

# Dual observations of a decaying sunspot: Hinode/SP vs. SDO/HMI in magnetic field analyses

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Several studies in the last few years have focused on the analysis of the magnetic properties on umbra-penumbra (UP) boundaries of sunspots (e.g. Jurčák et al. 2018, Schmassmann et al. 2018, Benko et al. 2018). Jurčák et al. 2018, using Hinode data, and Schmassmann et al. 2018, using HMI data, found a critical vertical magnetic field on UP boundaries of stable sunspots, with a different absolute value. In order to find shared characteristics between magnetic structures, solar pore boundaries have been included in the sample (e.g. García-Rivas et al. 2021). Since solar pores are more heavily affected by light contamination from quiet Sun regions than umbrae, a new dataset was employed: SDO/HMI maps corrected for scattered light ( $\text{HMI}_{dcon}$ ). With the aim of running a comparison between the datasets above-mentioned (Hinode, HMI, and  $\text{HMI}_{dcon}$ ), we study the continuum intensity and magnetic temporal evolution of a decaying sunspot that eventually loses its penumbra and transforms into naked spots. Spot boundaries have historically been defined by a continuum intensity threshold even though intensity maps from different instruments exhibit different intensity contrasts that affect the boundary position. The studied spot allows us to look for general dissimilarities in the selected datasets, and the influence of the nature of the spot (umbra surrounded by a penumbra / umbra without penumbra) on the derived UP boundary properties.