

Project Loon: Balloon-Powered Internet for Everyone

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Project Loon operates a network of stratospheric balloons to deliver Internet access to remote areas of the planet. The objective is to form a network of balloons capable of relaying connectivity between ground stations and remote users equipped with LTE devices. A key component of operating Loon balloons is navigating balloons to destinations and coordinating the fleet to form a mesh network. These balloons navigate only by changing altitude, using vertical wind shear to change direction. Using wind forecasts from numerical weather prediction models, control and optimization algorithms can be implemented to generate sequences of altitude changes that will achieve the desired trajectory. Our balloons have been flying in the upper troposphere/lower stratosphere since 2014, and we will provide an overview of research that uses wind observations from our balloons. We will close with a discussion of different stratospheric phenomena of interest to our project, including the quasi-biennial oscillation.

Key words: Project Loon, Stratospheric Balloons