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DEEP-FIELD AND AIRBORNE TOURISM UNDER INCREASING SCRUTINY

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The Expanding Frontier of Poorly Regulated Tourism in the Antarctic Interior

Even though Deep-Field and Airborne tourism accounts for just 1% of the Antarctic tourism market, it raises environmental and policy concerns. This issue was discussed at the 47th Antarctic Treaty Consultative Meeting.

Antarctica is the last great wilderness continent, and its environmental, scientific and other intrinsic values are internationally recognized by the 1991 Protocol of Environmental Protection to the Antarctic Treaty. Tourism here is a growing industry, with a record of over 100,000 tourists having visited Antarctica in the 2023-2024 season, compared to the 25,000 visitors in 2003-2004, according to the International Association of Antarctic Tour Operators, (IAATO). These figures may seem modest, however are of great concern in a region sparsely populated by National Antarctic Programs (NAPs) scientists and staff. Tourism tends to be concentrated in ecologically active and hence sensitive areas, increasing its impact.



Ski South Pole. Expeditioners arriving at the Ceremonial South Pole, marked by the flags of the twelve original Antarctic Treaty Signatories, near the U.S. Amundsen-Scott South Pole research station. Several hundred tourists arrive annually overland or by air for brief visits though some camp overnight - a limited form of dual use. *Credit: ALE-David Rootes*

***‘Deep-Field and Airborne tourism is expanding,
with a projected 35% growth for summer 2025-2026’***

Cruise tourism dominates Antarctic travel, currently involving 50+ operators, 70+ vessels, several cruising modalities and diverse activities on land and at sea. A less visible form of tourism is air-supported, land-based tourism to the Antarctic interior, referred to in industry parlance as “Deep-Field and Air Operations” (DF&AO), defined by IAATO as “private-sector flights (inter- and intra-continental) and overland activities by foot, kite, ski or vehicle” (IP033, ATCM 47, 2025).

Cruise activity concentrates in the North-West of the Antarctic Peninsula, where regular landings occur on limited ice-free land. In contrast, the area of operations of DF&AO is a continental-scale triangle linking transport hubs in the Union Glacier, some sites in Dronning Maud Land and the South Pole (Fig. 1), which serve both as destinations and as staging points for travel further afield. Compared to cruise tourism DF&AO involves fewer companies, far fewer passengers, a higher guide/tourist ratio, and higher operational costs reflected in considerably higher fees per tourist. As an example, in 2024-25 there were 117,206 cruise passengers and 938 DF&AO passengers, according to IAATO (IP032 and IP033, ATCM 47, 2025). These operations rely significantly on the use of infrastructure such as runways for inter- and intra-continental flights, refuelling facilities, runway maintenance machinery, vehicles for overland travel, and tourist accommodation. Some of this infrastructure is privately owned or operated, and in parallel some of it is state funded.

At present at least six companies offer travel packages priced from USD 12,000 for one-day trips, to over USD 100,000 for extended itineraries lasting 7-8 days and offering expedition support, luxury accommodation, and overland transport. Though a niche, DF&AO tourism is expanding, with a projected 35% growth for 2025–2026. The DF&AO catalogue includes “programs” near and far from the camps (skiing, kite-skiing, mountaineering, skydiving, cycling, marathons) and fly-ins to locations hundreds of kilometres away. The most common programs include visits to nearby mountain ranges, emperor penguin colonies, the geographic South Pole, or a combination. Other destinations include Mount Vinson, the highest peak in Antarctica; Mount Sidley, the highest volcano; and the Pole of Inaccessibility. Private operators also provide logistic and Search and Rescue (SAR) support to activities with different degrees of clients’ autonomy, from guided “Last Degree” treks from 89°S to the South Pole (60nm/111km), to self-guided expeditions to the South Pole or beyond from different starting points. Some programs require considerable fitness and skill from clients, whilst others focus on “glamping” (glamorous camping) and guided touring, and even weddings or an

educational “science week” hosted by top scientists. Air transport enables return trips to Antarctica lasting 24-36 hours, which are infeasible for cruise tourism.

Deep Field and Air Operators sometimes support National Antarctic Programs activities, and vice-versa, resulting in a dual tourism and science use of infrastructure. For instance, one DF&AO reports a 50-50% split, arguing logistical and carbon efficiency relative to stand-alone travel for either tourism or NAPs. Conversely, NAPs support commercial operations by ensuring regular access to runways for inter- and intra-continental flights. Other important services by national competent authorities include issuing permits or authorizing DF&AO activities in compliance with Antarctic Treaty regulation, processing Environmental Impact Assessments (EIAs), and certifying privately used runways. One operator ships its aviation fuel to Antarctica via National Antarctic Program vessels and hauls it 800km overland to support its air operations. Dual use helps legitimize DF&AO tourism while potentially limiting scrutiny from Parties seeking to cut operational costs.

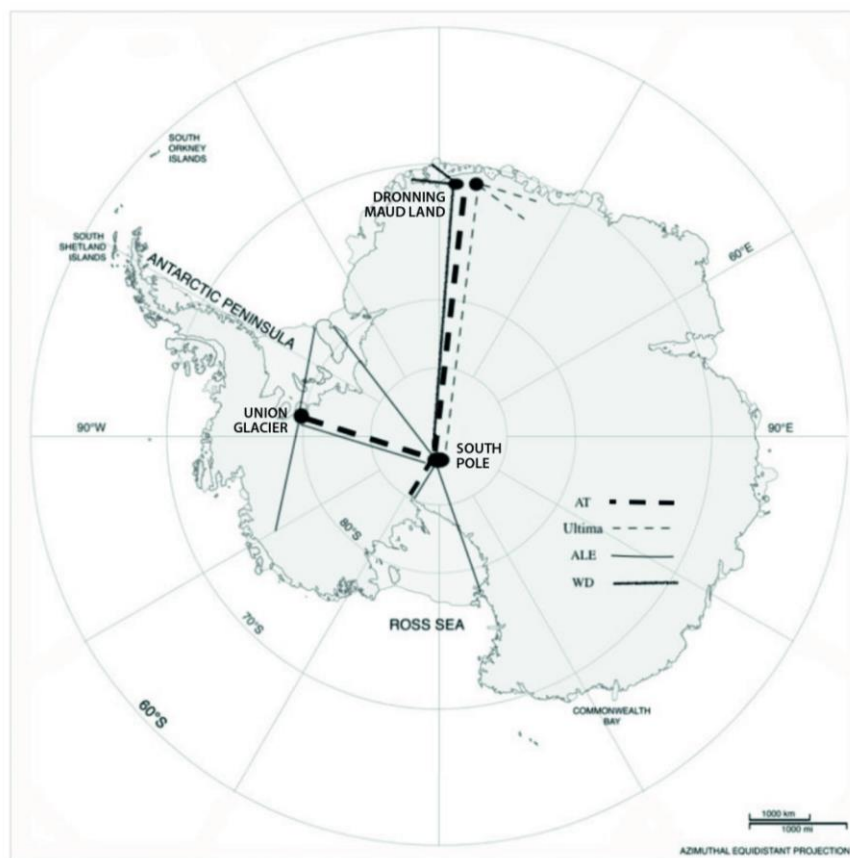


Fig.1: Key sites (runways, camps, destinations) and routes supporting Deep-Field & Airborne tourism.
Source: IAATO

DROMLAN (Dronning Maud Land Air Network) exemplifies the interdependence of NAP and DF&AO. Run by eleven Antarctic Treaty nations, it is a logistics coordination project aimed at lowering NAP costs. A South African–based company operates flights from Cape Town to Russia’s Novolazarevskaya Station, then onward to national bases. DROMLAN

primarily supports science-related activities, but paying tourists fill up leftover seats. They can stay in a facility near the passenger terminal, recently upgraded as high-end accommodation, the Ultima Oasis Camp (formerly “Hotel”).

Issues raised by Antarctic tourism have been regularly addressed by the Antarctic Treaty Consultative Meeting (ATCM) since the 1960s. Specifically, permanent tourism facilities have long been a cause of concern. While discussions have often been inconclusive, the ATCM has agreed on the regulation of aspects of tourism through “Resolutions” and administrative “Decisions”, which are non-binding, or “Measures” which are legally binding once in force. Some regulations relevant to DF&AO are listed below (Box 1).

Box 1: ATCM regulation related to Deep-Field and Airborne tourism

Tourism activities likely to cause substantial long-term environmental degradation should be discouraged (Resolution 5, ATCM 30, 2007). Tourism “should not be allowed to contribute to the long-term degradation” of recognized Antarctic values; and a “pragmatic precautionary approach” should be used where information about impacts is limited; furthermore, scientific research takes priority over all tourism (Resolution 7, ATCM 32, 2009). Governments are urged “not to authorise, permit or approve” the construction or operation of permanent facilities exclusively used for tourism operating over multiple seasons that would cause “more than a minor or transitory” impact on the environment, wilderness, or other intrinsic values. Examples provided include buildings and graded runways (Resolution 5, ATCM 44, 2022). Recent ATCM air safety regulations partly address the potential rise in non-governmental aircraft operations (Resolution 3, ATCM 44, 2022). Operating in Antarctica’s deep field is inherently risky due to extreme cold conditions and sheer remoteness. DF&AO operators must have contingency plans for health, safety, medical care, SAR, and evacuation—without relying on other operators or NAPs unless formally agreed—and must hold adequate insurance or other arrangements to cover emergency costs (Measure 4, ATCM 27, 2004). Liability arising from environmental emergencies is also regulated (Measure 1, 2005). These tourism-relevant Measures have not yet come into force some 20 years after their adoption; no more than Measure 5 (ATCM 32, 2009) applicable to cruise tourism.

Industry bylaws complement these regulations. Most commercial tourism operations in Antarctica are conducted under the IAATO, a tourism industry body, which sets self-regulatory bylaws and guidelines for its membership, conveniently filling up a vacuum left by a lack of ATCM regulation. IAATO evaluates prospective members, and periodically examines the performance of provisional and full members. Notably, IAATO regards its self-regulation as “binding” on its members. IAATO holds no voting rights, but it exerts considerable influence in the ATCM. Through proactive self-regulation IAATO exempts the ATCM from adopting a restrictive regulation. This does work to a point that most operators are IAATO members – including the six current DF&AO companies. However, future DF&AO tourism might develop outside of IAATO – or the Antarctic Treaty system.

Against this background, in 2023, Antarctic Treaty Parties launched a “dedicated process” to develop a comprehensive framework for managing tourism (Decision 6, ATCM 45, 2023). Unlike past efforts, Parties have now moved beyond an initial declaratory statement to adopt a broad roadmap (Decision 5, ATCM 46, 2024). These discussions are ongoing, and for the time being tourism specific regulation is limited, particularly for DF&AO tourism.

DF&AO tourism in Antarctica has long raised concerns about impacts on environmental, wilderness and scientific values, SAR implications, as well as legal issues concerning ownership, property rights and their commercial lease or transfer, jurisdiction and – potentially – sovereignty issues.

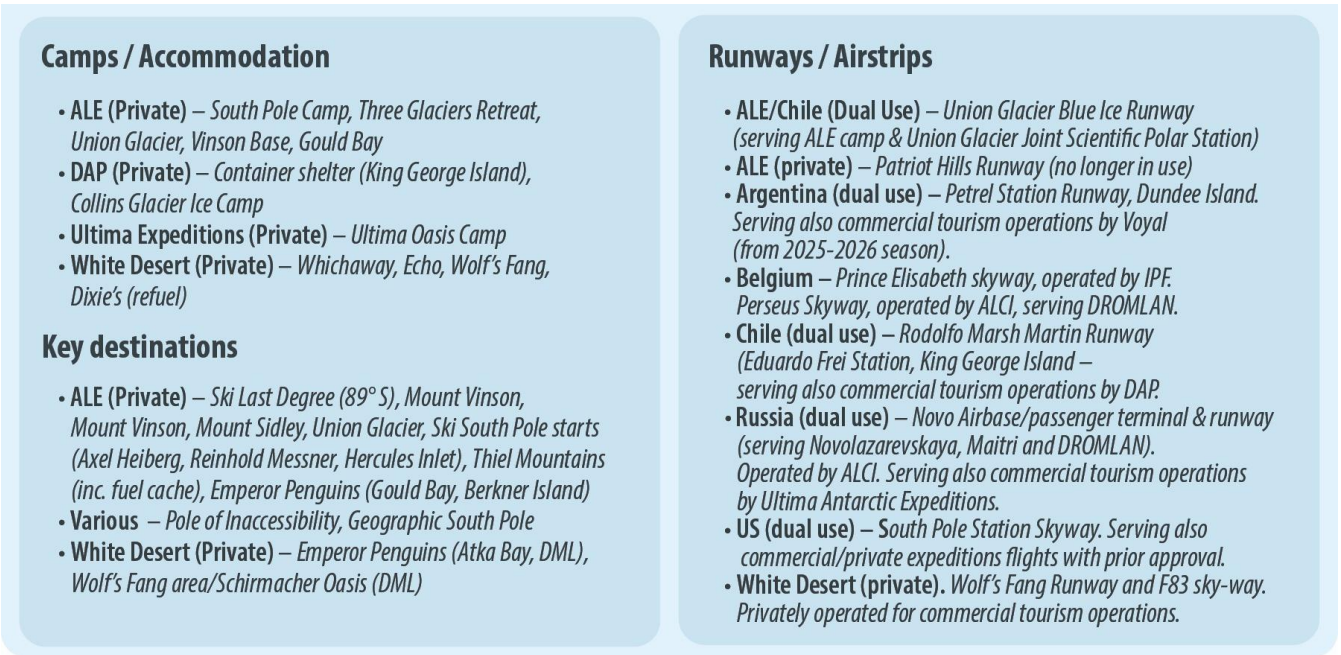


Fig.2: List of DF&AO main camps, runways and destinations. The six companies having DF&A activities are: Antarctic Logistics and Expeditions (ALE), Arctic Trucks Polar (AT), DAP Antarctica, White Desert (WD), Ultima Expeditions and Voyal. *Source: compiled by R. Roura from IAATO and companies’ websites.*

Semi-permanent infrastructure and repeated site use pose risks of direct, indirect and cumulative impacts on environmental, aesthetic, wilderness and other values recognized by the Environment Protocol. Aircraft operations in remote areas increase the potential for disturbance of fauna, pollution, and lasting physical traces. Visits to coastal emperor penguin (*Aptenodytes forsteri*) colonies, accessed by aircraft from deep field camps (Figs. 1 and 2), may disrupt this sea-ice breeding species, already highly vulnerable due to climate change, especially during the sensitive crèching period. Black carbon emissions from human activity sites darkens snow, accelerating its melting, and is above background levels even around deep-field tourism sites. In addition, Antarctic operations are highly carbon intensive, especially DF&AO.

Further, pressures from tourism can undermine scientific values, risk eroding the agreed privilege of science over tourism, and alter the balance between research freedom and comprehensive environmental protection under the Environment Protocol. For instance, interest in potential tourism uses of some locations – including ice-free “islands” in the polar plateau with outstanding scenery and pristine lakes – may result in pressure to exclude those locations from protected area proposals.

In practice, DF&AO tourism impacts are reviewed through EIAs for individual operations, but the effectiveness of these assessments is doubtful, and carbon emissions remain largely unaddressed. Antarctic EIA regulations categorize activity impacts according to the rather vague criteria of *less than*, *no more than*, or *more than* “a minor or transitory impact”, by which proposed activities are subject to a three-tiered EIA of increasing detail. Proposals with the highest level of impact require a high-level EIA which receives greater international scrutiny and regular environmental monitoring. IAATO members commit to ensuring “no more than a minimum or transitory impact” from their activities, which ostensibly rules out permanent infrastructure, and the need for high-level EIA. On this basis the industry claims no interest in establishing “hotels”, implicitly understood as buildings (i.e., structures with a roof and walls) providing accommodation and services. Deep-field camps, however, range from rugged “tent cities” to multiple luxury pods with private bathrooms. Though not always “buildings” – although some are – they function much like *hotels* in the Antarctic wilderness.

Camps are ostensibly dismantled at the end of each season (November–February), with sensitive items flown out and others cached on site. Consequently, these camps are regarded as semi-permanent or non-permanent. Yet removability alone does not make them temporary: the recurring presence of infrastructure in the same locations – whether assembled or not - raises the question of permanence. The difference is not just semantic; rather it has implications on the level of EIA that is required prior to their construction and the obligations that derive from it. It could be argued that their occupation of space is *permanent* in Antarctic terms, where “permanence” reflects a continuous activity over years or decades *and* an apparent intention to stay. For instance, the more recent Antarctic research stations have been built for (potential) dismantling after ~25 years, yet still classed as *permanent*.

The use of Antarctic space by private actors over extended periods remains a sensitive issue. Questions arise over private or commercial property rights in Antarctica, such as from long-term use of a site or the construction of permanent tourism facilities. The potential jurisdictional and sovereignty implications of such developments concern some

Parties. Article IV of the Antarctic Treaty sets aside territorial claims and while the Treaty is in force, “no act or activities [...] shall constitute a basis for asserting, supporting or denying a claim to territorial sovereignty in Antarctica or create any rights of sovereignty”. However, tourism operations and management can subtly support or undermine territorial claims, symbolically if not legally. Claimant states may use tourism infrastructure to quietly assert their presence or jurisdiction. For instance, an airstrip certified in the Union Glacier, although mostly privately operated, has been declared of “public use” and regarded as state (fiscal) property by the national competent authorities (Chile) certifying it. Conversely some claimant states view tourism operations in “their” areas taking place without their oversight as intrusive and potentially problematic.

The Antarctic Treaty and the Environment Protocol establish a system of inspections by any Party to any Antarctic facility – including DF&AO infrastructure - to verify compliance. Although no DF&AO camp has been inspected to date, several inspections by Norway along with other Parties have taken place in Dronning Maud Land (which is claimed by Norway), including visits to hybrid national/private operations in the area. Over time they found increasing and more dispersed activity in the area, especially from air-based operations around the “Novo” runway, with complex ownership structures and unclear distribution of responsibilities between national and private operators on the use of facilities. An additional concern was the Perseus airstrip and related plans for the proposed (private) development of an Antarctic “university” nearby, known as the Andromeda Project. This project was partly connected with nearby Belgium’s Princess Elisabeth Station, initially constructed and operated by a private interests’ foundation, namely the International Polar Foundation, and later transferred to the Belgian state, although still operated by this private foundation. Norwegian inspectors attempted to visit the Perseus airstrip in 2018 but were unable to land as a Russian airplane was parked in the runway. The inspection was limited to air observations even though questions remain about responsibilities on the use of the airstrip.

At the 47th ATCM in 2025, Norway introduced a proposal to suspend the authorisation of new non-governmental intra-continental air operations in Antarctica until a tourism framework is adopted. The proposal aimed to address concerns over the growing trend of remote and challenging expeditions, particularly airborne tourism, which could strain governmental Search and Rescue resources. Norway also raised concerns about “the number of runways and semi-permanent installations established to support airborne tourism operations, and the use of novel locations and increased access to remote penguin colonies not previously used as a tourist destinations” – thus summarizing many

of the issues about land-based tourism raised at the ATCM over the years, and partly addressed earlier on in the *General Principles of Antarctic Tourism* (Resolution 7, ATCM 32, 2009). Many Parties supported the proposal. However, others raised concerns about the uncertain timeline for agreeing on a tourism framework and the potential negative effects of a suspension on innovation, trade and market equity. Some suggested that a binding instrument, rather than a temporary suspension, might offer more consistent regulation, but negotiating such an agreement would obviously take time. Others recommended using existing tools, like the EIA process, to manage environmental risks, essentially business as usual.

Air-supported, land-based tourism constitutes an expanding frontier of poorly regulated tourism in the Antarctic interior. Some Parties have concerns about these activities, but blurred boundaries between tourism operations and NAP logistics may be an additional impediment to further regulation. The criteria of “exclusive tourism use” of Resolution 5 (ATCM 44, 2022) aiming to limit tourism permanent infrastructure seems to exclude dual-use tourism-NAP operations. Moreover, there is disagreement about freezing further development without appearing to protect a monopoly of existing operators. Instruments discouraging semi-permanent tourism infrastructure were introduced after such facilities were established, making rollback politically difficult. DF&AO is guided by generic Antarctic regulation, non-binding ATCM commitments designed to discourage long-term tourism infrastructure and environmental degradation, and industry self-regulation. Proposals for regulation are often dismissed due to a polarization of views, while activities on the ground evolve faster than management measures can be agreed. With respect to tourism regulation, some Parties lean toward maintaining the status quo or “codifying” IAATO’s existing guidelines rather than introducing their own measures. Collectively, Parties seem uncertain about whether to limit DF&AO tourism. Given its continued expansion and environmental impacts, tourism in the Antarctic interior and the system that enables it warrant further scrutiny by the ATCM and greater transparency.

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² The views expressed in this article are those of the author. They do not reflect the official policy or position of any entities of which the author is or was a member.

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