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The global ocean circulation: an elegant dynamical system HENDRIK DIJKSTRA, IMAU, Department of Physics and Astronomy, Utrecht University, Utrecht, The Netherlands — The global ocean circulation is a complex three-dimensional flow generated by wind stress and buoyancy fluxes at the ocean-atmosphere interface. As heat is transported with the currents, the ocean circulation is an important component in the climate system. An understanding of the properties of the time-mean flow and the internal variability of the circulation can only be accomplished by using a hierarchy of ocean models. Techniques from dynamical systems theory are very useful to systematically study the solutions of these models, the relations between the different solutions over the model hierarchy, and to connect modeled flows to observations. In this presentation, I will give an overview of the rather elegant structure of the different flow regimes known so far. In addition, the use of this structure in attributing physical mechanisms to phenomena deduced from observations will be illustrated for a particular example.

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