

Studying the Earth's Climate from Space

Jack A. Kaye
NASA

The vantage point of space provides an excellent way of studying the Earth's climate by enabling observations with equivalent quality of all part of the Earth's surface and the atmosphere. Observations from satellites are now providing quantitative information about how the Earth system varies on a variety of spatial and temporal time scales, documenting longer-term evolution, and providing information that can inform prediction and enable better policy and management decisions. Satellite-based information helps improve understanding not only of how individual Earth system components (atmosphere, ocean, cryosphere, biosphere, Earth surface) evolve but how they interact with each other and both contribute and respond to naturally-occurring and human induced change. NASA currently has a fleet of 17 orbiting satellite missions, and information from these missions in advancing science across many relevant disciplines. NASA's observations are shared openly and coordinated with those of its interagency and international partners to facilitate coordinated global scientific research and use in societal applications. New capability will continue to become available with additional launches; NASA has a total of five Earth science relevant launches planned for calendar year 2014, with one already successfully completed) and continued investment in calibration/validation and associated process study and modeling assures the continuing enhancement of our knowledge of the Earth System.