POTHOLES AND PITFALLS ALONG THE ROAD TO RESEARCH AND STUDYING ABROAD IN HAITI

Geological Society of America Meeting

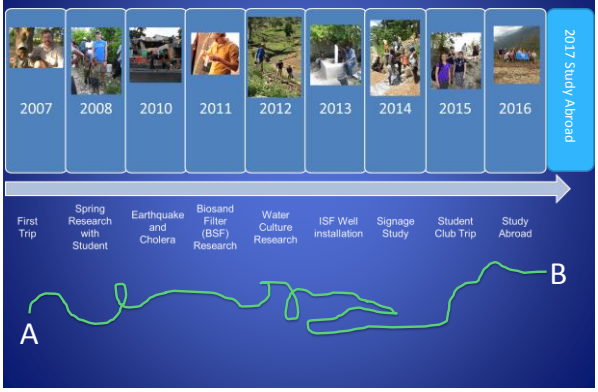
Seattle, WA
October 23, 2017

2017 GVSU Study Abroad student headed to Caribbean island

Dr. Peter Wampler, Geology

Grand Valley State University
Geology Department

My Non-Linear Journey in Haiti



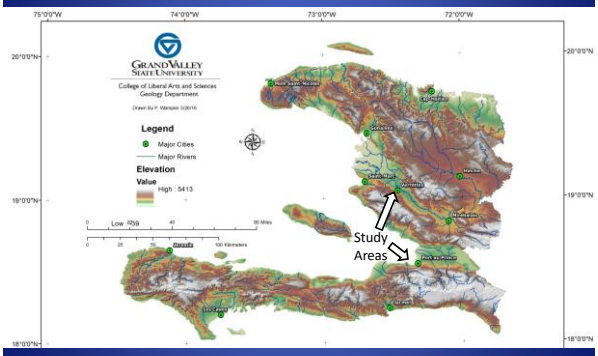
Collaborators

- Dr. Richard Rediske GVSU (AWRI)
- Dr. Azizur Molla GVSU (Anthropology)
- Dr. Dan Golembeski, GVSU (modern languages)
- Dawn Johnson, Renold Estime, Ellen Bolden, Hans Renord Pierre from Hopital Albert Schweitzer (HAS)
- GVSU students Hayley Schram, Danielle Deweerd, Andrew Sisson, Jared Kohler, Renato Delos-Reyes
- Sawyer Products, Inc.
- Students for Haiti Students
- Study abroad students !

HAS HÔPITAL ALBERT SCHWEITZER HAITI

SAWYER

Haiti Study Abroad Location



GVSU Haiti Study Abroad Program

Goat!

- Planning began in 2015 and the first trip was in 2016
- 4 weeks at 3+ locations
- "Adventure-based" service learning
- Exploring places and things that many people don't see in Haiti.

Why Haiti?

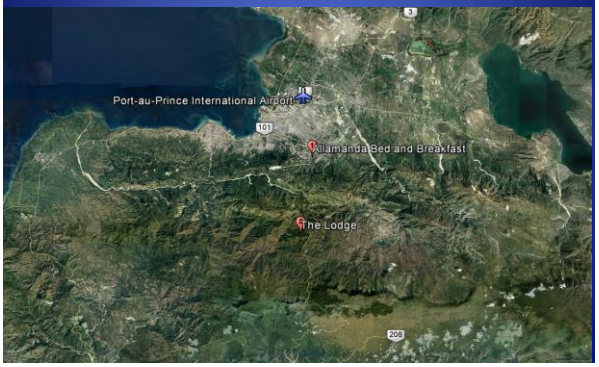
- Interesting karst geology and hydrology.
- Complex water resource, sanitation, and environmental issues.
  - Deforestation
  - Trash and contamination
  - Soil loss
  - Hurricanes, earthquakes, landslides, and flooding
- Complex social, economic, and cultural issues

HAITI "BOOT" CAMP (1-week)

- Cultural Immersion
  - The national museum.
  - Iron Market.
  - Historic hotels.
  - The catholic cathedral destroyed in the January 2010 earthquake.
  - Art Galleries
- In Furcy, high in the mountains above Port-au-Prince, we will hike, explore geology, and learn about ecology, hydrology, and environmental issues.

Artwork from the Iron Market

"Boot camp" locations



Discussing Duvalier at an art gallery

Touring a high-school science fair

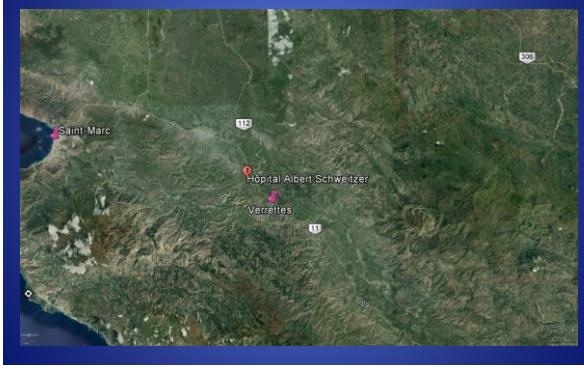
The Mountains above Port-au-Prince

GVSU Students Hiking the Road to Seguin

Service Learning (weeks 2-4)

- Combination of hikes, workshops, tours, and hands on service learning projects
- Water treatment and resources research

Deschapelles, Haiti



Service Learning Projects

- Share skills and experience through group and individual projects.
- Experience how difficult it is to help people in Haiti. What does it mean to do "smart good"?
- Participate in active water resources research in rural Haiti.
- Assist in education, outreach, and training workshops to share technology and knowledge.

2016 Study Abroad Students Crossing the Artibonite R. by barge

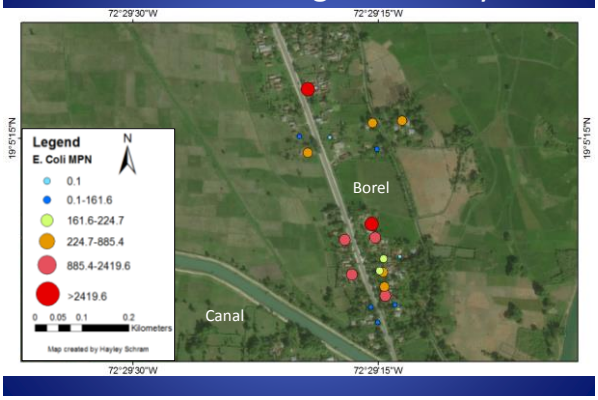
2016 Service Learning Projects

- Group service projects
  - Well installation (Three ISF wells)
  - Games and arts with kids
  - Water monitoring and sampling
- Individual Service learning projects
  - Presenting information about mental health to nursing students
  - Dance instruction
  - Hand-Dug well Water quality and DNA preservation study.
  - Entering data and organizing hospital documentation.
  - Observing doctors and dentists while working with patients (primarily pre-medical and dental students)

Hand-dug Well to ISF Well conversion

One of the three ISF wells we installed in 2016

2016 Hand Dug Well Study



2017 Service Learning Projects

- Group service learning projects
  - Health worker water treatment training in collaboration with HAS
  - Sawyer water Filter distribution in a remote village, schools, and local communities
  - After-School workshops for kids at Bibliothèque Communautaire Deschapelles (community library)
    - Human Body
    - Musical instruments
    - Water contamination and filtration
- Individual Service learning
  - Science Curriculum Development for schools
  - Water system testing for local hospital (Chlorine and bacteria)
  - Sawyer Water Filter Testing
  - Medical Observations
  - Piano Lessons

Sawyer Filter - ~ $15 w/bucket

2017 rural community filter distribution

2017 Water Filter Distribution Training Certificates

2017 Community Water Filter Distribution

2017 Follow-up Sawyer Filter Study

Sample_No	Site Name	Water Sampled	Cond. (µS)	Temp. (°C)	Coliform (MPN)	E. coli (MPN)
060717-01	Ba Doba	unfiltered	511	29	2419.6	172.3
060717-02	Ba Doba	filtered	511	29	0.1	0.1
060717-03	Ba Doba 2	unfiltered	518	29.3	2419.6	204.6
060717-04	Ba Doba 2	filtered	518	29.3	4.1	0.1
060717-05	Ba Doba 3	unfiltered	650	30.6	8.5	0.1
060717-06	Ba Doba 3	filtered	650	30.6	0.1	0.1
060717-07	Ba Doba 4	unfiltered	549	30.6	2419.6	1986.3
060717-08	Ba Doba 4	filtered	549	30.6	3.1	0.1
060717-09	Ba Doba 5	unfiltered	449	30.4	2419.6	21.8
060717-10	Ba Doba 5	filtered	449	30.4	0.1	0.1
060717-11	Ba Doba 6	unfiltered	255	30.3	2419.6	15.8
060717-12	Ba Doba 6	filtered	255	30.3	0.1	0.1
060717-13	Ba Doba 7	unfiltered	387	29.8	2419.6	160.7
060717-14	Ba Doba 7	filtered	387	29.8	0.1	0.1
060717-15	Ba Doba 8	unfiltered	478	30.7	2419.6	39.9
060717-16	Ba Doba 8	filtered	478	30.7	2419.6	0.1
060717-17	Ba Doba 9	unfiltered	333	30.7	1413.6	195.5
060717-18	Ba Doba 9	filtered	333	30.7	1	0.1
060717-19	Ba Doba 10	unfiltered	466	31.4	2419.6	2
060717-20	Ba Doba 10	filtered	466	31.4	0.1	0.1
060917-01	Nadine	unfiltered	288	29	816.4	0.1
060917-02	Nadine	filtered	288	29	21.3	0.1
060917-03	Rhigaro	unfiltered	353	29.7	2419.6	19.9
060917-04	Rhigaro	filtered	353	29.7	131.4	0.1
060917-05	Jirlande	unfiltered	407	30.2	2419.6	4.1
060917-06	Jirlande	filtered	407	30.2	85.3	0.1
060917-07	Mela	unfiltered	325	29.4	2419.6	1413.6
060917-08	Mela	filtered	325	29.4	7.5	0.1
060917-09	Archi	unfiltered	486	29.4	2419.6	18.1
060917-10	Archi	filtered	486	29.4	435.2	0.1
Average			**430.4**	**30.0**	**1146.3**	**141.9**
Geometric Mean			**417.4**	**30.0**	**60.8**	**1.6**

Table 2. Raw data collected from 15 homes near Deschapelles, Haiti. Values of 2419.6 exceeded the upper detection limit. Values of zero are indicated as 0.1 to allow calculation of geometric mean.

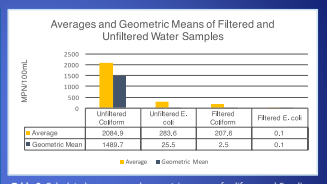
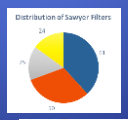


Table 3. Calculated averages and geometric means of coliform and *E. coli* concentrations in filtered and unfiltered samples Values of zero are indicated as 0.1 to allow for calculation of geometric mean.



Community Health Workers School Directors & Schools and Local Community

Source: DeWeerd et al, 2017

Musical Instrument Workshop

Lessons Learned

- Travel in Haiti, although complex and non-linear, can be safely accomplished through contacts in Haiti who can identify and avoid potential safety issues.
- The Interdisciplinary study abroad approach has strengths and weaknesses, but overall the strengths outweigh the weaknesses.
- Student Research should:
  - Be sensitive to those your are attempting to help (Smart good).
  - Be carefully planned and implemented to reduce the potential for unintended consequences.
- Service project expectations should be clearly defined for the students and discussed as the trip progresses.

Questions?

For more information go to www.gvsu.edu/haitiwater