

Partial outline and transcript from Richard Muller's October 1, 2010 *i4energy* presentation at Berkeley

Also incorporates matching sections of lecture at *Energy Biosciences Institute Seminar*, September 21, 2010

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### Climate and Energy: Some Important Recent Developments

<http://www.youtube.com/watch?v=VbR0EPWgkEI>

<http://www-bsac.eecs.berkeley.edu/file/post/4energyFall2010.pdf>

[http://citris-uc.org/news/2010/10/01/i4energy\\_seminar\\_global\\_warming\\_current\\_status\\_science\\_scandal\\_prospects\\_treaty](http://citris-uc.org/news/2010/10/01/i4energy_seminar_global_warming_current_status_science_scandal_prospects_treaty)

### **i4Energy Seminar: Global Warming - The Current Status: The Science, the Scandal, the Prospects for a Treaty**

*Seminar: i4Energy seminar | October 1 | 12-1 p.m. | Sutardja Dai Hall, Banatao Aud., 3rd Floor*

*Speaker/Performer: Richard Muller, Professor, Dept.*

*Sponsor: CITRIS (Ctr for Info Technology Research in the Interest of Society)*

*The schedule for the fall i4energy series is at <http://www.citris-uc.org/events/i4energy-fall2010>.*

#### *Abstract:*

*Recent events in the field of climate change have confused both the public and many "experts." I will try to elucidate what has been happening. Two out of three climate groups show no global warming for the past 13 years. What does that mean? Why does the third group (led by Jim Hansen) disagree? Why was there no treaty at Copenhagen? (It wasn't political, but technical!) Why do we hear so little about the Copenhagen follow-up meeting, this December in Cancun? What really happened in the Climategate scandal? How serious are the mistakes that embarrassed the IPCC (e.g. their claim that the Himalayas might melt in a few decades, subsequently retracted)? How reliable are the predictions of future global warming? (Pretty reliable, in my opinion.) I will attempt to give a non-partisan analysis.*

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Also see Energy Biosciences Institute (EBI) Seminar, September 21, 2010 for almost identical lecture (e.g. "IPCC sloppiness" list at 27:39).

<http://www.youtube.com/watch?v=UcqbTRTZoGU>

This contains clear screenshots of key slides.

[http://www.energybiosciencesinstitute.org/index.php?option=com\\_jcalpro&Itemid=68&extmode=view&extid=109](http://www.energybiosciencesinstitute.org/index.php?option=com_jcalpro&Itemid=68&extmode=view&extid=109)

### **The Current Status of Climate Change**

Because of its huge economic and political implications, Climate Change is rarely presented without spin. This will be an attempt to do that. I'll discuss the physics of the greenhouse effect, and the data that indicate global warming. Among key topics are: Copenhagen -- why did we fail to get a major treaty? Climategate -- what really happened? IPCC standards -- and why they are undergoing major revisions. What are the top prospects among the many choices for alternative energy? What kind of example can the U.S. set that could be followed by the rest of the world?

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**Times follow i4energy presentation. *Matching IBE Seminar sections in italics.***

[0:00]

[Introduction by Gary Baldwin, managing director i4energy.]

[2:10]

I'm going to attempt give a non-partisan talk. I will attempt to give you things that everybody accepts – facts that are known to the experts, but which you don't hear about very much. And often the reason you don't hear about them has to do with politics or policy. But if I'm trying to convince you to follow my policy, I wouldn't give you all the facts. That's typically what happens.

I'm going to give you key facts, and when people dispute me on these facts, I'll try to let you know. My goal is to try and do this in a non-partisan way ...

[2:45]

*CO2 as greenhouse gas.*

*Water vapour feedback, cloud cover as biggest uncertainty.*

*IPCC as consensus.*

[4:10]

If cloud cover were to increase by 2% in the next 50 years, we wouldn't have global warming. ...

If the global warming models are right – I think they're very likely right – then we are going to have global warming. And there's nobody proposing any solution about what to do about it, and I can't think of any solution. So with that optimistic note, let me show you why I don't think there's any solution.

[5:00]

*U.S. vs China emissions.*

[5:40]

It's an update from Netherlands Environmental Assessment Agency and this has the current level of the carbon dioxide emitted by China every year to be 50% above that of the United States, passing in 2006. ... It's true, they have four times the population of the U.S., so they are emitting less per person. And therefore according to the logic of most people at Berkeley they have every right to do this and therefore this increase they have every right to let it go and we shouldn't stop them. And Al Gore says there should be no limits whatsoever on China, but the U.S. should cut down because we've been responsible for about one-quarter of the global warming we've had so far ... whereas China is a newcomer they have a right to emit a lot.

[9:00]

[Assumption – China 10% growth to 2040, with 4% intensity cut in CO2 intensity -> 6% CO2 growth to 2040]

[10:36] No matter what we do it's irrelevant.

[Importance of setting an example.]

[13:20]

[ Himalayan glacier melt error ]

So one of things that's happened now is the discrediting of the IPCC.

The problem is the dramatic things ... the newspaper headlines – the melting of the Himalays, the destruction of the rainforest, the destruction of the coral reefs. None of that was based on science. So the dramatic things the headlines, they [IPCC] could not defend scientifically. But their estimates of temperature rise are in pretty good shape.

... Nobody who has the public's mind is talking about reducing is talking about reducing the emissions of China, India and the developing world. Nobody is discussing that publicly. ...

[16:30]

Anything we develop that costs a lot of money is a waste of setting an example. Because they can't afford it and we can't afford to subsidize it. So what we have to do is reduce carbon in a way that's profitable. I think there are some good options there, including solar, including wind, including nuclear. But those are the only hope.

[17:00]

*Gore AIT is "an extreme point of view"*

[19:18]

Let's look at the last 13 years. ... There are four different groups. The one now that I trust the most is NOAA U.S. and that's in black and they've shown no warming for 13 years. The MET centre in the U.K. does this analysis; they've shown no warming for the last 13 years.

Jim Hansen at NASA-GISS a year and a half ago predicted – a year ago, predicted that 2010 would be the warmest year ever. He predicted that when the new data came in that's what his analysis would show. In fact that's what his analysis shows. His is the green curve and he verifies his own prediction by analyzing the data in a different way from the other two groups. At the climate meeting I was at this morning, his was the only data that anybody quoted. They didn't even mention the other two groups that disagree with him. This is what I call cherrypicking. If you want to excite the audience, find someone who predicts, who says global warming is still happening – you know, it is still happening. The fact that you have 13 years without warming doesn't mean that there's not a trend. But it doesn't generate headlines. So, anyway I'm very uncomfortable with Hansen because he's telling us what the data are going to show before he does it, and in my realm of science you aren't supposed to do that.

[20:55]

Quite frankly, I have started a new temperature analysis group. Here at Berkeley, we are going to be the fourth group. It's going to be the Berkeley report. ... And it's going to be different from the others, because instead of using 10% of the data, we're going to use close to a hundred percent of the data. Instead of having the data in a format where no reasonable person could download, we're going to have it in easily downloadable form so anybody who wants to reproduce our analysis can do it. All of our code will be online and will be transparent. Anybody who

disputes our analysis - we're going to be using statistical methods that even the statisticians approve of, which none of the other groups do. So we're doing this. We're hoping to put the data by the end of this year and to have our analysis out at about the same time.

*Anecdotes ...*

[22:00]

This is global warming in the United States. ... The second warmest year on record in the United States was 1933. You don't hear that said either. We're talking about global warming, not U.S. warming. So people who think they've experienced global warming - "Hey it was really hot last week" - they're confusing weather or microclimate with global warming. 0.4 degree Celsius averaged. But in the southeast United States, according to the records - I don't have it here - it hasn't warmed at all. Zero. A little bit cooler. Southwest United States [Unintelligible]. So there are all sorts of people in the southwest United States who believe they've sensed global warming. ...

[22:50]

Is Alaska melting? You know, Alaska is melting because it in 1979-80 it warmed up. It hasn't warmed since then. These are the data that shows that the average temperature in the the last year is the same as the average temperature in the last 20 years. Alsaka is warmer than it was 30 years ago but it hasn't warmed since 30 years. That's an undisputed fact. But maybe if you draw a diagonal line through this what you're seeing is warming, with a little upward glitch a little downward glitch, but it's warming. That may be. The data aren't really good enough.

What bothers me is that nobody in the climate science business will show you the evidence that make their statements look a little bit suspicious.

In the science that I grew up in particle physics, astrophysics you're expected to say: "Here's my data, here's the data that disagrees with it, I think you'll agree that my data is more convincing than the data that disagrees with it". But in climate science no one ever shows the data that disagrees. They fear that the public is too stupid to recognize that because it disagrees doesn't mean it's right.

And so I was just at a talk down at the Berkeley [unitell] at which one of the speakers was talking about the fact this whole subject is confused by people who are attacking the analysis and it does a real lot of harm because it slows up our action. This is so dangerous it becomes a religion.

[24:40]

[Sea level. 20 cm (8 in), of which at most 10 cm due to humans. ]

[25:40]

[Melting of the Arctic. However Antarctica decreasing, but was increasing in models.]

[26:50]

[Hurricanes]

[29:50]

Now what about the climategate? The scientists have now been exonerated, acquitted, not guilty. They did get a wrist slap. They deceived the public and they deceived other scientists. But they did nothing that was immoral, illegal or anything like that.

What did they do that deceived the public? This is in the report, this is in the review. Not the charts. But these are the data as they published it on the cover of the World Meteorological Organization magazine.

These are the data that many of my fellow scientists at Berkeley use. They say:

“Well you know public may not understand graphs, but I do and look at this. Here’s the temperature for the last thousand years going all over the place. It’s not actually temperature it’s actually a measure of tree rings and [???] and corals and things but it’s a proxy for temperature it goes all over the place. And then look what happened recently – zoom – that’s clear and incontrovertible. The public may not understand this so I now have to lend my prestige to this. I’m a professor of physics and I will now go and tell people that global warming is clear and incontrovertible because I have seen the actual data. And it is.”

And unfortunately a lot of my colleagues have behaved in this way.

In their paper if you dig into it they said they did some things with the data from 1961 onward. They removed it and replaced with temperature data. So some of the people who read these papers asked to see the data. They refused to send it to them – the original raw data. They used their freedom-of-information act. The freedom-of-information officer on the advice of the scientists would not release the data.

Then the data came out They weren’t hacked, like a lot of people say. Most people who know this business believe they were leaked by one of the members of the team who was really upset with them.

Now I can show you the data that they refused to release – the original data before they did anything.

What they did was and there’s quote. A quote came out of the emails, these leaked emails: “Let’s use Mike’s trick to hide the decline”. That’s the words: “Let’s use Mike’s trick to hide the decline”

Mike, who’s Michael Mann, said “Hey trick just means mathematical trick” That’s all.

Now my response is I’m not worried about the word “trick” I’m worried about the decline What do you mean hide the decline.

Let me show you this. Now we have the data. Now it’s been released. And this is what it is. That’s the raw data as any Berkeley scientist would have published it

He would have said: “OK, we’ve had the medieval - ice age - and now we have global warming. And there’s some disagreement, but hey there’s disagreement all over the place. And that just shows the technique isn’t completely reliable.”

What they did, is they took the data from 1961 onward from this peak and erased it. What was their justification for erasing it? The fact that it went down and we know the temperature is going up Therefore it was unreliable? Is this unreliable? No. how do we know? Well we don’t know ... This is probably some human effect.

The justification would not have survived peer review in any peer-review in any journal I’m willing to publish in.

But they had it well hidden and they erased that and they replaced it with temperature data going up. And let me show you how cleverly this was done. Get back to this plot – there it is. They added the same temperature data to three different plots giving the illusion that there were three different sets going up. And they smoothed it ...

So that's what they did.

And what is the result in my mind? Quite frankly, as a scientist, I now have a list of people whose papers I won't read anymore. You're not allowed to do this in science. This is not up to our standards. I get infuriated with colleagues of mine who say: "Well, you know it's a human field. You make mistakes." Then I show them this. And then they say, "No that's not acceptable".

Now here's part of the problem. The temperature I showed you before? This one? Of the three groups I picked the one I trusted the most. Guess which group this was? Yeah – the group that hid the decline.

So we have Jim Hansen who predicts things ahead of time, what he's going to find. We have the group here that feels it is legitimate to hide things. This is why I'm now leading a study to redo all this in a totally transparent way.

[34:40]

[Text of slide from Energy Biosciences Institute Seminar, September 21, 2010 27:39 ]

### **Sloppiness in IPCC report**

- **Amazon rainforest** – 40% at risk from global warming
  - o Only reference is to WWF “gray” (not peer-reviewed) article
- **Himalayan glaciers** melt in 35 years?
  - o Reference is to WWF report; IPCC retracts claim
- **Storms** – cost will be huge
  - o Peer-reviewed article had retracted that claim
- **Temperature records** in China and Russia
  - o institutes in foreign countries claim IPCC bias
- **Temperature records in the U.S.**
  - o most instruments used well below US government standards
- **Coral Reefs** – bleaching endangers (?)
  - o key reference to a non-peer reviewed GreenPeace article (?)
- **Hide the decline**
  - o tree ring data removed to avoid misleading the public

“The next report will be much better.”

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[Supplementary – discussion of list in Energy Biosciences Institute Seminar, September 21, 2010 at 29:15]

*But It turns out, not the important things in the IPCC report, but the things that caught the public attention, are the things that are nonsense. So the IPCC says that it’s not important - we have the temperature record, we have the sea level rise. [Goes down list]. Right, but what got the public’s attention was the loss of species the melting of the Himalayas, the increase in storms, the costs will be huge. **The temperature record, I don’t know.** The coral reefs going away. And so on. And all of that stuff turned out to be non-scientific. So the problem was the things that caught the headlines from the IPCC report were not based on peer-reviewed science. The next IPCC report, we all expect will be much, much better. But it may not make the headlines as much for that reason. And so this is the old problem – the same thing I said about Al Gore. When you discover the things were you were worried about were not true, then you lose faith. [Emphasis added]*

[Followed by “climategate’] – reversed in i4energy presentation.

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