



# SPACE PHYSICS SEMINAR

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## Resolving Earth and Space Science Uncertainty: One tiny satellite at a time

**Thursday, November 7, 2013**

**725 Commonwealth Ave.**

**Refreshments at 3:30pm in CAS 500**

**Talk begins at 4:00pm in CAS 502**

### Abstract:

Two thematic drivers are motivating the science community towards constellations of small satellites, the revelation that many next generation system science questions are uniquely addressed with sufficient numbers of simultaneous space based measurements, and the realization that space is historically expensive, and in an environment of constrained costs, we must innovate to “do more with less”. We present analysis that answers many of the key questions surrounding constellations of scientific satellites, including research that resulted from the GEOScan community based effort originally intended as hosted payloads on Iridium NEXT. We present analysis that answers the question how many satellites does global system science require? Perhaps serendipitously, the analyses show that many of the key science questions independently converge towards similar results, i.e. that 20-40 satellites are needed for transformative, as opposed to incremental capability in system science. We focus on climate, carbon-cycle, and gravity science as demonstrations of these findings, including results from funded and proposed NASA missions, ERIS, RAVAN and EPIC. We conclude with a discussion on implementation plans and the new paradigms for community and international cooperation enabled by small satellite constellations.