

Meteoroid Engineering Model (MEM) Version History

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This is a brief description of the previous public releases of MEM.

MEM version 1.0, May 2004

This first version was only an interplanetary model. The graphical user interface was very simple and produced two output files. Average fluxes and speeds were given for the surfaces of a basic cube shaped spacecraft. The other output was a composite un-normalized speed distribution.

MEM version 1.5, September 2004

This next release was still only the interplanetary model. The graphical user interface was updated with new features. The output file formats were updated and the help files were updated. Source code was revised to include additional output surfaces and new output file formatting. The speed distribution output file was scaled to unity.

MEM release 1.0, February 2007

The model's name changed so that the MEM name would refer to a suite of models. This release now contains an interplanetary meteoroid model, IPMEM version 1.6, and EarthMEM version 1.0 for Earth orbiting spacecraft. The output files were updated to include new output values and surface distributions. A new summary table was added at the end of the main results, showing an average environment over all input states. A gravitational focusing and planet state vector algorithm were introduced for EarthMEM. Added an output file resolution choice, user can choose between two bin sizes for output data display. Errors were fixed in the velocity distribution output file, and penetration equation flux calculations. General improvements in memory allocations and array usage were made.

MEM release 1.0a, December 2007

IPMEM was updated to correct a variable initialization bug in the SpdDist*.out output file. The word "Normalized" was removed from the velocity distribution output files in both IPMEM and EarthMEM. Both models help files were updated. IPMEM version is now 1.6a.

MEM release 1.0b, January 2008

The averaging technique in the summary table of the main results file in both IPMEM and EarthMEM was changed to a flux weighted averaging. All distributions in the main results file and velocity distribution file are now shown as fractional flux and are not scaled. All average surface speed values in the summary table are calculated from their respective distributions. Fixed a bug in IPMEM where a non-normalized unit vector was being used in the calculation of the Z surface flux distribution. The velocity distribution file calculation method was changed to be consistent with the speed distribution by direction output file. Both help files were updated. IPMEM version is now 2.0 and EarthMEM version is now 2.0.

**Special Note sent out to users Jan 14th, 2008 indicating that the Sun surface average speed in the Summary Table of EarthMEM is incorrectly calculated; use the distribution to find the average speed. And the Anti-Sun surface average speed in the Summary Table of IPMEM is incorrectly calculated; use the distribution to find the average speed.

MEM release 1.0c, January 2008

Both IPMEM and EarthMEM have been updated to fix the Sun surface/Anti-Sun surface average speed calculation in the Summary Table of the main results file. This will address the workaround sent to users about MEMR1b. Also, the About dialogs in the graphical user interfaces and the help files have been updated to reflect the current versions.