

SPE Swiss section

Thursday, 1st October 2015

FIELD TRIP PROGRAMME

- 07:00** Meeting: Salle communale J-J Gauthier, 1 Route du Vallon, 1224 Chêne-Bougeries (tram 12, stop Chêne-Bougeries)
- 07:15-08:45** Departure by car or bus to Emosson dam via Chamonix
- 09:00-11:30** Hike up to the Triassic track site at 2400 m along mountain trail (500 m vertical slope)
- 11:30-12:30** Presentation and visit of the **Triassic Vieux-Emosson proto-dinosaurs track site** by Lionel Cavin, palaeontologist and director of the Natural History Museum Geneva
- 12:30-13:30** Lunch on site out of your rucksack
- 13:30-15:30** Hike down back to Emosson dam
- 16:00-17:30** Road back to Geneva

Note: *Good hiking shoes compulsory, warm cloths and rain jacket recommended !*



See summary description overleaf:

Vieux-Emosson proto-dinosaurs; summary description

The track site from the Triassic beds of the Vieux-Emosson was discovered in 1976. Its study revealed the occurrence of probable dinosaurs as some of the track-makers. This interpretation led to date the sandstone series enclosing the footprints to the Late Triassic, the period of the first dinosaurs known by bones elsewhere in the world. More than 800 footprints were recorded and referred to 9 ichnotaxa (taxonomic names given to a fossilized works of an organism) and some trackways were recognized (Demathieu & Weidman, 1982). Later, doubts were raised by some specialists about the dinosaurian origin of the footprints (Meyer & Thuring, 2003). The discoveries of new footprints in 2008 in the site of the Vieux-Emosson (Avanzini & Cavin, 2009) and in 2011 in a new site located 10 kilometers northwards, near the pasture of Emaney (Cavin et al., 2012), definitively demonstrate that the trace-makers were not dinosaurs, but more ancient reptiles that lived in the Middle, or possibly Early Triassic. Most footprints belong to the ichnofamily chirotheriids.

The animals at the origin of the footprints were basal archosaurs (a group of reptiles that includes the crocodiles, the dinosaurs, the birds and some extinct lineages). They were mostly quadrupedal but with a raised posture, approximately 3-4 meters in length. They wandered on a flat area situated 240 million years ago at the level of the sea in an environment initially interpreted as a beach, but which was recently reinterpreted as a floodplain on the basis of sedimentological structures (Wizevich et al., 2013).

The footprints from the Vieux-Emosson site, from the Emaney site and from several other spots in the vicinity are apparently always located in the very same sedimentary layer, indicating that they were marked at the same time and constitutes a megatracksite of several tens of square kilometers (Meyer et al., 2012). From this megatracksite, only some dispersed outcrops preserved from erosion are now visible.

Located at 2400 meters above sea level in the autochthonous cover of the Aiguilles Rouges Massif, the footprint site of the Vieux-Emosson offers an exceptional opportunity to address the formation and the uplift of the Alps.

References:

Avanzini, M. & Cavin, L. 2009. A new *Isochirotherium* trackway from the Triassic of Vieux Emosson, SW Switzerland: stratigraphic implications. *Swiss Journal of Geosciences*, 102: 353-361. doi: [10.1007/s00015-009-1322-4](https://doi.org/10.1007/s00015-009-1322-4)

Cavin, L., Avanzini, M., Bernardi, M., Piuze, A., Prox, P.-A., Meister, C., Boissonnas, J. & Meyer, C.A. 2012. New vertebrate trackways from the autochthonous cover of the Aiguilles Rouges Massif and reevaluation of the dinosaur record in the Valais, SW Switzerland. *Swiss Journal of Palaeontology*, 317-324. DOI: 10.1007/s13358-012-0040-0

Demathieu, G., & Weidmann, M. 1982. Les empreintes de pas de reptiles dans le Trias du Vieux Emosson (Finhaut, Valais, Suisse). *Eclogae Geologicae Helvetiae*, 75: 721-757.

Meyer, C. A., & Thuring, B. 2003. Dinosaurs of Switzerland. *Comptes Rendus Palevol*, 2: 103-117.

Meyer, C., Avanzini, M., Bernardi, M. & Cavin, L. 2012. An Early Triassic Megatracksite from the Triassic of SW Switzerland and France (Vieux Emosson, Aiguilles Rouges Massif) *10th Annual Meeting of the European Association of Vertebrate Palaeontologists*, Teruel, Spain, 19-24 June 2012.

Wizevich, M.C., Meyer, C.A., Thuring B. 2013. Fluvial origin for the quartzose sandstones of the autochthonous Triassic cover of the Aiguilles rouge Massif, southwestern Switzerland. Abstract 10th International Conference on Fluvial sedimentology, Leeds, 2013.

See maps overleaf:

- 1) site map showing walk path, square side = 1 km
- 2) general access road map
- 3) morning meeting point map



