USCDornsife

Dana and David Dornsife
College of Letters, Arts and Sciences

SPATIAL SCIENCES INSTITUTE
John P. Wilson
Director and Professor

13th December 2016

Dear Students and Alumni of the Spatial Sciences Institute:

As we wrap up for the holidays, I am reflecting upon many accomplishments for the Spatial Sciences Institute community over the past six months. I would like to share just some of the highlights with you.

SSI Academic Programs

This August we welcomed our first cohort of doctoral students in our new **Ph.D. program in Population, Health and Place**, a joint collaboration between the Spatial Sciences Institute and Department of Sociology in the USC Dornsife College of Letters, Arts and Sciences with the Department of Preventive Medicine in the USC Keck School of Medicine. These doctoral students already are working with a wide array of faculty from across the university in interdisciplinary research investigating health care risk modeling, environmental health impacts and homelessness. Admissions review for the second class to start in Fall 2017 is underway, and already we see that admissions in this program will be increasingly competitive.

We congratulate 22 students in our online **M.S. in Geographic Information Science and Technology (GIST) program** and 11 students in our online **Graduate Certificate of GIST** and **Graduate Certificate Geospatial Intelligence** programs who have graduated since May. We look forward to celebrating their accomplishments and all those who will graduate this academic year at the **USC Commencement** ceremonies on Friday, May 12, 2017. In addition to the graduates with their families and friends, we welcome all students and alumni to the SSI Commencement reception.

We always are happy and gratified to learn of promotions, new opportunities, and recognition which come to our GIST alumni. We congratulate M.S. GIST '16 alumnus **Nathan Novak** upon receiving the runner-up prize in the UNIGIS International Association's 2016 Academic Excellence Prize competition for his thesis entitled *"Predictive Habitat Modeling of Sperm Whale (Physeter macroceaphalus) within the Central Gulf of Alaska utilizing Passive Acoustic Monitoring."* In his thesis, Novak proposed an elaborate modeling of sperm whale habitats within the Central Gulf of Alaska using a range of geospatial data. Novak is Geospatial Technologies Manager with Orca Maritime, Inc., which specializes in underwater imagery and data collection using autonomous underwater vehicles (AUVs), remotely operated vehicles (ROVs), boat systems and human divers.

We also congratulate M.S. GIST '14 alumnus **William Ferguson** on the publication of his paper "Using a geographic information system to enhance patient access to point-of-care diagnostics in a limited-resource setting" in the *International Journal of Health Geographics*. Ferguson co-authored this paper with his thesis advisor **Professor Karen Kemp** and Gerald Kost.

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Our new "USC GIST Presents" podcast series features a number of our faculty, staff, advisors, and alumni on topics which range from GIS in the energy and utilities industries, the role of data science, business use cases with GIS, and geospatial leadership. You can access the "USC GIST Presents podcast library on iTunes."

Our students in the **M.S. in Spatial Informatics** program, which SSI offers jointly with the USC Viterbi School of Engineering Computer Science Department, are working on funded research projects on new frontiers of spatial computing under the direction of **Professor Yao-Yi Chiang**. We congratulate Dr. Chiang on receiving a grant from the **National Endowment for the Humanities** to build on his current map processing software to develop the techniques for automatically generating metadata from scanned maps. The USC Digital Library will deploy his techniques on their cloud infrastructure to test the feasibility for processing a large number of maps automatically. This research will fund some student research opportunities.

The vibrancy of our growing undergraduate program also is especially exciting. This fall we launched a new minor in **Human Security and Geospatial Intelligence**, a pioneering program not offered at the undergraduate level at any other academic institution. This new minor is designed to educate future leaders in location-based analytics to develop cutting-edge geospatial solutions to global challenges. Already students with international relations, public policy, urban planning and other majors, along with cadets in the ROTC commands, are combining this HSGI minor to complement their studies. **GEN [R] David Petraeus**, a USC Judge Widney Professor and former CIA director, helped promote this new interdisciplinary minor at a recent event moderated by **Professor and COL [R] Steven Fleming.** You can view the discussion between COL Fleming, GEN Petraeus, and other panelists regarding the importance of spatial thinking, modeling, and mapping skills to deal with natural and man-made hazards and threats.

In addition to welcoming our 15 new HSGI minors, we also have welcomed a number of new Spatial Studies minors and GeoDesign majors to our SSI fold. Our undergraduate student population now numbers nearly 80! Whether it's at a GeoDesign speaker series talk, GIS Day celebration, or SSI study break, we offer many opportunities for our undergrads to get to know each other and our faculty and staff.

We extend congratulations to Spatial Studies minor **Yu Chuan Shan** who was named this summer as one of the first **Dangermond Fellows with the National Audubon Society**. In this new program established by Esri founder and CEO Jack Dangermond with the National Audubon Society, Shan has worked at the Audobon headquarters in New York City, at the Esri headquarters in Redlands, and remotely with Audubon staff across to country to manage Audubon's enterprise GIS system and compile GIS data for different projects. Shan's projects include improving Audubon's native plants database and constructing maps of plant hardiness zones for web applications, visualizing the distribution of active Audubon members, and researching available resources for Audubon's climate initiative. We also commend GeoDesign major **Alex Chen** for being named one of the first **Virtual Interns for the USAID GeoCenter** for the Spring 2017 semester.

We are pleased to recognize the inaugural Executive Board of the newly-formed **"SC Mappers"** student organization, officially recognized by USC Student Affairs and officially a university chapter in the Youth Mappers organization:

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President: **Robin Franke**
Vice President: **Alex Chen**
Secretary/Treasurer: **Joanna Wang**
Program Director: **Natalie Millstein**
Publicity Director: **Rich Windisch**

The mission of Youth Mappers is "to cultivate a generation of young leaders to create resilient communities and to define their world by mapping it," capitalizing on web-based open geospatial technologies. Thanks to this new board and **Professor Lisa Sedano**, faculty advisor, for taking the lead in launching this new group, and we look forward to their mapathons and other future activities.

Research

In the Fall 2016 semester, we had 31 SSI masters and undergraduate students working on funded research projects with SSI faculty and staff, totalling over $71K in student research awards. The work they are doing is an integral part of the Institute's research enterprise and in many cases is award-winning.

We congratulate **Dr. Yao-Yi Chiang** on being the the first place winner at the Computing Community Consortium (CCC) sponsored Blue Sky Ideas Track Competition at the **ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems 2015** (SIGSPATIAL 2015) in Seattle, Washington for his paper *Querying Historical Maps as a Unified, Structured, and Linked Spatiotemporal Source*. Under Dr. Chiang's supervision, his spatial computing Ph.D. student **Weiwei Duan** presented their paper "Building Knowledge Graph from Public Data for Predictive Analysis - A Case Study on Predicting Technology Future in Space and Time" by the SIGSPATIAL International Workshop on Analytics for Big Geospatial Data (BigSpatial-2016) in San Francisco. His undergraduate student researchers **Ronald Yu** and **Zexuan Luo** had their paper "Recognizing Text on Historical Maps Using Maps from Multiple Time Periods" accepted to the International Conference on Pattern Recognition (ICPR) in Cancun, Mexico.

SSI Professor **Travis Longcore**, with joint appointments in Biological Sciences and Architecture, received a **Zumberge Interdisciplinary Grant** from the James H. Zumberge Research and Innovation Fund to research linkages between landscape conditions, genes and growth traits to help provide the crops that will grow in the landscapes of the future. Working with faculty colleagues from Biological Sciences and the USC Keck School of Medicine, Longcore's role is to map and characterize past environmental conditions at the locations of chickpea domestication and relate those conditions to future landscape conditions under global change.

Dr. Longcore also authored a chapter in Esri's new ebook "STEM and GIS in Higher Education". Former SSI faculty **Daniel Warshawsky**, now on the faculty of Wright State University, also authored a chapter in this ebook. **Dr. Steven Fleming's** article "Military Test Site Characterization and Training Future Officers— An Integrated Terrain Analysis Approach" was published in the journal *Military Geosciences and Desert Warfare: Past Lessons and Modern Challenges*.

The map "Hot Spots of Tweets Related to Food, Entertainment, Work, and Study in Gangnam Area of Seoul, Korea" by **Woojin Park**, **SSI Professors Yao-Yi Chiang and Su Jin Lee**, and Kiyun Yu was published in the **Esri Map Book 2016**, volume 31, p. 104-105. Dr. Park was a visiting scholar in SSI this past academic year.

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SSI Post-doctoral Scholar Dr. Noli Brazil's paper with David S. Kirk on "Uber and Metropolitan Traffic Fatalities in the United States" was published in the *American Journal of Epidemiology* by the Oxford University Press and attracted a great deal of social media and other press. Brazil and Kirk's study found that the deployment of Uber services in a given metropolitan county had no association with the number of subsequent traffic fatalities, whether measured in aggregate or specific to drunk-driving fatalities or fatalities during weekends and holidays.

This fall I have given a number of keynote addresses at conferences around the world: the Community Health Mapping Conference hosted by the **National Library of Medicine** in Washington, DC; with Jack Dangermond at the **Chinese Academy of Sciences Institute for Geographical Sciences and Natural Resources Research Conference** in Beijing, China; the Geospatial Approaches to Cancer Control Conference presented by the **National Cancer Institute Division of Cancer Control and Population Sciences** in Bethesda, MD; and the **Esri Geodesign Europe Summit** in Delft, the Netherlands.

Future Events

Please register now to attend the Institute's annual one-day conference, **the Los Angeles Geospatial Summit**, on **Friday, February 24, 2017**, at the USC Radisson Hotel. This year's Geospatial Summit program will feature:

- a keynote address by a member of Google's geospatial team;
- the impact of open data in government, by a case study presentation on the City of Los Angeles GeoHub initiative;
- the opportunities with drones and GIS;
- tips and tricks for GPS data collection;
- the value of mentorship; and
- lightening talks and posters presented by students from USC, UCLA, University of Redlands, Occidental College, Loyola Marymount University, and Cal State Long Beach.

Following the Geospatial Summit, we are excited to invite GIST alumni to a special program **exclusively for our GIST alumni** on Saturday morning, 8:30 – 11:30 am, **February 25, 2017, on "Emerging Trends in UAS Data Collection and Visualization"** on campus in the SSI office suite. This program will be a hands-on seminar on one of the hottest growing sub-fields in spatial sciences today, with hands-on demonstrations of new unmanned aerial systems (UAS) or drone software, tools, applications, and sensors. This program is **complimentary** for GIST alumni who also register for the Geospatial Summit at the discounted USC rate. To reserve your spot and for more information, including discounted Radisson hotel rates, please email Melissa Salido or call her at (213) 740-6532.

Looking towards next summer, please save the date for **our annual reception at the Esri International User Conference in San Diego, CA on Tuesday, July 11, 2017, 6 p.m., at Roy's**. Watch for more information about SSI activities at the Esri UC starting in the spring.
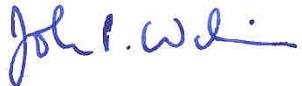
Appreciation

Highlights of SSI success as lengthy as this could only happen because of our opportunity to work with outstanding students and alumni. And as the founding director of the Spatial Sciences Institute, I am continually inspired by what the Spatial Sciences Institute has become in six years. The

Institute could not accomplish what it does without dedicated team work from SSI faculty and staff. I especially acknowledge the SSI administration – Director of Graduate Studies Dr. Robert Vos, Director of Undergraduate Studies Dr. Darren Ruddell, with Leilani Banks, Susan Kamei, Beau MacDonald, Andrea Macko, Melissa Salido, Richard Tsung, and Ken Watson – for moving us forward each day.

Wishing you and your family happy holidays and a healthy and prosperous New Year.

With kind regards,

John P. Wilson
Professor and Founding Director
Spatial Sciences Institute