
EARTHSHINE - a mission to study solar influences on Earth's climate and space environment

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The EARTH-Sun-Heliosphere Interactions Experiment (EARTHSHINE) is a multidisciplinary and interdisciplinary mission aimed at studying how the Sun influences Earth's climate and the near-Earth space environment. The effect of clouds on Earth's albedo is a major uncertainty in climate modelling and different methods for estimating variations in Earth's albedo have generated widely different results. EARTHSHINE will add to this debate by viewing the Earth from the unique viewpoint of the L1 Lagrange point which enables it to sample the entire dayside without aliasing the temporal variability of clouds. From L1, EARTHSHINE will also monitor the interplanetary medium and transient p[lasma and field structures emitted by the Sun which influence Earth's space environment and upper atmosphere. These have a number of effects on Earth and on man-made systems, and the data from EARTHSHINE will be particularly valuable for the safe operation of spacecraft which suffer disruption and damage from the energetic particles generated.