Good morning everyone, it's my pleasure to introduce my work based on the RAA (Rayleigh albedo anomaly) dataset obtained by CIPS instrument onboard AIM satellite.

The RAA basically shows the perturbation relative to the background UV Rayleigh scattering of the atmosphere under the sun. One of the sources that modulates the perturbation is gravity wave. The RAA is most sensitive to perturbation at altitude of 50–55 km, which is the stratopause. The bowtie-shaped image consists of 4 cameras slightly deviate from the nadir view.

Firstly, we calculate the neighborhood variance of each pixel after we apply a bandpass filtering over the RAA within the orbit strips. Then we calculate the "Peak event frequencies" or "PEF" of each map grid cell and each season. The PEF shows the relative wave activity of one location compare to other locations at the same latitude. This method is used in Hoffmann's 2013 paper about AIRS climatology, and we adopted this method because it intuitively shows the location of a gravity wave hotspot where waves happened more frequently than other places at the same latitude.

Here we can see the comparison of the two climatological results. For each season, the CIPS RAA and AIRS observe similar distribution gravity wave hotspot, especially for those well-known hotspots, such as **Southern Andes and Antarctic Peninsula**. However, they are similar, not the same. For example, the AIRS can see the hotspots over **East Africa**, but it is almost absent in RAA. On the contrary, the RAA sees a persistent hotspot over **Southern Brazil**, but during May-June-July-August season, it is not very obvious in the AIRS. There are many possible reasons for that, e.g., RAA and AIRS have slightly different local times, other reasons including possible wave filtering at different altitudes, instrumental wave filtering due to different horizontal resolution and retrieval algorithms. The possible reasons are still under investigation.

It is worth-noting that the AIM-CIPS is especially effective in capturing small-scale waves related to islands, even when the islands are too small to be shown in the coast lines. Here is one example of the island waves: you can see the tiny waves caused by wind flow overcomes the islands, if you take a closer look at this picture. As shown by the cloud patterns captured by MODIS, the size of the island is about 22 km, so you can imagine how small those island waves are. **We think it is an important contribution by AIM-CIPS because people used to think small-scale island waves dissipate before approaching stratosphere because there is often a relatively lack of island waves in AIRS considering its ubiquitous generation along time.**

To sum up, there are 4 highlights about this project. (1) this is the first stratopause gravity wave climatology results based on AIM CIPS observation. (2) The CIPS RAA climatology and AIRS climatology generally show the same gravity wave hotspot distribution. (3) AIM CIPS has an outstanding capability to observe small scale gravity waves due to its high horizontal resolution. (4) For the gravity wave variance hotspots, some of them are both observed by CIPS and AIRS, some hotspots are observed by either one of them. The source or cause of those hotspots are open questions. It is a low-hanging fruit to science if we can answer those questions.