

Interactive comment on “Hilbert problems for the geosciences in the 21st century – 20 years later” by Michael Ghil

Anonymous Referee #1

Received and published: 9 June 2020

The author updates his discusses of ten major problems in climate science outlined in Ghil (2001). This interesting paper is not a standard review of a certain area of climate science, but more of a career overview and perspective of the author, spanning multiple research areas and different intersections. The problems discussed start with atmospheric and oceanic variability modes, and continue to economic, and coupled climate-economic problems. Throughout, the author takes dynamical system theory as the main tool and applies it to this broad range of problems. I enjoyed very much reading the paper, found some parts to be surprising and other parts led me to search for subjects or tools that I was not aware of. It seems that this would be the exact purpose of such a paper - expanding the areas of interest of the readers that are likely to come from one specific specialization area, and I think the paper achieves that goal

C1

very nicely. I recommend publication basically as is. A couple of minor comments: (1) "climate control" made me think of geoengineering, and I was glad to see that was not the intention. Perhaps this can be made more explicit where necessary (or, even better, perhaps the terminology could be changed?). (2) These seem to be not Hilbert problems for the Geosciences, but more like for climate sciences, which is broad enough as is, of course. Perhaps the author wishes to consider renaming the manuscript or briefly putting the selected problems in the perspective of the broader Geosciences that might require a very different set of problems.

Interactive comment on Nonlin. Processes Geophys. Discuss., <https://doi.org/10.5194/npg-2020-13>, 2020.

C2