**Fig. 1.** The perimeter of the Pisan Mountains study area affected by the wildfire and the land uses (traced area on top). The location of the Santo Pietro (SP) watershed, check dam and soil sampling sites are marked.

**Fig. 2**. Wooden check dam at the outlet of Santo Pietro watershed (photo by P. Trucchi).

**Fig. 3.** A) the location of the check dam with respect to the Santo Pietro watershed; B) Geometrical scheme for calculation of the volume of sediment upstream the Santo Pietro watershed check dam, and for the volumes relative to each sediment layer identified in Core A. C) Check dam dimensions in meters.

**Fig. 4.** Some examples of burned areas at Pisan Mountains: a) high burn severity in a pine stand; b) high burn severity in maquis; c) low burn severity in maquis; d) moderate burn severity in a chestnut stand.

**Fig. 5.** Rainfall events recorded from October 28th to November 3rd, 2018 at Monte Serra Station, located at around 2.5 km from the SP watershed.

**Fig. 6.** Fire severity of the study area according to the Relativized Burn Ratio index.

**Fig. 7**. Sediment cores collected upstream the check dam built immediately after the wildfire at the outlet of the Santo Pietro watershed (see Fig. 3 for the locations of the cores).

**Fig. 8.** Rainfall and runoff time series, and amount of sediments transported by flow events (brown bars) at the outlet of the Santo Pietro watershed.

**Fig. 9.** Correlation of flow and sedimentation events at the outlet of the Santo Pietro watershed. Black trendline: A6‒A1 regression; red trendline: A6‒A5 regression; blue trendline: A4‒A1 regression.