

FIVE QUESTIONS

ABOUT TIPPING POINTS AND CLIMATE ANXIETY

WITH JOCHEM MAROTZKE



Mr. Marotzke, you research the Atlantic overturning circulation. The Gulf Stream is part of this phenomenon and is also driven by the salinity of the water. A recent study concluded that this warm-water heating system for Europe could soon collapse because melting Greenland ice is diluting the ocean. Is the concern that this climate tipping point will be irreversibly exceeded justified?

JOCHEM MAROTZKE: The aforementioned study assumes a very simplified physical relationship, and it is not reliable as a prediction. You really have to draw a sophisticated picture, both here and for other tipping points. The image of a tipping point that people often have in mind is something that topples over and can't rise up again. However, for many of the tipping points that are being discussed, there is still a great deal of uncertainty as to whether they will actually occur.

The public presentation of statistical uncertainties can cause confusion. How do you deal with this?

I admired how Mr. Drosten communicated during the pandemic. Science is complex and rarely black or white, so I prefer to explain how things connect. However, I am aware that I have to be careful when it comes to how I present research findings. That's why, in public lectures, I always outline first what we know for sure, namely that the ob-

served warming is due to humans. Period. We also expect more extreme weather. But it's quite another thing to be absolutely certain in individual cases, such as with tipping points.

How confident do you have to be to take action? There is a consensus in climate research that we have a serious problem.

It certainly isn't wise to wait until you are absolutely sure. How decisions are made under uncertainty is a political question. Of course, you have to trust the climate models. Heavy rainfall and droughts will increase. But when in doubt, it's counter to the scientific code to assume, even for a good cause, that you know more than you really do.

Science and politics often have different values and goals. And the public has expectations of both sides.

Politicians must factor in much more than just scientific knowledge. Rightly so. Good politics ensures a balance of interests in a democracy and has a leadership role, which I appreciate very much. If politics were as strictly consistent as science has to be, it would be incapable of action. However, I hope that politicians will use knowledge more systematically and that there will be more time for discourse. For this to work, both sides must learn to understand each other better.

In the movie *Don't Look Up*, an asteroid is racing towards Earth. Scientists are doing everything they can to ensure that this threat is taken seriously. Politicians and civil society, however, reassure everyone, "just don't look up!" How do you present unpleasant facts in such a way that society remains capable of taking action?

A positive example: during the pandemic, the authorities reacted decisively and effectively at the beginning; later, there was a switch from crisis mode to risk-management mode. However, climate change is not a crisis that is passing by; it's here to stay. Crisis mode cannot be sustained for long. At the same time, of course, one would have to act much more quickly and decisively to achieve defined climate goals. This is a fine line, also with respect to communication. Do I want to alert people, call for immediate action, or provide the most accurate knowledge possible as a basis for decision-making? The fear that we will exceed 1.5 degrees and then everything will collapse is certainly scientifically unfounded and paralyzing.

Interview: Tobias Beuchert

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