The Important Role of Satellite Data in Advancing the Weather Forecasts

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A review of the recent history of the use of satellite data in operational numerical weather prediction models is presented within the context of the ongoing successful transformation of the weather forecast process over the past 50 years. Today, weather forecasts are becoming more accurate, with extreme weather events now predicted 4, 5, 6 and even 7+ days in advance in some cases. These improvements are driven in large part by improved numerical models, working off a global observing system, increasingly based on a wide range of research and operational satellite systems. The presentation will emphasize the role of the Joint Center for Satellite Data Assimilation (JCSDA) representing a collaborative partnership among NASA, NOAA, Air Force and the Navy brought together to address the mission “to accelerate and improve the quantitative use of research and operational satellite data in weather, ocean, climate and environmental analysis and prediction models.” The ongoing efforts to accelerate the transition of the new research and operational observing capabilities (advanced microwave, hyperspectral infrared, COSMIC/GPSRO, GOES-R) into the operational numerical prediction system will be reviewed. The presentation will conclude with a summary of the current prioritized efforts required to insure the rapid assessment and operational implementation of the JPSS, GOES-R and COSMIC data and will also note upcoming research satellite missions as these systems come on line in the latter half of this decade.