

Nothing Grows Here, and That Is the Point

The driest place on Earth is valuable for exactly what it lacks.

7 min read

Before you read

- **arid** — extremely dry; receiving almost no rainfall
- **precipitation** — water falling from the sky in any form
- **dormant** — alive but inactive, waiting for conditions to change
- **sterile** — containing little or no living material
- **anomaly** — something that does not fit the expected pattern
- **calibrate** — to check an instrument against a known standard
- **encroach** — to advance gradually into somewhere it was not before
- **trade-off** — a gain in one thing accepted in exchange for a loss in another



The Atacama plateau in northern Chile, where some weather stations have never recorded rain

¹ There are weather stations in the Atacama Desert of northern Chile that have never recorded rainfall. Not a dry decade — no measurable precipitation at all since the instruments were installed. Parts of the desert floor are so arid and so sterile that scientists use them as a stand-in for Mars, testing rovers and life-detection instruments on ground where the instruments frequently detect nothing, which is precisely the

result that makes the test worthwhile.

² Three things conspire to produce this. The Andes to the east are high enough to block moisture arriving from the Amazon. The cold Humboldt Current runs up the coast to the west, chilling the air above it so that it carries little water inland. And the desert sits beneath a belt of permanently descending air, where sinking air warms and dries rather than rising, cooling and raining. Any one of these would make a dry place. Together they make an anomaly.

³ Absence, it turns out, is a resource. Water vapour in the atmosphere absorbs certain wavelengths of light before they ever reach the ground, which is a serious problem if your work is collecting that light. Remove the water, add altitude and the near absence of cloud, and you have the best conditions on the planet for astronomy.

⁴ So the Atacama has been quietly colonised by telescopes. Observatories sit on ridges and plateaus at altitudes where visitors are advised to move slowly. Some of the most productive instruments in modern astronomy are here, not because Chile is close to anything in space, but because there is so little between the mirror and the sky.



Telescope domes at altitude, where dry air and dark skies meet

⁵ The same emptiness supports an industry with very different requirements. The Atacama holds enormous mineral wealth — copper in quantity, and the salt flats that supply much of the world's lithium. Mining needs roads, ports, housing, power and, inconveniently for a desert, water. It also needs light, because mines run at night.

⁶ This is where the trade-off becomes concrete. The value of the sky above the Atacama depends on darkness, and darkness is the one resource that industrial development reliably destroys. Light from a port or a processing plant does not respect a boundary fence; it scatters in the atmosphere and raises the background glow for a hundred kilometres. Proposals for large industrial projects within reach of major observatories have drawn sustained objections from astronomers for exactly this reason. Chile has responded with some of the world's strictest lighting regulations in the regions around its observatories — but regulations govern how light is directed, not whether development encroaches at all.

⁷ And then, occasionally, the desert does something that complicates every account of it. Every few years, when an unusual weather pattern delivers rain where rain is not supposed to fall, the Atacama flowers. Great sheets of ground that looked permanently dead turn purple and white and yellow within weeks. The seeds were always there, dormant in the soil, in some cases for years, waiting for a quantity of water that most of them will never receive.

⁸ The desierto florido, as it is known, draws crowds and photographers and a certain amount of philosophical commentary. It is worth noticing what it actually demonstrates. The desert is not empty. It is a landscape running at a different speed, where a life cycle may wait a decade for its one opportunity, and where the usual measures of whether a place is alive — green, movement, growth — simply fail to register anything.

⁹ That failure of measurement runs through the whole region. Instruments must be calibrated against known standards, and the Atacama keeps supplying conditions for which the standards were not written: soil with no detectable organic carbon, skies with no detectable water, decades with no detectable rain. The desert is valuable to science, to astronomy and to industry for the same underlying reason — the near-total absence of the things that normally get in the way.

¹⁰ Which leaves an awkward question for the people who have to decide its future. Copper, lithium and dark skies are all genuinely needed. They are also, in the same square kilometre, not fully compatible. A desert can be mined or it can be observed, and the part of it that is both is smaller every year.

Part A Choose the best answer

Circle the letter next to the right answer.

1. Which of these is NOT given as a cause of the Atacama's dryness?
 - A The Andes blocking moisture from the east
 - B The cold Humboldt Current along the coast
 - C A belt of descending air above the region
 - D The high salt content of the desert soil
2. Why is dry air valuable to astronomers?
 - A Water vapour absorbs light before it reaches the ground
 - B Dry air is colder and keeps the mirrors stable
 - C Dry air reduces the risk of damage to the domes
 - D Water vapour makes the telescopes harder to move
3. What does the passage identify as the central conflict in the region?
 - A Mining uses water that the flowering desert needs
 - B Industrial light destroys the darkness astronomy depends on
 - C Tourists disturb the sites used to test Mars rovers
 - D Lithium extraction competes with copper for land
4. According to the passage, what does the desierto florido demonstrate?
 - A That the desert is slowly becoming wetter
 - B That seeds have been carried in from elsewhere
 - C That the desert is alive but running on a different timescale
 - D That rainfall records in the region are unreliable

5. What does the writer say Chile's lighting regulations can and cannot do?

- A They control how light is directed but not whether development arrives
- B They prevent all new building near the observatories
- C They apply only to mines and not to ports
- D They have replaced the need for darkness entirely

Part B Write your answer

Answer in three or four sentences, using evidence from the passage.

6. The writer says that “absence ... is a resource”. Explain what this means using two different examples from the passage.

7. Explain why the writer calls the usual measures of whether a place is alive a failure in the Atacama. What does the flowering desert show about those measures?

8. The final paragraph says copper, lithium and dark skies are all genuinely needed. Why does the writer choose to end on this rather than on the flowers?

Part C Think deeper

There is no single right answer here. Take a position and justify it.

9. Dark skies produce knowledge; mines produce materials that nearly everyone uses, including the people arguing for dark skies. If a decision had to be made for one particular valley, how would you decide it? State the principle you would use, not just the outcome.

10. The passage treats a place with almost nothing living in it as extremely valuable. Does value of that kind deserve the same protection as a forest or a reef? Argue a position and address the strongest objection to it.

Answer key

For parents and teachers

Part A

1. D | 2. A | 3. B | 4. C | 5. A

Part B

6. Absence of water vapour and cloud makes the sky transparent for telescopes; absence of organic material makes the soil a valid stand-in for Mars; absence of rain makes the conditions extreme enough to be scientifically useful. Any two, explained, earns full credit. Weak answers list the examples without explaining why absence is the valuable part.

7. Green, growth and movement are the ordinary signs of life, and the Atacama shows none of them for years at a time — yet the seeds are dormant, not dead, and bloom when rain finally arrives. The measures fail because they test for a timescale the desert does not run on. Accept answers that reach that distinction in their own words.

8. Ending on the flowers would leave the reader with wonder; ending on the conflict leaves them with an unresolved decision. The writer wants the reader holding the trade-off rather than admiring the scenery. Credit any answer that identifies a deliberate choice of effect.

Part C

These answers vary. Mark the reasoning, not the answer.

9. The question asks for a principle — for example, reversibility (light can be switched off, an open-cast mine cannot be unmade), scarcity, or who bears the cost. Mark whether a principle is actually stated and then applied, rather than an outcome asserted.

10. Strong answers engage with the objection directly: that protection is usually justified by biodiversity, and the Atacama's value is largely to human knowledge rather than to living systems. Either conclusion is acceptable if that objection is met rather than ignored.

EyeQBoost builds thinking skills in young learners through cognitive training, reading and gamified online classes.
More free reading sets at eyeqboost.com/resources.