

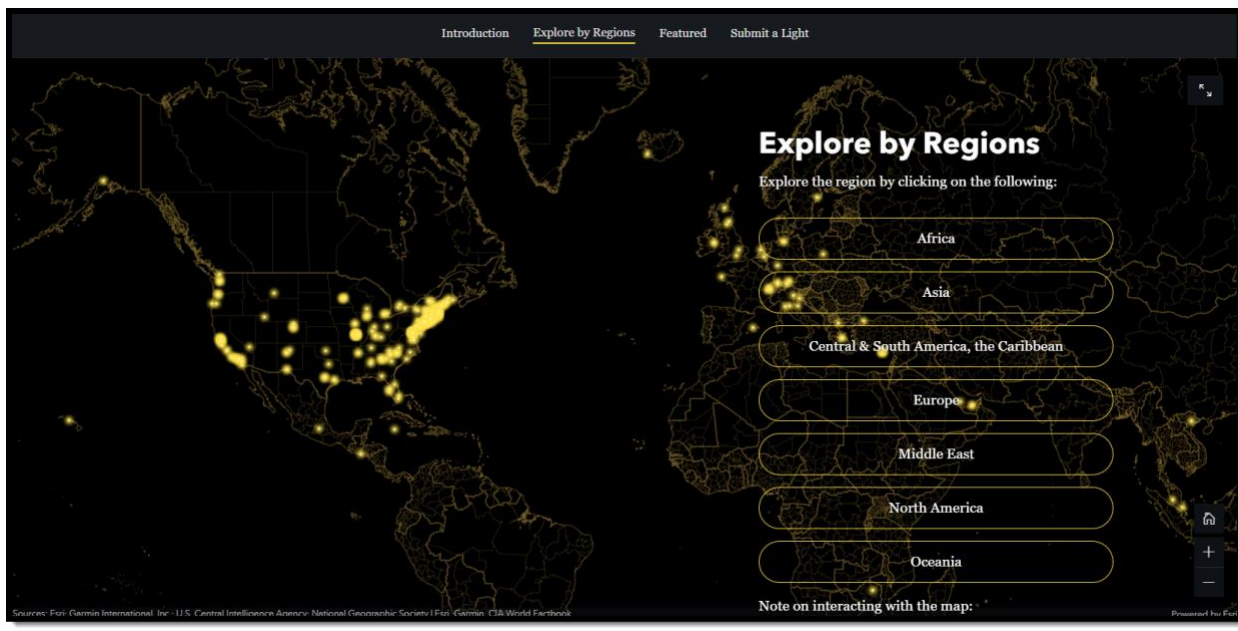
Spring 2021 Semester Review

January 2021 - May 2021

Highlights

- Global Illumination Map

We start our highlights with “Highlights”, otherwise known as the 2021 Global Illumination Map. The SAL developed a [second generation global illumination map](#) for the office of college relations that asked the Smith community to submit pictures of light with stories of celebration. The application was inspired by a NY Times data visualization with added customization to allow viewers to explore by region and view featured stories.



- SCMA map

Another intensive web mapping collaboration, the SAL partnered with the Museum of Art to feature Smith’s large collection of art that exists outside the museum. Our student associate, Hannah Dillahunt, [worked with SCMA](#) student assistant Lexie Casais and staff to transform curated content into a [spatial narrative](#) targeting individuals and groups of visitors.

- Aerial Gaze

We endured cold and often windy conditions to document art and science from above, and to embrace the creativity of our collaborators. Some of our sky work included:

- *Dancing with Drones*

Continued our episodic collaborations with Chris Aiken and Angie Hauser to document a dance performance in the [Movement Ecology & Performance in the Smith Landscape](#), and to capture aerial views of the senior dance recital in May.



- *Paradise Pond*

Gary Hartwell (Facilities) and Bob Newton (Geoscience) take full advantage of our weakness for doughnuts and bagels to lure us out on cold January mornings to fly Paradise Pond as part of the ongoing sedimentation redistribution project.



○ *TimeTracks and TimeTrails*

An Honors Thesis by Camille Butterfield combined drone photography with Art, Running, Mapping, Memory, Space, Place, Time, Track and Weaving. The SAL did the drone part, Camille did all the rest! Camille's thesis can be found in Scholarworks.



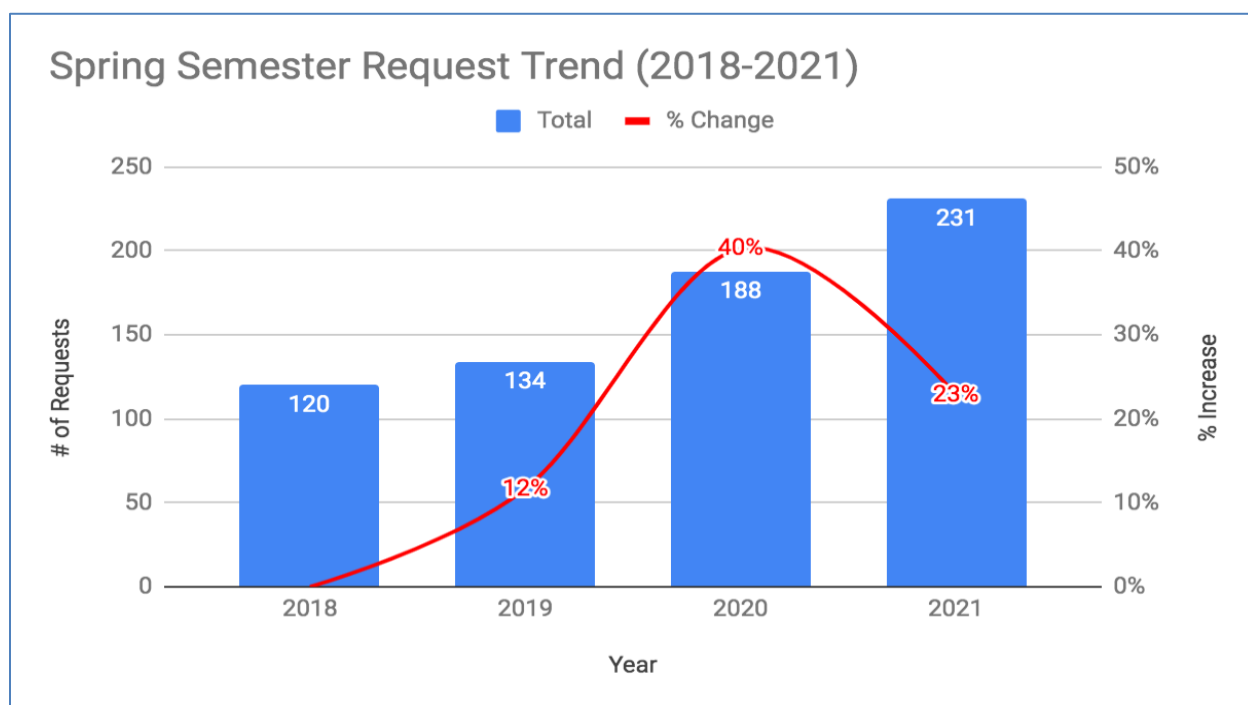
○ *New and Novel Equipment*

We added a new member to our drone family that puts us on edge, or rather, the red edge alongside the near infrared band. Our new Multispectral Drone, named *Plants*¹, collects data in 5 different bands of electromagnetic energy and enables insights to monitor vegetation health, measure biomass, better map shorelines, and to assess a variety of habitats or ecosystems.

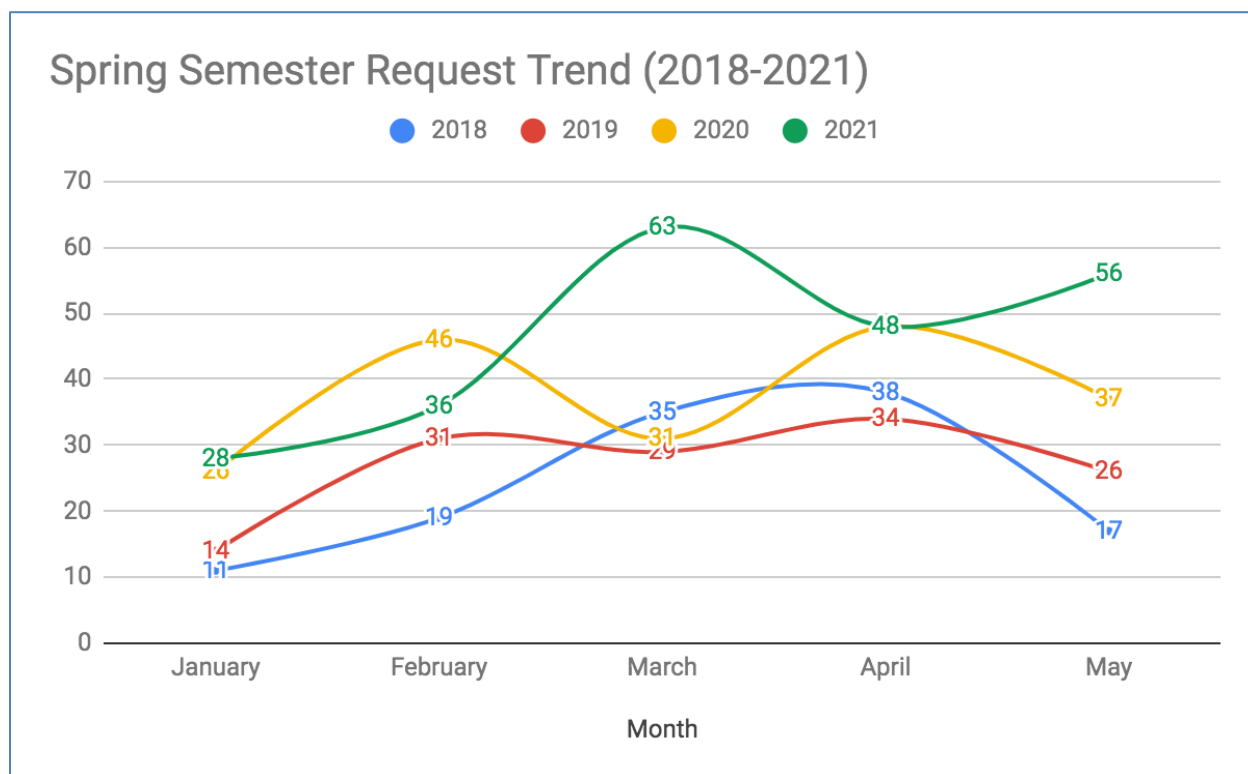
Tchotchkes

- Jon and Tracy concluded their participation in the 2020-2021 Technophilia/Technoskepticism Kahn Institute long term project.
- Tracy and Jon mingled with regional GIS folk to help plan the spring Northeast ArcInfo virtual conference. Tracy was instrumental in selecting the keynote speaker and in a weak moment Jon agreed to be on a GIS in Higher Education panel.
- Jon continued on the ES&P search committee to hire a 2 year visiting assistant professor.

¹ All our drones are named beginning with the letter "P"



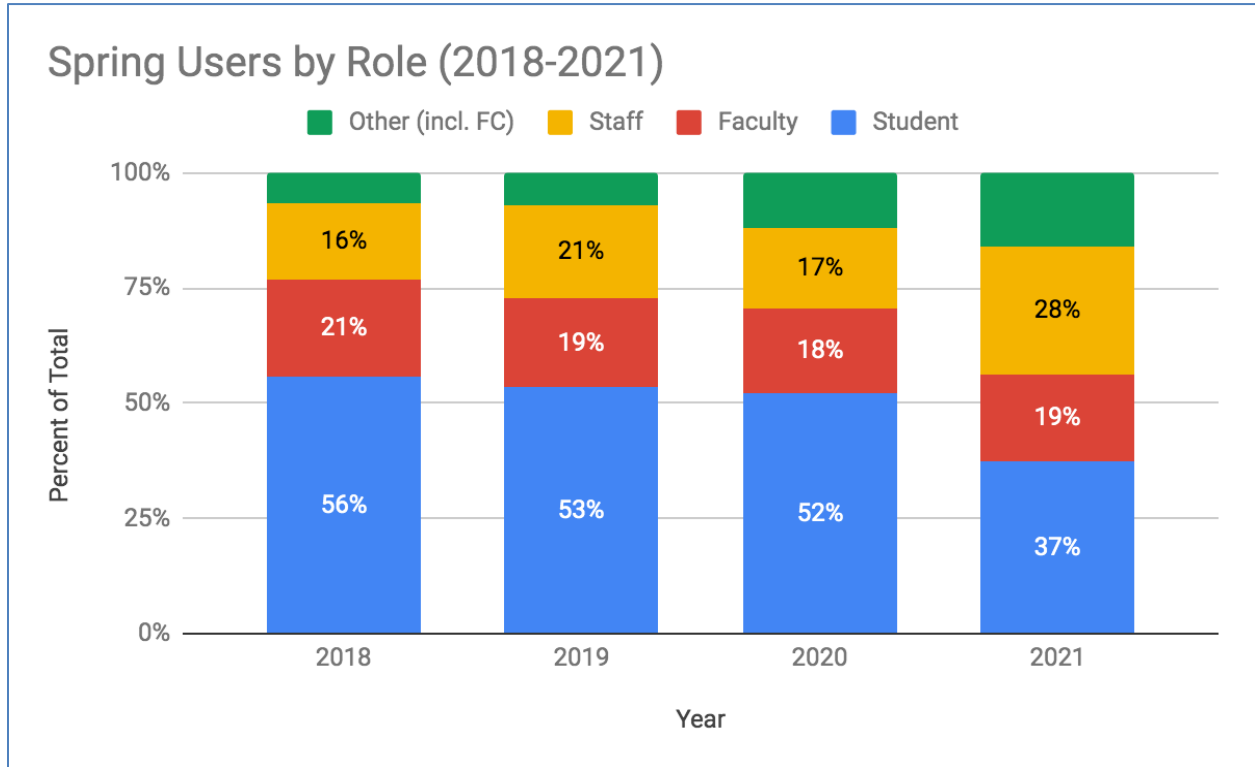
- The 231 engagements is likely an undercount, but does represent a 23% increase in requests compared to spring 2020 and a 72% increase from spring 2019.



- Some of the backstory behind spring 2021 request trend:
 - March increase reflects:

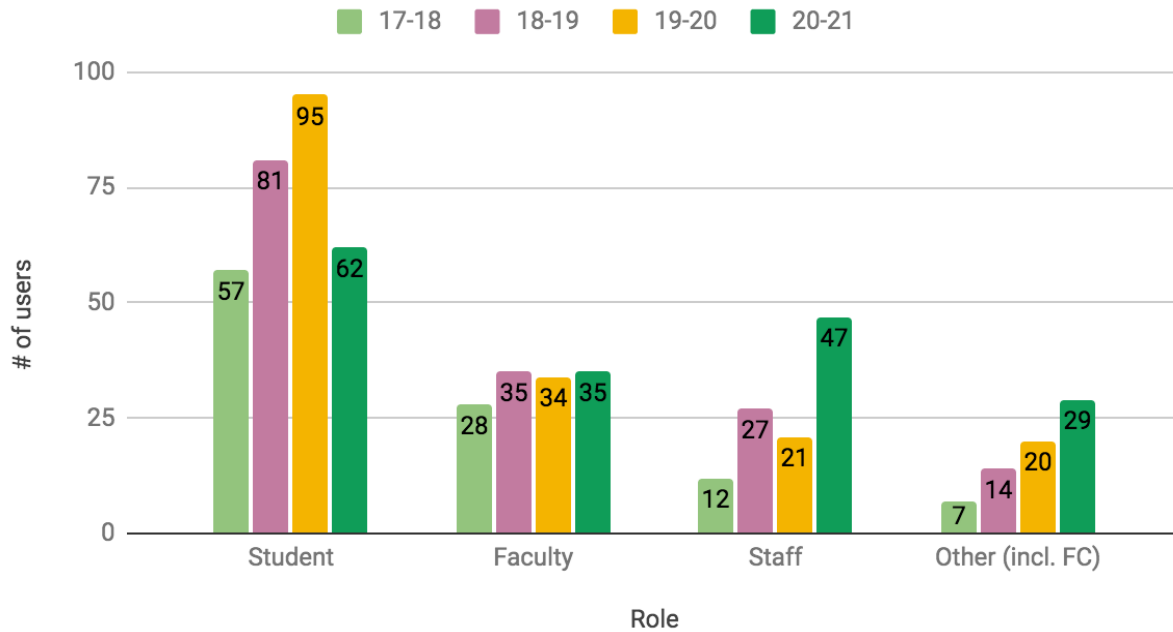
- application season for graduate schools, internships/jobs; year-long research projects in implementation stage; and Geomorphology labs
- May increase reflects:
 - unusually long semester (end of May) vs. ending early/mid-May

User Composition

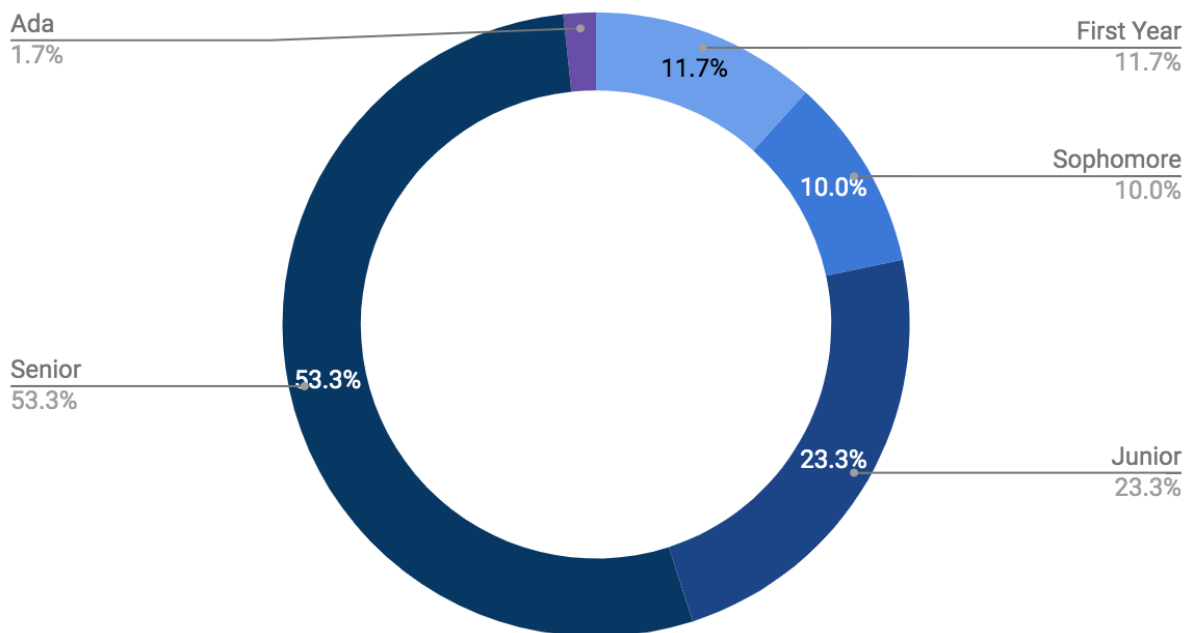


- There were 35 unique students, which is an increase from 27 from the Fall 2020; the shifting composition of users this spring reflects the overall shift in user roles since 2017 - in the past year, there's more demand from staff and others (the latter may be attributed to more intentional focus on collaborating with community and campus partners for course projects and research). It also reflects an aspect of joining the Libraries and responding to more internal, administrative requests.

Academic Year Users by Role 2017-2021

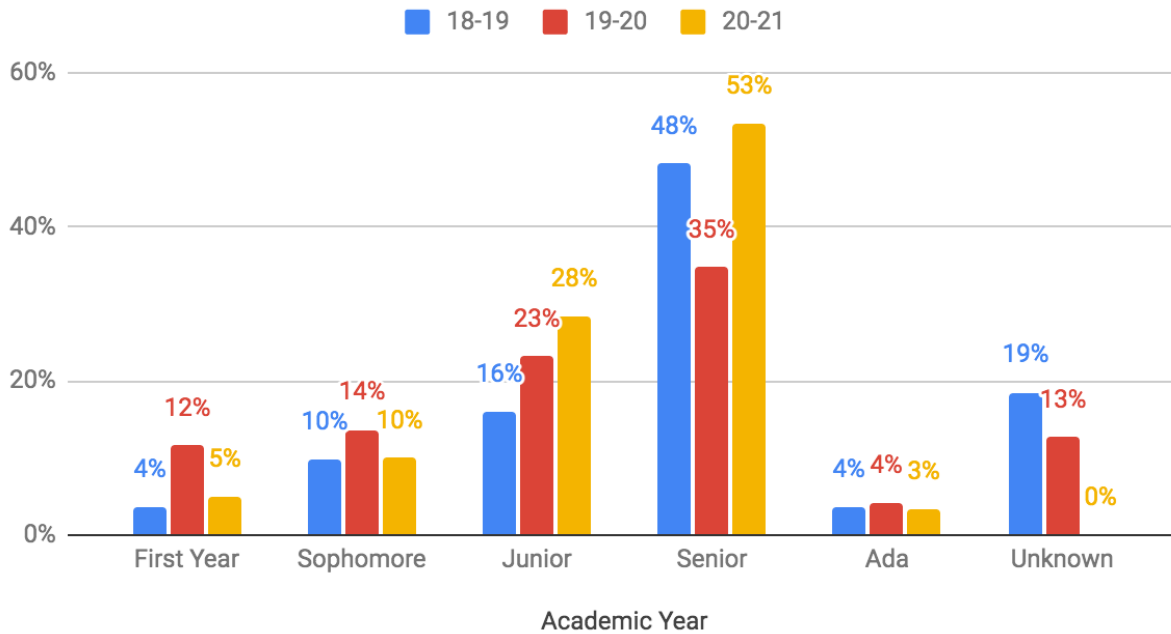


Spring 2021 Students by Class Year

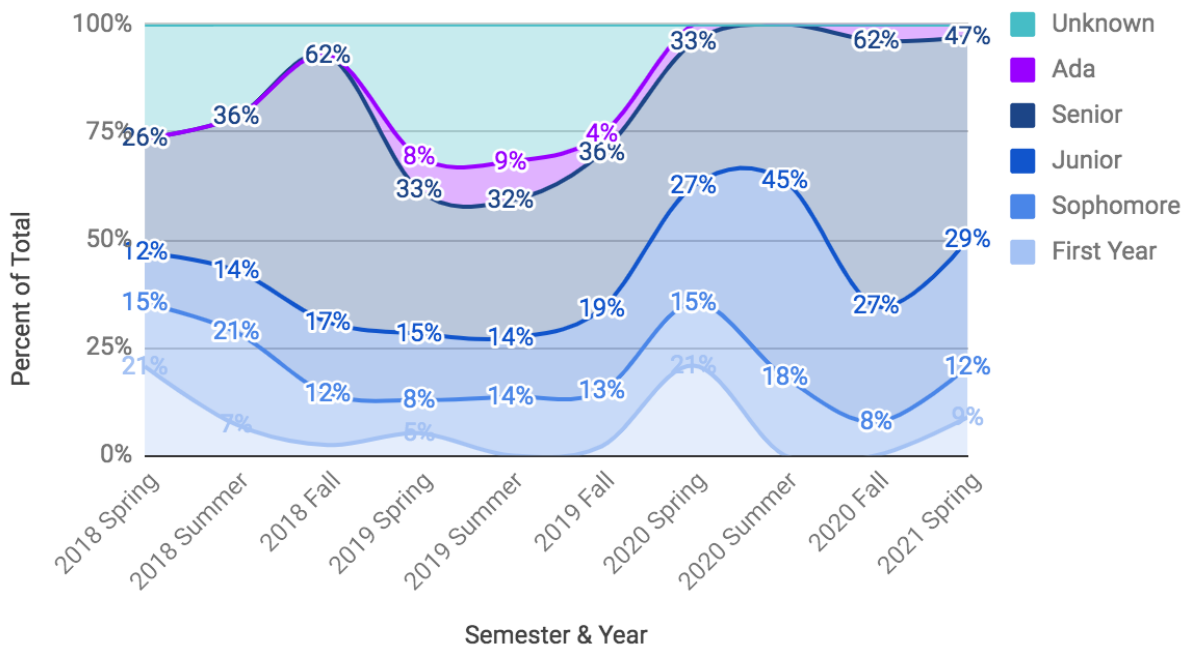


- The broad “students by class year” trend remains consistent - seniors and juniors are savvier in navigating academic resources; many are working with upper-level or core requirement courses, and capstone and independent research opportunities occur later in their academic careers.

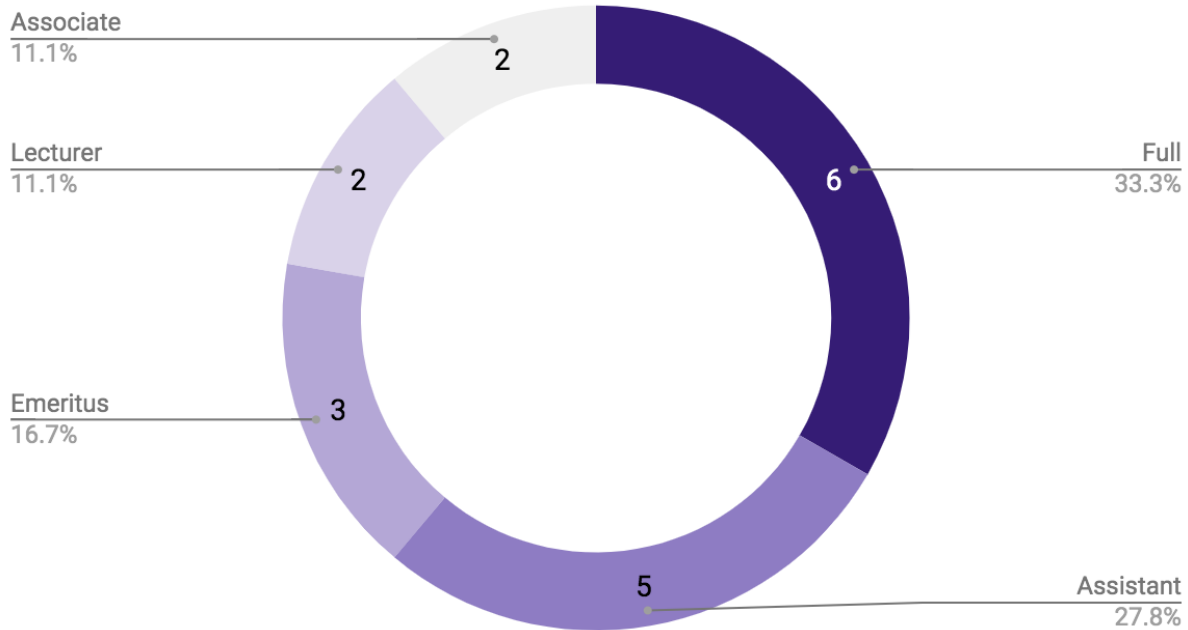
Breakdown of Students by Class Year (3-Year Period)



Breakdown of Students by Class Year (3-Year Period by Semester)



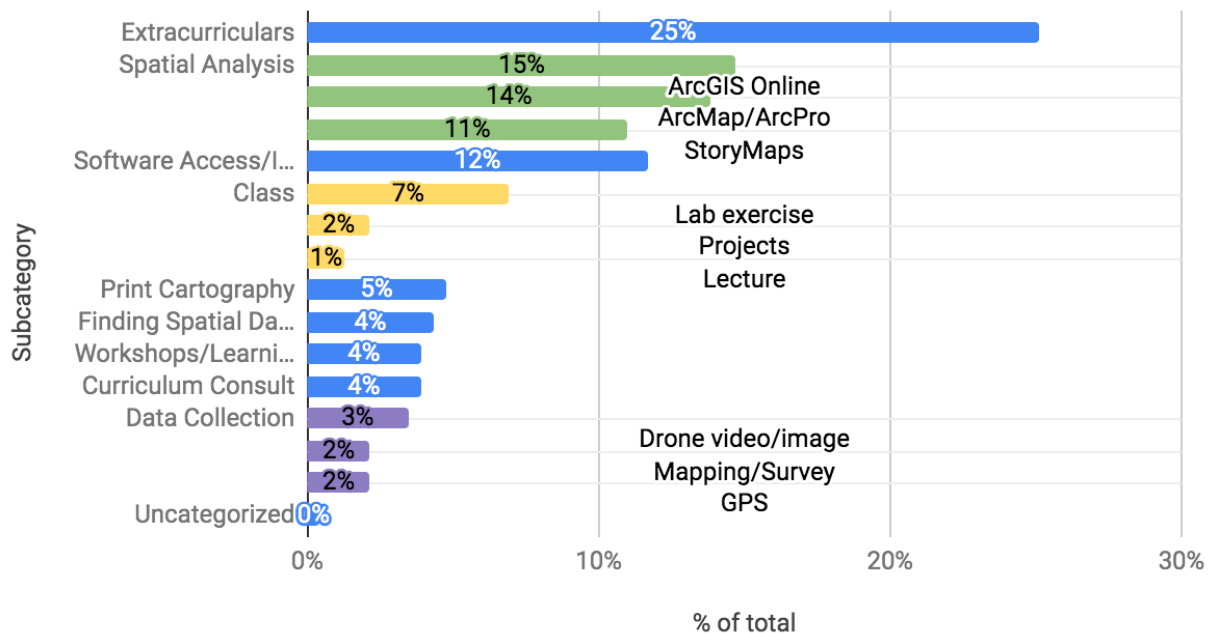
Spring 2021 Faculty by Rank



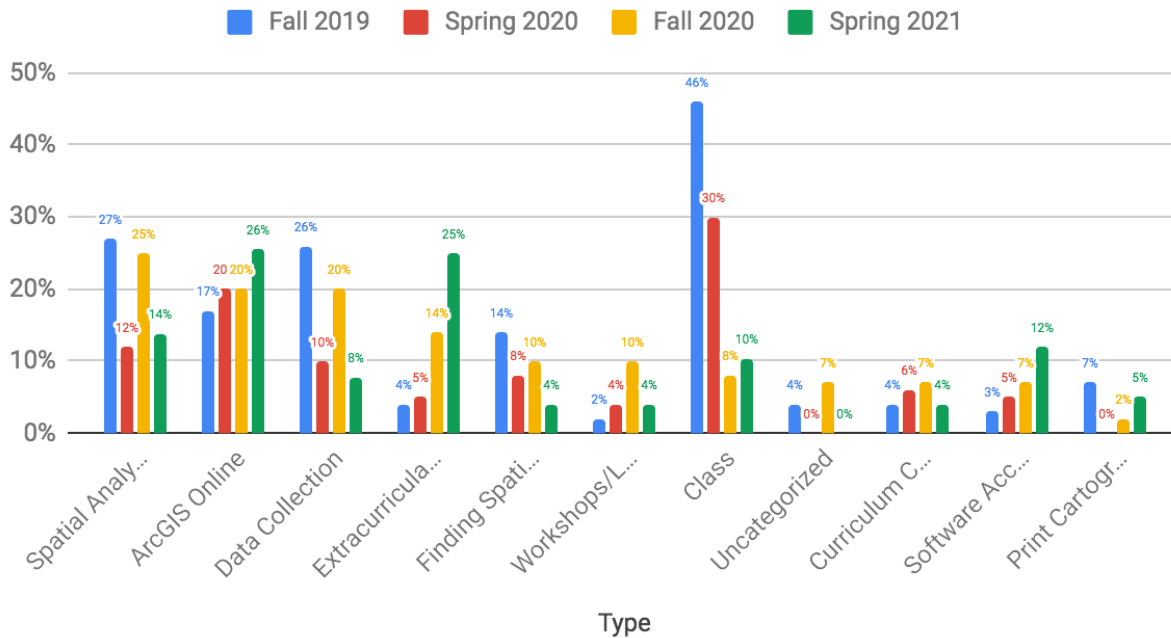
- Assistant Professors - the average duration for this position is 3 years, which could allow for comfort with curriculum experimentation (to include GIS) and pursuing a spatial component in their own scholarship.
- Full Professors - longtime spatial friends + 1 faculty using spatial analysis for the first time for research.

Type

Spring 2021 Requests by Type

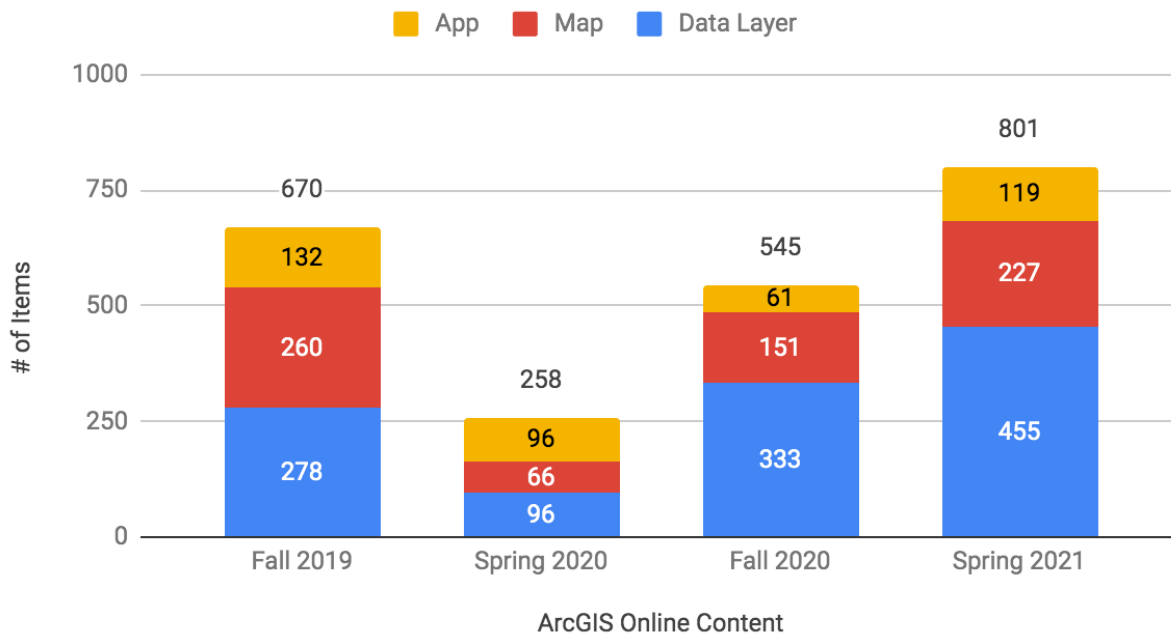


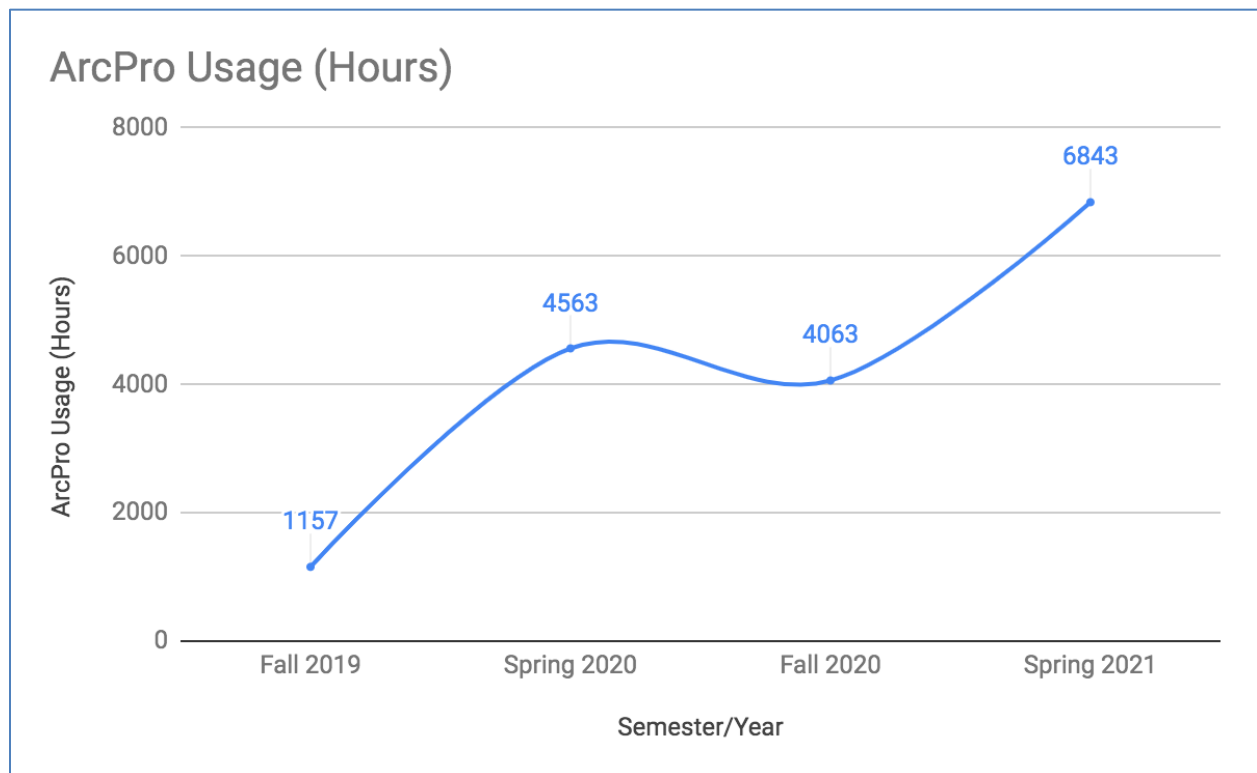
Breakdown of Requests by Type



- Extracurriculars include some meetings, admin requests, letters of recommendation, co-curricular collaborations, etc.
- Software Access/Installation - artifact of remote learning environment, but also desire for continued use after course ends/graduation.

ArcGIS Online Usage (2019-20; 2020-21)





- Increases in ArcGIS Online driven in part by the adoption of the ArcGIS Pro in the Intro to GIS this spring. ArcGIS Pro fully integrates with ArcGIS Online and StoryMaps' popularity snowballs.
 - Users are utilizing ArcGIS Online for active purposes (analysis, communicating scholarship) - in Fall 2020, 66 users (7% of total users) created 8% of the total content online, and in Spring 2021, 85 users (9% of total users) contributed 12% of the overall content.
- Cartography for publication:
 - Hannah Dillahunt '21 for Justin Cammy (Jewish Studies) - Abraham Sutzkever, Vilna Ghetto—English translation and scholarly edition of the *Yiddish poet's memoir of the Vilna ghetto and testimony at Nuremberg*: McGill-Queens University Press, 2021
 - Jon and Tracy constructed maps for Colin Hoag's book: *Fluvial Economies: A Landscape Ethnography of Water in Lesotho*

Classes

- DAN339 [Movement Ecology & Performance in the Smith Landscape](#)
 - [Footage](#)
 - Captured a public performance of the dancers as the choreography led them across the Paradise Pond (even an improvised interaction with dog who wanted to say hi) to the Chace Garden, to provide an aerial perspective to how bodies traverse through place and landscape.
- ENV201/202 [Researching Environmental Problems](#)

- Spatial thinking/GIS lecture and three lab sessions on [COVID Health Disparities & Environmental Burdens](#) (featuring navigable overview videos) The three labs included exercises on:
 - Assessing and converting tabular data into a useable spatial format (with COVID-19 death counts by county and race)
 - Geocoding gas leak data prepared by HEET
 - Querying and visualizing data
 - Using spatial analysis to substantiate observational patterns: calculating density, finding hotspots/outliers
- GEO/ENV150 [Intro to GIS](#)
 - The first foray in ArcGIS Pro for the Intro to GIS course. Final community partner projects:
 - [Green Space Assessment for Bay State Village](#)
 - [Cultural Landscape History of Smith's MacLeish Field Station](#)
 - [Stones of Smith's Buildings and Landscapes](#) - great use of path/range animation and [R code developed for generating routes](#)
 - Context Analysis for the Mill River Recreational Access Assessment
 - [Food Security Assessment for Northern Hilltowns](#)
 - Northampton Trails Assessment
 - Gap Analysis and Project Prioritization for the Mill River Greenway - data curation of available data for the Mill River Greenway and several years of invasive species survey from the Botanic Gardens
- ENX301 [Environmental Concentration Capstone](#)
 - The project "Can the Healthy Initiative Program (HIP) serve all the people who need it? A geographic analysis of food vendors and public assistance recipients in MA" (with the Pioneer Valley Planning Commission) mapped the current food insecurity as measured by distribution of vendors/recipients and travel time to determine the underserved zip codes.
- EGR422D [Engineering Design Clinic](#)
 - Onto the second portion of the year-long projects, "Complete Streets Design for South Street in Northampton, MA" (with Northampton Department of Public Works) and "Feasibility Design of the Northampton State Hospital Shared Use Path" (with Northampton Office of Planning & Sustainability + Mill River Greenway Initiative) continued with their profile analysis for an abutment design for a bridge and switchbacks, as well as cartographic considerations representing street lights. The derived data layers were shared with their respective sponsors, contributing to the DPW's spatial database.
- SOC232 [World Population](#)
 - The session is [contextualized in the COVID-19 pandemic that exacerbated the global inequalities of public health](#). The class session focused on [the implications of map visualization \(particularly in distorted maps presented to a public audience\)](#), investigating spatial data sources (what is available? What is missing?), and newer methods like crowdsourcing mapping to mitigate data gaps.
- GEO251 [Geomorphology](#)
 - The geomorphology labs heavily rely on GIS to analyze landscape features and provide evidence to how they formed. For example, in the first lab on world physiography, students

extract data from a hypsometric curve² to explore global elevation and combine precipitation data to understand plate tectonics and isostasy to explain distribution across the Earth's surface. The subsequent labs include: soil mantled hillslopes, watershed hydrology, glacial forms in Lake Hitchcock and Emerson Brook, and volcanic cinder cones.

Workshops

We hosted [three workshops](#) this spring, titles and descriptions below. Each workshop foregrounds SAL's pedagogies. Overall, there were 11 participants and an 80% attendance rate.

Title	Description	Topics & Themes
A Historical Research Tool: Georeferencing the Vilna Ghetto	With Hannah Dillahunt '21. When creating historical maps, it may be difficult to find data layers that reflect the landscape and landmarks of the past time period you wish to map. By using georeferencing as a historical tool, cartographers are able to spatially place older map documents or previous representations of the area on to what would be their present location. This technique allows for not only aesthetically pleasing cartography, but spatially accurate maps.	<ul style="list-style-type: none"> • Cartography • Student work • Faculty research • Spatial technique: georeferencing • Teach with GIS • Interdisciplinary - Jewish Studies / ES&P
Female Navigators that Shaped Smith	To conclude Women in History month, we will feature the illustrated (and illustrative) category of maps: pictorial maps, through the works of Smith cartographers like Carolyn H. Galbraith. The conversation will draw upon other modes of viewing the campus, and more contemporary renditions by Smithies. Nanci Young, College Archivist, will treat us with maps from the Archives.	<ul style="list-style-type: none"> • Map collection in Special Collections • Collaboration/sharing expertise with colleagues and students - Nanci, Emily Kim '16 • Interdisciplinary - history, art history, architecture • Cartography, aerial imaging
Where in the World?! Finding Spatial Data	Learn methods for finding, assessing, and transforming spatial data for class projects or research, including using field data and leveraging tabular data.	<ul style="list-style-type: none"> • Spatial data literacy • Spatial technique: join, field data collection

² A hypsometric curve shows the proportion of land above any elevation, it's used in this instance to show the continental and oceanic crust, and the buoyancy and elevation changes attributed to temperature changes in the oceanic crust

Accolades

- “We would like to thank Smith College Geosciences Professor Bosiljka Glumac and Professor John Brady for their support and the original inspiration for this project. This project would not have been possible without the valuable information from Charlie Conant from Smith College Facilities Management and Jon Caris from Smith's Spatial Analysis Lab (SAL). We are grateful also to Monica Gawet from the Tennessee Marble Company for providing us with further details about the marble quarry and its history. Finally, thank you to Landscape Studies Professor Reid Bertone-Johnson and Tracy Tien from the SAL for your GIS expertise and guidance.”³

“Thank you to Jon Caris and Tracy Tien in the Spatial Analysis Lab, for introducing me to drone footage with such grace and patience. Thank you for showing up early in the morning and navigating the changing weather conditions with me. I deeply appreciate the time and energy you put into helping me document this work.”⁴

³ Student in spring Introduction to GIS (GEO150)

⁴ Honors thesis acknowledgment (2021)