J Aeronaut Aerospace Eng 2017, 6:2(Suppl)
http://dx.doi.org/10.4172/2168-9792-C1-017

3rd International Conference and Exhibition on

Satellite & Space Missions

May 11-13, 2017 Barcelona, Spain

Proposed series of orbital debris remediation activities

Darren McKnight
Integrity Applications Inc., USA

Orbital debris is a growing hazard to reliable space operations and the sustainability of space-based systems that increasingly support national security and economic stability for many countries. Short-term attention has been focused on collision avoidance for operational payloads and enhanced debris mitigation guideline compliance while long-term attention has been focused on studying debris remediation via active debris removal (ADR). These three activities must be continued and augmented by three new efforts that work together to provide improved debris remediation activities to enhance space flight safety. The three new efforts are: An international spacecraft anomalies and failures workshop; massive collision monitoring activity (MCMA) operations and; just-in-time collision avoidance (JCA) development. This paper provides a plan that is focused on maintaining progress in three existing initiatives and starting three new ones.

dmcknight@integrity-apps.com

Using spectral vegetation indices derived from *in situ* single leaf-level reflectance to estimate seasonal progression of vegetation fraction among mid-latitude deciduous trees

Humphrey Kalibo
Marshall University, USA

Vegetation fraction (VF) greatly influences crucial processes like photosynthesis and evapotranspiration. However, it is among the least studied of the biophysical parameters, yet it is needed in several applications, notably estimating soil erosion, analysis of carbon storage estimates and development of atmospheric models, which have policy implications regarding climate research. Existing methods for deriving VF, e.g., using satellite imagery and spectral mixture analysis have limitations. Consequently, an alternative methodology for quantitatively estimating this parameter for different vegetation types, especially over the growing season, is needed. This study describes a simple technique for estimating VF that combines the power of spectral vegetation indices (VIs) and the simplicity of digital photography. It employs upward-looking hemispherical photographs of twelve deciduous tree canopies and eight VIs calculated from *in situ* single-leaf level reflectance data to calculate VF. When plotted over time, the VIs showed very similar seasonal patterns as the photo-derived VF of each tree, and the VF values estimated by the VIs were temporally similar for each tree over the growing season. NDVI and SAVI had the highest estimation accuracy. SR showed temporal similarity with the VF of low-foliage trees, and had considerably higher accuracy of prediction. Seasonality and amount of foliage cover significantly affected estimation accuracies. This methodology is simple, inexpensive and could be adapted to other settings. It can complement existing methods and can potentially be used to study other critical parameters such as LAI and biomass in other types of vegetation, but further research is needed to validate it.

hwafula@yahoo.com