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Sommario/riassunto	Vegetation plays an essential role in the study of the environment through plant respiration and photosynthesis. Therefore, the assessment of the current vegetation status is critical to modeling terrestrial ecosystems and energy cycles. Canopy structure (LAI, fCover, plant height, biomass, leaf angle distribution) and biochemical parameters (leaf pigmentation and water content) have been employed to assess vegetation status and its dynamics at scales ranging from kilometric to decametric spatial resolutions thanks to methods based on remote sensing (RS) data.Optical RS retrieval methods are based on the radiative transfer processes of sunlight in vegetation, determining the amount of radiation that is measured by passive sensors in the visible and infrared channels. The increased availability of active RS (radar and LiDAR) data has fostered their use in many applications for the analysis of land surface properties and processes, thanks to their insensitivity to weather conditions and the ability to exploit rich structural and texture information. Optical and radar data fusion and multi-sensor integration approaches are pressing topics, which could fully exploit the information conveyed by both the optical and microwave parts of the electromagnetic spectrum.This Special Issue reprint reviews the state of the art in biophysical parameters retrieval and its usage in a wide variety of applications (e.g., ecology, carbon cycle, agriculture, forestry and food security).