The Time Is Now: Climate Change Is Not Going Away

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Abstract

This paper attempts to address a fundamental problem in the way climate change is discussed. Whether it is a confusion of terms or unreliable data, or an outright denial of reality, the way in which climate change is discussed directly impacts potential solutions to it. A productive discussion regarding climate data modeling and visualisations, Climatization, climate change mitigation and adaptation policies, and other concepts will facilitate climate change readiness in countries around the world.

Keywords: Climate change, discussion, data modeling and visualisations, Climatization, climate change readiness
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Introduction

Climate Change is one of the greatest threats facing the 21st century. One of the greatest precursors to this problem is the way in which the topic is discussed and highly politicized, often with little understanding. To assist in alleviating this problem, this paper will briefly define a few important terms. According to chapter 18 in *Environment: The Science Behind the Stories, 5th Edition*:

**Climate** describes an area’s long-term atmospheric conditions, including temperature, precipitation, wind, humidity, barometric pressure, solar radiation, and other characteristics. **Climate** differs from **weather** in that weather specifies conditions at localized sites over hours or days, whereas climate describes conditions over years, decades, or centuries. **Global climate change** encompasses an array of changes in aspects of Earth’s climate, such as temperature, precipitation, and storm frequency and intensity. People often use the term **global warming** synonymously in casual conversation, but **global warming** refers specifically to an increase in Earth’s average surface temperature. Global warming is only one aspect of global climate change, but warming does in turn drive other components of climate change.

(Withgott & Laposata, 2014)

The scope of this paper addresses the necessity of a global conversation regarding climate change modeling and data visualizations to assist in the development of mitigation and adaptation policies.
A brief summary of each of the four scholarly articles’ significant findings is below:

**Using data digitalization to inform climate change adaptation policy: Informing the future using the present**

Mozambique serves as a case study for recovering data related to climate change. With Mozambique being “vulnerable to the effects of droughts, storms, and floods” (Munang et al. 2013), the data recovery is that much more vital for preparation. The government there will be better able to anticipate climate change threats or other concerns and hopefully be more proactive with that information available.

“Maintaining existing long-term datasets and conducting innovative, standardized measurements is critical to characterize climate processes and respond to climate variability and change” (Munang et al. 2013). Much of the data previously recorded on climate observations has been on paper, leaving research susceptible to water damage or fire damage, arson, or other extenuating circumstances.

**Interpreting climate data visualisations to inform adaptation decisions**

The little things matter greatly. It is noted in the article that “seemingly small details, such as the horizontal or vertical alignment of the visualisation, may have a notable impact on preferences.” (Doran et al. 2015). In other words, simply the scale and orientation of the x-y (or z) axis completely alter the perception of the data. The more information that is depicted on the visualization, the more people prefer them to explain “the multi-model spread” of information (Doran et al. 2015). Using intuitive, predictable colors improve people’s comprehension of the data being presented. In the concluding remarks, the authors state “Edward Tufte states ‘above all show the data’” (Tufte, 1983), but in using different visualisation styles, attributes and
techniques tailored towards a specific user community, we are inherently adding a layer of interpretation” (Doran et al. 2015).

**Climatization: A critical perspective of framing disasters as climate change events**

Climate Change is misunderstood and highly politicized. There is a general misunderstanding of terms and what they mean, prompting operative definitions of “disaster” “Climatization” and “securitized” (Grant et al. 2015). Disaster: ‘‘a serious disruption to the functioning of a community or a society involving widespread human, material, economic or environmental losses and impacts, which exceeds the ability of the affected community or society to cope using its own resources’ (UNISDR, 2009)” (Grant et al. 2015). Climatization is defined by the authors as “framing a disastrous event or degraded environmental condition as caused by climate change, in order to reach an intended goal or to distract the discussion from the real problem which might have a different root course than caused by the climate change effects” (Grant et al. 2015). “When a specific issue is securitized, it is ‘presented as an existential threat, requiring emergency measures and justifying actions outside the normal bounds of political procedure” (Buzan et al., 1998; Waever, 2008, 2011)” (Grant et al. 2015). In the article, climate change is noted as a potential excuse to not act to fix a situation, and Bangladesh is used as a case study.

**Barriers and opportunities for robust decision making approaches to support climate change adaptation in the developing world**

Climate change is inevitable, with the developing countries at an even greater risk and further behind. Robust Decision Making RDM (Bhave et al. 2016) is suggested as a better course
both politically and economically to get enough of the data to make a decision when time is of the essence; “Hence RDM relies on engaging decision makers and stakeholders to elicit their priorities, preferences and performance criteria for adaptation strategies, followed by modelling assessments across a large range of potential future conditions, including climatic, socio-economic and landuse [sic] changes” (Bhave et al. 2016). In their conclusions and future directions section, the authors indicate that “Future research directions need to consider real-world cases and to unravel some of the political economy of the decision-making space within which RDM sits” (2016).

**Discussion**

High quality data is the foundation for understanding, evaluating, and predicting outcomes related to climate change issues. In order to have a thorough discussion regarding the potential solutions of climate change adaptation or mitigation, the existing data collected needs to be stored more efficiently, as noted earlier (Munang et al. 2013). Perhaps as a matter of economic policy, it would be wise to invest in training programs for data-entry positions, in order to expedite the process of data digitalization resulting in more accurate climate change modeling and facilitating climate change policy. For countries such a policy is not feasible: According to the Central Intelligence Agency (2018), Mozambican access to electricity encompasses only 39% of the country, with approximately 66% of that being in urban areas. Obviously in these countries, alternative solutions will need to be created. One possible solution could be to create and disperse paper copies of the data to as many locations as possible. Another potential solution could be investment in travel expenses for scientists to go and share their research at several conferences.
Visualizing climate data accurately for a variety of audiences is central to sharing climate change models and developing mitigation and adaptation policies. In addition to climate modeling, a variety of discussion platforms, processes and approaches, such as Robust Decision Making (RDM), Decision Making Under Uncertainty (DMUU), Environmental Impact Assessment (EIA), and Strategic Environmental Assessment (SEA), assist a variety of audiences in identifying adaptation strategies that work reasonably well across large ranges of uncertain future climatic conditions (Bhave et al. 2016).

**Conclusion**

A thorough discussion of strategies for mitigation and adaptation to climate change is imperative. Unfortunately, many issues related to climate change must be addressed by the United States, as the US is the only country not participating in the Paris Agreement (Sampathkumar & Cockburn, 2017). A meaningful and productive conversation regarding appropriate climate change strategies is needed. The choice to accept climate change as a reality is fundamental to the conversation, as well as a sense of urgency to develop short-term and long-term strategies for mitigation where possible and adaptation where necessary. Part of this discussion will naturally entail identifying what is *climatization*, “framing a disastrous event or degraded environmental condition as caused by climate change, in order to reach an intended goal or to distract the discussion from the real problem which might have a different root course than caused by the climate change effects” (Grant et al. 2015), and what is not. This conversation must also keep in mind that to develop effective mitigation and adaptation strategies, participants must address the complex and often conflicting goals of citizens, stakeholders, politicians, governments, and scientists from around the world. Agreement upon a common set of definitions
as well as accurate data analysis, modeling and representation is also critical. In order to have a thorough discussion regarding the potential solutions of climate change adaptation or mitigation, the existing data collected needs to be stored more efficiently, as noted earlier (Munang et al. 2013). Perhaps as a matter of economic policy, it would be wise to invest in training programs for data-entry positions, in order to expedite the process of data digitalization. Where that is not feasible, local solutions need to be created and implemented as quickly as possible. See Discussion for some suggestions.

As mentioned earlier, much of the data previously recorded on climate observations has been on paper, leaving research susceptible to water damage or fire damage, or other “decay” (Munang et al. 2013). With the only copies being lost in floods or fires, data needs to be collected again, something that there is little time for. With the data that can be saved, more research will need to be done regarding how best to facilitate learning with the visualization of data.
References


Subheading: The Paris accord was signed by nearly 200 countries in December 2015


Citation based on Citation model provided by the CIA:


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