Title: Evaluation of Turbulence-Detection Methods on Himawari-8

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Abstract:
Stakeholders in the Pacific Region have stated the need for products that provide warning for atmospheric conditions leading to aircraft turbulence, which are underrepresented in the planned GOES-R ABI product stream. Here we plan to test and evaluate a set of turbulence-warning derived products on Himawari-8 and GOES-West in order to implement a future ABI-derived cruising-altitude turbulence warning system. We will add these products into the AWIPS datastream and work with NOAA operational collaborators to do field-testing.

These products include first, the mature GOES-R "Future Capability" Overshooting Top Detection (OTD) algorithm, which will be used to identify likely regions of turbulence associated with intense convective updrafts and gravity waves. Second will be a revised version of the Tropopause Folds Turbulence Detection (TFTP) product, which is associated with clear-air turbulence along air mass boundaries at the jet stream. Third will be a gravity wave detection tool, which will highlight transverse banding and wave patterns along unstable wind maxima in the upper troposphere.

In order to comprehensively serve the needs of the Honolulu WFO and Aviation Weather Center, we will create products using both the AHI and the GOES-West imager. Although the GOES-West products will be lower quality, they will provide a useful contrast in product capabilities, and also present information covering the entire area of interest for the Pacific Region. We will work with forecasting partners in the Pacific Region WFOs and the Aviation Weather Center throughout the length of the project to assess the real-time quality and value of the products.