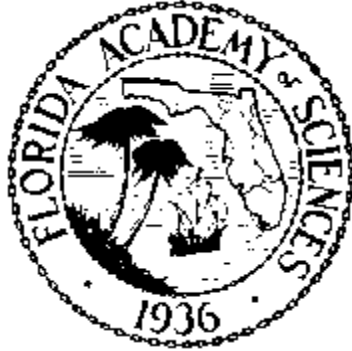


CALL FOR ABSTRACTS

with an Application Form for the Elizabeth A. Hays Travel Award



The 84th Annual Meeting of the
FLORIDA ACADEMY OF SCIENCES

will be held at

Bethune-Cookman University
Daytona Beach, Florida
March 20, 2020

All FAS abstracts must be submitted online at
<https://www.flacademyofsciences.org/submit-abstract/>

Abstract Topics: Abstracts on any aspect of science or engineering are solicited and you are cordially invited to organize additional sessions or symposia in any area of science, engineering or science education. For further information and procedures, visit the academy's web page located at <https://www.flacademyofsciences.org> or contact the FAS Program Chair, Dr. David Karlen (Environmental Protection Commission of Hillsborough County) at 813-627-2600 x1202, email karlen@epchc.org

Abstract Deadline: Friday, 17 January 2020
Early submissions are strongly encouraged.
Please note that acceptance is not guaranteed.

Section Chairs, 2019-2020, Florida Academy of Sciences

- AGR** Agricultural and Natural Resource Sciences: Ms. Julie Boswell, University of Florida, College of Agriculture and Life Sciences, Gainesville, FL 32611, email: julieboswell@ufl.edu
- ANT** Anthropological Sciences: Mr. Justin Maiers, University of South Florida, 4202 E. Fowler Ave. Tampa, FL 33620, phone: 813-947-2138, email: maiersj@mail.usf.edu
- AOS** Atmospheric and Oceanographic Sciences: Dr. Michael Robinson, Department of Biology, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-4930, email: mprobinson@mail.barry.edu; and Co-Chair Dr. David Karlen, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, FL 33619, phone: 813-627-2600 x1202, email: karlen@epchc.org
- BIO** Biological Sciences: Dr. Laura Mudd, Department of Biology, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-3204, email: lmudd@barry.edu; and Co-Chair: Dr. Tom D'Elia, Biology Department, Indian River State College, 3209 Virginia Avenue Fort Pierce, FL 34981, phone: 772-462-7492, email: tdelia@irsc.edu
- CMS** Computer/Mathematical Sciences: Dr. Ricardo Jimenez, Department of Math and Computer Science, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-4945, email: rjimenez@barry.edu
- ENG** Engineering Sciences: Dr. Sessa Srinivasan, Physics Department, Florida Polytechnic University, 4700 Research Way, Lakeland, FL, 33805, phone: 863-874-8527, email: sssrinivasan@floridapoly.edu
- ENV** Environmental Chemistry and Chemical Sciences: Dr. Darin Bell, Department of Math and Science, Saint Leo University, 33701 State Road 52, Saint Leo, FL 33574, phone: 352-588-7368, email: darin.bell@saintleo.edu
- GEO** Geosciences: Dr. Al Karlin, Department of Biology, University of Tampa 401 W. Kennedy Blvd. Tampa, FL 33606, email: alvin.karlin@gmail.com
- MED** Medical Sciences: Dr. Ana Jimenez, Department of Biology, Barry University, 11300 NE 2nd Ave, Miami Shores, FL 33161, phone: 305-899-3276 email: amjimenez@barry.edu; and Co-chair. Dr. Mark Best MD, MPH. LECOM-Bradenton, 5000 Lakewood Ranch Blvd, Bradenton, FL 34211, phone: 941-782-5662, email: mbest@lecom.edu
- PSS** Physics and Space Sciences: Dr. Georgui Bourov, Embry-Riddle Aeronautical University, 600 S Clyde Morris Blvd, Daytona Beach, FL 32114, phone: 386-323-8829, email: bourov987@erau.edu
- RES** Florida Committee on Rare & Endangered Plants & Animals: Dr. I. Jack Stout, Department of Biology, University of Central Florida, Department of Biology, 4000 Central Florida Blvd., Orlando, FL 32816-2368, phone: 407-823-2919, email: i.stout@ucf.edu
- SOC** Social Science: Dr. Jennifer Wortham, University of Tampa 401 W. Kennedy Blvd. Tampa, FL 33606, phone: 813-257-1722, email: jwortham@ut.edu
- TCH** Science Teaching: Co-Chair Dr. Tom Arnold, LECOM-Bradenton, 5000 Lakewood Ranch Blvd, Bradenton, FL 34211, phone: 941-782-5672, email: tarnold@lecom.edu, and Co-Chair Ms. Carmen Carpenter, South University Bachelor of Health Sciences Program, 9801 Belvedere Road, Royal Palm Beach, FL 33411, phone: 912-226-2821 email: ccarpenter@southuniversity.edu
- Local Arrangements Chair:** Dr. Sarah E. Krejci, Assistant Professor, Biology and Environmental Science, Bethune-Cookman University, 640 Dr. Mary McLeod Bethune Boulevard Daytona Beach, FL 32114 phone: 386-481-2693, email: krejcis@cookman.edu
- Program Chair:** Dr. David Karlen, Water Management Division, Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, FL 33619, phone: 813-627-2600x1202, email: karlen@epchc.org

FLORIDA ACADEMY OF SCIENCES 84th ANNUAL MEETING
MARCH 20, 2020
MEETING INFORMATION

OVERVIEW

The 84th Annual Meeting of the Florida Academy of Sciences will be held at Bethune-Cookman University in Daytona Beach on 20 March 2020. Abstracts on all aspects of science and engineering are solicited for general sessions in all sections of the Academy (list of sections on previous page). Any person or section interested in organizing a special session should contact the appropriate Section Chair or the Program Chair for further information.

Bethune-Cookman University, Daytona Beach, FL

On October 3, 1904, a very determined young black woman, Mary McLeod Bethune, opened the Daytona Literary and Industrial Training School for Negro Girls with \$1.50, faith in God and five little girls: Lena, Lucille, and Ruth Warren, Anna Geiger and Celest Jackson. Through Dr. Bethune's lifetime the school underwent several stages of growth and development and on May 24, 1919, the Daytona Educational and Industrial Institute was changed to Daytona Normal and Industrial Institute. In 1923 the school merged with Cookman Institute of Jacksonville, Florida (founded in 1872) and became co-ed while it also gained the prestigious United Methodist Church affiliation. Although the merger of Bethune's school and Cookman Institute began in 1923, it was not finalized until 1925 when both schools collaborated to become the Daytona-Cookman Collegiate Institute. In 1931, the College became accredited by the Association of Colleges and Secondary Schools of the Southern States, as a Junior College with class B status, and on April 27, 1931, the school's name was officially changed to Bethune-Cookman College to reflect the leadership of Dr. Mary McLeod Bethune. In 1941, the Florida State Department of Education approved a 4-year baccalaureate program offering liberal arts and teacher education. During the early 1940's BCU finalized the process of the State of Florida's accreditation for the teacher's education program and accreditation by the Southern Association of Colleges and Secondary Schools (SACS). The school became a charter member of the newly formed United Negro College Fund, which was created in 1943 by Dr. Bethune and Tuskegee Institute president Frederick Patterson. Since 1943, Bethune-Cookman University has graduated more than 13,200 students. Many alumni are employed in the fields of education, medicine, business, politics, government, science, religion, athletics and environmental sciences.

DRIVING DIRECTIONS

Bethune-Cookman University, 640 Dr. Mary McLeod Bethune Blvd, Daytona Beach, FL 32114, is located about 4.6 miles east of I-95. From I-95, take Exit 261A U.S. 92 East and go East 4.6 miles, turn left onto N. Lincoln Street go 0.2 miles and turn right onto Dr. Mary McLeod Bethune Blvd. Once on campus, look for signage with the Academy's name, acronym, or logo. Additional information on the meeting location and parking are available on the B-C U FAS meeting webpage: <http://aquaticresearchlab.org/fasatbcu>

DAYS, TIMES AND SESSION SCHEDULES

The scheduling is:

- Friday sessions (all Senior Academy): AGR, ANT, AOS, BIO, CMS, ENG, ENV, GEO, MED, PSS, RES, SOC, and TCH. See page 2 for explanation of abbreviations.

The scheduling details will be finalized in February 2020.

PARKING

Free parking will be available across from the Science Hall. Avoid parking in spaces that are restricted by permanent signs.

REGISTRATION

All presenters and attendees must register and pay the appropriate registration fee, but you need not be a member of the Academy to present an oral or poster presentation. Please make every effort to register online before February 1, 2020 - not only will it save you money, you will not have to stand in a long registration line at the time of the meeting.

LOCAL ARRANGEMENTS

The Local Arrangements Chair for the Annual Meeting is Dr. Sarah Krejci (see contacts, p. 2). She should be consulted for any special meeting needs.

LODGING

A block of rooms has been reserved for the Florida Academy of Sciences at a reduced rate of \$112/night + tax (Single) at the **Courtyard Daytona Beach Speedway/Airport**, 1605 Richard Petty Blvd., Daytona Beach, FL 32114. Please call Marriott Reservations at **1(800) 321-2211** or **(386) 255-3388** and tell them you are with the Florida Academy of Sciences Room Block to get the group rate. **The deadline for reservations is February 20, 2020 so we recommend booking as soon as possible.** Note: neither the Group nor attendees of the meeting shall be authorized to resell room reservations made as part of this group rate.

MEALS

Breakfast, lunch, dinner, and snacks will be available at several locations on campus during the meeting. Campus maps and other information at the Registration Desk will direct participants to dining options close to campus.

BANQUET

The Academy banquet is scheduled for Friday evening, March 20th. We are honored to have Dr. Richard Yost from the University of Florida and our 2019 FAS medalist as our banquet speaker. Additional banquet information (reservations, tickets, *etc.*) will be available on the FAS website link for Meeting Registration (<https://flacademyofsciences.org>) in November 2019. **Please note:** **NO** banquet tickets will be sold at the meeting.

PLENARY SESSION SPEAKER

The Meg Gale Plenary Address will be given on Friday, March 20th, immediately following the business meeting.

FLORIDA JUNIOR ACADEMY OF SCIENCE ANNUAL MEETING

The Florida Junior Academy of Science (FJAS) will meet on **Saturday April 18, 2020** at B-C U separate from the Florida Academy of Sciences meeting this year. As the student division of FAS, FJAS provides opportunities that encourage middle and high school students in the sciences, allowing them to compete, share, and network with other students and adults having common interests. The focus of this "common bond" among participants is their research activities. The Florida Junior Academy of Science is seeking volunteers to assist in judging and to act as section moderators at its meeting and is also seeking individuals in early February of 2020 to evaluate research papers submitted for this meeting. Persons interested in participating in this rewarding experience should contact Ms. Leya Joykutty, FJAS Director, email: leyajoykutty@gmail.com.

NOMINATIONS FOR THE FAS MEDALIST

The Florida Academy of Sciences encourages its members to submit formal nominations for candidates to be considered as the 2020 Medalist (see p. 7 for a listing of past FAS Medalists).

Nomination Procedure: The medal is presented each year at the annual meeting to a resident of the State of Florida who has contributed in an outstanding manner to the promotion of scientific research, to the stimulation of interest in the sciences, or to the diffusion of scientific knowledge. The candidate need not hold the Ph.D. He or she may be a research scientist, a philanthropist, an educator, a journalist, a science fair coordinator, or a member of industry, government, or other organization and who has met the criteria given above. The nominee does not need to be a member of FAS nor do you have to be a member to submit a nomination.

A nomination form is available on the Academy's website at

<https://www.flacademyofsciences.org/awards/>

Please email the completed form and any supporting materials as a pdf file to: Dr. Kelli Hunsucker, khunsucker@fit.edu. Your nomination form must arrive no later than **January 17, 2020**. The Committee might ask you to submit a copy of your nominee's resume or curriculum vitae.

COMMERCIAL AND INSTITUTIONAL EXHIBITS

Space is available on a first come-first served basis. Exhibits by research institutions or organizations offering programs of an informational nature may be given free space. Parties interested in fee or free spaces should contact the FAS Office for details: (321) 831-2500 or email: Flacademyofsciences@gmail.com. The Academy reserves the right to deny exhibits by individuals or organizations with a focus that is not pertinent or is contrary to its goals.

Florida Academy of Sciences Medalists 1963–2019

1963	Dr. Archie Carr	University of Florida	Biology
1964	Dr. Werner A. Baum	University of Miami	Meteorology
1965	Dr. Alex G. Smith	University of Florida	Astronomy
1966	Dr. Karl Dittmer	Florida State University	Chemistry
1967	Dr. Alfred H. Lawton	University of South Florida	Medicine
1968	Dr. Sidney Fox	University of Miami	Biochemistry
1969	Dr. F. G. Walton Smith	University of Miami	Marine Science
1970	Dr. Pierce Brodtkorb	University of Florida	Zoology
1971	Dr. Maurice A. Barton	Mound Park Foundation	Medicine-Teaching
1972	Dr. Lloyd M. Biedler	Florida State University	Physiology-Biophysics
1973	Dr. Ruth S. Breen	Florida State University	Botany
1974	Dr. E. T. York, Jr.	University of Florida	Agriculture
1975	Dr. Alex E. S. Green	University of Florida	Physics
1976	Dr. Robert N. Ginsburg	University of Miami	Geology
1977	Dr. Michael Kasha	Florida State University	Molecular Biophysics
1978	Dr. John Edward Davies	University of Miami	Public Health
1979	Dr. Stanley S. Ballard	University of Florida	Optics
1980	Dr. Thomas D. Carr	University of Florida	Astronomy
1981	Dr. Harold J. Humm	University of South Florida	Marine Biology
1982	Dr. George B. Butler	University of Florida	Chemistry
1983	Dr. Karen Steidinger	Florida Dept. Natural Resources	Biology
1984	Dr. Yngve Ohrne	University of Florida	Chemistry
1985	Dr. William Sears	Florida Atlantic University	Anthropology
1986	Dr. E. Dwight Adams	University of Florida	Physics
1987	Dr. Larry Hench	University of Florida	Engineering
1988	Dr. Gene C. Ness	University of South Florida	Biochemistry
1989	Dr. Frank Bradshaw Wood	University of Florida	Astronomy
1990	Dr. Martin Uman	University of Florida	Electrical Engineering
1991	Dr. Frank Millero	University of Miami	Oceanography
1992	Dr. Gregory Choppin	Florida State University	Chemistry
1993	Dr. D. O. Shah	University of Florida	Chemical Engineering
1994	Mrs. Barbara B. Martin	University of South Florida	Chemistry
1994	Dr. Dean F. Martin	University of South Florida	Chemistry
1995	Dr. James N. Layne	Archbold Biological Station	Zoology
1996	Dr. Leslie Sue Lieberman	University of Florida	Anthropology
1997	Dr. George R. Newkome	University of South Florida	Chemistry
1998	Dr. Joseph J. Krzanowski	University of South Florida	Pharmacology
1999	Dr. Abraham Kandel	University of South Florida	Computer Science
2000	Richard F. Lockey, M.D.	University of South Florida	Medicine
2001	Dr. Clinton J. Dawes	University of South Florida	Biology
2002	Dr. John H. Trefry	Florida Institute of Technology	Marine Science
2003	Dr. Christian A. Clausen	University of Central Florida	Chemistry
2004	Dr. Jerald T. Milanich	University of Florida	Archaeology
2005	Dr. Thomas Crisman	University of Florida	Ecology
2006	Dr. James O'Brien	Florida State University	Climatology
2007	Dr. Robert A. Horton	Florida State University	Chemistry
2008	Dr. John M. Lawrence	University of South Florida	Biology
2009	(no medal awarded)		
2010	Dr. Terry D. Oswalt	Florida Institute of Technology	Astronomy
2011	Dr. Michael J. Greenberg	University of Florida	Biology
2012	Dr. Bruce J. MacFadden	University of Florida	Paleontology
2013	Dr. Lonnie Ingram	University of Florida	Microbiology
2014	Dr. Peter Delfyett	University of Central Florida	Physics
2015	Dr. Paul Sanberg	University of South Florida	Medicine
2016	Dr. George A. Maul	Florida Institute of Technology	Oceanography
2017	Dr. Alan G. Marshall	Florida State University	Chemistry
2018	Dr. Richard L. Turner	Florida Institute of Technology	Biology
2019	Dr. Richard A. Yost	University of Florida	Chemistry

STUDENT AWARDS

Students presenting papers at the Annual Meeting of the Academy, and who are registered for the Meeting, may be considered for a number of awards. Details are presented below. Students wishing to be considered for one or more of these awards should indicate their interest on the FAS abstract submission website. Dr. Sessa Srinivasan is the Awards Chair and he can be contacted at: Dr. Sessa Srinivasan, Physics Department, Florida Polytechnic University, 4700 Research Way, Lakeland, FL, 33805, phone: 863-874-8527, email: sssrinivasan@floridapoly.edu

1. Outstanding Student Paper Award - This award is presented by any of the Academy Sections to graduate and undergraduate students for oral and poster presentations.
2. Al Hall Memorial Award (student award in Engineering) – The student shall have the following or must meet the following criteria:
 - Have at least 3.0 GPA (grade point average);
 - Maintain 12 credit hours per semester;
 - Be a Junior/Senior/Graduate Student;
 - Be a FAS student member prior to presenting an oral or poster paper at the Annual Meeting of the Academy.

The award shall be given for an oral paper or poster that judges at the Annual Meeting of the Academy deem outstanding in nature. This award shall be given only to one recipient annually. The winner of the Al Hall Memorial Award consists of a monetary gift, plaque, and certificate for the outstanding paper and/or poster presentation at the FAS Annual Meeting.

3. Dr. Elizabeth A. Hays Travel Award: The Florida Academy of Sciences provides travel support for students enrolled at colleges and universities to present papers at its annual meetings. This awards program is supported by an endowed account, the Dr. Elizabeth A. Hays Travel Award Fund. Awards, which are based on demonstrated financial need, may be applied to the costs of travel, lodging, and meals, Academy student membership for the calendar year of the meeting, or the cost of the banquet. The amount of each award is \$100, and the award includes waiver of the meeting registration fee. Instructions for applying are attached. (***SEE THE LAST TWO PAGES OF THIS DOCUMENT***).

FLORIDA ACADEMY OF SCIENCES 84th ANNUAL MEETING
MARCH 20, 2020

INSTRUCTIONS FOR ABSTRACT SUBMISSION

ONLINE SUBMISSION

The abstract online submittal form is available at:

<https://www.flacademyofsciences.org/submit-abstract/>

Authors will be notified of abstract acceptance in January 2020.

FAS requests complete names, addresses (including street addresses and ZIP codes), organizational departments, phone numbers, *etc.*

PUBLICATION OF FAS ABSTRACTS

All accepted and presented FAS abstracts will be published in the *Florida Scientist* (Volume 83) and available electronically at the meeting.

DIRECTIONS FOR ABSTRACT PREPARATION

Abstracts must be typed (or text may be cut-and-pasted) into the appropriate submission window on the website (see URL above). WE ASK ALL AUTHORS TO ADHERE STRICTLY TO THE INSTRUCTIONS SHOWN BELOW IN ORDER TO ACHIEVE UNIFORM PUBLICATION; PLEASE FOLLOW THE DIRECTIONS CAREFULLY. FAILURE TO ADHERE TO THE INSTRUCTIONS WILL DELAY THE ACCEPTANCE OF YOUR ABSTRACT. Sample abstracts follow at the end of this document, and are also posted on the online submission URL shown above.

Abstract Size: No more than 300 words (*including* title, authors, affiliations, *etc.*). *It is crucial for publication that abstracts are kept within this limit.*

Order of parts: Title, author(s), affiliation(s), text (including acknowledgment of financial and technical assistance), keywords, Corresponding author email address.

Title: Upper case 1st letter for the 1st word of the title, and for 1st letter of proper nouns, followed by a period.

Author(s): Immediately following title. Author's full first name and middle initial (optional) and last name in upper and lower case letters. If multi-authored, use "and" in lowercase before last author. Use numbers in parenthesis and superscript to indicate different author affiliations (please see example abstracts).

Affiliation(s): Immediately following author(s). Upper and lower case letters. Full address with zip code, and state abbreviation (FL or others). Use standard abbreviations (*e.g.*, Dept., Inst., Univ., Geol.) only if necessary to save space for text, and followed with a period.

Keywords: Provide five keywords that describe research topic

Corresponding author: Primary author (usually presenter) and contact email address

Text: Immediately following affiliations. According to standard typing of scientific text in respective discipline.

POSTERS

Poster exhibits of scientific studies on any topic are strongly encouraged and will be displayed during the annual meeting. ***Poster presentations must include an abstract to be submitted online by 17 January 2020.*** All poster abstracts will appear in the Program Issue.

POSTER FORMAT

Maximum size is approximately 3'×4' (a size used commonly at many conferences and meetings). We request posters to be printed/displayed in landscape view.

Online examples of poster formats and templates:

<https://www.youtube.com/watch?v=1RwJbhcCA58>

<https://www.posterpresentations.com/free-poster-templates.html#winston>

<https://hsp.berkeley.edu/sites/default/files/ScientificPosters.pdf>

VIDEO PRESENTATIONS

A limited number of short (3-5 minute) video presentations of scientific studies on any topic will be accepted and shown during the poster session. ***Video presentations must include an abstract to be submitted online by 17 January 2020.*** All video abstracts will appear in the Program Issue. If you are interested in submitting a video presentation please contact the Program Chair, Dr. David Karlen at karlen@epchc.org for further details.

AUDIO VISUAL EQUIPMENT

The standard presentation format will be PowerPoint slides submitted to the session chair prior to the session meeting. We expect presenters will have their PowerPoint presentations available on their personal thumb-drive/memory-stick devices 15 minutes before the beginning of a session.

Overhead projectors will be available in all meeting rooms. Presenters should ***specialy request*** on the abstract online submittal form if they will require any special AV equipment.

WHEN TO SUBMIT

The deadline for abstract submittal is ***Friday, 17 January 2020***, but FAS ***strongly*** encourages early submissions.

PLANNING YOUR PRESENTATION

Each speaker will have 15 minutes for his or her presentation. There will be no exceptions to this rule. It is recommended that your presentation last approximately 12 minutes, so that there will be ample time for questions afterward. Your Section Chair or Moderator will give you a signal as the end of your 12 minutes approaches. Please plan on being present when the session in which you are going to speak begins. Your Section Chair may have instructions that speakers need to hear. In addition, if you are going to be using special equipment, such as slide projectors, you should be at the meeting room 15-30 minutes before the start of your session to see that this equipment is working properly.

QUESTIONS?

Contact your Section Chair (page 2), or the Program Chair, Dr. David Karlen at: karlen@epchc.org

Please check the FAS website for further updates:

<https://www.flacademyofsciences.org/>

(See next page for sample abstracts.)

Abstract sample, one or more than one author from same institution:

The distribution of *Pyrodinium bahamense* cysts in Old Tampa Bay sediments. David J. Karlen and Melissa A. Miller. Environmental Protection Commission of Hillsborough County 3629 Queen Palm Drive Tampa, Florida 33619. Extensive blooms of the dinoflagellate *Pyrodinium bahamense* have occurred over the summers of 2008 and 2009 in Old Tampa Bay. This species forms resting cysts which remain dormant in the sediments until conditions are favorable for blooms to occur. This pilot study looked at the abundance and distribution of *Pyrodinium bahamense* cysts in Old Tampa Bay sediments collected in May 2010 at the Environmental Protection Commission of Hillsborough County (EPCHC) monthly water quality monitoring stations. The purpose of this study was to 1) map the distribution of *Pyrodinium bahamense* cysts in Old Tampa Bay to provide a baseline for predicting future bloom locations and 2) look at the water quality and sediment characteristics which correspond to the distribution of *Pyrodinium bahamense* cysts in Old Tampa Bay. Additionally, we looked at the monthly population trends of *Pyrodinium bahamense* in Old Tampa Bay from phytoplankton samples collected at the EPCHC water quality monitoring stations from January 2008 through August 2010. The phytoplankton data were compared with corresponding water quality data to look at possible correlations between *Pyrodinium bahamense* blooms and surface hydrographic conditions and nutrient concentrations. The highest cyst densities occurred in the north and western areas of Old Tampa Bay and were correlated with areas of high silt/clay and organic content as well as reduced nitrogen isotopic signatures. These sites also corresponded to areas where past blooms had started. Cyst densities decreased towards the lower section of the bay, possibly due to stronger currents and shorter water residence time. Bloom events during 2008 – 2010 were tied to high water temperatures and decreasing surface salinities. Apparent optimal conditions for blooms had surface water temperature of 30°C and surface salinities around 25‰. Ortho-phosphate had a strong correlation with *P. bahamense* cell counts; however peak concentrations in Ortho-PO₄ occurred approximately one month after peak bloom events. (Funding provided by the Tampa Bay Estuary Program).

Keywords Tampa Bay, Harmful algae blooms, Dinoflagellates, cysts, phytoplankton
Corresponding author: David Karlen, karlen@epchc.org

Abstract sample, more than one author from two or more institutions:

Post-restoration recovery of the benthic macrofaunal community at the McKay Bay dredge hole in Tampa Bay. David J. Karlen⁽¹⁾, Kris A. Kaufman⁽²⁾, Thomas L. Dix⁽¹⁾, Kevin W. Campbell⁽¹⁾, Joette M. Jernigan⁽¹⁾, Sara E. Markham⁽¹⁾ and Barbara K. Goetting⁽¹⁾. ⁽¹⁾ Environmental Protection Commission of Hillsborough County, 3629 Queen Palm Drive, Tampa, FL 33619, ⁽²⁾ Southwest Florida Water Management District, 7601 US Hwy 301 N. Tampa, FL 33637. Dredge holes are submerged borrow pits left when sediments are dredged to provide fill for construction projects. The Tampa Bay Estuary Program conducted a study evaluating the habitat quality of dredge holes in Tampa Bay in 2003 and ranked the McKay Bay dredge hole as the worst in terms of poor water and sediment quality and a degraded benthic community. The study recommended that this dredge hole should be filled in order to eliminate hypoxic conditions and allow for the establishment of a healthy benthic community. The Southwest Florida Water Management District provided funding for filling the dredge hole using fill material provided by Port Tampa Bay from the dredging of a new berth and a mitigation project on the McKay Bay peninsula. The Environmental Protection Commission of Hillsborough County conducted pre- and post- restoration benthic monitoring to evaluate the success of the project. A total of 30 sites were sampled in August 2011 prior to restoration and resampled in May 2014 approximately 1 year after the dredge hole was filled. Fifteen sites were within the dredge hole and 15 sites were located outside of the dredge hole as controls. Post-restoration results indicated improvements in bottom dissolved oxygen within the restored area and an increase in benthic species richness. Benthic species composition was also more similar between the dredge hole and control sites indicating the restoration was successful in restoring the benthic community.

Keywords Tampa Bay, dredge hole, restoration, benthic infauna, sediment habitats
Corresponding author: David Karlen, karlen@epchc.org



Florida Academy of Sciences

Dr. Elizabeth A. Hays Travel Award

Application Form for 2020 Annual Meeting

The Florida Academy of Sciences provides travel support for students enrolled at colleges and universities to present papers at its annual meetings. This awards program is supported by an endowed account, the Dr. Elizabeth A. Hays Travel Award Fund. Awards, which are based on demonstrated financial need, may be used for the cost of the banquet, Academy student membership for the calendar year of the meeting, and the costs of travel, lodging, and meals. In addition, **the registration fee is waived for award recipients.** (Applicants will be informed about awards early enough for them to register for the meeting with or without paying by the early registration deadline.)

A completed application form must be submitted via email or postmarked by **Friday, 17 January 2020** or earlier and be accompanied by (1) a copy of the **abstract** (submitted by the same deadline online at: flacademyofsciences.org/submit-abstract for an oral or poster presentation at the 84th Annual Meeting of the Academy; (2) an **essay** on the significance of the student’s attendance of the annual meeting and on the reasons for financial need; (3) an **itinerary**; and (4) a **letter** of support from the student’s research or academic advisor. If submitting by email, please scan or save all of above documents into a single pdf or MS Word file.

The letter of support must address the student’s **financial need**, not the nature of the research; and it **must certify** that the student is currently enrolled at the institution. In addition, the advisor must indicate whether or not the institution can support the student’s travel by institutional vehicle or other mode of travel if the student requests a subsidy for travel. The advisor’s letter may be sent separately, but it, too, must be emailed by **17 January 2020** or earlier. It is recommended that the student provide the advisor with a copy of this completed application form and the essay to assist the advisor in composing the letter of support.

The application will be reviewed by the Awards Committee of the Academy, and all the information submitted will remain confidential. The abstract will be published in *Florida Scientist* volume 83 as submitted per instructions in the Call-for-Abstracts. Recipients will be announced along with recipients of other student awards made for the annual meeting. This form, the essay, other supporting documentation, and the advisor’s letter should be emailed to:

Dr. Sesha Srinivasan
FAS Awards Committee Chair
Email: ssrinivasan@floridapoly.edu

In accordance with Academy policy, the Awards Committee does not discriminate against any person on the basis of race, color, national or ethnic origin, sex, sexual orientation, religion, political belief, age, or disabilities.

Name of student: _____

Current college or university: _____

Currently enrolled (**circle one**): B.A./B.S. M.A./M.S. Ph.D. Major: _____

Undergraduates, current classification (**circle one**): freshman sophomore junior senior

U.S. Postal address: _____

Email address: _____

(Continue next page)

	Advisor	Department Chair/Head
Name		
Circle status of advisor	Research Academic	
Department		
Institution		
Street or other address info.		
City, State, Zip Code		
Telephone		
Email address		

Title of presentation: _____

Format of presentation (**circle one**): Oral Poster

Authors: _____

I am requesting a grant to assist with travel expenses for the 2020 Annual Meeting of Florida Academy of Sciences. In submitting this application and supporting documentation, I recognize that, if granted an award, I must be the presenter of the paper described above and that I will use the funds for their intended purposes or return to Florida Academy of Sciences the funds received and forfeit the waiver of the registration fee.

Signature: _____ Date: _____

Email this completed form and supporting material (**abstract, essay, itinerary, advisor's letter**) to: Dr. Sessa Srinivasan, FAS Awards Committee Chair, email: ssrinivasan@floridapoly.edu. If sent separately, have your advisor email the letter of support to the same address. All materials must be received no later than **January 17, 2020**.