



Coronal mass ejections (CMEs) during the ascending phase of cycle 24

Olivier Floyd, Philippe Lamy, and Tatiana Barlyanova
Laboratoire d'Astrophysique de Marseille, Marseille cedex 13, France

The Artemis-II catalog of coronal mass ejections (Floyd et al., *Solar Phys.* 2013) lists their properties (date and time of appearance, position angle, angular width, mass and kinetic energy) based on detection and measurements performed on synoptic maps constructed from the calibrated SOHO/LASCO-C2 images of the K-corona from January 1996 to December 2010. It has now been extended to 2013 allowing an analysis of their properties during the ascending phase of solar cycle 24 and a comparison with the previous cycle. In addition, these properties are compared to three proxies of solar activity, the international sunspot number (SSN), the sunspot area (SSA) and the radio flux at 10.7~cm (F10.7), either globally or separately in the North and South hemispheres in the case of the first two proxies. The monthly averaged number and mass of CMEs exhibit a time shift of 12 years and 9 months between the ascending phases of cycles 23 and 24, in agreement with the anomalously long 23/24 minimum. Both are significantly less during the present cycle than the previous one in agreement with a weak cycle 24. There are strong linear correlations of the monthly averaged number and mass of CMEs with both SSA and F10.7 but less so with SSN. However two significantly different regimes are observed for the whole cycle 23 and for the ascending phase of cycle 24 implying a comparatively larger CME activity after 2009 with respect to both SSA and F10.7. The analysis in separate hemispheres reveals a contrasted situation with significantly different rates and different linear correlations with the proxies. Possible origins of these differences will be discussed.