The School of Geographical Sciences and Urban Planning is an academic unit of the College of Liberal Arts and Sciences.

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sgsup.asu.edu
Navigating today’s world is a delicate balancing act. Our cities are growing as more and more people move to urban areas. As urban areas become more populated, the impacts on our natural environments become more evident.

The relationships between people and their environment—whether natural or built—effects everything from health to economic success. Our school is working diligently to support the development of positive relationships between people and place. Our faculty, researchers and students are creating solutions that allow people to thrive in our world.

As the world changes, whether these changes are on the global scale or on our own streets, the need for resiliency is apparent. Resilient cities that can adjust to changes. Resilient people who can adapt. Resilient students—our future geographers and urban planners—who can help us do both.

We are equipping our students with the transdisciplinary skills necessary to tackle the challenges of the changing world, and our researchers are identifying areas of concern and creating methods for better decision-making. They do this with an understanding of the growing urgency that our human and natural environments need to be built and protected to support healthy and prosperous communities. The School of Geographical Sciences and Urban Planning is driven by its mission to support our students and researchers in reaching these goals.

Within these pages, you will enjoy a glimpse of the incredible work being done by our faculty, researchers and students as they work to better understand urban heat and its impact on our vulnerable communities, the effects of urban agriculture, use GIS for humanitarian efforts and forge new global partnerships to answer questions about biking.

As director of the School of Geographical Sciences and Urban Planning, I am proud of the work we do and inspired by the hope it creates of a better tomorrow.

Trisalyn Nelson
Our diverse student body

Undergraduate

Degrees Awarded: 125
Certificates & Minors: 26
State: 3
Countries: 37
GIS: 3
Geography BS: 3
Urban Studies: 6
Meteorology: 14

26,748 total number of seats filled in undergraduate SGSUP courses

Graduate

Total Students: 139
Graduate Degrees: 54
Urban Planning PhD: 7
Urban Planning MA: 27
GIS: 38
Geography MA: 3

$828,070 grants/fellowships earned

Fall 2018 Faculty

Tenure & Tenure-Track Faculty

Robert Balling
Randall Cerveny
Netra Chhetri
Dylan Connor
Ronald Dorn
Meagan Ehlenz
Stewart Fotheringham
Amy Frazer
Matei Georgescu
David Hondula
Peter Kedron
Joochul Kim
David King
Michael Kuby
Kelli Larson
Wei Li
Wenwen Li
Trisalyn Nelson

Keven McHugh
Sara Meerow
Soe Myint
Breandan O hUallachain
Martin Pasqualetti
Deirdre Pfeiffer
David Piawaka
David Sailor
Deborah Salon
Mark Schmeeckle
Daqin Tong
Ian Walker
Douglas Webster
Elizabeth Wentz

Instructional Faculty

Patricia de Toledo Basile
Stephanie Deitrick
Jason Kelley
Elizabeth Larson
Erinanne Saffell
John Shaeffer

Ashley Broadbent
Patricia Gober
Michael Goodchild
Nancy Selover
Patricia Solis
Susanna Werth

Research Faculty

NASA
Centers for Disease Control and Prevention
US Environmental Protection Agency
Vitalyst Health Foundation

National Science Foundation
US Fish and Wildlife Services
US Department of Education
Arizona State University Foundation

SGSUP research funded in FY18 by institutions, including:

$3.1 million

$29.4 million

150+ contributions to local and global news networks
135+ articles published by SGSUP faculty in peer-reviewed journals

Proposals submitted by SGSUP in FY18 for future research funding
Measuring the benefits of urban agriculture

Springing from a once-vacant neighborhood plot are neatly combed rows of crops planted by local residents. They meticulously care for this small piece of land, and soon enough, patches of green sprout. Cultivating that land may have started as a way to unite a neighborhood, to give pride to a place or to teach land stewardship to students.

The urban agriculture phenomenon has grown for many reasons, each specific to the plot of land or “green rooftop” it covers. While most of the benefits seem to be local, when taken collectively, it’s another story.

A team funded by the National Science Foundation and led by Arizona State University’s School of Geographical Sciences and Urban Planning and Google researchers has assessed the value of urban agriculture and quantified its benefits at a global scale. They report their findings in a paper published in the American Geophysical Union journal Earth’s Future.

“For the first time, we have a data-driven approach that quantifies the ecosystem benefits from urban agriculture,” said Matei Georgescu, a geographer at ASU and corresponding author of the paper. “Our estimates of ecosystem benefits show the potential for millions of tons of food production, thousands of tons of nitrogen sequestration, billions of kilowatt hours of energy savings and billions of cubic meters of avoided storm runoff.”

“Analysis of the food-energy-water nexus sometimes leaves the impression that benefits are concentrated in one place and costs in another,” said Tom Torgersen, program director for NSF’s Water, Sustainability and Climate program, which supported the research. “But that’s not always the case. Urban agriculture is an underdeveloped industry that could sequester nitrogen in cities, generate energy savings, help moderate urban climate, reduce storm water runoff and provide more nutritious foods.”

The researchers estimated the annual value of selected ecosystem benefits of urban agriculture at approximately $33 billion.

“The most obvious benefit of urban agriculture is that it improves access to healthy foods,” said Michelle Stuhlmacher, a PhD candidate in the School of Geographical Sciences and Urban Planning. “In addition to considering yield, our analysis evaluates the potential ecosystem benefits — such as urban nitrogen fixation, pollination, biological control of pests, control of damaging storm water runoff and energy conservation — that result from urban agriculture.”

The work, the researchers say, provides more than an accounting of urban agriculture in a single scenario. It can be used as a tool for future assessments of the changing urban agriculture landscape to understand trade-offs among urban design strategies.

In addition to Georgescu and Stuhlmacher, co-authors of the paper are Albie Miles of the University of Hawaii; Peng Gong of Tsinghua University, Beijing; ASU graduate student Nazli Uludere and Melissa Wagner; and Chris Herwig of Google.

Elizabeth Tellman, a PhD in geography candidate, was named as a finalist by Allianz Reinsurance for the Allianz Climate Risk Research Award. Researchers from 18 countries submitted their ideas to tackle the challenge of climate change. Tellman’s work on flooding in El Salvador won her second place in the competition.

Inspired by living in El Salvador for several years where she saw the effects of landslides and flooding on poor rural regions, Tellman’s goal is to create a global flood detection system using data from multiple satellites, cloud computing technology and remote sensing techniques, allowing developing countries to put better flood mitigation strategies in place.

As part of this effort, Tellman co-founded Cloud to Street, a tech start-up and social enterprise that produces flood information and gets that information to decision-makers and communities who can leverage it.

Global partnership propels student’s research on urban bicycling

When Lindsey Conrow hit an obstacle in her doctoral research, she was able to complete her PhD in geography from the School of Geographical Sciences and Urban Planning thanks to ASU’s PLuS Alliance partnership with University of New South Wales Sydney in Australia and King’s College London.

“I was interested in pursuing spatial analytics, the math side of geography,” she said. She was especially interested in data on bicycling, but she was finding it impossible to acquire data she could analyze.

After the PLuS Alliance research collaboration launched in early 2016, Conrow’s adviser, Elizabeth Wentz, professor in the School of Geographical Sciences and Urban Planning and dean of social sciences in the College of Liberal Arts and Sciences, discovered that a team at UNSW Sydney had a set of data about bicycling that needed to be formatted. This opened the door for Conrow, who completed her dissertation and graduated in May 2018.

“Finally, these are the data I needed to answer the questions I had about how people bike around urban areas,” said Conrow, who spent 10 weeks in Sydney, Australia, in the summer of 2016 getting the data set ready for analysis. The information came from an app used locally.

Conrow worked on the three journal articles that made up her dissertation, one of which has already been published in Applied Geography. Two of the studies analyze the app data from Sydney, while the third looks at bicycling data in Tempe.

A first-generation college student, Conrow spent five years at ASU working on her doctorate. She currently is in Zurich on a two-year fellowship studying mobility issues among an aging population.
How many bicycles pass through Arizona State University’s Tempe campus on a daily basis? How about each year?

To help answer these questions and more, a pair of bike counters were installed at the Forest/University and Apache/College cross streets, changing the game for everyone involved in the transit community. Within four months of the installation, the counter at Apache/College hit over 100,000 incoming riders!

“Our students will use the data to do course work and projects on bicycling in the region,” said Trisalyn Nelson, director of ASU’s School of Geographical Sciences and Urban Planning. “It’s important to monitor how many people bicycle in order to have an understanding of how changes in infrastructure and policy impact people’s willingness to ride.”

According to Nelson, bicycle ridership rates are up 17 percent on the Tempe campus. The new counters will document those changes and the reasons that go along with them.

“The school purchased the counters and ASU Parking and Transit Services helped install them,” said JC Porter, ASU’s assistant director of commuter services. “They will definitely help since normally that data is collected by volunteers who have to count the bikes by hand.”

The newly installed counters are just one of ASU’s current bike-related initiatives.

With some help from the city of Tempe, BikeMaps.org—a web-map founded by Nelson—released an handy guide to show the top 12 locations in Tempe where the most bicycle accidents occur. The guide is a useful resource to decrease the number of bicycle crashes around ASU.

“BikeMaps provides an important tool for ASU students to understand bicycle safety,” Nelson said. “It’s a site where anyone in the world can map a bicycle crash near miss or hazard. Most incidents go unreported and we want to use the website to help the region make better decisions.”

In addition to the counters and bicycle safety tips, Nelson and Porter aim to further studies in the area with a new partnership between the School of Geographical Sciences and Urban Planning and Parking and Transit Services to create a new course.

“Students will have the opportunity to work on practical research questions that will help ASU support all forms of transportation,” Nelson said. “We will study bike parking, bicycling and walking safety issues, investigate how and why bicycling to campus is on the rise, and map the shadiest paths between buildings.”
Growing up in Illinois, the Norman family would gather their chairs and sit with the garage door open, looking out over the neighborhood as storms rolled in. A young Royal, who had the habit of clipping the weather report out of the newspaper, received a cardboard meteorology set as a gift from his aunt. It is surprising how themes from childhood can grow, unwittingly, into lifelong pursuits.

“I’ve always liked weather. It’s always changing,” said Royal Norman, as he sat among several computers modeling the upcoming forecast to share for the evening broadcast. He’ll be on the news later that night, helping people prepare for their week. As chief meteorologist for KTVK in Phoenix, Norman oversees weather for the station—a perfect job for the kid sitting with his family in the garage.

When Norman decided to pursue his lifelong interest in meteorology, he enrolled at Arizona State University. It was here that Norman was finally able to delve deeper into the science of meteorology, something that always intrigued him. He went on to graduate from ASU in 1984 with a bachelor’s degree in geography, with a focus on meteorology and climatology.

Graduating sparked a confidence in Norman. He realized that KTVK was the only station in Phoenix that did not employ a meteorologist. He stepped out on a limb and wrote a letter to the station. “In my letter I told them I had been doing radio for years and that I was a meteorologist, and that I didn’t think I would suck at it,” laughed Norman.

That letter started Norman on the path to a 35-year career as a television meteorologist.

His career has also provided the opportunity to reconnect with his school roots. Randy Cerveny, professor of meteorology and climatology with the School of Geographical Sciences and Urban Planning, has teamed up with Norman to provide his expertise over the years.

Norman’s career once again intersected with his education as the School of Geographical Sciences and Urban Planning welcomed him back as a Distinguished Alumnus.

Norman is the first to be selected for the recognition, which was established to recognize alumni from the school who have gone on to make great strides and achievements in their careers. Coinciding with the distinction is the opportunity for the alumnus to share their story at the Distinguished Alumnus Lecture.

“Our alumni are making an impact in this world,” said Trisalyn Nelson, director of the School of Geographical Sciences and Urban Planning. “Mr. Norman is no different. Every day, he brings his knowledge of weather and cheerful demeanor into homes across Arizona. His award-winning work on monsoons has helped immensely in making Arizonans more informed and safer during the annual monsoon season.”

Gabriel Leon, who graduated in May 2018 from the School of Geographical Sciences and Urban Planning, used his interest in both the natural and built environments and the relationship between the two to help create an educational plan that is helping him tackle issues close to his heart.

Leon graduated with a bachelor’s in geography, a bachelor’s in planning, a geographic information science certificate and with honors from Barrett, The Honors College. While at the university he won prestigious scholarships including the Mark Bowland Leadership Scholarship and the Matthew G. Bailey Scholarship.

Leon has turned his formal education into real-world action working to provide humanitarian aid in the US-Mexico border region. His efforts, sparked in part by his coursework in geography, have brought him to provide clean water and medical care to migrants passing through the region. Through his coursework, Leon learned not only about the issue of migrant deaths in the desert but also how geography can be used to help address the problem.

As a student in Barrett, The Honors College, he received the Quesada Award, a scholarship that helps fund honors theses focusing on issues affecting the Hispanic community. Leon used the award to support research of his thesis titled “Humanitarian Aid in the Borderlands: A Geographical Exploration of Water Sources in Cabeza Prieta National Wildlife Refuge.”

Quesada funds covered gas, food, medical supplies and training for on-the-ground research along the US-Mexico border located in southwestern Arizona. Leon took a 10-day research trip to the area, one of many visits where he combined thesis research with humanitarian aid work.

He surveyed the location and quality of dozens of existing water sources in the Cabeza Prieta. The aim of his survey was to determine the relationship between human-remains recovery sites and water sources, information that humanitarian aid organizations could use to determine how and where to deploy assistance.

“Documenting a landscape over 13,000 square miles for search-and-rescue/recovery of lost and deceased migrants has been a daunting challenge and there’s still so much left to do,” he said.

“With more than 3,000 confirmed migrant deaths and somewhere between 9,000 and 15,000 estimated migrant deaths on the Arizona-Mexico border, it is critical to understand the region and be able to respond adequately to the humanitarian crisis,” he said.

Leon was recognized for his scholastic achievements and volunteer work by being named a Dean’s Medal recipient for the 2018 spring semester.
Graduate planning program ranks among best in nation

Planetizen – an online network and news outlet for the planning, design and development community – released its ranking for graduate urban planning programs across the United States. The School of Geographical Sciences and Urban Planning’s Master of Urban and Environmental Planning (MUEP) program made the list as the No. 22 planning program in the country.

To establish the ranking, Planetizen considers a variety of factors including student enrollment, student-to-faculty ratio, diversity of faculty and students, research citations by faculty, student employment rates and the opinions of planning educators. In total, 96 programs were reviewed this year with the top 25 earning a ranking on the list.

The position at 22 marks a rise of three spots for the program over the 2015 ranking. The MUEP program ranks as the sixth best in the western region and when accounting for student enrollment in the program, jumps to the third best small program in the nation. It is also the only program in Arizona to make the list.

The forward momentum marks an exciting time for the school and the MUEP program. “We are just getting started with fine-tuning the MUEP program to ensure our students land great jobs and have the skills to meet industry and community needs,” said Trisalyn Nelson, director of the School of Geographical Sciences and Urban Planning. “The MUEP program has a new leadership structure with more support for students interested in gaining practical skills and connecting with future employers.”

The MUEP program has placed an emphasis on meeting student needs, including the creation of specialized courses to help them develop the nuanced abilities they will need in their careers. “We are increasingly providing skills-based education to prepare students to hit the ground running after graduation,” said Deirdre Pfeiffer, associate professor of urban planning and director of the MUEP program. “We have a growing transportation cluster which is running after graduation,” said David Pijawka, the school’s director of the School of Public Affairs, and by the relationships with leading planning practitioners in the region, state and beyond.

Elevating the transdisciplinary nature of the School of Geographical Sciences and Urban Planning, the planning program is beginning to work closely alongside the school’s transformative research centers – the Urban Climate Research Center and the Spatial Analysis Research Center. This aspect of the program was highlighted in a recent Planetizen report: “The MUEP program is enriched by the interdisciplinary participation of faculty from other academic units of the university, such as the School of Sustainability and the School of Public Affairs, and by the relationships with leading planning practitioners in the region, state and beyond.”

In recognition of decades’ worth of service to teaching and research, Professor David Pijawka has been awarded the Distinguished Professional Planner Award by the American Planning Association (APPA). The award, presented during the chapter’s annual conference in October 2017, celebrated the latest achievement in Pijawka’s remarkable career.

“David’s input and impact is felt throughout our planning program,” said Trisalyn Nelson, director for the School of Geographical Sciences and Urban Planning. “From his guidance of our students to the development of program curriculum, our successes are thanks in large part to his incredible contributions to our school and the planning field. He is an innovator and an early proponent of themes like urban sustainability and resilience, and very deserving of this award.”

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The Urban Climate Research Center (UCRC) employs a collaborative social/physical science framework to address critical issues in the urban atmospheric environment. Our core mission is to advance fundamental knowledge of processes in the urban atmosphere and related interactions among urban systems by supporting and facilitating interdisciplinary research activities of our faculty affiliates.

The UCRC officially launched on October 5, 2017, with a kick-off event. UCRC hosted 32 faculty affiliates spanning six different schools at Arizona State University to introduce their research interests and sharing specific projects. Each researcher and faculty member was working on with the intent of providing opportunities to identify future collaborators.

Working alongside the Arizona State University Foundation and thanks to the generosity of Anthony J. Brazel, prominent climatologist and professor emeritus at ASU’s School of Geographical Sciences and Urban Planning, the UCRC created the Anthony J. Brazel Urban Climate Lecture Series. For its inaugural event, UCRC was honored to host Sue Grimmond, an international leader in the field of urban climate research at Reading University in the United Kingdom.

Cities Research Campaign

Highlighting the transdisciplinary nature of the UCRC, affiliates participated in a major Cities Research Campaign. Working with the Dean of Sustainability, Chris Boone, and the ASU Office of Knowledge Enterprise Development (KED), UCRC worked with over 100 leading faculty in the area of urban development and sustainability, representing over 25 ASU schools and centers.

Two students mentored by UCRC researchers swept the 2018 Urban Water Innovation Network (UWIN) undergraduate poster competition. Samuel Meltzer, an undergraduate student at ASU, who was awarded the first place price in the competition. Lolya McWest, an undergraduate student at Rutgers University, presented her poster “Impacts of Urban Tree Canopy and Water Features on a Semi-Arid Thermal Environment” and was awarded the second place prize in the competition. Both of these students were mentored by ASU faculty and researchers, including Matei Georgescu, Ashley Broadbent, Jennifer Vanos, Ariane Middel and David Hondula.

The Laboratory for Urban Climate Instrumentation (LUCI) continues to grow, offering a significant inventory of equipment and instruments for faculty researchers, their students and outside partners to use in their research and projects.

SPARC: The Spatial Analysis Research Center, or SPARC, is a GIScience and Earth-observing center focused on advancing the science and technology of GIScience and leading the transdisciplinary applications for spatial data solutions to address a variety of issues.

When launching a new research center, there are many elements in motion. First was naming Stewart Fotheringham, professor in the School of Geographical Sciences and Urban Planning and member of the National Academy of Sciences, as director of the Spatial Analysis Research Center (SPARC). Following Fotheringham’s appointment, no time was wasted in getting all of the other parts in place. This included launching a web presence for the center (sparc.asu.edu) and creating a social media footprint by creating @SPARC_ASU on Twitter. These efforts are enabling the center to establish connections with spatial scientists and geographic information scientists around the world.

In order to connect with others who are local to metropolitan-Phoenix area, SPARC hosted a launch event that showcased a series of presentations from members of SPARC on a variety of their research interests including bikes, bears, elections and spatial optimization. Attendees included researchers from across Arizona State University who utilize spatial analysis and GIS to varying degrees, as well as practitioners who utilize it in their work.

As SPARC continues to establish its foothold as a leading center for spatial research, the center is attracting top talent to join its ranks. Since its inception, SPARC has grown to include over 25 leading researchers and postdoctoral scholars. Among its members are two members of the National Academy Sciences, trailblazers of GIS and emerging leaders in the field. Notably, Michael Goodchild—nicknamed the “father of GIScience”—joined SPARC in 2017 and presented at its launch event on the history and growing capacity of the field. In the fall of 2018, SPARC welcomes Amy Frazier and Peter Kedron to the center.

Growing membership

$1 million+ funded to SPARC research in FY18

$13.9 million proposals submitted in FY18 for future SPARC research funding

Making connections

Growing inventories

Engaging with tomorrow’s leading researchers, the UCRC hosted its first student poster competition on April 3, 2018. Over 20 applications to present at the competition were received from undergraduate and graduate students, as well as postdoctoral scholars. In total, 5 ASU schools, the University of Southern California and Georgia Tech were all represented in the competition.

Student poster competition

Presenters at the SPARC Launch included (from left to right): Dan Brown, Daoying Tong, Soe Myint, Stewart Fotheringham, Toslayan Niyom, Wannawat U. Michael Goodchild and Ross Maciejewski.