



CIGS Mr. Roger Pielke, Jr. Seminar

Extreme Weather and Climate Change: Science and Politics (Summary of Q&A)

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Venue: CIGS Meeting Room, Tokyo, Japan

Questioner 1: Referring to slide 36, have you done any sort of serial correlation analysis of this to detect some cyclicity of the graph? Is there any good research for cyclicity or correlation analyzed together with solar activity, solar flares, or sunspots? Referring to slide 42, damage to the United States by floods is a declining trend, and it seems to me it is quite natural to see that happen because people set up higher levies, so this is human protection against a natural disaster. Am I right? Lastly, do you attribute these foolish games of politics to simply one of the many partisan battles between the Republicans and Democrats, or is there a conspiracy theory behind it?

Roger Pielke, Jr.: One thing that has a lot of confidence in the scientific community is ENSO, El Nino Southern Oscillation. It has a strong relationship to hurricane landfall development regions, and there is an oscillation between the Western North Pacific and the Atlantic. In my opinion, the ability of scientists and meteorological agencies to predict what will happen in the next year is not so good. To answer the second question, the United Nations has an objective to reduce economic losses from natural disasters as a proportion of Gross Domestic Product (GDP). Global weather losses and overall losses as a proportion of GDP have gone down since 1990. Going into your third question, when there is more wealth around the world, then every earthquake-prone region eventually will become prepared for earthquakes, like Japan. Every hurricane-prone region will become prepared for hurricanes, like Miami. Taking a look at Bangladesh, we have seen enormous disasters from typhoons and cyclones, but now we see less because there is more preparation, warnings, and so on. About your last question, I do not believe in conspiracy theories, but I do think part of this issue has become enhanced by the use of natural disasters in climate campaigns. ‘Loss and damage’ is an idea that if we can attribute part of the costs of disasters, then we can explain why rich countries have to give money to poor countries to improve adaptation. This could state a political overlay on science.

Questioner 2: We often hear from experts that it is not the number of typhoons that is the problem, but the intensity. There will be less category 1 typhoons but more category 5s. So, we will have to prepare for the possibility of a category 5 which makes it more difficult to prepare and protect ourselves. Do you agree with this idea? Do you think the kind of studies about extreme events and event attribution will eventually decrease uncertainty between the extreme global events and the man-made greenhouse gases or the overall global climate change?

Pielke: To answer your first question, it is definitely true that the more intense hurricanes cause the great majority of the damage. For example, in the United States, category 3 hurricanes and greater cause 85% of the damage. They are less in frequency

but greater in the damage they cause. It seems completely plausible to me that over the century, we might expect fewer overall storms, but the ones that do occur would be more intense. We created a simple mathematical statistical paper that looked at a set of climate models and assumed that their predictions were true. From this paper, we were able to deduce that the predicted effects of the hurricanes could occur, at shortest, many, many decades from now. So, it does make sense to prepare for extreme events. Regarding event attribution studies, they are studies that use climate models and run climate models with no greenhouse gas forcing. The incidents of extreme events are observed, then another model is run with greenhouse gas forcing. Once this is done, how extreme events have changed, their frequency, and intensity are observed. We can say that different events are attributed to human-caused climate change; however, at some point, if we are causing more events, we should be able to see the occurrence of more events in the data. We have not seen an increase in the frequency of events. In the future, the scientific community is going to have to make a decision about how events will be studied and how attribution will be evaluated.

Questioner 3: How does the global attention on temperature influence the location of agriculture, production, the economy, industries, politics, and national security. How much of that do you attribute to humans?

Pielke: Many scientists stand firm with the report that the temperature increase and precipitation changes from the late 1880s to today have been attributed to greenhouse gas force around the world. In the future, these changes are expected to continue and possibly accelerate. This brings about a political issue; if we tell the public that there will be changes in temperature and extreme events, but we will not see it for many decades, then they will not be concerned about it and, instead, focus on what is happening today and connect that to climate change. We need to focus on the energy policy questions in order to deal with climate change, but politics get in the way. I think we should consider this as a science issue or an economic energy issue. We have to act now or else there are going to be some serious risks that we will face in the future.

Questioner 4: I feel that climate change is strongly connected to the complexity of human society. Political neutrality is almost impossible. So, we should address policies and political issues more consciously, and be more clear about our values and views.

Pielke: I agree. The expert community needs to do a better job of helping policymakers understand the range of choices other than hide them away through assumptions integrated with assessment models. The IPCC and even the Paris Agreement depend on technology that is not available now. For example, the IPCC has scenarios which include something called BECCS, bio-energy with carbon capture and storage.

Questioner 5: I would appreciate it if you could comment on the change in sea temperature, or the sea level with respect to tropical cyclones, especially in the southern part of the Pacific Ocean.

Pielke: Sea level rise is happening, and it is not occurring equally around the world. Many coastal countries around the world will be affected. Even if we stop all fossil fuel consumption now, we will still have significant sea level rise for centuries. Sea level rise is, first, going to be an adaptation issue, then it is going to be a litigation issue. It is going to be difficult to motivate people around the world who do not live in coastal areas to take litigation action for an area which is far away. It is real; it will get worse; there will be enormous costs if we wish to protect coastal communities like Venice, New Orleans, Miami, or Tokyo Bay.

Questioner 6: You said we have to build about two nuclear power plants every day for the next 12,000 days if we are going to reduce fossil fuel consumption. Could you elaborate on that? If we don't, what will happen? Also, are you supporting BP or working with them on some of your analysis?

Pielke: To answer your first question, it is worse than that because the idea of two nuclear power plants per day doesn't take into consideration the increasing energy demand. We have just only began to see the massive increase for energy worldwide. If we are going to see decarbonization, we are going to have to really understand the scale of that project. We are not looking long term enough. About BP, I have never been funded by the energy industry or anyone in it.

Questioner 7: I also do climate research, and when I visited small islands and talked to the people, they said the frequency of hurricanes has been increasing for the last 5 – 10 years. I think developing countries like these are still lacking the data on extreme weather events. So, how can we promote this kind of research?

Pielke: There is an imbalance between developed and developing countries on climate event data. For developed countries, it is mostly an economic impact. For developing countries, it is mostly a human impact. A lot of work and effort needs to be done in order to enable developing countries to become more resilient and prepared for extreme events. Unfortunately, the best way to do that is to become wealthier. But, when a country becomes wealthier, they consume more energy and, thus, contribute much more emissions to the atmosphere. Being able to provide more energy choices, different energy services, and production should be human-kind's focus at the moment. We are making progress, but we still have a ways to go.