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Paper Title:	<b>Constellation of CubeSats for Realtime Ionospheric E-field Measurements for Global Space Weather</b>

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**Abstract:** Inexpensive and robust space-weather monitoring instruments are needed to fill upcoming gaps in the Nation's ability to meet requirements for space weather specification and forecasting. Foremost among the needed data are electric fields, since they drive global ionospheric and thermospheric behavior, and because there are relatively few ground-based measurements. We envisage a constellation of CubeSats to provide global coverage of the electric field and its variability.

The DICE (Dynamic Ionosphere CubeSat Experiment) mission was a step towards this goal, with two identical 1.5U CubeSats, each carrying three space weather instruments: (1) double probe instruments to measure AC and DC electric fields; (2) Langmuir probes to measure ionospheric electron density, and; (3) a magnetometer to measure field-aligned currents. DICE launched in October 2011. DICE was the first CubeSat mission to observe a Storm Enhanced Density event, fulfilling a major goal of the mission.

In this paper we show the utility of a constellation of electric field measurements, describe the CubeSat and instrument suite that comprise the "SensorSat", and demonstrate how the measurements will meet or exceed the Nation's DoD and Civil space environment monitoring requirements. We will also present new CubeSat and Small Satellite space and ground segment technologies that are helping enable the practical implementation and management of CubeSat constellations, including low cost access to space, high speed space to earth communications, and global ground station networks.

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