2020 EDUCATION SUMMIT

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Before we begin…

- Attendees are in listen-only mode
- Please enter questions into the Q&A panel at any time
- If you wish to direct a question to a specific person, please include his/her name with the question (e.g., @Jack)
- Sessions are being recorded. Recordings will be available at proceedings.esri.com in a few weeks.

Designing a Cloud-First Introduction to GIS

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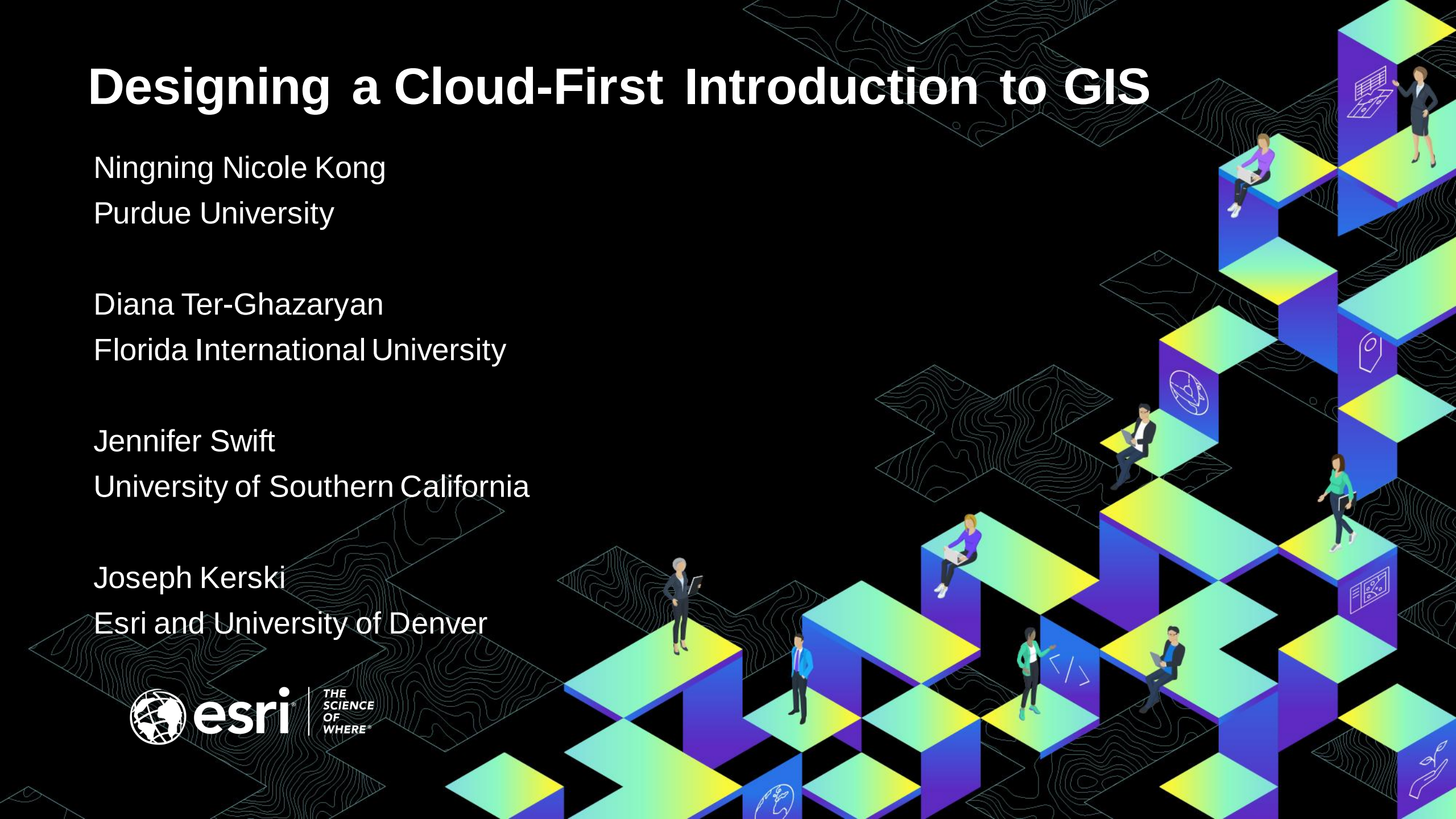


Session Topics

Q1: What is "cloud"? In what courses or workshops are you using cloud-first tools and methods?

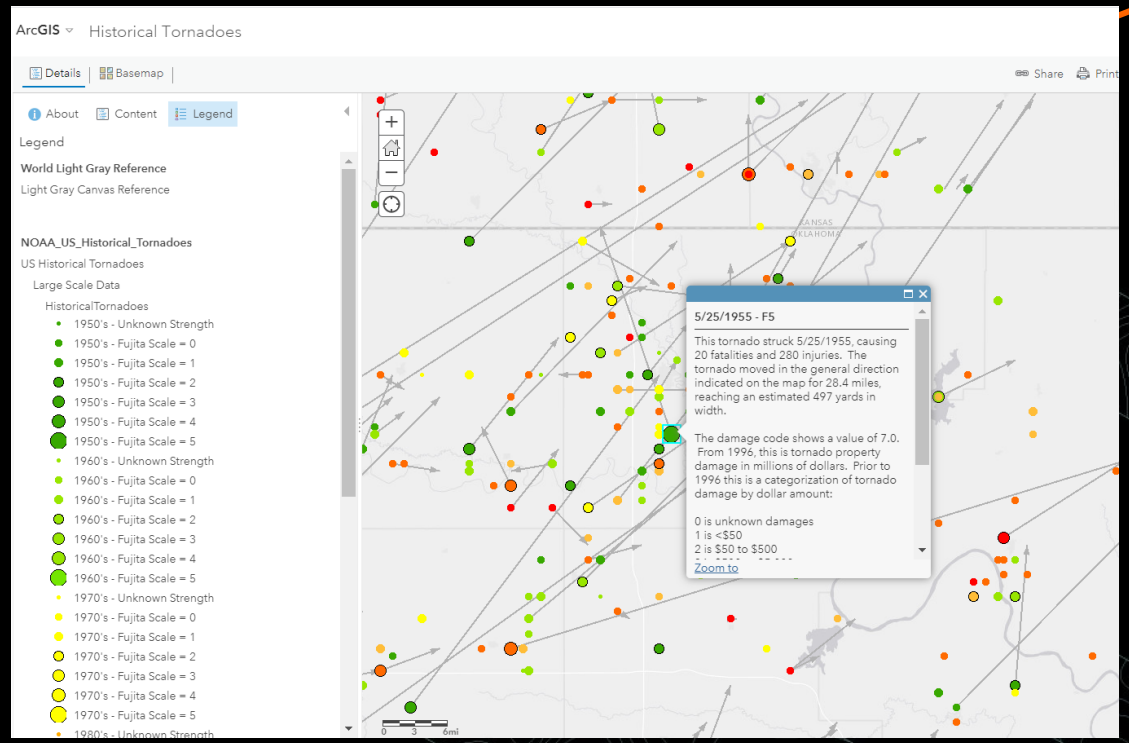
Q2: What was the decision-making process that you went through in creating cloud-first designs?

Q3: **How** do you use this approach in courses and workshops?

Q4: What are 1-2 challenges of the cloud-first approach?

Q5: What are your future cloud-first plans with these and other courses and workshops?

Threading throughout the session…



Why teach with cloud-first tools and methods?

How to teach with cloud-first tools and methods?

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Q1:

Nicole:

Libraries and School of Information Studies.
(1) Spatial Literacy focused course; (2) workshops in Ethnography, Art History, Qualitative Research.

Diana:

(1) Several section of Intro to GIS, Digital Earth, WebGIS, (2) All of my guest lectures/workshop in Fall 2020 across disciplines (Business, Landscape Architecture, History, (3) A workshop for colleagues encouraging them to incorporate cloud-first/focused.

Q1:

Joseph:

Cloud-first means: Web based GIS software, online data services, and online assessments.

(1) In a Cartography and Geo-Visualization course, a first-semester GIS course for students at North Park University.

(2) In a Population, Economics, and Urban Geography course, the third in a 5-course certificate program for AP Human Geography K-12 instructors at Elmhurst University.

Q1:

Jennifer:

- **Cloud**: Refers to resources such as servers accessed via the internet, implying no use of programs installed locally on desktops; “cloud-first” courses are designed from the get-go to utilize modern cloud computing functionality on hosting providers such as Amazon AWS, Microsoft Azure or Google Cloud.

  In what courses or workshops are you using cloud-only tools and methods?

  (1) In several undergraduate courses: first semester GE courses Maps in the Digital World, Sustainability Science in the City, Human Populations and Natural Hazards, Water Planet, and Principles of GeoDesign, and in an upper-level major class Geospatial Modeling and Customization.

  (2) In graduate classes: Spatial Programming and Customization, Web GIS, Spatial Computing, and Foundations and Applications of Data Mining.

- Poll question: In what percentage of your courses do you anticipate using primarily cloud-based tools?

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Q2:

Nicole:
Simple analysis will be enough; courses won't require students to develop rich understanding of data models or data management. Spatial thinking is more important focus. ArcGIS Online allows easy learning curve for diverse audiences. All prefer web-based platform to present results; often team-based.

Diana:
Because why not? For Intro courses there is very little that cannot be done with AGOL, which gives users a sleek, results-rich experience, even for complete beginners.

Not having to deal with tech issues leaves more time to focus on spatial thinking and foundational geospatial concepts, which are evergreen.

Q2:

Joseph:
(1) Focus on spatial thinking and getting students excited about being change agents, rather than **all** of GIS at once.
(2) To minimize technical issues with installations and devices.

Jennifer:
(1) Consider how well a given computing solution supports teaching and learning to customize out-of-the-box applications, i.e. for application development or data mining projects, or learning how to program geospatial technologies, and how to utilize cloud hosting services.

(2) Requests for new software should be made to in-house IT staff 6 months in advance of intended launch

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Q3: Nicole:

1. Prepare students from spatial thinking perspectives.
2. Connect spatial information to their own project.
3. Jump into cloud-based technology!

- Introduce institution login information.
- Introduce the file organization structure, such as content, available maps. Introduce different contents, like web maps, feature layers, web apps, etc.
- Let them try!
- Collaboration - to sew their projects together.

The 1-credit course: Spatial thinking -> geospatial information evolution and application -> project proposal development -> information seeking -> spatial visualization -> analysis ->teamwork/presentation.

Q3: Diana:

- (1) Switched to fully remote and cloud-only instruction halfway through Spring 20. Topics we covered with cloud-only: geocoding, pattern analysis, proximity analysis, data joins, tessellations.

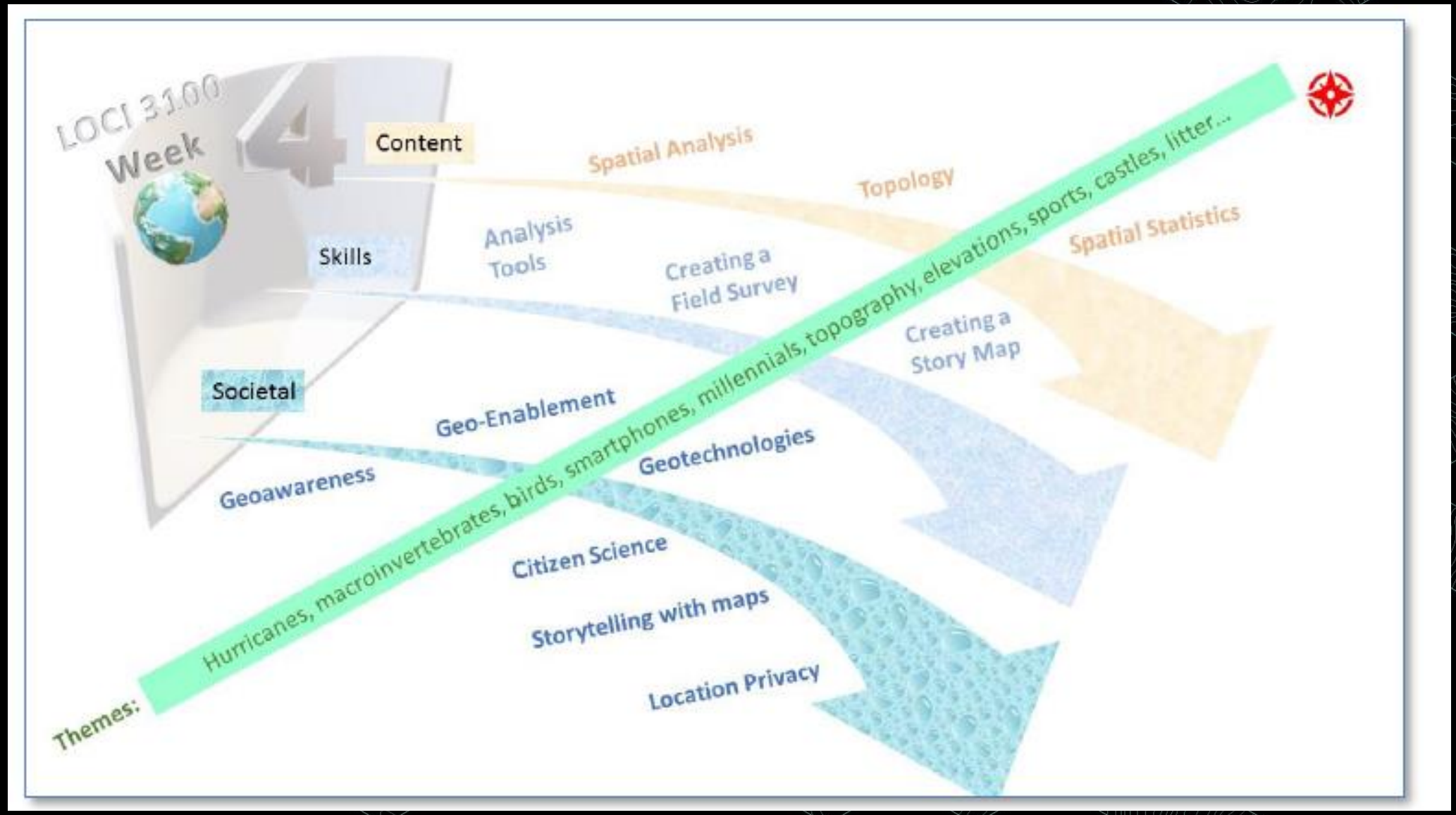
- (2) In light COVID-19 we used pertinent available datasets that were made available, students visualized and analyzed them.

- (3) Discussed dashboards tracking disease progression worldwide, and in that context discussed cartographic principles and best practices.

- (4) Currently I am planning a workshop on using ArcGIS Online in GIS courses, especially Intro to GIS courses, for my colleagues who are teaching GIS this coming Fall.

Q3: Joseph: Cartography and Geo-Visualization - Examples

Each week: Readings/videos > Discussion > Hands-on Activities > Discussion > Quiz.



Q3: Joseph: Cartography and Geo-Visualization - Week 4

Objectives:

1. Learn how maps are made from spreadsheets, GPX data, web feeds, and surveys.
2. Symbolize and classify maps from created data.
3. Apply design principles to map change over space and time.
4. Create a story map.
5. Identify ways in which society influences mapping, and how mapping influences society,

Readings/videos:

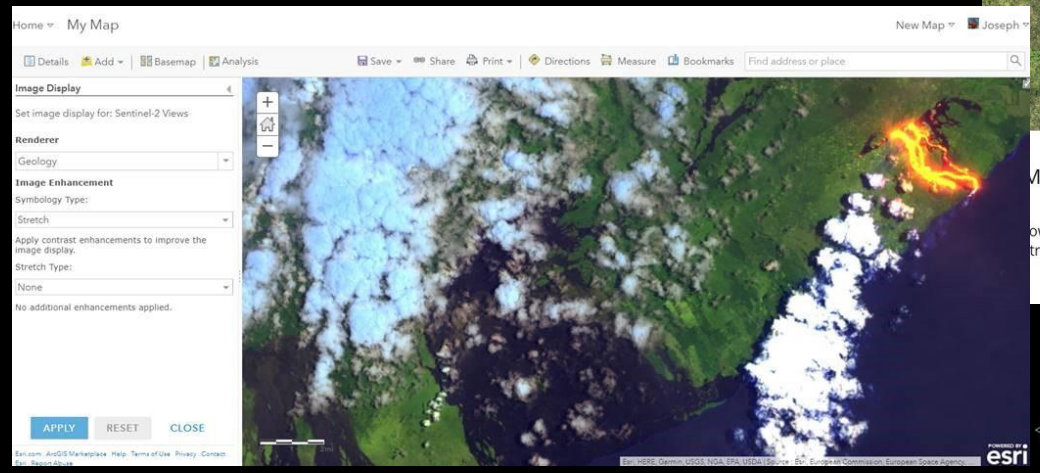
1. Critically assess maps, identifying 1 good & 1 poor example of map design.
2. Identify two principles of typography on maps.
3. Define Fitness for Use and Truth in Labeling in mapping.
4. Describe at least three reasons why data quality matters in LOCI work.
5. Define the "fee vs. free" debate in the provision of data; describe the open data movement.

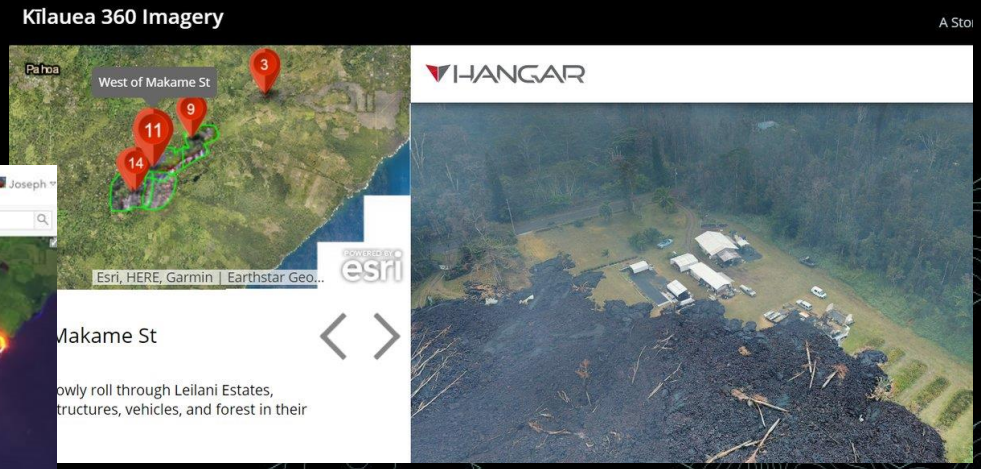
Activities:

1. Map and analyze demographic variables in ArcGIS Online.
2. Create a field survey using Survey123.
3. Create a map in ArcGIS Online using survey data > symbolize > classify.
4. Create a dashboard showing survey results.
5. Create a story map summarizing your field investigation.

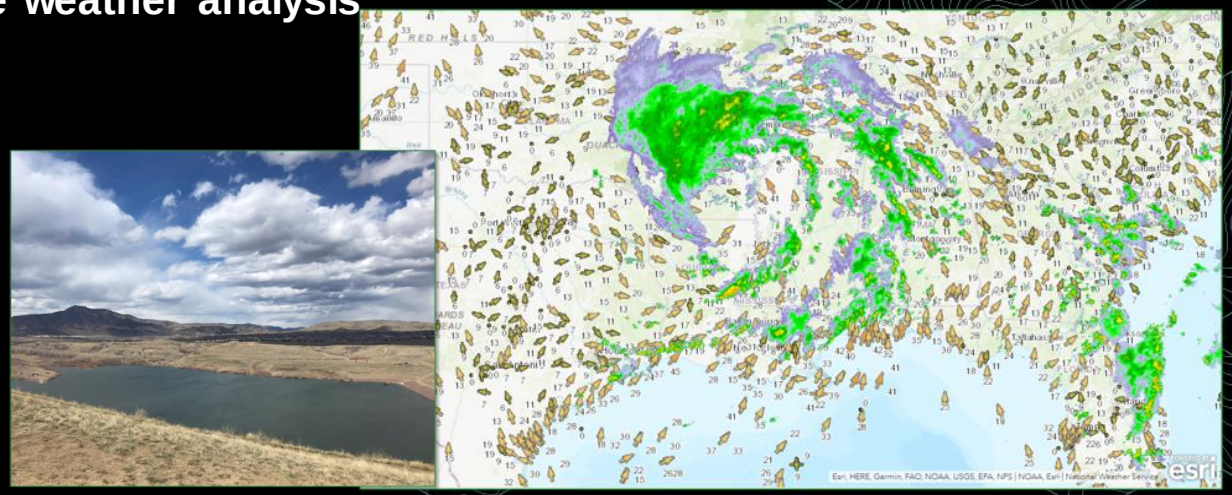
Q3 – Joseph: Cartography and Geo-Visualization - Examples

Sentinel-2 imagery with UAV story map

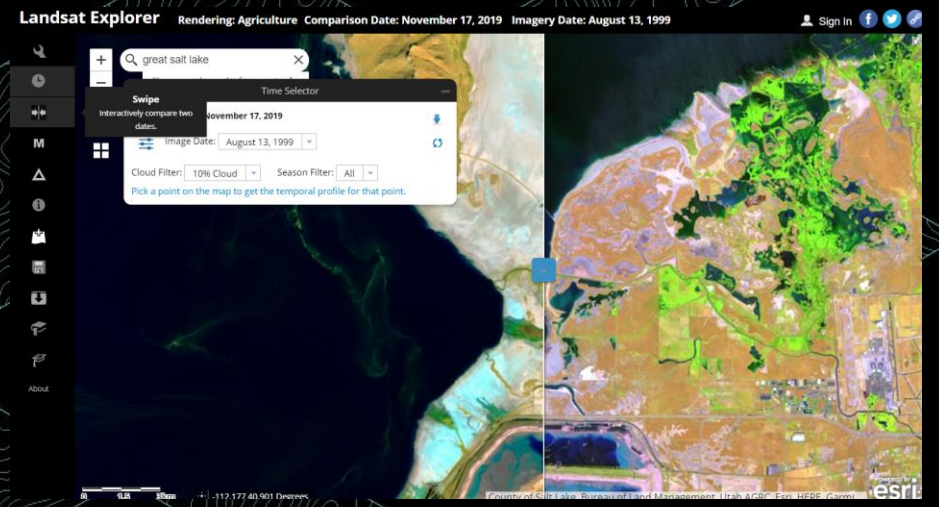




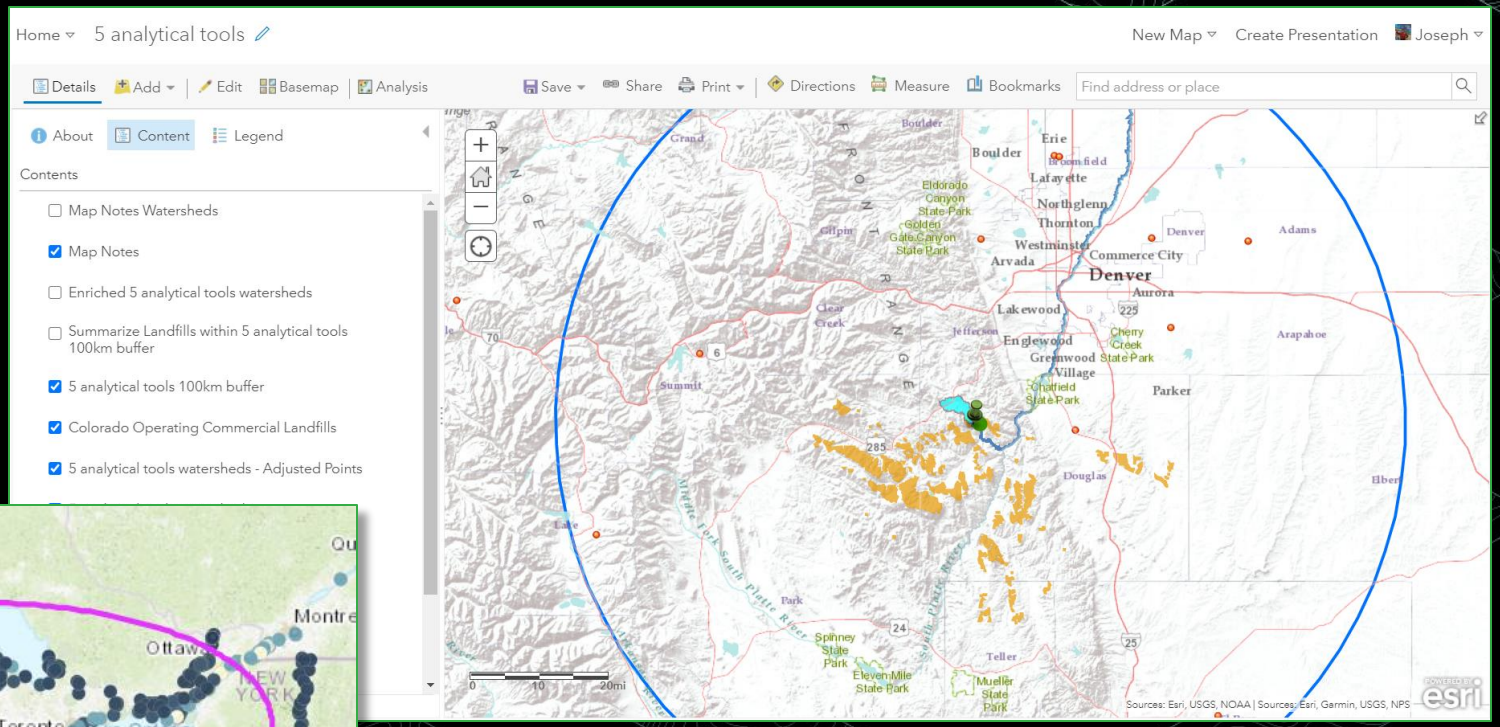
Real-time weather analysis

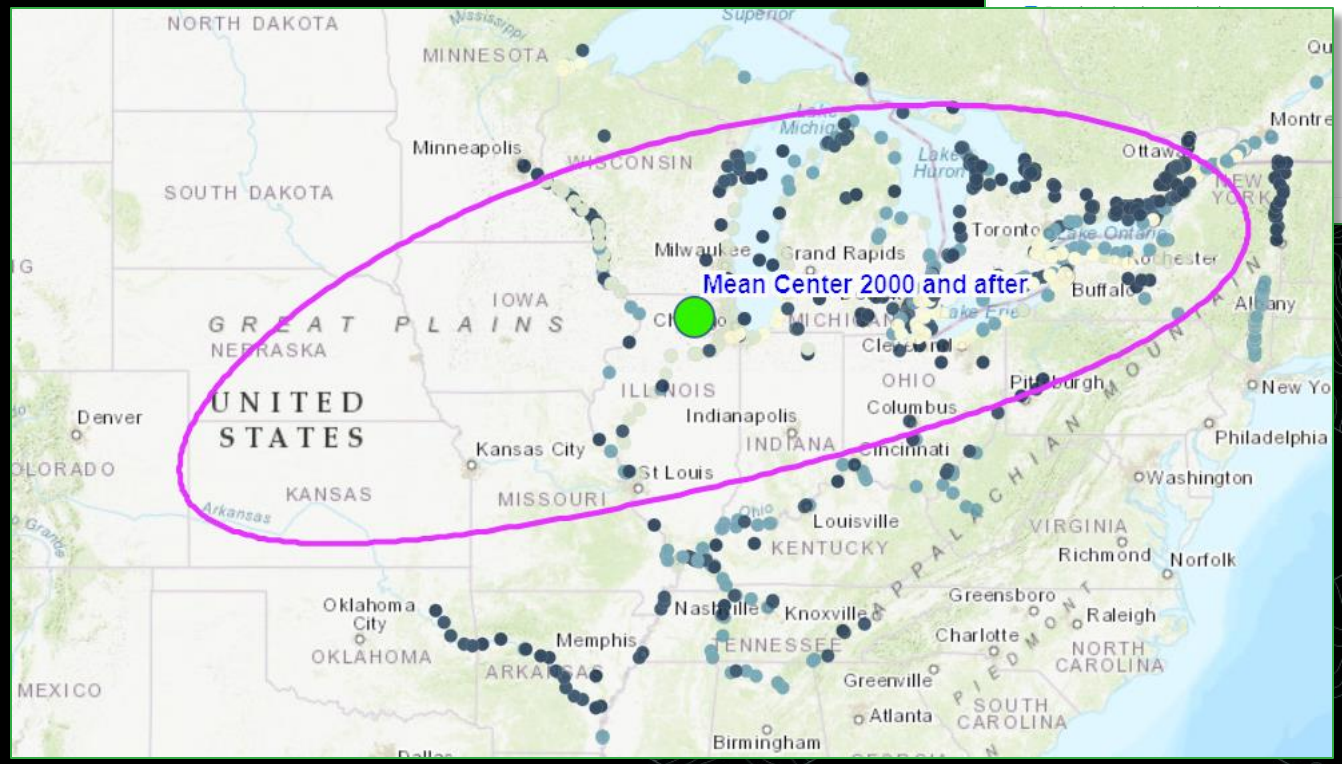


Landsat Explorer



Analysis tools in ArcGIS Online.





Q3:

Jennifer:

(1) At the undergraduate level, the intent is to provide a platform for storytelling in a multitude of disciplines that non-computer science students can readily deploy.

(2) Consider objectives in graduate course, such as critically evaluating the benefits and challenges of developing web GIS applications using different geospatial technologies and system architectures, and tackling application design problems to make end user experiences and interfaces easy to use and aesthetically pleasing.

(3) Faculty collaborate synchronously with students by sharing personal computers, demonstrating coding, exploring programming and application development working in groups (i.e. breakouts), then by coming back together as a class to share results and ask and answer questions.

(4) Throughout the courses, explain to students how to leverage their work in digital portfolios and use these computing platforms long after graduation.

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Q4:

Nicole:

1. It is an art or a trade-off to decide what is the perfect amount of GIS concept/technology we need to introduce.
2. Dealing with online layers
    - Some users shared contents might not exist long enough for the semester.
    - Sometimes, it is hard to evaluate students work because it is easy to borrow some contents from the ArcGIS Online community.
3. If the web interface changes (or upgraded), the learning materials need to be changed as well. Instructors need to keep up with the technology!
4. If teaching on our own server environment, maintenance is an issue. How can students create innovative ways to break the server? If it happens, everyone else is stuck.

Q4:

Diana:

The pros and cons are really different sides of the same coin. The ease, accessibility and cross-platform availability of AGOL can lead to students running away with tools and analyses without first understanding them.

At the same time, this lends itself to the "learn-by-doing" lean of the contemporary student, their preference for iterative/trial-and-error learning styles.

Q4:

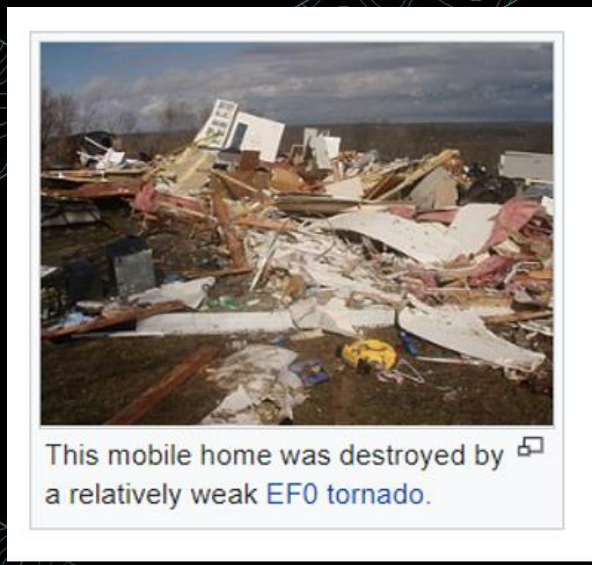
Joseph:

One challenge is that when students see a demo, video, or talk with GIS professionals, they want to dig deeper and go from A to Z without steps B, C, etc.

They cannot do every type of analysis with cloud-based tools.

However, if you master 9 things in ArcGIS Online, you can do anything!

Your role as the instructor is critical.



Q4:

Jennifer:

1. In the current quarantine, internet or network capacity owned by the students must be high-end in order to support the virtual desktops.
2. The ease of finding clean, GIS-ready data today can be misleading compared to the realities of finding and cleaning raw data to apply to a unique research project entirely on their own.
3. Long-term maintenance and updates of software required hardware can be a challenge since ideally we make requests many months in advance of implementation in courses.
4. Keeping our courses cutting-edge in geospatial technologies to best support the sciences we teach, and in tune with the existing and future needs of an evolving job market.

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Nicole:

Workshops – introduce new tools such as Experience builder.

Course – Spend more time to explain GIS concepts before moving to the platform.

Collaboration space with coordination? If a team of students are working on the same story map, they can over-write each other.

Diana:

Will continue using Story Maps, Web App Builder (and expanding their use across disciplines at my institution), excited about using Experience Builder and Business Analyst Web. Also excited to begin incorporating AGOL into intermediate, advanced and applied courses.

Q5:

Joseph:

(1) Dig deeper into the analysis tools using Business Analyst Web, ArcGIS Insights, and ArcGIS Online in Intermediate GIS courses.

(2) Make use of these tools in upcoming workshops for business, history, and health.

Jennifer:

(1) Cross-disciplinary collaborations among faculty within the same unit, and with colleagues at other universities.

(2) Address the dovetailing of courses, such as the intersection of geospatial programming, web and mobile GIS, and cartography.

- Poll question: For the upcoming term, what GIS software do you anticipate using?

How may we help you?

To connect with your Account Manager, submit a request through this form and a member of our team will contact you next week.

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