Climate Change! Maps! Action!
Public response to climate change projections presented via Google Earth

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Abstract

This presentation explores the effectiveness of the Geoweb as a successful means of communicating climate change to the general public. This will involve visual depictions of select aspects of climate change on Google Earth (GE), which will be presented to focus groups. Questionnaires will be given to participants to complete before, during and after the interactions with the Geoweb. It is expected that this research will yield mixed results on effectiveness of the Geoweb to communicate climate change.

Background and Relevance

Despite the overwhelming scientific evidence supporting the claim that humans are currently the main contributors to climate change, communicating this data in a compelling manner is no easy task. Climate change is not perceived as an urgent risk by the general North American public (Dilling and Moser 2007). Risk is defined as the likelihood that an individual will experience the effects of danger (Short Jr. 1984), whereas perceived risk is the subjective consideration of the probability of an accident happening and how concerned we are with the price of the negative outcome (Sjoberg et al. 2004). One of the struggles of communicating climate change is recognition and acceptance of the difference between actual and perceived risk involving climate change.

Other major barriers to communicating the negative effects of climate change include remoteness of impacts, lack of peer support and solution skepticism. Barriers to action combating anthropogenic forcing of climate change include lack of political will and leadership and cognitive barriers (Dilling and Moser 2007). Creative means for overcoming these barriers to climate change communication are in order.

This communication is viewed as extremely important for effective resolution of climate change issues. The United Nations Framework Convention on Climate Change calls for (1) the development and implementation of educational and public awareness programs on climate change and its effects; (2), the public access to information on climate change and its effects; (3) the public participation in addressing climate change and its effects and; (4) developing adequate responses (UN Framework Convention Climate Change 1994, article 6 paragraph i-iii). Support for mitigation measures may increase as the public becomes more aware of the causes of atmospheric greenhouse gasses (Seacrest et al. 2000). The United Nations and other international organizations recognize

that communication is the first step to help reduce greenhouse gasses.

This research aims to discover if the Geoweb is an effective means of achieving these goals. The Geoweb "is an integrated, discoverable collection of geographically related web services and data that spans multiple jurisdictions and geographic regions" (Lake et al. 2007). The presumption is that individuals and stakeholders now have the means to utilize free, user-friendly technology that is obtainable to anyone with access to an Internet-enabled computer or mobile device. It provides the ability to display and analyze geospatial data and add to that information without professional training (Rouse et al., 2007). It is hoped that since Geoweb platforms such as GE are free and user friendly, money and professional training will no longer be a barrier to allow individuals to easily interact with publicly accessible maps.

In terms of climate and environmental change, GE provides a means to visually "visit" remote and relatively inaccessible landscapes most vulnerable to environmental degradation and climate change. For example, the Sierra Club's display of the Arctic National Refuge is featured in GE Outreach's showcase. This enables users to "fly over" Northern Alaska to view environmental impacts of oil drilling, which has destroyed the once flawless landscape. Projections and flyovers may have the potential to dismantle current cognitive barriers hindering communication of the realities of climate change. This study seeks to present geospatial information displaying the effects of climate change in the most efficient way possible.

Methods

For the purposes of this study I will concentrate on one aspect of the Geoweb, the digital earth, GE. I chose GE because of its relative ease of use. Users can interact with GE using KML, which is a widely-used markup language. (KML is a dialect of XML.) Furthermore, GE is currently extremely popular with the general public, likely due to its versatility. GE appears to be exciting to navigate for an expert computer programmer or an average Internet surfer.

I will determine the effectiveness of communicating climate change by assessing the degree of learning that takes place during this study. Was the true immediacy of risk communicated effectively? Did the participants learn more than they knew before about climate change? Did GE aid in this process? One way to determine the answers to these questions would be to present spatial data depicting the risks of climate change to focus groups via GE. Possible examples of risks induced by climate change would be sea level rise and/or coastal flood surges. Focus groups may be a good option for this study because focus groups encourage people to discuss their views and opinions with peers and the researcher simultaneously. Focus groups are also a good way to assess the ease of use and interface design as the participants may discuss struggles and achievements with each other throughout the exercise. Other options for gathering data are being considered to reveal the effectiveness of the Geoweb as a means of communicating climate change.

Furthermore, this study will investigate the likelihood that these new ways of displaying spatial data illustrating the effects of human-induced climate change will spark community action. Information alone will not necessarily change behavior (Schmel 2004, Dilling and Moser 2007), but perhaps a convincing interactive map made available on the web may aid in this process. For the purposes of this study, "effectiveness" will be measured via a questionnaire. The participants will fill out the questionnaire before the exercise and as they navigate the information presented in GE. The questionnaire will aim to reveal participants perceptions of climate change during each process of the exercise.

This research will be conducted in Barbados, a small island developing state (SIDS). SIDSs contributes the least to global climate change, they are among those that will suffer the most from it (UN General Assembly 1994). They are vulnerable due to their small size, insularity and remoteness, environmental factors that limit disaster mitigation capability and demographic and economic structure (Pelling, 2001, UNFCCC 1994, Belle et al. 2005). This research will attempt to understand how do people living in SIDSs think about climate change and how do they view risk imposed by climate change?

Conclusion

The impending results will reveal public response to climate change projections using digital earth and Geoweb applications. It is expected that the Geoweb will be an effective means of communication for some and not others. The digital divide still exists and will act as a barrier to hinder the effectiveness of GE as a means of communication climate change. Another barrier to communication via the Geoweb might be the participants' educational background and geospatial understanding. Recognizing and acknowledging participants' risk perception versus their actual risk is another communication hurdle that will need to be taken into consideration. However, it is also likely that some participants will embrace the technology and develop a meaningful understanding of the data presented and an ability to navigate through the data quickly and effectively. It is hoped that those who are able to navigate the digital earth smoothly will communicate with others about what they have seen and encourage others to view the data online. The first step to lessen the anthropogenic impacts of climate change is to communicate the impending risks and impacts. With creative new ways of communicating the effects of climate change it is hoped that new and creative ways of lessening the impacts of climate change will immerge. This research strives to discern the effectiveness of the Geoweb as a means of communicating climate change.

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