Program

A small step for an archosaurus, but a giant leap for paleontology

Objectif Sciences International




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"Sur les traces des dinosaures"
Emosson, Switzerland

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Why is paleontology important?

In Emosson, Switzerland, at around 2400 m high, some slabs of sandstone ca. 250 million years old have kept footprints and tracks of ancient animals !

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Our goals

Observe these footprints and map their tracks

- ✓ *Identify which species are involved*
- ✓ *Determine the location of each footprint and find some tracks*
- ✓ *Be able to find the footprints and tracks again, and monitor the rate of erosion*

Collect information on the animals that roamed the ground of our planet

- ✓ *Estimate their size, their morphology and the way they walked*
- ✓ *Help classify these species*

Share our data with Geneva Museum

- ✓ *Present our findings to the public and to research scientists*

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The challenges!

Difficult access to the sites

- ✓ *Our base camp was at 2000 m high, and the sandstones between 2300 and 2500 m*
- ✓ *The slabs of sandstone are not horizontal…*
- ✓ *Working positions are often awkward!*

The large size and number of slabs, with long tracks of footprints

The local climate and weather

- ✓ *It is frequently cold and the weather is not always favorable for investigations*
- ✓ *Snow covers the sandstone slabs during winter*
- ✓ *Erosion deteriorates the footprints*

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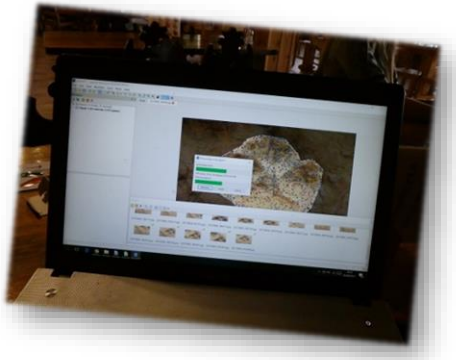
On the field…

Molding the footprints the old way…

1. *We make a first molding on-site with silicone pressed on the footprint and released after drying 30 minutes*
2. *Back to the camp, we place this first molding on plaster mixture, with few days of drying time*

✓ *However this technique is polluting footprints and time-consuming…*



Digital photography & 3D modeling

- ✓ *This is a technique that produces digital 3D images of the footprints*
- ✓ *A software computes a 3D image from several photos of the same footprint taken at different angles*
- ✓ *It is possible to create moldings thanks to a 3D printer*
- ✓ *No issue of ageing (or weight!) of the molding with digital data!*

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Our findings

Some achievements

- ✓ *Few moldings of archosaurus' footprints*
- ✓ *Digital 3D models of few footprints*

Some issues we faced

- ✓ *Traditional moldings are heavy, polluting and time-consuming*
- ✓ *Our computer was very slow for producing 3D images, from a large number of photos for a single footprint*
- ✓ *The sandstone slabs are difficult to reach!*

But wonderful memories!

- ✓ *Nice atmosphere within the team*
- ✓ *Few but beautiful moldings and 3D images*
- ✓ *Surrounded by beautiful mountain landscapes!*

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Sharing our results

We have shared our results

- ✓ *To the paleontologists of Geneva Museum during our summer camp*
- ✓ *To other OSI participants at OSI post-camp last October*

We have also popularized our work

- ✓ *To the visitors attending our presentations in Emosson*
- ✓ *To our parents and families*
- ✓ *To you, who are attending this presentation!*

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What about tomorrow?

This was a wonderful camp, but here are some improvement ideas…

On practical point of view

- ✓ *More detailed protocols are necessary*
- ✓ *The goals should be focused on more specific targets*

On technical point of view

- ✓ *Use of a 3D scanner would improve efficiency*
- ✓ *Drones would be useful to map the footprints' tracks*
  - ✓ *Issue of the weight – carried on our backs!*
  - ✓ *Autonomy and charging of batteries in the mountains?*
  - ✓ *Size and landing issues for flying drones…*
- ✓ *Powerful computers are required to handle these digital data…*

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