1086-34-784   **Andrew A Roberts*** (`arob@live.unc.edu`). *Multi-scale Analysis in Ocean Circulation Models.* Stommel's model captures the basic dynamics of thermohaline circulation but does not exhibit self-sustained oscillations in the mode of circulation. The goal is to determine minimal conditions under which a model exhibits such oscillations, which are believed to be integral to Dansgaard–Oeschger events. An attempt is made by appending a deep ocean box, which provides the opportunity to view convective instability as a driving force for oscillations. The model is analyzed using geometric singular perturbation theory, which producing a caricature of the dynamics on multiple time scales. The model does not exhibit self-sustaining oscillations with constant forcing terms and without dynamic sea ice. However, the more complex Saha-de Verdière model, which has four surface and four deep boxes, does exhibit self-sustaining oscillations with dynamic sea ice. (Received September 12, 2012)