



The Coastal Ocean Environment Summer School in Ghana

<https://coessing.org/>

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University of Michigan

2018 Ocean Sciences Meeting

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Dedication

Joel Bernard Arbic

April 11, 1969-December 2, 2017

FAMILY



Brian and Joel, Dec 1969



Dan, Brian, Joel, Mom, Dad, late 1980s



Joel, Shantala, Rowan, Remy, 2017

OUR OUTDOOR TRIPS



Virgin River Narrows, Zion, 1997



Top of Half Dome, Yosemite, 1998



Canadian Rockies, 2003

18 MONTH AROUND- THE-WORLD TRIP WITH SHANTALA



Namibia, 2007



Machapuchare Base Camp, Himalayas, 2008



Borneo, 2008

Outline

- My background in Michigan, Ghana, and oceanography
- Need for oceanography in Africa
- The Coastal Ocean Environment Summer School in Ghana
- Science Corps Africa: Expanding the summer school idea to other fields

My Michigan History



My hometown

- Rural (~15,000 people)
- Cold
- Snowy



U-M B.S. in Math and Physics, 1988

- Not as cold as Sault Ste Marie
- Much less snow

Notation

- In this talk “UM” = “University of Michigan”

Notation

- In this talk “U-M” = “University of Michigan”
- Apologies to those from other “M” states

Sault Ste Marie is as different from
Ghana as one can imagine...

- Cold and snowy

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- No fufu

Sault Ste Marie is as different from Ghana as one can imagine...

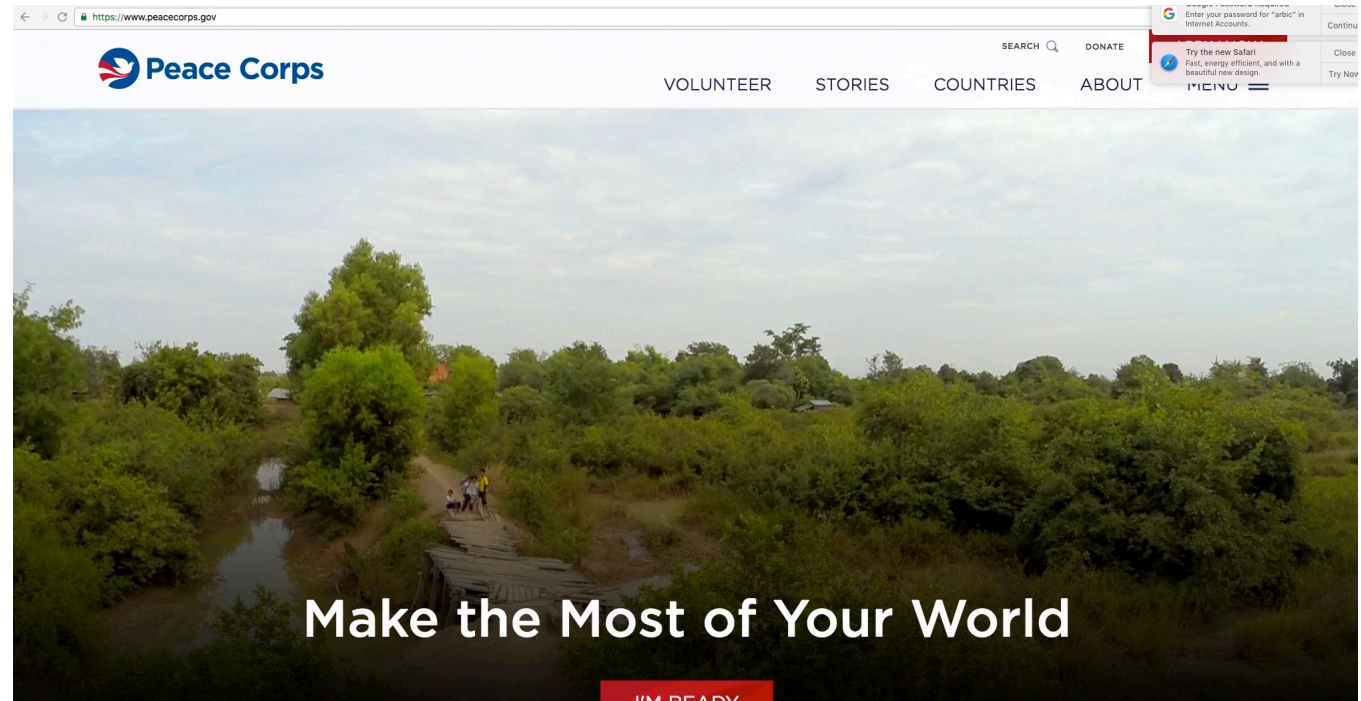
- Cold and snowy
 - Main ethnic groups Caucasian and Native American
 - No fufu
-
- What brought me to Ghana?

My history in Africa—Peace Corps

After receiving my U-M BS I joined the Peace Corps

Peace Corps sends US citizens all around the world to work on development projects

The idea for Peace Corps was announced by Presidential candidate John F. Kennedy right outside the University of Michigan Student Union in 1960

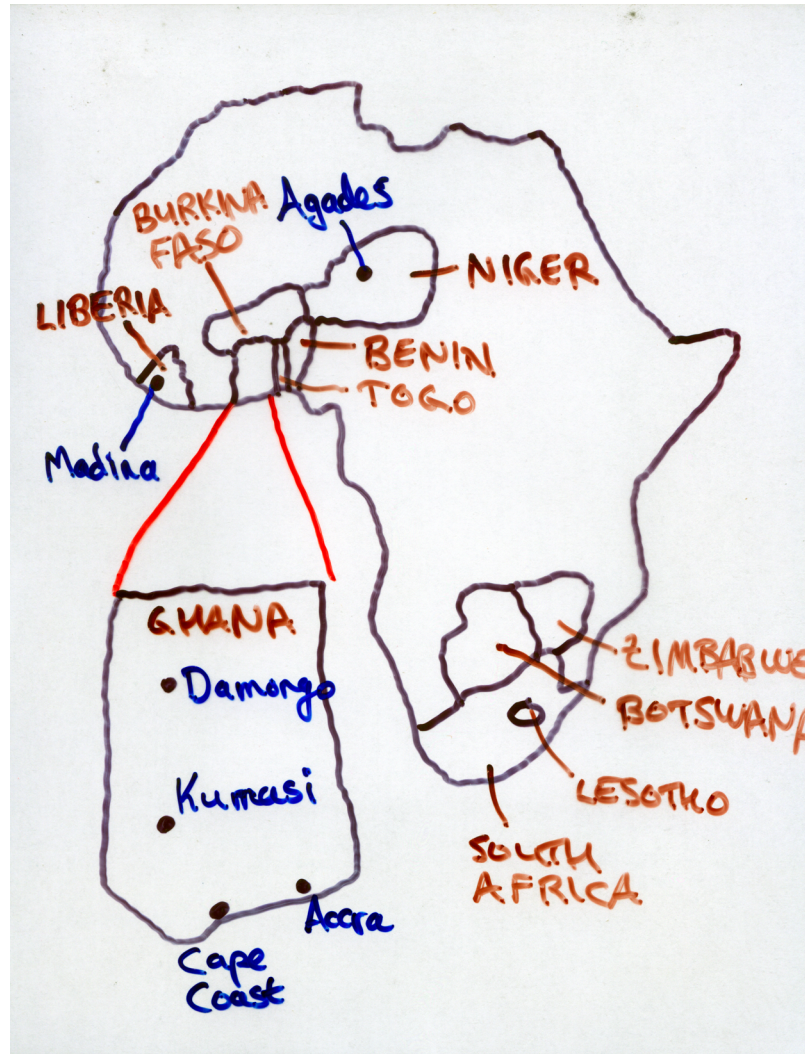


The Peace Corps

We take a different approach to making a difference. If you are inspired by impact that is hands-on, grassroots-driven, and lasting, get to know us. [Our Mission.](#)

IS PEACE CORPS RIGHT FOR ME?

My Peace Corps service



My Peace Corps service



←Liberian
refugee
camp in
Buduburam
Gamao, Ghana



In front of my
house in
Damongo→



Travel in
←Niger
and
South
Africa→

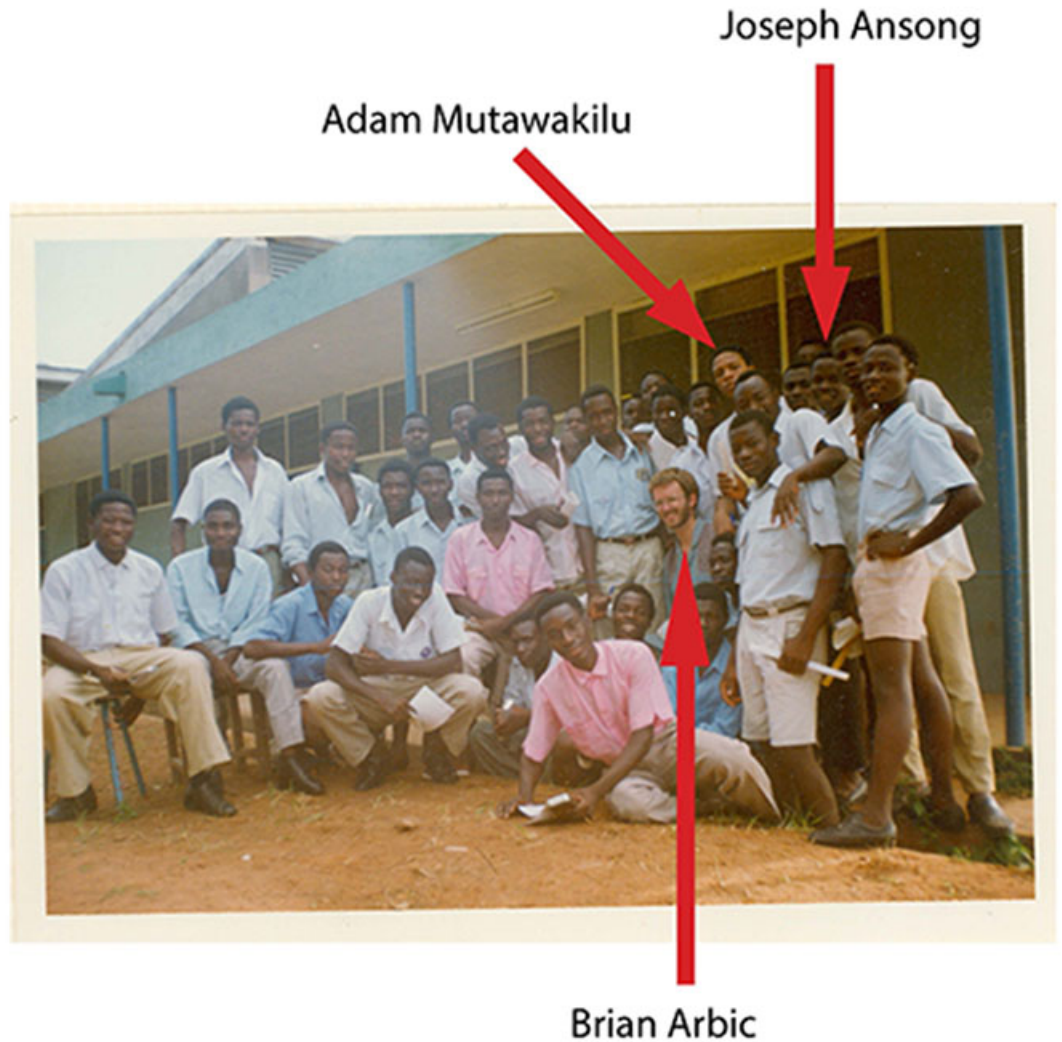


My Peace Corps service

Form 5 Science Class

Damongo Secondary School

1992



My oceanography research

Numerical simulations of the physical ocean

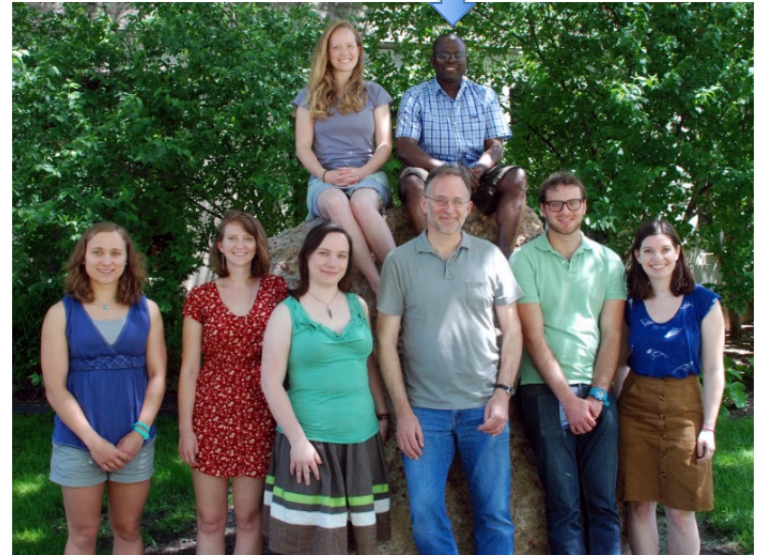
- waves
- tides
- currents and turbulent eddies

Simulations conducted on some of the largest supercomputers in US

Research funded by US Navy, National Science Foundation, and NASA

Research done by students, postdocs, and Navy/NASA scientist collaborators

Joseph Ansong



Group photo, June 2, 2016

Top, left to right: Paige Martin, Joseph Ansong

Bottom, left to right: Eliana Crawford, Anna Savage, Amanda O'Rourke, Brian Arbic, Conrad Luecke, Molly Range

Impact of damping on low-mode internal tides (Ansong et al. 2015)

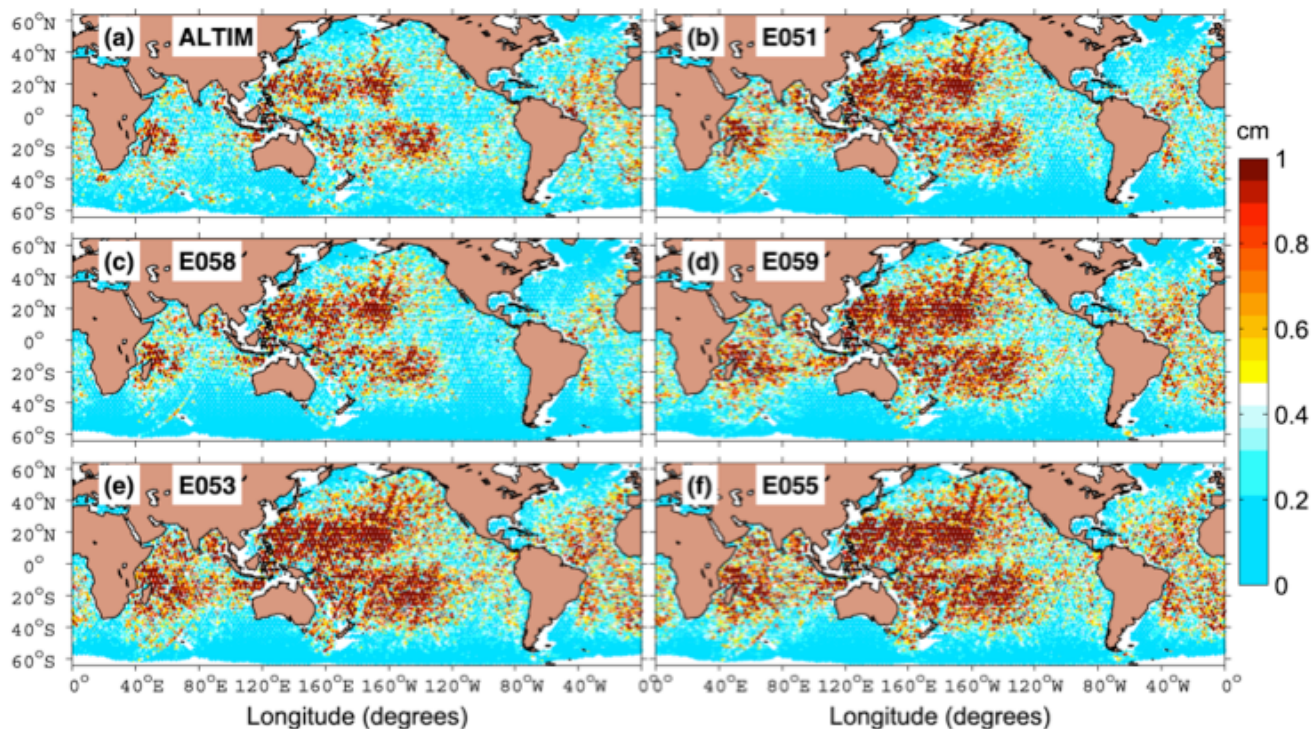


Figure 5. Amplitude (cm) of M_2 internal tide in (a) along-track altimeter-based analyses, and in HYCOM simulations (b) E051; with wave drag (scale factor = 0.5) applied to the bottom flow, (c) E058; with wave drag (scale factor = 1.0) applied to the bottom flow, (d) E059; with wave drag (scale factor = 1.0) applied to only the barotropic flow, (e) E053; without wave drag, (f) E055; without wave drag but with quadratic bottom friction increased by about 100 times along the continental shelves. The amplitudes of the HYCOM simulations are computed from 3 months of SSH output.

Reunion with Joseph Ansong

Re-union: Emails...

Left Email:
Sent: Sat, 10 Jan 2009 10:04:22 -0700
From: Joseph Ansong <jansong@math.ualberta.ca>
Subject: your former student
Hi Brian,
Hope you're doing fine. This is Joseph Ansong, your former student at Damongo Secondary School in Ghana. I had your email address from Mustapha.
I'm currently finishing my Ph.D. program in Applied Mathematics at the university of Alberta in Canada. I'm doing laboratory experiments on "Internal gravity waves generated by convective plumes" as well as "Turbulent plumes in stratified environments". I hope to be done by August of this year.
I was in San Antonio in November (2008) for the APS (Division of Fluid Dynamics) conference. It was great. I would have contacted you if I knew you were in Texas. Any way, I'm glad to be in touch again. All the best and happy new year.
Joseph Ansong,
Department of Mathematical and Statistical Sciences,
University of Alberta,
T6G 2G1.

Right Email:
Date: Sun, 11 Jan 2009 07:40:13 -0600 (CST)
From: Brian Arbic <arbic@utg.ig.utexas.edu>
To: Joseph Ansong <jansong@math.ualberta.ca>
Subject: Re: your former student
Hi Koj,
It is great to hear from you just a few days after hearing from Mustapha. I am extremely happy to hear that many of you have progressed further in education. Some months ago I also heard from Francis Aka-Eri and Seidu Jeremah, who as you probably know have each founded their own companies. If you are in contact with any of your other classmates (Red?) or with DASS science students in the years after yours whom I also taught (for instance Bilson Abdulai Dramani, or the students in the SSS system), please let them know that I would be happy to hear from them.
I spent most of November on vacation, so I probably wouldn't have been there when you were. I hope that you enjoyed San Antonio, it is a lovely town. I was taking my UTexas vacation hours before starting a new job, at El Paso State University. I have recently moved to ESU and hope to...

Michigan Today
Keeping alumni and friends connected to U-M
TOPICS: Around the World, Education & Society, Global Outreach
Surprise reunion
BY WILLIAM FOREMAN
January 11, 2012

Surprise reunion
Joseph Ansong (standing) and Brian Arbic (left) look through a scribbled-up notebook of Arbic's time as a Peace Corps volunteer in Ghana. Ansong was Arbic's student, and eventually made his way to U-M as a post-doctoral student under Arbic's office. It's hard to see to Professor Foreman's photo. (WILLIAM FOREMAN)

Brian Arbic flipped through a scribbled-up notebook from his days as a Peace Corps volunteer teaching math and physics in Ghana nearly 20 years ago. He found an old class roster, neatly written by hand on ruled paper, and pointed to the name of one of his best students—Joseph Ansong. Before leaving the western African nation to pursue an academic career, Arbic visited Ansong, who had moved to a new school. The American was sad to see it was a shabby place with poorly trained teachers who often skipped class. The son of a poor cocoa farmer, Ansong couldn't afford a better school. The future didn't look bright for him.

Re-union: The visit...



Need for oceanography in Africa

- Marine issues are numerous
 - Overfishing
 - Pollution
 - Shipping and navigation
 - Offshore oil drilling
 - Sea level rise and coastal erosion
- Oceanography is a global science that needs global measurements conducted by a global network of scientists
- Africa is the continent left out of the discussion

The Coastal Ocean Environment Summer School in Ghana

- Began with idea to form an oceanography summer school in collaboration with Ghanaian universities
- Initial funding from US National Science Foundation
- Joseph Ansong and I took an exploratory trip to Ghana in August 2014
 - My first time back to Ghana since 1993
 - Right in the middle of the Ebola panic
 - Most dramatic change: cell phones
 - Visited several potential partners (KNUST, U-Ghana, U-Cape Coast, Regional Maritime University)

The 2015 Coastal Ocean Environment Summer School in Ghana

First summer school held for one week in August 2015, at Regional Maritime University.

Four lecturers from US (U-M, U-M, U-New Orleans, WHOI), a few lectures from Ghanaians.

About 30 regular attendees.

Wide-ranging curriculum included physical oceanography, chemical oceanography, remote sensing, marine law.



The 2016 Coastal Ocean Environment Summer School in Ghana

Second summer school held for one week in August 2016, at University of Ghana.

Obtained more funding for 2016-2017 summer schools, from various sources in Ghana and at University of Michigan.

Eight lecturers from US (U-M, U-M, U-M, U-M, Oregon State, Scripps, WHOI, U-New Orleans), more lectures from Ghanaians.

About 100 regular attendees.



The 2016 Coastal Ocean Environment Summer School in Ghana

2016 school expanded to include labs, a field trip, and expansion into environmental as well as marine science.

Four UM undergraduates undertook environmental case studies, all of which will be published in educational journals.

The undergraduates constructed a website for the school, <https://coessing.org>



The 2017 Coastal Ocean Environment Summer School in Ghana

Third summer school held for one week in August 2017, at Regional Maritime University.

Ten lecturers from US (U-M, U-M, U-M, Oregon State, Scripps, WHOI, U-New Orleans, UC Berkeley, U-Southern Mississippi, NASA JPL), and lectures from Ghanaians.

About 100 regular attendees.

Attendees from Nigeria and Liberia as well as Ghana.

Boat trip with instrument deployments added.



2018 school

- Will be held at University of Ghana
- Joseph Ansong now has a permanent position there
- Some funding from International Centre for Theoretical Physics in Trieste, Italy

Who are the participants?

- Government and private sector employees
 - Ghana Petroleum Commission
 - Ghana Shipping Authority
 - Ghana Meteorological Agency
- Undergraduate and graduate students, and some faculty, from several Ghanaian universities
- Number of applicants continues to increase—will have to turn some of them down
- More graduate students
- Participants from outside of Ghana (e.g. Nigeria, Liberia)

What are the long-term goals of the summer school?

- To increase the number of MS and PhD level scientists in Africa working in the marine sector
- To increase the participation of African scientists in the global oceanographic endeavor i.e. international meetings etc.
- To inspire similar oceanographic schools in other African countries

Who might fund the school beyond 2017?

- We are talking to/working with
 - The US Office of Naval Research
 - Private foundations
 - International Centre for Theoretical Physics
 - NGOs such as CRDF Global

Adding research projects to the school

- We would like to add research projects to the school
- One idea is to establish a network of tide gauges around Africa to monitor sea level rise

The global tide gauge network



Data

Network

Research

Products ▾

GLOSS

About ▾



Network Status

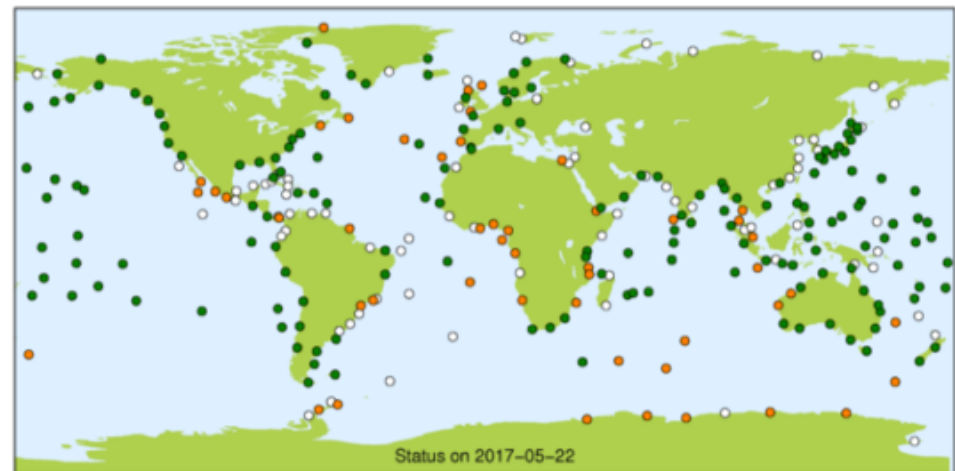
The UHSLC datasets are GLOSS data streams (read more [here](#)). There are many tide gauge records in the UHSLC database, but the backbone is the GLOSS Core Network (GCN) – a global set of ~300 tide gauge stations that serve as the foundation of the global in situ sea level network. The network is designed to provide evenly distributed sampling of global coastal sea level variation at a variety of time-scales. For more information on the selection and standards required of GCN stations, please see the [GLOSS Implementation Plan 2012](#).

The maps to the right show the status of GCN stations in the UHSLC data streams (graphics courtesy of PSMSL). For each stream, the colored circles indicate whether a site is operational (green marker), has been operational in the past (orange marker), or never operated successfully for that particular stream (white marker).

All full summary of the network status for all GLOSS data streams is available here: [glossCoreNetwork.xml](#)

Fast-Delivery

Research Quality (JASL)



Updated in past 6 months (164)

Has some data (49)

No data (77)

Science Corps Africa: Expanding the idea to other fields

- Inspired by the example of the Peace Corps, we are working on developing a “Science Corps Africa”.
- Idea is to establish a network of summer schools in oceanography and other STEM disciplines, to foster African STEM development through US/African partnerships in research and education.
- Could include private and government sector entities in Africa, as well as universities
- Lower the “activation barrier” for US scientists to come to Africa.

August 2014 reunion with Adam Mutawakilu



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Members of Parliament



Hon. Mutawakilu Adam
MP for Damang constituency, Northern

Names: Adam
Marital Status: Married (with five children)
Party: National Democratic Congress (NDC)
Religion: Muslim
Date of Birth: 2nd March 1972
Profession: Accounting
Education: 2008-2010 KNUST Commonwealth Executive MBA General 1999-2002 University of Ghana BSc. Honors in Accounting
Telephone:
Email:
Committees: Committee on Members Holding Offices of Profit

Employment:

- Government of Ghana District Chief Executive 2009-2013
- University for Development Studies Head of Treasury 2004-2009
- Ghana Education Service Class Tutor 1996-2003
- West Gonja Hospital Laboratory Assistant 1992-1993

Other Information:

August 2017 reunion with many former students in northern Ghana

