The Discussion between Anna Rose, Nick Minchin, Joanne Nova, and David Evans

A conversation recorded at the home of Joanne and David on 15 September 2011, for the documentary I Can Change Your Mind, which was broadcast on the ABC on 26 April 2012.

12 June, 2012, minor updates 27 Feb 2015

Joanne and David

The original basis for this transcript was the transcript made available on the Internet by the company producing the documentary, Smith & Nasht. We made some corrections. The times refer to the recording of the [whole interview by Barry Corke](http://www.youtube.com/embed/IqO7lGKYU0Q?feature=player_detailpage), so anyone can check that the transcript is right. We also added comments and times in red or in angle brackets.

**The dialog that made it to the finished documentary that was broadcast is shown in blue**. Max Bourke is the producer and cameraman, Helen is the camerawoman, and there is a sound guy you don’t see around the corner to the left.

# Background of Joanne and David, why they became skeptical

David: Anna I used to work for Department of Climate Change, or as it was back then the Australian Greenhouse Office for about five or six years doing carbon modelling for them and I was out there to save the planet. I was also a member of the Labor Party on and off for 15 years and I was a member of Greenpeace. So I was a believer, I thought I was saving the planet and I thought this plan problem was a really momentous one that needed solving straight away. As the years went by I found out more evidence, the evidence supporting it drifted away and evidence started accumulating that the manmade hypothesis wasn't true and so I changed my mind.

Anna: Okay, I've read that you were a rocket scientist but then I couldn't actually find where you worked on rockets, can you explain?

David: Yeah, that's on an ad hominem site called Desmog. Yes, I did introduce myself as a rocket scientist in an article I wrote for ‘The Australian'. The term rocket scientist was used in the, at least when I was there at Stanford University and a few of the major US universities, to mean someone who did a technical degree, one of the hard sciences such as electrical engineering, because I did a PhD and at one of the four or five leading US institutions.

Anna: But you haven't actually worked with rockets?

David: No. Although I did do an interview with JPL.

Anna: Okay.

David: Well I was aware of the evidence piling up while I was at the Greenhouse Office but frankly I didn't really think very much about it. I was sort of in an environment where you sort of got on with the job. As Al Gore quoted Upton Sinclair, “it's difficult to make a man understand something if his job depends on not understanding it”. But when I finished with the greenhouse job, which I did for other reasons, I finished there for other reasons. And when I finished it I did look into it a little bit more and I'd noticed that the evidence wasn't right and somewhere around 2006 or so I noticed that it was quite wrong and Joanne was a believer at that stage.

Jo: I was actually a member of the Australian Greens, it's the only political party I've ever been a member of so I'm like you, Anna in that I am concerned about the environment, I'm concerned about doing things sustainably. I worry about the country that we leave for our kids and, you know, I applaud you for going out there and doing something to follow what you believe in. I mean congratulations, if only everyone was as active in doing things to make the place - the world a better place and I even spoke on ABC radio about how we should be concerned about carbon dioxide and the feedback effects, as the ocean warms it will release more CO2. And then David came to me one day, I'd stepped out of things, taken maternity leave and stopped paying attention to the debate. And David comes to me one day and he says to me, he says "You know there's no evidence left to support the great global warming scare" and I said, "You must be kidding. You've got to be crazy, of course there is, what about the ice cores?" And you would know the ice cores, wouldn't you?

Anna: Yeah.

Jo: You've seen the ice core graph, the one from Vostock, you can't look at this graph and not say wow, there's something going on with temperature and CO2. We can see clearly that it rises and falls together, you have to look at this when this information came out in the early '90s and late '80s and say wow, we need to look at this and study it. What shocked me was when David said not only has it been well studied and we've got better data but the better data shows that the CO2 rises 800 years after the temperature and that that's not controversial and that that's been published in five or six of the top leading journals between 1999 and 2003. So I downloaded the data and I graphed it and if we take this point here 130,000 years ago, it's the first big kind of warming peak in the past, you can see the temperatures rise first, that CO2 comes up second, you can see that CO2 stays little for 15,000 years while temperatures fall. There just isn't a strong connection in these graphs and in fact the only real connection which is explained in here is that temperature controls CO2 and it's obvious that temperature controls CO2, heats the oceans, releases the CO2 and then as the world cools because of other reasons CO2 gets absorbed again. Maybe there's a small amplification in there but it hasn't been shown mathematically, it hasn't been published in peer-reviewed research. You know, I looked at this and thought wow, this doesn't disprove the whole great global warming thing on its own. There's lots of other evidence we used to do that but for us – <interruption from phone call>

Jo: For me the big issue with this is not that it single handedly disproves the argument because it doesn't, there's a lot of other evidence but what shocked me about this was that I hadn't read about it in any of the popular science magazines that I read all the time. I thought I knew stuff about this debate and this floored me because suddenly I realized that there was a lot that was going on behind the scenes that wasn't being reported. So I guess it was the half truths that really got to me that kind of undermined my belief that I understood what was going on with the climate and with the story we were being told.

# Anna grapples with the notion that skeptics agree that while CO2 causes some warming, most of the warming in the climate models is due to clouds and humidity, not directly due to CO2, and it’s wrong

Anna: So you were of the view that warming is happening and we are seeing climate change impacts?

Jo: Yes, and that carbon is a greenhouse - carbon dioxide is a greenhouse gas and that adding more to it will warm the planet, yes, absolutely, that's all well-proven solid science known for years, yes. I have no disagreement with any of that. The disagreement is with how much warming there is. Is it going to be a catastrophe or is it going to be 0.5 of a degree and as far as we can see the evidence, the empirical evidence, and there's lots of it, all seems to point to it being around about half a degree to maybe one degree with CO2 doubling which is not the catastrophic projections that are coming out from the climate models.

Anna: So you've said that you've said that with - at the moment we're 40% more CO2 than preindustrial revolution?

Jo: Yes.

Anna: 38, 40% roughly.

Jo: Yeah, it's gone up by 100 ppm.

Anna: If we go up 10% more you said that we will see a 1.2 degree warming?

Jo: No, if it doubles from pre-industrial levels so that's 280 to 560 ppm. At the moment we're at 390, we're a long way off that doubling and going up at about 2 ppm a year.

Anna: But you have said that carbon could lead to warming of 1.2 degrees Celsius?

Jo: If CO2 doubles from preindustrial times. 1.2 is the maximum that there's any evidence to support. That would be the direct effects of CO2 according to the physics that we know of that is well proven, that CO2 absorbs and re-emits infra-red.

Anna: But having admitted that, that carbon does lead to warming and up to, you 10 know, in your opinion 1.2 degrees, I'm wondering why you're still putting out the *Handbook* that says that the impact of carbon is unmeasurable because obviously that - where you've said here.

Jo: Because so far, so far we've had 0.7 of a degree due to all kinds of factors in the last century and to argue that - the effects we've had so far are unmeasurable. It's very difficult to unpick all the factors that are going on driving the climate and separate it out and say how much of this is caused by CO2 and how much isn't. I'm saying at most, at most it's possible, it could be 1.2. The evidence we're getting from the satellites and from the weather balloon measurements for over 40 years of weather balloon measurements show that we're looking at more at about half that and that's for a doubling so that will be whenever the planet reaches 560 if it gets there.

Anna: I've looked through your blog though – <Max interrupts to reposition cameras, asks David to go through summary of data showing climate models are wrong>

David: <16:28> Anna, we agree that carbon dioxide causes global warming. Every molecule of carbon dioxide that we emit causes some global warming. It's not a question of if it causes warming or not, it's a question of how much. So we get down to calculations, right, and the calculations will tell you how much warming is caused by the direct effect of CO2 in the atmosphere, a well known, that's physics has been done a century ago….

Anna: Carbon traps heat.

David: Exactly.

Jo: Carbon dioxide.

David: Now the problem is in the climate models only one-third of the warming is due to that direct effect of CO2, the other two thirds is due to positive feedbacks and that's the bit we're arguing about. Now -

Anna: <17:02> So we're just arguing - we all agree that climate change is happening?

David: Yes.

Anna: It's due to carbon pollution.

David: No.

Anna: But we're just saying about how much -

David: No, I agree that climate change is occurring but I don't think it's due to carbon dioxide emissions.

Jo: There's some small immeasurable amount.

David: Some very small amount is but the majority is not.

Anna: Potentially 1.2 degrees but also -

David: If carbon doubles.

Jo: No, if CO2 doubles if it gets to 560, the planet's not even close to 560 so we're talking about a theoretical future point in time with a 1.2 degrees which came from James Hanson et al in 1984. We have no real beef with that calculation, it's the question of these feedbacks amplifying that 1.2 to 3.5 or in the case of Garnaut I think he's talking 5.9 or 5.7 degrees or something. You know, these are enormous leaps and it would be quite a different future for the planet if we're talking about 3 degrees or 5 degrees as opposed to half a degree which is closer to what we say the empirical evidence is showing us.

Anna: <17:57> So you don't believe in positive feedbacks?

Jo: We don't think the positive feedbacks is supported by any evidence. The evidence all supports negative feedbacks which would fit with almost every other natural system that applies on the planet. Most natural, long-term, long-standing situations have negative feedback which is what makes them inherently fairly stable.

Nick: So a counterbalancing effects.

David: That's right, any perturbation is matched by a dampening effect.

Nick: Yeah, yeah.

# The Question: Anna, do you know of any evidence that CO2 is the main cause?

David: <18:24> Anna, do you know of any evidence that carbon dioxide is the main cause of global warming? Any evidence at all?

Anna: Yes.

David: What?

Anna: So we've got models, we've got lab experiments.

# So climate models are the evidence…

David: <18:34> Well models aren't evidence, models are just computations. They're logically equivalent to someone punching on calculations. I'm a modeller, I know.

Anna: Yeah, I know you've done a lot of data entry. [There is some error in the transcription at this point.]

<Joanne laughed at the attempted put down. David used the word “isomorphic”. Anyway, it’s not important. >

Joanne: <18:55> So to simulate the entire climate and condense it down to theoretical calculations. It’s a page, it’s lots of pages of calculations. Effectively that’s what a model is. It’s someone saying “so I reckon if we assume this and estimate that, and we think this is probably the case and we work within these limits which we reckon are right, and we add this factor and this factor and this factor and then we calculate it all we get an answer.” It’s a theoretical calculation, it’s not observational evidence. We’re arguing that we need to get back to the real basics of science, and true science is based on observations. 28 million weather balloons have been released looking for things the models have predicted and found the models were wrong. They’ve proven the that models were based on flawed assumptions.

Anna: So in answer to your question…

David: Sorry, yes. Any evidence at all. We’re not looking for evidence of warming, we’re looking for evidence that carbon did it.

<Max stopped things, rearranged us.>

David: <20:53> There is no empirical evidence that carbon dioxide is the main cause of global warming. There’s evidence of climate change, and there’s evidence of warming. That’s not evidence that carbon dioxide did it.

Nick: Although you accept that carbon dioxide does cause some warming.

David: <21:06> Theoretically we know it must cause some warming, Nick yeah. The only reason, and climate scientists would agree with me, <21:13> the reason that climate scientists blame carbon dioxide is because of the models. What they've done is embody all the physics and all their understanding of the climate science in the models to simulate what's going on in the climate, okay. So the reason we believe the carbon dioxide might be a danger to the planet and our emissions is because of the models. <21:32> But the models are fundamentally flawed. We know that because we've now over the last 15 years collected several data sets in several different areas that contradict the model entirely. I'd like to quickly present you with evidence of four of those contradictions.

# First piece of evidence contradicting the climate models: Air temperatures

David: <21:47> The first one is the models have built up a track record. They've been predicting temperature for a while and they've got a track record that goes back to 1988 when James Hanson, the father of global warming, introduced to the US Congress the whole idea, and here's a copy of his original peer-reviewed Journal paper where he's outlined three scenarios of how temperature increases over the years. And starting in 1988 he saw scenario A where the world kept emitting carbon dioxide at roughly the same level as it was then which is in fact the path we've followed. But he also included a scenario C here which is what he thought climate models would say if the world cut back on carbon emissions savagely, starting in 1988 such that by the year 2000 the carbon level, the atmospheric carbon level, had stopped increasing at all. Now, here is what the satellites say the temperature of the world actually did. And you will notice that the actual temperatures are well below what Hanson thought would happen if we kept emitting carbon and they're even below what the models said if we cut back on carbon. So I think that's pretty strong proof that (a) the climate models exaggerate a lot and (b) they haven't got a clue about the effect of carbon dioxide on the world's temperature.

Nick: <22:56> But David, were these models that were used in 1988 -

David: Yeah, they're essentially the same the science was settled back then.

Nick: I was just going to, it sort of begs the question are the models now so much better and more sophisticated?

David: Yeah, the models give the same answers today, they're just beefier but they're essentially the same.

Jo: <23:09> They have the same assumptions about things like water vapor. For example, when we talk about the 3.5 degree warming that's the amount due to 1.2 degrees above where it was at if it doubles, so if it doubles between 2000 and 2100, 1.2 degrees is due to the direct effects of carbon and the physics, that's well known. This two thirds is due to feedbacks and the biggest feedback is water vapor and that was the case back in 1990 or 1988. There's some models still running on the assumption that - and it makes sense - that the world will warm, it will release more water, more humidity into the atmosphere. Humidity is the strongest greenhouse gas, it keeps the traps warming, you know at night time. So it makes sense. I was a fair guess to say more humidity will increase the warming even further. But the catch is, is that humidity rising to the top of the blanket of wet air around the planet? Does it get up to that 10 kilometer height or does it turn into clouds at 1 or 2 kilometers and rain out on us. Clouds are cooling down that low, net cooling, they reflect a lot of light back to space so the real debate here, the $2 trillion guess is whether humidity rises up and turns into clouds and rains out or whether it goes up to 10 kilometers and sticks around and acts to thicken the blanket and make the planet even warmer still. That's where the 28 million radiosondes, the weather balloons that have been recording since 1959 are really important. They show no increase in humidity. In fact a decrease in that humidity up at that important layer, the 10 kilometer layer where it should be increasing. And they also show no temperature increase up there which is what all the models, all of the models which suggest big rises in temperature. They all depend on getting that result. So this is a key assumption.

Nick: <24:55> What does the IPCC say in response to that, what you just put? What are they arguing?

David: Well I can show you, let's go on, I will show you.

Jo: We should show the graphs for starters.

David: We will.

# Second piece of evidence contradicting the climate models: Ocean temperatures

David: <25:03> Anna, <25:04> second bit of evidence that shows the climate models are fundamentally flawed. <25:06> Most of the heat in the climate is contained in the oceans, a relatively small amount in the air, right? The models say that the heat in the ocean should be increasing at a pretty steady rate. <25:17> However we've only measured ocean heat properly since 2003 when the Argo system went in. The Argo system has 3,000 buoys around the world, they dive down, duck dive down to 2,000 metres, they come up very slowly, measure the temperature and when they get to the surface they radio the results by satellite back to HQ.

Anna: Was Argo the data that you said was not publicly available but actually was?

David: When I said that, the data was not publicly available and it now has been released.

Jo: Only recently.

David: And I drew this graph from the stuff they've released. <25:46> This is the Argo data since it came into inception in 2003. It's roughly flat. The climate models show that.

Nick: Is this sea surface temperature, what is that measuring?

David: Well it's actually ocean heat content, it's actually ocean heat content or equivalently ocean temperature.

Jo: The amount of heat stored in what, 700 metres?

David: 700 metre and that's roughly the hull crush depth of a military submarine so it's pretty deep.

Jo: <26:07> And 70% of the planet is covered with water so this is a large slab of the planet's heat that we're talking about and if the planet was warming this is where we'd expect to see the heat being stored and the evidence is just not there. And back in October last year wasn't Roger Pielke asking for the data and he was getting letters saying no, sorry.

David: Major US climate scientist, they just said no, you can't have the data.

Anna: <26:30> So you're saying the ocean is not warming?

David: No.

Jo: The data says –

David: The Argo system says the ocean is not warming.

Jo: 3,000 buoys radioing back information say the ocean isn't warming. Where is this missing heat?

David: That's 2003, middle of 2003 when the Argo system came on, until today.

Nick: What's this measure?

David: These are in joules.

Nick: Ocean heat content in joules.

Jo: 10 to the 22 joules, big scary numbers with lots of zeros.

David: You can convert it to temperature if you like, it's possible.

Nick: But it's a heat content.

<Max interrupts to rearrange us.>

# Third piece of evidence contradicting the climate models: Missing Hotspot

David: <27:06> The third area, Anna where the climate models are fundamentally flawed is in their treatment of the warming pattern in the atmosphere. As the planet warms the atmosphere warms too and the pattern of warming in the atmosphere gives you some clues about the cause of the warming. Now, all the climate change models, all of them, all say that there's a big increase of heat about 10 kilometers up over the tropics, this is the so-called hotspot.

Jo: This is the point with 10 kilometers up is about there.

David: So in these two diagrams here this is what the climate models say should be happening. This is 75 degrees north, the equator, 75 degrees south. This is height above the equator. That's about 10 or 12 kilometers there, and this is the pattern we're expecting. Now, as it happens people have been sending up millions of radiosondes, weather balloons, since the 1960s measuring the atmospheric warming pattern. And this is what they measure. That's reality.

Anna: And what year is this taken from?

David: This is -

Nick: 2006, program 2006.

David: This is published in 2006. The warming pattern from 1979 through 1999 which was a period of warming global warming.

Jo: It's decadal trends.

Nick: About 20 years.

David: Yeah, 20 years, this is a similar period. Now all the climate models all have this hot spot. It's missing. Now the significance of this Anna, is absolutely crucial. You see the whole climate model set up was based on a guess about how moist air behaves. It was made in 1980. The guess was that as the planet heats due to any cause, there's more evaporation and the water vapor blanket thickens. There's two greenhouse blankets on our planet that are worth considering. There's a greenhouse - sorry, there's a carbon dioxide blanket, that's the small one and there's a much bigger water vapor blanket that does most of the work. And the way the climate models work is they say alright, if you increase the warming due to the CO2 blanket getting a big thicker that will cause the water vapor blanket to get thicker as well and it will amplify and they say amplifies it by about a factor of 3. So you get a little bit of temperature due to the direct increase of heat due to the CO2, and then that amplifies that by a factor of 3 due to the water vapor blanket. This shows that the water vapor blanket -

Nick: So what are you saying for that to be true there has to be a hot spot?

David: There has to be a hotspot. No hot spot, no water vapor blanket thickening, no amplification by factor of 3, our CO2 is not a cause for alarm.

Jo: It's a major positive feedback disappears. When you don't have any sign of the extra humidity and warming that they expect that's a major assumption, the major positive feedback assumption's just gone, it's just killed.

Nick: How do we actually know whether there's a hot spot or not? How is that measured?

David: There is no hot spot.

Nick: No, no, but how would you know if there was one?

David: Every model has a hot spot. Because we send up radiosonde.

Jo: The weather balloons.

David: They have -

Nick: Yeah, what measures the hot spot?

David: The radiosonde or weather balloon is a package at the end of a hot air balloon, sorry, a helium balloon and this package has a thermometer in it and a radio transmitter and they release them up in the air.

Nick: But it's a measure of - this is humidity - is this humidity?

David: No, this is the temperature.

Nick: It's actually temperature.

Jo: Temperature.

David: It's a temperature change.

Jo: Humidity is quite hard to measure up there because it's very dry air on the edge of that water blanket layer.

Nick: So it's simply a measure of the temperature there.

David: That's right, as you go up. You need a radiosonde. You can't do it with satellites because they can't distinguish temperature at different heights, but the radiosondes can because they ascend through the air slowly and at each height they're radioing back what the temperature was. So we've got a very clear idea of what the change in the atmospheric warming pattern was over the last three or four decades. And all the climate change, all the climate models say this and reality says that. And that provides at least two thirds of the warming in the climate change models. So the climate change models are falsified.

Nick: And are there any possible explanations for that and how would you deal with those explanations?

David: No, it's rather a black spot. This came out in about 1995 or so and we’d accumulated enough data to be able to be pretty sure of this picture. They hid the results until 2006 and they finally published them in a bunch of diagrams just hidden away in the back of a report in 2006.

Jo: The US CCSP (indistinct) 2006.

David: Yeah, the US Climate Change Science Program.

# Fourth piece of evidence contradicting the climate models: Outgoing radiation

David: <31:15> Now the fourth bit of evidence we'd like to show you is what happens when the surface of the Earth heats up. You might imagine that as the surface of the Earth heats up it gives off more radiation out into space, outgoing radiation space as measured by satellite and that is in fact what happens. That's reality. The climate models, however, all show that as the surface of the Earth heats up less heat is radiated to space.

Jo: That's the positive.

David: Because in the models they aggressively trap heat too much, it's that positive feedback again Nick. So they're trapping heat with that water vapor blanket and the heat isn't escaping into space.

Nick: And the assumption underpinning the models.

David: That's the model. And Professor Lindzen of MIT is a very, you know, very eminent -

Nick: Yep, we're hopefully going to see him, yep.

David: Very eminent climate scientist has pointed out in 2010 that the reality as measured by the ERBE satellite has a slope this way but all the climate models –

Nick: Sorry, that's the slope of?

David: This is reality, this is the ERBE satellite. This is how the temperature - sorry, the amount of radiation, outgoing radiation increases as the temperature of the planet, sorry, the temperature of the surface increases but all the climate models show the outgoing radiation decreasing as the surface temperature goes down.

# Conclusion about the failure of the climate models

David <32:25> Now any one of those four points, the failure of the climate models to predict air temperature, water temperature, the hot spot and the outgoing radiation, any one of them is enough, independently, to invalidate the climate models and the climate models are the only reason we have for believing in the CO2 scare. There is no empirical evidence to show that CO2 is the major cause of the recent global warming. It's only because of the climate models that we believe that. And the climate models are fundamentally flawed.

 <Max asks for thermometer photographs, rearranges us slightly>

# Theory has gained too much momentum by the time the evidence showed it wrong

David: <33:22> Anna, this evidence that the climate models are fundamentally flawed and that the guess about hot air made in 1980 was wrong, first started appearing in the mid '90s and the climate models and the climate scientists could have abandoned their theory and said oh, sorry, we're wrong but by then they already had a lot of political momentum built up. A lot of people on very good money building careers, bureaucratic careers and so on and they let it go.

Jo: The IPCC was already in motion, Kyoto came in 1997, a lot of money was starting to move into the field, banking on the fact that we would get a carbon trading scheme of sorts. There were a lot of people, bureaucrats, people with careers that depended on it. I mean you can't blame them for trying to find all the reasons why their story, their institution, their thing was right.

# Conspiracy? No, just confirmation bias or worse.

Anna: <34:06> So you're saying that thousands of climate scientists around the world are in a giant conspiracy to cover up data?

David: No, we're not saying that at all.

Jo: People love to throw the conspiracy theorist thing and it's a systemic problem.

David: It's not a conspiracy at all. It's a case of group think, it's a confluence of interests, at best - it's a massive case of confirmation bias. There's only a few climate scientists who aware of the details of this and how the models actually work and everyone else is relying on them.

Jo: Only 62 scientists reviewed chapter 9 in the last IPCC report. So we're talking about three dozen scientists and most of those had written articles in it were reviewing their own work or were some way involved in it. The thousands of scientists that the IPCC refer to many of those study things like the effects of climate change on limas in Madagascar, they've never looked at the climate models, they're studying the effects of warming, glaciers, sea level rise, things like that. Those things are going to happen no matter what causes the warming. So most of those thousands of scientists are not involved in the details of estimating climate sensitivity.

Anna: But even now every year there's 1,000 to 2,000 papers published on climate change and they don't disagree with the IPCC?

# Money in Climate Science

Jo: <35:04> Because people have - sure, people have put in $79 billion, in fact the number's probably much higher than that now, to paying scientists to find a crisis. So those scientists have done what they're paid to do, they've looked at every possible angle and every possible cause to put out a paper on the question they've been asked to study. No-one's been asked to study the other side, no-one's been paid to audit the IPCC, to find holes in the theory, there are no grants for skeptics to come out and say hey, we'd like to look at these climate models and we'd like to produce a climate model based on say solar magnetic factors. So it's totally monopolistic science and science shouldn't work like that.

Anna: You think it's the sun that causes climate change?

Jo: We think that there's a lot of other factors that need to be considered.

Anna: I believe that climate scientists have considered the sun, they've considered orbital changes.

Jo: The IPCC does not include any solar magnetic affects in any of its models. This enormous impact and the results have just come out of CERN recently support it. The empirical evidence suggests that there's a connection between sun spots and the climate but we're not saying - we don't know what causes climate change. We're simply saying there's a lot of other factors and the models ignore them all and then say yes, well we looked at everything and we couldn't explain the warming except for CO2 in our models. It's argument from ignorance, it's a logical fallacy.

Anna: If you're going to say that the majority of the scientific establishment is wrong, that NASA's wrong, that every academy of science is wrong -

Jo: No, we're not, no, we are saying thousands -

David: We're not saying that at all.

Anna: You've got to put forward an alternative theory.

# Numbers of Scientists

Jo: <36:29> No, thousands of scientists support the skeptics and 900 peer-reviewed papers support skeptical arguments, it's a difference between the independent scientists and establishment or government paid scientists. We can name Nobel Prize winners in physics who agree with us. Ivar Giaever resigned today, he's a Nobel Prize-winning physics in tunneling, tunneling physics and he resigned today from the American Physical Society because he said it is ridiculous to say the evidence on global warming is incontrovertible. So here we have experts, top-level outranking scientists, we never argue that we're right because we have Nobel Prize winners on our side because that would be argument from authority. We argue we're right because of the evidence.

Anna: So where is this warming going? I mean these things that we're measuring?

# Authority versus evidence, echoes of Pope v. Galileo

David: <37:14> Anna, Anna we're presenting you with evidence and you're coming back with authority. You're saying how can those scientists be wrong? You're not coming back with counterevidence, you're arguing from authority. That puts us structurally in the same position as Galileo and the Pope. The Pope had all the political authority and was arguing from authority because he was interpreted religious. So it's religious dogma and he was the guy who was interpreting it. Galileo had evidence on his side and that was the start of the enlightenment, right, when science and evidence triumphed over political authority. Now we're having a discussion here, I'm presenting you with evidence and you're presenting me with authority.

Anna: Well I'm not a scientist but I think I'm smart enough to listen to the majority of scientists.

Jo: Sure.

Nick: But what you're essentially saying is not so much that scientists are wrong but there's lots of these scientists in this field relying on the models.

David: Exactly and look at what they're doing.

Nick: And that's the point.

# Climate scientists cheating: Sherwood used the ol’ color trick to “find” the hotspot

David: <38:04> This is what I wanted to bring you to, this is what I wanted to bring you to. Now remember I showed you the hotspot there, which disproves the climate models, shows they’re wrong. Well, they release the data in 2006 finally, the experimental data, and in 2008 a guy called Sherwood came up with this. He re-analyzed the data, using not the temperature thermometers in there but using the wind shear meters and he had a theory about wind shear, he re-analyzed it and he came up with this.

Nick: Sorry, what did he use, wind shear meter, what they are?

David: He measured – using the wind and the theory about wind shear he tried to get a different picture of what the temperatures up there were and he analyzed and he came up with this. And all the alarmist scientists were very –the ones they knew understood how models work and so on were –very relieved that the hotspot had been found and this was trumpeted, including by John Cook’s Skeptical Science site, as finding the hotspot. Now, there's just a little problem here. It's not a very technical problem.

Anna: Yeah, you're talking about the scale.

David: I'm talking about the scale. The color here for no change at all is red. It's red. So if there were no change in the atmospheric warming pattern at all it would be red. Now the question for you, Anna is what purpose could there possibly be for using such an unorthodox scale except to deceive?

Anna: So you think that scientists are trying to deceive people?

David: You're answering a question with a question.

Anna: I think it's reasonable for me to be asking you guys questions.

Nick: Mr Sherwood has sought to -

Jo: Do you think it's reasonable for scientists to change the scale of graphs in order to show that it matches the data? It takes no change at all, zero change to produce an orange red color on this graph. The climate could stay exactly the same, which it largely did, and in this respect, and they managed to show it as if it matches the graph here.

Anna: But the data that you're using -

Nick: What's Mr Sherwood's said?

 <Max interrupts, tells us to get a move on. Wants David to redo some earlier stuff on pictures, and cover thermometers. Rearranges everyone a little.>

# Climate scientists cheating: Corrupt land thermometers

David: <41:14> So we reckon the climate scientists have a failed model on their hands and they're cheating and concealing the failure of their model. One of the ways they conceal the failure is to mis-measure the temperature. For instance, here's an official thermometer that's used to measure global warming. The thermometer is in there and the thermometer's near an air conditioning outlet which air conditioners emit hot air, near a refrigeration outlet, refrigeration emits hot air, near decomposing sewerage which also is hot, over concrete and behind a wind break. So I put it to you that that is not measuring global temperature at all. It's not even measuring the area of the locality, the area around it's just measuring that locality and it's artificially warming.

Jo: And it certainly isn't measuring the way things were 100 years ago and we're looking for 0.7 of degree of over a century with thermometers like this. There were no air conditioning ducts in 1890 or 1910, yet the situation has changed around these thermometers and they might be in the same spot but urban life has closed in around them and these standards are not good. I mean what kind of scientist would look at that thermometer and say yes, we can accurately measure the heat, the change in the climate to 0.1 of a degree with thermometers like this.

David: These thermometers are very sensitive. Any little heating nudge matters. There's a car park here with hot engines cooling down, heating that one. There's another air conditioner there, there's asphalt to keep it warm at night. Here's one in northern Norway. There's the airport terminal and there's a runway. The thermometer's here. Now jet air craft go through and give it the occasional blast of jet air. There's de-icing machines that go by, it gets the hot tarmac to keep it a little bit warmer at night. If they were serious about measuring the temperature in the locality they wouldn't put the thermometer there, they'd put it over there or over here out in the snow.

Jo: They're not even trying.

David: <43:00> Here's another example. <43:01> Half the world's thermometers, official thermometers for measuring global warming are at airports. This one's at Rome airport so you've got aircraft taxiing in here, they occasionally hit this thermometer here with a blast of jet air, there's a bunch of cars and trucks over here. This isn't measuring global warming, it's measuring local warming, a very local warming, it's measuring the increase in air traffic. Here's another example. Now these thermometers are supposed to be in a clearing that's over natural vegetation. I put it to you this is not natural vegetation of Florida, it's a bunch of air conditioners and sewage plants.

Jo: NOAA's own standards say that these should be 30 meters or more from an artificial heating source.

David: And a survey by a bunch of US volunteers went out and photographed these things and they found that 89% of these, the US thermometers, for use in the global system, violate the official citing requirements that they be more than 100 feet or 30 meters from an artificial heating source. Here's a classic, this is in Baltimore. This one's on the top of a roof in the middle of a huge city. So you've got urban heat from cars and buildings all over the place, but the thermometer's here. Then they put it near the air conditioners. At least they could have put it on the other side of the building. These people aren't even trying. Or are they?

Nick: Who placed these, the US weather bureau?

David: NOAA.

Jo: See, this is it and a lot of these stations are maintained by volunteers so we're not suggesting that there's been a deliberate effort here to make the data dodgy. The data has got dodgy and that's been an accident but scientists should be up in arms that this is where the data's coming from.

David: But they choose to use the dodgy data.

Jo: That's it, they haven't excluded the data from their records. This kind of data, a real scientist would look at it and say wow, oh my goodness, well we can't rely on that thermometer we'll get it out of the records. We'll just erase that and go back to the thermometers we have which are good ones and that would be the honest thing to do in a situation like this.

Anna: Well but the Bureau of Meteorology does that in Australia.

David: This one's in Australia. This is the Sydney Observatory, that's the Western Distributor there, that's where the thermometer is.

Anna: But this is not included in the temperature records?

David: Sure it…

Anna: It's not. I mean you've been told this before, why don't we call the Bureau of Meteorology now if you want to go over it again but I mean let's do it, let's call them.

Nick: What are you saying, that that thermometer, measures from that is not used?

Anna: So in Australia the Bureau of Meteorology and they have told David this earlier.

David: I've never been told anything by the Bureau of Meteorology.

Anna: Okay, well it was my understanding that this had been pointed out to you by people.

David: Sorry, not in the real world.

Anna: That the Australian Bureau of Meteorology. They have these sites, the one in Sydney's actually at Botany, they don't use in one in the city.

David: Well they used to use that one. Well let that one stand for a while but -

Anna: But it's not like climate scientists aren't aware of this. You're acting like it's some -

David: Yes, but they're using it nonetheless.

Anna: Well actually the Bureau of Meteorology doesn't use it.

# Satellites and Land thermometers tell different stories

David: <45:33> And here's the result, here's the result. The Goddard Institute of Space Studies, James Hanson's outfit at NASA, produces this as the world temperature record and they don't use any satellites for here, it's all from land and sea thermometers and the general impression obviously there is of an increasing trend and the warmest year could be 2010, 2006, maybe 2002 and 1998 isn't anything in particular. Okay, we've got the graph 1979 to current time. So we've got an increased warming trend and that's a politically convenient thing. But we also have satellites measuring the globe. Satellites go around 24/7, they measure almost the entire planet without bias and they show quite a different picture. They show that 1998 was the warmest year. They show a warming trend until about 2001 and then it flattens off somewhat. So all that mucking around with corrupt thermometers makes a difference.

Jo: All those headlines that came out last year that 2010 was the warmest year ever relied on the one record from GISS, not the three other global data sets which combined the satellites or other data.

Anna: So you're talking about this one?

Jo: So it's cherry picking in a sense to say 2010 was the warmest year without saying that three out of four major global data sets don't say that.

# Trust, concealing, use of obviously corrupt land thermometers

Anna: But if you don't trust NASA's data I assume you don't use a GPS?

David: This comes from a NASA satellite. We trust this one because it's satellite data and hasn't been fudged around like this.

Anna: So you trust some of NASA's data but not the rest?

David: That's right, the one that come from Jim Hanson and these thermometers here that are so badly located and violate official siting requirements no, we don't trust that. We instead trust the stuff that comes off the NASA Aqua satellite which is shown here in the University of Alabama record - temperature record.

Anna: <47:14> But I mean how stupid do you think climate scientists are to not - they do account for this. How can you say that?

David: Well they have a failed theory on their hands.

Nick: They try to…

David: They're concealing.

Anna: They're concealing?

David: Obviously.

Jo: <47:23> 55% of all the temperature data they use in the global records comes from their airports and we know that airports didn't exist in 1910. We know there wasn't two square kilometers of thick black tarmac absorbing heat and reflecting it back next to half the world's thermometers in 1910 and yet we're told the world is warmed, evidence is incontrovertible. Remember the debate is settled and no-one's allowed to ask any questions. You don't need a PhD in physics to look at thermometers which are at airports, are near tarmac and the Australian thermometers have never been independently audited. The ones in the US were independently audited by about 700 volunteers. How come a $4 billion agency can't go out and audit its own thermometers to make sure they're in the right spot? I mean NOAA has a $4 billion budget and it took 700 volunteers to go out and take photos of a thousand stations in the US and only after those were made public did NOAA say well alright, we'll stop counting the data from some of these stations but we'll leave it in the past record, in some cases they've done that. The scientists should have been up in arms, they should have said wow, I had no idea the data was this unreliable. We will completely go through the process, thanks for pointing out the mistakes, thanks for showing us some unreliable data, we'll make sure we get the best most rigorous data we can use.

Anna: Two things. One, they were aware of it. It was climate scientists that raised this as yes, it's called the urban heat island affect, yes, they're aware of it, yes they -

Jo: No, the urban heat island effect is different. This is called micro stations - micro siting problems with station. It's not about the urban heat island affect. It's about the fact that these are closer than 30 meters to artificial heat sources. It's NOAA's own standards. In 89% of the cases that the volunteers photographed, 89% were too close by NOAA standards to artificial heat and cooling sources. That's pretty major failure of a bureaucracy. 89% failed their own standards and they didn't know that and they hadn't done micro siting survey themselves.

Nick: Did they try to adjust the land-based temperature record to take account of the locations?

David: Sometimes they do.

Jo: Yeah, they do.

David: <49:24> But consider this, Nick. If they're playing with the numbers in their computers why bother with the thermometers. You're going to play with them on the computer anyway. And the bottom line is their temperature record is different from the satellites. Satellites are unbiased, go around 24/7, they come up with a very different picture.

Anna: Here's all of the - here's three data sets and they're all showing a clear upward trend.

Nick: Well no, see this is the satellite one shows it coming back down.

David: Sure, look at the time scale. We just showed you a graph of that much. Notice how this one keeps going up and the other ones are leveling off a bit, that's what we're talking about.

Anna: This measures partly in the ocean and the Arctic where a lot of the warming is concentrated. So you can't just ignore ocean warming.

David: Actually they're measuring the Arctic where there are no land thermometers and they extrapolate into it. They're using their computers not thermometers to get the Arctic temperatures. That's a different argument.

Jo: <50: 07> They use 1,200 kilometer smoothing where they take a thermometer and they extrapolate for 1,200 kilometers around it to estimate what the temperature would be. Since 1990 when the all the money poured into climate science and we got concerned about this something like 75% of all of the stations have been excluded from the database. Instead of getting more data put into this, instead of having 6,000 data points which is what they had in the '80s, they've dropped it down to 1,500 or less. Where's all that data gone? Why do we now estimate 1,200 kilometers from thermometer to thermometer instead of using all the data from everywhere we can. It would be alright if they'd removed all the unreliable thermometers but clearly that's not the case.

Anna: So you're saying this green line from NASA is wrong?

David: That's the GISS line.

Jo: You're talking about 0.1 of a degree.

David: <50:53> This green line from NASA comes from this thermometer in part, yes, it's wrong. And we don't trust them.

Nick: That's a land based one.

David: They're concealing the failure of their theory.

Anna: <51:03> So scientists are concealing?

David: I've just showed you four bits of evidence that each on its own, independently, shows that the climate models are wrong. They disagree with reality quite violently, and those only came to light starting in '95 but mainly in the last few years and I'm saying the climate scientists are concealing the evidence for that. They're concealing the failure of their theory and one of the ways they do is to mis-measure temperature. In the Climategate email scandal broke, we got an insight into some of those things they were doing and some of the tricks they were pulling and like Kevin Trenberth who says it's a travesty that we can't find the missing heat. The models were saying that ought to be a lot of heat build up, in reality it was not occurring. And so the question for you is for how much longer, for how much longer do the ocean temperatures and the air temperatures have to be static and not rising before you say hang on, there's something wrong with this theory, maybe CO2 isn't such a problem after all.

Anna: But they are rising.

David: But they're not. I just showed you the Argo diagrams of the ocean temperature.

# Anna Brings up Conspiracy theories, banking

Anna: I know that you think scientists are concealing it and I know that you think - I mean I'm a bit worried when I read things on your blog about how this is linked somehow not just to a conspiracy of scientists but also bankers.

Jo: <52:07> No, excuse me, excuse me calling people conspiracy theorists is something the name calling that people do in this debate. I have never said that, I do not say that. This is a systematic problem. We have paid scientists to argue one side of the story and we haven't paid to the do the other. It's monopoly science. Monopolies don't work in business, it's like having someone go to trial and only paying for an attack team and not a defense team. It doesn't work like that. Science needs to have people asking both sides of the question auditing from both sides trying to disprove each other, trying to debate it. Without debate we haven't got science, we've just got propaganda.

Anna: But I don't understand how you can say scientists are linked to bankers in a scheme to create hyperinflation?

Jo: Because I've never said. Because I've got no idea where you've got that from.

David: We've never said that. Where did you get that from, Anna?

Anna: From your blog, I mean you wrote this, I printed it out this morning.

Jo: How do you read that kind of stuff?

Anna: "You might think that inflation and climate science are only linked metaphorically but the corruption in science is fed by the corruption in our currencies, the monetary system that allows a privileged few to print money from nothing" I don't know what that means "is the same system that allows" -

Jo: Is fractional reserve banking and it's an entirely different topic and it's a big field and yes, we think the fact that interest rates have been kept low have allowed governments to put out a lot of money into things like this and for other people to invest in things. Let's just put some perspective on this. Climate trading last year was $144 billion turned over worldwide. Investment in renewable energy was $243 billion. None of this has anything to do with the science, the science comes back to the evidence, always the empirical evidence.

David: We're presenting you with evidence.

Anna: But then why have you said "If the system's swimming with easy money people can afford to build widely extravagant and unproductive things like wind farms." I don't understand how you link them?

Jo: <53:45> Because it's easy to raise money when loans are cheap and interest rates are cheap for schemes which are hard to justify in times when you've got to spend your own money and you have to think very hard about whether you're going to spend your money on something. When money is created through fractional reserve banking in a way that makes it easy for people to take big loans, to do big takeovers, big mergers and what not and things like that, it's an entirely different climate. It's an economic climate which makes it easy for people to not be so careful with their money.

Nick: They're simply saying a lot of people - it's not an unreasonable thing to say about any subject, that there's a lot of vested interests in this being right.

Jo: Which tells you nothing about the science, we always keep coming back to the evidence, it's simply an observation about the fact that there are a lot of policies where money is not spent well.

# Anna Charges Joanne with Being Paid By Exxon, Wrong!

Anna: …Nick if we're going to talk about vested interests, I mean the publication of this was paid for by the Heartland Institute which gets money from Exxon Mobile.

Jo: <54:34> And that's a complete lie and an absolute myth and it is totally untrue.

Anna: But it said on your blog we've received funding from Heartland -

Jo: No, no, no, it says on my blog that I did this totally unfunded absolutely with no financial support from anyone except David, thank you, David, and I put this out online free for people to take off my website.

Anna: No, I understand that.

Nick: Who cares who pays for it, it's a question whether it's right or not.

Jo: <54:58> And how does that change any of the graphs in it? I mean that's an ad hominem attack. It's exactly the kind of thing that comes from Desmog, which is a funded site designed to smear respectable scientists and to deter scientists from speaking out because who wants to be the target of a smear site. And no, I did this entirely off my own bat out of a patriotic and professional duty because I was just astonished at how this debate has become so loaded, so corrupted and the information is not getting out there. So out of concern for that I did this entirely unfunded. Anything you've heard to the contrary is someone's misinterpretation of it.

Anna: No, I understand that no-one paid you to write it.

Jo: Heartland paid to print it. I gave them permission, they paid me nothing for it and I asked them to print copies in Australia so that I could give them to politicians in Australia, which we did at the time.

Anna: Does their links to Exxon Mobile concern you?

Jo: Not at all.

David: What links?

Anna: Their funding?

Jo: <55:54> How does that change the graph from NASA? Don't you think you're confusing the issue? I mean we're talking about weather balloons and radiosondes and Argo buoys and data and you're coming back to funding from Exxon. Exxon's funding, in any case, let's talk about it, was $23 million over 10 years paid to some skeptical scientists and not me. I'd like that cheque, I wish it would come.

David: Sorry, babe.

Jo: But - so that's $23 million and that Greenpeace came out with that number, it was the biggest one I could find when I was searching. On the other hand the US Government has paid $79 billion into climate science and climate related technologies and industries.

David: Since 1990.

# Warmist money versus evidence

Jo: <56:32> Their numbers are just enormous. So for all the dollars paid to anyone in a skeptical point of view, 3,500 times as much money has gone to scientists to find more of the thousand papers that you refer to, a lot of which is simply repetitive and coming out with inconclusive remarks. We've got the conclusive evidence, 28 million radiosondes, 6,000 bore holes, 3,000 Argo buoys, 30 years of satellite data, we keep coming back to the evidence and other people keep coming back to slurs, smears, and attacks.

 <Max interrupts. David leaves to pick up kids from school. Everyone takes a break and Barry’s camera turned off for ~15 mins. David returns.>

# Reshooting the four pieces of evidence

<David reshoots some of the graphs, talking to the data presented, at Max’s request. Maxc and Helen said they just wanted us to do it for the pictures, that they were just shooting the graphs. So we didn’t pay much attention to the dialog, and got slightly silly. This section was omitted from the transcript put up by Smith and Nasht.>

David: <57:30> Anna, this is James Hansen’s graph from 1988. This is in a journal, here. You’ve got three scenarios of how he thought the temperature would be

Nick: Is that temperature?

David: Yeah. This is a scenario. This is scenario A, where he forecast the temperature what would happen if emissions stayed much the same as they are now.

Joanne: Business as usual.

David: And this is in fact roughly the route the world has followed.

Nick: In terms of emissions.

David: A lot of interest is in scenario C. Scenario C he said this is what would happen if we cut back carbon emissions immediately starting in 1988, such that by the year 2000 the carbon dioxide levels had stopped rising at all. And he said this was roughly the temperature that would occur. In fact, the satellites say, we’ve underperformed both of them.

Nick: Yeah that’s a satellite temperature measure.

David: This red one’s a satellite temperature .

Anna: And what’s the surface of the ocean temperature show?

David: This is global air temperatures. And that’s satellite versus model predictions.

Nick: Yeah, ‘cos you’re comparing like with like. That’s his

David: We are, like with like.

Nick: Yep, yeah. Global air temperatures.

David: <58:33> We turn to the ocean. The ocean contains most of the heat in the climate system. We only started measuring ocean temperatures, or ocean heat content, properly, in 2003 when we used the Argo system. The Argo system consists of 3,000 buoys. They duck dive down to 2,000 meters and they slowly come up measuring the temperatures as they go and when they get to the surface they radio back via satellite back to HQ what the temperatures were all the way up. And there are 3,000 of these roaming around the oceans so we’ve got a pretty clear idea of what the temperature is in the ocean starting in the middle of 2003. <59:04> And these are the entire Argo results, from the middle of 2003 through to a few months ago. And they show pretty much that the temperature of the oceans has been flat, where as the climate models are all insisting that the temperature of the ocean ought to be rising fairly quickly. So you’ve got a clear disagreement between the models on the one hand and reality as measured by Argo on the other hand.

David: <59:29> A third area of disagreement is in the pattern of atmospheric warming. Whenever there’s global warming, the atmosphere will heat, and the pattern in which it warms sometimes gives you clues about what caused the global warming. Now, all the climate models insist that the water vapor blanket increases, gets thicker. You see, the way the climate models work, is they take a guess about moist air. They say alright the CO2 blanket increases the heat by a certain amount, and it gets a little bit thicker. But the guess about moist air says that the water vapor blanket responds by getting thicker as well. And that thickening of the water vapor shows up in this graph here. This shows…. We’ve got from 75 degrees north here, through the equator, 75 degrees south. This is the height above sea level. That’s about 10 – 12 kilometers. So what we are looking for is a hotspot, here in the equator, above the equator. This is where it gets hotter because the water vapor blanket is pushing up. All the action happens in the tropics, what happens elsewhere is pretty much irrelevant. So we also measured, from the 1960s, we measured using millions of radiosondes, we measured the actual changes. And these are shown here. And in particular there is no hotspot. These are nothing like each other. The significance of the hotspot is that it’s the water vapor thickening that causes the hotspot, so if there’s no water vapor thickening, the climate models are exaggerating the temperature rises by a factor of at least three. They’re showing positive feedback where there is none.

Anna: <1:01:09> So … <general babble about doing this for cameras, for pictures only.>

David: <1:01:14> And this is a map … that shows you the outgoing radiation in the models. These show outgoing radiation from the earth as the surface of the earth heats.

Nick: What’s ERBE?

David: The ERBE satellite.

Nick: Right.

David: This is the satellite that recorded the outgoing radiation from the earth during the 1990s and early 2000s. And these, there are a number of them, are all climate models. Here the slope of the line is that way, indicating that as the surface of the earth heats up, more radiation escapes to space in reality. But the climate models are too aggressive in trapping heat and they all show the opposite, that as the surface heats up, less radiation gets out to space.

Nick: Sure.

David: And that shows that the climate models have got this fundamentally wrong. There is a fundamental flaw in the climate models and it’s to do with the water vapor and heat trapping.

# Reshooting the corrupt thermometers

 <Max rearranges us. Asks us to do the land thermometers again. This section was omitted from the transcript put up by Smith and Nasht.>

David: <1:02:19> Here’s an example of how they use thermometers. That’s the thermometer in there. Now, you’ve got an air conditioning duct here; air conditioners emit hot air. You’ve got a refrigeration duct here; refrigerators let out some hot air. You’ve got decomposing sewage. You’ve got concrete reflecting heat, and a wind break. So that thermometer is just measuring the temperature in this courtyard. It’s not typical of the area around it. And this is in a warming locality. And it can’t be used—or shouldn’t be used—to measure global warming but it is, and the records from this thermometer are in the global warming records as produced by the Goddard Institute of Space Studies, GISS.

David: <1:02:55> This one’s a real shocker. In here there are two large air conditioner units there. There’s a car park here with hot engines and of course there’s asphalt and concrete, and a wind break.

David: <1:03:09> This one’s in northern Norway. This one’s interesting. Here’s the airport lounge, and here’s the runway, so planes often come in here, jet planes, and there’s the thermometer there. So the thermometer occasionally get sprayed with blasts of jet air from hot air exhaust from the engines. It also gets hit with stuff from the de-icing machines, and it gets radiation from the tarmac at night to keep it a little bit warmer than the surroundings. If they were serious about using a thermometer here to measure what the surrounding area was like, they’d have put the thermometer out here, or over here, somewhere in the snow. So using that thermometer of the purpose of measuring global warming is wrong.

David: <1:03:52> Here’s an example of a thermometer in an urban area. This one’s in Baltimore in the United States. There’s lots of urban heat coming in here from cars, buildings, and everything else. This on the top of a building. There’s the thermometer there, and they’ve placed it pretty close to an air conditioning unit. I mean if you were at all serious, even if you had to do it in this location, you’d put it on the other side of the building, surely. Not near the air conditioning units; the air conditioning units are releasing hot air.

# Reshooting Sherwood’s fake “finding” of the hotspot

 <Helen asks us to do the Sherwood graphic again. This section was omitted from the transcript put up by Smith and Nasht.>

David: <1:04:30> This is an example produced by Steve Sherwood. He’s at New South Wales University and was at Yale. Steve Sherwood published this in the Journal of Climate in 2008. And he used the same data that I showed you earlier for the hotspot. Let’s put it up here. <Rummaging through pictures> Start again.

David: <1:04:57> This is a graph from Steve Sherwood of Yale and now at New South Wales University. He published this in the Journal of Climate in 2008. And he took this data and instead of just using the thermometers as in the previous ones, he used the wind measures instead. He had a theory about wind shear and he applied it in his computers, and he came up with a different picture of what the temperatures were, the warming pattern in the atmosphere in the last 30 years. Now, we could argue about the merits of using wind measures to measure the temperature. There’s a problem with this graph. And that is, that the scale shows zero as no change. If there was no change at all in the atmosphere’s temperature, Sherwood’s graph would be all red. Now I ask you, is there any reason you’d choose a scale like this, other than to deceive people? Because every other graph that ever shows temperature always shows red as warming and blue as cold. Here, he’s given the misleading impression that there’s a hotspot. Indeed the alarmists used this for a couple of years to quell questions about whether the hotspot had been found: “oh yeah, we found the hotspot, yeah Sherwood found it.”

Anna: So you’re saying that this is cool.

David: I’m saying that blue is cooling.

Anna: And that green‘s…

David: Green is mild cooling, yeah.

Anna: And that this is.

David: He reckoned this was warming.

Joanne: But that’s a departure from all the standards used in graphs like that and all of the graphs we’re comparing it with. And here’s an … Always the story is the warm color is the yellows and oranges are above zero and the cool colors are below zero, and that’s one of those universal standards everywhere. And this has changed it. And it would appear that it’s designed to produce a result which looks like this.

Nick: What’s Sherwood’s explanation for this?

Joanne: I don’t know that anybody has ever asked him?

Nick: Really?

David: We’d love to ask him. I’ve invited him to a debate next month in Perth but I doubt if it’s been accepted.

# Anna’s Death Threat

 <Max interrupts. Some fussing about. Max directs Anna to responds to graphs.>

Anna: <1:08:42> So thank you for taking the time to explain where you're coming from and to show me the graphs.

Jo: Thanks for listening.

Anna: You're welcome. There's so much that I want to go through in terms of the science.

Jo: It's difficult.

Anna: I've been reading a lot of science that contradicts what you're saying so I'd like to be able to go through that. I've got a few things to show you there but before we do I was really glad that I was coming to meet you because I did read something on your blog a while ago that it upset me a bit and made me a bit offended and a bit hurt because you were talking about - you were talking about the death threats that scientists had received and you said that "When the rock star fame is waning a highly publicized death threat is a way to win sympathy and keep the celebrity factor rolling, it also makes your opponents look like criminals, convenient" and then you said "This is sheer beef it up spin " in a new blog post, "making a mountain out of a mole hill, clutching at straws in desperation to eke out a PR victory from the dregs of the fading scare." And I wanted to show you both a death threat that I received that to me was not making a mountain out of a mole hill. We reported it straight away to the Federal Police and I worry that some of the debate that's happening on your blog maybe, maybe encouraging things like this. The comments sections...

David: Where's the death threat?

Anna: So here it says -

David: Whereabouts?

Anna: You might want to read it out.

David: Just point, whereabouts?

Anna: Sure. Just this line here.

Jo: Yeah, well that kind of stuff is appalling and I would never condone statements that suggest anything violent. I wish this debate was polite. The first and most important thing I put on my requirement for comments on my site is please be polite. I want good manners in this debate because good manners are the only way we can stick to the science instead of getting involved in attacks on people which is so not what this is about. We should be worried about what the climate's doing and what the data's reporting, not on things and people are very angry and yeah, that's a shame and I never, never support, I never condone that kind of violence. My comments were made in relation to what was put out by the ANU and others in June this year in a hot political climate in Australia and they were saying skeptics are making death threats and we were saying well where are they, show us the evidence and what they put forward was a letter from four or five years ago which was during the Howard Government, before I started blogging and everything like that. One letter from five years ago they put forward rude arguments kind of similar with lots of swearing, it's so unnecessary, it's so boorish and, you know, I don't want people to do that and they were 16 months old. So when I say that people are hyping up things I was referring to a 5-year-old letter and 16-month-old rude emails and the rude emails had no evidence of death threats, they were just very rude and unnecessary. So you'd have to agree that was beefing things up in that political climate. None of this was put forward. At the time when those things were released to the public and the statements were made there were no reports to the AFP, there were no investigations, people were not following things up. You can see how easy it would be for someone who didn't like us to make up death threats to throw them an out and then to say look the skeptics are being horrible and we're like can we just get back to the scientific evidence and if there is a real death threat then we want a real investigation because those people should be prosecuted because there is no excuse for doing that kind of thing.

David: Anna, I think you're right to be upset about this. We get mail like this reasonably frequency, apart from that line there. That's a shocker. The threat there…you should have reported that to the police.

Anna: Of course we did.

David: Good.

Anna: And that's what climate scientists have been doing as well. But I feel like, Jo, the things that you just -

David: Well, you say climate scientists, didn't it, there's never been any produced of that.

Jo: Yeah, we get very nasty emails too.

David: This is the first genuine death threat or something that can be interpreted as a death threat that I've seen.

Anna: I feel though that what you wrote on your blog, "This is sheer beef it up spin making a mountain out of a mole hill" -

Jo: Don't you agree that issuing a press release about 5-year-old one letters about a comment made in passing by an anonymous person and by rude emails that are 16 months old are sheer “beef it up spin” in the current environment to claim that there are thousands of death threats and to claim that they're increasing when in fact the evidence is quite old. I mean that's “beef it up spin”.

Anna: Several months ago a climate scientist had a noose brandished in front of him as he was about to speak at a conference.

Jo: Where, and when?

Anna: In Melbourne, it's on YouTube. I mean this happened very recently.

Jo: Okay, and I detest those kind of things. I want to get the violence out of this. I don't see why - I can't be responsible for the actions of other people, I can only do what you do and say we want a polite debate. We want to talk about the evidence.

Anna: But then writing things like this about when the rock star thing is waning.

Jo: They do wild, beef it up spin I'm not allowed to say that it's wild beef it up spin. If the climate scientists stuck to reporting the genuine death threats, if there are any, and real investigations and they stuck to saying what was out there then I couldn't accuse them of spin.

Anna: I feel like you're insinuating though that this is somehow people are sending themselves death threats and I did not send that to myself.

Jo: And I'm not saying you did. As I said you've put this in front of me now and I've never seen it before and I have no idea what the police investigation has turned up, if anything, and, you know, I hope that if someone did that then they should be held to account for it.

Anna: I'm saying that this stuff is so common and it seems to be getting worse and I am worried about places like, not the stuff you write but in the comments of your blog and some of the things that -

Jo: If you see a comment that you dislike, please let me know. I'd like to remove comments which suggest any form of violent intent and I try to keep on top of that. I've only got volunteers, I'm not paid, as much as I can I remove any threats of violence from both sides because to me it's just wrong. This should be about the evidence.

Anna: Okay, alright. Sounds like we both agree.

 <Max interjects a bit>

# “Deniers”

Jo: <1:15:11> You know, the idea that calling us deniers is name calling from the beginning, it's designed to stop people listening to any arguments put forward. If you ask people just to explain the English what is it we deny, they can never name any scientific point or paper that we will not discuss. They can't name any empirical evidence for any warming greater than 1.2 degrees and we have asked and we have asked continuously and on our blogs and around anywhere we could. No-one can point to that kind of thing. No-one can say we deny anything and yet they keep calling us deniers with these illusions of holocaust and sympathy with Nazis and what not. That's name calling that started out, that's been running for years. So when are people on your side of the debate going to start saying well hold on a minute, couldn't we just call them independent scientists instead of calling them deniers. When are we going to raise the standards on that side of the debate?

Anna: I think this probably goes back to a point about you, as you said, accept that carbon pollution or carbon dioxide causing -

Jo: I don't accept its pollution.

Anna: Pollution is a by-product of production that has a bad impact on the world.

Jo: If it did and there's no evidence that it does.

# Authority v. Evidence

Anna: Well actually I mean you've got the Climate Commission, you've got the IPCC saying it's beyond reasonable doubt.

Jo: You've got lots of associations.

David: You've got authority just like the Pope had authority. You can have the Pope himself on your side, it's still a battle of evidence, which I've shown you.

Anna: The Pope has no expertise in climate science.

Nick: Sorry, what are they saying, what are they saying is beyond reasonable doubt?

Anna: That, you know, you've got scientists very - the vast majority of scientists –

# We’ve got more scientists then you…

Jo: No, no. We can name more scientists than you can, the petition project has 31,500 scientists named, it's been checked, it's been checked twice it was done by volunteers.

Anna: It has names like Mickey Mouse on it.

Jo: <1:16:50> It's had names like that on the first round and you're ignoring the second round. Sorry, 31,500 scientists have named it, it's been double checked, 9,000 PhDs, that's never really been reported to the public. It doesn't prove anything, okay, argument from authority, just because we outnumber you we never say we're right because we outnumber you. We outrank you as well. We've got the Nobel Prize winners like Ivar Giaever on our side. We don't say we're right because we outrank you either. We just say there is another side to the argument, can we put both sides forward.

Anna: The vast majority of scientists, 97.5% of climate scientists?

Jo: No, the vast majority of the climate - which was 75 people.

David: Of the government climate scientists in the Western countries.

Jo: Did they tell you it was only 75 people out of 77?

Anna: There's been numerous studies that show that the absolutely overwhelming vast majority of climate scientists who are peer reviewed -

Jo: And they can name 75 scientists out of 77 in that and it was a 2-minute study done on the Internet which just asked them if the world was warming. We agreed, we say yes, it's warming so, you know, that's inane to report to that.

# And the Chinese, Russians, and Indians…

David: <1:17:51> Anna, also the Chinese climate establishment, thinks it's a load of hooey. The Russians have always said it's rubbish and said it's due to the sun. The Indians disagree with it and their national report on it -

Anna: Where are you getting this information on China because I was just over there meeting with people who are doing a lot of work on climate science in Beijing and the government absolutely accepts the science of climate change.

David: They're accepting a lot of Western money. If you go to a Chinese book store however you will find books in there saying it's all a plot by the Western countries against developed nations.

Anna: I'm not basing this on Chinese book stores.

Jo: There are plenty of Chinese -

David: Well, that's a government book store and it wouldn't be in there. I'm also basing it on what the Chinese said after Copenhagen. The Chinese were saying during and after Copenhagen they were saying we're not signing this agreement because we're not convinced that CO2 is the cause of the problem. That's almost a direct quote. They say that over and over again. So that's why I'm saying the Chinese aren't buying it.

Anna: I disagree with that.

David: Okay.

Jo: Okay.

# And the evidence…

Anna: <1:18:36> So but I mean we have - when you asked where is the evidence –

David: I do, have you got any evidence? Can you name any? We have gone through this conversation for an hour now and we haven't heard any evidence from you, Anna.

Anna: I was not really allowed to respond as you guys went through the graphs.

Jo: Okay, your turn.

David: Okay.

Anna: But I mean so you've got climate scientists here saying a very large body of observations, experiments, analysis and physical theory points to increasing greenhouse gases in the atmosphere with carbon dioxide being the most important as the primary cause of observed warming.

David: That's evidence of a climate scientist, it's not evidence that CO2 caused anything.

Anna: But when you say, I mean you do accept that there's a climate change impacts happening?

David: We accept that climate change has been going on, it's been going on since the depth of the little ice age in 1680, we've been in a warming trend since 1680 and yes, it's continuing to warm.

# And the onus…

Anna: <1:19:18> So I'm not sure what you're proposing is causing this warming if it's not?

Jo: We don't have to propose anything.

David: We're not pro…

Jo: We're not asking for billions of dollars and trillions of dollars in a scheme. We're saying could we spend our public money, our taxation and other dollars on useful things like medical research instead of on solar panels made in China which aren't going to help the environment. Aren't you concerned if they spend billions of dollars on solar panels that they're not preserving any environment, they're not saving diversity, they're not making any difference at all to the global temperature, not one bit, isn't that a waste of taxpayers' money?

Anna: But you say you don't have to prove anything.

Jo: We don't have to prove anything.

Anna: Because you're not asking for anything.

Jo: We're not asking for any money. We don't have to explain the entirety of how the climate is controlled by the multiple, multivariable factors that control our climate. It's a mystery. If we could explain that there would be climate models which would forecast ahead of time when there was El Ninos or when there were La Ninas coming, they'd be able to say farmers, worry about this next season because the next season is going to be wet or hot or cold or something.

# Climate v. Weather

Anna: <1:20:20> You're confusing weather with climate now.

Jo: What is climate? Lots of weather.

Anna: Yeah, 30-year period.

Jo: Lots of little slices of weather. Do you know the climate models when they come up with their 70-year predictions do that by breaking things down into small time zones and small parts all around the planet. They then figure out what goes on in each small bit and they add up all the small bits to come up with a long-term answer. Now if they get all the small bits wrong, all their predictions of local rainfalls and temperatures and things are wrong, how can you add up thousands of errors on a global model and come up with an answer that's right.

# General argument

Anna: <1:20:50> So you're saying that because you're not asking for money you don't have to prove anything?

David: No, we're saying CO2 didn't do it, we've got the evidence to show it. And we're also pointing out you haven't got any evidence.

Jo: Well, we're saying prove the models are wrong and this is a baseless scare and a waste of money.

Anna: <1:21:01> I feel like actually you're asking for quite a lot which is for the world to take a huge gamble and choose not to act on a very small chance that you might be right. That's asking for much more than.

Jo: Yes, asking -

David: We presented four bits of evidence here that the climate models are fundamentally flawed. They're totally wrong.

Nick: <1:21:17> And if you look at it the other way, Anna we're being asked to take a huge gamble that those who assert that our emissions are warming the planet dangerously are right because they want to change the whole industrial system and eradicate.

Anna: Nick…

Nick: No, I'm just saying, just looking at the way this is presented the onus is actually on those who assert that the warming that's occurred is caused by our emissions and is dangerous and that we have to do something about it.

Anna: Well the IPPC…

Nick: Well hang on why is it so?

Anna: - has said that there's 90% probability…

Nick: But you accept that that is the onus?

Anna: Well the IPCC said there's 90% probability so yet not 100% chance that climate change is happening and that it's human induced.

Jo: And they came up with that number by asking a room full of people to put up their hands, it's a bunch of opinions, it's not based on observational evidence.

David: Who pays those people?

Anna: <1:22:05> So the IPCC has said that there's a 90% probability that climate change is happening and it's caused by humans so there is a chance that they're wrong <1:22:12> but if we take that gamble and don't act the consequences are that we destroy the entire planet. Or, we could…

Joanne: (Laughs)

Anna Actually I don't think it's funny because I'm still going to be alive and your kids are going to be alive.

Jo: <1:22:25> The planet is not going to be destroyed.

David: Anna, there's no evidence for it. We've showed you the climate models and four different independent ways we show you'd the climate models are fundamentally flawed, <1:22:32> they haven't got a clue what's going on about carbon dioxide, what's the problem?

Anna: So we could bet the whole house on the chance that you're right or we could insure the house in case you're wrong.

David: Well, we could bet the whole house and see if the temperature goes up. Let's see the air temperatures haven't gone up according to the satellites, our best means of measuring air temperature, haven't gone up since 2001 and since we started measuring the oceans properly in 2003 those temperatures haven't gone up either.

Anna: Surface temperatures have increased and ocean temperatures have increased.

David: According to the dodgy thermometers, yes.

Jo: Surface temperatures have been increasing for 300 -

David: But according to the satellites and the Argo, no.

Jo: <1:22:59> Surface temperatures have been increasing for 300 years, it started long before we got SUVs and long before coal-fired power stations. Those temperatures have been going up. Something else caused it to start warming, maybe that's slowed down while our natural forces have come in. That would be a coincidence. You're asking us to bet lots of money on a coincidence which isn't backed by any of the other observational evidence we can point at. 28 million weather balloons, 6,000 bore holes, 3,000 Argo buoys, 30 years of satellite data. The evidence going back millions of years fails to show any strong correlation where CO2 causes major changes in temperature.

Anna: So but you're kind of implying that climate scientists are saying that all warming in the past is caused by carbon where they've never said that.

Jo: I didn't say that.

David: No, and they don't say that either.

Anna: But we know that the ice cores do show positive feedback loops.

Jo: No, they don't.

David: They don't, they don't prove that at all.

Anna: They do.

David: No, they haven't.

Jo: No, there hasn't been any published papers showing that there is major amplification, nothing they can put a number to.

David: There were some papers showing some amplification but they made an aliasing error and it's wrong.

Anna: But you've got that graph yourself saying -

Jo: Yeah, yeah, we've got the graph, the Vostock ice core graph. As I said I looked at that and I was convinced we needed to worry. We've looked at the problem, we know that temperature causes CO2 to rise and fall and most of this movement is due to temperature pushing CO2 up. Maybe there is some positive feedback from CO2 affecting temperature, maybe, but it has not -

David: In theory there must be.

Jo: - but it has not been published in any peer-reviewed papers, no-one's been calculating climate sensitivity based on the best data that we have, only on 20-year-old data. They're still quoting Lorius 1990 when they talk about climate sensitivity from ice cores.

Anna: <1:24:37> Let's talk about old data –

 <Max interrupts, wants Nick talking about correlation versus causation. Small break.>

# Anna questions missing hotspot

Anna: <1:26:36> I'm not a climate scientist so this is coming…

Jo: Neither am I.

Anna: - from what I'm reading from climate scientists around the world and in Australia. One thing I am concerned about in terms of your hotspot argument is that the data that you're using is 13 years old and that one of the - it was released in 2006 but it –

 <Max, technical problem>

Anna: <1:27:38> One of the things I'm concerned about when it comes to your hotspot argument is the fact that the data that was taken was taken 13 years ago and one of the people who was part of that original study, a guy called John Christy, he was part of that study that cast doubt over the hot spot and he has said he's updated his views to say previously reported discrepancies between the amount of warming near the surface and higher in the atmosphere have been used to challenge the reliability of climate models and the reality of human-induced global warming. This significant discrepancy no longer exists because errors in the satellite and radiosonde data have been identified and corrected. New data sets have also been developed that do not show such discrepancies. So when you have one of the original people -

David: That was there the temperate zone not the tropics, what I showed you was for the tropics.

Anna: But when you have one of the original people -

David: Yeah, that was for the temperate zone and not the tropics, what I showed you was the tropics.

Jo: And when was that comment made?

Anna: In a second study, so as far as I know there have been three studies that have said that what you are arguing is wrong, one in 2003, 2005 and 2006.

David: They go on longer than that, they go back and forth -

Jo: There have been dozens of studies that go -

David: There's been quite a few of them now, every six months someone puts out something on either side.

Anna: These are just the three of the peer-reviewed ones that I…

David: That's old, that's temperate zone stuff, it's not tropic zone.

Jo: It's very old.

Anna: But see they will say that you're data is old.

David: The data is old because it's the only data there is. You have to get the data during the warming period. The last warming period was '75 to '99, that's what the area - that's the period that the data covers.

Jo: We can all see on the graphs the world hasn't changed temperature much in the 2000s so it would be kind of pointless to look for a change in the upper tropospheric warming zone during a period when the world didn't warm much. So when the world did warm, we agree, 1980 and 1990s we can't find any evidence and they have re-analyzed and re-analyzed that data for that 20-year period over and over and no matter how many different ways they adjust and look for coal biases and warm biases at the right spots they haven't managed to publish a convincing study showing that the models fit with the observations. McIntyre, McKitrick and Herman published a paper in 2010 showing that the models disagreed but only by 400%. It was huge.

Anna: <1:29:54> I mean Lindzen disagrees with you on this.

David: No, he agrees with us, we're in contact with him he agrees. The missing hotspot is due to lack of evaporation and the lack of the thing put the water vapor layer pushing up into the atmosphere and, yeah, it's a huge discrepancy.

Anna: We'll talk to Lindzen when we meet him but I've seen a statement from him that I'll send you afterwards saying that actually this is no evidence that climate change isn't happening.

David: It's got nothing to do with climate change is happening. We agree climate change is happening.

Nick: The issue's whether there's positive feedback. This is evidence to suggest that there isn't the positive feedback that's asserted.

Anna: Lindzen argues that trying to use this to say, this is my understanding, that Lindzen says trying to use the hotspot to say that there's no climate change and it's that it's not human induced is incorrect.

Nick: I haven't seen that but we'll hopefully -

Anna: It's very recent.

Nick: Hopefully have a chance to put it to him.

Anna: Yeah, we will put it to him.

Jo: Yeah, ask Lindzen whether he thinks the model's right and whether they are assumptions on the upper tropospheric -

Nick: Because that is his area, the positive feedback.

# Anna’s understanding is overly simplistic…

Anna: <1:30:54> It seems that what we were discussing earlier and as you have also said that carbon does cause warming -

Jo: Carbon dioxide, yep.

Anna: 1.2 degrees.

Jo: Up to if it doubles.

Anna: And then what we're arguing beyond that is about feedbacks?

David: That's right.

Jo: Yes.

Nick: That's right.

Anna: So we're not disputing that carbon dioxide causing warming?

Jo: Yes, we're not.

David: No, no, no we're not disputing.

Nick: Does it cause dangerous warming and is it a problem, yeah, that's the -

Anna: Is it a problem?

# Nick points out that a bit of warming might be good

Nick: <1:31:14> How do we know? How do we actually know that warming is a problem? Why do you think this is the perfect temperature for the world? Why is it so horrifying to think that the world might be 1 degree warmer, it might be a whole lot better.

Anna: We've already had people in the Pacific having to evacuate from their islands because of sea level rise.

Jo: Which people, which people and which islands?

Nick: See this is the thing that gets me that there isn't the cost benefit analysis of warming. For some people warming will be fantastic. For lots of plants it's going to be fantastic.

Jo: For food production.

Nick: For people who are trying to grow crops in cold places.

Anna: You're joking? Your joking, you're not actually saying that if we have climate change with the potential of runaway climate change?

# The Debate is About Runaway Climate Change

Nick: <1:31:55> No, that's the debate, would there be runaway climate change. I'm saying is it necessarily the case that even if it went up 1 degree over a century that that would be disastrous for humanity.

Anna: But that's not what the scientists are saying. Here you've got the Australian Academy of Science, you've got NASA, you've got every national academy of science in the world.

Nick: This comes back to the whole argument that they're basing on models that are saying it is going to run away and it's going to be 4 degrees or more.

Anna: It's not just about models. It's also about the real world.

Jo: It's about the opinions of scientists and associations, none of those associations surveyed their members and asked the thousands of members whether they agreed with the statements put forward by those associations. Those associations are just committees of 6 to 8 people who have an opinion, they've all sat around a table and the 6 to 8 of them and said yes, yes, we think this is the case and put out a statement on behalf of something like the American Physical Society. Ivar Giaever today, Nobel Prize winner from 1973, bailed out. He said I'm out, I'm not a member of the American Physical Society anymore because their statement on global warming is untenable, it's unscientific for them to say the evidence is incontrovertible and there is no debate.

 <Max interrupts, “move on”>

# Anna tackles the corrupt land thermometers

Anna: <1:33:07> Let's talk about the measurements, the one underneath.

David: That one?

Nick: Thermometers.

Anna: Thermometers, yep. So firstly as we briefly discussed but probably didn't get on camera, the Bureau of Meteorology in Australia does take this into account. They used to have one in the centre of Sydney, they've moved it far out of the CBD so that it would be reflected accurately in the data. So we know, and I'm happy for us to call them now and to talk to them about that because I think that you're wrong in saying that they include these in the temperature records.

David: These aren't in Australia, this is in Urbana in Ohio in the United States.

Jo: Most of the photos we have are from the US.

Anna: Okay. So climate scientists all over the world are aware of this and they do account for it.

David: Sure, no, they don't account for it.

Anna: But then there has also been a more recent study that I'm sure you're aware of saying actually it makes no difference anyway.

David: We saw that study too.

Anna: Because the well sited ones and the bad site –

Jo: You can statistically combine big pools of things to come up with answers and when you've statistically done all the tricks to say that you can show that there's no difference between this class and that class, but you look at these and ask yourself looking at this do you believe that that thermometer is accurately measuring the temperature to within 0.1 or 0.2 of a degree which is what this is all about and how can anybody look at that and not say well, you know, this is not very good science, this is not very good data, we have some question about it.

David: Bottom line is, Anna, these thermometers give rise to a temperature record that's different from the satellites. These thermometers show it's still warming and the warmest year was 2010 or 2006. We use the satellites the warmest year is 1998 and the warming probably stopped in 2001. So who are you going to believe? The satellites that go around 24/7 and measure the whole planet, or a bunch of thermometers like that?

Anna: Are you saying that the world has - I don't think you said this but are you saying that the world hasn't warmed since 1998?

David: <1:35:04> I'm saying the warmest year according to the satellites was 1998. The warming trend stopped in about 2001 or '02, it's pretty much flattened off since then.

Nick: It's basically levelled off. That's what the satellites are showing.

David: That's backed up by the Argo data for the oceans which shows it really hasn't been warming, it's been flat in the ocean data since 2003.

Anna: How do you explain this with this green line from NASA?

Jo: Because if you condense enough data down and you make the time span long you're really not able to see any of the data here. This 0.8 degree from bottom to top there, so this difference between them is about 0.2 of a degree between satellite and between the surface data. 0.2 of a degree in 30 years makes a difference.

Nick: <1:35:38> That's from 1850. That's 160 years compressed.

David: That is just showing from there on and notice how the green one, the GISS one keeps going up more than the others? This is out there on its own using those little corrupt thermometers and it's too warm. They're cheating.

Jo: That difference might not be statistically significant yet but it's still a big difference on the kind of scales that we're talking about.

Anna: I would be careful about saying that NASA is cheating.

David: The satellites are run by NASA: It comes from the NASA Aqua satellite. We're saying some parts of NASA -

Anna: You said about this green line which is NASA:

David: Well some parts of - a couple of those are NASA. Some parts of NASA are concealing the failure of the models by exaggerating the temperatures and one way they do it is to use thermometers that are placed too close to artificial heating sources.

# Big Trends (the Akasofu graph, then back to the Carboniferous)

Anna: <1:36:21> It seems though that you're focusing on some very small things whilst ignoring a big trend which is about long-term warming in correlation with carbon dioxide.

David: Good, I was hoping you'd bring up a big trend. Here's the trend I want to show you. It's been warming since the depth of the little ice age in 1680. It's been warming at about half a degree per century and within that warming there are periods of about 24 to 30 years of warming and 24 to 30 years of cooling and that pattern has been consistent as far back as we can see. Now this part of this graph here shows the observational data period from about 1880 through to the current date and it shows warming, cooling, warming, cooling, warming, cooling, about 25, 30 years each way. The last warming period was from 1975 through to 2001 and the alarmist models just extrapolate that. But what's actually happened is that it's now fading away, the warming has stopped going up according to the satellites and to aqua - sorry, to Argo, and what's likely to happen for the next decade or two is that we get mild cooling if the pattern continues. So let's talk big trends.

Jo: Let's talk really big trends, go on this is my turn to throw out this graph. People call us, remember, we're called the deniers, here's 600 million years of history. Sure, the estimates of uncertainty are enormous back here but no-one really disagrees that CO2 was a lot higher, 10 to 20 times higher back 500 million years ago. The world slipped into an ice age 450 million years ago when CO2 was much higher, the reason the CO2 has been coming down there is life on Earth evolved then. It sucked that CO2 out of the sky, we're carbon-based life forms, everything on Earth is designed, living things designed to pull that carbon out of the sky and turn it into plants and what not. The long-term history we've looked at every length of data there is, remember we're the cherry pickers, that's what we're called, and we're called the deniers and there is no evidence we will not discuss and point to. There's no evidence in here that shows that CO2 is a major driving force of our climate.

# Anna’s reveals her overly simplistic understanding

Anna: <1:38:27> You don't think that carbon is a driving force?

Jo: We don't think that carbon dioxide is a driving force of our climate.

David: It's a very minor player.

Jo: We think it is a player, it's a small part.

Anna: We know that it traps heat. I mean okay -

David: Yes, we know that, yes, we agree.

Anna: Which part of this equation do you disagree with?

Jo: We disagree with the numbers.

Anna: Okay, so we know that humans emit greenhouse gases including carbon?

David: Yes, yes.

Anna: We know that carbon traps heat.

David: Yes.

Anna: And we know that the world has been warming surface, air and ocean.

David: Yes, over a period of decades, right, it's been warming, yes.

Nick: Centuries.

Jo: Centuries.

David: Centuries, yep.

Anna: So that's - I mean that's -

David: It's not a slam dunk. It could be something else causing the warming and the fact that –

Anna: And but what do you propose it is?

David: - the climate models are so wrong and fundamentally flawed indicates that it almost certainly is something else.

Anna: I disagree.

David: Okay.

Anna: I think that -

Jo: Quite up to you.

# Please, please, please – show us your evidence! The Enlightenment.

David: <1:39:09> If you have any evidence please present it. If you've got any evidence at all that carbon dioxide is the main cause of global warming please let us know what it is. So far you've only quoted authority to us, you've quoted various authorities, admittedly scientific but nonetheless you're just quoting authority.

Anna: Admittedly scientific, I mean that's what this debate is about, it's about what science -

David: The Pope had his scientists too. They disagree with Galileo and they were wrong.

Anna: I don't know why you keep bringing up the Pope.

David: Because the Pope versus Galileo was a very old traditional case of the beginning of the enlightenment -

Anna: So you're Galileo and I'm the Pope in this equation?

David: You're quoting authority, I'm quoting evidence and I don't want to return to pre-enlightenment time where political authority and being politically trendy overrides scientific theory - sorry, scientific evidence and that is what I'm afraid is happening in this environment at the moment. We've got a huge name calling campaign to suppress people who do point to evidence. We've got government spending oodles and oodles of money on propaganda telling us that we're wrong and just to listen to them and it looks like we've got massive political authority on one side of the argument and nothing on the other side. One side has got no resources, the other side has massive resources.

# Would you buy insurance at this price from these people?

Anna: <1:40:09> So what's the downside to taking action?

Jo: Alright, good, I'm glad you asked, you mean as in like precautionary principle because people quote that as why don't we take insurance. If your insurance costs $100,000 -

Anna: What I was saying before was about you guys are saying that we shouldn't act.

Jo: If your house insurance cost $100,000 would it be worth taking? There is a cost benefit to all insurance. What is the point of spending thousands of millions of billions of dollars if we haven't got any evidence at all that the models are producing reliable estimates of what's going to happen in the future.

Anna: Alright, assuming that you're right, assuming that you're right, even if - okay, let's use a really simple analogy. Most people take our car insurance every year, it's about $1,000, you don't get to the end of the year and go "Damn, I didn't crash my car."

Jo: Sure.

Anna: So -

Jo: Sure, so if the guys who are selling you car insurance are saying you need to spend $50,000 to insure your $50,000 car then you'd be saying hang on why, and then they say well look at the accident statistics and we say well let's look at them and they say well we're withholding all the data, we don't give you the publicly available data on it. We're hiding declines, they get caught saying that in their emails.

Anna: You're talking about tree rings, not temperature -

Jo: No, you're giving an analogy and I'm responding. If those guys said you need to spend $50,000 a year on your car insurance for a $50,000 car I would ask to see the evidence. They hide the evidence, they won't admit it, they've been caught saying we're hiding things, we won't give out the information. We're hiding declines and we're using tricks and they've said all that and you're still saying –

Anna: You’re taking both of those things completely out of context.

Jo: Okay, I'll pay $50,000 to insure my $50,000 car.

Anna: What can we use to buy clean air, clean water and clean soil if –

# It All Comes Back to Evidence

Jo: <1:41:47> Well first we need evidence. We need to start with getting the policies right. Think about the precautionary principle. It's a bogus law of science. It isn't a law of science because it works for both sides. From our point of view we're saying if you were to spend, as Obama is planning to, $3.4 billion on carbon sequestration, to pump carbon underground and store it underground, that's $3.4 billion which could be used to provide 46 million people with operations to cure their vision, so we're talking about 46 million people who could be cured of blindness, 100 million could be given clean water and you're choosing to say well we better stuff that carbon underground and let the 46 million go blind. What do you say to the mother in Tanzania who loses three kids to dysentery because they haven't got clean water. You say "I'm sorry about your kids, it was worth it though because we've changed world temperatures by 0.00001 degree in over 50 years." I mean where's the fairness in that? And people throw the precautionary principle but we can throw it back just as fast. It tells you nothing about what you should do. Only a cost benefit analysis that looks at both sides is worth doing.

Anna: You're free to throw anything back at me but I think that you're setting up a false dichotomy. It's not we can focus on health or we can solve climate change. We need to -

Jo: There is only so much money available in the world. You're saying well we should spend –

Nick: You've got to make choices.

Jo: - as much as we want, we can spend as much on insurance as we want in the unlikely event that something will happen.

Anna: Unlikely? The IPCC -

Jo: Do you have insurance that an asteroid could hit your house?

Anna: The IPCC is saying it's 90%.

Jo: Do you think it's worth insuring that an asteroid could hit your house?

Anna: If the car that I'm about to get into after we leave your lovely house was having a chance - if engineers told me that car that I'm about to get into had a 90% chance of crashing I would not get in it.

Jo: I'd ask the engineers for some evidence.

Anna: But your evidence, evidence is coming from people who frankly -

Jo: <1:43:39> Our evidence is coming from 28 million weather balloons, 6,000 bore holes, 3,000 Argos buoys, 30 years of satellite data, 500 million years of the best proxies that science can put forward. Our evidence is coming from anywhere and everywhere and from machines that don't have opinions, they give us numbers. Your evidence comes from people with opinions, from associations and from scientists and from models.

Anna: You're saying science is opinion?

Jo: A model is an opinion because someone has had to say my guesstimate, my estimate, my assumption, I reckon that humidity will rise to here and stick around for this long. Other scientists say well the humidity could rain out low, it could turn into low clouds that reflect the light. What if we spend $2 trillion, that was what global markets were looking at spending per year turning over in currency trading on global climate credits, carbon credits, you know, it's enormous amounts of money. If they're going to spend that much money shouldn't we be able to point to some instrument, some non-opinion, some actual recordings from an instrument which suggests we have something to worry about. All they've got are models.

Anna: I would argue that they also have real world observations and ice cores.

Jo: But which ones?

# Joanne’s Funding

 <Max interrupts: “we’ve reached that intractable point again”. Joanne points out she want to talk about her funding, which Anna had wrong, Max assents.>

Jo: <1:46:07> Look, in all fairness, Anna, I was given some funding, some support and help to cover costs and things to develop this booklet which is the -

Nick: Which is number two.

Jo: - the second *Skeptics Handbook* that came out from Heartland. Overall David and I have spent thousands on this, it's cost us thousands of dollars to run my blog, to work for three years nearly full time to do this and the fact that I did this one for nothing pretty much shows that any intent I have in this is not about earning the money in vested interests, it's about getting the information out there and, you know, whether or not I was supported by even say a Saudi oil sheik doesn't change the graphs, it doesn't change the arguments.

Nick: Not that you were supported by a Saudi oil sheik.

Jo: No, but do you know any? If you've got any criticisms, and I'm sure you do, of the arguments in it then I'm more than happy to talk about that but funding is just another ad hominem attack, it's got nothing to do with the evidence.

Anna: I haven't read this one actually, 'Global Beliefs Want Your Money'.

Jo: Please, have a copy.

Anna: Okay.

# One Last thing…

Jo: Because the other point I guess we haven't had time to talk about today which I think's really important –

 <General laughter. Max assents, but it won’t get put to air… Quick break.>

Anna: <1:48:01> For me it's -

Nick: The effect on farmers.

Anna: That's why I care about it. Not so much about the polar bears or the melting ice or anything like that it's about agricultural impacts.

 <Ok, cameras rolling>

Jo: <1:48:33> Look, people keep saying that we're funded by big oil and they keep throwing the fossil fuel thing in, I guess it's fair to discuss those kind of things but people very rarely point to the ones who are going to win if there's a carbon trading scheme and this is one of the things that quite scares me is that if we get, well a global scheme, they were talking about $2 trillion turning over each year, the largest commodity market bearing in mind it's not a commodity it's just paper certificates for air over China, and the kind of money that's involved there, the people who are really going to win are the big bankers who have been pushing for this, the giant financial houses like Deutsche Bank and Goldman Sachs, and JP Morgan are going to make money on every trade, no matter who buys or who sells, no matter whether the cost is high or low. They're going to make money because they're the brokers in a massive trading scheme. No wonder those guys are keen to push it and Deutsche Bank are putting out information booklets on the climate. There is massive money on both sides of this equation but you can't say big oil has a huge impact and not mention the enormous, enormous pressure from financial institutions.

Anna: Have they been funding climate science research?

Jo: These financial institutions they've been funding lobbying on Washington and Congress.

Anna: I do understand that you are very, very passionate and that you completely believe what you believe and you're not saying it because you're being funded by Exxon Mobile or anyone.

Jo: Thank you.

Anna: I understand that. I think though that like I can't agree with what you're saying because there's been so many scientists that have, I feel, satisfactorily answered this. I probably didn't communicate that particularly well because I'm not a scientist.

David: That's alright, we understand that all these arguments always come to that point.