



Large Wood recruitment and transport along a piedmont gravel bed river

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In recent years an increasing attention has been devoted on Large Wood (LW), focusing to its role and impact along riverine systems. However there is still a lack of knowledge about many aspects of its recruitment and displacement from the vegetated patches (e.g. floodplain and island) of a riverine environment. This research aims to analyse and consider the differences in LW recruitment during a flood event along a reach of a piedmont gravel bed river. The study has been carried out along a 3 km – long study reach located into the middle course of the gravel bed Piave River (North-Eastern Italian Alps). A buffer zone of 20 m – wide was considered along the floodplains and islands. Into this stripe every standing tree, with diameter ≥ 0.10 m, was measured manually (Diameter Breast Height–DBH; Height). Moreover, for each tree the GPS position was recorded and a numbered tag was installed to simplify the post event recovery. In November 2014 an over bankfull flood ($Q=1039$ m³ s⁻¹; R.I=3.5 years) occurred. Preliminary results shows that 668 trees were recruited during the flood event thanks to both bank erosion processes along the floodplain banks and along the island shores. Analysing the origin, it is possible to define as 401 (60.03 %) trees were recruited from the floodplain, 244 (36.53%) from fluvial islands and, finally, 23 (3.44%) trees were not completely moved into the active channel area and recruited by the flood, but were just uprooted. Thanks to the accurate dendrometric measurements, it has been possible to define the dimensions for both category of LW, recruited from floodplain and island respectively. Looking to the minimum, maximum and mean height detected were defined values of 2.00, 20.00 and 8.98 m, and 2.20, 15.00 and 6.64 m, for floodplain and island, respectively. The DBH show minimum, maximum and mean values of about 0.10, 0.54 and 0.14 m, and 0.10, 0.44 and 0.14 m for floodplain and island, respectively. These dendrometric measurements permitted us to define the input volume of LW from floodplain and island, 75.59 m³ (0.19 m³/tree) and 39.66 m³ (0.16 m³/tree), respectively. It is worth to focus on the greater input of LW from floodplain, due to the recruitment of an higher number of trees and the bigger dimension of these plants. Post flood field survey permitted also to detect the displacement length of recruited trees along the study area, obtaining values of about 2.50 km, that is consistent with similar results obtained in the same study reach. Further analysis will permit to investigate more in detail the LW origin, its displacement and to link it with flood condition and the morphological settings of the study reach. This research is funded within, the University of Padova research Project CPDA149091- “WoodAlp: linking large Wood and morphological dynamics of gravel bed rivers of Eastern Italian Alps”- 2014-16 and the Project “SedAlp: sediment management in Alpine basins, integrating sediment continuum, risk mitigation and hydropower”, 83-4-3-AT, in the framework of the European Territorial Cooperation Program “Alpine Space” 2007-13.