

Astronomy Open Night, Friday, September 6, 2019

ESS 001; 7:30PM

For more information: <http://www.astro.sunysb.edu/openight/opennite.html>

Douglas Swesty

“Our First Look at the Black Hole”

Recently, the Event Horizon Telescope collaboration revealed our first direct glimpse at the event horizon of a black hole. This is incredible news for astrophysicists as it has taken over a century, from the time that black holes were first predicted as a consequence of Einstein's theory of gravity, until we were finally able to get a direct view of one. In this talk I will discuss what a black hole is, how the idea of one was originally discovered, and how we finally, in 2019, have been able to see one directly.

Dr. Swesty received his PhD in Physics from SUNY, Stony Brook in 1993. He spent six years at the University of Illinois as a postdoctoral researcher and as a Visiting Assistant Professor. He returned to Stony Brook in 1999 where he is currently a Research Associate Professor. His work focuses on nuclear astrophysics and computational astrophysics.

Physics Open Night, Friday, September 13, 2019

ESS 001; 7:30PM

For more information: <http://www.physics.sunysb.edu/Physics/WorldsOfPhysics/2018-19/>

TBA

Living World Open Night, Friday, September 20, 2019

ESS 001; 7:30PM

For more information: <http://life.bio.sunysb.edu/marinebio/livingworld/>

Patricia Wright

“My Love of Nature: Doing my Best to Save it from Extinction”

First in a Series: Celebration of Nature, Commemorating Alexander von Humboldt's 250th Birthday

Beginning my career as a social worker in New York City, I switched to studying father-care in monkeys in the Amazon of Peru for my doctorate. As a post doc at Duke University I fell in love with lemurs and from the first trip to Madagascar realized lemurs were on the brink of extinction. For the past thirty years I have organized teams of scientists and local Malagasies to work together to save the endemic plants and animals, as well as the people of Madagascar. CVB, a research station next to the rainforest, is the hub and heart of a program based on science with spokes in health, education, environmental arts and human livelihoods. Madagascar is a challenge, but we are making positive strides. Recently I have made two new discoveries: 1) a relict "lost rainforest" in the center of the barren highlands of Madagascar, where we are describing new species and 2) a fossil ecosystem dated at 10,000 years ago which changes our understanding of human arrival on Madagascar. We continue to protect nature and do good science.

Dr. Wright is a Distinguished Service Professor in the Department of Anthropology at Stony Brook University. She has been the Executive Director for the Institute for the Conservation of Tropical Environments (ICTE) since 1992 and founded the Centre ValBio Research station in Madagascar in 2002. Centre ValBio hosts programs in Biodiversity Research, Environmental Arts, Village education, health, and reforestation. She has studied non-human primates in South America, Asia and Madagascar. Her research interests include conservation biology, behavior and ecology, the evolution of tropical biodiversity, biodiversity conservation, and climate change in the tropics.

Geology Open Night, Friday, September 26, 2019

ESS 001; 7:30PM

For more information: <http://www.geo.sunysb.edu/openight/index.html>

Troy Rasbury

"Boron in Long Island Fresh Water"

Boron isotopes have been used as a tracer of the source of contaminants such as nitrate to surface and groundwater in a variety of terrestrial settings. We conducted a survey of Long Island waters including rainwater, spring fed creeks and rivers, subterranean groundwater discharge, and ponds across eastern Long Island to determine if boron could be a useful tracer of contaminants. A major motivation was to identify the source of nitrate to groundwater and to the Long Island Sound. Nitrates can cause harmful algal blooms in ponds, lakes and in the Long Island Sound. As background to this study we analyzed samples that are potential sources of nitrates including septic samples as well as some commercially available fertilizer and manure to consider potential contaminants to the waters.

Septic waters have high boron concentrations and light boron isotope compositions, likely derived from bleach. Fertilizers also have high concentrations and have a range of isotope ratios, but are mostly isotopically distinct and heavier than septic samples. Manure has lower boron concentrations and is isotopically heavier than commercial fertilizer. Seawater has high boron concentrations and is isotopically very heavy.

This study shows that boron from seawater is a significant source of boron without concomitant increases in salinity. Volatilization of boric acid from seawater likely accounts for ratios that are even heavier than seawater. Ponds in the

Pine Barrens have boron isotopes similar to seawater with the lowest boron concentrations of any samples we measured, likely reflecting the average composition of rainwater. There is a remarkable range in boron isotopes across all the fresh groundwater samples we measured. There is little trend with boron concentrations suggesting that there are multiple sources with different isotope compositions.

Combining these results with analyses of subterranean groundwater discharge (SGD) which has been conducted in several locations on the Long Island Sound indicates that the source of nitrate to the Long Island Sound through SGD has isotopically light boron isotopes and is not one simple source, but rather must represent a range of sources. This is consistent with the idea that non-point source contributions of nitrate to the Long Island Sound are significant.

Troy Rasbury is an Associate Professor in the Department of Geosciences. She is an isotope geochemist and oversees the Facility for Isotope Research and Student Training (FIRST) at Stony Brook University. The work presented here represents a new direction for her research and is collaborative with Henry Bokuniewicz and J. Kirk Cochran of SoMAS. Students including Caitlin Brown, Joe Tamborski, Deanna Downs, and Brooke Peritore have been involved in this research and contributed to the data and discussion.

Directions to SUNY Stony Brook and ESS Building

- ⇒ from exit 62 of the Long Island Expressway (LIE, I-495) follow Nicolls Road (Route 97) north for nine miles. Pass the South and Main entrances to the University.
 - ⇒ Enter the North entrance which will be on your left.
 - ⇒ at the top of the small hill, turn right on Circle Road.
 - ⇒ Proceed about 1 mile.
 - ⇒ Turn left onto Campus Drive and then immediately turn left again onto John S. Toll Drive.
 - ⇒ Proceed about 50 yards then turn right into the large paved parking lot.
 - ⇒ The Earth and Space Sciences building is the large concrete building at the northeast end of the parking lot.
- Map of campus is on the web at: <http://www.stonybrook.edu/sb/map/>

TEACHER IN SERVICE CREDITS

NYS teachers who wish to receive CTLE credit for any of these lectures must register here: <https://goo.gl/forms/pfdNLevMTO8VfbJ02>. You must register for each lecture you attend and sign-in at the lecture. The Graduate School will send a CTLE certificate about six weeks after each lecture.