Developing an Environmental Awareness Repertoire of ABI Imagery ('DEAR-ABII') to Advise the Operational Weather Forecaster

Principal Investigators: Steven Miller (CIRA), Curtis Seaman (CIRA), Jeremy Solbrig (CIRA), Yoo-Jeong Noh (CIRA)

Abstract

Resolution matters! Throughout the course of the GOES-R Satellite Proving Ground, a recurrent theme in terms of National Weather Service forecaster feedback when presented with new applications anticipating the improved imaging capabilities of the Advanced Baseline Imager (ABI) has been the desire for something beyond the once- or twice-per-day cadence of the low-earth-orbiting (LEO) satellites used for these demonstrations. In terms of the temporal resolution benefits of the geostationary platform, Verne Suomi's mantra that "The weather moves, not the satellite!" resonates strongly with the specific needs of the operational weather forecaster, perhaps more-so than any other stakeholder group. In terms of spectral resolution, having the requisite spectral bands to delineate the complex, multi-parameter environment via the use of unique 'spectral fingerprints' (optical properties) has been limited from the geostationary platform up until now. But with the proverbial firehose of new information comes the attendant challenge of processing it quickly and effectively to facilitate its use in time-critical forecaster decisions. To maximize the vast potential of the new GOES-R sensor technology in advising the operational weather forecaster, we are proposing to Develop an Environmental Awareness Repertoire of ABI Imagery ('DEAR-ABII'). The title of this proposal is of course a play on the "Dear Abby" advice column made famous by Pauline Phillips. Under the pen name of Abigail Van Buren, Abby advised her readership on life's difficult problems with succinct and thoughtful insight. In this spirit, we propose to use our wealth of satellite meteorology, radiative transfer, and remote sensing expertise to assist NOAA's operational forecasters with the pressing questions they have about the complex environment. For this purpose, we will leverage the tremendous information content offered by GOES-R in the domains of space, time and spectrum, distilling it into a suite of visually intuitive and value-added imagery products. These products will be ready-packaged for AWIPS display, enabling their direct coupling to quantitative (Level-2) satellite retrieval products and model analysis and forecast fields..