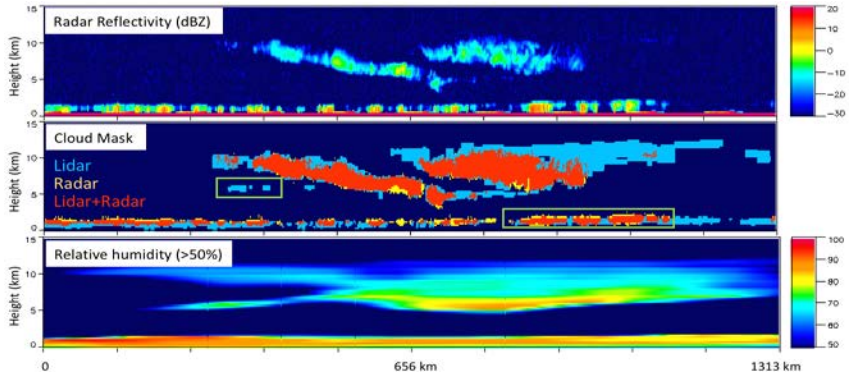
Improving the ABI Cloud Layers Product for Multiple Layer Cloud Systems and Aviation Forecast Applications

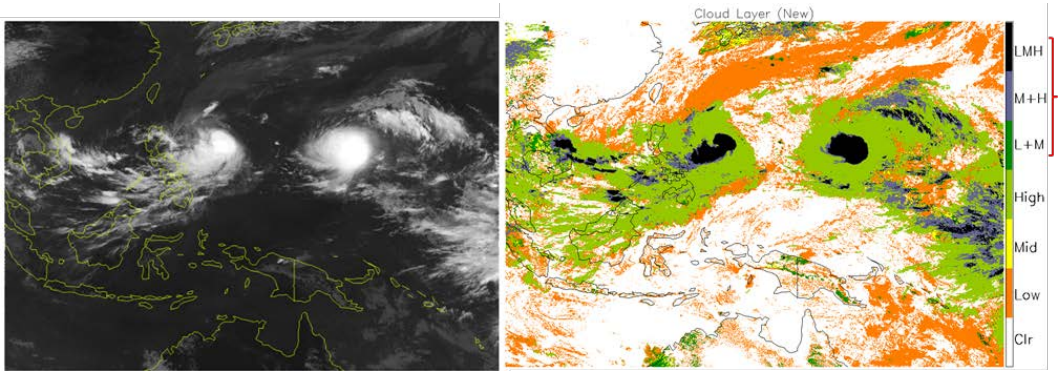
John M. Haynes and Yoo-Jeong Noh (CIRA/Colorado State University)

This project aims to improve the GOES-16 cloud layer product by providing information on the boundaries of cloud layers even when one layer overlies another. This is extremely valuable information for aviation purposes, since the presence of a high cloud (like cirrus) might obscure a lower cloud where conditions are unsuitable for flying.

- **Multilayered (ML) clouds present an identification challenge for the GOES-16 algorithms**
- **The spaceborne cloud radar *CloudSat* and lidar *CALIPSO* will be used to train an operational algorithm that uses both GOES-R observations (including the 0.64, 1.38, 3.9 and 11 µm channels) and external parameters (like relative humidity) to identify areas of ML clouds**
- **The improved identification algorithm will be combined with CIRA's cloud geometric thickness algorithm to provide forecasters more information about the heights of clouds in traditionally problematic ML situations**



CloudSat radar and CALIPSO lidar can be used to accurately determine the heights of multilayered clouds, and provide *a priori* training for GOES-16.



Combined cloud layer flags (L=low, M=mid, H=high) (right panel) produced by the CIRA cloud geometric thickness algorithm (right) applied to Himawari-8 AHI; 11 µm IR image (left).