**So, I’m guessing you saw the news that the global average surface temperature in January twenty-twenty-five was one-point-seven five degrees Celsius warmer than preindustrial levels.**

**All a bit embarrassing really because our climate scientists had previously told us that January twenty-twenty-FOUR was the warmest on record and that THAT was probably an anomaly caused by the strong El Nino effect in the Pacific Ocean that was happening at the time, which tends to temporarily nudge global temperatures up a little bit.**

**That system moved into its La Nina phase later in year, which is the one that tends to COOL global temperatures down again, so the general consensus was that we would see the line on the graph dip a bit this year.**

**And so far, it hasn’t.**

**It all appears to be a bit of a puzzle for mainstream climate science, despite the fact that people like Stefan Rahmstorf and Johan Rockstrom at the Potsdam institute have been talking about tipping points and feedback loops for several years now, and despite the fact that ocean surface temperatures in twenty-twenty-four were notably higher than previous years, and despite the fact that the removal of sulphates from the fossil fuels in the sea freight industry has reduced the amount of reflective particles in the atmosphere and despite the fact that even the previously impenetrably cold waters around Antarctica have also now been found to be warming at an unprecedented and alarming rate. Despite all these indicators, mainstream climate science still insists that the latest numbers are a bit perplexing and might just be an anomaly.**

**Well, now there’s another bit of empirical evidence to chuck in the mix from the other end of the world, up in the Arctic, where researchers have just discovered that more than a third of THAT region has now FLIPPED from being a vital carbon store to being a net carbon source.**

**So, are we actually getting any closer to some answers here, or not, because I think we’d all quite like to know, wouldn’t we?**

**Hello and welcome to Just Have a Think,**

**Now if you’re a regular viewer you’ll have probably heard me bleating on about tipping points and feedback loops many times over the years.**

**In fact, the first time I referenced them was literally in the first video I ever made on YouTube back in twenty seventeen and I’ve been periodically talking about them ever since.**

**Since then, we’ve seen average global surface temperatures increase pretty relentlessly.**

**According to the National Oceanic and Atmospheric Administration, which, by the way, is currently in the process of being dismantled by the not at all fake or illegitimate US Department of Government Efficiency, the ten warmest years since eighteen-fifty all occurred in the last decade.**

**So, even if we steer clear of short term knee jerk reactions to individual weather anomalies brought about by phenomena like the ENSO system, and instead focus on longer term climate trends, which is what our scientists tell us we should do if we want an accurate picture of what’s coming, then it still looks like we’re well on our way to permanently, not temporarily, breaching the lower limit of one-point-five degrees Celsius set out in the Paris Accord.**

**Arguably though, an even better way to gauge long term climate trends is to focus on atmospheric concentrations of carbon dioxide, which is what Professor Carl Rasmussen of Cambridge University in the UK suggested in this recent social media post.**

**He offers us this chart showing that the concentration of CO2 in the atmosphere is increasing at an increasing rate. In other words, it is accelerating. Rasmussen argues that the correct analytical question should not be ‘when will we reach long-term plus one-point-five degrees Celsius?’ but ‘when are we likely to reach four hundred and fifty parts per million of atmospheric CO2?’ because that’s essentially the concentration that will lock in place that long-term temperature increase. The latest data indicate a likely breach of four-fifty PPM in September twenty-thirty-three, plus or minus about seventeen months.**

**Which brings us, briefly, to James Hansen.**

**He’s the guy that wore a fetching cream suit to a congressional hearing back in nineteen eighty-eight, where he told them this**

**“The evidence that the earth is warming by an amount which is too large to be a chance fluctuation represents a very strong case, in my opinion, that the greenhouse effect has been detected and it is changing our climate now.”**

**Anyway, Professor Hansen has developed something of a reputation in recent years for erring towards the slightly more apocalyptic end of the climate prediction spectrum, and there are a lot of equally well-regarded climate scientists who suggest his assertions are a little more bleak than they need to be.**

**Nevertheless, he and his team have access to some of the best resources available and they are extremely forensic in their analysis of the data, so it seems a little remiss to ignore their research altogether. Their latest paper, published in February twenty-twenty-five, argues that average global surface temperatures will stay at or above one-point-five degrees higher than pre-industrial levels in the coming years before rising to around two degrees by twenty-forty-five, with all the ensuing environmental, ecological, socio-economic and geo-political carnage that such a breach will reap on our planet.**

**But as I say, other experts have contested the paper's findings. Valerie Masson-Delmotte, who is the former co-chair of the United Nations climate panel's working group on climatology pointed out that Hansen’s paper**

**"is not published in a climate science journal and it formulates a certain number of hypotheses that are not consistent with all the available observations,"**

**I’ve left a link to the Hansen research in the description section below here, and I’ll let you draw your own conclusion about its accuracy.**

**For my money though, it’s THIS latest research that’s perhaps the most concerning of all the recently published scientific literature.**

**It comes from an international team led by the Woodwell Climate Research Centre in the USA.**

**The researchers studied Carbon Dioxide readings gathered from two hundred different study sites between nineteen-ninety and twenty-twenty, apparently representing a data sample some four times larger than any previous analysis.**

**What those data revealed is that thirty-four percent of the Arctic-boreal zone has now flipped to become a net source of carbon dioxide into our atmosphere, having been a net store of carbon for thousands of years. That number is derived by measuring carbon uptake from plant photosynthesis and setting that against CO₂ emitted by microbial and plant respiration. And when emissions from all the widespread wildfires were added in, the number goes up to forty percent.**

**Although many parts of the Arctic are turning greener as they warm up between three and seven times faster than the global average, bringing longer growing seasons and more CO2 consuming vegetation, previous research has shown that only about twelve percent of those new areas are showing an annual net uptake in CO2.**

**Speaking in an interview with Kate Petersen at the Woodwell Center, the paper’s lead author Dr. Anna Virkkala said**

**“We wanted to develop the most current and comprehensive picture of carbon in the north, and to do that, we knew we needed to account for fire’s growing carbon footprint in this region,”**

**“While we found many northern ecosystems are still acting as carbon dioxide sinks, source regions and fires are now cancelling out much of that net uptake and reversing long-standing trends.”**

**And all of that comes on top of the accelerating levels of CO₂ and methane emissions from lakes, rivers, and wetlands that are being released as the permafrost region continues to thaw as well, which is something we’ve looked at a couple of times here on the channel.**

**And these are examples of the tipping points and feedback loops I mentioned earlier on. They are self-reinforcing. They get faster and faster, and they make the lines on climate projection graphs change from linear progressions to exponential curves. Which is why people like James Hansen and the folks at the Potsdam Institute, and frankly many other climate scientists if you manage to catch them in a private candid moment, are all extremely concerned that our political leaders are catastrophically underestimating the size of our global predicament and the speed with which the consequences will hit us in the coming decades.**

**To get an idea of why we find ourselves in such a position, despite the fact that the physics of greenhouse gases and atmospheric warming have been well known by governments and corporations for about fifty years,**

**you could do worse than get yourself of a copy of this book, published in October twenty-twenty-four.**

**The authors explain how the idea that we can overshoot the Paris climate targets in the short term and then rein them back in again a bit later in the century when we’ve magically developed the technology to suck hundreds of billions of tonnes of carbon dioxide back out of our atmosphere, has been quite successfully implanted into the brains of politicians by the breathtakingly effective PR machines of the fossil fuel industry, lubricated, as always by liberal quantities of financial compensation.**

**As with all the best investigations, Carton and Malm follow that money, revealing how all the gargantuan investments made by big oil and gas and subsidised by governments would become stranded assets if we stopped burning fossil fuels quickly enough to stay within the Paris climate goals.**

**I won’t spoil the plot too much because it’s a bloody good read, albeit an exasperating one, but I’m sure you get the idea.**

**Technology will definitely play a vital role in improving the world we live in, just as it did throughout the twentieth century and in many ways continues to do in the twenty-first century, which is why I feature it so heavily here at the Just Have a Think channel.**

**But the simple fact remains that the world is NOT on track to reduce greenhouse gas emissions anywhere near quickly enough to stay within the Paris goals.**

**There is no known technology that can remove hundreds of billions of tonnes of carbon dioxide from our atmosphere and there is no realistic prospect of anyone pulling such a technology of out of their rear-end anytime soon. So, unless we eradicate the root cause of the problem, no amount of technological band-aidery is going to make a blind bit of difference.**

**Now, these sorts of videos always provoke an enthusiastic stream of consciousness down there in the comments section, so whatever your opinion, that’s the place to leave your thoughts.**

**That’ll do us for this week though.**

**Thanks, as always to the amazing folks over at Patreon, who keep the content on this channel completely independent and enable me to keep ads and sponsorship messages out of your way.**

**If you appreciate that and you feel you could support my work here at Just Have a Think then please do jump over to Patreon dot com forward slash just have a think to find out how you can join the team and have a look at all the exclusive perks you can get there, including free introductory membership and paid membership for as little as a dollar a month.**

**And if you enjoyed this video then you really can hugely support me by hitting the subscribe button on YouTube and clicking on all notifications. It won’t cost you a penny to do that and it’s just a simple click away, either down there or on that icon there.**

**Most important of all though, thanks very much for watching! Have a great week, and remember to just have a think.**

**See you next week.**