

VISITOR GUIDELINES FOR THE ANTARCTIC



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DEAR TRAVELLERS!

You are visiting the Antarctic for private or professional reasons? You are about to discover the “White Continent” for the first time or you are planning a revisit? We wish you a pleasant journey – and would like to contribute with these guidelines to a safe and environmentally sustainable stay in the Antarctic.

The extreme Antarctic landscape and climate are fascinating and motivating increasing numbers of visitors. Many consider a journey to this region one of the “great challenges”. Despite this fascination, visitors need to keep in mind that Antarctica is in no way comparable to other tourist destinations of the world. Particularly in case of emergencies, you need to rely mainly on yourself as external rescue options are very limited.

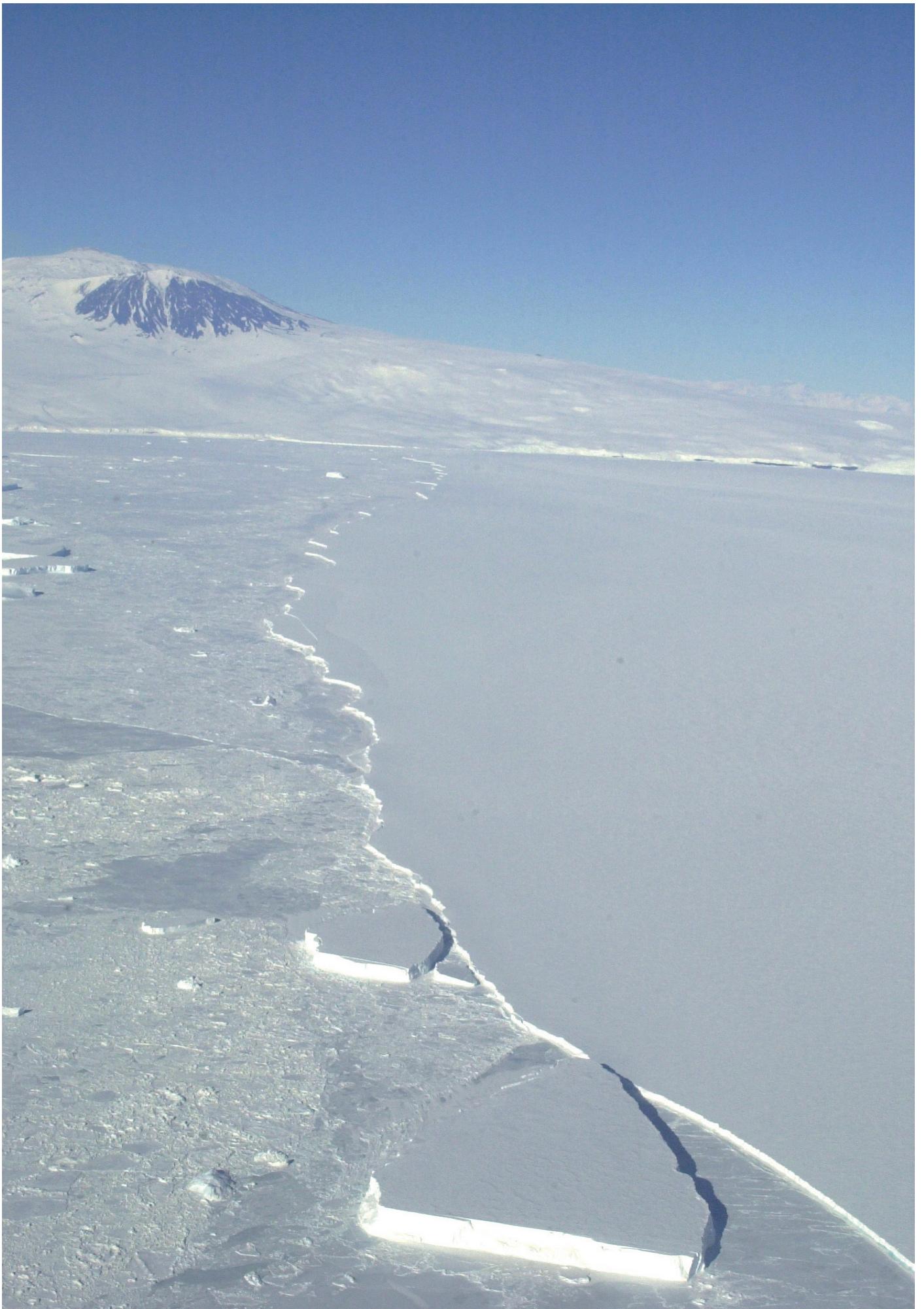
To preserve the Antarctic in its pristine condition, internationally binding guidelines are in place for visitors to the continent. On the following pages, we would like to introduce you to these regulations.

By observing these guidelines during your stay, you can personally contribute to the protection of the Antarctic.

We wish you a safe and successful journey!

Your German Federal Environment Agency





Edge of Ross Ice Shelf (Photo: Emily Stone)

1 WHAT MAKES ANTARCTICA SO UNIQUE?

Antarctica is a continent of extremes with globally unparalleled climate and weather conditions. The continental mainland – covering more than 13 million sqkm (5 million sqmi) – is mostly covered by ice. Only narrow coastlines predominantly in Western Antarctica and some ridges in the Antarctic interior, making up merely 2% of the land area, are ice-free. Significant distances to the next greater continental mainland of Patagonia, New Zealand and South Africa and particularly the isolation of Antarctica caused by the circumpolar ocean current shelter the Antarctic from other ecosystems.

In the ice-free dry valleys (Antarctic Dry Valleys), annual precipitation is lower than in the Sahara. Due to its combination of extremely low temperatures and extreme aridity, the Antarctic ranks among the most hostile environments on earth. At the same time, the temperature-related absence of evaporation makes it the greatest freshwater reservoir on earth – holding roughly 90% of global ice and 75% of global freshwater.

In the interior mainland, the annual average temperature ranges at -55°C (-67°F). The Russian station Wostok in Eastern Antarctica has registered the lowest temperature ever measured under open skies: -89.2°C (-129°F). Along the Antarctic coastline, the temperature exchange between ocean and atmosphere is effecting much milder temperatures. During summer, average temperatures on the Antarctic Peninsula range around freezing point.

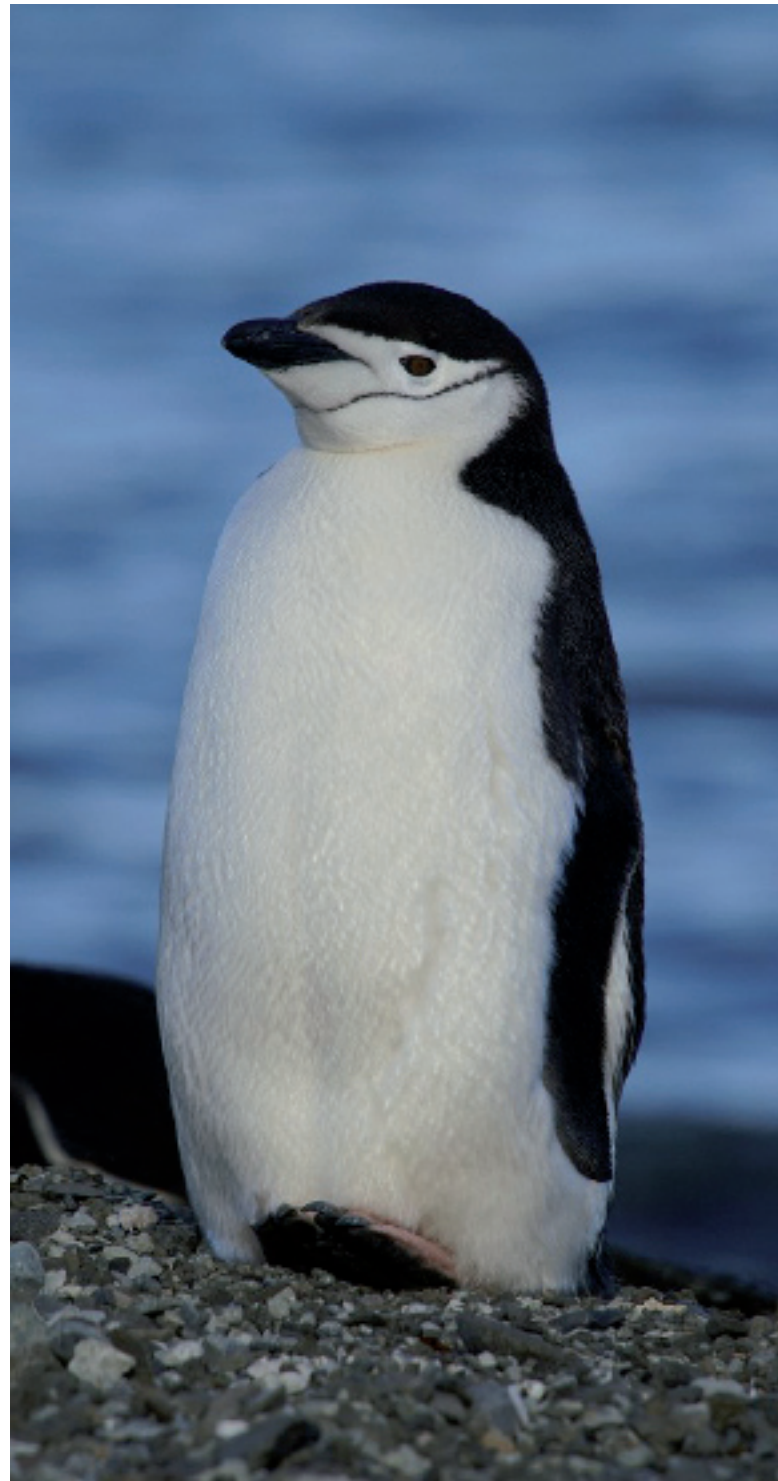
At the South Pole (90°S), the light of day is mostly absent during polar night between March and September, while for the rest of the year the sun sinks seldom. Fauna and flora are characterised by polar day and night as well as the short summer period between November and February. Plants and animals of the Antarctic are adapted to its extreme living conditions.

Many of the species indigenous to the Antarctic can only be found there. The Antarctic flora is dominated by mosses, algae, and lichens; only two flowering plants are native to Antarctica: the Antarctic hair grass and the Antarctic pearlwort.

Similar to Antarctic plants, the majority of Antarctic wildlife is concentrated along the narrow, ice-free coastline – for example on the Antarctic Peninsula. The largest purely terrestrial animal endemic to Antarctica is a small midge. The much more prominent inhabitants of the continent, such as seals or penguins, live only temporarily on-shore. Their nutritional basis is krill, a shrimp-like marine invertebrate which forms large swarms.

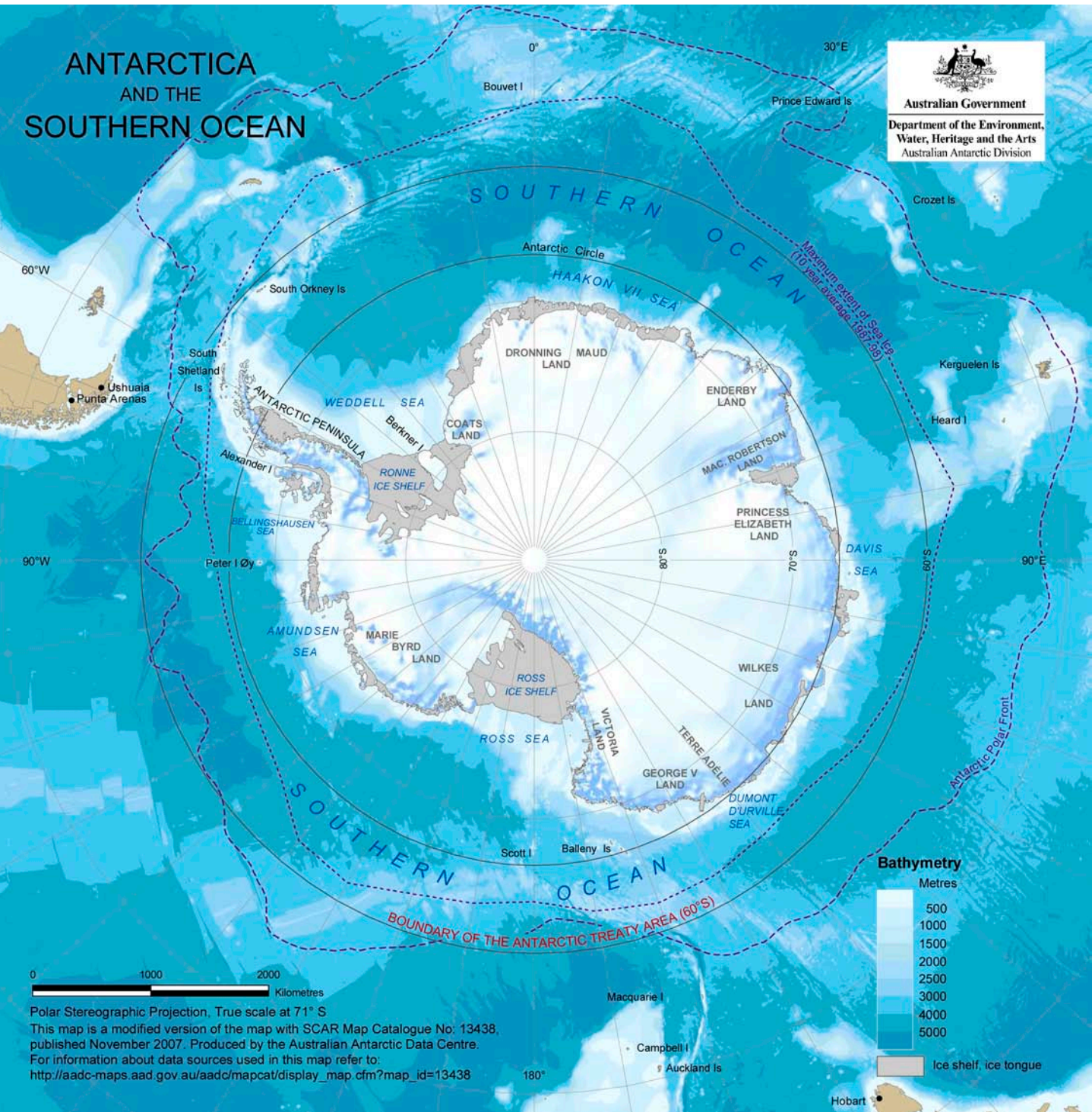
As food for numerous organisms, krill holds a key role in the foodweb of the Antarctic Ocean.

In contrast to all other continents, Antarctica has no indigenous human population. Roughly 4,000 people occupy 80 research stations during summertime; during wintertime, the station personnel is reduced to roughly 1,000. About half of the research stations are maintained on a year-round basis.



Chinstrap penguin (Picture: Wolfgang Dinter)

Map of the Antarctic



Map courtesy of the Antarctic Treaty Secretariat and the Australian Antarctic Data Center

2 HOW IS THE ANTARCTIC BEING PROTECTED?

The Antarctic Treaty

In 1959, twelve countries signed the Antarctic Treaty – the core international agreement governing the Antarctic – in Washington D.C. The treaty declares the Antarctic as a place of peace, international cooperation and scientific research. Furthermore, the treaty is the first to bindingly regulate human activities for an entire continent; it defers territorial claims which remain unresolved to this day.¹

46 countries have signed the Antarctic Treaty to date. Among these, 28 countries have the status of a Consultative Party based on extensive research activities. This entitles them to actively participate in the drafting and adoption of international regulations.

The Antarctic Treaty system is one of the most successful international agreements. For this vast region of the world nearly one and a half times the size of Europe delimited by the Urals in terms of continental size, and despite an unresolved and consequently “frozen” territorial conflict, it has ensured peace for 50 years and has facilitated close cooperation in scientific research and environmental protection between countries despite diverging interests.

The Federal Republic of Germany acceded to the Antarctic Treaty in 1979 and became a Consultative Party in 1981. Accordingly, it is bound by the treaty and all decisions taken at the annual meetings of Consultative Parties to the Antarctic Treaty (Antarctic Treaty Consultative Meeting, ATCM). The ATCM is the key platform for political decisions. It adopts measures for the protection of the Antarctic and recommends them to the respective Consultative Party governments for implementation.

The ATCM also admits representatives of logistic operators in the Antarctic, the tourism industry and environmental organisations as observers without voting power.

Other key agreements in regard to the Antarctic include the Convention for the Conservation of Antarctic Seals (CCAS) and the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).

¹ Argentina, Australia, Chile, France, Great Britain, New Zealand, and Norway claim Antarctic territory.



Flags of the Antarctic Treaty Signatory States at the South Pole (Picture: Josh Landis)

The Environmental Protocol

With the Protocol on Environmental Protection to the Antarctic Treaty (EP), signed in 1991, the contracting parties agreed to integrally protect the Antarctic environment in order to preserve its intrinsic and wilderness value. The EP prohibits any kind of exploitation of natural resources and regulates the assessment of the environmental impact of research and tourist activities in the Antarctic. Germany transposed the EP into national legislation in 1998 (Act implementing the Protocol of Environmental Protection to the Antarctic Treaty – AUG).



Tourists in the Antarctic (www.pixelio.de)

What is the task of the German Federal Environment Agency?

The AUG designates the German Federal Environment Agency (Umweltbundesamt (UBA)) as authorising institution for all activities in Antarctica that are organised in Germany or proceed from its territory. All German citizens therefore need to obtain a permit from the German Federal Environment Agency for their planned activities in the Antarctic – regardless of whether they are tourists or researchers. This also applies to self-organised activities – e.g. a trip with a sailing or motor yacht.

Those responsible for an expedition are required to inform their fellow travellers on environmentally sound behaviour and to ensure compliance with visitor guidelines.

To enable monitoring of compliance with AUG and permit requirements, heads of expeditions need to hand in a post-visit report describing the actual course of operations.

Tourism in the Antarctic

Since the beginning of tourism to the Antarctic, which is mainly concentrated on the Antarctic Peninsula, visitor numbers have increased significantly and have more than quintupled between 1992 and 2008. This made it necessary to adopt additional internationally binding regulations on tourism. As early as 1994, at their 18th meeting in Kyoto, the Parties to the Antarctic Treaty adopted binding regulations for the protection of flora and fauna. These regulations are the legal basis for tour operators as well as for visitors to Antarctica. In the meantime parties also adopted binding Visitor Site Guidelines for environmentally sound behaviour for the most important landing sites.



Ice shelf in Antarctica (Picture: Gotthilf Hempel, AWI)

3 WHAT SHOULD YOU KEEP IN MIND WHEN VISITING THE ANTARCTIC?

Protect plants and wildlife

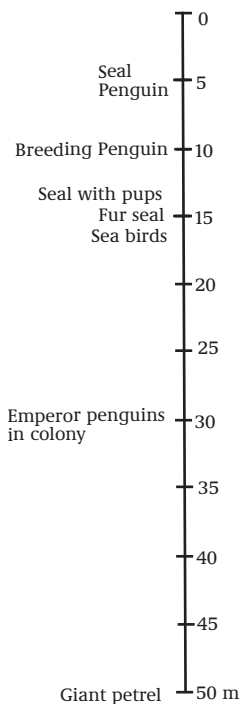
Antarctic communities are specifically adapted to extreme ecological conditions. Therefore, they are only to a limited extent capable of reacting to changes to their environment, which makes them extremely vulnerable to disturbance.

Century-long commercial hunting of seals and whales has dramatically reduced populations of some species. While seal populations have managed to recover, whale species such as the blue whale or the finback continue to be threatened in their existence and have been placed under protection.

Since enactment of the EP, touching, catching, injuring, or killing of penguins and other birds, seals, whales and other species in the Antarctic has been prohibited. Furthermore, all activities are prohibited that could potentially provoke negative effects on fauna and flora – noise, close approaches or trampling. To preserve the continent’s uniqueness, plants, animals, or parts thereof may not be removed from the Antarctic. Foreign species such as dogs may not be introduced.

Watching is allowed - but keep your distance

The UBA recommends the following minimum distances:



Compared to other ecosystems, Antarctic wildlife are surprisingly trusting and barely display flight reflexes, as they are not familiar with land-based predators on the continent. Thus, it appears tempting to approach wildlife for photographs. For average tourists, it is difficult to determine whether animals are scared or feel threatened. In order to avoid unnecessary stress for animals, you should always keep the following minimum distances (see beneath).

How do you recognise that animals feel threatened? Not all behaviour can be discerned as a reaction to a disturbance: Seals lift their head; skuas and Antarctic terns sound a warning cry and attack; penguins and other birds interrupt their breeding and desert their young.



Emperor penguin with chick (Picture: Astrid Richter)

Scientists have found that animals that have been disturbed feature higher heart rates, shorter regeneration phases, and are inclined to attack or flight reflexes upon approach by humans. The extent of the reactions depends on how close and how fast you approach the animal.

On Cape Royds, the population of the native colony of Adélie penguins has decreased considerably as a consequence of frequent visits and helicopter overflights.

Behavioural studies of Adélie penguins showed that 68% of the animals rose from their nests when approached to a distance of 5 m; after humans retreated, it took 50 sec. until penguins reclaimed their resting position. During this time, eggs cooled by 2.8 - 3.9 °C. Heart frequency increased from 82 beats/min. to 126 beats/min. No change in behaviour occurred when approach remained at a distance of 15 - 30 m. Heart beat frequencies also remained comparably low at 96 beats/min.

Especially during breeding season between September and May, you should not approach bird colonies. During phases of moult, incubation and



Weddell seals (Picture: Joachim Plötz, AWI)

upbringing, animals are particularly sensitive to disturbance. Elephant seal cows e.g. interrupt lactation when disturbed. Should this happen several times during the first three postnatal weeks, the seal pups will migrate to the ocean underweight. This can jeopardise their survival.

Keeping a sufficient distance to animals is also in your own interest. Seals in general and particularly fur seals – once threatened – can rapidly charge at intruders and cause serious injuries. Therefore, retreat instantly at the first sign of disturbance. In your own interest, you should keep the following guidelines in mind:

- Keep the recommended minimum distances to animals and retreat upon any sign of disturbance
- Animals always have the right of way
- Never block the way between an individual and its colony or the water
- Remain at the edge of colonies
- Never circle animals
- Take pictures – but do not use flashlight



Antarctic tern (Picture: Fritz Hertel)

Avoid unnecessary noise

The solitude of the Antarctic mainland ice and the apparently endless, deserted vastness make Antarctica one of the few places on earth where silence and the forces of nature can truly be experienced. Being able to experience this silence is a value in itself.

When operating helicopters, airplanes or zodiacs or when using these means of transportation as a passenger, please be careful not to disturb animals at land or at sea through noise or close approaches. Low overflights of animal colonies can trigger escape-flight responses. Therefore we ask you to keep the following guidelines in mind:

- Avoid unnecessary noise
- Please operate skidoos or zodiacs as noiselessly as possible, i.e. at low speed and at low rotational speed. Never use these means of transportation close to animals and their colonies
- When conducting overflights, comply with mandatory minimum flight altitudes (a minimum of 610 m (= 2000 ft) above ground level when passing over penguin, and other bird colonies)

Preserve the vegetation

As a consequence of extreme climatic conditions and short vegetation periods, plants of Antarctica are particularly vulnerable to external influences. Experiments with moss have revealed that vegetation recovers only slowly from trampling damage. Parts of plants dry up within a span of two weeks when torn out. Uprooted or crushed parts of plants do not recover over the Antarctic summer in which they sustained this damage. The growth rate of lichens is merely 0.01 - 0.1 mm per year – a footprint can therefore remain visible for more than a century.

Do not step on or drive over mosses, lichens or grass. Carefully select camp sites and sites for depots and do not cause damage to vegetation or ground cover.

If possible, pitch your tent on snow- or ice-covered areas. If it is inevitable to erect your camp on ice-free areas, avoid permanent modifications to the surroundings of the site when pitching and anchoring your tent.

Ice-free parts of Antarctica are very arid, making them particularly susceptible to wildfire. Avoid open fires and take precautions against spread of fire. Keep the following in mind:

- If possible, stay on existing paths and trails
- Do not step on vegetation
- Erect camps and depots on snow- or ice-covered grounds
- Take precautions against wildfire

Keep non-native plants and animals out of the Antarctic

Due to the geographic isolation of the continent, Antarctic wildlife is not familiar with land-based predators. For a long time, animals have thus been sheltered against predating species and newly introduced diseases. With increasing human activity, however, new threats to the Antarctic ecosystem have emerged: For example, the Infectious Bursal Disease virus (IBDV) has been detected among emperor penguin chicks; this virus weakens the immune system and is probably related to imported chicken products.

Against these kinds of threats, native plants and animals have not developed any defence mechanisms and strategies. It is thus prohibited to introduce non-native plants or animals into Antarctica without permission.

In the face of growing visitor numbers and human encroachment of previously unaffected stretches of land, the Antarctic is increasingly subject to the threat of newly introduced and invasive species. Non-native species, seeds, spores, germs or bacteria can reach Antarctica in various ways.

Keep in mind: Traces of soil and seeds from your last hiking trip back home can cling to your shoes, Velcro, tripods or hiking poles.

Even within Antarctica, there is a danger of distorting ecosystems when you transport non-local organisms from one isolated habitat to another. This can endanger many specialised and isolated habitats. Soil particles or bird excrements can contain micro-organisms such as mites or hair worms, which can thus cling to your shoes. In the course of your journey in Antarctica, you can potentially spread these seeds and soil particles over long distances. This may lead to a change in the species composition of previously isolated regions. Therefore, please keep the following in mind:

- Keep your shoes, your clothes, your luggage and your equipment clean of plants and traces of soil
- Do not introduce any animals or plants into the Antarctic



Footprints remain visible for a long period (Picture: Osama Mustafa)

Respect protected areas

Certain areas in the Antarctic, both marine and land-based, have been put under special protection because of their ecological, scientific, historic or aesthetic value. These Antarctic Specially Protected Areas (ASPAs) are designated to protect wildlife, plants and geological landmarks against disturbance and to preserve the integrity of particularly pristine areas. It is strictly prohibited to enter or fly over these areas, unless a special permission has been granted.

Furthermore, Antarctic Specially Managed Areas (ASMAs) have been established to facilitate an environmentally sustainable use of heavily frequented areas. Designated trails, access limitations, as well as designated landing sites and flying corridors regulate human interference with nature. ASMAs can contain one or several ASPAs or Historic Sites and Monuments (HSMs).

A current list of ASPAs and ASMAs with the associated management plans as well as a list of HSMs can be obtained from the Antarctic Treaty Secretariat.²

Summing up, this means:

- Get information ahead of time about the locations and boundaries of protected areas
- Do not enter ASPAs
- Comply with the provisions applicable to ASMAs

² <http://cep.ats.aq/cep/apa/introduction/index.html>.

Respect Historic Sites and Monuments

The Antarctic features numerous remains of exploration endeavours and various polar expeditions. In memory of the exploration history, they have been put under protection as Historic Sites and Monuments (HSMs).

Apart from artefacts left behind by the first explorers, testimonies of the period of economic exploitation as well as first research stations have been protected. Furthermore, memorials and cairns have been erected in memory of deceased explorers, whalers, researchers, journalists and travellers.



Robert F. Scott-Expedition at Amundsen's camp Polheim, South Pole (Picture: Lawrence Oates)

Ice, snow, wind and extreme temperatures are affecting these historic sites. Considerable visitor numbers are additionally having an impact on the condition and the surroundings of historic buildings. Particularly erosion, carelessness and vandalism (e.g. leaving graffiti on wood or stones) are causing damage. Help to preserve the original condition of HSMs!

Only enter huts that have been cleared for the public. Do not touch or remove parts of the interior or from the building. By behaving responsibly, you can help ensure that these sites remain open to the public in the future. That means:

- Do not modify the HSM itself nor its surroundings
- Comply with admission restrictions (danger of collapse)

Respect scientific research

For more than a century, research has been conducted in the Antarctic in fields such as astrophysics, biology, geology, glaciology, climatology, medicine, meteorology and oceanography. Globally unique conditions of the Antarctic environment are incentive for numerous countries to carry out research in the Antarctic with considerable logistic efforts:

- Antarctica features the best air quality globally, allowing measurements – e.g. of concentrations of greenhouse gases or heavy metals - to be performed against reliable background data.
- Inland ice and glaciers of Antarctica are unique “archives” of historic climate conditions and can provide the key to understanding today’s climate changes.

In case you have arranged a visit to a research station, contact the respective station 72 - 24 h prior to your planned visit for reconfirmation of the arranged date. The difficult research conditions in Antarctica may necessitate changes of schedules at short notice. We ask you:

- Do not disturb or interfere with ongoing scientific work during your visit
- Look out for ground markers and labels in the area surrounding research stations
- Enter only rooms that have been assigned to you and respect the privacy of station personnel
- Do not touch, modify or destroy experimental setups and measuring apparatus

Safety first

Your personal safety has priority over any kind of sightseeing or tourist activity. Do not forget that options for external help in case of emergencies are very limited in the Antarctic.

Weather conditions can rapidly change. Fog, sudden gale-force winds, and the monotony and si-



Ice core drilling (Picture: AWI)

milarity of the landscape can potentially impede orientation and thus the return to your group.

Do not overestimate your physical abilities. If you are travelling in a group, plan your activities according to the physical condition of the weakest group member. Do not forget: Even for healthy people in good physical condition, the adverse climatic conditions of Antarctica put an additional strain on the body.

Under the influence of wind, the exceptionally low Antarctic temperatures are perceived to be even more extreme. Wind chill describes an effect that withdraws heat from the skin through evaporative heat loss. Temperatures of -25°C (-13°F) for example, which in calm wind conditions do not pose an immediate threat for humans, are perceived as -40°C (-40°F) under the influence of winds at 35 km/h (22 mph). Under these conditions, hypothermia and frostbite can occur within half an hour.

Apart from low temperatures, orientation problems in the Antarctic pose another threat. Sudden gale-force down-slope winds from the interior mainland – so called catabatic winds – can rapidly deteriorate visibility and travelling speed. Some areas are still only insufficiently mapped, and poor visibility and monotonous landscapes pose additional challenges.

In snow-covered landscapes, a white-out effect can occur, which is widely familiar from higher altitudes. The diffuse reflection of sunlight under foggy, overcast or snow conditions leads to a loss of horizon on snow-covered surfaces. This means that the human eye can no longer differentiate between earth and sky, contours or shadows disappear altogether. Apart from orientation difficulties, this phenomenon may also lead to psychological strain – many people become anxious or frightened.

Therefore, exercise caution, do not overestimate your abilities and – if travelling in a group – stay together. That way, you avoid dangerous rescue



Young elephant seal (Picture: Fritz Hertel)

operations for yourself and for others. Existing emergency food depots and refuge huts may only be used in case of an emergency. If you need to remove equipment or food, notify the nearest research station and the authority in charge for the particular infrastructure as soon as the emergency has ended.

If there is a danger that the Antarctic environment will suffer serious and long-term damage as a result of an accident or emergency during your expedition, you are required to take quick and effective counter-measures. They need to be initiated directly after the end of the emergency. In your own interest, please keep the following in mind:

- Be aware of your physical limits and those of the weakest member of the group
- Do not leave your group
- Always plan with a safety margin (with regard to time, food, fuel, cold protection)
- Conduct yourself in a way that will make outside help unnecessary
- Be aware of crevasses on glaciers and snow-fields
- Initiate counter-measures in case of ecological damages



Horizon disappears during a white-out (Picture: Hannes Grobe)

Preserve the pristine condition of the Antarctic

For a long time, there had been little or no traces of human activity in the Antarctic. Over the past years, this has changed. To help preserve Antarctica's naturalness as much as possible, you are neither allowed to leave waste behind nor to modify the landscape or take stones, fossils, driftwood, animals or plant parts with you as "souvenirs".

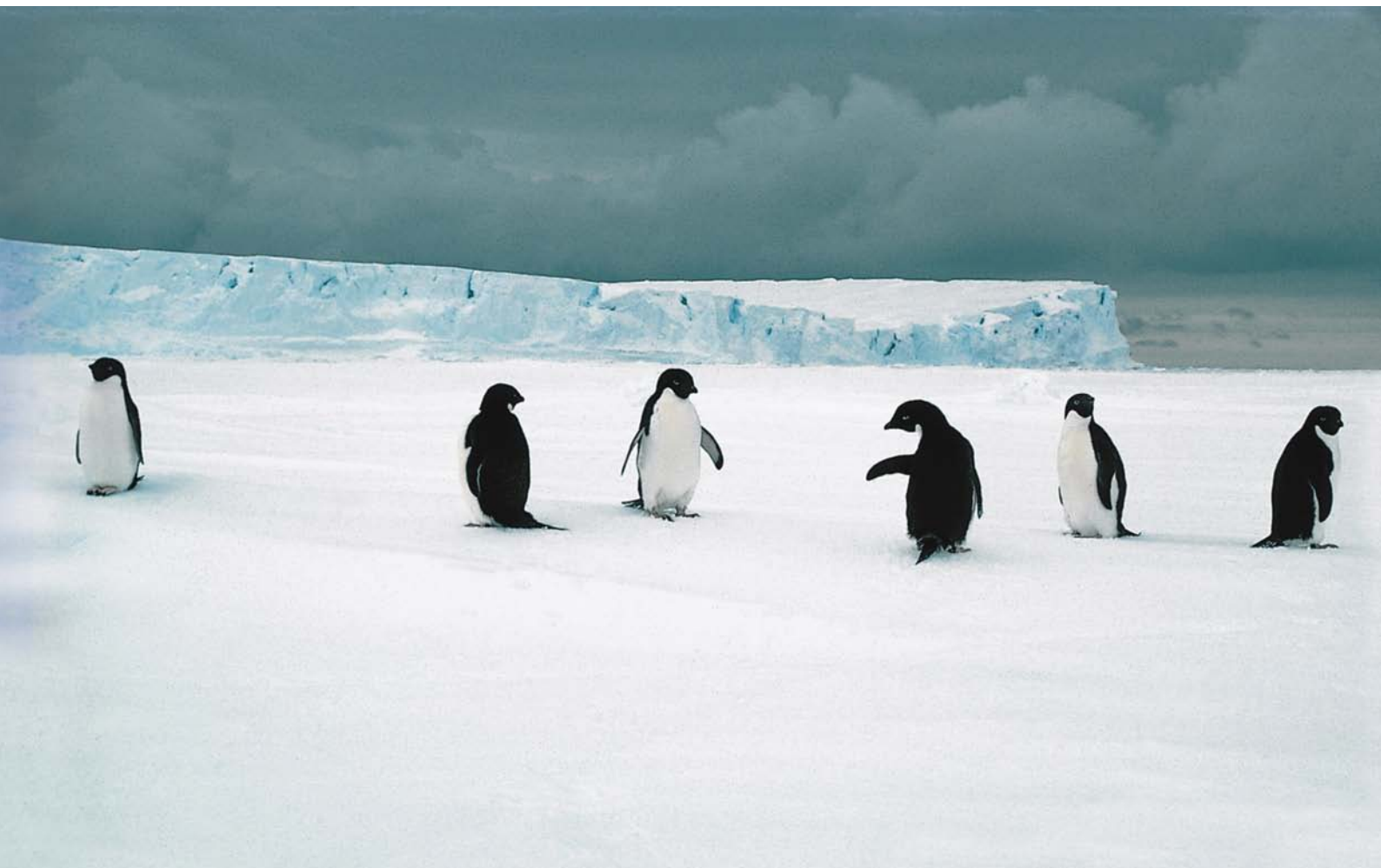
The Antarctic climate – deep temperatures and low atmospheric humidity – causes organic waste such as leftover foods to decompose at a very slow rate. Waste is thus not only causing damage to the environment, but also spoils other travellers' experience of Antarctica.

Freshwater or saltwater lakes and glacial creeks are very sensitive ecosystems. Waste and waste water can cause irrevocable damages of the hydro-chemistry, as decomposition processes are extremely slow.

Help preserve the pristine condition of the region by not leaving any waste behind neither on-shore nor at sea. If you come across waste, take it with you for correct disposal.

Please keep the following in mind:

- Do not leave any waste behind
- Do not extract any items, particularly no plants or parts of plants and do not take animals or their remains with you
- Leave stones, fossils, sand and driftwood in their place
- Do not pollute watercourses or bodies of standing water



Adélie penguins (Picture: Gerhard Dieckmann, AWI)

USEFUL INTERNET LINKS

- Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR), <http://www.ccamlr.org/>
- Alfred-Wegener-Institute for Polar- and Marine Research, <http://www.awi.de>
- Antarctic Treaty Secretariat (ATS), <http://www.ats.aq>
- Antarctic and Southern Ocean Coalition (ASOC), <http://www.asoc.org>
- Council of Managers of National Programs (COMNAP), <http://www.comnap.aq/>
- German Federal Environment Agency, <http://www.umweltbundesamt.de/index-e.htm>
- German Federal Agency for Nature Conservation, http://www.bfn.de/0310_ant
- German Federal Agency for Maritime Navigation and Hydrography, <http://www.bsh.de>
- International Association of Antarctica Tour Operators (IAATO), <http://www.iaato.org>
- List of ASMAs, <http://cep.ats.aq/cep/apa/asma/index.html>
- List of ASPAs, <http://cep.ats.aq/cep/apa/aspa/index.html>
- List of HSMs, <http://cep.ats.aq/cep/apa/hsm/index.html>
- Scientific Committee for Antarctic Research, <http://www.scar.org/>

ABBREVIATIONS

ASMA Antarctic Specially Managed Area

ASPA Antarctic Specially Protected Area

ATCM Antarctic Treaty Consultative Meeting

AWI Alfred-Wegener-Institute for Polar and Marine Research

EP Environmental Protocol to the Antarctic Treaty

HSM Historic Sites and Monument

UBA Umweltbundesamt (German Federal Environment Agency)

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