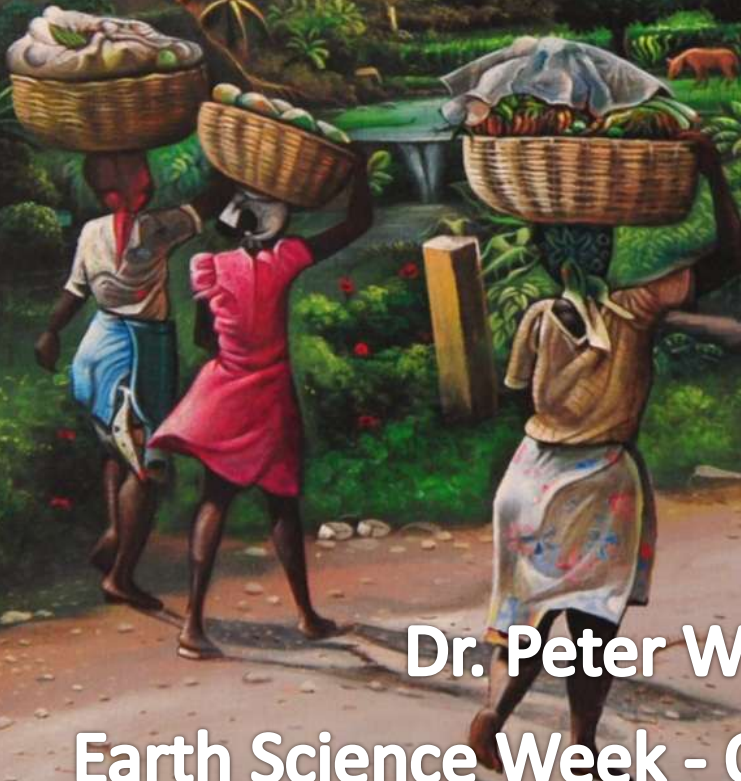


Water Resources of Haiti

The good, the bad, and the ugly



Dr. Peter Wampler

Earth Science Week - October 18th 2011

Presentation Outline

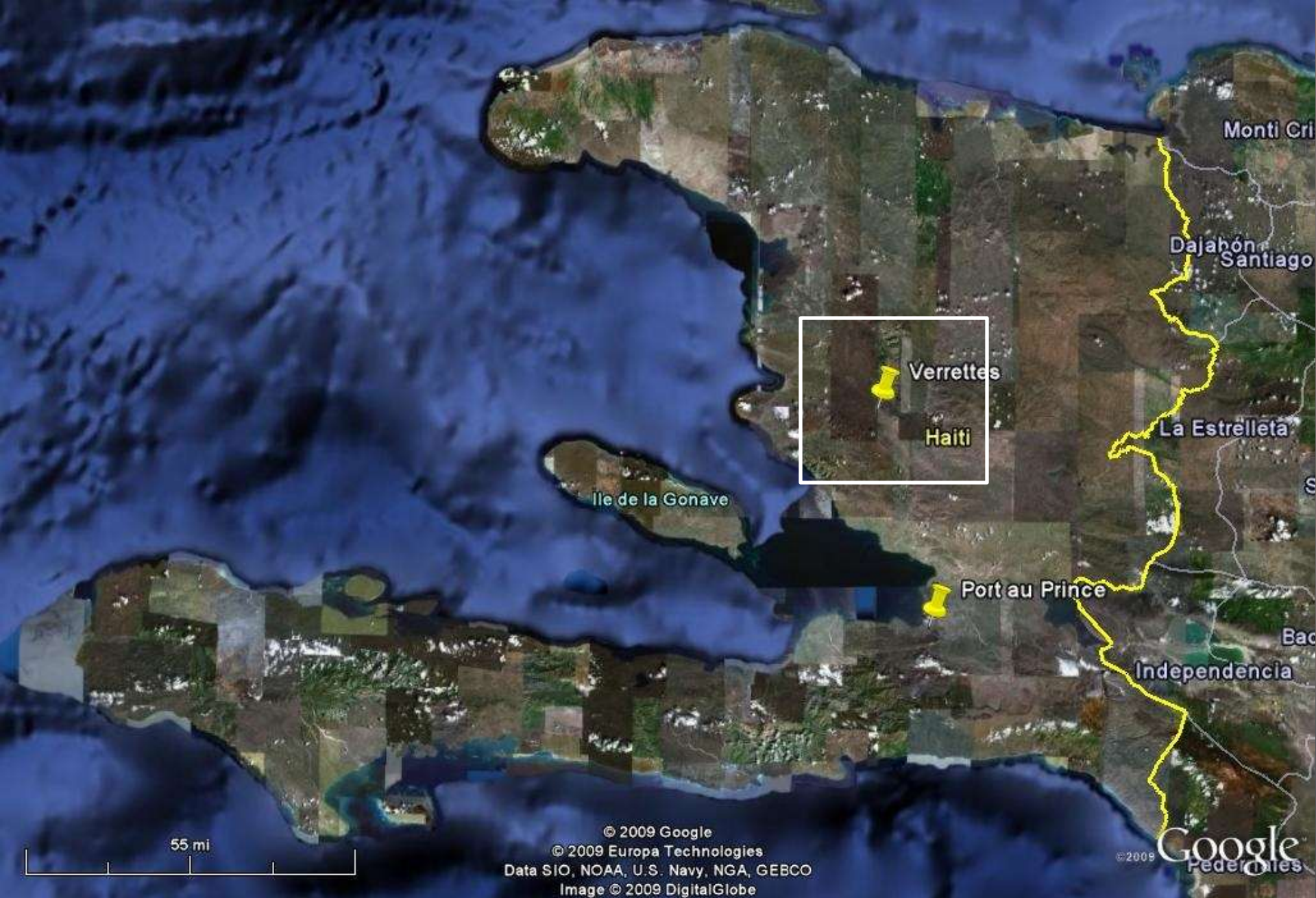
- Geography Primer
- The good
- The bad
- The ugly
- What can be done to make “the ugly” beautiful and “the bad” good...



Location

This map illustrates the location of the study area within the Caribbean region. The main map shows the Caribbean Sea, bordered by North America to the north, South America to the south, and Central America to the west. The Atlantic Ocean is to the east. Key landmasses labeled include Cuba, Haiti, and the Dominican Republic. A green star marks the location of the study area in Haiti. An inset map provides a detailed view of the Caribbean Sea, showing the North American Plate moving northward and the Caribbean Plate moving eastward. The inset map also labels various islands and cities, including Cuba, Haiti, Santo Domingo, Port-au-Prince, and Puerto Rico. The inset map is credited to Google.





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Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Image © 2009 DigitalGlobe

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Federal

The Good

- Amazing people with caring families



Mother and son in Moreau Pay



Internet Café under tarps in Port au Prince



Photo by Jared Kohler



Photo by Jared Kohler

The Good

- Amazing people with caring families
- Young people with great potential



Curious Children in Liancourt



Middle-school kids in Port au Prince



Photo by Jared Kohler

Université Quisqueya

Port au Prince



The Good

- Amazing people with caring families
- Young people with great potential
- Very productive climate – if you provide soil and water it will grow!



Gourde Tree for which the
Haitian Currency is named



Corn growing in the high mountains



Photo by Jared Kohler



Photo by Jared Kohler

The Good

- Amazing people with caring families
- Young people with great potential
- Very productive climate – if you provide soil and water it will grow!
- Abundant water



Typical Spring in Haiti

Groundwater emerging from a karst aquifer







The Good

- Amazing people with caring families
- Young people with great potential
- Very productive climate – if you provide soil and water it will grow!
 - Most productive of the French colonies (“The jewel of the Antilles”)
- Abundant water
- Many people who want to help



Photo by Jared Kohler



FERME EXPERIMENTAL MAUGER
INRNDR <> CRDA <> ODVA <> NTAC (TAIWAN)



The Bad

- Dysfunctional government and complex (usually negative) relationship with foreign governments



Statue honoring an unknown freedom fighter (Negre Marron)



2008 food riots in Port au Prince

200 Years of HISTORY



George Braithwaite, 1st Baronet, 1750-1820



Thomas Maitland, 1780-1825



Robert Wedderburn, 1780-1825



George Canning, 1781-1827



John Thomas, 1781-1827



George Canning, 1781-1827



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George Canning, 1781-1827

2010 Presidential Election



The Bad

- Dysfunctional government and complex (usually negative) relationship with foreign governments
- Ecologically “broken” and virtually all water is contaminated
 - Macro-scale deforestation
 - Micro-scale soil loss



Dominican Republic

Haiti







Typical Haitian “stove”



Student Andrew Sisson standing on Pinnacle Karren

Summary of 2011 Results

Source Type	N =	Total E Coli (avg) cfu/100 ml	Total Coliform (avg) cfu/100 ml
BSF Source Water (Fountain)	2	0.0	74.1
BSF Stored Filtered Water	21	1.0	534.1
BSF Water Filtered Today	31	19.0	368.5
Canal (river water)	1	517.2	2419.6
Chlorine Treatment	1	0.0	0.0
Commercial Well	2	14.5	643.2
Deep Well	7	0.1	6.7
Fountain	30	6.5	454.6
Hand Dug Well	18	383.4	2653.8
Hand Pump Well	27	0.4	105.9
River	8	703.3	5365.5
Sawyer Filter	6	0.0	403.3
Sediment Basin	3	0.3	23.9
Spring (capped)	8	43.6	371.5
Spring (uncapped)	13	58.2	1773.3
Treated Household Water	2	0.0	0.0
Total (avg of all samples)	180	84.8	887.5

The Ugly



Cemetery in Port au Prince



Tent Cities in Port au Prince

- **January 12, 2010 magnitude 7.0 earthquake**
 - 316,000 people killed
 - 300,000 injured
 - 1.3 million displaced
 - 97,294 houses destroyed and 188,383 damaged

January 2010 Earthquake



“Acute-on-Chronic” – Dr. Paul Farmer’s description of the January, 2010 Earthquake and it’s relationship to systemic problems in Haiti



Source: <http://www.medindia.net>

The Ugly

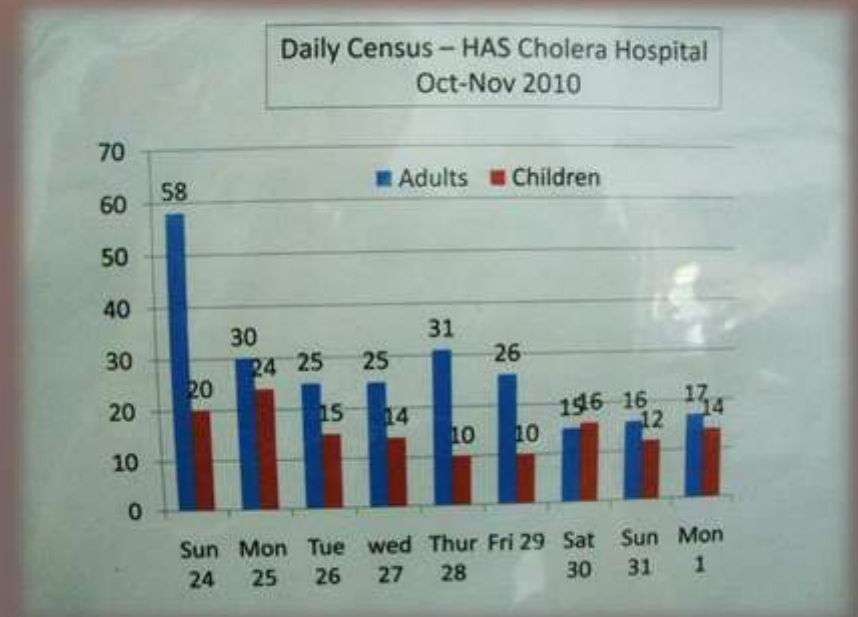


Source: <http://current.com>

- January 12, 2010 magnitude 7.0 earthquake
- 2010 Cholera outbreak
 - Over 2,000 dead



Washington Times – November 10, 2010



LA Times – November 10, 2010

"The factors that determine an outbreak of cholera, epidemic or pandemic are complex and ecological,"

Dr. Stephen Jay, professor of medicine and public health at the Indiana University School of Medicine in reference to the recent Haitian Cholera epidemic

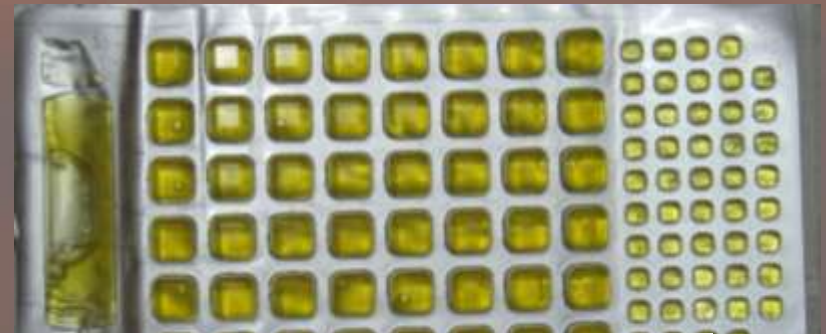
The Ugly



- **January 12, 2010 magnitude 7.0 earthquake**
- **Cholera outbreak**
- **Poor sanitation and water-borne diseases**



Contaminated Reservoir



Lake Michigan

[Larger Photo](#)

E. coli levels prompt beach closure

South Beach in South Haven closed due to bacteria

Updated: Friday, 25 Jun 2010, 6:57 AM EDT

Published : Friday, 25 Jun 2010, 6:57 AM EDT

SOUTH HAVEN, Mich. (WOOD) - South Beach in South Haven is closed this weekend after water samples revealed high levels of E. coli bacteria.

Public Health officials who reviewed the samples said that the bacteria counts showed a level of about 358 E. coli per 100ml of water, which is higher than the acceptable standard of 300 per 100ml.

The beach will remain closed throughout the weekend, and additional samples will be tested on Monday.

The city's North Beach has also been tested -- that water is fine to swim in, officials say.

E. Coli = 38,730 cfu/100 ml

What can be done?

1. In home filtration (Biosand filters, Sawyer Filters)
2. Sealing or conversion of hand-dug wells
3. Installation of deep wells and conversion of springs to hand-pump wells
4. Ecological restoration
5. Investment in education and empowering young Haitians

Empowering Haiti through Education Fund

YOU CAN HELP.



The Empowering Haiti through Education Fund exists solely to support “rising stars” from Haitian high schools, who, without financial support, would not be able to realize their potential and pursue higher education in the USA. The scholarship helps these students to attend Grand Valley State University so that, after receiving their education, they can return to Haiti and further that nation’s development.

Grand Valley State University Empowering Haiti through Education Fund

- Bring promising Haitian students to GVSU
- GVSU students could benefit from getting to know Haitian students.



“Classroom” in Petit Riviere, Haiti



GVSU students

Plan de discipline pour
la Salle de Classe
Règles:
1- À chaque intervention lever la main
2- Respecter ses mains et ses pieds
3- Rester assis au moment de
L'instruction
4- Manger seulement au réfectoire
5- Discuter quand c'est le moment
6- Seulement l'heure de récréation
est réservée aux jeux.

Jared Kohler

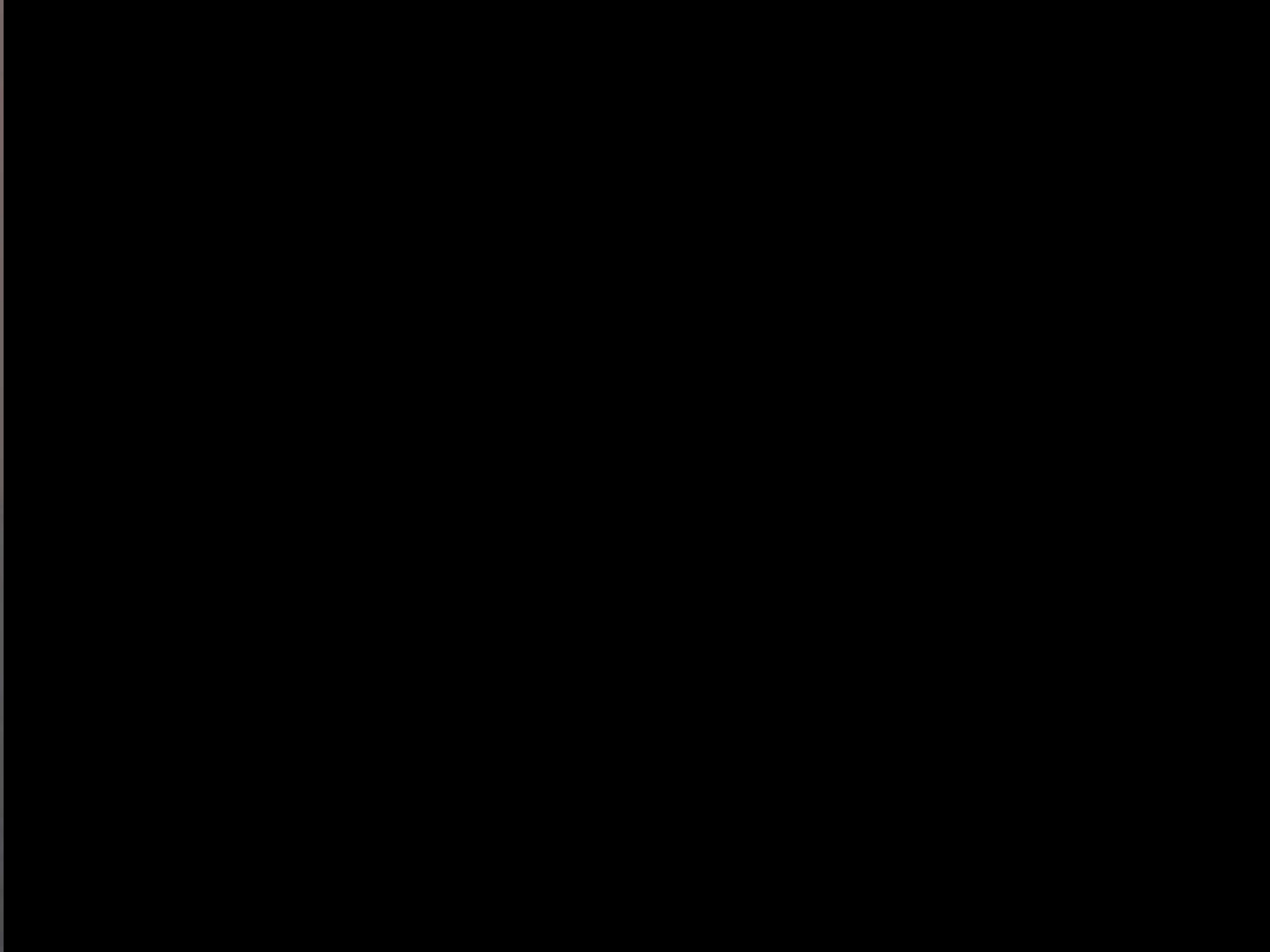
Andrew Sisson

Chris Hendree

BONNE ET HEUREUSE ANNÉE 20

077

Investing in the future of Haiti



Video by Jared Kohler

Questions ?



www.gvsu.edu/haitiwater

www.gvsu.edu/haiti

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