

Wisconsin State Cartographer's Office

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# STATE CARTOGRAPHER'S OFFICE ANNUAL REPORT 2018-19





# SCO IN THE NEWS



## CLASS OF FY19

(SCO STUDENT ASSISTANTS)



AUSTIN COPPERNOLL Undergraduate, Geography, UW-Madison. SCO GIS Developer, Dec 2016-Aug 2018. GIS Analyst at Floating Point FX.



NICK EXLEY
Accelerated Masters in
Cartography/GIS,
Geography, UW-Madison.
SCO GIS Intern, May-Aug
2018.



RYAN HALTON
Accelerated Masters in
Cartography/GIS,
Geography, UW-Madison.
SCO GIS Technician, Dec
2016-Feb 2019. GIS
Technician at Madison Gas
and Electric.



HOLLY (XINJI) LIU Ph.D. student, Geography, UW-Madison. SCO Application Developer, May 2019+



JEFFREY PICCIRILLO Computer Science Certificate, UW-Madison. SCO GIS developer, Dec 2017-Aug 2018. GIS Developer, Austin TX.



NISHIGANDHA SONTAKKE Accelerated Masters in Cartography/GIS, Geography, UW-Madison. SCO GISPP Intern, Sept 2018+



ALEX CAMPBELL Undergraduate, Geography, UW-Madison. SCO GIS Developer, Sept 2018-May 2019. Platform Engineer at Esri.



ANDREA EIBERGEN Undergraduate, Geography, UW-Madison. SCO GIS Developer, Nov 2017-Aug 2018. Intern at TDS Telecommunications.



CLAYTON GROTH
Masters in GIS & Web Map
Programming, Geography,
UW-Madison. SCO GIS
Developer, Sept 2018March 2019.



MIKE HRUSKA GIS Capstone Certificate, Geography, UW-Madison. SCO GIS Technician, Jan-Aug 2018.



JOE MARKS
Accelerated Masters in
Cartography/GIS,
Geography, UW-Madison.
SCO GIS Developer, April
2019+



BEN SEGAL Undergraduate, Geography, UW-Madison. SCO GIS Developer, June 2017-May 2019. Intern at Esri.



ELIAS WILZ
Professional Masters in
Environmental Observation
and Informatics, Nelson
Institute, UW-Madison.
SCO GIS Developer, May
2019+

## STUDENT ACADEMIC ADVISING





#### BEN SEGAL

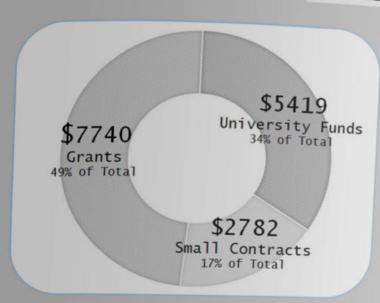
Directed study, Spring 2019.
Project: GIS server operations and
Python data processing.
Advisor: Mr. J. Lacv

NISHIGANDHA SONTAKKE

GISPP Accelerated Masters Final Project, Summer 2019.

Project: Flooding risk "blue spots" mapping using parcel, structure and building assessment data.

Advisor: Dr. H. Veregin



## STUDENT FUNDING

Our student assistants are supported with funding from various sources, including an annual university funding allocation, funds from small contracts and revenuegenerating activities, and external grants.

The GIS Professional Programs in Geography also funds one intern through their fellowship program.

### **OUR ALUMNI**

We have provided servicelearning opportunities for UW-Madison students since 1974. We deeply value the importance of connecting students to realworld problems as they begin their school-to-career transition. We are exceptionally proud of the many successful students and staff who have worked with us over the decades!

If you are an SCO alum, please send us a note and let us know what you are up to!

www.sco.wisc.edu/sco/alumni

NAME	POSITION	LOCATION	ERA
Bancroft-Short, Dawson	Geospatial Analyst at Continental Mapping Consultants	Sun Prairie, W	Alumni - 2010
Bougie, Matt		Madison, WI	Alumni - 2010
Bricknell, Michael	Cartographer at Rowan Technologies Solutions LLC	New York, NY	Alumni - 2010
Campbell, Alex	Platform Engineer at Esti	Denver, CO	Alumni - 2010
Coppernoll, Austin	GIS Analyst at Floating Point FX	Madison, WI	Alumni - 2010s
Czaplewski, John	Programmer Analyst, Department of Geosciences - UW- Madison	Madison, WI	Alumni - 2010s
Donahue, Patrick	Food and dairy Sanitarian at Wisconsin Department of Agriculture, Trade and Consumer Protection	Madison, WI	Alumni - 2010s
Duffin, Kirstin	Reference Librarian, Eastern Illinois University		Alumni - 2010s
Eibergen, Andrea	GIS Intern at TDS Telecommunications	Madison, WI	Alumni - 2010s
Evjen, Molly	Program Assistant at Share	Vancouver, WA	Alumni - 2010s
xley, Nick		Madison, Wi	Alumni - 2010s
Gregg, Josh	GIS Specialist at U.S. Forest Service	Albuquerque, NM	Alumni - 2010s
Srisbeck, Derek	GIS Technician, de maximis Data Management Solutions	St. Paul, MN	Alumni - 2010s
iroth, Clayton			Alumni - 2010s
lalton, Ryan			Alumni - 2010s
lao, Shuguang	Software Engineer at TripAdvisor	Boston, MA /	Vumni - 2010s

#### Grants, Contracts and Funding Sources

#### Grants ending in FY19



#### Statewide Parcel (V3/V4) and PLSS (E0) Databases

Collaboration with Wisconsin Dept of Administration Land Information Program and county Land Information Offices

\$234K from Wisconsin Dept of Administration Jan 2017 to Dec 2018

doa.wi.gov/Pages/LocalGovtsGrants/Parcel-Initiative.aspx



#### Lifemapping

Collaboration with Dean Olsen, UW Cart Lab, Earthling Interactive & KW2 Marketing to develop beta version of Lifemapping software.

Portion of a larger \$200K project funded by D2P Jan 2017 to Dec 2018

#### Grants starting in FY19



#### Statewide Parcel (V5) and PLSS (E1) Databases

Collaboration with Wisconsin Dept of Administration Land Information Program and county Land Information Offices

\$123K from Wisconsin Dept of Administration Jan 2019 to Dec 2019

doa.wi.gov/Pages/LocalGovtsGrants/Parcel-Initiative.aspx



#### Coastal Hazard Mapping Community of Practice

Collaboration with Wisconsin Dept of Administration Coastal Management Program

\$242K from WI Coastal Management Program and National Oceanic and Atmospheric Administration Oct 2018 to March 2020



#### Antimicrobial Resistance Mapping

Collaboration with UW-Madison School of Pharmacy, UW-Madison Dept. of Geography and the

Portion of \$74K grant from UW Institute for Clinical and Translational Research



Marshfield Clinic



Collaboration with Wisconsin Dept of Administration Land Information Program and county Land Information Offices

Statewide Parcel (V6) and PLSS (E2) Databases

\$128K from Wisconsin Dept of Administration Jan 2020 to Dec 2020

doa.wi.gov/Pages/LocalGovtsGrants/Parcel-Initiative.aspx



#### Access to Digital Geographic Data in Wisconsin

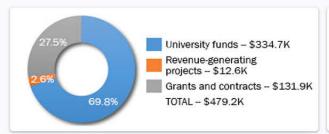
Collaboration with UW-Madison Robinson Map

\$21K from from Wisconsin Dept of Administration Coastal Management Program

July 2019 to June 2020

#### SCO funding sources for FY19

Grants starting in FY20



The State Cartographer's Office is a special program at UW-Madison created by state statute in 1974. The office is affiliated with the Department of Geography in the College of Letters & Science.

We receive an annual base budget allocation from the College for personnel, students and operating expenses. Additional financial support from the UW-Madison Division of Continuing Studies facilitates our outreach mission. We fill the remainder of our funding needs through external grants and contracts.

# Big Projects\*

#### Statewide Parcels

Completed & released new versions of the statewide database and app. Updated county validation tools. Staff: See, Vogel, Wells, Veregin. Students: Campbell, Coppernoll, Groth, Halton, Hruska, Segal.

#### Statewide PLSS

Completed beta version and commenced work on E1 of the statewide database. Staff: Elza, Hemstead, See, Vogel, Wells, Veregin. Students: Campbell, Coppernoll, Groth, Halton, Segal.

#### Coastal Hazard Mapping

Began work on NOAA Project of Special Merit to develop a coastal hazard mapping community of practice. Collaboration with WI Coastal Management Program and State GIO. Staff: Elza, Kohls, Veregin.

#### Antimicrobial Resistance

Map and analyze patterns of pathogen resistance in the state. Staff: Lacy. Students: Eibergen, Liu, Marks, Piccirillo, Segal.

#### GeoData@Wisconsin Geoportal

Overhaul existing geoportal with new user interface, data holdings and workflows. Staff: Lacy.

\* See Grants, Contracts & Funding page for information on partners and sponsors.

# **Initiatives**

#### WSRS2022

Prepare for the new 2022 terrestrial reference frame and vertical datum. Staff: Hemstead, Lacy, Veregin.

#### PLSS Work Group

Education and advocacy for the state's Public Land Survey System infrastructure. Staff: Hemstead, Veregin.

#### Wisconsin-Minnesota Boundary

Work with county surveyors (and others) to establish the location of the Wisconsin-Minnesota boundary in the Mississippi River. Staff: Hemstead, Lacy, Veregin.

# **Smaller Projects**

#### Urban-Rural Web App

Built custom web app for the Office of Rural Health. Staff: See. Students: Liu, Marks.

#### Parcel-Land Use Analysis

Performed custom land use analysis for statewide parcel database for Aldo Leopold Foundation. Staff: Vogel. Student: Sontakke.

#### Nitrate Contamination Quality Assessment

Performed quality assessment of nitrate contamination study for groundwater in Rock County. Staff: Veregin, Wells. Student: Sontakke.

#### LiDAR Data and Education

Conducted LiDAR data workshop, updated workshop materials to ArcPro, loaded/cataloged LiDAR to to WisconsinView, built/enhanced data discovery/access features for LiDAR data. Staff: Elza, Veregin, Wells. Student: Sontakke.

# App Updates

#### Survey Control Finder

Staff: Hemstead, See. Students: Coppernoll, Groth, Piccirillo, Segal.

#### Coastal Bordner Explorer

Includes updates to historic county air photo mosaics. Staff: Lacy, See. Students: Coppernoll, Halton, Hruska, Piccirillo.

#### Wisconsin Bearing Trees

Staff: Hemstead, See, Veregin. Students: Groth, Halton, Marks.

#### WHAIFinder

Staff: Lacy, See. Students: Groth, Marks, Segal.

#### Pronounce Wisconsin

Staff: See, Veregin. Students: Marks, Segal.

#### Air Photo Catalog

Staff: Lacy. Students: Wilz.

WHAIFINDER Free online access to view and download over 38,000 historic aerial photographs of Wisconsin from the 1930s. Originally funded by the Baldwin Wisconsin Idea Endowment at UW-Madison. Collaborators include the SCO, the Robinson Map Library, UW Digital Collections Center and the Wisconsin Department of Transportation.

In 2018-19 numerous updates were made to provide a more intuitive interface, improve database quality, eliminate obsolete records and streamline the process for managing database updates.

SCO Student Assistants: Clayton Groth, Joe Marks, Ben Segal

wisconsin bearing trees Photos and other information on Wisconsin's known remaining bearing trees, identified in the General Land Office survey of the state starting in the 1830s to tie to the locations of Public Land Survey System corners. This app is a volunteer effort with photos and information supplied by users.

The app was rewritten in 2018-19 to make better use of web mapping technology.

Student Assistant: Clayton Groth, Ryan Halton, Joe Marks

#### **STATEWIDE PARCEL MAP VIEWER Access**

to view, query and download GIS files of Wisconsin's 3.5 million-plus tax parcels. Produced by the Statewide Parcel Map Database project, a multi-year collaboration between the SCO, the Wisconsin Land Information Program and county Land Information Offices.

The app and the data underneath the app were last updated in June, 2019.

SCO Student Assistants: Alex Campbell, Austin Coppernoll, Clayton Groth, Ryan Halton, Michael Hruska, Ben Segal

**SURVEY CONTROL FINDER** Central point of access to over 28,000 control points and over 200,000 Public Land Survey System corner records in Wisconsin. Includes federal, state and local control data as well as Continuously Operating Reference Stations (CORS). Partners include County Surveyors, County Land Information Officers, the Wisconsin Department of Transportation and the National Geodetic Survey.

The app was recently rewritten and operational improvements continue to be made.

Student Assistants: Austin Coppernoll, Clayton Groth, Jeffrey Piccirillo, Ben Segal

#### **COASTAL BORDNER SURVEY EXPLORER** Access to

thousands of polygon, line and point features digitized from 1930s Wisconsin Land Economic Inventory ("Bordner Survey") maps within Wisconsin's coastal regions, as well as selected 1930s-era air photo county mosaics. Data can be viewed, queried, or downloaded. A collaborative project between the SCO and the UW-Madison Forest Landscape Ecology Lab. Funded through a grant from the Wisconsin Coastal Management Program.

Twenty-eight new county air photo mosaics were added in 2018 as well as recently digitized data in non-coastal areas.

SCO Student Assistants: Austin Coppernoll, Ryan Halton, Mike Hruska, Jeffrey Piccirillo

#### **AERIAL PHOTOGRAPHY**

**CATALOG** Directory of historic and current Wisconsin aerial photography dating back to the late 1920s that serves as the main online index for holdings of the Robinson Map Library, the largest repository of aerial photography in the state.

With a newly designed interface, the app is undergoing a migration to a new database platform.

Student Assistants: Eli Wilz



#### SCO WEB APPLICATIONS



WHAIFINDER



STATEWIDE PARCEL MAP VIEWER



GEODATA @WISCONSIN



SURVEY CONTROL FINDER



WISCONSIN BEARING TREES



PRONOUNCE WISCONSIN



COASTAL BORDNER SURVEY EXPLORER



AERIAL PHOTOGRAPHY CATALOG



AERIAL IMAGERY ACQUISITION PLANS

#### **GEODATA@WISCONSIN**

Portal for GIS data discovery for use in teaching, learning, research or general interest. Developed and maintained by the Robinson Map Library and the SCO. There are several thousand publicly-accessible holdings in GeoData.

A 2019-20 grant from the Wisconsin Coastal Management Program will support enhancements to the GeoData platform, interface and holdings.

#### PRONOUNCE WISCONSIN

Online pronouncing gazetteer that speaks Wisconsin place names. Gives pronunciations for about 1700 places in the state, including counties, cities, villages and unincorporated communities. A collaborative effort between the SCO and Jackie Johnson, creator of

MissPronouncer.com.

The app was completely rewritten in 2018-19.

Student Assistants: Joe Marks, Ben Segal



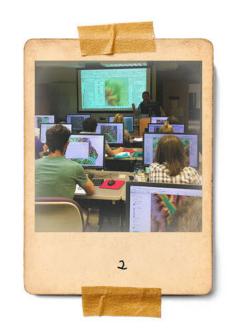
Find our apps at sco.wisc.edu

## AERIAL PHOTOGRAPHY ACQUISITION PLANS

Shows recent and planned aerial imagery acquisition projects in Wisconsin, based on information supplied in County Land Information Program Plans.















Events Organized by the SCO

1. We organized the 9th annual UW-Madison Geospatial Summit in partnership with the GIS Professional Programs in the Geography Dept at UW-Madison. The day-long event in November 2018 included a career fair and attracted 160 people.

2. We held a LiDAR training workshop in Science Hall in August, 2018. Our partners include Jim Giglierano, Wisconsin Geographic Information Officer, and Joel Nelson from the University of Minnesota.

3. We organized the annual Presidents Council meeting. The Council was established in 1996 to improve communication amongst associations in the state having a stake in land information.

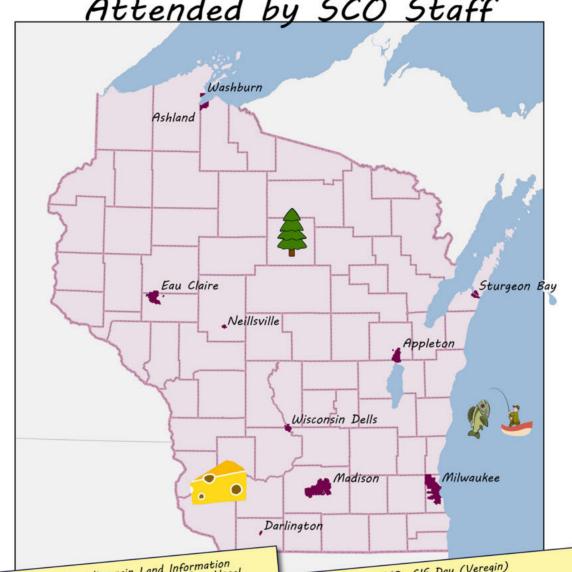
4. With the PLSS Workgroup we organized our 5th Public Land Survey System Forum. The day-long event was held in Darlington and attracted 120 people, including 41 county employees and 11 county board members.

5. We held several meetings of the new Wisconsin Spatial Reference System 2022 Task Force (WSRS2022) organized under the Wisconsin Society of Land Surveyors. The mission of WSRS2022 is to ensure successful implementation of the National Geodetic Survey's new reference systems coming in 2022. Howard Veregin is Chair of WSRS2022 and Brenda Hemstead and Jim Lacy head up two Focus Groups.

6. Jim Lacy was lead organizer of the Fall 2018 Wisconsin Land Information Association Regional Meeting in Sturgeon Bay. Founded in 1987, WLIA is the state's largest geospatial organization.



Conferences and Meetings Attended by SCO Staff



Appleton, Feb 2019: Wisconsin Land Information
Association Conference (Hemstead, Lacy, See, Vogel,
Veregin, Wells); Wisconsin Land Information Council
(Veregin); Wisconsin Spatial Reference System 2022
(Veregin); Wisconsin Spatial Reference System 2022
Task Force Meeting (Hemstead, Lacy, Veregin); Land
Information Officers Network Meeting (Lacy, Veregin)

Ashland, May 2019: Great Lakes Coastal Managers Meeting (Elza, Kohls); Northern Area GIS Users Group Meeting (Elza, Kohls)

Darlington, April 2019: Annual Public Land Survey System Forum (Hemstead, Veregin)

Eau Claire, May 2019: Wisconsin Land Information Association Conference (Veregin)

Madison: NATRF2022 Discovery Team Meeting, Aug 2018 (Hemstead, Veregin); UW-Madison Geospatial Summit, Nov 2018 (Hemstead, Lacy, See, Vogel, Summit, Nov 2018 (Hemstead, Lacy, See, Vogel, Summit, Nov 2019 (Memstead, Misconsin Presidents Veregin, Wells); Wisconsin Geographic Wisconsin Presidents Committee, Jan 2019 (Veregin); Wisconsin Presidents (March 2019 (Lacy, Veregin); Wisconsin Council, March 2019 (Hemstead, Veregin); Wisconsin Hearing, April 2019 (Hemstead, Veregin); Wisconsin Land June 2019 (Hemstead, Lacy, Veregin); Wisconsin Land Information Council, June 2019 (Veregin)

Milwaukee, Nov 2019: GIS Day (Veregin)

Neillsville: Wisconsin County Surveyors Association Board Meetings, 2018-19 (Hemstead)

Sturgeon Bay, Oct 2018: Wisconsin Land Information Association Conference (Elza, Lacy, Lacy, Lacy, Wisconsin Land Information Council (Vergain)

Washburn, April 2019: Breaking the Cycle of Flood Damage Workshop (Elza)

Wisconsin Dells, Jan 2019: Wisconsin Society of Land Surveyors Institute (Hemstead, Veregin); Wisconsin County Surveyors Association Membership Meeting (Hemstead); Wisconsin Spatial Reference System 2022 Task Force Meeting (Hemstead, Veregin)

Charleston, SC, April 2019: NOAA Fellow Matching Workshop (Elza)

San Diego, CA, April 2019: F05546 NA (Elza)

Silver Spring, MD, May 2019: National Geodetic Survey Geospatial Summit (Veregin)





