



**HAL**  
open science

# Reflexive Mountain Tourism in the Anthropocene Era: Discussion on the Montenvers Rehabilitation Project, Chamonix

Emmanuel Salim, Camille Girault, Kalpana Nesur

► **To cite this version:**

Emmanuel Salim, Camille Girault, Kalpana Nesur. Reflexive Mountain Tourism in the Anthropocene Era: Discussion on the Montenvers Rehabilitation Project, Chamonix. *Mondes du tourisme*, 2023, 10.4000/11yp4 . halshs-04639641

**HAL Id: halshs-04639641**

**<https://shs.hal.science/halshs-04639641v1>**

Submitted on 9 Jul 2024

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution - NonCommercial - NoDerivatives 4.0 International License

---

## Reflexive Mountain Tourism in the Anthropocene Era: Discussion on the Montenvers Rehabilitation Project, Chamonix

*Le tourisme réflexif en montagne à l'heure de l'Anthropocène : discussion autour du projet de réhabilitation du Montenvers, Chamonix*

Emmanuel Salim, Camille Girault and Kalpana Nesur

---



**Electronic version**

URL: <https://journals.openedition.org/tourisme/6845>  
DOI: 10.4000/11yp4  
ISSN: 2492-7503

**This article is a translation of:**

Le tourisme réflexif en montagne à l'heure de l'Anthropocène : discussion autour du projet de réhabilitation du Montenvers, Chamonix - URL : <https://journals.openedition.org/tourisme/6123> [fr]

**Publisher**

Association Mondes du tourisme

**Electronic reference**

Emmanuel Salim, Camille Girault and Kalpana Nesur, "Reflexive Mountain Tourism in the Anthropocene Era: Discussion on the Montenvers Rehabilitation Project, Chamonix", *Mondes du Tourisme* [Online], Articles, Online since 08 July 2024, connection on 08 July 2024. URL: <http://journals.openedition.org/tourisme/6845> ; DOI: <https://doi.org/10.4000/11yp4>

---

This text was automatically generated on July 8, 2024.



The text only may be used under licence CC BY-NC-ND 4.0. All other elements (illustrations, imported files) are "All rights reserved", unless otherwise stated.

---

# Reflexive Mountain Tourism in the Anthropocene Era: Discussion on the Montenvers Rehabilitation Project, Chamonix

*Le tourisme réflexif en montagne à l'heure de l'Anthropocène : discussion autour du projet de réhabilitation du Montenvers, Chamonix*

Emmanuel Salim, Camille Girault and Kalpana Nesur

---

## EDITOR'S NOTE

This article was translated from French by the authors with the help of DeepL Translator and DeepL Write, and then post-edited by Rebecca Ellerker.

## Introduction

- 1 It is long after its invention and expansion that tourism has been considered as a scientific subject. The numerous scientific and media critiques of which tourism is the subject, for example to denounce excess development, to blame tourism for its harmful environmental impacts at local and global levels, or to accuse it of upsetting territorial balances by excluding some residents (Bourdeau, 2011; Knafou, 2021), are almost consubstantial with the first works on tourism that appeared in the 1960s (Gay, 2018). While the 'massification' of tourism seems to be a process that reflects a real increase in the number of tourists throughout the 20th century and their concentration in certain emblematic places, the notion of 'overtourism' has spread much more recently in the media and in scientific analyses to denounce excessive forms of tourist frequentation that have particularly harmful social and environmental effects on the territories and societies affected by this observed, but above all perceived, overload (Koens *et al.*, 2018).

However, the negative view of tourists is not new, and this criticism, which contrasts ‘tourists’ who are supposedly uncultured and disrespectful with ‘travellers’ whose motives are more sensitive and praiseworthy, is a long-standing phenomenon (Jeanneret, 1995; Urbain, 2002). The geography and anthropology of tourism invite us to deconstruct these discourses and imaginaries (Duhamel, 2018; Gay, *ibid.*). For instance, during his excursion to Montenvers in 1783, M. T. Bourrit complained about the over-visitation of the site, which was then visited by several hundred people per decade (Debarbieux, 1988), showing that the thresholds for accepting tourist visits to a site have at least as much to do with the tourists themselves as with the hypothetical carrying capacity of tourist sites. These criticisms have led to the development of an alternative term that is often used as a normative model: ‘sustainable’ tourism. According to the World Tourism Organisation (WTO), sustainable tourism aims to “reconcile the improvement of environmental and social conditions resulting from tourism development with the preservation of the development capacities of future generations”.<sup>1</sup> However, like sustainable development, this term is potentially oxymoronic. ‘Sustainable tourism’ has received its fair share of criticism, particularly with regard to the thresholds and carrying capacities it would require, while continuing to impose a political and mercantile rhetoric (Bourdeau, 2008) to the detriment of indicators relating to health, education, or social relationships (Furt and Antoinette Maupertuis, 2013).

- 2 On the basis of these initial observations, and without postulating in any way the sustainability or resilience of tourism systems, it is important for us in this article to consider the impact in the context of global environmental crisis – which we will refer to here as the Anthropocene – and the multifactorial and multi-scalar awareness of ecological issues in the case of tourism, specifically in the mountains. Indeed, the trajectory of tourism as a system of stakeholders, practices, and places (Knafou and Stock, 2003) seems to be structurally affected by these changes, and the mountains appear to be an area of study where these effects are more visible and prevalent.
- 3 Since it brings together political, economic, cultural, environmental, and territorial issues, tourism is often referred to in Maussian terms as a “total social fact” (Cousin and Réau, 2009); an epistemic concept that is particularly relevant in the context of the Anthropocene, since tourists and tourism stakeholders are both responsible for and victims of the environmental impacts of tourism. In short, they participate in its development at a local and global scale, while at the same time suffering directly from its consequences. Tourism is estimated to be responsible for more than 8% of global greenhouse gas (GHG) emissions (Lenzen *et al.*, 2018), while at the same time it is one of the sectors most affected by all the consequences of climate change (and therefore by excess GHG emissions) (Mora *et al.*, 2018). At the level of the Pays du Mont-Blanc – designated by the public authorities as the Upper Arve Valley tourist region –, there are more than 12 million tourists per year (excluding Covid years), including almost 5 million in summer. These visits inevitably generate greenhouse gas emissions, especially as almost half of the tourists are foreigners. Moreover, there has been a clear downward trend in the number of summer visitors over the last 20 years.<sup>2</sup> Although we cannot establish a direct and exclusive link between this trend in tourism and the Anthropocene, we can hypothesise that changes in the glacial landscapes are contributing to a decline in the attractiveness of this region. Furthermore, in the face of such a global and local situation, we also hypothesise that neither tourists nor other

tourism stakeholders remain indifferent; their practices and choices reflect adaptation strategies, even if these may lack coherence. The Montenvers site rehabilitation project (see below) is part of this approach and highlights the contradictions between what people say and what they do. Scientific support and environmental awareness are promoted as levers for renewing tourist appeal and, more profoundly, for rethinking the tourist experience. It is questionable, however, whether this kind of reflexive tourism might turn out to be just another avatar of a tourism system that reproduces tried-and-tested logics for the sake of economic profitability.

- 4 The aim of this article, therefore, is to observe and understand changes in tourism practices and infrastructures at the Montenvers site in the light of the Anthropocene. More broadly, it aims to discuss the concept of *reflexive tourism* by deconstructing the link between the political and economic foundations of such a project to rehabilitate this historic and emblematic tourist site.
- 5 We will first review the concept of the Anthropocene, before contextualising the project to rehabilitate the Montenvers site in relation to the long history of this tourist site and the reality of scientific studies of the Mer de Glace. Then, based on a hybrid methodology combining interviews, analysis of previous scientific studies of the site, and critical analysis of documents presenting the project, we will discuss the interests and limitations of the concept of *reflexive tourism*.

## The Anthropocene as an unevenly considered framework for tourism stakeholders

- 6 The term Anthropocene emerged at the turn of the 21st century (Crutzen, 2002), and is defined as a new geological epoch in which human activities have become the main forces influencing the climate and the environment on a global scale (Latour, 2015). The Anthropocene Working Group of the International Commission on Stratigraphy, responsible for establishing the geological evidence on which the scientific recognition of the Anthropocene is based, suggests that the Anthropocene began in 1950 and is characterised by the fallout of radionuclides visible on a global scale resulting from the explosion of the first atomic bombs (Alexandre *et al.*, 2020). While acknowledging the contributions of the critical concepts of the Capitalocene, the Plantationocene and the Oliganthropocene (Bonneuil, 2017; Ferdinand, 2019; Swyngedouw, 2014), we will use the concept of the Anthropocene here to describe human impacts on the environment on a global scale, without commenting on the underlying socio-politico-technical reasons, which are not the subject of this article. Average global temperatures have increased by about 1.1°C in the period 2011-2020 compared to the 1850-1900 baseline average (IPCC, 2021), mainly as a result of anthropogenic greenhouse gas emissions. Tourists consequently face a series of dilemmas and paradoxes: visiting certain places threatened by climate change despite the environmental impact of their stay (D'Souza *et al.*, 2021), and, more generally, deciding between an individual choice of tourist mobility and foregoing long-distance motorised travel for environmental reasons. In addition to the other vulnerabilities of the tourism system, which were clearly highlighted by the Covid-19 crisis (Gössling and Schweiggart, 2022), adapting to the consequences of such global warming will, therefore, be one of the major challenges facing tourism in the 21<sup>st</sup> century, both locally and globally (Scott, 2021). In this context, the disappearance of the cryosphere is one of the main consequences of

climate change for mountain tourism (IPCC, 2019). Two examples are particularly telling: the evolution of tourist activities related to downhill skiing, the conditions of which are deteriorating both in terms of time and space due to climate change (Gilaberte-Búrdalo *et al.*, 2014), and glacier tourism, defined as a form of tourism whose main purpose is to encounter a glacier, the very object of which is under threat in the short term (Sommer *et al.*, 2020). However, the adaptation strategies of the various tourism stakeholders are struggling to incorporate this scientific knowledge into their planning (Salim *et al.*, 2021c). In both cases, the disappearance of the cryosphere would lead to a reduction or even disappearance of the main resource on which these tourist services are based.

- 7 Tourists are themselves becoming increasingly aware of these environmental changes and the likely disappearance of certain tourist resources. Studies on the popularity of certain tourist destinations, such as the Great Barrier Reef in Australia (Piggott-McKellar and McNamara, 2017) or Hudson Bay in Canada (D'Souza *et al.*, 2021), show that visitors want to see these places before they disappear. This idea has been conceptualised as a form of last chance tourism, where tourists rush to certain tourist sites to observe an element (usually natural) before it disappears (Lemelin *et al.*, 2010). This tourism practice has led to ethical debates about the fact that visitors, who are often well aware of climate change and its causes and consequences, paradoxically endanger the elements they come to observe through the GHG emissions associated with their travel (Dawson *et al.*, 2011; D'Souza *et al.*, 2021). This paradox needs to be understood in terms of the interplay of scales of time and space. GHG emissions are seen primarily as a global, long-term issue, whereas the choice of a tourist holiday is an individual, short-term decision with seemingly little impact on this temporal scale. This underlying scalar ambiguity is more common in environmental policy. However, it seems that among the motivations for these tourists is the idea of better experiencing and better understanding the processes at work behind climate change, and thus a search for reflexivity (Salim *et al.*, 2020). This observation is in line with the idea developed by Knafo (2017), who suggests the term *reflexive tourism* to describe a form of tourism in which tourists are placed in a situation that leads them to question the causes and processes that led to an event (for example, by reflecting on the sociological or psychological causes that led to the Holocaust, in the case of the Camp des Milles in Aix-en-Provence). It is no longer a question of simply presenting information, but of encouraging visitors to reflect on their practices, to “sort through their knowledge and [...] try to situate themselves in relation to the issues at stake” (Knafo, 2017, p. 7). In the specific case of reflexive tourism at mountain glacier sites, this can be understood as tourists who are aware of glacier retreat wanting to experience the reality of global warming in a concrete way, in order that they may observe and become aware of the necessity to act in response to the global environmental crisis. It can also be understood as the stakeholders' desire to highlight these elements and arguments in their tourism offer. Approached in this way, some of the contradictions that societies face in the context of the challenges of ecological transition can be explained by reflexive tourism.

## Survey conducted at Montenvers, a site subject to a major rehabilitation and enhancement project

- 8 With the development of glacier interpretation centres (Salim *et al.*, 2021c) and the emphasis on the scientific value of glaciers, which until now have been promoted mainly for their aesthetic value (Bussard *et al.*, 2021), the current changes in glacier tourism can be seen as a form of adaptation to climate change, reducing the vulnerability of the sites and thus changing their promotion, away from the main emphasis being on the glaciers' aesthetic value. In this respect, the operators of one of the historic glacier tourism sites in the French Alps – Montenvers and its famous Mer de Glace – have announced a project for 2021 to restore the site and build a glacier and climate interpretation centre on an unprecedented scale.<sup>3</sup> Details of this project can be found in the consultative report of the Regional Mission of the Environmental Authority dated 27 September 2021.<sup>4</sup> The announcement of this project provides an opportunity to question the way in which the Anthropocene is influencing the development projects of a site largely affected by it, and the way in which this dynamic makes Montenvers a site of tension between reflexive tourism and the lucrative tourism strategy of local stakeholders.
- 9 The Mer de Glace was one of the first Alpine glaciers to be opened to tourism in the mid-18th century. After the visit of the Englishmen W. Windham and R. Pococke in 1741, Montenvers quickly became one of the most popular glacier tourist sites in the Alps (Joutard, 1986). Nowadays, some 400,000 visitors come to admire the glacier every year,<sup>5</sup> making it the second most popular tourist site in Savoie after the Aiguille du Midi. Today, visitors to this tourist site can take the cogwheel railway, inaugurated in 1909, to observe the Mer de Glace from several “terraces” and, during the summer, to listen to lectures and readings by glaciologists from the main terrace. To get as close as possible to the glacier, a cable car takes visitors down some 580 steps (a number that is increasing every year as the glacier shrinks – see Figure 1) to visit an ice cave that has been excavated every year since 1946. Visitors can also visit the “Galerie des Cristaux” and the “Glaciorium”, a crystal exhibition and a small glacier interpretation centre respectively; stay in the “Grand Hôtel du Montenvers”, built in 1880 and renovated in 2017; eat in three restaurants and snack bars; go on a variety of hikes or access various mountain huts across the glacier. In winter, many skiers who descend the Vallée Blanche, a high-altitude ski route connecting the Aiguille du Midi to Chamonix via the Mer de Glace, use the Montenvers train to reach Chamonix (refer to Figure 1). In terms of the activities offered and practiced, Montenvers tourism appears above all to be associated with experiences of contemplation and the practice of nature-based recreational activities, rather than being defined by the pursuit of scientific information and reflexive experiences. Nevertheless, it appears that both the motivations of tourists and the tourist offerings are evolving.



Figure 1. Location map of the Mer de Glace and Montenvers basins



Photos: E. Salim and S. Abrial. The extension of the Mer de Glace comes from the 2013 GLIMS inventory.

- 10 The Mer de Glace is not only a popular tourist destination, but also a glacier closely monitored by scientists. Numerous studies have been conducted to comprehend its dynamics over several centuries (Le Roy *et al.*, 2015; Nussbaumer *et al.*, 2007; Vincent *et al.*, 2019). In particular, according to findings from the Glacioclim program, the front of the Mer de Glace glacier has receded by 2.5 kilometres since 1850, with a third of the retreat happening since 1996. Additionally, at the level of Montenvers, its thickness has decreased by 100 metres since 1991, as reported by Vincent *et al.* (2007). The Mer de Glace is a prominent visual indicator of the enduring effects of the Anthropocene. The most pessimistic modelling projects suggest that the glacier will no longer be visible from Montenvers by 2050 (Peyaud *et al.*, 2020). Additionally, Montenvers is a centre for political communication on environmental concerns, having hosted visits from French politicians including Manuel Valls in 2015 and Emmanuel Macron in 2020.
- 11 To provide context, the project in question forms part of the renewal of the public service delegation (DSP) awarded by the Chamonix-Mont-Blanc municipality to the Compagnie de la Mer de Glace. This company is a subsidiary of the Compagnie du Mont-Blanc, created especially for this purpose, and has been entrusted with managing the site from 2021 to 2054. This project aims to enhance and expand the Montenvers site, with two significant alterations proposed. Firstly, the current gondola lift will be removed and replaced by a new one that will be lower and further upstream from the Mer de Glace basin (Figure 1); and secondly, a large “International Glacier and Climate Interpretation Centre” will be built.
- 12 To examine the underlying dynamics of this project, it is necessary to analyse its current operation and the response of the site managers to the Anthropocene. To do



this, we will utilise six semi-structured interviews carried out between 2019 and 2020 with multiple stakeholders of the previous DSP. The interviews were carried out with various managers from the Compagnie du Mont-Blanc and the Montanvers site, the Communauté de Commune de la Vallée de Chamonix, and a manager in charge of constructing the ice cave. The purpose of the interviews was to acquire a clearer understanding of the stakeholders' views on climate change, its effects on site operations and the corresponding adjustment strategies implemented. This initial series of interviews will be complemented by five additional ones conducted in 2021 with managers from the Compagnie du Mont-Blanc and various people involved in scientific work at the Montanvers site. These subsequent interviews were geared towards gaining a deeper understanding of the dynamics that have driven the development of scientific outreach activities and the key stakeholders involved, in particular the financial backers. A summary of the interviewed individuals and discussed topics is available in Appendix 1. All interviews were conducted on the premises, recorded with the participants' consent, transcribed, and analysed using MaxQDA software. The interviews lasted 45 minutes to 1.5 hours. In addition, an analysis was conducted on the grey literature relating to the site redevelopment project. This included reports from the commission of the site, the regional environmental authority, the Conseil Général de l'Environnement et du Développement Durable, as well as promotional material and press releases. An objective approach to the transformation of visitors' expectations and perceptions is important for a full understanding of the influence of the Anthropocene on this glacial site. The Montanvers site has been the subject of scientific publications that explore visitors' motivations, perceptions, and behaviour. These elements will be utilized in the following sections.

## The Anthropocene as a key to understanding how Montanvers operates

- 13 The receding of the Mer de Glace is obviously bringing about many changes in the operation of the Montanvers site. One of the first things mentioned by those interviewed is the increasing difficulty of accessing the glacier due to its loss of thickness. In 2020, to reach the ice cave from the cable car that was built in 1988 to the glacier level, it is necessary to descend (and then ascend) more than 580 steps. In addition to the physical effort required by visitors, the extended access to the glacier imposes extra work for Montanvers' operators, who have to ensure the safety of visitors by providing a lookout, protecting the route from falling rocks and clearing it of snow in winter, not to mention the fact that the staff responsible for maintaining the ice cave will themselves be affected by the extension.

From an operational point of view, it takes much longer to open the cave than it used to. Because we have to [...] clear the snow and maintain the path, and the same goes for the grotus [people who dig the cave], you can feel it even in summer since the path to access [the cave] is longer. (E1)

- 14 Since the ice cave workers must clear snow and maintain the path, one can feel the increased workload even in the summer due to the extended access route to the cave. During winter, the staff at Montanvers face further demands: as well as clearing the snow, they must ensure that all visitors who have descended the steps, as well as those

arriving from the Aiguille du Midi, have returned before the last train leaves. This delay can sometimes prolong employees' working time by several hours and requires additional staff, which can increase operating costs.

- 15 The reduction in thickness of glacier ice is causing a transformation in the paths to access the hut in the Mer de Glace basin, as Mourey and Ravanel (2017) have already shown. Additionally, the decrease in ice thickness, along with the growth of the supraglacial debris coverage, is leading to an increase in the time required to descend the Vallée Blanche: the lack of snow sometimes means that skiers have to take off their skis well before Montanvers. The fast melting of the glacier heightens the danger of rockfalls at the ice cave entrance, although the melting here has been mitigated by the installation of protective covers. Moreover, the glacier's deceleration has impeded the ice cave excavation; constructing the cave in fresh ice every year was feasible only when the glacier flowed at a sufficient velocity, in the "same place". Today, the glacier's virtual immobility means that new ice has to be found upstream, increasing travel time and the length of the footbridge required (Figure 2).

Figure 2. Access platforms to the ice cave



E. Salim, June 2021.

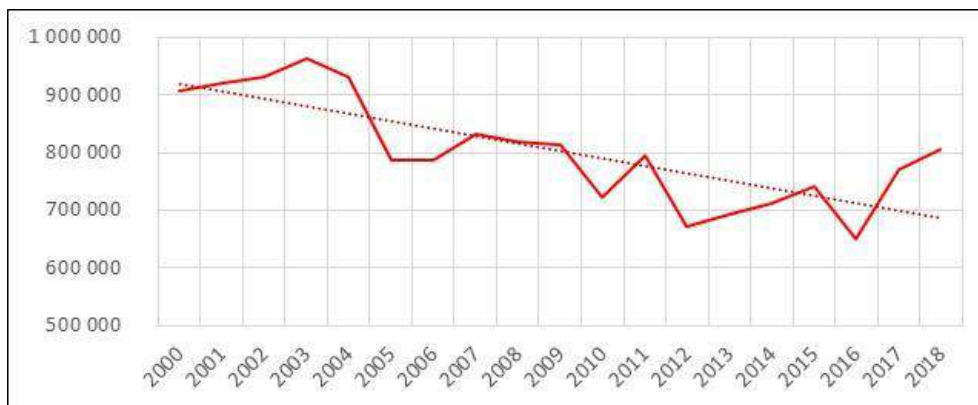
- 16 Finally, the various managers and tourism stakeholders interviewed are concerned about the attractiveness of the site. The first reason is linked to the sometimes early in the season closure of the ice cave, and the dissatisfaction of some visitors perceived by the site's operators:
 

Over the last few years, we've noticed that we're becoming less and less attractive relative to the glacier, where, let's say, 100% of the customers who go to the Mer de Glace say: "Yeah, I came here to see a glacier, now I see a field of stones." (E3)
- 17 The second reason is related to the fact that the future of the ice cave is not guaranteed. In the opinion of the leading figure in the company that runs it, it will only be able to operate for a few more years in its current state:

Today we'll make do with it, that's all, if we can [continue] for ten years, if there's a new gondola [...]. But my whole team and I know very well that it's not going to continue. (E4)

- 18 Finally, the perceived and feared loss of attractiveness is linked to the change in the landscape. This involves both a reduction in the proportion of 'ice' in the landscape and the greying of the glacial landscape. In short, in the collective imagination of tourists, a glacier should be white and light blue (see below), "here they see a glacier tongue covered with debris, so some visitors are disappointed" (E2). According to the operators present at the site, this change in the landscape is a recurring source of dissatisfaction and disappointment for visitors. Although other surveys have shown that visitor dissatisfaction with changes to glacial landscapes remains low (Salim *et al.*, 2021d), we can observe that visitor numbers to the Monteners site have been declining since the 2000s (Figure 3). When asked about this, the operators of the site believe that this decline in visitor numbers is linked to a shift in flows following the renovation of the Aiguille du Midi in 2015, which has since seen an increase in visitor numbers. However, some of the respondents involved in outreach activities consider that the introduction of public conferences on the Monteners terrace is a response to the decline in the number of visitors to the site and the lack of activities on offer ten years ago, as well as a way of facing up to the increase in access time to the glacier. What's more, these conferences now provide content related to the landscape, "explaining what people see", "without being too negative", because "they're on holiday" (E7, E11). According to one of the stakeholders involved, these conferences make it possible to "explain to customers why the glaciers are melting" (E10).

Figure 3. Evolution of visitors to the Monteners site between 2000 and 2018



Data from Savoie-Mont-Blanc-Tourisme, including the number of people arriving and departing.

- 19 The Monteners site has historically undergone numerous changes related to the Mer de Glace fluctuations, especially since 1850, which marks the end of the Little Ice Age. However, geomorphological processes appear to be more frequent and intense today (Salim *et al.*, 2021b).

## Montenvers and the Mer de Glace as indicators of the Anthropocene: insights from the work carried out with visitors to the site

- 20 This concern among tourism operators about growing dissatisfaction among Montenvers visitors can be explained by the results of other studies of glacier tourism practices around the world, where visitors can express a certain disappointment due to changes in glacial landscapes (Garavaglia *et al.*, 2012; Stewart *et al.*, 2016). Two studies have been carried out for Montenvers, both looking at the motivations that bring visitors to the Mer de Glace and how they perceive the landscape once they are there. The results of these studies are presented here.
- 21 In the first study, Salim *et al.* (2021d) investigated how the glacial landscape is perceived by visitors to Montenvers. Semi-structured interviews were used to understand which elements of the landscape led visitors to make positive or negative judgements, and a quantitative survey was used to assess potential dissatisfaction with the landscape. The results show that the landscape is perceived positively by the vast majority of visitors. While the aesthetics of the landscape are generally appreciated, negative perceptions are concentrated on the glacier itself, both because of its small volume and because of its lack of whiteness, the numerous debris on its surface being associated with the idea of “degraded nature”. The quantitative results confirm this observation, with a very low rate of dissatisfaction.
- 22 Beyond questions of satisfaction, this work shows the extent to which the glacial landscape of Montenvers is indicative of a clear entry of contemporary societies into the Anthropocene. In addition to the factors already mentioned, the negative assessments reflect the idea that the landscape is locally marked by the consequences of human activity in general on the environment. The retreat of the Mer de Glace, which is well perceived by visitors, can be experienced as the loss of an object linked to people’s identity or, more generally, as the gradual disappearance of a common good of humanity. In some cases, seeing the landscape leads them to reflect on their practices and on the impact of mankind on the environment. These reflections can be positive or negative, depending on the visitor. In short, the glacial landscape of Montenvers is characteristic of an Anthropocene landscape – in the sense that it shows the impact of humans on the environment on a global scale through a local manifestation – and is perceived as such by its observers (even if they do not necessarily use the term Anthropocene).
- 23 In the second study, Salim *et al.* (2020) focused on visitors’ motivations for coming to the site. Their results show that while the main motivations for visitors are to see a beautiful landscape, to see the glacier, or to be close to nature, the urgency to see the Mer de Glace before it disappears is also one of the primary reasons for visiting. As shown elsewhere (Dawson *et al.*, 2011), the more motivated visitors are by last-chance tourism, the more aware they are of environmental issues and their own impact on the environment. However, beyond the simple urgency of seeing a disappearing element, Salim *et al.* (2020) show that visitors may come to Montenvers to observe glacial retreat or to gain a better understanding of the complex processes involved in climate change. In other cases, they may see the glacier as heritage to be protected and transmitted to future generations. However, although some studies tend to show that visiting an



‘endangered’ place influences intentions to take action for the environment (Miller *et al.*, 2020; Salim *et al.*, 2022), it is still very difficult to assess whether the tourist experience of Montenvers induces lasting behavioural changes in visitors, bearing in mind that making individuals responsible for their actions is potentially a form of political disempowerment (Hache, 2007).

- 24 In light of the two studies presented, it seems that the Mer de Glace is now well identified by its visitors as a site in the process of disappearance, and also well perceived as a marker of the Anthropocene. What’s more, it seems that some visitors to the Montenvers site go there as part of a reflective process aimed at gaining a better understanding of current environmental dynamics and the role that humans play in them. These issues are now being taken up by site managers and local tourism operators.

## Rehabilitation of Montenvers, adaptation and interpretation of the landscape

- 25 According to the promoters of the project, the rehabilitation of Montenvers is intended to “renew the tourist offer in order to cope with the effects of climate change”.<sup>6</sup> The first phase of the project, which includes the dismantling of the existing gondola and the installation of the new one scheduled for December 2023, is aimed primarily at overcoming the access problems mentioned above. The new 581-metre-long gondola will bridge a 203-metre difference in altitude, eliminating the current 580 steps and making it easier for visitors and mountain guides to access the glacier in summer and for skiers to descend the Vallée Blanche in winter. According to the directors of the new Compagnie de la Mer de Glace – a subsidiary of the Compagnie du Mont-Blanc, a for-profit company – the aim is also to allow visitors to “experience the ice”, described as “a unique experience, full of meaning and emotion, with scientific content” (E7), in particular by guaranteeing the excavation of the ice cave for some years to come. The managers are also aware of the temporary nature of this easy access. Modelling of the retreat of the Mer de Glace suggests that it could be used until 2040-2050 at most (Peyaud *et al.*, 2020; Vincent *et al.*, 2019). The entire gondola project has therefore been designed to be reversible and capable of being dismantled once the glacier has disappeared – which is also a legal requirement, as the 2016 law on the “modernisation, development and protection of mountain areas”, known as Loi Montagne 2, stipulates that “the authorisation to carry out the work must be accompanied by an obligation to dismantle the ski lifts and their auxiliary structures and to restore the sites. This dismantling and restoration must take place within three years of the definitive closure of the ski lifts”.<sup>7</sup> With regard to a possible extension, the Commission des Sites, in its favourable opinion dated 1 October 2020, stated that the planned layout would be “the maximum limit that should never be exceeded again”,<sup>8</sup> a condition also requested by the Departmental Site Commission in its opinion dated 1 July 2020. A limit claimed by the Compagnie de la Mer de Glace, which says it is not “chasing ice” (E7).
- 26 Although the promoters mention limiting expansion and adapting to climate change, the environmental and climate impact of the project is questionable. Indeed, as the MRAE points out, no carbon assessment of the project has been carried out, and it is likely that the planned increase in the number of visits and the international scope of

the project will have a negative impact on this point. Finally, we must not lose sight of the fact that the financial stakes for the Compagnie du Mont-Blanc are colossal.

- 27 The second part of the project, the one that interests us most here, aims to turn Montanvers into a tourist site with “a glaciarium that is unique worldwide”.<sup>9</sup> This glacier interpretation centre,<sup>10</sup> designed on three levels, aims to create an itinerary that takes visitors through a series of themed areas: These are: “Glaciers and People”, which looks at the history of the site; “Discovering Glaciers”, which looks at glacial processes and dynamics; “Studying Glaciers”, which looks at scientific research on glaciers; “The Climate Observatory”, which looks at climate dynamics, their links with glaciers and future projections for climate change; and finally, the digital “Flyover”, which is presented as an immersive experience where visitors can observe the glacial landscape from the air.<sup>11</sup>
- 28 The various public and private stakeholders involved in the project consider that one of its main objectives is to increase the number of visitors to the Montanvers site by broadening the tourist offer and improving the visitor experience. “To achieve this, it is important to renovate the site with a new image focusing on a cultural and scientific dimension” (E10). According to data provided by Savoie-Mont-Blanc-Tourisme, between 2000 and 2018, the number of visits to Montanvers fell by around 12%. While this fall in visitor numbers may be due to a number of factors – in particular the revival of the nearby Aiguille du Midi, which experienced the opposite dynamic over the same period – for those interviewed, it is mainly the result of changes in the glacial landscape. While some members of the management structure believe that this new flow of visitors should be sought on international markets, the construction of the new interpretation centre also aims to increase the number of school groups visiting the site and to make Montanvers an in-situ “laboratory”, a place for education on glacial evolution and climate change. There are also plans to create rooms for scientific and business seminars, a sign that the Compagnie du Mont-Blanc is also seeking to diversify its business model by positioning itself on the business tourism market, a sector that is not incompatible with reflexive tourism.

## Is Montanvers an archetypal example of reflexive tourism?

- 29 The project led by the Montanvers operators seems to emphasise the interpretive dimension present in Alpine glacier tourism sites (Salim *et al.*, 2021a). However, it is clear that the project conceived here aims to make the site an ‘observatory’ or ‘research centre’ for climate change and its consequences. This objective is in line with the motivations of visitors to the site, which include learning about and understanding climate change, as is the case for other glacial sites (Lemieux *et al.*, 2018; Purdie *et al.*, 2020). It also seems important to promote elements that will help to better understand the processes associated with the Anthropocene, in order to maximise the willingness of tourists to adopt responsible and sustainable behaviour. In this respect, studies on polar bear tourism in particular show that a lack of understanding of the links between the Anthropocene and the disappearance of the bears leads to a decrease in people’s intention to take action for the environment (Miller *et al.*, 2020), and that the role of human influence – and tourist behaviour in relation to it – in the Anthropocene is still poorly understood (D’Souza *et al.*, 2021). Beyond information, Knafou (2017) considers



that a tourist site that wants to mobilise tourists' reflexive capacities must adopt other approaches, emotional or cognitive, that encourage tourists to question and reflect on their place in the process under study. In other words, for Montanvers, it's not just a question of highlighting the known information about climate change, glacial retreat, and its consequences, but of encouraging tourists to reflect on their place and role (through their actions, journeys, and behaviour) in this context, mobilising both rational and emotional levers.

- 30 However, while this project represents an opportunity to develop a reflexive form of tourism towards the Mer de Glace, with the aim of questioning the Anthropocene, the Compagnie du Mont-Blanc still has to resolve the major contradictions inherent in this project, between its declared sustainability and its desire to maximise tourist numbers. During the interviews conducted, those responsible for the project stated that their aim is to increase the attractiveness of the site, particularly by way of the international markets. There is also a tension between the desire of the site operators to demonstrate and explain the effects of climate change and the desire to satisfy visitors. This tension, already identified by Nesur *et al.* (2022), is expressed in some of the interviews regarding scientific mediation. For example, one of the site's stakeholders clearly states that information on climate change must be presented without resorting to catastrophism or blaming visitors who are 'on holiday' (E11). The holiday argument thus legitimises a 'consensual' discourse on the Anthropocene, echoing the adage that "the holiday of great values creates the value of great holidays" (Morin, 1962). Moreover, according to one of the participants, the discourse currently produced by glaciologists on the terrace focuses mainly on the changes that are taking place, but very little on the solutions that need to be found. Furthermore, the tension mentioned above sees the tourist as an individual to be "looked after", incapable of making a positive assessment of a complex phenomenon that requires him or her to reflect on his or her own actions. As a counterpoint, we can add to the discussion that a recent Canadian study shows that adding information about climate change and its consequences to guided glacier tours could actually lead to an increase in participant satisfaction (He and Hinch, 2021).
- 31 The first contradiction is perhaps the most difficult to resolve. As reported by Clivaz and Savioz (2020), 80% of the GHG emissions associated with tourism in the Chamonix Valley are generated by the travel undertaken by tourists to get there. In 2018, international customers accounted for around 43% of winter tourist and para-tourist overnight stays and 40% of summer overnight stays in the Chamonix valley.<sup>12</sup> In this context, the achievement of climate targets (at least compliance with the Paris Agreement) requires a significant reduction in emissions, which is a priori incompatible with an increase in the number of tourists, especially international tourists. In the context of this project, the profitability of the more than 35 million euros invested seems incompatible with the objectives of reducing greenhouse gas emissions. The paradox between the development of reflexive tourism around the issues of the Anthropocene and the international tourist travel that it implies is, therefore, fundamental and unsolvable for managers. This point is all the more important given that the recent inclusion of alpinism – in the context of the Mont Blanc massif – as a Unesco Intangible Cultural Heritage is likely to increase the international appeal of a destination such as the Chamonix Valley (Debarbieux, 2020). To resolve this paradox, we need to understand the extent to which domestic tourism

could be favoured and whether this is compatible with the upgrading of the project's economic rationale (50 euros for a round-trip ticket from Chamonix once the project is completed, compared with 38 euros today<sup>13</sup>). Strengthening the local clientele is also an avenue to be explored, particularly with school groups, which are part of the project's target audience. However, the financial question remains unanswered and would require further economic analysis. The second contradiction seems easier to resolve in that it requires a change in the way we look at tourists, treating them as individuals capable of reflecting on the information they receive. The development of reflexive tourism at Montenvers could also increase the attractiveness of the mountain for local and national audiences, while at the same time allowing the emergence of a place dedicated to reflection on the Anthropocene, for which the geomorphology and historical nature of the facilities are particularly well suited.

## Conclusions

- 32 The Montenvers site is particularly affected by the entry into the Anthropocene. Interviews with site managers show that the retreat of the glaciers and related processes are changing the way the site is managed and creating additional difficulties in terms of access and safety. These changes make the site a marker of the Anthropocene, and one that is well perceived as such by visitors. Although the aesthetic changes to the Mer de Glace have not led to a significant drop in visitor satisfaction, they are nonetheless highly indicative of the climate changes underway and the effective entry into the Anthropocene. The educational dimension of the site's rehabilitation project can, therefore make the abstract concept of the Anthropocene, in this case in its climatic dimension, a reality for visitors. However, there are two contradictions that stand in the way of this project. The first is related to the increase in visitor numbers that the project could bring. This increase is likely to come mainly from international markets because of the need to upgrade in order to make the investment profitable. Given the need to reduce greenhouse gas emissions and the fact that, in the Chamonix valley, the majority of these come from international tourism, the increase in international visitors to a site dedicated to the Anthropocene is an aporia. This contradiction can also be seen in terms of the tension between economic profitability and environmental responsibility. The second contradiction lies in limiting the discourse produced on the Anthropocene in the name of satisfying tourist customers. This contradiction can be easily resolved by changing the way tourists are perceived and by increasing the proportion of school excursions and domestic tourism. In addition to these contradictions and paradoxes, the Montenvers project, through the reflection it offers on the environmental changes underway, seems to be conducive to the creation of a reflexive approach where visitors can see, understand, and feel the consequences of the Anthropocene, while at the same time reflecting on the role their actions play in this process. More theoretically, the development of reflexive tourism could lead to a reversal of the imaginary of last-chance tourism – perceived rather negatively as the exploitation of an endangered object – towards the imaginary of reflexivity, where these objects are used as a support for the development of a discourse that encourages introspection and reflection. The development of reflexive tourism in relation to the Anthropocene now seems necessary to participate in the paradigm shift required to resolve it. It should, therefore, embody the solutions that our behaviour can provide and the need for them to be accompanied by a more global

paradigm shift in terms of territorial governance, particularly with regard to the neoliberal vision of tourism development. The concept of reflexive tourism could be further explored in the light of the perceptions of those who practice it. In this respect, future work could be carried out to measure its compatibility and operability on the Monteners site, and even within other sites linked to the Anthropocene, and to analyse the potential gap between the objectives of the stakeholders and the experience of the visitors.

---

## BIBLIOGRAPHY

Frédéric ALEXANDRE, Fabrice ARGOUNÈS and Rémi BÉROS, *Dictionnaire critique de l'anthropocène*, Paris, CNRS Éditions, 2020.

Christophe BONNEUIL, "Capitalocène. Réflexions sur l'échange écologique inégal et le crime climatique à l'âge de l'Anthropocène", *EcoRev'*, vol. 44, n° 1, p. 52-60, 2017.

Philippe BOURDEAU, "Territoires de montagne et tourisme durable : une approche critique", in Olivier Bessy and Jean-Pierre Augustin (eds), *Loisirs sportifs, territoires et développement durable*, Presses universitaires du sport, 2008.

Jonathan BUSSARD, Emmanuel SALIM and Johannes WELLING, "Visiter les glaciers, une forme de géotourisme ? Les cas du Monteners (Mer de Glace, France) et de Jökulsárlón (Breiðamerkurjökull, Islande)", *Géo-Regards*, n° 14, p. 139-156, 2021.

Christophe CLIVAZ and Alexandre SAVIOZ, "Recul des glaciers et appréhension des changements climatiques par les acteurs touristiques locaux. Le cas de Chamonix-Mont-Blanc dans les Alpes françaises", *Via. Tourism Review*, n° 18, 2020.

Saskia COUSIN and Bertrand RÉAU, *Sociologie du tourisme*, Paris, La Découverte, 2009.

Paul J. CRUTZEN, "Geology of mankind", *Nature*, vol. 415, n° 6867, p. 23-23, 2002.

Jackie DAWSON, M. J. JOHNSTON, Emma J. STEWART, Christopher LEMIEUX, Harvey R. LEMELIN, Patrick MAHER and Bryan S. R. GRIMWOOD, "Ethical considerations of last chance tourism", *Journal of Ecotourism*, vol. 10, n° 3, p. 250-265, 2011.

Bernard DEBARBIEUX, *L'Unesco au Mont Blanc*, Chamonix, Guérin-Éditions Paulsen, 2020.

Bernard DEBARBIEUX, *Territoires de haute montagne : recherches sur le processus de territorialisation et d'appropriation sociale de l'espace de haute montagne dans les Alpes du Nord*, doctoral thesis in Geography, Université Joseph-Fourier-Grenoble 1, 1988.

Jamie D'SOUZA, Jackie DAWSON and Mark GROULX, "Last chance tourism: A decade review of a case study on Churchill, Manitoba's polar bear viewing industry", *Journal of Sustainable Tourism*, vol. 31, n° 1, p. 1-19, 2021.

Philippe DUHAMEL, *Géographie du tourisme et des loisirs*, Paris, Armand Colin, 2018.

Malcom FERDINAND, *Une écologie décoloniale. Penser l'écologie depuis le monde caribéen*, Paris, Média Diffusion, 2019.

- Jean-Marie FURT and Marie ANTOINETTE MAUPERTUIS, "Développement touristique insulaire et qualité de vie des résidents : une analyse critique des indicateurs de tourisme durable", *Études caribéennes*, n° 23, 2013.
- Valentina GARAVAGLIA, Guglielmina DIOLAIUTO, Claudio SMIRAGLIA, Vera PASQUALE and Manuela PELFINI, "Evaluating Tourist Perception of Environmental Changes as a Contribution to Managing Natural Resources in Glacierized Areas: A Case Study of the Forni Glacier (Stelvio National Park, Italian Alps)", *Environmental Management*, vol. 50, n° 6, p. 1125-1138, 2012.
- Jean-Christophe GAY, "Le tourisme par la géographie", *L'Espace géographique*, vol. 47, n° 2, p. 97-101, 2018.
- Maria GILABERTE-BÚRDALO, Fernando German LÓPEZ-MARTÍN, Maria R. PINO-OTIN and Juan L. LOPEZ-MORENO, "Impacts of climate change on ski industry", *Environmental Science & Policy*, vol. 44, p. 51-61, 2014.
- Stefan GÖSSLING and Nadja SCHWEIGGART, "Two years of Covid-19 and tourism: What we learned, and what we should have learned", *Journal of Sustainable Tourism*, vol. 30, n° 4, p. 1-17, 2022.
- Émilie HACHE, "La responsabilité, une technique de gouvernementalité néolibérale ?", *Raisons politiques*, vol. 28, n° 4, p. 49-65, 2007.
- Mu HE and Tom HINCH, "Climate Change Interpretation and the Leisure Experience of Participants on a Commercial Tour", *Leisure/Loisir*, vol. 45, n° 1, p. 1-26, 2021.
- IPCC, *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, V. Masson-Delmotte, P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J. B. R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds), Cambridge, Cambridge University Press, 2021.
- IPCC, *Special Report on the Ocean and Cryosphere in a Changing Climate*, Intergovernmental Panel on Climate Change, 2019.
- Yves JEANNERET, "Voir autrement nos vacances : Jean-Didier Urbain *L'idiot du voyage. Histoires de touristes ; Sur la plage. Mœurs et coutumes balnéaires*", *Communication & Langages*, vol. 103, n° 1, p. 125-126, 1995.
- Philippe JOUTARD, *L'invention du Mont Blanc*, Paris, Gallimard/Julliard, 1986.
- Emil JUVAN and Sara DOLNICAR, "The attitude-behaviour gap in sustainable tourism", *Annals of Tourism Research*, vol. 48, p. 76-95, 2014.
- Rémy KNAFOU, *Réinventer le tourisme*, Paris, Éditions du Faubourg, 2021.
- Rémy KNAFOU, "Le tourisme réflexif, un nouveau fondement d'un tourisme durable", *Arbor*, vol. 193, n° 785, p. a395-a395, 2017.
- Rémy KNAFOU and Mathis STOCK, "Tourisme", in Jacques Lévy and Michel Lussault (eds), *Dictionnaire de la géographie et de l'espace des sociétés*, Paris, Belin, 2003, p. 931-934.
- Ko KOENS, Albert POSTMA and Bernadett PAPP, "Is Overtourism Overused? Understanding the Impact of Tourism in a City Context", *Sustainability*, vol. 10, n° 12, p. 4384, 2018.
- Bruno LATOUR, "Telling Friends from Foes in the Time of the Anthropocene", in Clive Hamilton, François Gemenne and Christophe Bonneuil (eds), *The Anthropocene and the Global Environmental Crisis. Rethinking modernity in a new epoch*, London, Routledge, 2015.

Melaine LE ROY, Kurt NICOLUSSI, Philip DELINE, Laurent ASTRADE, Jean-Louis EDOUARD, Cécile MIRAMONT and Fabien ARNAUD, "Calendar-dated glacier variations in the western European Alps during the Neoglacial: The Mer de Glace record, Mont-Blanc massif", *Quaternary Science Reviews*, vol. 108, p. 1-22, 2015.

Harvey LEMELIN, Jackie DAWSON, Emma J. STEWART, Pat MAHER and Michael LUECK, "Last-chance tourism: The boom, doom, and gloom of visiting vanishing destinations", *Current Issues in Tourism*, vol. 13, n° 5, p. 477-493, 2010.

Christopher J. LEMIEUX, Mark GROULX, Elizabeth HALPENNY, Heather STAGER, Jackie DAWSON, Emma J. STEWART and Glen HVENEGAARD, "The End of the Ice Age?: Disappearing World Heritage and the Climate Change Communication Imperative", *Environmental Communication*, vol. 12, n° 5, p. 653-671, 2018.

Manfred LENZEN, Ya-Yen SUN, Futu FATURAY, Yuan-Peng TING, Arne GESCHKE and Arunima MALIK, "The carbon footprint of global tourism", *Nature Climate Change*, vol. 8, n° 6, p. 522-528, 2018.

Lauren B. MILLER, Jeffrey C. HALLO, Robert G. DVORAK, Jessica P. FEFER, Brian A. PETERSON and Matthew T. J. BROWNLEE, "On the edge of the world: Examining pro-environmental outcomes of last chance tourism in Kaktovik, Alaska", *Journal of Sustainable Tourism*, vol. 28, n° 11, p. 1703-1722, 2020.

Camilo MORA, Daniele SPIRANDELLI, Erik C. FRANKLIN, John LYNHAM, Michael B. KANTAR, Wendy MILES, Charlotte Z. SMITH, Kelle FREEL, Jade MOY, Leo V. LOUIS, Evan W. BARBA, Keith BETTINGER, Abby G. FRAZIER, John F. COLBURN IX, Naota HANASAKI, Ed HAWKINS, Yukiko HIRABAYASHI, Wolfgang KNORR, Christopher M. LITTLE, Kerry EMANUEL, Justin SHEFFIELD, Jonathan A. PATZ and Cynthia L. HUNTER, "Broad threat to humanity from cumulative climate hazards intensified by greenhouse gas emissions", *Nature Climate Change*, vol. 8, n° 12, p. 1062-1071, 2018.

Edgar MORIN, *L'esprit du temps. Essai sur la culture de masse*, Paris, Grasset, 1962.

Jacques MOUREY and Ludovic RAVANEL, "Évolution des itinéraires d'accès aux refuges du bassin de la Mer de Glace (massif du Mont-Blanc, France)", *Journal of Alpine Research / Revue de géographie alpine*, vol. 105, n° 4, 2017.

Kalpana NESUR, Emmanuel SALIM, Camille GIRAULT and Ludovic RAVANEL, "Transmettre le savoir scientifique sur les glaciers au grand public : rôle des centres d'interprétation glaciaire dans les stratégies de diversification touristique en montagne", *Journal of Alpine Research / Revue de géographie alpine*, vol. 110, n° 1, 2022.

Samuel NUSSBAUMER, Heinz ZUMBÜHL and Daniel STEINER, "Fluctuations of the Mer de Glace (Mont-Blanc area, France) AD 1500-2050. An interdisciplinary approach using new historical data and neural network simulations", *Zeitschrift für Gletscherkunde und Glazialgeologie*, vol. 40, 2007.

Vincent PEYAUD, Coline BOUCHAYER, Olivier GAGLIARDINI, Christian VINCENT, Fabien GILLET-CHAULET, Delphine SIX and Olivier LAARMAN, "Numerical modeling of the dynamics of the Mer de Glace glacier, French Alps: Comparison with past observations and forecasting of near-future evolution", *The Cryosphere*, vol. 14, n° 11, p. 3979-3994, 2020.

Annah E. PIGGOTT-MCKELLAR and Karen E. MCNAMARA, "Last chance tourism and the Great Barrier Reef", *Journal of Sustainable Tourism*, vol. 25, n° 3, p. 397-415, 2017.

Heather PURDIE, Jessica H. HUTTON, Emma J. STEWART and Stephen ESPINER, "Implications of a changing alpine environment for geotourism: A case study from Aoraki/Mount Cook, New Zealand", *Journal of Outdoor Recreation and Tourism*, vol. 29, p. 100235, 2020.

- Michel RASPAUD, “Rodolphe Christin et Philippe Bourdeau (dir.), *Le Tourisme : émancipation ou contrôle social ?*”, *Mondes du tourisme*, n° 7, p. 112-113, 2011 [<https://doi.org/10.4000/tourisme.212>].
- Emmanuel SALIM, Christophe GAUCHON and Ludovic RAVANEL, “Voir la glace. Tour d’horizon des sites touristiques glaciaires alpins, entre post- et hyper-modernités”, *Journal of Alpine Research / Revue de géographie alpine*, vol. 109, n° 4, 2021a.
- Emmanuel SALIM, Laura MABBOUX, Ludovic RAVANEL, Philip DELINE and Christophe GAUCHON, “A history of tourism at the Mer de Glace: Adaptations of glacier tourism to glacier fluctuations since 1741”, *Journal of Mountain Science*, vol. 18, n° 8, p. 1977-1994, 2021b.
- Emmanuel SALIM and Ludovic RAVANEL, “Last chance to see the ice: Visitor motivation at Montenvers-Mer-de-Glace, French Alps”, *Tourism Geographies*, p. 1-23, 2020 [<https://doi.org/10.1080/14616688.2020.1833971>].
- Emmanuel SALIM, Ludovic RAVANEL and Philip DELINE, “Does witnessing the effects of climate change on glacial landscapes increase pro-environmental behaviour intentions? An empirical study of a last-chance destination”, *Current Issues in Tourism*, p. 1-19, 2022 [<https://doi.org/10.1080/13683500.2022.2044291>].
- Emmanuel SALIM, Ludovic RAVANEL, Philip DELINE and Christophe GAUCHON, “A review of melting ice adaptation strategies in the glacier tourism context”, *Scandinavian Journal of Hospitality and Tourism*, vol. 21, n° 2, p. 229-246, 2021c.
- Emmanuel SALIM, Ludovic RAVANEL and Christophe GAUCHON, “Aesthetic perceptions of the landscape of a shrinking glacier: Evidence from the Mont Blanc massif”, *Journal of Outdoor Recreation and Tourism*, vol. 35, p. 100411, 2021d.
- Daniel SCOTT, “Sustainable Tourism and the Grand Challenge of Climate Change”, *Sustainability*, vol. 13, n° 4, p. 1966, 2021.
- Christian SOMMER, Philipp MALZ, Thorsten C. SEEHAUS, Stefan LIPPL, Michael ZEMP and Matthias H. BRAUN, “Rapid glacier retreat and downwasting throughout the European Alps in the early 21st century”, *Nature Communications*, vol. 11, n° 1, p. 3209, 2020.
- Emma J. STEWART, Jude WILSON, Stephen ESPINER, Heather PURDIE, Christopher LEMIEUX and Jackie DAWSON, “Implications of climate change for glacier tourism”, *Tourism Geographies*, vol. 18, n° 4, p. 377-398, 2016.
- Erik SWYNGEDOUW, “The Anthro(Obs)cene”, in The Antipode Editorial Collective (dir.), *Keywords in Radical Geography: Antipode at 50*, Oxford, Wiley-Blackwell, 2019, p. 253-258.
- Jean-Didier URBAIN, *L’idiot du voyage*, Paris, Payot, 2002.
- Christian VINCENT, Emmanuel LE MEUR, Delphine SIX and Emmanuel THIBERT, “Un service d’observation des glaciers des alpes françaises ‘glacioclim-alpes’, pour quoi faire ?”, *La Houille Blanche*, n° 3, p. 86-95, 2007.
- Christian VINCENT, Vincent PEYAUD, Olivier LAARMAN, Delphine SIX, Adrien GILBERT, Fabien GILLET-CHAULET, Étienne BERTHIER, Samuel MORIN, Déborah VERFAILLIE, Antoine RABATEL, Bruno JOURDAIN and Jordi BOLIBAR, “Déclin des deux plus grands glaciers des Alpes françaises au cours du XXI<sup>e</sup> siècle : Argentière et Mer de Glace”, *La Météorologie*, n° 106, p. 49, 2019.



## APPENDIXES

## Appendix 1. List of interviews

People interviewed			Topics covered
<i>Impacts and adaptation to climate change</i>			
2019	E1	Montenvers Operations Manager	Perception of climate change Perception of the impact of climate change on Montenvers Description of the impacts perceived by stakeholders on the operation of the site Adaptation strategies developed
2019	E2	Manager of the Compagnie du Mont-Blanc	
2019	E3	Manager of the Compagnie du Mont-Blanc	
2019	E4	Head of Operations at the Montenvers ice cave	
2019	E5	Manager of the Communauté de Commune de la Vallée de Chamonix	
2020	E6	Head of the Chamonix Valley Tourist Office	
<i>Scientific outreach</i>			
2021	E7	Manager of the Compagnie du Mont-Blanc	Origin of mediation projects
2021	E8	Manager of the Compagnie du Mont-Blanc	Project objectives Project funding
2021	E9	Freelance set designer	Project implementation and difficulties encountered
2021	E10	Manager of the Communauté de Commune de la Vallée de Chamonix	Roles of stakeholders and partnerships Link between the project and climate change
2021	E11	Scientific educator	

## NOTES

1. Definition from WTO's 1992 Agenda 21.
2. Source: Savoie Mont Blanc Public Report 2022, [https://pro.savoie-mont-blanc.com/var/ezwebin\\_site/storage/original/application/966a27207a19ca5c6d35556bfb3d151.pdf](https://pro.savoie-mont-blanc.com/var/ezwebin_site/storage/original/application/966a27207a19ca5c6d35556bfb3d151.pdf) [accessed on 30/05/2024].
3. <https://www.francebleu.fr/infos/culture-loisirs/le-nouveau-visage-du-site-touristique-du-montenvers-devoile-hier-a-chamonix-1632840435> [accessed on 30/05/2024].
4. [http://www.mrae.developpement-durable.gouv.fr/IMG/pdf/2021apara104\\_glaciorium\\_chamonix\\_74.pdf](http://www.mrae.developpement-durable.gouv.fr/IMG/pdf/2021apara104_glaciorium_chamonix_74.pdf) [accessed on 30/05/2024].

5. Data from the Compagnie de la Mer de Glace for 2018, which differ from Savoie-Mont-Blanc Tourisme figures, which include all passages (ascents and descents).
  6. Extract from the press kit, dated 28 September 2021.
  7. Loi Montagne 2: <https://www.legifrance.gouv.fr/jorf/id/JORFTEXT000033717812> [accessed on 30/05/2024].
  8. CGEDD, *Site classé du Mont-Blanc : requalification des espaces d'accueil du Montenvers et nouvel accès à la Mer de Glace*, report to the Commission supérieure des sites, perspectives et paysages, n° 008390-06, 1<sup>st</sup> October 2020.
  9. Extract from the press kit, dated 28 September 2021.
  10. Video presentation of the project by the Compagnie de la Mer de Glace: <https://www.youtube.com/watch?v=blKzQIjYhZQ> [accessed on 30/05/2024].
  11. Information from the preliminary project presented on 31 May 2018 and the press kit dated 28 September 2021.
  12. Data supplied by the Chamonix Valley Tourist Office.
  13. Summer 2023 round-trip fares.
- 

## ABSTRACTS

Entering the Anthropocene, defined as the era during which human activities have become forces capable of influencing the climate and the environment on a planetary scale, raises many questions for tourism. Glacier tourism sites and practices, although not uniquely, are changing along with their environment. These changes raise the question of how climate change influences the motivations of those involved in tourism and, more specifically, allow us to envisage the emergence of reflexive tourism. Reflexive tourism is understood to be an awareness by tourists themselves of the issues - in this case, environmental issues - raised by current lifestyles, and offers a broader approach to the contradictions faced by societies in the context of the challenges of ecological transition. By analysing the implementation of the project to rehabilitate one of France's most famous glacier sites, Montenvers and its Mer de Glace, this article aims to examine the rationale behind the development of tourism in such a site, while highlighting its contradictions. Interviews with site and project stakeholders reveal a clear tension between a logic of sustainability leading to reflexive tourism, and an economic logic of investment and the quest for profitability. Beyond this case study, this work considers more generally the figure of tourism as a symbol of societal contradictions between discourse and practice in the Anthropocene.

L'entrée dans l'Anthropocène, défini comme l'ère dans laquelle les activités humaines deviennent des forces à même d'influencer le climat et l'environnement à l'échelle planétaire, induit de nombreuses questions pour le tourisme. S'ils ne sont pas les seuls, les sites touristiques glaciaires, et les pratiques afférentes, se transforment avec leur environnement. Ces transformations posent la question de l'influence du changement climatique sur les motivations des acteurs touristiques et permettent d'envisager plus spécifiquement l'avènement d'un tourisme réflexif. Entendu comme une prise de conscience par les touristes eux-mêmes des enjeux - ici, environnementaux - soulevés par les modes de vie actuels, le tourisme réflexif permet plus largement d'aborder les contradictions auxquelles sont confrontées les sociétés dans le cadre des défis de la transition écologique. À travers l'analyse de la mise en œuvre du projet de

réhabilitation de l'un des sites glaciaires les plus connus de France, le Montanvers et sa Mer de Glace, cet article entend interroger les logiques du développement touristique d'un tel site tout en soulignant ses contradictions. Les entretiens menés avec les parties prenantes du site et du projet montrent une tension claire entre une logique de durabilité menant au tourisme réflexif et une logique économique d'investissement et de quête de rentabilité. Au-delà de ce cas d'étude, ce travail questionne plus généralement la figure du tourisme comme symbole des contradictions sociétales entre discours et pratiques à l'heure de l'Anthropocène.

## INDEX

**Mots-clés:** tourisme réflexif, Anthropocène, glaciers, changement climatique, transition

**Keywords:** reflexive tourism, Anthropocene, glaciers, climate change, transition

## AUTHORS

### EMMANUEL SALIM

Geography

Assistant professor, University of Toulouse Jean-Jaurès, ISTHIA, CERTOP (UMR 5044)

Associate Research fellow, University of Lausanne, IGD, CIRM

emmanuel.salim[at]univ-tlse2.fr

### CAMILLE GIRAULT

Geography

Assistant professor, Savoie-Mont-Blanc University, CNRS, Edytem (UMR 5204)

camille.girault[at]univ-smb.fr

### KALPANA NESUR

Geography

Research intern, Savoie-Mont-Blanc University, CNRS, Edytem (UMR 5204)

k.nesur[at]gmail.com