

23rd SYMPOSIUM ON SPACE ACTIVITY AND SOCIETY (E5)
Part 2: Space Assets and Disaster Management (5B)

Author: Mr. Matthew Cross
Faculty of Engineering, Carleton University, Canada, mcross8@uwo.ca

Ms. Natasha Jackson
Faculty of Engineering, Carleton University, Canada, njackson@connect.carleton.ca

CU3SAT: A CANADIAN STUDENT MISSION FOR MITIGATING GEOMAGNETIC STORM
DISRUPTION

Abstract

This paper details the proposed mission to give advance warning of coronal mass ejections to mitigate disruptions caused by geomagnetic storms. A geomagnetic storm in 1989 caused the 21.5 GW Hydro-Quebec electrical grid to fail within 90 seconds resulting in a 9 hour blackout. Future storms have the potential to cause permanent damage to electrical grids, satellite communications, global positioning satellites and ground based electronics. The resulting disruption to services may cause widespread chaos and panic as seen in natural disasters. The modulation of radiation flux in low earth orbit serves as a 12-36 hour warning of an impending shock wave. Having advance warning of these storms allows for alerting the public and isolating infrastructure to mitigate disruption. We present the latest satellite and payload design work for this mission undertaken by Carleton University students in Canada.