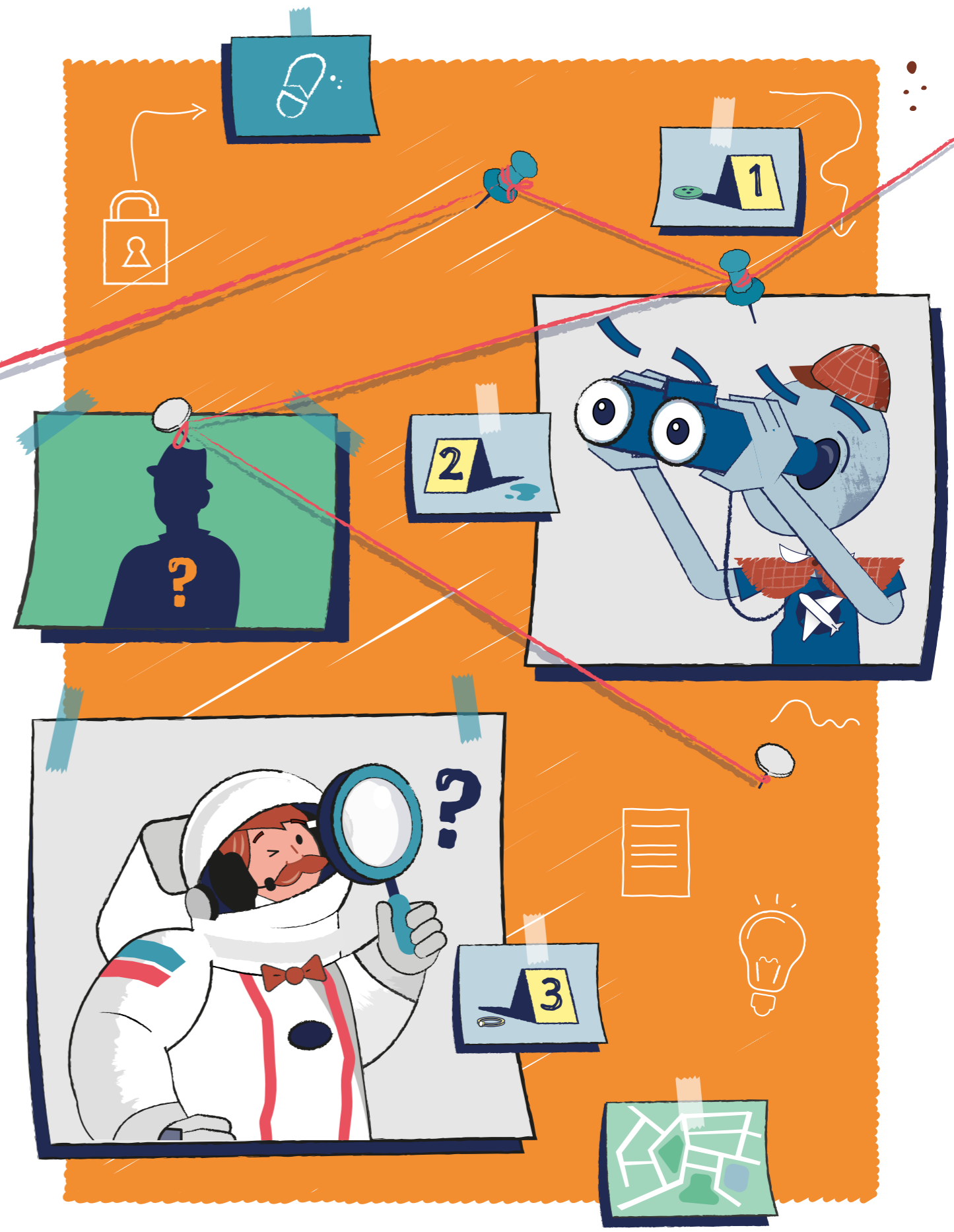


CHAPTER 4:
INVESTIGATIONS



INVESTIGATIONS

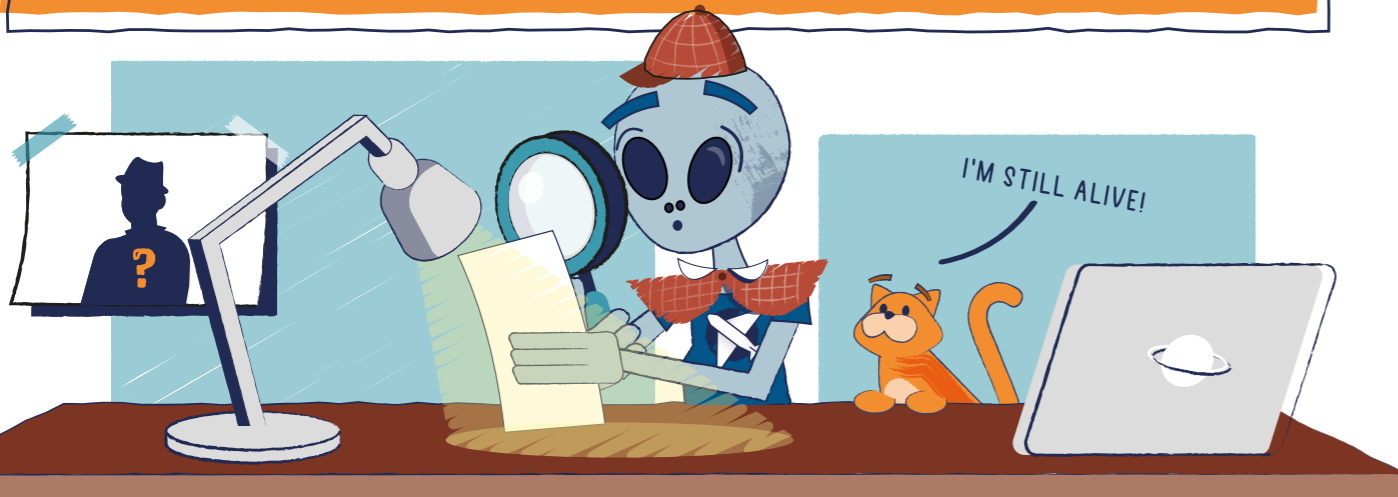
THERE'S AN OLD SAYING IN ENGLISH:
"CURIOSITY KILLED THE CAT".

Honestly, it's not the best saying... We don't know the whole story. At first glance it seems like a sad, sad story, especially for the cat. Most importantly, the meaning of the saying is that curiosity can be dangerous. Well, it is tempting to say that today the opposite is true: the real danger is to lack curiosity! Being curious may be one of the most important skills to develop.



With TV, internet, newspapers and social media, we now have a huge amount of information to browse and satisfy our curiosity for literally ANY topic. However... being curious is only the beginning.

We need to go a tiny bit further. We need not only look for pieces of information, but also to compare them, analyse them, and draw our own conclusions.



In a word: we need to be able to **investigate**.

This is of course the basis of any good detective work (including Sherlock Holmes'), but it's the principle of scientific work as well.

We try to find clues... The clues lead us to an idea, a possibility, a hypothesis... We look for elements that support this idea...

If the idea seems well supported, then what do we do? Well, as strange as it may seem, we look for elements that prove our idea wrong! Exactly! We actively try to disprove our own theory! And only if we fail to disprove it, we may consider that our theory looks right.

THE SECRET OF GOOD SCIENCE IS NOT TO PROVE AN IDEA RIGHT ONCE AND FOR ALL - AS ALL THEORIES MAY BE DISPROVED ONE DAY...



The secret is to try your best to prove the idea wrong, and to fail.



Oh, and to make sure you really fail, you are going to involve your friends too:

You are going to ask a whole bunch of people (let's call them the scientific community) to look at your idea, to criticise it and prove in which ways it is wrong. Let's call this a peer-review process.

You will probably have to change your idea a few times to respond to critiques...

..And after lots of work from lots of people, if the theory cannot be disproved, and if all your friends finally accept it, we'll say that it's valid.

Which means it's the best we have so far, so we'll consider that true... until someone comes up with an even better theory.



IN THE FOLLOWING ACTIVITIES, WE'LL DEVELOP SOME INVESTIGATION TOOLS REGARDING SATELLITE IMAGES. YOU WILL CAREFULLY ANALYSE PICTURES FROM SATELLITE IMAGERY AND CONDUCT A THOROUGH INVESTIGATION WITH THEM!



IMAGE ANALYSIS



BELOW ARE THREE PICTURES FROM SATELLITE IMAGERY. THEY SHOW THREE LOCATIONS, PHOTOGRAPHED FROM HIGH ABOVE, BY A SATELLITE CALLED PLEIADES. FIRST, LET'S DO A GENERAL ANALYSIS OF EACH OF THEM:



Pléiades Satellite Image © CNES 2021, Distribution Airbus DS



Pléiades Satellite Image © CNES 2019, Distribution Airbus DS



Pléiades Satellite Image © CNES 2017, Distribution Airbus DS

A

Do you see any natural landmarks, any striking natural element (mountain, coast, river..)?

B

Do you see any sign of human activity (buildings, infrastructures, houses, roads...)? What do you think they are used for?

C

What do you think the climate is like in each place? Hot or cold, dry or humid? What kind of vegetation or environment can you spot?



SPOTTING THE LOCATION

LET'S USE THE THREE IMAGES ON THE LEFT PAGE AGAIN. AFTER THE ANALYSIS YOU HAVE DONE IN ACTIVITY ONE, WE NEED TO LOCATE THEIR EXACT PLACE... BELOW IS A LIST OF LOCATIONS: CAN YOU FIND WHICH ONES ARE THE LOCATIONS OF THE THREE PICTURES?

1. Victoria Falls, on the border between Zambia and Zimbabwe
2. The Panama Canal
3. The urban area of Manhattan, in New York, U.S.A
4. The city of Paris, France
5. The Kawah Volcano, in Indonesia
6. The Al Qudra lake, in Dubai, in the United Arab Emirates

If you wish to explore further, you can use Google Earth on a computer and try to find the exact location corresponding to each image!

MONITORING NATURAL DISASTERS

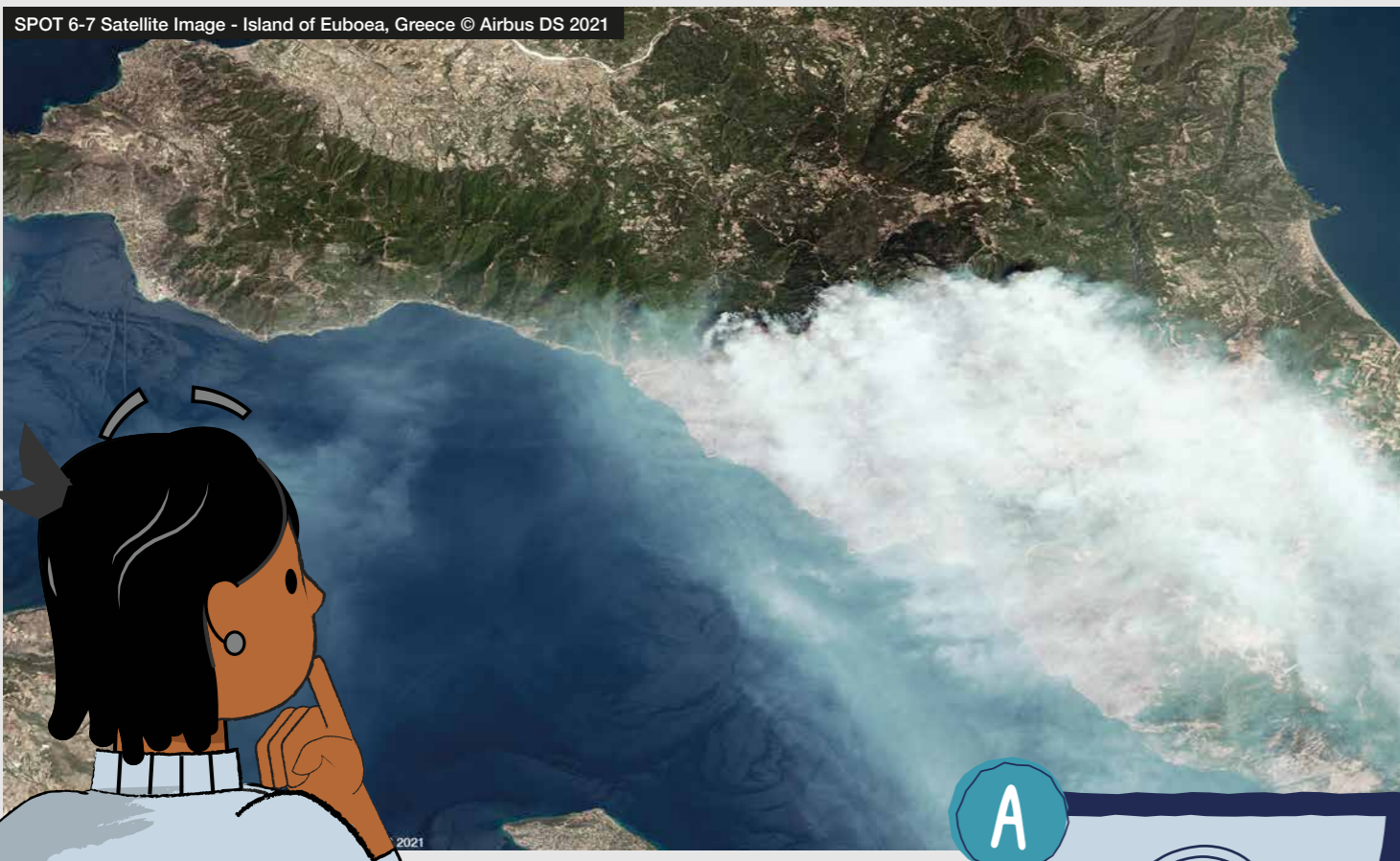
Satellites are sometimes used to monitor natural disasters and understand their consequences. Below is an image from the Greek island of Euboea (A), which suffered from forest fires in 2021. Can you spot where the active, smoking fires are? And are you able to identify which parts of the forest are already burned down?

ACTIVITY

3



SPOT 6-7 Satellite Image - Island of Euboea, Greece © Airbus DS 2021



A



© CNES 2013 - Distribution Astrium Services / Spot Image

Let's now move to the city of Tacloban (B), in the Philippines. In 2013, the city was hit by a typhoon called Haiyan, which caused massive destruction. The picture above shows the city before and after the typhoon: can you spot the differences? What seems to be damaged, burned or destroyed? Be as precise as possible.

B
