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Carbon dioxide fluxes immediately after a forest fire

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The carbon dioxide emission of a forest area of young Maritime Pines (Pinus pinaster Ait.) in Central Portugal was investigated after a wildfire on 13 August 2017 that was classified by EFFIS as of mostly moderate severity. Eddy-covariance measurements together with auxiliary measurements commenced about one month after the end of the fire, making this study one of the first investigations with carbon dioxide flux measurements starting almost immediately after a wildfire. For this study, about 15 months of post-fire data were analyzed. First results indicated that no emissions took place during the - dry - period that followed the installation of the instruments, except for short events after dew fall. During this same period, a small uptake was recorded during daytime. After the first days with significant rainfall in October 2017 the emission dominated, while no fluxes occurred during winter time. Stronger emissions were observed during the rainy season of spring 2018 but during the summer of 2018 the forest already acted a sink. Because fluxes were generally low, large efforts were required for data quality and footprint analysis. A big challenge was the gap filling because conditions differed dependent on the time after the forest fire.