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Persistent anticyclones, AI and quantum compu Need a "CERN for Climate Change"

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At the thermodynamic level, climate change is simple 19th Century physics. Predictions of warmer wetter winters and hotter drier summers draw on such thermodynamic ideas. However, these do not explain what happened this summer, where drought, heatwaves and fire spread across large parts of Europe. The proximate cause of such meteorological conditions was a persistent anticyclone positioned over Western Europe. Were such anti-cyclonic conditions made more likely by climate change? To answer this question re-quires us to understand not just the thermodynamic aspects of climate change, but the dynamic feedbacks too. This changes climate change prediction from a simple thermo-dynamic problem to a highly complex, nonlinear 21st Century problem. Indeed I argue that it is so complex that current generation climate models are simply not good enough to provide reliable answers. I conclude we need a “CERN for Climate Change” (where nations pool human and computational resources) to understand whether the summer of 2026 is going to be the new year-on-year normal for Europe, or whether it is a summer we are un-likely to experience again for many years. Along the way, I will try to discuss the potential role of AI and quantum computing in helping answer these questions. In a sea of tiny droplets, a larger drop, owing to its larger inertia, has more potential to col-lide with smaller drops, coalesce with them, and grow. We derive an equation of motion of these big lucky droplets. In turbulence, we show that their growth scales with the smaller drops’ inertia, and point to the advantage enjoyed by luckier drops starting out in vortical regions.

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Schlagwörter

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