
# The Amazing Amazon: Myths and Realities

ANALYSIS

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For 25 years, I have worked in the Amazon basin. While I may not know everything about the region — it is, after all, rather immense — I know it quite well, and I am intimately familiar with certain sectors.

I serve as a director of Embrapa, Brazil's National Center for Research on Agrobiology. Part of the Federal Ministry of Agriculture, Embrapa employs more than 3,000 Ph.D.'s at 40 research centers across Brazil.

We make use of more than 40 satellites in our work. We use the National Oceanic & Atmospheric Administration satellite to monitor the burning of forests. Every two hours it divides the earth into blocks of one square kilometer and measures the temperature of each, registering differences as small as a tenth of a degree.

We also work with land satellites (landsats) that allow us to observe details as small as 15 meters. The Spot satellite, which we use, covers the globe in 10-meter detail. We also use radar satellites that enable us to penetrate clouds, the leaves of the trees, and even the surface of the soil. Spot's control system is accurate to two centimeters — less than an inch.

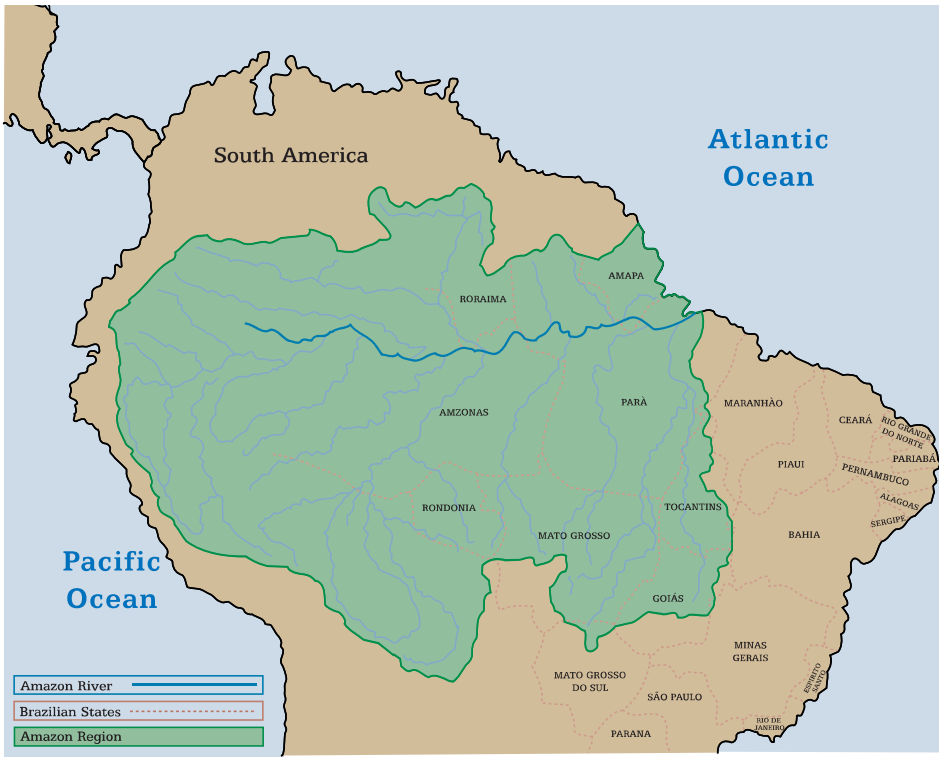
We use satellites from Brazil, the United States, Europe, and Japan. Brazil was the first nation in the southern hemisphere to launch a satellite. It can cover the entire world with an accuracy of about eight inches.

There is, of course, no substitute for field work. Despite technological advances, not every detail can be picked up by satellite, after all, and those who rely exclusively on satellite images are working with incomplete information at best. Embrapa researchers undertake land and river expeditions to gather local plant and soil specimens.

So, let's discuss the Amazon rainforests. We will briefly describe the bounty of tropical rainforests. Then we will analyze some myths about the Amazon basin. Finally, we will summarize our discussion and conclude with a question of our own.

### What are rainforests really like?

Tropical rainforests are exceptionally rich in fauna and flora. Although constituting just




twelve percent of the earth's surface, they are home to more than half of earth's life forms. It is an impressive wealth. A small corner of the Amazon jungle has more species of birds than all of North America. The world harbors about nine thousand species of birds. Counting resident and migrant birds, Brazil alone has three thousand species. A little piece of the Amazon jungle lying by the ocean has more species of trees than all of England. Rainforests are also home to some 30 to 50 million people.

At least a quarter of the world's plant-based medicines come from the tropical forests. This represents an annual market of $23 billion. We eat produce from rain forests every day. Wood and minerals are other important products of rain forests. The forests also play a critical role in maintaining the world's climate balance.

We must not overlook the spiritual value of rainforests. As Catholics, we know that nature is a gift of God, a masterpiece of His handiwork reflecting His majesty and beauty. Our Lady appears in a cave, she appears over water — nature serves as her stage. As Catholics, we have a balanced view that appreciates both the beauty of nature and the purposes for which God created it.

Economic development has reduced the size of the world's rainforests, but Brazil encompasses 40 percent of the world's rainforests. The area of the Amazon watershed, which includes Bolivia, Ecuador, Colombia, and Peru, is about 3.5 million square miles. The Brazilian Amazon region occupies about two million square miles, over 60 percent of Brazil.

### First myth: the homogeneous Amazon

There are many myths about the Amazon. We will review five.

Many people imagine the Amazon region as a vast homogeneous tropical rainforest covering an area nearly as large as the United States.

This is simply not the case. First, Brazil's highest mountains are in the Amazon basin. In these mountains — whose altitudes exceed 10,000 feet — we have cloud forests. On top of the mountains, we have grasslands.

Some areas of the Amazon have deciduous forests like those in the United States. It is well known that the leaves fall off deciduous trees during certain seasons, yet a foreigner will sometimes attribute their loss to fires. To such a comment, I once responded: "I had the same impression visiting London's Hyde Park. It was winter and there were no leaves on the trees. I thought, my goodness, who has set fire to this lovely park?"

The Amazon basin also includes sparse forests — delicate forests susceptible to fire — and palm forests.

The trees of riparian forests, those along rivers, constantly fall into these waterways, which then must be unclogged. Some forests are entirely flooded by rivers. For six months a year their trees are submerged in 40 to 50 feet of water. Fish navigate around their branches as though they were flying birds.

The Amazon basin encompasses more than 385,000 square miles of savanna. The typical savanna, bush savanna, features small trees, but there are also clear savannas, and vast savannas teeming with wildlife.

Immense areas of the Amazon are comprised by grasslands. When fires raged in Roraima (a territory of northern Brazil adjacent to Venezuela) in 1988, I witnessed a foreign journalist reporting, "This was a forest. Look what is left after the fire." But the area was a grassland, not a forest. In fact, for at least 25,000 years there has never been a forest there. The grasslands, by the way, are older than the forests.

### Second myth: "the lungs of the world"

Some would have us believe that as much as a quarter of the world's oxygen is produced in the Amazon forests. You may have heard the Amazon called "the lungs of the world."

Once again, it is not true. It is the world's oceans that fill that role — producing the oxygen that life requires. The production of oxygen in the Amazon forest equals the amount of oxygen it consumes. Nothing is left over, as any high-school biology book will tell you.

A young forest will produce oxygen because it is taking in carbon dioxide, using the carbon to grow and releasing the oxygen. When a forest has reached maturity, on the other hand, it "breathes," consuming the oxygen it produces. The trees in the Amazon are at their maximum growth level and the balance of their production and consumption of oxygen is zero every single day of the year.

It is true that the humidity in the Amazon forms a considerable amount of clouds and produces much rain. In fact, sixteen percent of the earth's water comes from the Amazon region. So, while the Amazon forest is not

Professor Miranda at the National Press Club in Washington, D.C.

"the lungs of the world," you could say that it does serve as an air-conditioning system.

**Third myth: the uninhabited Amazon**

Another myth is that the Amazon region is largely uninhabited, save for a few Indians scattered around its southern perimeter.

The facts, once again, tell quite a different story. As the census confirms, more than 350,000 Indians alone live in the Amazon, and their number is increasing every year.

Nor are native Indians the only residents of the region. There are also the Caboclos, an ethnic mix of Indian, African, and Portuguese. They live in the Amazon, where they fish and harvest Brazil nuts. Then there are the rubber tappers. If you view the state of Acre by satellite, you might think that it is a continuous green forest, but if you look more closely, you will see white and red dots. They represent settlements — rubber tapper settlements, to be precise.

Then there are the small farms. Like the pioneers of the American West, these farmers and their families — a half million families — settled far from their birthplaces to seek land of their own and the promise of a better life. They worked hard to achieve it, and, quite naturally, wish to pass the fruit of their labors on to their children.

There are also mining settlements. Brazil produces some fifty tons of gold a year, which helps to pay our foreign debt.

Twenty million Brazilians live in the Amazon region, which has 1500 villages and cities — growing cities like Manaus and Belém, each with populations in excess of one million. Fifty-five percent of the residents of the region live in its cities — which are experiencing the highest urban expansion rates in Brazil.

**Fourth myth: the unprotected Amazon**

Another popular myth is that the Brazilian government does not protect the Amazon rainforest with its laws.

The Amazon comprises large indigenous areas and many national parks and forests. I do not know if there is any country in the world that has this much land protected by law. Development of these lands is prohibited.

*Some would have us believe that as much as quarter of the world's oxygen is produced in the Amazon, the so-called lungs of the world.*

This does not meant that the other areas can be used as the owner desires. Federal law restricts the farmer in the Amazon watershed to the use of just 20 percent of his land. This is an unreasonable restriction that often means economic suicide for the small farmer, who generally must develop at least half his holdings to survive. The law formerly designated an even split between forest and agriculture, but this more reasonable balance fell victim to the pressures of environmental extremists.

**Fifth myth: the imminent deforestation of the Amazon**

Our final myth concerns the degree of deforestation of the Amazon. There are those who charge that the rainforest will cease to exist within a decade.

They are wrong.

Brazil has spent $2.5 million to analyze the deforestation of the area. The effort has involved 50,000 man-hours, 10,000 machine-hours, and 85 specialists, as well as 331 maps and 229 satellite images. Every detail of the entire Amazon forest is measured every two years. Satellite images reveal areas that have been cleared. Square patterns in pink can be readily distinguished from the natural irregular patterns of the savannas.

Over the last half of the second millennium, that is, for the past 500 years, the total extent of deforestation is a 193,000 square miles [*half million square kilometers*], almost the size of Texas. If the loss were one percent annually, it would take a hundred years to deforest the Amazon. The rate is less than half that rate, just 0.4 percent.

It is true that the Brazilian government sets fires in the forest, but there is a significant difference between controlled burning and wildfires. Wildfires begin when they are not wanted and spread where they are not wanted. They are out of control.

Controlled burning, on the other hand, is planned. It is a proven means of agricultural

technology used by farmers to control weeds, ticks, and other problems. Controlled burning accounts for more than 99 percent of the fires that occur in Brazil.

**In summary: myths vs. reality**

Contrary to the myths propagated by those whose interests are served by such disinformation, the Amazon:

- is not a vast homogeneous rain forest, but a mosaic of majestic mountains and widely diverse forests, savannas, and grasslands;
- is not "the lungs of the world," but a balanced producer and consumer of oxygen;
- is not virtually uninhabited, but the home of 20 million Brazilians;
- is not unprotected by Brazilians, but rather is somewhat over regulated;
- is not on the verge of imminent deforestation, with more than 99 percent of its fires planned as controlled burning.

**A unique concern**

The real question is not about the exaggerated destruction of the Amazon, but about why there are so many forests in Brazil and so few in other countries.

In Europe, the forest is virtually gone. It has disappeared in Asia. In Africa, there are a few forests but not many. More in Canada — the tundra — than in the United States, but nothing even remotely approaching the Amazon forest. Even in the Spanish nations of South America — Chile, Colombia, Venezuela, for example — the forests are a phenomena of the past. Brazil alone has preserved enormous forests.

*I am God's representative of my people. I have to defend the interests of my people, but I also have to defend the interests of my Lord and take care of this earthly paradise.*

*King Dom João III*

Why? There are a number of reasons, but I would like to note one that is not as well known as it should be: the traditional concern of the Portuguese crown for the environment, a solicitude as unique as it is old.

Brazil was discovered by the Portuguese explorer Pedro Alvares Cabral in 1500. As early as 1530, King Dom Manuel, specifically forbade harvesting of more than a hundred species of Brazilian trees. Receiving reports that Brazil was an earthly paradise, King Dom João III declared:

> I am God's representative of my people. I have to defend the interests of my people, but I also have to defend the interests of my Lord and take care of this earthly paradise. I have to study and proceed with caution, because I have this responsibility. I have to render accounts to God for this.

King Dom João issued a royal decree mandating a detailed study of Brazil. In 1587 a report was issued reviewing the land, river by river, and this is used in Brazilian universities to this day.

In 1808, King D. João VI arrived in Brazil and established a botanical garden of over 5,000 acres in Rio de Janeiro. The United States had hardly been born when Brazil already had its first Royal Botanical Garden.

Brazil's Emperor Dom Pedro II was also concerned about the environment, but he expressed that concern in a balanced and rational way.

If you visit the statue of Christ the Redeemer in Rio de Janeiro, you will see the immense national forest of Tijuca. It was planted by order of Emperor Dom Pedro. Dom Pedro's decree was an example of environmental wisdom. We know exactly how many and what kinds of trees were planted. Each tree was numbered, and the decree established that anyone working in the forest of Tijuca must also live there.

The commissioner in charge of the project wrote the Emperor:

> Let us repeat this experiment in other areas of the lands of the Court. Let us form schools of agriculture next to the forest in which we will train engineers who will practice good forestry. Let us take good care of our territory.

They were not worried about the next election; they were concerned about the welfare of the next generation and the generations to come. ■


**Prof. Miranda's exposition sparked numerous questions**