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Celebrating Diversity in STEM

The Color of Science™ is COSI's signature diversity and equity initiative which spotlights the amazing contributions to science, technology, engineering and math (STEM), made by women and persons of color through various yearround programming. In this passport, you will explore the great diversity that exists within a variety of scientific landscapes. We hope you enjoy reading these short biographies of some of the most remarkable men and women who are researchers, scientists and engineers!

Dr. Frederic Bertley

COSI's President and CEO, Founder, The Color of Science™

Marilyn Crichlow, MS Hydrologist

Marilyn Crichlow is a hydrologist with over 25 years of experience in water resources management. A former director of the Water Resources Agency (WRA) in Trinidad and Tobago and



the first woman to hold such a position in the region, she has helped Caribbean countries to better manage their water resources using an integrated approach that considers user needs, environmental needs and stakeholder participation.

Did you know?

Snow is not white. Frozen water is clear; the reflection of the sun makes it white.

Shari Fox, PhD

Research Scientist III

Dr. Fox is a research scientist studying the arctic environment and sea ice changes. She works closely with community members such as Inuit hunters and



elders on projects in Nunavut, a Canadian territory, and in Alaska, Greenland, and Fennoscandia. Dr. Fox is currently working on investigating connections between high-latitude communities in the Arctic and high-altitude communities in Nepal that have in common livelihoods closely tied to changing snow and ice environments.

Interesting Fact: Snowflakes always have six sides.

Mary J. Brodzik, BA

Mary is a Senior Associate Scientist at the National Snow and Ice Data Center in Colorado. She and her team study snow patterns. She specifically studies the remote sensing of snow and ice, and uses a data processing algorithm to understand runoff from glacier ice and seasonal snow. She earned her Bachelors of Mathematics from Fordham University.

Interesting Fact:

While some snowflakes look very similar, no two snowflakes are exactly alike.

Warren Washington, PhD

Atmospheric Scientist

Dr. Warren Washington's work has helped scientists understand climate change for over 50 years, including the development of groundbreaking computer models which predict future



states of the atmosphere. Dr. Washington has won numerous prestigious awards for his research and overall contribution to science, including the National Medal of Science, which is the highest honor a scientist can receive in the U.S.– it was presented to him by President Obama.

Did you know?

Glacier ice contains an estimated 75% of the world's supply of fresh water.

Julienne Stroeve, PhD Glaciologist

Dr. Stroeve is a scientist studying the remote sensing of snow and ice in the visible, infrared and microwave wavelengths. In 2012, she traveled to the Arctic Ocean to study sea ice at its lowest



extent, and documented her expedition for research purposes. She has briefed members of the CIA on climate change, and has met with Homeland Security to discuss climate issues in Fairbanks, Alaska.

Interesting Fact: Snow affects sound. Fresh fallen snow absorbs sound waves.

Ukichiro Nakaya, PhD

Physicist

Dr. Nakaya graduated from Tokyo Imperial University in 1925 with a degree in Experimental Physics. In 1930, he began to research natural snow crystals. He collected 3000 microscopic photos of snow

- Anage Credit: Wikipedia

crystals, and created a database. Dr. Nakaya went on to create the first artificial snowflake on March 12, 1936. For all of his many contributions to science like the study of snow crystals, he was awarded the Imperial Prize of the Japan Academy in 1941.

Did you know?

Scientists believe there are about 100,000 glaciers in Alaska! Only 650 of them have been named.

Ning Sun, PhD Hydrologist

Dr. Sun is a hydrologist with more than 10 years of experience in researching topics related to snow. Her modeling work focuses on the context of climate change, climate extremes,



and the contributions of humans to these changes. She is specifically interested in mountain snow hydrology, river temperature modeling, water quality in urban settings, and climate-forest interactions.

Fun Fact: Yodeling will not cause an avalanche.

Jessica Lundquist, PhD

Hydrologist

Dr. Lundquist is currently a researcher and a professor of Civil and Environmental Engineering at the University of Washington. redit University of Washington Her research focuses on spatial patterns of snow and weather in the mountains. Her team looks at how those patterns might affect streamflow and water resources. Dr. Lundquist and her graduate students operate a snow school each year, where they provide a cool, hands on way to teach kids about hydrology.

Did you know?

Naturally falling snow is classified as a mineral.

Lonnie Thompson, PhD Ellen Mosley-Thompson,

PhD Paleoclimatologists

Lonnie Thompson and Ellen Mosley-Thompson, married over 40 years, are researchers who study climate change effects in glacial regions, and help develop deep ice

drilling technology. Lonnie is one of the world's top scientists in paleoclimatology and glaciology, receiving global recognition for his analysis of ice cores from mountain glaciers and ice caps. He and Ellen founded the famous Byrd Polar Institute at the Ohio State University where the power couple base their world class research today.

Fun Fact: The largest glacier in Alaska, the Bering Glacier, is about the same size as the state of Delaware!

Kandis Y. Boyd, PhD

Meteorologist

Dr. Boyd was the first African American woman to receive a bachelor's degree in Meteorology from Iowa State University. She served as a member of the National Climate

Assessment Development Advisory ^{Image Credit, NOPA} Committee, and was both acting and deputy director of the NOAA Weather Program Office. Dr. Boyd has received many awards from the meteorological and engineering communities, such as the 2020 Black Engineer of the Year Award for Career Government Achievement, and 3 NOAA Administrator's Awards.

Did you know?

Scientists have discovered that some bats hibernate in snow dens to survive the winter!

Phoebe Suina, BS

Hydrologist

Phoebe Suina is the founder of High Water Mark, which is a Native-American, woman-owned environmental consulting firm focused on the effects of flooding and other natural

Page Credit: Dartmouth Engineering disasters in New Mexico. The firm emerged after a wildfire led to devastating flooding. High Water Mark originally only held contracts with tribal communities, like the Cochiti Pueblo, of which she is a member. The firm works to find funding and support to prepare for future flooding events in tribal and non-tribal communities.

Interesting Fact:

Alaska has the greatest concentration of glaciers in the US: 30,000 square miles or 5% of the state is covered by glaciers.

Bekki Harjo, PhD

Senior Hydrologist

Dr. Harjo is a Senior Hydrologist with the National Weather Service. and she holds doctorates in Law and Biosystems Engineering. She analyzes ional Weather Service data related to flooding, like predicting patterns in high risk locations such as rivers and other terrains, from a variety of weather systems and events. Dr. Harjo is a Certified Floodplain Manager, which learns from past flooding disasters and the damages left behind in order to help prepare and mitigate repetitive loss.

Fun Fact:

One of the coldest temperatures ever recorded was -129°F in Antarctica. on July 21, 1983.

Nanna Karlsson, PhD

Glaciologist

Dr. Karlsson is the co-editor-in-chief of The Cryosphere, an international scientific journal about all things related to frozen water and ground on earth as well as other planets. Her work focuses



mage Credit: ResearchGate

on recreating past snapshots of ice accumulation and ice stream movement, as well as flow patterns of the Antarctic and Greenland Ice Sheets. She also studies ice and water findings on Mars.

Fun Fact:

Almost half of the land in Alaska is tundra, meaning no large trees will grow there.

Indrani Das, PhD Hydrologist

Dr. Das is an expert in Glaciology & Atmospheric Sciences. She studies ice sheets and shelves, and the interactions between ice and the atmosphere or ocean.

the interactions between and the atmosphere or ocean. ^{And Observators} Her research uses satellite remote sensing, and other methods such as ground-based measurements, laser altimetry and the use of airborne radar technology. She received her Ph.D in Atmospheric Physics from Indian Space Research Organization in 2007. She has worked for the Lamont-Doherty Earth Observatory at Columbia University since 2010.

Interesting Fact:

Permafrost is any ground that remains completely frozen for at least two years straight.

Lauren Simkins, PhD

Glaciologist

Dr. Lauren Simkins is an Assistant Professor at the University of Virginia. She studies changes in glacial, coastal and marine environments. She is the Principal Investigator of the Ice and Ocean Group, Titese Credit: University of Virginia

which is a research group with UVA. Their work is able to determine past activity and movement of glaciers by studying sediments found in the ice. The Ice and Ocean Group also studies the changes that occur when glaciers and oceans interact.

Fun Fact:

In Alaska's arctic region, the permafrost (frozen earth) can be found as thick as 2,000 feet.



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Glaciologist: a person who studies snow or ice, which forms glaciers

Hydrologist: a person who studies how water moves above and throughout the earth

Meteorologist: a person who studies the weather

Paleoclimatologist: a person who studies ancient climates that existed hundreds of thousands of years ago





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