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Interactive comment on "On fluctuating air-sea-interaction in local models: linear theory" *by* Achim Wirth

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The main criticism of the reviewer is that the models are too simple and the stochastic differential equations are extensively use in the community.

In climate sciences, there is a large body of work that adds noise to models of different complexity and analyses the results. But the point I want to make is that stochastic differential equations can actually be used to perform analytic calculations and obtain solid results. Therefore the appendices are detailed (also to allow for an easy verification of the results and show that part of it is indeed linear algebra). I am not aware that this has been done for air-sea interaction. Simple analytical models are wide-spread in the physics community but to the best of my knowledge, not for air-sea interaction

so far. When the reviewer talks about "The fluctuation theorem [...] is still found in the mainstream weather and climate literature", it is not clear to me if he means the fluctuation dissipation relation (section 4 of my paper), fluctuation dissipation theorem (section 6 of my paper) or fluctuation theorems (section 7 of my paper), which are all different. Explaining this differences and illustrating them is one purpose of my work. I challenge the reviewer to give me a single reference where fluctuation theorems are discussed for weather, ocean or climate.

I want to emphasise that the reviewer has found no error and given no reference showing that the results are not new.