

Combining Imager and Lightning For Enhanced GOES-R Rain Estimates in the NWS Pacific Region

Precipitation estimates from geostationary satellites provide the rapid temporal update desired by the operational meteorologists to capture the growth and decay of precipitating cloud systems on a scale of several kilometers. The launch of the Geostationary Operational Environmental Satellite-R Series (GOES-R) ushered a new era of geostationary satellite with the 16 channel Advanced Baseline Imager (ABI) and the Geostationary Lightning Mapper (GLM) and the ability to take full-disk images of Earth at five-minute intervals. A combined IR and lightning convective features and precipitation algorithm for the Pacific Region is being developed using geostationary JMA's Himawari-8 infrared and ground lightning network GLD360 lightning observations.

Following the heritage of an IR-lightning combined precipitation algorithm over land (Xu, Adler, and Wang 2013, 2014), the Pacific Ocean region IR and lightning convective feature and precipitation algorithm uses a combination of an IR-based C/S technique (CST), multi-channel cloud information, and lightning information to identify deep convection cores and estimates rainfall rates.

This study presents an overview of an oceanic IR-lightning Convective feature and precipitation algorithm, case studies, and provides some thoughts on the next step improvements.