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Evolution of the coronal quiet-Sun magnetic field observed by Hinode/SOT

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Abstract. The new space instrumentation on board the Hinode satellite allows us to study in details the dynamic evolution of the quiet-Sun magnetic field from the photosphere to the corona. Based on high resolution magnetograms Hinode/SOT, we investigate the effects of photospheric motions on the evolution of coronal structures and open field lines. Observed photospheric motions are flux cancellation, coalescence, fragmentation and emergence of polarities. We describe the coronal magnetic field above a quiet-Sun photospheric region as a potential field. We use a time series of 1 hour long with a 1 minute cadence to study the changes in connectivity and magnetic energy of coronal structures subject to these photospheric motions. We especially focus on the redistribution of the magnetic energy density in the corona. We also demonstrate that the open magnetic flux as a source of the fast solar wind is a tiny fraction of the photospheric flux and stays almost constant over 1 hour.