

## ***Interactive comment on “Quasi-hydrostatic equations for climate models and the study on linear instability” by Robert Nigmatulin and Xiulin Xu***

**Ilias Sibgatullin**

sibgat@imec.msu.ru

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Dear Robert Nigmatulin and Xiulin Xu,

You try to make conclusions on the well-posedness of the Cauchy problem. For evolution system it means hyperbolicity. But the system of hydrostatic approximation is not strictly (explicitly) evolutionary. For arbitrary vertical structure, there is an approach to make it evolutionary by vertical discretization to a set of shallow water systems, you can see the reference in my comments <https://arxiv.org/abs/2001.08637>. With such an approach hyperbolicity can be strictly analyzed, so the conclusions on well-posedness were made, but it seems you just do not want to consider these works and to compare

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to your results. Your approach with dependent variables and with 3 diagnostic and 3 prognostic equations seems questionable to me.

Ilias Sibgatullin

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