

Hope for the Amazon!

The Peruvian Air Force (FAP) Suppresses Forest Fires

MAJOR GIANCARLO SÁEZ MENDOZA, FAP

Introduction

The FAP made its presence known during the forest fires in South America, sending two Russian MI-171Sh helicopters to the Plurinational State of Bolivia to help fight the fires. The latest events in the Amazon have attracted worldwide attention, not only from scientific and environmental points of view, but political as well, since the Amazon territory produces oxygen for the entire planet and the concern has been shared by the mainstream media.

While the world focuses on Brazil, few know that the Bolivian Amazon also includes an adjoining region called the Chiquitanía. This region shares the same problems of hot spots, due to the naturally occurring low humidity and high temperatures of the season, produced by the annual drying and burning of crop fields. These fires have been devastating thousands of hectares of natural forest and produce large amounts of carbon monoxide that are harming thousands of Bolivians.

Thus, the Bolivian government requested international assistance, to which, once preparations were made, the FAP responded. This article uses this professional forum to relay first-hand accounts of personnel who were there, to further expound on the global problem currently being experienced by these fires.

The global problem of fires in South America

An important sector of the Amazon is in flames. In a broader picture, various hot spots are scattered all throughout South America as well. According to data from the Brazilian National Institute of Space Research (INPE), at the present time there are 225,629 fire sources registered since January of 2019 throughout the continent,¹ involving not only Brazil, but also countries such as Venezuela, Bolivia, Argentina, Colombia, Paraguay and Peru, among others. Brazil has the highest number of fire sources with 50 percent of the general total of the continent, with 56,085 of them corresponding to the Amazonian biome, that is, almost 25 percent of all heat sources on the continent. There have undoubtedly been aggravating factors that have led the states of Amazonas and Acre in Brazil to declare themselves in a state of emergency/environmental alert, and thereby precipitating Brazil's president, Jair Bolsonaro, to take action on the matter and order the deployment of the armed forces towards natural reserves,

indigenous lands, and border areas of the region to fight against the fires.² These events have aroused the interest of many to ask the how and why of these fires.

The main cause of these forest fires is humans, that is, the fires caused by farmers in the dry season to clear or clean a certain area. In an interview with Reuters, Paulo Moutinho, researcher of the Institute of Environmental Research of the Amazon (IPAM), argues that the alarming increase in Amazon fires is due in large part to the progress of deforestation. He explains that the lack of preventive actions causes the fires deliberately started to clear an already deforested area, to open roads or prepare the land for cultivation, to “spread to areas that were not to be burned and are drier.”³ Similarly, a study of the Amazon Andes Study Project (MAAP) describes the current relationship between fires and deforestation, which has already reached the disturbing figure of 52,500 hectares deforested in 2019. The key finding of its analysis was the relatively large condition of large-scale deforestation followed by fires, especially in the Amazonian states of Rondônia, Amazonas and Pará; and that as long as the dry season continues, there will be a high risk of fires leaking into the surrounding forest, causing more extensive burning.⁴



Figure 1. FAP MI-171Sh helicopter performing fire fighting operations in Tierra Hermosa, department of Santa Cruz, Bolivia

Source: Author

Bolivia shares a similar reality on its side of the Amazon, the Chiquitos region (the Bolivian Chiquitanía), which has had a string of fire sources. The tropical regions of the Chiquitano forest, the Bolivian Amazon, and the Western Pantanal, have been affected by forest fires harming the urban populations of Roboré, Puerto Busch, and San Ignacio de Velasco in the Santa Cruz region. As a result, the then president of Bolivia, Evo Morales, formed an Environmental Emergency Cabinet,⁵ which created the Tajibo Plan to systematically face the problem that affects

this region. According to the Incident Command Situation Report of 17 September 2019 issued by the Tajibo Plan, the area of fires affected 758,442 hectares of forests and 4,472 families within seven municipalities, and were declared a Disaster Situation, with three municipalities declared to be in an Emergency Situation.⁶ The reasons for the fires are not different from those of Brazil, since they share the same geography and the same agricultural and economic needs. The most widespread area of vegetation removal is Chaqueo, which consists of deforesting and burning land with the aim of converting it to arable fields, with the remaining ashes to be used as fertilizer. Thus, Brazil and Bolivia are fighting the same dangers caused by uncontrolled activities, only with different colloquial terms: “Burned” in Brazil, “Chaqueos” in Bolivia.

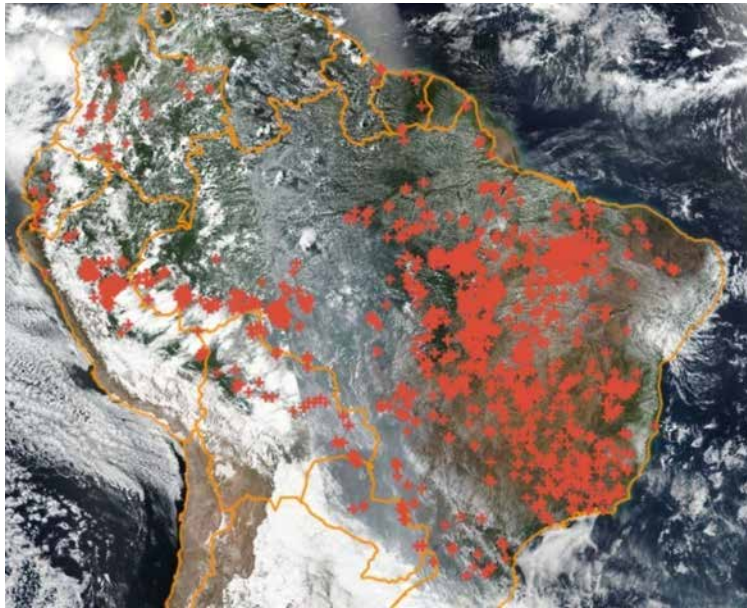


Figure 2. Image captured by the Aqua Satellite which shows all the heat sources in South America

Fuente: Autor

The FAP suppresses fires in the Amazon

Faced with this alarming situation, Bolivia requested air support from Peru, via a diplomatic Verbal Note, to combat its forest fires in the Amazon. The political relationship between Peru and Bolivia had only recently been established, when on 25 July 2019, they held their fifth Presidential Meeting and Binational Cabinet, in which they agreed to strengthen the prevention of legal and illegal

trafficking of wood and non-wood forest resources and wildlife.⁷ Meanwhile, the Commander of FAP, Lieutenant General Rodolfo García Esquerre, and the Commander of the Bolivian Air Force (FAB), Major General Jorge Gonzalo Terceros Lara, had already strengthened strong friendship ties during the LIX Conference of Chiefs of American Air Forces (CONJEFAMER 2019), hosted by the System of Cooperation among the American Air Forces (SICOFAA). Therefore, this was the crucial time to demonstrate the usefulness of this international aid system. As soon as Bolivia generated the necessary aerial overflight permits, the FAP immediately and effectively assigned and deployed its best firefighting equipment and aircraft.

The FAP entrusted this mission to 3rd Air Group, responsible for the administration of the institution's multipurpose helicopters. The aircraft to be deployed had to have the performance and autonomy necessary to fly to remote places, transport a large capacity of water with collapsible buckets, adequate robustness to withstand dusty fields, and high-performance engines able to withstand high temperatures. Two MI-171Sh helicopters that were operating under the Special Command of the Apurimac, Ene and Mantaro Rivers Valley (VRAEM), which at that time were carrying out aerial operations to combat drug trafficking and terrorism in that area, were then chosen to be deployed from Lima, together with collapsible bucket systems that could carry 2,500 liters of water. The Commander of 3rd Air Group, Colonel FAP Martin Asenjo Gallo, established safety standards for the deployment of personnel and aircraft, while FAP Commander Romel Calderón Ochoa, of 2nd Command, oversaw choosing work teams and commissioned crews.

The response capability was outstanding—upon notification on 26 August, the FAP responded the very next day with equipment, personnel, and aircraft taking off from Mazamari airfield for the long journey to Bolivia. Initially, the destination was the city of Roboré. However, when the intervention priority changed due to the ongoing ecological disaster, the flight plan changed to the city of San Ignacio de Velasco in Santa Cruz, where the Command Post was located. Of noteworthy significance were the efforts of the Commander of the 332nd Air Squadron, Major FAP Javier Rojas Aguilar, who constantly monitored the development of the deployment and daily performance of the personnel and aircraft.

On August 28, 2019, upon landing in the city of San Ignacio de Velasco, the FAP team was presented with a reception headed by then President Evo Morales, the Minister of Defense and senior Bolivian military commanders, and their arrival was transmitted by the country's mass media. At this time, the expectation and interests of the Bolivian people were made known to this first contingent of foreign humanitarian aid to quell the forest fires of the Chiquitanía, and the Bolivian president thanked the team commissioned for this effort, and his counterpart, the President of

Peru, Martin Vizcarra, for the commitment shown. Hours later, the Peruvian delegation attended an exhibit provided by the Minister of Defense who released an executive summary with statistical data and various sources of information.

All the entities of the Bolivian government made major efforts to fight the fires of the Chiquitano forest. According to the reports of August 27, 2019, the Bolivian institutions involved in the Emergency Cabinet, to include state ministries, the armed forces, municipal departments, park rangers, defense movements, firefighters, among others; were able to mobilize 821 fire teams, 15 emergency teams, 20 computer teams, 23 rapid response teams, and 7 helicopters, plus volunteer staff. Among them were a total of 4,288 participants and 215 vehicles, aided by humanitarian aid from Civil Defense, Argentina's International Assistance Firefighters of Jujuy, and of course the newly arrived specialized helicopters from Peru. Meanwhile, the Ministry of Defense requested additional international assistance, urging other countries to join the delegations already present.

Once updated with current information and available means at hand, the Peruvian delegation proceeded to analyze the operational requirements to combat fires in the region. The problem was large-scale due to the amount of hot spots and their disperse locations, in addition to the low availability of water in the region. The cities most affected by fire and smoke in the department of Beni were San Martin, Los Angeles and Tierra Hermosa, which were 73 nautical miles from San Ignacio de Velasco. Therefore, factors such as meteorology and refueling en route, in addition to intelligence on the coordinates of the hot spots, the availability of water, possible emergency landing points, and establishment of a Command Post required consideration in the planning phase.

The extensive number of hot spots in this area demanded the efficient determination of whether to target fires harming the Amazonian flora and fauna versus fires that directly affected the population by smoke. The latter was chosen as the population was being severely affected by the carbon monoxide that had been emitted for days, and schools had been closed so the population could flee to other cities to protect themselves.

Once the prioritization of objectives was completed, mission planning began. Bolivia provided fuel facilities at the advanced points requested by the FAP, and FAB pilots went as aerial observers in order to provide help and information of interest on the ground. Given the remoteness of the objectives, the two helicopters had to take off from San Ignacio de Velasco with internal auxiliary fuel tanks and enough maintenance equipment to handle any technical setbacks. Navigation had to be done with the collapsible bucket system inside the aircraft until landing at a predetermined point, at which time it would be deployed outside the helicopter as an external load in order to carry out the firefighting mission. This was necessary as the maximum

speed of the MI-171Sh is 150 km/hr with an external load versus its normal cruising speed of 220 km/hr without an external load; thus, an important tactical point to consider in order to maximize the mission's speed efficiency. Terrain height was not to be a major problem since flight took place 300 meters above the average sea level, and according to performance tables, although temperatures ranged between 30 to 35 degrees Celsius, almost all the available power would be available for use, except if dust protectors were to be used.

Firefighting operations began on 29 August in the town of San Martin. Upon arriving at the village and while preparing the collapsible bucket system, the crews spoke with the villagers and were able to corroborate the acute condition that was affecting them. Indeed, by state mandate, schools had postponed classes because some children were presenting conjunctivitis and throat itching caused by smoke inhalation. This made the FAP crews redouble their efforts to obtain a more real awareness of the problem and to increase their commitment to help the Bolivian people.

When taking off from the towns of San Martin and Los Angeles, the strong heat cores in the great savanna of the region could be seen less than 10 miles away. Not only were they intense, but there were many of them, and they were scattered. Of importance was to find sources of water in order to reach as many heat sources as possible. Therefore, it was necessary to look for shortcuts nearby (small sources of water used for agriculture and/or livestock) in order to prioritize the closest objectives and minimize time of movement among them and, thus, achieve a greater rate of recharge and discharge of water.

The search for shortcuts was a big problem for the crews, due to various factors. First, there were not a lot of shortcuts. Second, some of them were very distant from the fire. Third, some of the shortcuts did not enough water to fully load the collapsible buckets. Fourth, the entry and exit axis of some shortcuts were not convenient for approach, since these water sources were used for rural activity and not intended for air operations. Fifth, due to the drought season in the region, sometimes shortcuts' water supply ran out of water when refilling the collapsible buckets at the rate of 2,500 liters of water per refill.

These factors were taken into consideration during planning and operations. In some cases, there were shortcuts that filled 100 percent of the collapsible buckets, but were 5 miles from the fire, while others that filled 70 to 80 percent of the buckets were only a mile away. The amount of water discharged under cyclical recharges/discharges of greater capacity shortcuts at 5 miles did not exceed the rate of those with less distance, thus adding an additional factor to the on-site analysis of the mission.

Several water discharge techniques were used during the operations. The topography was convenient because of the plains, however, the dryness of the terrain made firefighting difficult. At that time of the year, vegetation in the Chiquitanía was quite dry, the humidity was below 29 percent, and the temperature of the fire at ground level reached 200 degrees Celsius, so throwing water towards the surroundings of the fire from high altitude meant that a percentage of the water evaporated during its descent. Thus, attempting to create fire barriers indirectly would not work in this situation. Additionally, some fires formed a line which required a chain discharge. Other heat sources required water discharges on one point of fire to be able to placate the core as much as possible, for which a swooping technique was used with slow forward speed (approximately 50 km / hr.).

This made crews co-operate with each other by establishing a focus of heat to attack through intervals; while one recharged, the other discharged. This way, the evenness of water discharges of 2,500 liters at the same point by the two helicopters, reduced reactivation and allowed the mission to continue to the next hot spot in less time. The crews had to carry out an evaluation of each fire in order to achieve the best effect, while always considering flight and operational safety parameters.

Crews had to wear protective masks to protect themselves from the smoke entering the cabin. According to the FAP firefighting manual, the ideal height to attack fires and be effective is 15 to 20 meters above the target. However, the magnitude of the fires was such that the vertical extent of smoke reached the helicopter and the cockpit. Smoke was a damaging factor, the reduction of visibility made the optical calculation of the discharge more difficult, as well as the clearance with other aircraft, but most importantly, it exposed the crew to toxic gases. Therefore, protective smoke masks were requested, which were provided immediately by the host country. While they did not completely prevent the inhalation of smoke, it reduced it to a large extent and was a positive psychological factor for the crews.

The period of assistance to be provided by Peru, according to the ministerial resolution, was five days. If the arrival of the helicopters took place on 28 August, departure should have been on 1 September. However, the water discharge figures were so high that President Evo Morales himself went to corroborate the work of the two FAP helicopters. On August 30, having verified the firefighting tasks accomplished by the Peruvian delegation via a flyby with a FAB plane, President Morales congratulated the Peruvian crews at the San Ignacio de Velasco Airport and through a diplomatic Verbal Note from the Ministry of Foreign Affairs, the Peruvian government was asked to extend the support until 3 September, two more days than agreed. Peru generously accepted the request, and just like the members of the Peruvian detachment, they all expressed their joy to be able to continue assisting fighting the fires

and overcoming the problems they had already made their own, as if they were Bolivian nationals.

The work of the FAP crews was useful and enormous. Considering that one day was devoted to the preventive maintenance in the major assemblies of both helicopters, in total there were six days devoted to the intense accomplishment of the mission. The two helicopters managed to carry out 243 discharges with a total of 607,500 liters of water, using 73.7 hours of flight during the entire mission. There were 17 members of the Peruvian delegation who, under the direction of Colonel FAP Alfredo Zavalaga Calienes, completed a job beyond all expectations. Colonel FAP Ronny Santillán Valle, Defense and Air Attaché at the Embassy of Peru in La Paz, who traveled by land to the city of San Ignacio de Velasco to take care of all the logistical coordination for the crews and helicopters, deserves special recognition, as his work allowed the crews to exclusively concentrate on the mission.

Colonel Ronny Santillán Valle (Defense and Air Attaché) Colonel Alfredo Javier Zavalaga Calienes (Mission Chief) Major Edgar Gino Burgos Valdivia (Aircrew Chief) Major Giancarlo Sáez Mendoza (PREVAC Officer) Major Renzo Luis Llabrés Viñas (Chief of Operations of EA No. 332) Captain Rhony Samuel López Raa (Training and Tactical) Captain Sergio Danner Paucar Centurión (Public Relations) Captain Irwin Alexander Espinoza Ávila (Personnel) Senior Master Sergeant Fredy Luis Lachos Santos (Flight Engineer) Master Sergeant Alfredo Fermín Mamani Huisacayna (Radio Systems) Technical Sergeant Danny Henry Osorio Santa Cruz (Radio Systems) Technical Sergeant Juan Guillermo Caldas Antúnez (Flight Engineer) Technical Sergeant Rubén Manuel Barreto Rondan (Hydraulic System) Staff Sergeant Harry Jackson Vargas Galván (Electrical System) Staff Sergeant Wilmer Ernesto Santisteban Cueva (Structures) Staff Sergeant Edgar Adolfo Ramírez Alcántara (Engines) Senior Airman Alan Crisanto Leyva Luna (Flight Engineer)
--

Table 1. List of FAP participants

Source: Author

Prior to their departure, the Peruvian delegation was recognized by the Bolivian Ministry of Defense, granting them the Mariscal Andrés de Santa Cruz Decoration. Having completed the mission on Tuesday, 3 September, the crews were preparing to plan to return the next day. The Peruvian detachment already felt recognized by the Bolivian people, for the displays of affection received through the streets of the city as they heard “Thank you Peru, thank you for helping us”, words that motivated and

recharged their energies. However, they were greatly surprised when representatives of the Ministry of Defense asked them for a moment of their time to perform a decoration ceremony in recognition of their work. The award was presented in the Hall of Distinguished Guests at the airport, with thanks, to the Head of Mission, who was presented with a plaque representing every team member (see Table 1). Additionally, the mayor of the municipality of San Ignacio de Velasco extended the ceremony by declaring the members of the Peruvian delegation as Distinguished Guests and giving them the Chiquitano Cherub—to protect them on their return home. After the ceremony, the members of the delegation undertook the journey back to Peru, saying goodbye with a pass in formation in front of the airport, while flying the Peruvian flag.

The Amazon is still in danger. The Bolivian government has contracted the services of the Global SuperTanker company and has received great international aid from the European Union, France, Colombia, Switzerland, Russia and Argentina. Their efforts have been great and have been noted through reports issued by their government.⁸ They will surely work, in the same way, to establish measures for the reconstruction of the affected areas.

Conclusion

The responsibility of the Amazon is shared by all its inhabitants. We are striving to put out fires that we humans have caused. However, let's look at the Amazon as a whole. Let's realize what we are going to leave to our children and grandchildren. We know the measures that are being taken to put out the fires, but we do not know the measures that are being taken so they do not happen again. They say that a man who does not study his history is destined to repeat it. The media will support us in spreading the news of these disasters until they stop being news or headline worthy, and then, we will fall back into the same sequence of events if we do not take preventive measures. We, public servants, are the professionals responsible for respecting and enforcing the main source of oxygen that our countrymen and human beings have.

I wish to end this space that the USAF Journal of the Americas has kindly provided me, to affectionately greet my military colleagues from all of Latin America, who have the honor of wearing the glorious uniform of their respectable countries. Also, to express my desire to promote in civil society, the professionalism of the members of the Armed Forces. The fervor we have towards military defense operations and social development are sensitive to the pain and needs of our citizens—our goal being an instrument of state to contribute to social peace and respect for human rights. As military, it is our verve and destiny to protect the civilian population from

threats, and we do it with satisfaction and firmness. I show the commitment of my institution, the FAP, in building a better place to live for next generations. □

Notes

1. <http://queimadas.dgi.inpe.br/queimadas/bdqueimadas#>
2. https://elpais.com/internacional/2019/08/24/actualidad/1566597603_259337.html “Bolsonaro moviliza al Ejército ante la presión internacional por la crisis en el Amazonas”
3. <https://www.bbc.com/mundo/noticias-america-latina-49448825>
4. <https://maaproject.org/2019/fuego-deforestacion-brasil/> MAAP#109: Fuego y Deforestación en la Amazonia Brasileña, 2019.
5. <http://www.mindef.gob.bo/mindef/node/3685>
6. http://www.mindef.gob.bo/mindef/sites/default/files/u73/13-SEP-19_percent20REPORTE_percent20DEFENSA_percent20CIVIL.pdf
7. <https://www.gob.pe/institucion/minagri/noticias/29780-peru-y-bolivia-se-unen-para-prevenir-y-controlar-el-trafico-ilegal-de-recursos-forestales-y-de-vida-silvestre>
8. <http://www.mindef.gob.bo/mindef/node/3829>



Mayor Giancarlo Sáez Mendoza, FAP

Bachelor of Science in Administration from the National University San Agustín de Arequipa. He was part of the Peruvian Company in the United Nations Stabilization Mission in Haiti. He is the creator of the Android app “Flight Planner Bell 212” designed for the calculation of performance tables. He is a command pilot in MI-17 and Bell 212 helicopters. He was an Instructor Pilot and Air Squadron Commander at the FAP Pilot Training School. He has been awarded the General FAP Armando Revoredo Iglesias Merit Medal, for Distinguished Action evacuating wounded in combat in the VRAEM area. He has been awarded the Andrés de Santa Cruz Mariscal Medal of the Plurinational State of Bolivia for carrying out aerial firefighting operations in the Bolivian Amazon. Currently serves as Commander of Maintenance Squadron No. 306, 3rd Air Group.