

Search for missing links between photospheric downdrafts and chromospheric brightening in the network magnetic elements

M39a

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We analyze a several hours sequence of high-resolution and high-cadence filtergram and spectro-polarimetric data observed by using Hinode/SOT. We focus on the phenomena of high-speed downflows near the photosphere associated with long-lived magnetic flux concentration. These events are generally related to not only the formation of small concentrated magnetic flux patches but also the excitation of wave propagating through the chromosphere.

Convective collapse predicts the formation of high-speed downflow and the development of shocks propagating upward within magnetic flux tubes. However, convective collapse happen just once for a short-time interval and never repeat again in the same magnetic flux. If these events repeat several times in the same magnetic flux pathes, there are missing links between photospheric downdrafts and chromospheric brightening of the network magnetic elements. A plausible interpretation of repeated such events is the process called magnetic pumping (Kato et al. 2011).

In this talk, we will report on the details of our analysis and discuss an observational detection of this process.