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ABSTRACT

Recent developments in laser ranging of space debris facilitated its successful application to orbit determination in various studies. This work studies potential locations for future debris laser ranging stations in view of these great achievements. In doing so, it deals with visibility aspects of trackable objects from the USSTRATCOM catalogue rather than with mathematical observability properties. Object visibility durations are computed as a function of geometric visibility (mean pass duration and mean revisit frequency), illumination conditions (twilight zone), and average cloud coverage. These three factors are analyzed both individually and in combination for different sets of objects corresponding to different orbit regimes. Eventually, some favorable station locations are discussed with und without the additional requirement of maximum station separation.