SkySend: Providing Communication During Disaster Relief

Subramanian, Sanjana (School: Urbana High School)

The purpose of this project was to develop a product that could provide basic communication services in the days after a natural disaster. The product needed to be easily assembled by an untrained person, be relatively cheap (<$1000), and be low-maintenance. An UAS (Unmanned Aircraft System), the SkySend balloon, was designed to meet these goals. A weather balloon carries a payload including a computer and battery pack at around 300 feet, providing WiFi-Satellite messaging to users within a 100 yard radius (number varies based on strength of WiFi antenna used). To set up SkySend, a user just needs to fill the 350g weather balloon with helium, tether it to the ground, and turn the system on. Once connected to the on-board "WiFi", users can access a form prompting them to type out a message and phone number to send the message to. An on-board computer sends this information to a satellite, which in turn sends the message to its intended recipient. The entire product would cost just $632.00 per unit. Some possible modifications were considered while doing this project, including a wired tether and a response system. A wired tether would involve the SkySend system being connected to ground power at all times, eliminating a need for batteries. While this is a plus, there might not always be ground power available and the balloon would need to be much bigger to support the added weight. If this project were redone, it would include a response system. Currently, messages are only outgoing, and responses could greatly improve the product.