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Natural disturbances and protection forests: at the cutting edge of remote sensing technologies for a rapid assessment of a stand protective function

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Protection forests can be severely affected by natural disturbances, whose consequences could greatly alter the fundamental ecosystem services they are providing. Assessing and monitoring the status of the protective function, particularly within disturbed stands, is therefore of vital importance, with timing being a critical issue. Remote sensing technologies (e.g. satellite images, LiDAR, UAV) are nowadays thoroughly available and can be usefully applied in order to quantify and monitor the protective role of Alpine forests, especially after abrupt changes in their cover and structure following the occurrence of a disturbance event. In this contribution, after a brief introduction on these technologies and their potential contribution to protection forest management, some specific case studies will be presented. In particular, we will focus on case studies involving protection forests affected by windthrows (the post-Vaia situation in the Eastern Italian Alps; Lidar and UAV surveys) and by forest fires in the Western Italian Alps (Fall 2017 fires; Sentinel-2 Images).