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13. Deutsche Klimatagung

COVID-19 in Berlin: On the use of „clean" shutdown correlations to estimate further climate effects

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The search for climatic impacts on the outbreak and progress of epidemics has often recourse to idealized seasonal cycle models, covers extended periods and/or concerns large populated areas. Here the occasion of the German shutdown is taken up to pose more detailed questions, in contrast, based on daily data for the capital, Berlin, and its climatic environment as represented by the station Lindenberg (Mark) -- some 30 km beyond the outskirts of the city. The three months of shutdown (there was no „lockdown"!) from March to June, 2020, where extrinsic impacts on the local evolution of the SARS-COV19 epidemic were largely absent, created a sort of „laboratory condition" for the study of intrinsic epidemic dynamics. Of this period, the 66 days of the first wave did largely coincide with the seasonal transition in spring 2020, and correlations are obvious here between the epidemic wave and parameters of a 5-dimensional observed surface climate (pressure, temperature, relative humidity, winds and daily sunshine duration). Use of these correlations to extend the study of climatic impacts beyond the shutdown period is restricted for the obvious external reasons of seasonal march and lifting of restrictions, but there is also an internal issue: As it turned out, the first wave in Berlin belongs to the equilibrium („Zero COVID") branch of the system's dynamics, whereas the second wave that started in autumn represents a higher dynamic excitation and cannot relax the same way: it runs into the endemic state. Using an established epidemic model, these conditions are further scrutinized, including the question, how a „combined" correlation might be defined that takes the variable effect of individual climatic impacts into acount. The apparently simple situation of the first wave under shutdown conditions bears challending scientific tasks.