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Providing Small Satellite communications Using the NOAA GOES Satellite

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The results of a LEO to GEO communication system using the NOAA GOES (Geostationary Operational Environmental Satellite) DCS (Data Collection System) are presented. The DCS system was designed to collect climate-related data from remote unmanned stations. Data are uplinked to one of the two operational satellites via an aggregated link to the NASA Wallops Facility. The modified LEO transmitter, one of the 7 transmitters flown on the TechEdSat-8 nano-satellite, is designed to compensate for the Doppler effects to ensure the communication link. Though a slow data rate initially, the system may offer another convenient means of transmitting data from LEO to ground stations any time during an orbit. The experiment will allow for an assessment of this as a future communication system development path - as well as the very interesting extension of the system for a comparable system at Mars for climatic surveys from ground stations (hence, a Mars radio).