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Multi-source observations of a coronal mass ejection front from low to middle corona

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The shape and dynamics of coronal mass ejections (CMEs) varies significantly based on the instrument and wavelength used. This has led to significant debate about the proper definitions of CME/shock fronts, pile-up/compression regions, and cores observed in projection in optically thin vs. optically thin emission. Here we present an observational analysis of the evolving shape and kinematics of a large-scale CME that occurred on May 7, 2021 on the eastern limb of the Sun as seen from 1 au. The eruption was observed continuously, consecutively by the Atmospheric Imaging Assembly (AIA) telescope suite on the Solar Dynamics Observatory (SDO), the ground-based COronal Solar Magnetism Observatory (COSMO) K-coronagraph (K-Cor) on Mauna Loa, and the C2 and C3 telescopes of the Large Angle Solar Coronagraph (LASCO) on the Solar and Heliospheric Observatory (SoHO). We apply the recently developed Wavetrack Python suite for automated detection and tracking of coronal eruptive features to evaluate and compare the evolving shape of the CME front as it propagated from the solar surface out to 30 solar radii.