

SPACE DEBRIS SYMPOSIUM (A6)

Poster Session (P)

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ADDITIONAL ORBITAL FRAGMENTATION EVENTS

Abstract

The space debris model MASTER-2009 is based on the simulation of historical fragmentation events that actually occurred up to a reference epoch. The simulated debris distribution is compared with measured data. In this way, the model is validated. The validated population can only be given up to the date when the latest version of the model has been published. The latest version of the model was created for May of 2009. Trends for the future population were assumed relating to an expected rate of fragmentation events. It is necessary to continuously update the population. Since the year 2009, further fragmentations have occurred. In this paper, the additional events between the years 2009 and 2013 are examined and added to the existing population. It will be shown how the population has changed over these years. Many of the released debris during this period already have re-entered into the Earth's atmosphere due to the residual atmospheric drag. Overall, however, a further increase of space debris can be observed. The individual additional events are simulated. The simulated debris clouds are propagated to a new reference epoch. The results are presented as spatial density and compared with the population of 2009. In this way, the additional contribution to the space debris environment of the recent years is presented. The presentation refers exclusively to the fragments. Other contributions to space debris are not considered here. A particular risk exists for debris objects, which are larger than one centimeter. In this size class today the fragments are the dominant contribution to the space debris environment.