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Abstract Volume

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Tracking early dinosaurs - new discoveries from the Upper Austroalpine Nappes of Eastern Switzerland (Hautpdolomit, Norian)

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We report here on the discovery of new sauropod and theropod footprints from the middle and upper part of the Hauptdolomit Group (HDG; Mid to Late Norian) from the Upper Austroalpine Ela Nappe in the Natural Park Ela (Canton Graubünden; South-eastern Switzerland). Field studies and aerial surveys in 2009 revealed trampled surfaces in the middle part of the HDG (Late Alaunian to Early Sevatian) at two different locations that display rounded footprints with no signs of digits and can therefore be assigned to advanced sauropods. Close to the summit of Piz Mitgel (3127 m.a.s.l.), the uppermost part of the HDG displays a surface with well-preserved prosauropod pes prints and small- to medium-sized tridactyl footprints of theropod affinity. The summit of the Piz Ela is formed by steeply inclined, east-dipping bedding planes (816 m2) of the higher of part of the HDG with three vertebrate footprint levels. The lowermost surface shows several imprints of small theropods (?*Grallator*). The intermediate level (main surface) exhibits a long trackway with large tridactyl footprints with a pes length of about 33 cm, which can be assigned to the ichnogenus *Eubrontes*. Furthermore, a trackway with large footprints of a bipedal animal is present on the same level. The highest level, just below the summit, shows tridactyl tracks of small theropods and faint, large, rounded imprints that were most probably left by prosauropods. Higher up in the stratigraphic sequence at the boundary between the HDG and the overlying Kössen Formation (Sevatian), we found a dolomitic layer that shows a trackway with deep and possibly tridactyl imprints with mud rims of a bipedal animal.

Up to now, seven levels with dinosaur tracks have been detected in a stratigraphic range spanning the Norian (Alaunian) to Late Rhaetian. The large theropod footprints attributed to the ichnotaxon *Eubrontes* reported here and those from the Swiss National Park together with the record from the coeval Dolomia Principale of the Tre Cime di Lavaredo (? Tuvalian; Dolomites, Italy) are the oldest unequivocal evidence of very large theropod dinosaurs in the Triassic. They predate the fossil remains of *Liliensternus liliensterni* from the Late Norian Knollenmergel of Southern Germany. If, the presence of footprints of advanced sauropods can further be substantiated these tracksites will become a key-element for the reconstruction of the evolutionary scenarios of saurischian dinosaurs developed in the last few years.