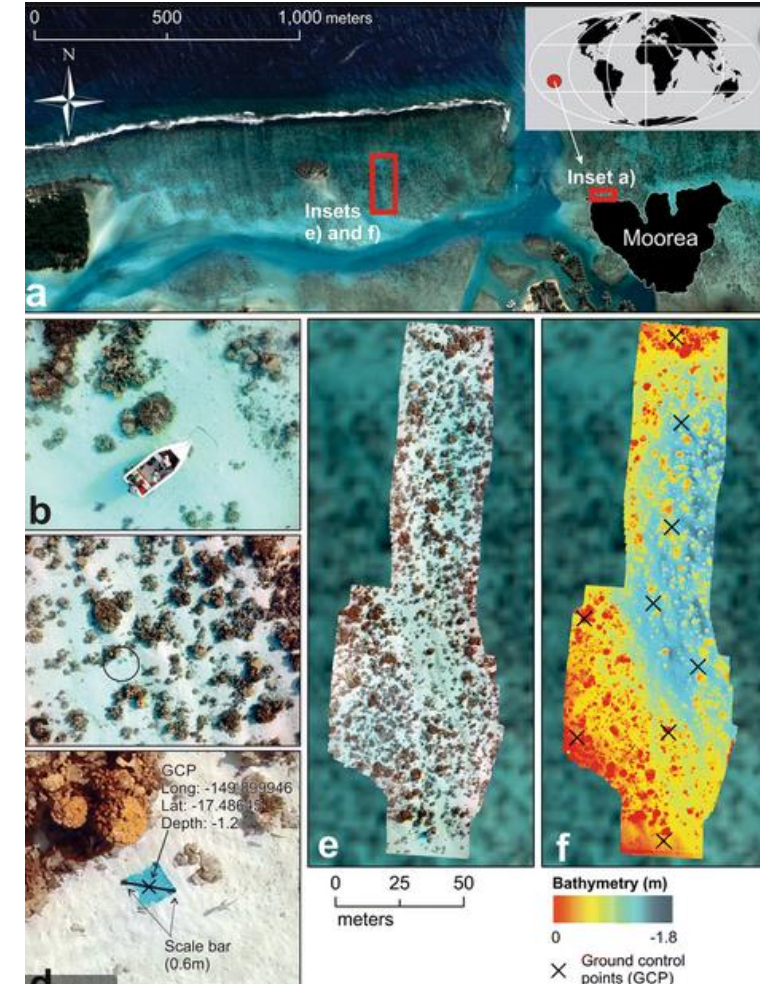
FACULTAD DE  
**HÁBITAT**

Lourdes Marcela López  
Juan Manuel Lozano  
Carlos Renato Ramos



# Interested in Collaborating?

- Virtual Internship host
- Remote Sensing and ground-truthing
- Mapping app development
- GIS labs + Python Labs
- Grant Collaboration



# New Hybrid Study Abroad or

# Fulbright Specialist visit summer 2021 or Jan 2022?



# Thank you!

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