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USING COMMERCIAL LOW EARTH ORBIT SATELLITES TO AID NATURAL DISASTER  
RECOVERY

**Abstract**

We examine the potential for LEO satellites to aid in disaster recovery using case studies from our experience with natural disaster recovery from earthquakes and hurricanes in the Caribbean.

In the wake of a disaster, infrastructure can be severely damaged, hampering telecommunications. Access to information for survivors is the start of returning to self-sufficiency, regaining dignity, and maintaining hope. LEO based satellite Internet access systems allow for expansion of the features and functionality of an emergency communications systems.

Previous research has shown an Airborne Communications Network (ACN) allows for rapid and accurate information exchange that is essential for the disaster response period[1]. A system allowing even a limited amount of communications post-disaster is a great improvement on the current situation, where telecommunications are frequently not available. It is technically feasible to use an satellite Internet access system quickly accessible in disaster areas and configured to restore some of the functions of damaged terrestrial telecommunications networks.

The next generation of satellite Internet access via LEO satellites enables us to increase connectivity and reduce the communications problems that were experienced following these disasters. We provide case studies on how these communication improvements can be optimally used based upon practical lessons from these previous disasters.

This work builds on earlier research on aiding disaster recovery using mobile networks supplied from planes. And on practical experience with the 2010 Haitian earthquake and Hurricanes Dorian in the Caribbean. Experience with both natural and man-made disasters highlights the fact that communications are useful only to the extent that they are accessible and useable by the population.

[1] Curran, Stephen John, "Modeling the Use of an Airborne Platform for Cellular Communications Following Disruptions" (2017). PhD Dissertations and Master's Theses. <https://commons.erau.edu/edt/353>