SIP contribution to plant/soil interaction study: first results

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Climate change and land-use changes are significantly reshaping interactions among the vegetation and compartments of ecosystems. Understanding soil-vegetation interactions requires new monitoring approaches that can provide a high spatial and temporal resolution, and that can ideally be performed in a minimally invasive manner. Here, we focus on advancing SIP as a tool to measure in-situ soil properties at the field scale, supported by lab measurements performed to quantify relations between SIP and physico-chemical properties. We tested the method in a Bordeaux vineyard during the June 2018 growing season. We acquired one set of six SIP profiles with DAS-1 (MPT, LLC) in the frequency range of 0.1 mHz to 225 Hz, namely: five perpendicular profiles and 1 parallel to the grapevine rows, each with 25 cm electrode spacing. We also collected soil samples along the lines to perform laboratory experiments to measure the main physico-chemistry parameters. The vegetation health was described/estimated by observation. We determined that plant roots were more resistive than the surrounding soil. We also documented some relationships between soil-vegetation properties and SIP response, including soil grain size distribution, the shape of the root zones, and plant size/health. The study suggests that SIP holds potential for providing insights about soil-plant interactions.