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## **Space environment (natural and artificial) — Guide to process-based implementation of meteoroid and debris environmental models (orbital altitudes below GEO + 2 000 km)**

*Environnement spatial (naturel et artificiel) — Lignes directrices pour une mise en oeuvre fondée sur les processus des modèles environnementaux des météoroïdes et des débris (altitudes d'orbite inférieures à GEO + 2 000 km)*



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## Foreword

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## Introduction

Every spacecraft or launch vehicle orbital stage in an Earth orbit is exposed to a certain flux of micrometeoroids and man-made space debris. Collisions with these particles take place with hypervelocity. The impact risk is evaluated in the design phases of a spacecraft or the launch vehicle orbital stage. Many meteoroid and space debris environment models have been studied and developed which describe populations of meteoroids and/or space debris. These models can be used as interim solutions for impact risk assessments and shielding design purposes. However, there are different methods in existence for reproducing the observed environment by means of mathematical and physical models of release processes, for propagating orbits of release products, and for mapping the propagated environment onto spatial and temporal distributions of objects densities, transient velocities, and impact fluxes. Until a specific standard for the space debris environment is defined, a common implementation process of models should be indicated for impact risk assessment and design of a spacecraft.