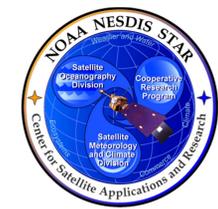




Morphing polar-orbiter imagery of cloud products for improved visualization and forecasting

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1. Objective

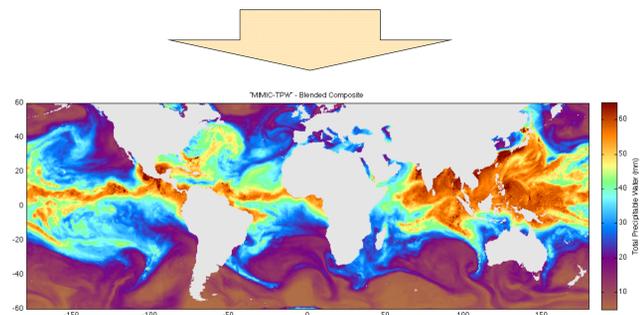
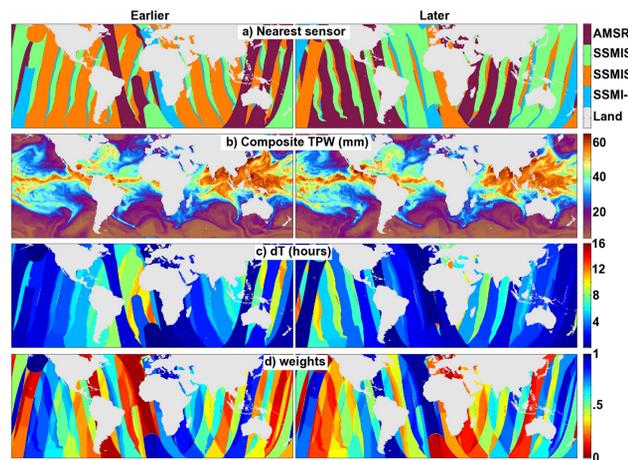
To develop an image morphing algorithm to produce 30-minute resolution, multi-platform, blended cloud properties imagery for the Alaska region.

2. Introduction

Research is underway to process multi-platform cloud products from polar orbiters (NOAA and Metops AVHRR, JPSS VIIRS) together into a seamless, time-continuous derived product using image "morphing" algorithms. The polar domain (poleward of 60° latitude) is an ideal environment for applying these algorithms, because of the more frequent sampling from polar orbiters and the lack of geostationary alternatives. For the same reasons, forecast centers in Alaska have a particularly high stake in the development of derived product image sequences from polar orbiters that are designed for optimal visualization with frequent and regular temporal presentation (comparable to geostationary imagery). These algorithms are extended from projects at CIMSS that have already proven successful with polar-orbiter microwave imagery in the tropics, such as MIMIC-TC and MIMIC-TPW. Initial results shown here, from the first months of this two-year project (2012-2014), will be extended to applications to longwave infrared brightness temperature and the Clouds from AVHRR Extended (CLAVR-x product).

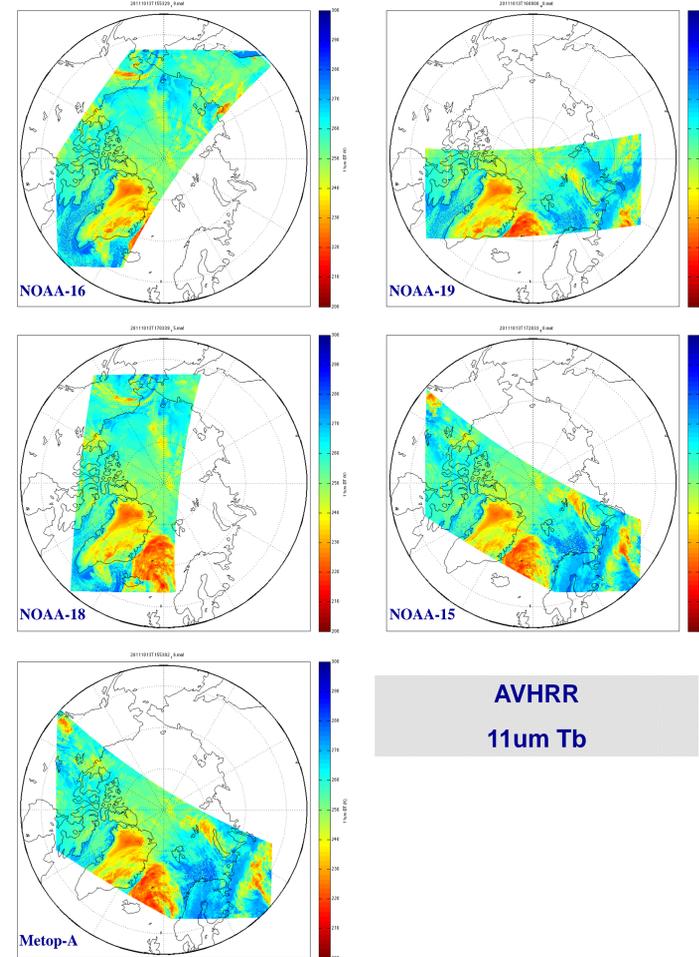
3. Legacy algorithm: the MIMIC-TPW product

- 'MIMIC': Morphed Integrated Microwave Imagery at CIMSS, TPW: Total Precipitable Water
- Multi-satellite TPW retrievals advected with model winds to make hourly images
- Emphasis on fidelity to original data, resolution, timeliness, seamless blending
- Run in experimental real-time mode at CIMSS where it is used heavily by tropical and coastal forecasters.



4. Polar morphing demonstration

The images below make up a representative sample of the currently available AVHRR imagery, which is input into the morphed composite (larger image, right). The critical added value of the morphed composite is the ability to observe changes in the cloud positions and properties over the entire domain at short, regular intervals. This is demonstrated in the accompanying animation.



Acknowledgements

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