Numerical Simulations of Chromospheric Dynamics and Coronal Heating

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We present results from 3d MHD models spanning the upper convection zone up to the lower corona, 15~Mm above the photosphere. Transition region and coronal heating in these models is due both the stressing of the magnetic field by photospheric and convection zone dynamics, but also in some models by the injection of emerging magnetic flux. Of particular interest to this study is the coupling between photospheric and chromospheric dynamics and the structure and heating of the solar corona. Synthetic observations of spectral lines formed in the chromosphere, transition region, and corona are computed and compared with observations made with the Swedish 1-meter Solar Telescope and with the Hinode satellite.