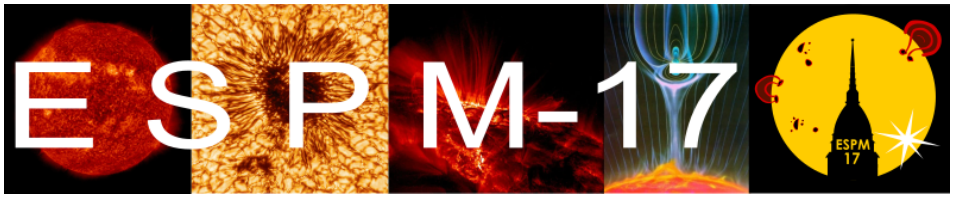

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Coronal hole and Quiet Sun comparison through observations and simulations

We presents a comparison of plasma dynamics in Coronal Holes (CHs) and Quiet Sun (QS) through observations and 2.5D MHD flux emergence simulations. We observe these regions in chromospheric and transition region lines of IRIS as a function of the underlying photospheric magnetic field (|B|). We find excess intensity (blue, redshifts) in QS(CH) with |B|. We observe persistent upflows, downflows, and bidirectional flows, with an acceleration(deceleration) of upflows(downflows) in CH(QS). We simulate flux emergence in 2.5, forming hot, cool jets due to magnetic reconnection, resulting in a confined jet(surge) in QS(CH). Through spectral synthesis, CHs show reduced intensities, excess upflows (downflows), and widths during the jetting (return downflow) period when compared to QS, with velocity, linewidth correlated with B_z at z=0 in CH. During the jetting period in CH, we find upflows in Si IV to be correlated (anti- correlated) with upflows (downflows) in other lines, and downflows in CH in Si IV to be correlated (anti-correlated) with upflows (downflows) in other lines when compared to QS. During downflow, we find no strong correlation between Si IV and other line velocities. The correlation during the jetting period occurs due to coincident, co-spatial origins of the hot and cool jet, while the lack of correlation during the downflow phase suggests a decoupling of hot and cool plasma. These results demonstrate that flux emergence and resultant reconnection with pre-existing flux in the atmosphere support the picture of a unified scenario for the formation of solar wind and coronal heating.

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Session Classification: Coffee break and poster session 1

Track Classification: Energy and mass transfer throughout the solar atmosphere and structures within