

Understanding and Monitoring the Space Radiation Environment from Suborbital Altitudes to Deep Space

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The space radiation environment is comprised of three types of primary radiation (galactic cosmic rays, solar energetic particles, and near-earth radiation belts), which all vary on different time scales, from minutes to hours to years, and have different energy and flux characteristics. In addition, humans inside spacecraft also experience secondary radiation created by interactions of the primary radiation with the spacecraft structure, and this secondary radiation can sometimes be more destructive or damaging than the initial primary radiation itself. Therefore, understanding and monitoring the radiation environment is and will continue to be crucial for all current and future manned space missions, from suborbital and earth orbiting missions, to deep space missions to the moon, asteroid belts, Mars and beyond.