

Degradation Process Due to UV Radiation and Future Radiometers

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Among all the potential degradation processes that may occur in space, UV radiation is the most likely to be the most contributive one. UV radiation is the most likely explanation for the difference in the degradation that the exposed cavities suffer in respect with the not exposed one. We analyzed different measurements from instruments measuring TSI and their degradation effect during their mission. Then we performed an experiment with a UV lamp (deuterium source) and compare the effect produced in the laboratory with the degradation curved obtained in PREMOS [1] or the SOVA cavities [2].

We will also show the next generation of radiometers that we are developing in the PMOD/WRC, applying carbon nanotubes as an observer and letting behind the silicon or polyurethane base coatings. As well, a new geometry has been designed for these new sensors, instated of a cavity-shape absorber we manufactured a flat detector with an ellipsoidal reflective dome. All these changes will improve the reproducibility and stability of the detector obtaining a more accurate measurements and enhancing the operational life of the instruments, which will allow us to study the evolution of the Sun along multiple solar cycles.

[1] Schmutz, W., A. Fehlmann, W. Finsterle, G. Kopp, and G. Thuillier, Total solar irradiance measurements with PREMOS/PICARD, *AIP Conference Proceedings*, 1531, 624 (2013).

[2] Romera, J., Ch. Wehrli, and C. Fröhlich, Solar total irradiance variability from SOVA 2 on board EURECA, *Solar Phys.*, 152: 23 (1994).