



Spring 2020 Semester Review

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Summary

Our spring began well enough with Emma traveling to The Bahamas to fly drones with the Carbonate Sedimentology class and a full and diverse set of classes to collaborate with during the term. Our student assistants (Hannah Davis and Morgan Jones) were seasoned members of our team — offering workshops, collaborating with faculty and students, and helping redesign our drone course. In retrospect, the start of the semester resembled a caffeine high, but soon a muzzy haze of withdrawal would set in. The reality that our team would not persist beyond June started the slog to extend the post-bac position and to request a permanent full time GIS Analyst position — all very much in doubt.

Soon after, we along with everyone else, dispersed and began grappling with transitioning to remote learning and trying to work from home. We adjusted to continue our collaborations and course engagements through a patchwork of technologies and persistence. We even found new opportunities by refocusing our tradecraft and leveraged our resources to offer maps and workshops related to the pandemic. We innovated to develop more inclusive teaching by developing virtual field trips. These efforts continue.

Administrative & Programmatic

Much of our administrative labor centered on simply maintaining adequate staffing in the Spatial Analysis Lab. Despite these burdens and extraordinary time sinks, the SAL sustained energy and interest to revise our drone course, continue planning a Kahn seminar, and meet multiple departmental service obligations. Highlights include:

- Extended the Spatial Fellow position until June 30, 2020 with financial contributions from ES&P, LSS, the Botanic Garden, the Libraries, and the Provost office.
- Submitted a proposal requesting a new GIS Analyst position with extensive support and guidance from the SAL Steering Committee (thank you). Not surprisingly and unfortunately, this position will likely be years in the making and may never materialize.
- Redesigned Aerial Imagery & Cinematography course (IDP109) from 7 week / 1 credit to 14 week (fall semester) / 2 credit course.
- Co-organized, with Dana Leibsohn, [Technophilia/Technoskepticism](#) 2020-2021 Kahn Seminar

- Awarded a Sherred Center Pedagogical Partnership to hire Morgan Jones '21 to help revise IDP109. Morgan's outstanding work was recognized with the Academic Catalyst Award, one of the [2020 Impact Awards](#) from the Wurtele Center for Leadership.
- Spotlight awards to Emma and Tracy
- Attended and participated in multiple departmental meetings, college and community service:
 - ES&P meetings (Jon)
 - SCL Exhibition team (Tracy)
 - SCL Managers meetings (Jon)
 - SCL Leadership and Managers meetings (Jon)
 - SCL weekly meetings (Tracy, Emma, Jon)
 - LRT monthly meetings (Tracy, Emma, Jon)
 - LRT leadership meetings (Jon)
 - Sherred Center Teaching and Learning Seminar with Al Rudnitsky (Jon)
 - Spring NEARC Planning Committee (Tracy and Jon)
- Member of the Editorial Collective for an issue of Science for the People (SftP) magazine (Emma)

Classes

- *ENV 201/202 Researching Environmental Problems*
 - Students in the Environmental Science and Policy research methods course learned core spatial analysis skills, including visual hierarchies and symbology, assessing elevation data, rasterizing and reclassifying, and making raster calculations. Once students acclimated to the remote learning, they conducted their own research using these techniques to investigate climate change sensitivities in Springfield and West Springfield by assessing permeability, flooding, and environmental justice issues.
- *GEO 251 Geomorphology*
 - We assisted geomorphology this spring with GIS support working on weekly lab assignments investigating geomorphological features in various landscapes around the world. These assignments taught the students core spatial analysis techniques and how to understand LiDAR elevation datasets. Fieldwork was cancelled when we went remote, but the SAL helped bring the field to students' laptops with a [virtual field trip to Emerson Brook](#).

- *GEO 334 Carbonate Sedimentology*
 - In January, one third of the SAL team packed a swimsuit and Pebbles the Drone and joined the Carbonate Sedimentology class in The Bahamas to take additional aerial photos of key study locations. Drone images are used to assess the movement of boulders after large climatic storms, most recently Hurricane Joaquin. Back at Smith, the SAL helped students create seamless maps of the drone flights using Pix4D and taught introductory lessons in ArcGIS to make maps of each boulder location and elevation profiles along key transects.

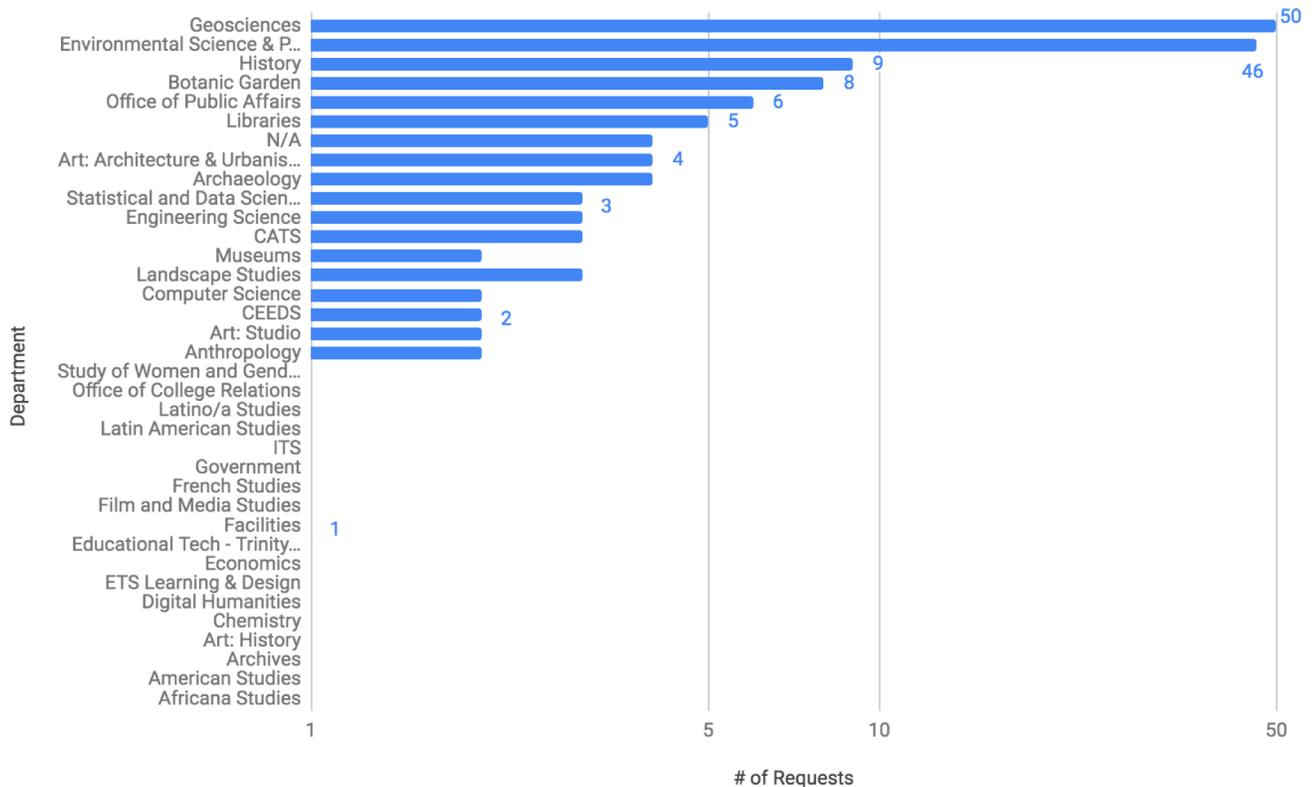
- *HST 292 Doing Digital History*
 - [Detailed sessions recap](#) - In this course, students explored four methods of doing digital history: network analysis, textual analysis, public history, and mapping. In the first session, we introduced the [history of cartography](#) to reiterate mapping as a mode of knowledge production (cartography and sovereignty, colonialism) and active mean of discovery rather than another way to present “history” as we know, mapping and landscapes are not neutral/gendered, then transitioned to counter-cartography as a way to reclaim marginalized/forgotten history and reveal spatial connections through layering of time. Examples we used include [Bill Rankin](#), [Mapping Inequality](#), [“People Who” Atlas](#) (to demonstrate experiential space discussed in the course readings. In the second session, we intersected mapping and public history by doing a GPS collection exercise on campus counter history. Each group created interactive pop-ups on web maps (overlying georeferenced historical campus maps) and practiced different StoryMaps mechanisms.

- *ARX 144 What I Found in the Archives*
 - Early in the semester we attended class to have a conversation with Professor Mucher about using mapping and the archives. The archives contain much more spatial materials than merely maps-- the objects themselves beg to be placed on the map. During our active conversation we discussed the localities of rocks and minerals in Smith’s mineral collection. These locations are just the beginning — what else happens in that area? Is there a mine? What are they mining and why? Why do Smith geology professors have a connection with that place? These questions shape the spatial story behind this collection and add an enriching layer to archival studies.

Help Requests per Class

We try to capture the number of requests associated with each class. Our numbers are likely low, but the table below gives some sense of engagement for each class. As you can imagine, many of the requests extend well beyond the initial inquiry and become mini-projects in themselves.

Requests by Department



Class	Requests
Researching Environmental Problems	27
Geomorphology	16
Carbonate Sedimentology	14
Doing Digital History	9
What I Found in the Archives	1

Climate & Energy Policy	2
Capstone in SDS	2
Art & Ecology	2
Statistical Methods for Undergrad Research	1
Paris: A Multilayered City	1
Aerial Imagery & Cinematography	1

Faculty & Student Research

Faculty Research

- Afro-Asian Solidarity Collective - Lisa Armstrong (SWG) & Jada Ficarra and Destiny Wiley-Yancy - helped student research assistant to organize and prepare the research data in spatial format to input to [the Afro-Asian networks visualization](#)
- Cold War technocrats movements in Latin America - Javier Puente (LALS) & Amaya Ramsay-Malone - build "The Hemispheric Circulation of Agrarian Reform, 1961-1979" project into a StoryMap to showcase the circulation of rural technocrats and agrarian experts throughout Latin America during national agrarian reform; suggested a list of GIS-savvy research students
- Diamond mining and vessel tracking in Orange River (Namibia, South Africa) - Elisa Kim (Architecture) & Chloe Hou - case study of offshore diamond mining in Namibia and the lineage of diamond transportation into the ocean, help finding data related to watersheds, bathymetry, rivers, vessel traffic, and satellite imagery in southwestern Africa
- Rural and urban school discrepancies in Mexican communities after election cycles - Fernando Armstrong-Fumero (ANT). Included some instruction in QGIS (open software) and wrangling data from the National Institute of Statistics and Geography INEGI.
- [Pukara](#) and the Chijnaya Foundation in Peru - Liz Klarich (ANT). Advised and reacquainted with StoryMaps, as well as accessing data from the [Peruvian geospatial portal](#)

Special Studies

- Methods to Analyze Shoreline Movement in Ambergris Caye - Hannah Dillahunt & Camille Washington-Ottombre (ES&P)
 - Research question asks how to develop methodologies for shoreline movement using different qualities of imagery? Using Landsat imagery and drone imagery from 1980 to 2017, Hannah identified shoreline indicators, performed image classification, and used Digital Shoreline Analysis System to measure movement.
- Mill River RFID tagging - Lucy Hansen, Claire Logan Hankla, Lesly Oquendo & Bosiljka Glumac
 - Several drone flights conducted along the Mill River to generate high resolution maps to identify stones and tiny pebbles in sediment beds. Methodology applied to a research trip in San Salvador, The Bahamas in January 2020.
- Community Garden for Florence Heights - Reid Bertone-Johnson (LSS)
 - Created access for GIS data storage and enabled ArcGIS Online accounts

Design Clinic & Capstone Projects

- Northampton DPW Design Clinic - Megan Barstow, Rebecca Wolf, Deniz Keles (Engineering) - Elm Street Brook in Northampton, acquiring drone imagery (help with preparing permission materials to NoHo High School, Cooley Dickinson, property owners) and LiDAR/GIS work for ecohydrology restoration work
- Minneapolis Met Council Land Use/Land Cover - Serene Lee, Julia Bouzaher, Jessica Keast, Ann Mudanye (SDS) - SDS capstone project investigating climate mitigation assessment of forested areas in the Twin Cities, help analyzing land cover and impervious surface data (from UM) and land use data (from Met Council) to extract “green” areas to further analyze in R

Drone Flights / Missions

- Emma Harnisch - became a FAA Part 107 certified remote pilot and traveled with Carbonate Sedimentology class to San Salvador, The Bahamas to pilot drone for mapping reconnaissance.
- Submitted [public comments](#) to voice disapproval of the Federal Aviation Administration (FAA) Notice of Proposed Rulemaking (NPRM) to establish [Remote ID](#) for drones. If these regulations are approved as written, our drone program will be severely burdened to comply. **In short, the NPRM is so broad and complex that it will effectively shut down all of our teaching and research with drones at Smith College.**
- [MacLeish - priority forest areas](#)
 - Flew 5 missions in early spring 2020 (before leaf on) to map high priority forest areas and to begin building a map and image database of the MacLeish property.
- [Albright House - chimney inspection](#)
 - Saving the college ~ \$1600
- Arts Afield
 - Captured spring 2020 imagery of project area in anticipation of summer/fall installation
 - Artwork [Proposal](#)

Maps & Collaborations

- [COVID-19 Experience Map](#)
 - The COVID-19 Experience Map aimed to allow the Smith community to share their own experience and observations as we live remotely. We used Survey123, a crowdsourcing application, to ask about student, staff, and faculty lives under social distancing measures. This map now serves as an archive of distancing tips

and tricks, recipes and resources that grounded us during these challenging times.

- [Western Mass Mutual Aid Network](#)
 - This crowdsourced map was created in response to the coronavirus (COVID-19) pandemic that began sweeping through the United States in early March to locate point people in the Pioneer Valley to assist with mutual aid efforts-- including rides to the grocery store, grocery and medicine pick up/drop off, assistance finding childcare and pet-care, connecting to funds as more and more jobs are being lost.
- [Global Illumination Map](#)
 - A collaboration with the Office of Alumnae Relations & Public Relations, to visualize the first global illumination event that garnered wide-spread support of Smith affiliates lighting a beacon for the class of 2020. The map has 1861 submissions and 16192 views, also [a shout-out from Nancy Pelosi](#)
- [Smithies Around the World 2020 Map](#)
 - The second iteration of mapping Smith alums, the data include 2019 graduates, as well as undergrad and graduate alums. The interface affords dynamic layers and extent feature count, and the interactive points with year and major
- SCMA - Ancient World Gallery exhibit
 - Creating a digital humanities project that aims to make the ancient world exhibit more accessible and virtual, with maps that demonstrate disparate geographies and timelines, work with a fall art history student fellow
- BG - IrisBG basemap
 - Process of using most up-to-date campus imagery as basemap in IrisBG, and coordinate question in plant collection attributes (precision and trueness)
- CEEDS - Arts Afield Tell of the Grass
 - (see above description)

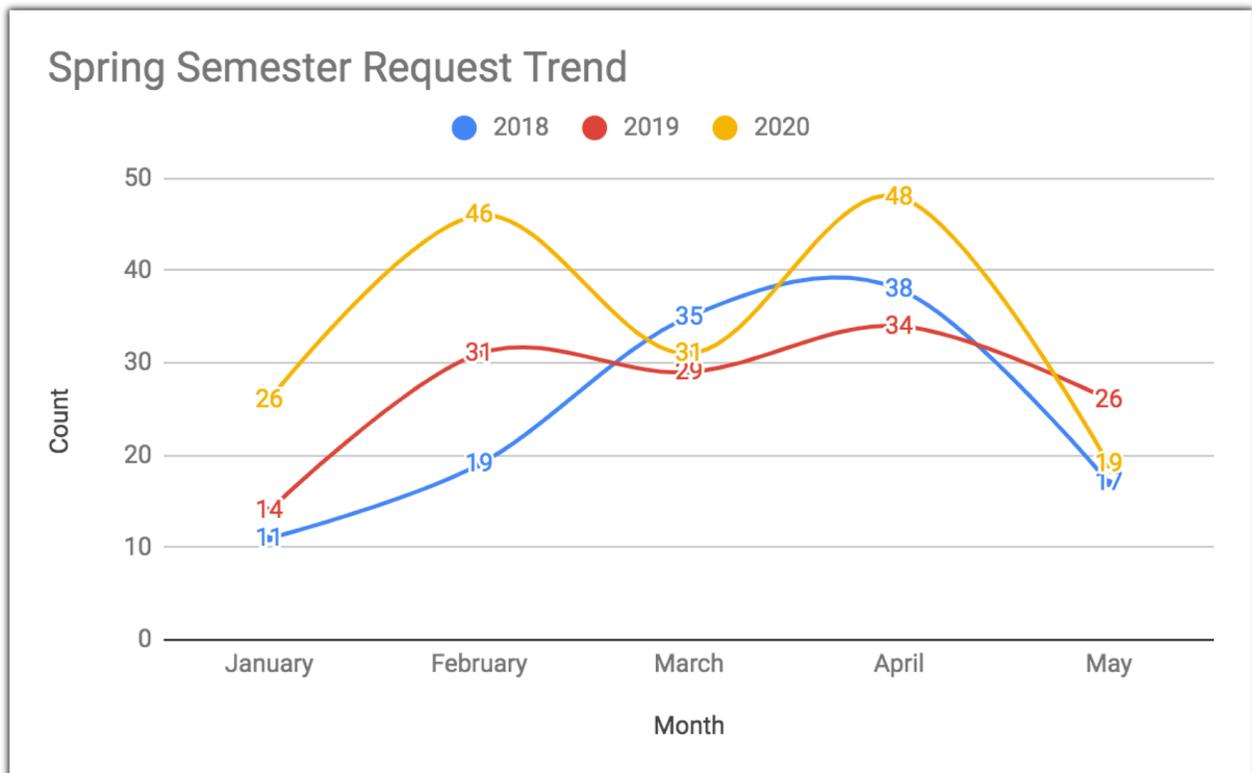
Workshops

- [Drone Ethics: Creating a Code of Conduct Part 2](#)
 - A follow-up conversation on the ethics of using drones for academic and environmental research. Work with the SAL to collaboratively edit our policy on how we use drone technology here at Smith. Be ready to think critically about how we engage with this technology and research practices. We welcome technophiles and technophobes alike!
- Exploring ArcPro - by Hannah Davis '20
 - Curious about making the switch to ArcPro? Learn the basics of using ArcPro.
- [Where In The World?!: Finding Spatial Data](#)
 - Where in the world do you find spatial data for mapping projects? Learn about how and where to find this information and the beginning steps to using the data creatively and successfully

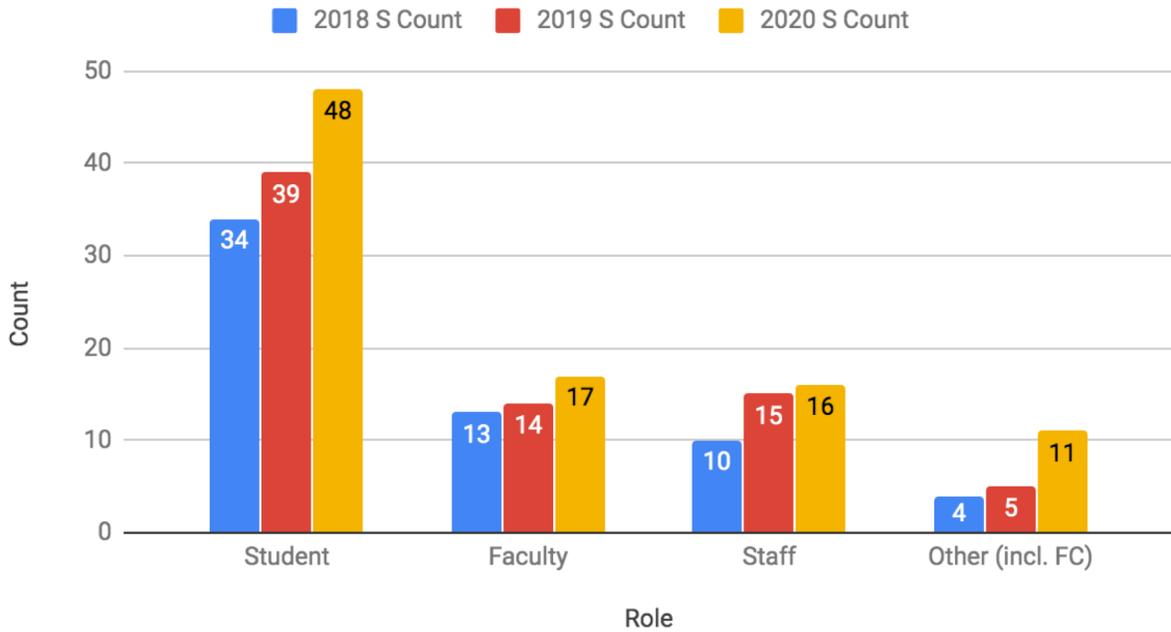
- Placing the Mineral Collection: Geocoding the Archives
 - Where did we get all these rocks? Explore the mineral collection and their various journeys to the Smith College Mineral Collection. We will use mapping to better understand the stories behind these rock specimens
- [Crowdsource Mapping Four-part Series](#) - tutorials & recordings, [Q&A](#), [COVID-19 related mapping resources](#)
 - Designing & Collecting Data with Survey123
 - Creating Web Maps from Survey123 Data
 - Styling a Web Map
 - Incorporating an Interactive Map in StoryMaps or Web App

Collaboration & Support Log

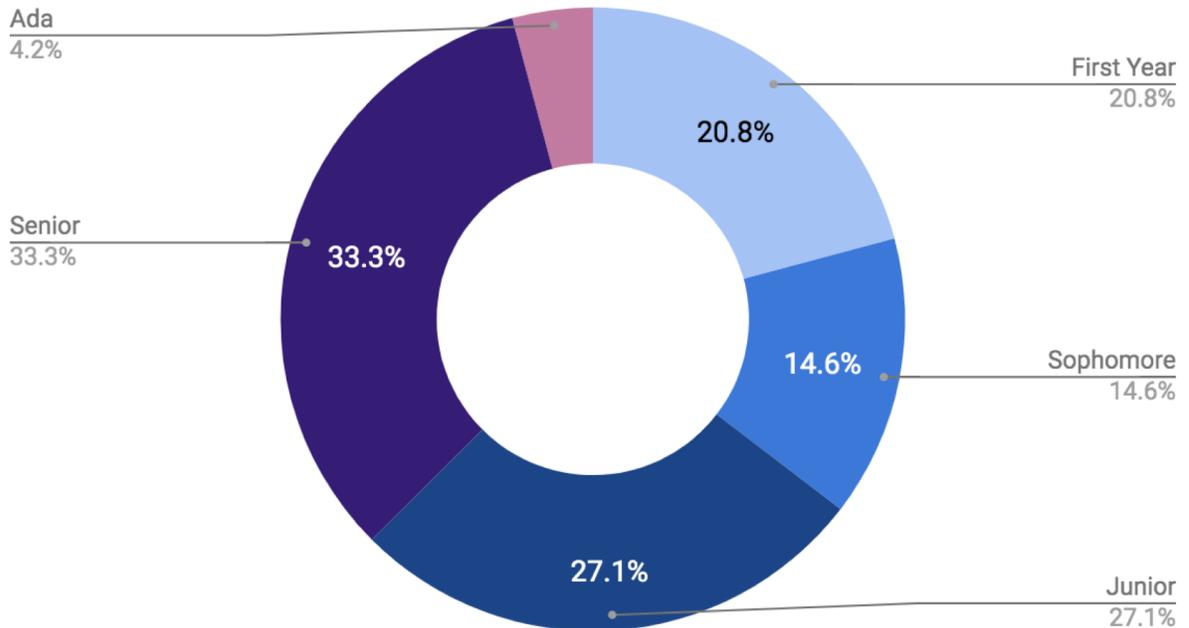
The pattern or frequency of requests for help and collaboration for 2018-2020 are similar, but the amplitude is increasing. Again, our counts are likely low, but the increasing trend is clear. The responses to student, faculty, and staff requests are appropriately scaled and there is no surprise on the proportion of help by class year. Seniors and Juniors are taking upper level courses that we work with and they often involve advanced projects and spatial analysis.



Spring Semester User Role by Count



Spring 2020 Student User by Class



We are using a newer system to track our work, which allows the creation of pivot tables to dig a little further into where help is most needed. Going forward, these numbers will guide how to allocate our limited resources.

Type	Requests	Subcategory	Requests
Class Support	66	Projects	36
		Lab exercise	29
		Lecture	1
ArcGIS Online	43	Webmap	19
		StoryMaps	12
		Logistics	12
Spatial Analysis	26		
Data Collection	23	Drone video/image	12
		Mapping/Survey	8
		GPS	3
Finding Spatial Data	18		
Consultations	13	Spatial thinking	7
		Curriculum	6
Software	12		
Extracurriculars	11		
Training	8	Learning resources	7
		Workshops	1

ArcGIS Online

ArcGIS Online is the cloud based environment that hosts web maps and StoryMaps. Variability is largely driven by classes that assign StoryMaps as a project. For example, in the spring of 2018, a large class (Archaeology of Food) assigned StoryMaps as a class project.

ArcGIS Online New Users by Semester & Year

