
End-to-end performance simulation techniques for deep space earth albedo monitor

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The Albedo MONitor and RAdiometer (Amon-Ra) instrument is the primary payload of the EARTH-Sun-Heliosphere INteractions Experiment (EARTHSHINE) satellite. It is to measure the Earth reflectance with 1% absolute accuracy and to study the intricate connections between the solar activity and Earth climate change. Using ASAP optical analysis tool, we are currently developing a wide range of computational techniques to confirm the feasibility of the primary science objectives of the mission. The example techniques may include, but not limited to, geometry re-scaling, solar apodization and iterative ray tracing. We report the current progress of the technical development, the computational details and their application to the science performance verification of the AmonRa visible channel optical system.