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Advances in simulating the dynamics of the solar upper atmosphere

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Abstract. The high resolution observations from Hinode has made it crucial that we have adequate models to compare the observations with. Including the solar atmosphere from the upper parts of the convection zone to the lower corona has been impossible partly because of the lack of efficient hardware, partly because of numerical code restrictions. During the last year we have made significant strides in advancing the numerical code we use called "Bifrost". It is now able to simulate the sun from the upper parts of the convection zone and up to the lower parts of the corona, including full radiative transfer, magnetic fields, thermal conduction along magnetic field lines and the tracing of out-of equilibrium ions in 3D. Initial results and comparison with Hinode data will be shown.