

# Analysis of a two-layer energy balance climate model

*Monday, 22 April 2024 10:00 (30 minutes)*

A simple yet extremely valuable approach to the study of the climate system comes from the use of Energy Balance Models (EBMs), which had originally been introduced in the sixties independently by Budyko and Sellers. Such models

describe in a simplified yet effective way the evolution of the zonally averaged temperature on the Earth's surface, thus reducing the problem to a single 1D field.

The classical EBM can be improved by increasing the vertical resolution. In this talk I will present a two-layer energy balance model that allows for vertical exchanges between a surface layer and the atmosphere. I will analyse stability, long time behaviour of solutions and the sensitivity of our model with respect to parameters which are partly related to the greenhouse effect.

The presented results are the outcome of a joint work with P. Cannarsa, V. Lucarini, P. Martinez, J. Vancostenoble.

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