

**Interpretation of SIM Measurements from Analysis of 3D MHD Simulations**

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Measurements from the Solar Irradiance Monitor (SIM) onboard SORCE mission indicate that solar irradiance at Visible and IR spectral ranges varies in counterphase with the solar magnetic cycle. These variations are not reproduced by most of the irradiance reconstruction techniques employed so far, so that it is not clear yet whether SIM calibration procedures need to be improved, or if instead new physical mechanisms must be invoked to explain such variations. We employ three-dimensional Magneto Hydro Dynamic simulations of the solar photosphere to investigate the dependence of solar radiance at SIM Visible and IR spectral ranges on variations of the surface magnetic filling factor. We found that magnetic features can have net negative contribution to solar radiance if they are preferentially distributed close to disk center. Nevertheless, even taking into account the migration of active regions toward lower latitudes during the solar cycle, our results indicate that the contribution of magnetic features to radiance in SIM Visible and IR bands is overall positive.