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Multi-Angle Implementation of Atmospheric Correction (MAIAC) Algorithm

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Multi-Angle Implementation of Atmospheric Correction (MAIAC) is a new algorithm developed for MODIS. MAIAC uses a time series analysis and processing of groups of pixels to perform simultaneous retrievals of aerosol properties and surface bidirectional reflectance without typical assumptions about the surface. It is a generic algorithm which works over both dark and bright land surfaces, including deserts. MAIAC has an internal Cloud Mask, a dynamic land-water-snow classification and a surface change mask which allows it to flexibly choose processing path over different surfaces. A distinct feature of MAIAC is a high 1 km resolution of aerosol retrievals which is required in different applications including the air quality analysis. The novel features of MAIAC include the high quality cloud mask, discrimination of aerosol type, including biomass burning smoke and dust, and detection of surface change - all required for high quality aerosol retrievals. An overview of the algorithm, results of AERONET validation, and examples of comparison with MODIS Collection 5 aerosol product and Deep Blue algorithm for different parts of the world, will be presented.