

MODELING THE SUN-TO-EARTH EVOLUTION OF CORONAL MASS EJECTIONS WITH EUHFORIA

J. Pomoell, E. Kilpua, C. Verbeke, E. Lumme, S. Poedts, E. Palmerio, A. Isavnin

Department of Physics, P.O. Box 64, FI-00014 University of Helsinki, Finland
email: jens.pomoell@helsinki.fi

Unraveling the formation and evolution of coronal mass ejections (CMEs) from the Sun to Earth remains one of the outstanding goals in current solar-terrestrial physics and space weather research. Physics-based modeling has been recognized by the community as a key for advancing the understanding of these dynamical phenomena and as perhaps the most important avenue for attaining more accurate space weather predictions.

In this work, we discuss our on-going efforts to develop a modeling pipeline designed to accurately model the Sun-to-Earth evolution of CMEs on a routine basis. Our model, *EUHFORIA*, is the first European magnetohydrodynamics forecast-capable simulation model of the inner heliosphere. The purpose of the model is to aid in mitigating the effects of space weather on European technological assets as well as assist in science operations of future space missions such as ESA's Solar Orbiter. While currently transitioning to operations, the model is also under rapid development. In addition to introducing *EUHFORIA*, we present the current status and discuss future horizons of our model.