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Comparison of in-situ heliospheric current sheet structure to white light synoptic maps of the streamer belt

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The heliospheric current sheet (HCS) is a large scale boundary embedded in the heliospheric magnetic field which separates oppositely directed magnetic field lines originating from the opposite polarity northern and southern magnetic hemispheres of the Sun. It can be thought of as the outward extension of the magnetic equator of the underlying solar dipole magnetic field being convected out into the heliosphere, frozen in to the outflowing solar wind, and embedded in the coronal streamers observed in white light through the Thomson scattering of sunlight by coronal electrons when direct sunlight from the solar disk is blocked off. We use synoptic maps constructed from sequences of images obtained by the STEREO Heliospheric Imagers to study the evolution of the streamer belt with distance from the Sun. We compare the results with the locations of heliospheric current sheet crossings observed by the in-situ magnetic field measurements by the Ulysses, STEREO A and B, and ACE spacecraft during 2007. We also analyse the relationship between the streamer belt maps and the organisation of solar wind plasma properties such as the wind speed both observed and predicted by a global solar wind model.