Proposal for Ablation Cascade Mitigation & Defense

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Risk of loss to space access is rapidly becoming one of the biggest threats to the modern world. Its own iteration of the rocket equation, the complexity of a long-term solution is daunting, and the technological limitations require creativity and small thinking. While applaudable, work done by the Space Surveillance Network and the Orbital Debris Program Office is inadequate and their scope insufficient to sustainably and effectively tackle the task. By moving the infrastructure for ablation cascade mitigation into orbit, we eliminate the constraints placed on current methods. Using biomimicry, additive manufacturing, and satellite bus technology we can effectively generate real-time 3D maps of all objects in orbit and begin to sustainably experiment with methods of forced re-entry and decay without increasing the inherent risk in the process. Sharply decreasing launch costs, advances in programmable materials and small sat and CubeSat technologies all make this possible. Affordability and sustainability are crucial to the success of any orbital street sweeping team, as time is of the essence. We can build an infrastructure that pays for itself and has enough residual capabilities to spurn a drastic rate of improvement using existing technology. Ignoring the risk of ablation cascade is a suicide call for any technological species and using existing technology to affordably build a sustainable mitigation infrastructure is possible and imperative.