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Status and Plans for Satellite Instrumentation: NASA

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As part of its Earth Observation and Climate Monitoring Program NASA will, within the next few years place a number of technologically very advanced instruments into Earth orbit. Some of these instruments represent major upgrades for instruments currently in orbit, while others will generate data previously unavailable. These instruments present a technology challenge to NASA. The hundredfold increase in data volume also presents a major challenge to the scientific community to properly and timely use the large information content of the data to better define the state of the atmosphere and to improve the weather forecast.

AIRS, AMSR, AMSU, CERES, HSB, MISR and MODIS achieve global coverage at least once each day and produce data which constrain the state of the surface, the atmosphere or energy input (clouds). Assimilation of data from these instruments should have a positive impact on the weather forecast. We review the physical basis of the geophysical parameters measured by these instruments, and discuss the status of the hardware and the data processing systems. We use the AIRS/AMSU/HSB system to show details of the data flow from the satellite to the end-user and to discuss the data processing challenge and the issue of "direct assimilation" versus the assimilation of **"retrieved geophysical parameters"**.