



UNDER ANTARCTICA

Booklet n°1 - Adventure awaits!

Heidi

Paco

Matthieu



Nice to meet you,
I am **Paco**, a Cape penguin
and I live in **South Africa**.

Can you believe it? While I was taking my nap —
whoosh! — a funny-looking letter landed right on my
feathers!

When I looked up, I saw an old **tern** flying away
towards the horizon.
What could she possibly want from me?

Yuck! The letter smelled like melted snow... and not-
so-fresh **krill!**

Would you like to read the letter with me?

Notice to all Cape Penguins!

It's been a while now since things have started
changing here in **Antarctica**. We've been noticing it's
getting warmer... and our food is becoming harder and
harder to find.

This is a call to all penguins, we need your help to
investigate this mystery!

Two humans with very big boots have already
answered the call. They're getting ready to cross the
White Continent in search of answers.

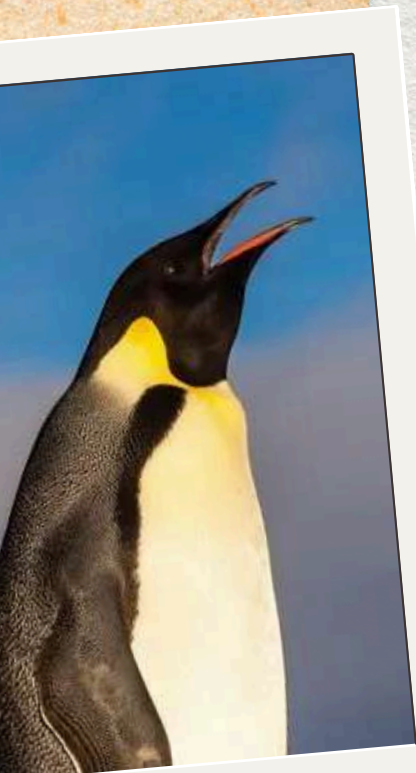
They're looking for a brave little penguin, clever as an
octopus, small enough to slip into their **pulk**,
and bold enough to travel across our icy land!

Considering your quick waddle and your bright mind,
I thought of you right away.

Let's meet in January to talk about everything at the
Great Annual Penguin Council, to mark the
International Year of Glaciers' Preservation.

Only serious penguins need apply!

Your great cousin,
Your Excellency, the **Emperor Penguin**



it's me





On the back of the letter, I found a map showing the way to Antarctica!

The Roaring Forties

The Furious Fifties

Without a moment's hesitation, I jumped in and swam straight south! At the 60th parallel, I left the **South Atlantic Ocean** behind and entered the Southern Ocean. Down there, I had to face an icy and powerful current : the famous **Antarctic Circumpolar Current**. It guards the continent like a giant wall. The further I went, the louder the wind howled above me, and huge icebergs loomed across my path.

The Shrieking Sixties

But nothing could stop me.
I'm a brave penguin!
Antarctica was so close!

— — — — The winds that circle Antarctica are named after the latitudes where they blow.

They are known to be the strongest and most constant winds on the planet, feared for the extreme storms they can unleash.

Brr... brr... brr... I... I'm... brr...
Paco... (shivering)...
But wow, it's freezing here,
good grief!

Oh wow, you made it! We
were waiting for you!
I'm Matthieu. What's your
name, buddy?

Yep! Antarctica is the southernmost
continent on Earth, and also the
coldest. Its record temperature has
reached **-89.2°C**.
That's 75 degrees colder than a
freezer!



Help Paco explore Antarctica

Find the following on the map above:

- ☐ 2 ice shelves
- ☐ The Transantarctic Mountains
- ☐ The geographic South Pole
- ☐ The Antarctic Peninsula
- ☐ A sea that starts with the letter "R"

Have you humans been coming here for a long time?
It's not exactly close to home for you either, is it?

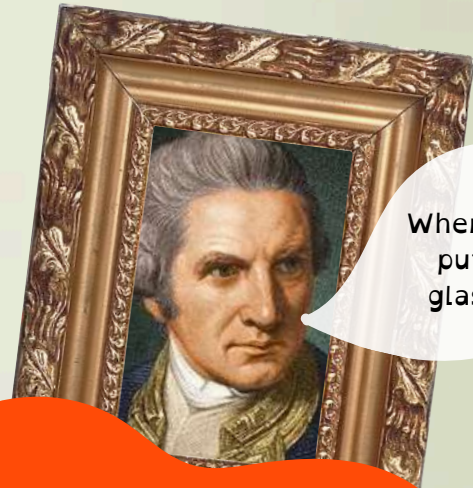
CHAPTER I : TERRA AUSTRALIS

About 2,500 years ago, Greeks like Parmenides and Aristotle believed that a large continent lay hidden at the south of the planet, in order to balance the cold lands they knew in the Northern Hemisphere. Later, this idea would be called **Terra Australis**. It remained a mysterious legend until the explorations of the 19th century.



Map made in 1531
showing Terra Australis.

In 1772, **James Cook** and his crew set out from England in search of this supposed land. They believed it to be warm and full of untold resources.



Where did I
put my
glasses?



HMS Resolution,
James Cook's three-masted ship

In 1773, they sailed past the Antarctic Circle and circled the continent with their ship. Although they never actually saw it, this expedition put an end to the myth of a warm Terra Australis. If such a land existed it would be cold and barren!

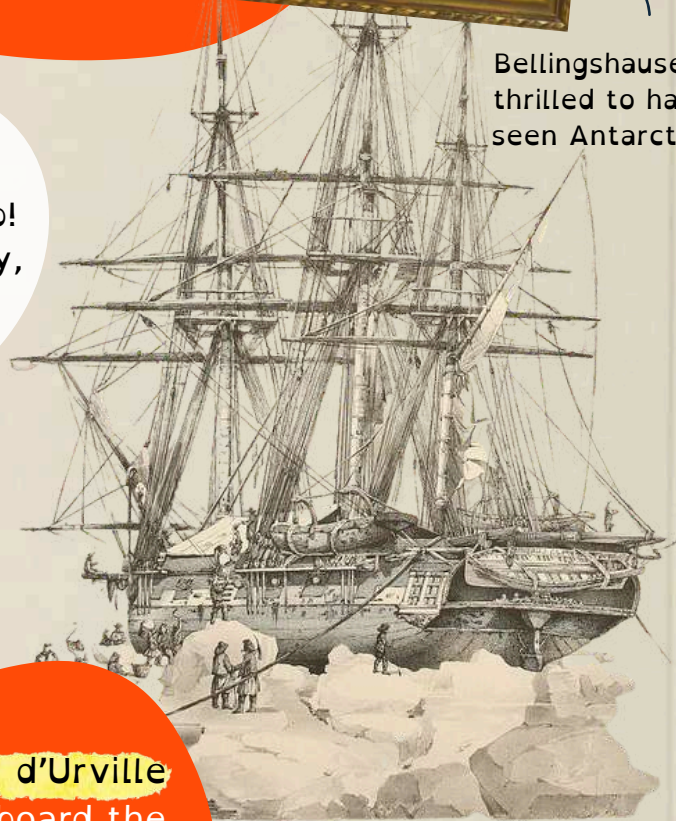


It was only about 200 years ago, in the 19th century, that the Antarctic continent was first seen. An archipelago north of the Antarctic Peninsula was discovered by William Smith. Following this discovery, from 1820 onwards, many explorers from different countries such as Bellingshausen, Bransfield, Palmer, and their brave crews, were able to prove the presence of a solid land.



Bellingshausen thrilled to have seen Antarctica

Look at this beautiful ship! Pretty classy, isn't it? It's French.



The three-masted ship Astrolabe

In 1840, the Frenchman **Dumont d'Urville** set out to explore Antarctica aboard the **Astrolabe**. He managed to land and claim a portion of the coast.

After that, the goal was no longer just to find land, but to reach the most coveted point on the planet...

You mean the South Pole, right?

Exactly, but that's another story!



This is all very interesting, but why is it so white here? Is it snow?

More than just snow — these are **glaciers**! I'm Heïdi, and I'm a **glaciologist**, which means I study glaciers. It's my passion and my job. So let me explain everything to you:

Glaciers - what are they?

A glacier is easy to understand!
To form, it needs 4 ingredients:



A place that is cold all year round



Lots of snow



Cold temperatures



Lots of time

Glaciers in Antarctica can be several kilometers thick, and even though they are huge, they aren't really still. They actually slowly slide along. Isn't that amazing?

Look, this is a glacier spreading all the way into the sea! It's called an **ice shelf**.

Help Paco write an acrostic poem for his colony:

G _____
L _____
A _____
C _____
I _____
E _____
R _____

We'll talk about it in more detail later, but here's what you can remember for now: the Antarctic polar ice cap is the largest glacier in the world!



Welcome to
the team!

Help Paco connect/cut out
the labels and place them
on the right character!

Explorer

Member of The French
Explorers' Society

Loves to share her knowledge and
passion for glaciers

Glaciologist

Very brave

Worked on glaciers on every
continent

First Frenchman to reach the South Pole
on skis, alone and without resupply

Always in for an adventure
somewhere on the planet

Excellent
swimmer

70 cm tall

Heidi

Matthieu

Paco



Heidi, Matthieu, that all sounds great, but what exactly are you going to do?



Heidi and Matthieu's mission

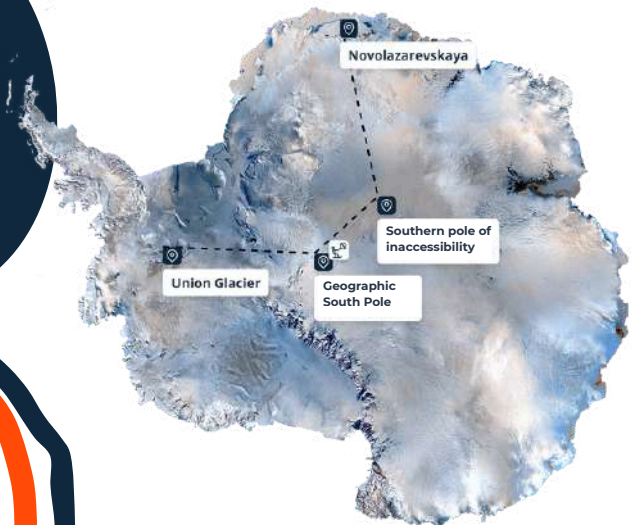
For 90 days, we're going to cross Antarctica to understand how it is reacting to **climate change**.

Ground-penetrating radar



We'll both be dragging a pulk behind us, one of our gadgets that will help you show what's happening under the ice to the other penguins.
As it's heavy and almost 120 meters long, we'll be moving by **kite-skiing**. What's more, it's an eco-friendly way to travel!

Our highest altitude will be 3800 meters




What... kite-skiing?! What language is that?

It's like a boat on snow. A large sail catches the wind to push us forward. The difference is that we glide on skis. This will allow us to travel almost 4,000 km (about the distance from Madrid to Moscow as the penguin flies).



Help Paco match each key number from the expedition to what it represents:

- | | |
|--------|--------------------------------|
| 90 ● | ● highest altitude (in meters) |
| 3800 ● | ● kilometers to travel |
| 4000 ● | ● mission duration (in days) |



I have to tell you, I have a mission too.
In three months, I have to present everything I've
learned with you to the Annual Penguin Council...
But I have to admit, I'm scared I won't understand
it all! What if I get it wrong?

Don't worry!
Even the greatest
glaciologists keep learning!
The adventure of studying
climate is always changing.
The important thing is to
share what you've learned.
You'll be able to take all the
games we play with you to
help the other penguins
understand glaciers better!

Exactly buddy!
Over the next three months,
every week, we're going to
explore lots of exciting topics
about glaciers together. We'll be
there to help you understand
everything.

See you next week!

The Adventurers' Games

To see if you're ready to join us, place these statements in the correct pulk by drawing their path:

Psst... all the answers can be found on the pages above!

Heïdi and Matthieu are travelling by kite-ski to be more environmentally friendly

'Terra Australis' means "Australia's land"

Glaciers are made from snow

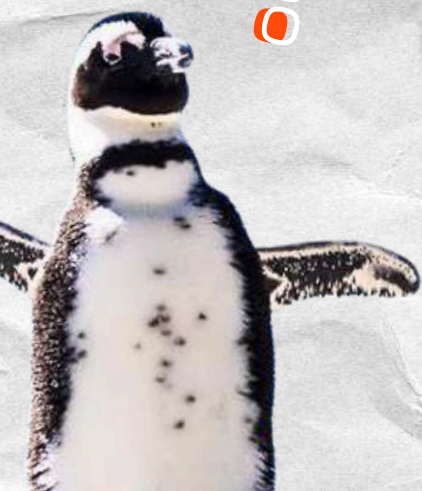
Penguins cannot swim

Antarctica is a mountain free continent

Glaciers slowly slide

Antarctica is at the North Pole

Antarctica was the last continent to be discovered



The South Pole mystery



During this adventure, Paco will need your help! Clumsy as he is, he has lost the secret password that will allow him to enter the penguin council at the end of the expedition.

In each booklet, one letter of the word is hiding! Your mission, as a young adventurer, is to gather all the letters to rebuild the secret password.

So keep your eyes wide open and find each letter. Our penguin friend needs you!

Lexicon

A

Antarctic Circumpolar Current (ACC) : is an ocean current that flows clockwise (as seen from the South Pole) from west to east around Antarctica. Its movement is driven by differences in temperature or salinity.

C

Continent : a very large area of land rising above the sea. There are six of them in total.

g

Glacier : a mass of ice formed by the accumulation and compaction of snow on mountains or land. They can be up to 5 kms thick.

I

Iceberg : a huge mass of floating ice broken off a glacier.

Ice shelf : A floating piece of ice attached to a glacier or an ice sheet, extending out over the sea.

k

Krill : Tiny plankton from cold seas, usually between 1 and 2 cms long. After phytoplankton (algae), which they feed on, they are at the base of the marine food chain.

P

Peninsula : a piece of land almost surrounded by water or projecting out into a body of water.

Pulk : A sled used for sport or transport.

t

Tern : A small seabird related to the gull, it travels more than 70,000 kilometers between the south and north poles each year, the longest migration known among birds.

Any question ?

Got a question or a kind word for Heïdi and Matthieu? Send it through their mailbox. They'll reply as soon as possible!



To go further

More adventures with Matthieu Tordeur and Heïdi Sevestre



GAME SOLUTIONS

Page 8

Heïdi : Glaciologue / Adore partager ses connaissances et son amour des glaciers / A travaillé sur des glaciers de chaque continent / Est toujours partante pour une aventure au bout du monde

Matthieu : Explorateur / Membre de la Société des Explorateurs Français / Le premier français à rallier le pôle Sud à skis, en solitaire et sans ravitaillement / Est toujours partant pour une aventure au bout du monde

Paco : Excellent nageur / 70 cm de hauteur / Très courageux

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90: mission duration (in days) / 4000: kilometers to travel / 3800: highest altitude (in meters)

Page 11

Pulk "true" : Glaciers are made from snow / Glaciers slowly slide / Antarctica was the last continent to be discovered / Heïdi and Matthieu are travelling by kite-ski

Pulk "false" : Antarctica is at the North Pole / Penguins cannot swim / Antarctica is a mountain free continent / 'Terra Australis' means "Australia's land"