200 years of geomorphic history of the Arveyron of the Mer de Glace
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Since the 50’: the major impact of human activities

In 1973, a unique hydropower plant is built, with a subglacial harnessing. The waterflow is totally derived from the glacier front to the Gorges du Mauvais Pas, even during flood events. It means that no flood has passed through the proglacial margin for 45 years. That is why the geomorphic transition between the by passed section and the "connected" section is outstanding. Human activities concern also the channel damming and the sediment extraction. All those impacts have participated to decrease the torrential activity.

Present geomorphic activity

Now, the Mer de Glace tongue is retreating into a hanging valley. The proglacial margin has typical paraglacial processes and landforms such as lakes or developing alluvial fans at the foot of the right lateral moraine. However, the full flow abstraction due to the hydropower plant has modified the paraglacial evolution and disconnected the Arveyron to its potential sediment sources. Thus, the river is now sediment supply limited as shows the cascade river bed morphology.

Conclusions

- From the end of the LIA to the middle of the 20th century, Mer de Glace retreat has caused the decrease of the geomorphic activity of the Arveyron of the Mer de Glace
- Since the middle of the 20th century, this trend is enhanced and mainly led by human activities, especially the hydropower plant.

References