



On the Propagation and Interaction of Coronal Mass Ejections (Arne Richter Award for Outstanding Young Scientists Lecture)

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Coronal mass ejections (CMEs) are emitted from the Sun several times per day and impact Earth on average twice a month, where they are the main source of intense space weather. In order to understand the properties and effects of CMEs at Earth, it is essential to study their propagation from the Sun to the Earth as well as their initiation at the Sun. In the past ten years, it has been possible to combine global numerical models with in-situ measurements of CMEs from multiple spacecraft and with remote-sensing observations in the corona and in the heliosphere. These studies have shed new light on CME evolution, and revealed that, far from being simple, it often involves deflection and rotation. Interaction between CMEs and solar wind streams or between successive CMEs is another source of complexity. In this talk, I will review recent progress in our understanding of CME propagation, made by combining SDO and STEREO observations with in-situ measurements at 1 AU. I will also discuss recent investigations of the interaction of series of eruptions, their effect on Earth's magnetosphere and their abilities to effectively accelerate solar energetic particles.