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Correcting Galileo's Energetic Particle Detector (EPD) data; Methodology, Implications and Applications

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Over the course of its 8 year mission the Energetic Particle Detector, launched in 1989 on the Galileo satellite, took data on the Jovian Particle environment. In the high radiation environment the EPD composition measurement system visibly decayed; higher mass particles, specifically oxygen and sulphur, read far lower energies and count rates at later epochs in the missions. By considering the non-steady accumulation of damage in the detector a correction method has been developed. Applying this correction method allows us to reanalyse the data. Specifically, we obtain new estimations on the surface weathering due to sputtering experienced by Europa and the other icy moons.