

Questions to and Answers from Tim Flannery on the Gold Coast, Tu.12.10.10. (Transcript from iPod Dictaphone recording)

First three questions after Tim Flannery's address on the Gold Coast, Tu.12.10.10

First question:

Tim Wells (TW): Professor Flannery you've been a commentator for climate change and written books about climate change, the science of climatology. In regard to the science of climatology how many scientifically, er, peer-reviewed scientific papers have you published on climatology?

Tim Flannery (TF): On climatology? **None in climatology.** I've published several in palaeontology that bear on the issue. And that's my background and expertise is in palaeontology. And you've got to understand that, um, climate science as an academic discipline didn't exist until a few years ago so everyone has come to it from elsewhere whether its atmospheric physics or oceanography or palaeontology or whatever, so.

Second question:

Malcolm Roberts (MR): Hi Tim (cough), excuse me. My name is Malcolm Roberts. I'm not affiliated with any organisation. I've read in the press that you're quite, er bewildered, maybe a little bit annoyed with politicians and lack of action. I can empathise.

I've written to every politician in, in the federal parliament requesting evidence. I've written to the Chief Executive of CSIRO, Dr Megan Clark requesting evidence. I've written to the Group Executive for CSIRO Environmental requesting evidence. I've er had correspondence with David Karoly who's a Lead Author for the UN IPCC and a Reviewing Editor for the UN IPCC. And many other academics. And I have had not received any evidence that human production of CO2 caused global warming.

I have also read the UN IPCC's only chapter – interruption.

The UN IPCC's Expert Reviewer Dr Vincent Gray has reviewed all four UN IPCC reports and he says directly in correspondence with me there is not one piece of evidence that human production of carbon dioxide caused warming.

In view of your comments, could you provide me please with one piece, specific piece, of scientifically measured real-world evidence that human production of carbon dioxide caused global warming?

TF: Sure, yeah. You need to go back to the early science. Because this is such a well-established piece of science many, um, many organisations just assume it's common

knowledge so the IPCC does this. But if you want to go back to the actual science of the link between CO2 and warming potential you need to go back to the work of John Tyndall. It's available on line. That's T-y-n-d-a-l*. His 1859 paper published the same year that Darwin published the Origin of Species quantifying **the warming potential** of CO2. Er that's the basis.

* Note: it's actually Tyndall with two l's. A scientist known for his laboratory prowess. Despite its unreliability on political and biographical topics, Wikipedia provides a useful summary confirmed by other sources: "Tyndall was an experimenter and laboratory apparatus builder, not an abstract model builder". It seems he was not active in working on the bulk atmosphere. http://en.wikipedia.org/wiki/John_Tyndall

MR: Excuse me, you said quantifying the **warming potential**.

TF: That's right.

MR: **I'm after specific real-world evidence** that our exhaled air and our industry's production of carbon dioxide caused global warming.

TF: Sure, well, I

MR: Specific evidence, real world.

TF: Well that is the real-world data. That tells you how much warming is created by each molecule of CO2. Um, and as you increase the rate of CO2 in the atmosphere

MR: **Why have temperatures come down in the last 10 years?**

TF: Um, well, can I just say

MR: I'd love you to.

TF: There are many things that affect the climate system, right? So CO2 is a warming factor and the other greenhouse gases is a warming factor. The sun and the intensity of the sun and the **solar cycles** are another factor that influence the **climate cycle**. There is the distribution of heat energy around the planet that also affects it. So we can't expect, um, just by increasing CO2 that you'll get a straight line relationship year-on-year because it's a very complex system.

Um, and you could if you know that you've got to pick the appropriate base line and to understand the global temperature increase you've really got to look at things over a century because if you look at that longer time frame you can iron out some of the variability that occurs on a decadal basis and 1998 was a hot year, sure if you draw a line from there to where we are you get pretty much a flat line, er today. But if you chose 2002 or you chose 1992 you get a very different slope, you see. So you've got to pick the appropriate scale. And the appropriate scale for this sort of stuff is about a century. **

Note: A lady in the audience offered to send me a graph showing causality. She approached me afterwards and I provided an address for her to send her graph. In our brief conversation she made it clear she did not understand causality. Further, she said that not her responsibility but mine. The graph has not yet been received.

TF: See, the thing is if, could I just mention here too that the argument that you're implying is that CO2 concentration has no impact on temperature. Now we know from Tyndall's work that just cannot be right. And from the work of every other scientist that you go to a laboratory

MR: **Every other scientist?**

TF: Yeah, you can actually, there is no doubt about this because you can measure it empirically. CO2 traps heat. And we know how much heat. And that is that's just a question that's beyond question. You can see it with your own eyes in a laboratory.

Um, so there is an impact. But in the climate system there are many, many impacts.

MR: Are you aware there's a group of scientists and authors right now working in England because they realise that you can trap heat in carbon dioxide but **how can a thing, something that traps heat release heat?** In the real world it actually radiates it to other gases and actually promotes cooling. (My slip here: in addition to radiating heat to other molecules, CO2 actually transfers heat to other molecules by conduction. This warms other gases such that the atmosphere gains buoyancy carrying heat upward toward space. CO2 does not trap heat. It absorbs heat and then radiates and conducts heat away to objects at lower temperature. Ask any eagle or pilot what happens when air is warmed. Note that the Earth's surface, being cooler than the troposphere cannot be warmed by the cooler tropospheric CO2—consistent with the Second Law of Thermodynamics. See 'Flat Earth Flannery?' below for more)

TF: I'm afraid there's no basis in science for that***

MR: **One piece of specific evidence, please.**

TF: (low volume and not recorded clearly)

MR: **That's not evidence.**

Third question:

Gold Coast resident, Gregg Thompson (GT) mostly in reference to a statement TF made about ozone in his earlier address to the audience: I'd just like to ask you a question about ozone. But to follow on from that gentleman's er, comments: how much CO2 is actually in the atmosphere?

TF: About, at the moment? In rough terms about four parts per ten thousand. So there's very little of it.

GT: What percentage is that?

TF: Four parts per ten thousand? It's um .

Audience discussion as we waited for TF. Audience member then called out .04

TF: Point oh 4 percent. It's a very, it's almost a trace gas.

GT: No, no it's actually zero, zero point zero four percent. You're not aware of that are you?

TF: No, I just left two zeros off.

GT: That's rather strange. (Interjections from audience against the questioner)

GT: Now, you talked about – more audience discussion. With regard to ozone you made a comment then that's clearly wrong. If you go onto NASA's site you know that NASA itself says on that site that the ozone hole has not changed at all. In fact in 2006 it was the biggest they'd had up until 2007. You go onto it now, it hasn't changed despite hundreds of billions of dollars being spent on CFC's. So why would you be saying that's true when it's clearly, you can go on NASA, you can find that out. You're supposed to be a global warming expert but you don't even know how much CO2. Why are you saying that? Why are you telling us something that's not true?

TF: Can I just. Audience discussion.

GT: Please tell us why. Because you're trying to wreck the economy.

TF: I think we should show a bit of respect for each other and for the questioners. So can we let the fellow have his say.

GT: You're hyping everybody up about things that are completely false.

TF: Now as far as the ozone hole goes, it's very similar to, um, er, it's very similar to the climate system. It doesn't simply respond in a linear fashion because what the CFC's do they destroy ozone optimally where temperatures are below about minus 60 and of course the, the the temperature of the air over the Antarctic varies annually quite a lot. There's a whole lot of climatic factors. So if you look at the ozone hole over time some years it's big, some years it's small. 2006 as you say perhaps it was a big, perhaps there was a bigger ozone hole. But if you look at the trend.

GT: Every year since the satellite since the satellite went up.

TF: Just excuse me, I did ask for some respect for you and if you could show some respect for me answering I'd appreciate it. So if you look at the trend in the ozone hole size since the ban in 1987 it has been towards a decrease in the ozone hole size. The ozone hole over the northern hemisphere has vanished and the southern one is reducing. And that data was recently, er published again by triple A S and they for the first time this year they said we're actually on track to have a restored ozone layer by 2050.

GT: why does NASA say it's probably always been that way because the hole has not changed? You can look it up yourself. Anyone in this room can. Go on the net and look up ozone hole and have a look at how it varies. It just moves around there's hardly any difference whatsoever in the size. Just go and check these things out for yourselves.

TF: What you said is not quite right. We need to

GT: It is. You can check it out.

TF: I don't want to spend too much time on this but there's a lot of very good data on ozone depletion over time.