Engaging and Inspiring young women in STEAM: NASA SERVIR's contributions to the Women in Science (WiSci) STEAM Camps

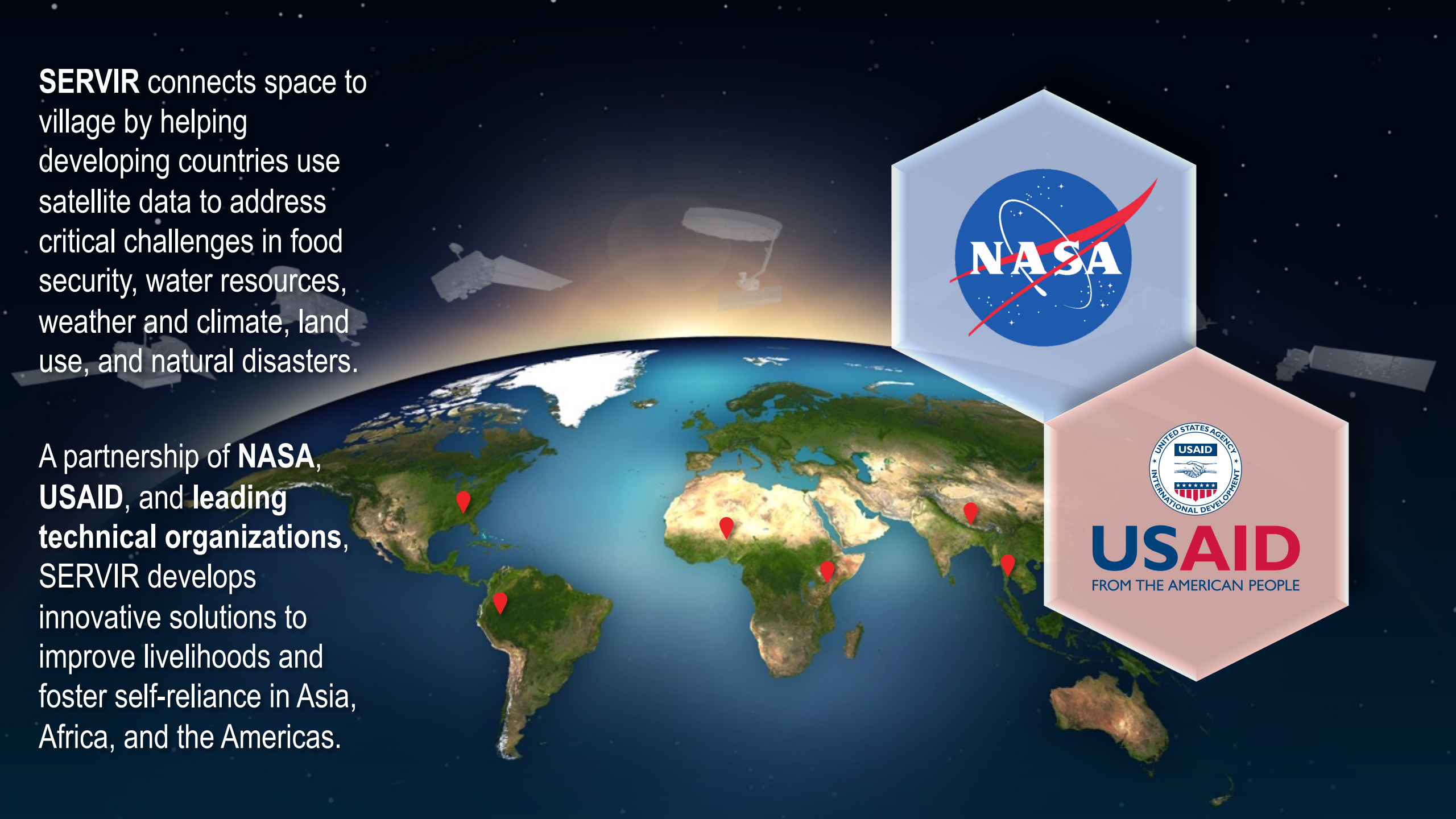


Emily C Adams, Phoebe Odour, Anastasia Wahome, Githika Tondapu, Andi Thomas, and Denis Macharia

emily.c.adams@nasa.gov

12.12.19

ED44A-02


SERVIR connects space to village by helping developing countries use satellite data to address critical challenges in food security, water resources, weather and climate, land use, and natural disasters.
A partnership of **NASA**, **USAID**, and **leading technical organizations**, SERVIR develops innovative solutions to improve livelihoods and foster self-reliance in Asia, Africa, and the Americas.
NASA
USAID
FROM THE AMERICAN PEOPLE

Countries Around the World Need Satellite Data

Problem

- Complex challenges occur in data-scarce environments
- Most countries lack the capacity to use satellite data and geospatial technologies to manage risk

Approach

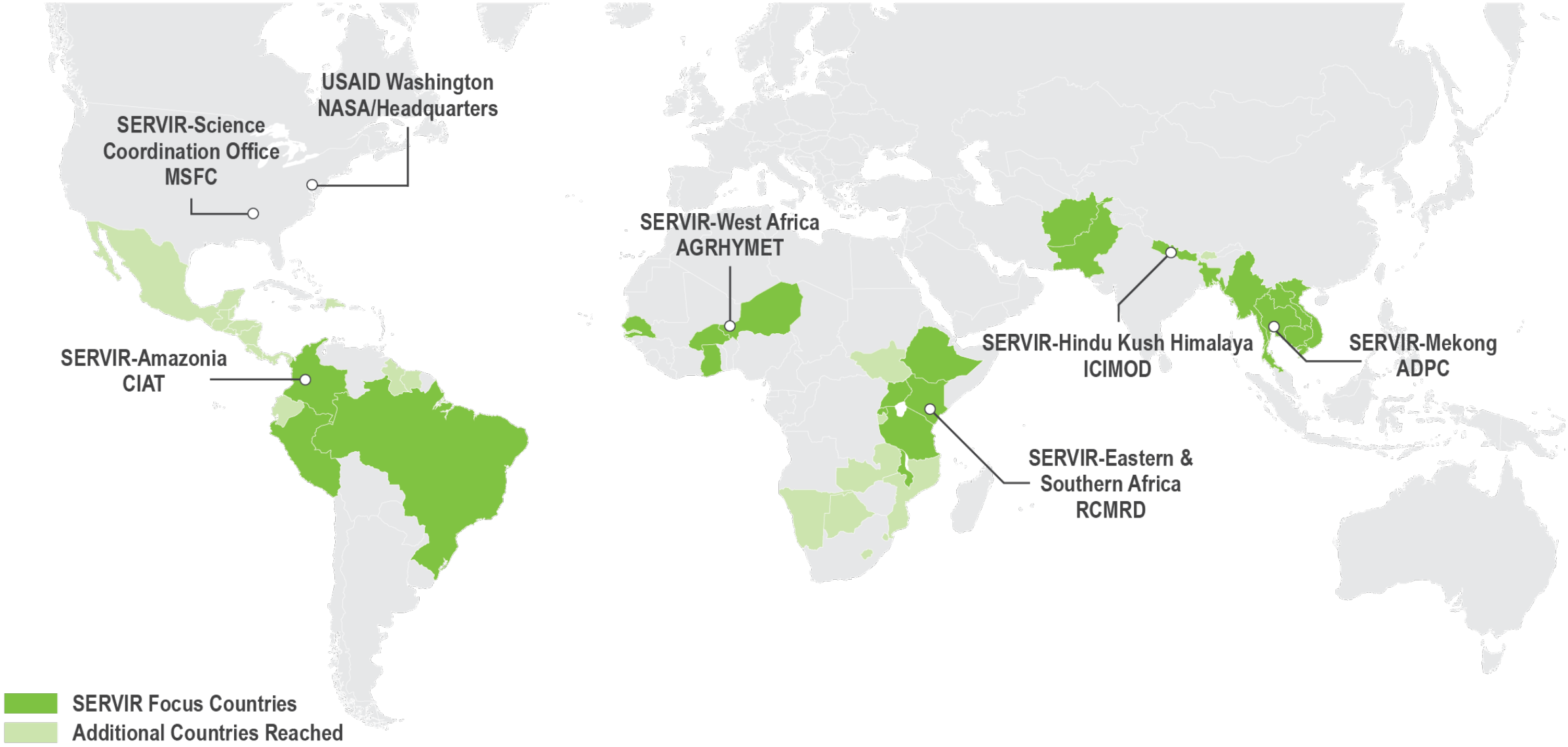
- Build lasting capacity through regional partners in the spirit of self-reliance
- Ensure needs-driven and collaborative solutions for accurate problem identification, buy-in, and sustainability
- Leverage best the US science







SERVIR Focuses on Countries in Asia, Africa, and the Americas



SERVIR Services Address Needs in Four Areas



Agriculture & Food Security



Water & Water-Related Disasters



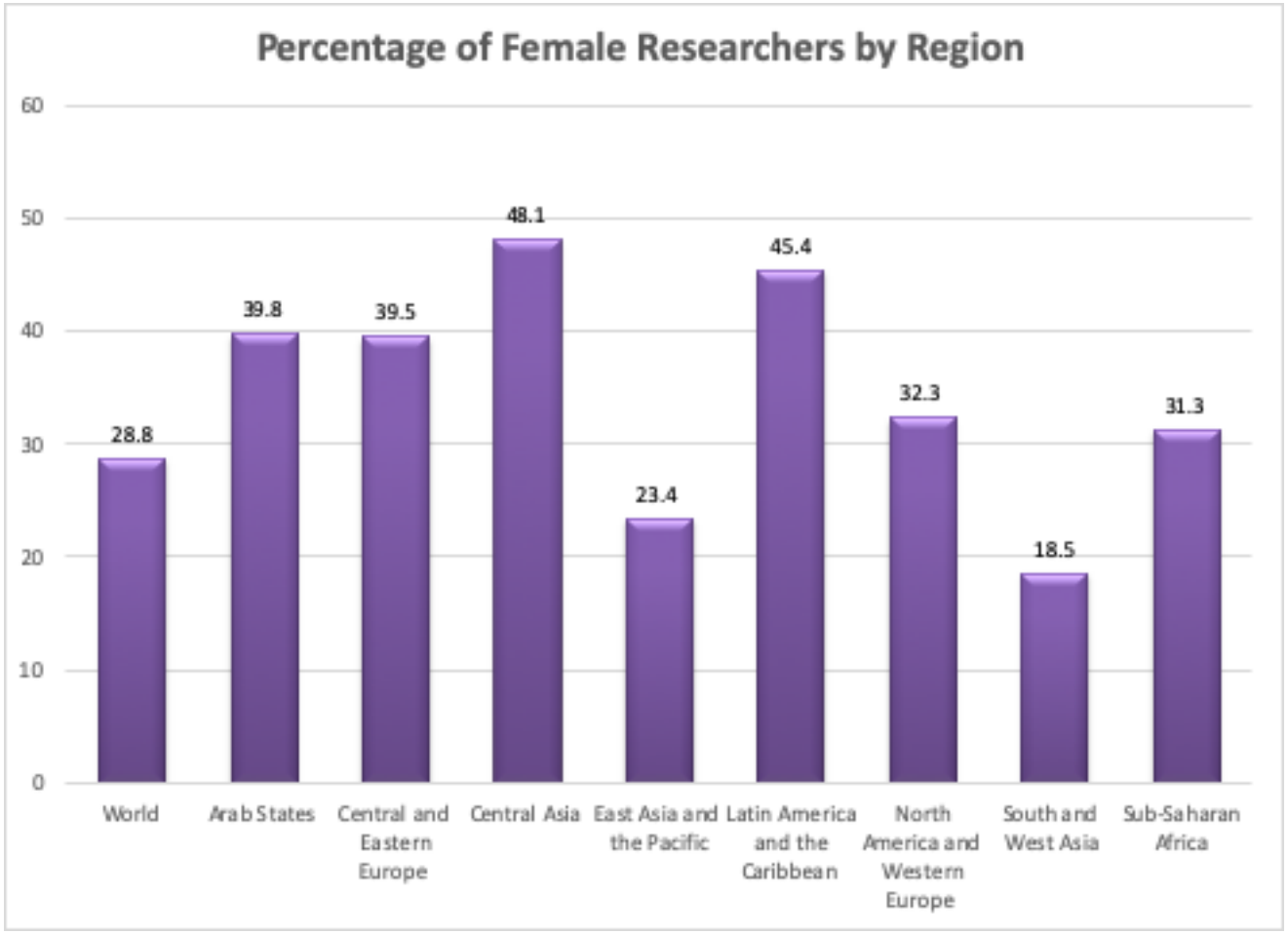
Land Cover & Ecosystems



Weather & Climate

The Development of SERVIR Gender Strategies

Studies show a near equivalent interest of boys and girls in STEAM fields in early childhood, however, this ratio declines sharply through time due to various pressures.



Source: UNESCO 2018

SERVIR Gender Strategy Objectives:

1. Build women leadership and gender champions in SERVIR and create a working environment that gives equal opportunity regardless of gender
2. **Empower women and girls to explore STEM fields in the countries and regions where we operate**
3. Integrate gender considerations within the service planning approach
4. Use remote sensing and GIS to address development issues in a way that is intentionally inclusive of:
   - women, taking into account how their experience is shaped by ethnicity, class, gender, sexual orientation, and other social signifiers
   - other social groups characterized by gender, ethnicity, age, and/or disadvantaged social status.

Empowering Women in STEM



- More than **35 women** across the SERVIR network
- **~50%** of full time staff at the SERVIR Science Coordination office are women
- Advancing the careers of women in **S&T**
- **Integrating gender** across SERVIR activities



What is WiSci

- The Women in Science (WiSci) STEAM Camp seeking to address the gender gap in education in STEAM
  - Intensive 2 week summer camp
  - Exposes girls to STEAM content from leading firms
  - Builds leadership skills
  - Provides a network of engaged and empowered young women from around the world
  - Provides mentorship



Image Source: World Learning
Used with permission

NASA @ The Women in STEAM (WiSci) Camp

400 girls empowered
from **20** countries including the United States

- 2 week intensive STEAM leadership camp for 100 high school aged girls from around the world
- NASA SERVIR supported hands-on Earth science content at :
  - WiSci Malawi (2017)
  - WiSci Namibia (2018)
  - WiSci Estonia and WiSci Kosovo (2019)



Image sources: Emily Adams

NASA @ WiSci – Curriculum approach
Malawi, 2017
Mapping our Changing World



Hands-on activities designed to allow the girls to interactively map our world, showcase how these problems are common worldwide, illustrate how land use changes impact our lives, no matter where we are from, and empower the girls to realize that their input makes a difference.

- Schedule:
  - 1 hour of classroom intro
    - Game play
    - Basic remote sensing and GIS concepts
  - Full day outdoor excursion to collect field points with their cell phones
  - 1 hour classroom wrap up showcasing field points and showcasing additional resources for continued learning



Image Sources: Emily Adams

NASA @ WiSci – Curriculum approach Namibia, 2018

- Building off of lessons learned in Malawi
- Utilized Google Earth Engine Code Editor to understand, visualize, and interpret Landsat imagery
- Linked content to Sustainable Development Goals



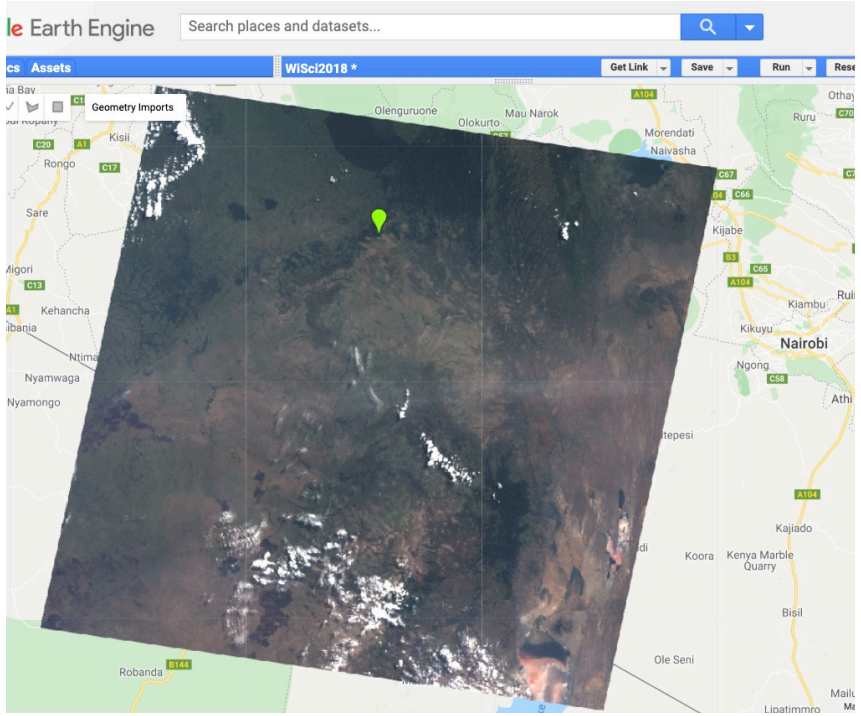


Image sources: Emily Adams

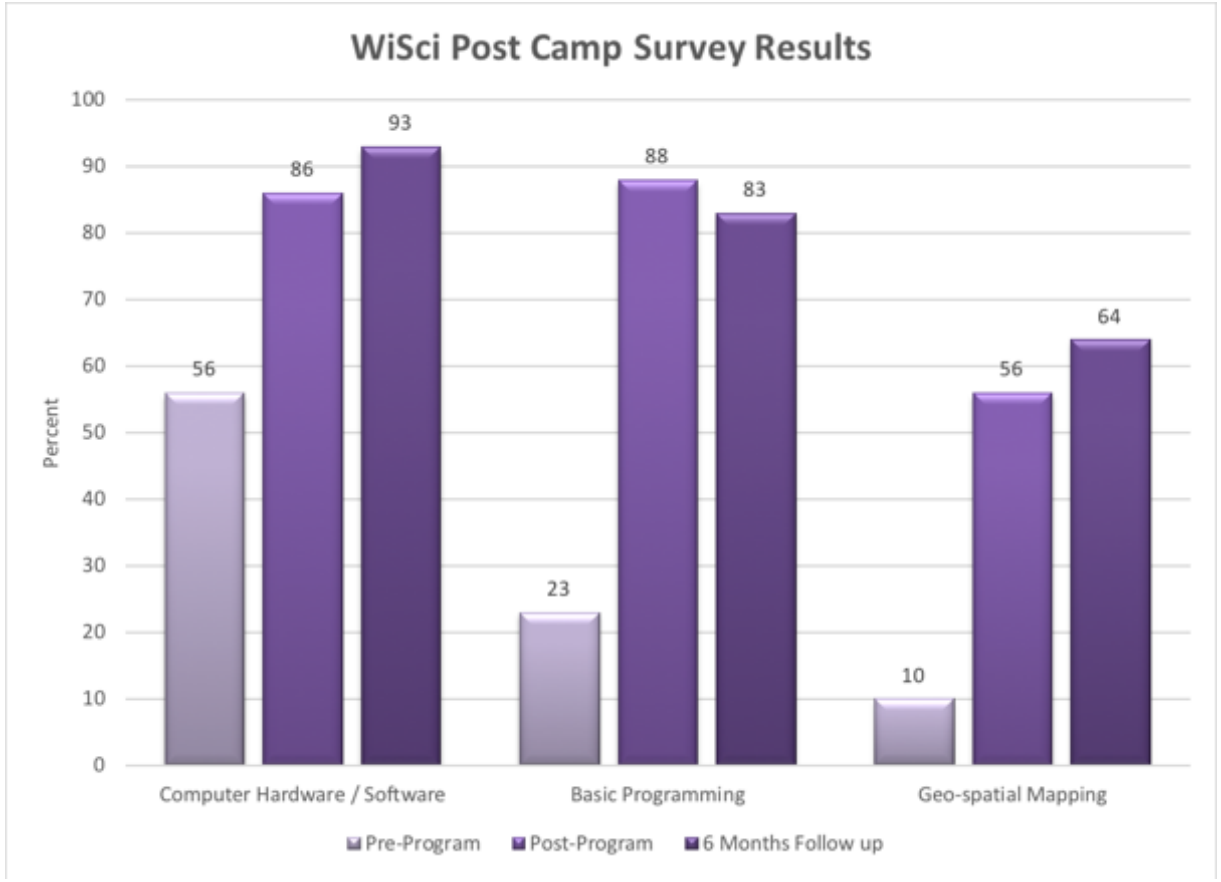
NASA @ WiSci – Curriculum approach Estonia and Kosovo, 2019

- **Introduced:**
- **New game concepts**
- **An offline program to examine precipitation data**
- **An opportunity for the girls to have unstructured time to explore the data and to present what they learned to the group**



Image source: Emily Adams

NASA @ WiSci Impact



The percentage of respondents who would rate their skills as “good” or “excellent”

Source: Used with permission from Girl UP



Image source: Twitter

https://sites.google.com/uah.edu/servir-wisci/home

Mentorship and Role Models

- Girls with role models are much more likely to consider STEM careers
- These role models can include fictional portrayals of women in STEAM fields, which are also few

- All WiSci Camps include a Mentor Hours session



Image source: Used with permission from Girl UP





Thank you!
Questions?

emily.c.adams@nasa.gov
@emily4eo





