

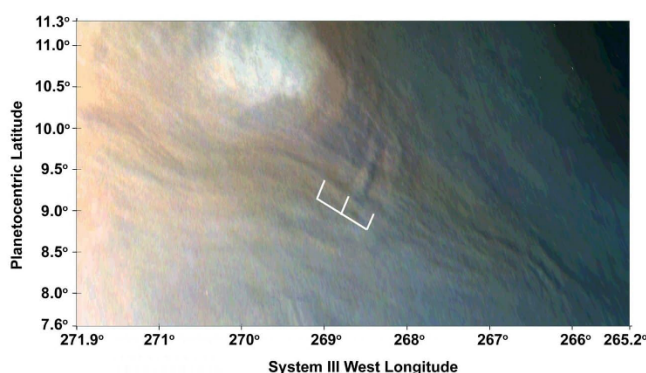
## Waves in planetary atmospheres

Buoyancy waves in Earth's atmosphere (also known as gravity waves, like waves in the ocean) have many implications for Earth's atmosphere. These waves cause turbulence over mountainous regions, transport momentum and change global circulation. They even propagate into the thermosphere where satellites orbit, perturbing densities and winds, which can affect satellite drag and communication. Waves have also been observed in other planetary atmospheres within our solar system, and are thought to play a significant role in atmospheric dynamics on other planets.

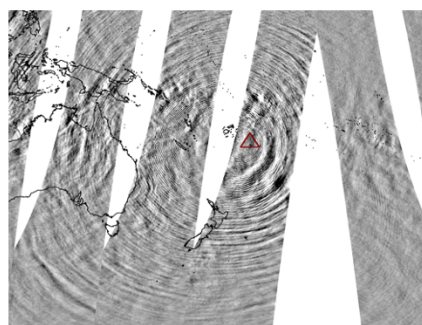
This seminar style course will explore basic theory of gravity (buoyancy) waves in Earth's atmosphere through instructor lectures. We will also read and discuss relevant journal papers through student led discussions. The course will also include in class wave projects using observational data, and discussion on how to interpret waves in real data. Prior programming experience is necessary for this course.

### Prerequisites:

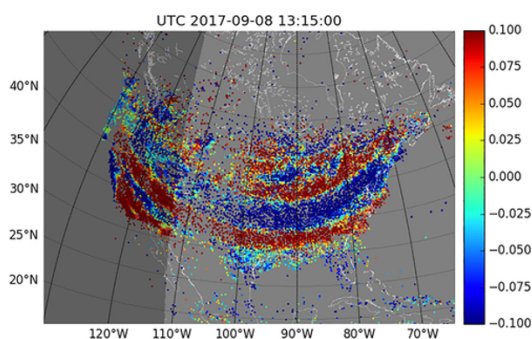
Calc III and prior programming experience



Waves on Jupiter spotted by Juno



Above: Gravity waves observed in the stratosphere near 35km in altitude hours after the Hunga Tonga–Hunga Ha'apai eruption



Left: Ionospheric perturbations from large scale waves generated from a geomagnetic storm (Zhang et al, 2019)