



European Commission

JRC TECHNICAL REPORT

Weekly analysis of wildfires in the Amazon region: August 31 - September 06, 2020

2020



GWIS

Global Wildfire Information System



European Commission > JRC EU Science Hub > DRM > GWIS > Applications > Current Situation Viewer

Map Options

- Country Boundaries Layer
- Human Settlement Layer

Forecasts

FIRE DANGER FORECAST

Source:

Index:

LIGHTNING FORECAST

Date:

Rapid Damage Assessment

Select a date-range

From: 31 Aug 2020 To: 06 Sep 2020

ACTIVE FIRES

MODIS VIIRS

BURNT AREAS

MODIS (Last update: 2020-03-14)

MODIS & VIIRS NRT

FIRE EMISSIONS

500 km
500 mi

Joint Research Centre

JRC121770

GWIS | Ver. 2.4.4 | Brexit disclaimer

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JRC121770

Luxembourg: Publications Office of the European Union, 2020

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How to cite this report: San-Miguel-Ayanz, J¹., Artes, T. ¹, Oom, D. ¹, Campanharo, W.², Pfeiffer, H.³, Branco, A. ³, Liberta, G.¹, De Rigo, D. ³, Grecchi, R. ³, Maiani, P.³, Boca, R. ³, Durrant, T. ⁴, Ferrari, D. ⁴, 2020. Weekly analysis of wildfires in the Amazon region: August 31-September 06, 2020, Publications Office of the European Union, Luxembourg, JRC121770.

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Scope of this report and executive summary

This report describes the trends of wildfires in the Amazon in 2020 through the comparison with the fire activity in the region in previous fire seasons. It must be noted that 2019 was a critical year in terms of fire activity in many of the countries in the region. Seasonality and trends on fire activity in the countries can be found at the [JRC Technical Report on the Amazon](#). The current report has been produced by the European Commission's Joint Research Centre (JRC) within its activities on the development of a Global Wildfire Information System (GWIS)¹. Most of the Amazon region is in Brazil, specifically in the Brazilian Legal Amazon (BLA)², and in other neighbor countries. Paraguay has been included in this report due to the high fire activity observed this year, although it is not part of the Amazon region. Figure 1 shows the geographical extent of the countries analyzed in this report.

- The Brazil Legal Amazon, within Brazil, shows a similar trend of burnt of that in 2019, with approximately 1,844,283 ha burned in the last week, a value that is about **13% higher** than the figure in 2019 for that week; **4,005 fires were recorded in the week, which is the highest weekly value** since the beginning of the year and higher than the value of the same week of 2019. **About 14,24 Mha burnt so far in 2020, a value higher than that in 2019.**
- The 2020 wildfire season in Brazil is similar to that of 2019. More than 2,3 Mha burned last week in Brazil, where **5,580 new fires occurred, which is the highest value since the beginning of the year. Overall, 19.1 Mha of burnt areas were mapped in GWIS until September 6, 2020, which is a higher value of that in 2019.** The main difference compared to 2019 is that the average fire size is considerable smaller in 2020.
- A total of 2,792,204 ha burnt in Bolivia since January 1 until September 6, 2020, with 199,183 ha burnt last week decreasing from the peak of the previous week (24-31 August). **The total burnt area in 2020 is notably below (-58%) the values of 2019 and similar to 2018.** The burnt area last week was lower to the value of the same week in 2018 and 2019.
- **In Colombia, the current fire season has been more severe than the last two years, 2018 and 2019,** with larger burnt areas and a higher number of fires from January to April. The fire activity last week was similar to that of previous years, although nearly **3 Mha burnt in the country until September 6, 2020, which about 18% higher than that of 2019.**
- **Paraguay, with 3.67 Mha burnt** until September 6, 2020, shows higher fire activity than in 2018 and 2019, and an increase of burnt areas between March and June, **reaching values more than 2 times those of the past years. The fire activity last week was below the values in 2018 and 2019 for the same week.**
- **Peru, after the peak values of burned area and number of fires since the beginning of the year 2020 recorded in the previous week (24-31 August), this week recorded 485 fires responsible for 100,087 ha burned. It shows an above average fire activity in 2020, as compared to the previous two years, with about 1,539,120 ha of burnt areas mapped until September 6, 2020, which is approximately double than the values in 2019.** The number of fires mapped in GWIS is nearly double of that in 2019.
- **Venezuela, with about 6,75Mha burnt** in the country until now, **is above the values of the previous two years. However, the fire activity in the last weeks is comparable to those in 2018 and 2019.**
- This week, fire danger conditions are expected to be of very high to extreme fire danger in central Brazil and the south of the BLA and in southern Bolivia and northern Paraguay where the conditions will be more extreme comparing with the previous week.



Figure 1. Areas analyzed in this report: Brazil Legal Amazon, Brazil, Bolivia, Colombia, Paraguay, Peru and Venezuela

¹ <https://gwis.jrc.ec.europa.eu>

² The Brazilian Legal Amazon is a geopolitical region in Brazil, established in the article 2 of the complementary law 124, of 2007, that includes 772 municipalities over 9 states. It comprises approximately five million square kilometres, which correspond to 59% of the Brazilian territory ([IBGE, 2019](#))

1 Wildfires in the Brazilian Legal Amazon Region

Figure 2 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. A total of 14,249,356 ha burnt in the BLA since January 1 until September 6, 2020, with 1,844,283 ha burnt in total the last week. **The total burnt area in the BLA, at about 14.2 Mha, is currently slightly higher than that the same period of 2019.**

The number of fires recorded in GWIS in the last week was 4,005, which is the highest value since the beginning of the year, higher than the value in 2019 and 2018 in that week. The total number of fires in 2020 is slightly above the figures in 2018 and 2019. On average, fires that occurred in the BLA in the last 4 weeks, were smaller in 2020 compared to 2019. The number of thermal anomalies until September 6, 2020 (461,945) shows a typical trend in the region as compared to the trends in 2018 and 2019. A number of 106,908 thermal anomalies was registered last week, the highest value since the beginning of the year.

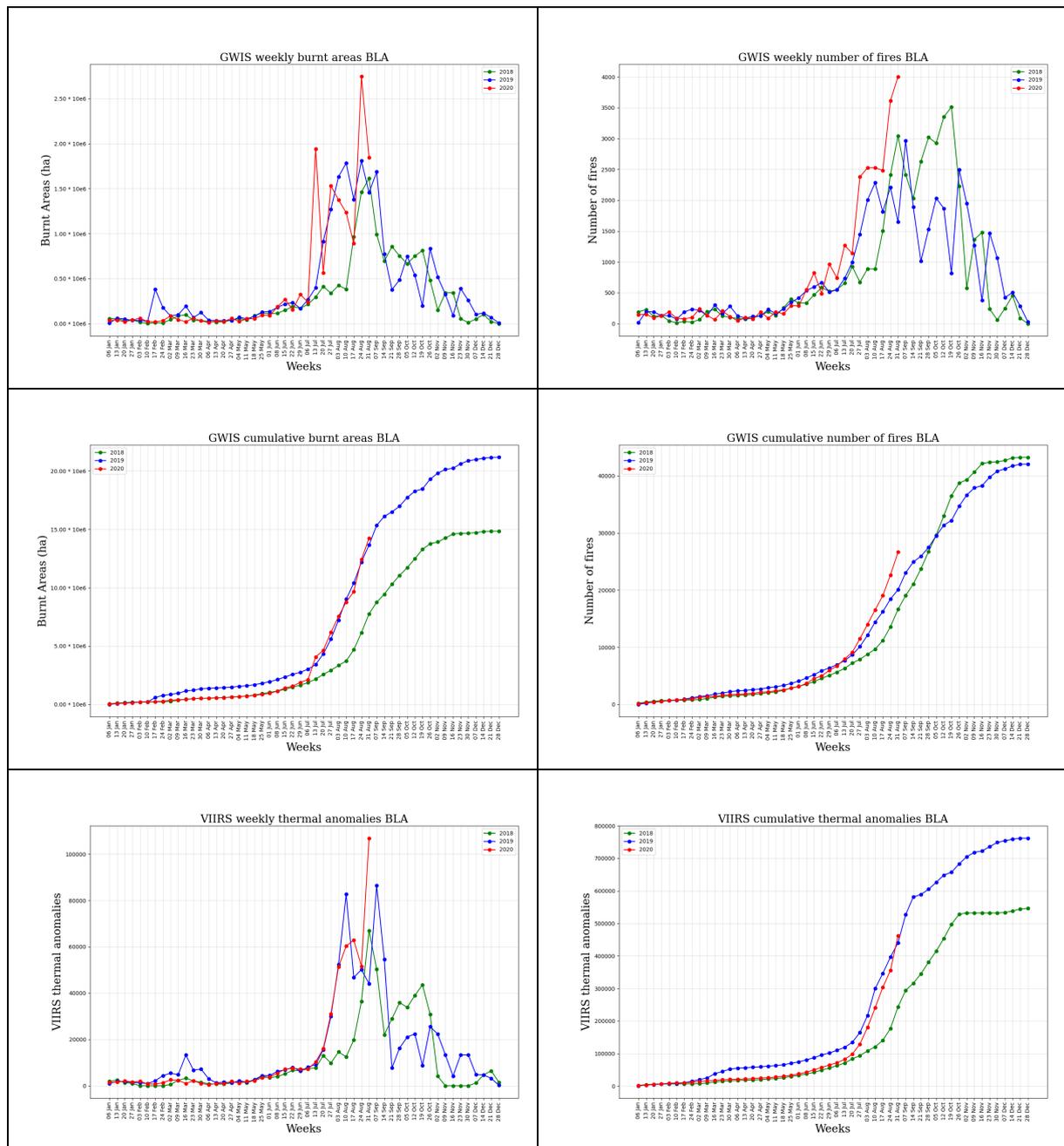


Figure 2. Trend of burnt areas and number of fires as compared to data in the last two years.

2 Wildfires in Brazil

Figure 3 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. A total of 19,1 Mha ha burnt in Brazil since January 1 until September 6, 2020, with a total 2,3 Mha burnt in the last week. **Ongoing fires and those new fires started between August 30 and September 6 burnt 1,599,029 ha the last week. The total burnt area in Brazil, at approximately 19.1 Mha, is slightly higher than that of 2019.** The value of the week was about 40% of the value of the same week in 2019 but higher than 2018.

The number of fires recorded in GWIS in the last week was 5,580, which is the highest value since the beginning of the year, higher than the value in 2019 and 2018 in that week. The number of fires in 2020 up to September 6 is higher than that of 2019, although the average fire size is smaller. The number of thermal anomalies until September 6, 2020 (626,121) shows a typical trend in the region but higher values as compared to the trends in 2018 and 2019. 127,408 thermal anomalies were registered last week, the highest value since the beginning of the year.

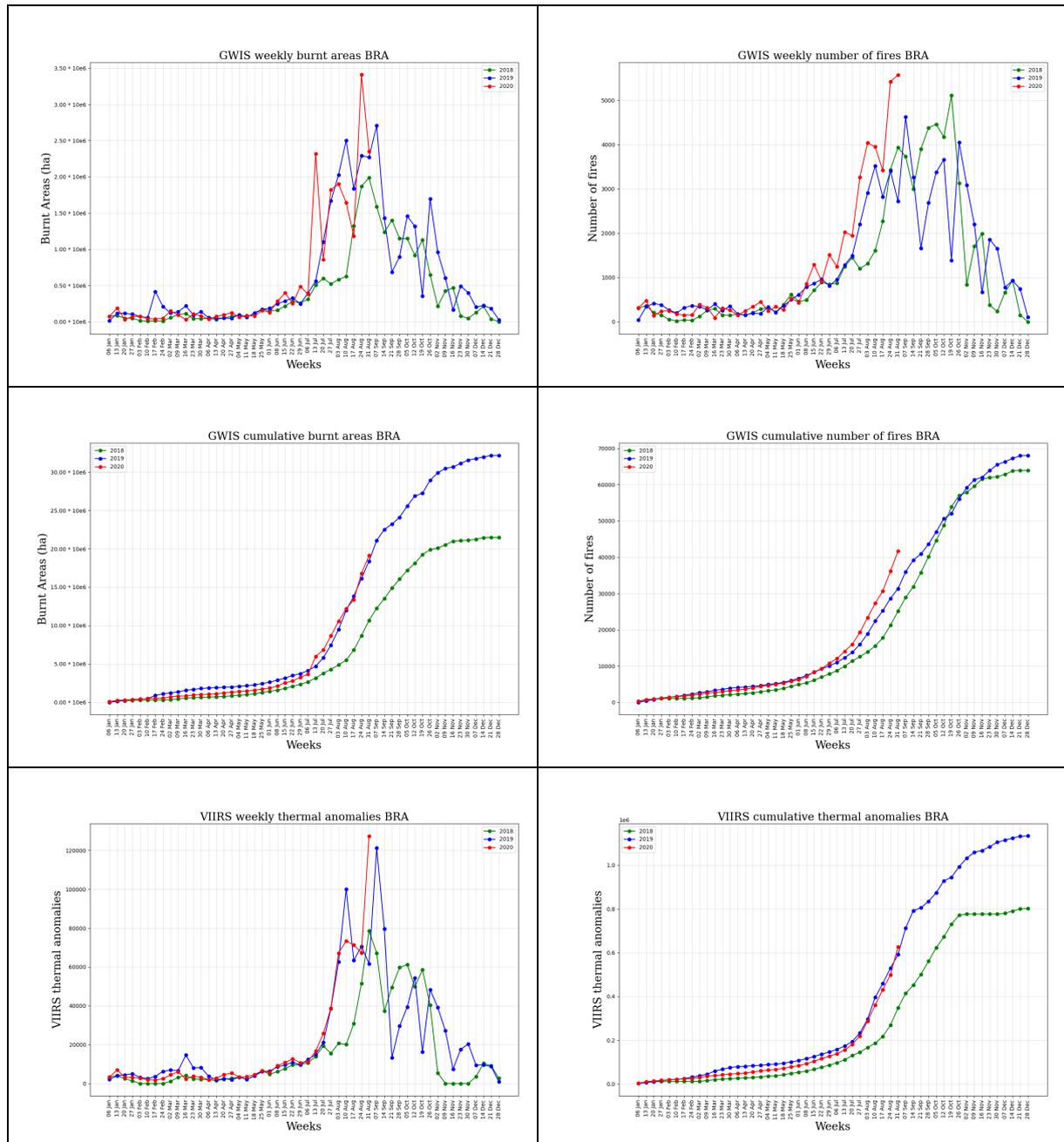


Figure 3. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

3 Wildfires in Bolivia

Figure 4 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. A total of 2,792,204 ha burnt in Bolivia since January 1 until September 6, 2020, with 199,183 ha burnt in the last week. **The total burnt area in 2020 is currently about 58 % below the value of 2019, very similar with 2018, while the burnt area last week presented values lower than 2018 and 2019 for the same week.**

The number of fires recorded in GWIS in the last week was 609, lower than the number of fires in the same week in 2018 but higher than 2019. The number of thermal anomalies until September 6, 2020 (85,842) shows a typical trend in the region; however, the value is about 50% of that reached in 2019. 9,699 thermal anomalies were detected by VIIRS in the last week, a value that is below those of 2018 and 2019.

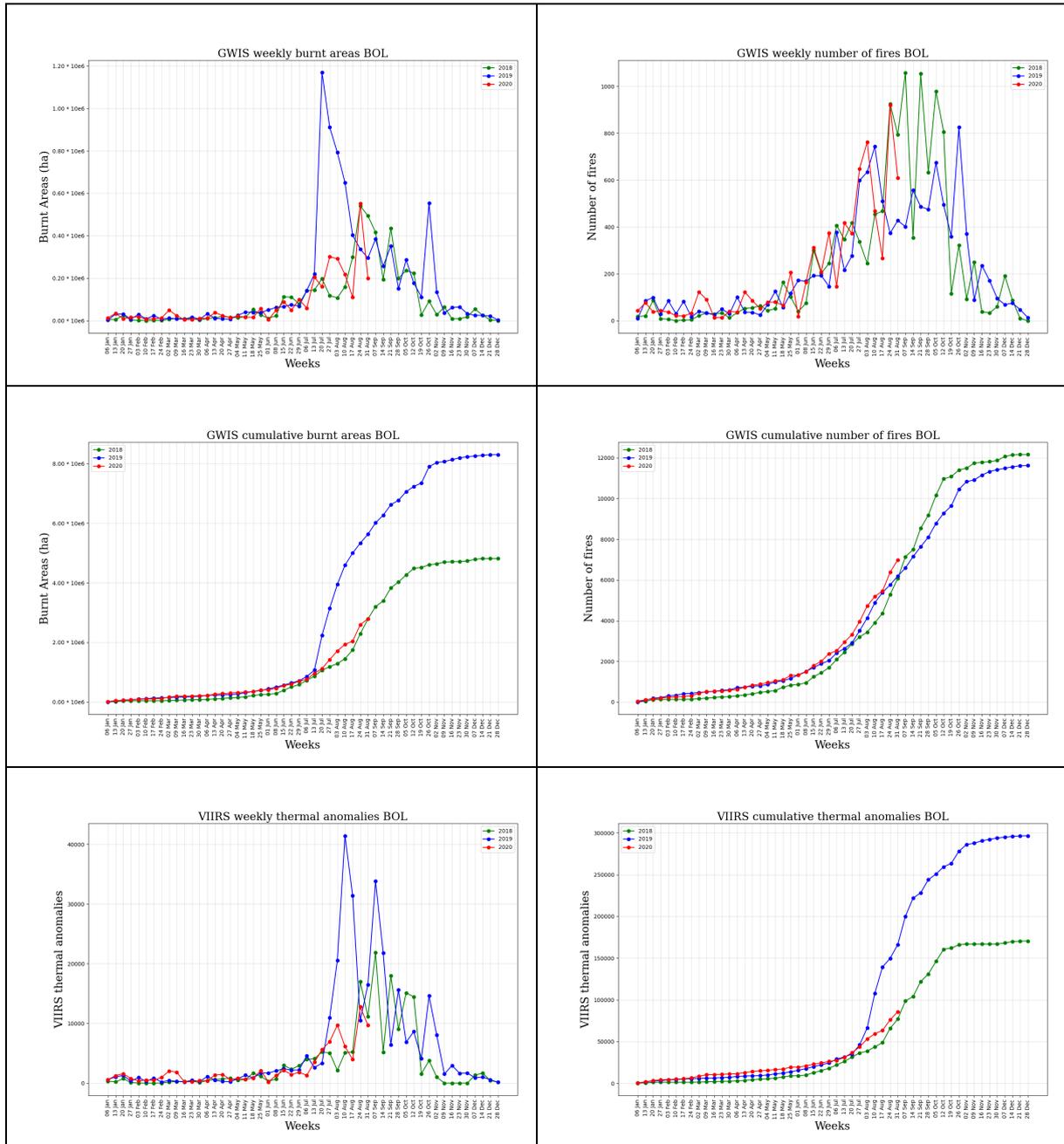


Figure 4. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

4 Wildfires in Colombia

Figure 5 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. A total of 3,052,578 ha burnt in Colombia since January 1 until September 6, 2020, with 21,853 ha burnt in the last week. Although the fire activity last week is similar to those of previous years, the **total burnt area in the country remains approximately 28 % above the values of 2019, due to the intensive fire activity from January to April 2020.**

The number of fires recorded in GWIS in the last week was 109, which shows a stable trend in the last weeks, as compared to 2018 and 2019. The number of fires is approximately 28% higher than that of last year. The number of thermal anomalies until September 6, 2020 (108,513) shows a typical trend in the region as compared to the trends in 2018 and 2019, with values approximately 28% higher than those in 2019. 875 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week in 2019 and slightly above the values in the same week in 2018.

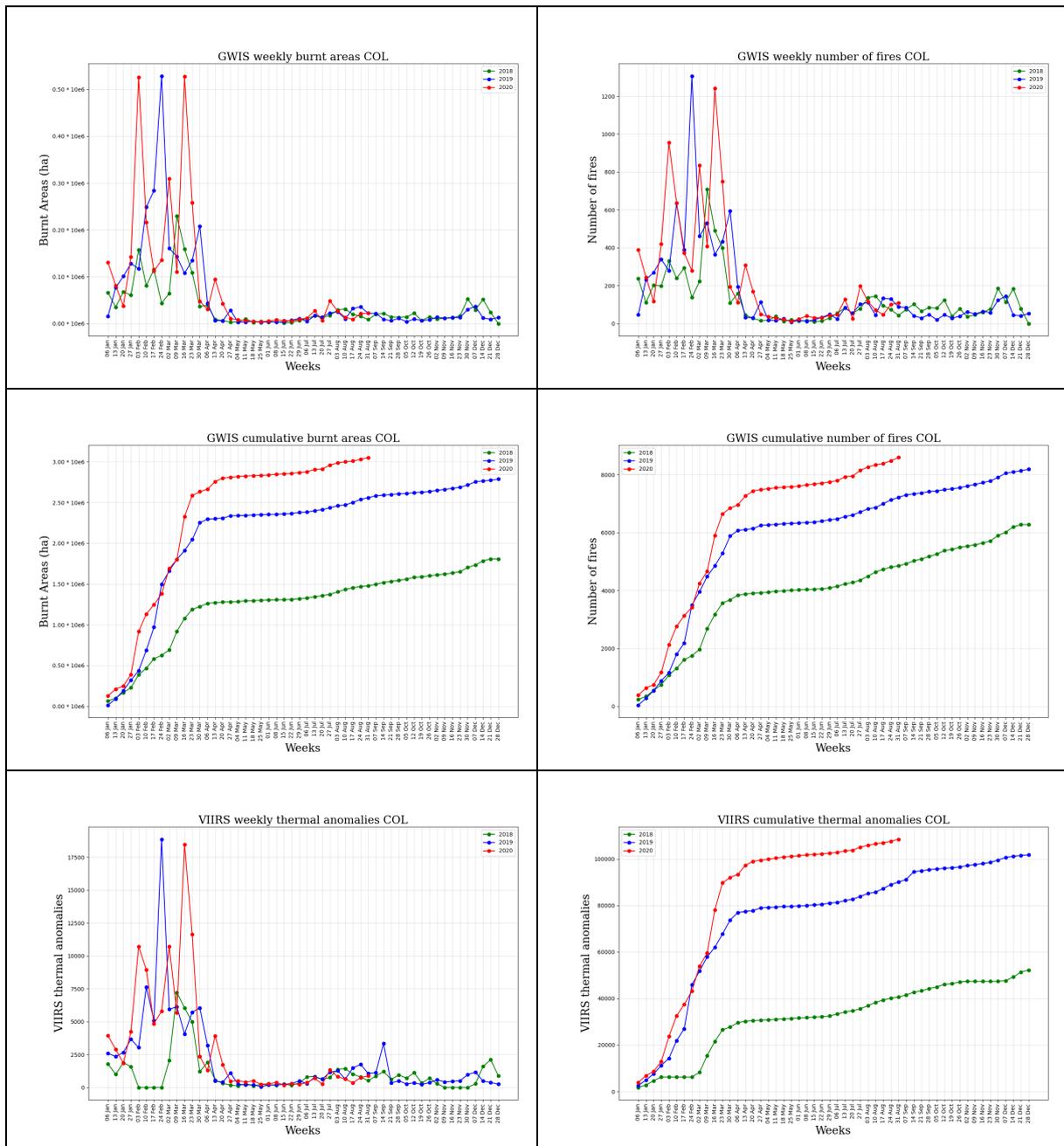


Figure 5. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

5 Wildfires in Paraguay

Figure 6 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. **A total of 3,670,728 ha burnt in Paraguay since January 1 until September 6, 2020, which is nearly the double of the values in 2018 and 2019.** Approximately 103,174 ha burnt in the country the last week, which showed lower fire activity than the previous week.

The number of fires recorded in GWIS in the last week was 381, which is lower than the value in 2018 but higher than 2019. The number of thermal anomalies until September 6, 2020 (113,008) shows a typical trend in the region, but with much higher values, nearly double values, as compared to the trends in 2018 and 2019, with 4,184 thermal anomalies detected by VIIRS last week.

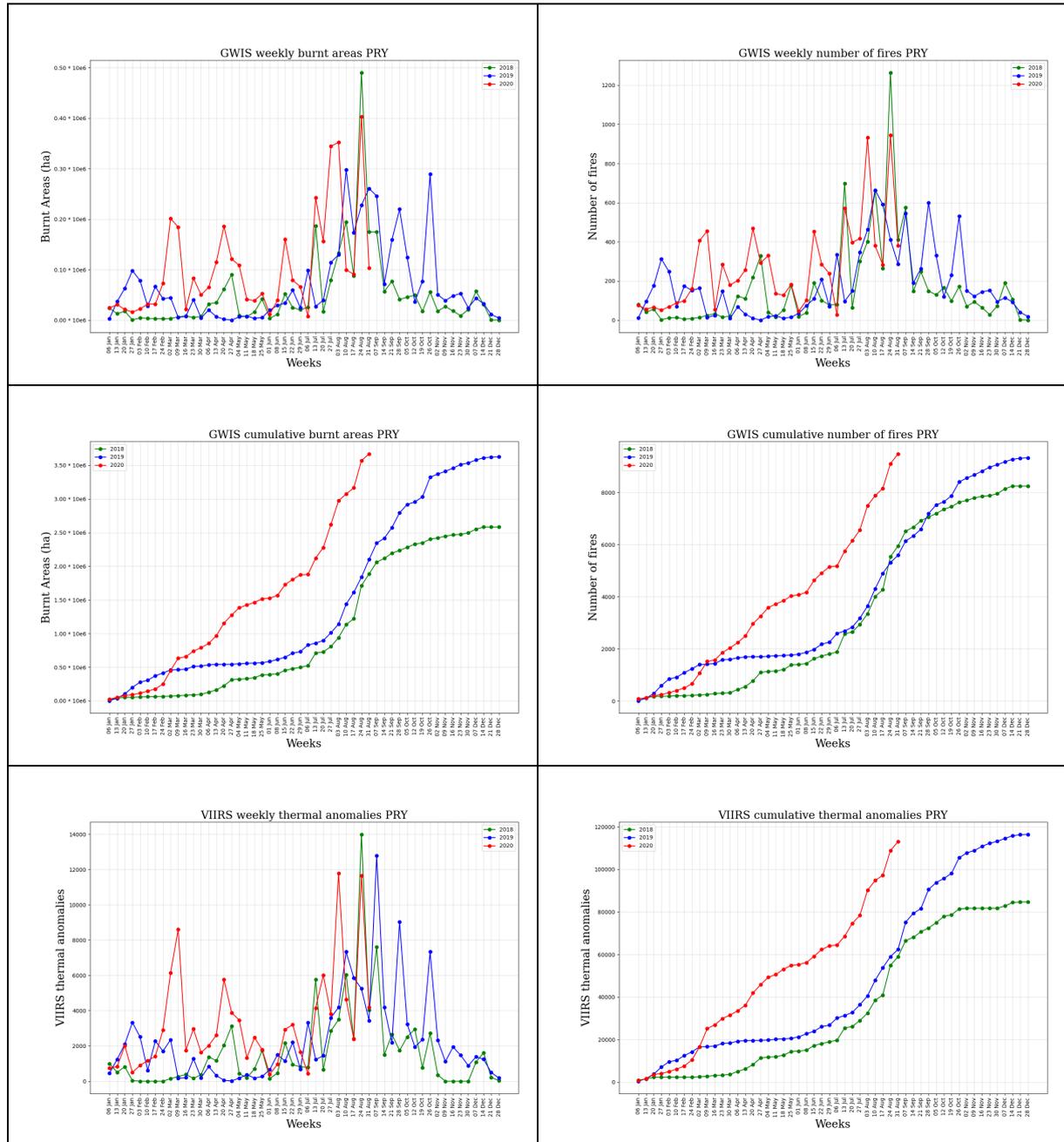


Figure 6. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

6 Wildfires in Peru

Figure 7 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. **A total of 1,539,120 ha burnt in Peru since January 1 until September 6, 2020. This value is approximately the double than that of 2019.** Approximately 100,087 ha burnt in the last week, decreasing after the last week peak, a value that is higher than those of 2019 but lower than 2018 for the same week.

The number of fires recorded in GWIS in the last week was 485, decreasing after the last week peak but still higher than that of 2018 and 2019 for the same week. The total number of fires since the beginning of the year, above 5,000, is about double of that of 2019. The number of thermal anomalies until August 30, 2020 (47,538) shows a typical trend in the region, with values higher than in 2018 and 2019. 2,452 thermal anomalies registered last week, decreasing after the last week peak.

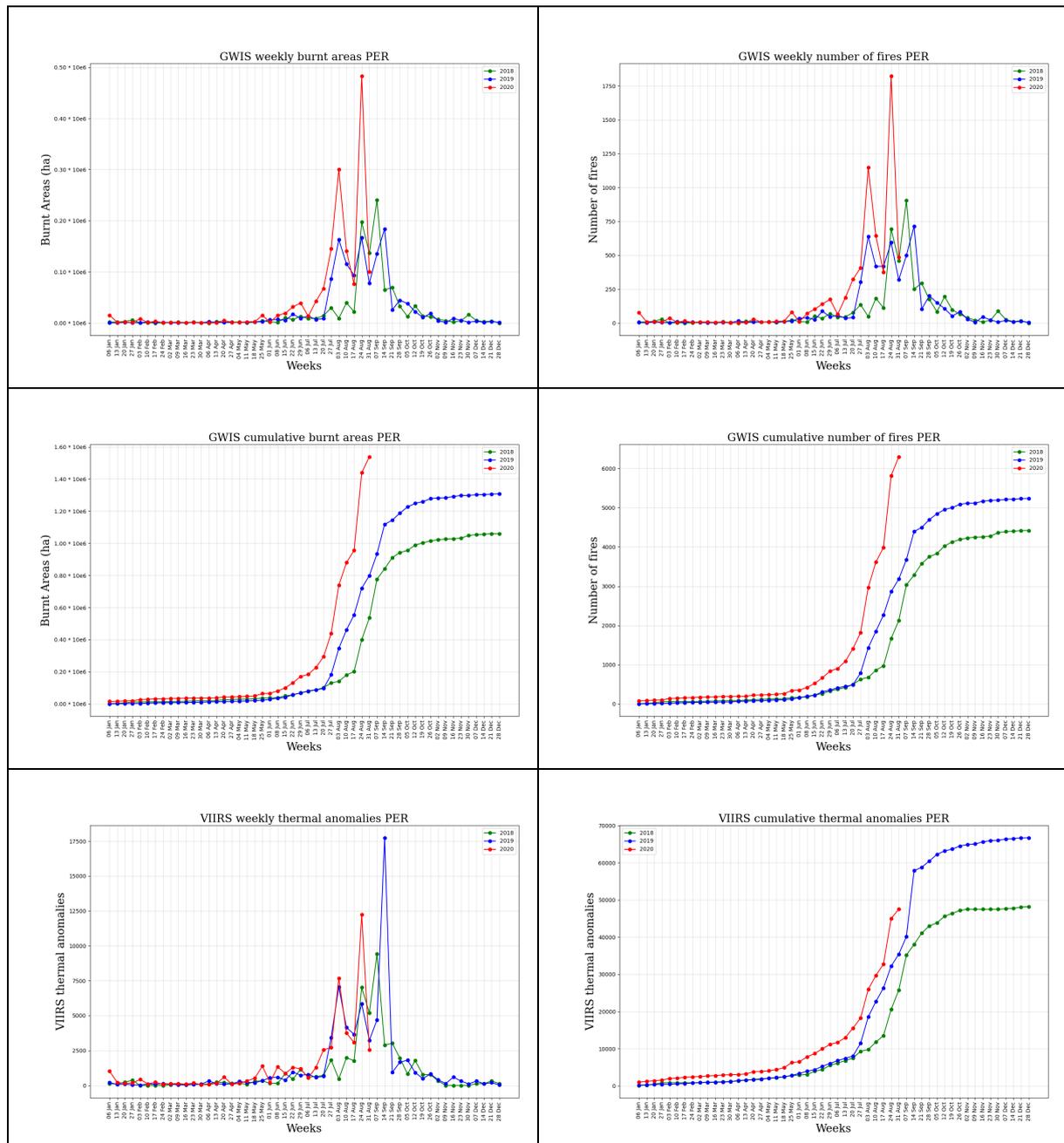


Figure 7. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

7 Wildfires in Venezuela

Figure 8 shows the trends on the extent of burnt areas and the number of fires since January 1, 2020 produced by the Near-Real Time (NRT) fire analysis in GWIS. The last row shows the evolution of active hot spots (thermal anomalies) detected by the satellite sensor VIIRS. **A total of 6,753,142 ha burnt in Venezuela since January 1 until September 6, 2020, with 4,161 ha burnt in the last week. The value of the total burnt area in the country is approximately 15 % higher than that in 2019 due to the intensive fire activity in the country between January and April. The trend in the last week is comparable to that of 2018 and 2019.**

The number of fires recorded in GWIS in the last week was 25, which shows a stable trend comparable to those of the previous two years, although the total number of fires remains approximately 15% higher than in 2019. The number of thermal anomalies until September 6, 2020 (265,195) shows a typical trend in the region as compared to the trends in 2018 and 2019, but with approximately 15% higher value than the previous years. 571 thermal anomalies were recorded by VIIRS during the last week, a value that is like those recorded in that week the previous two years.

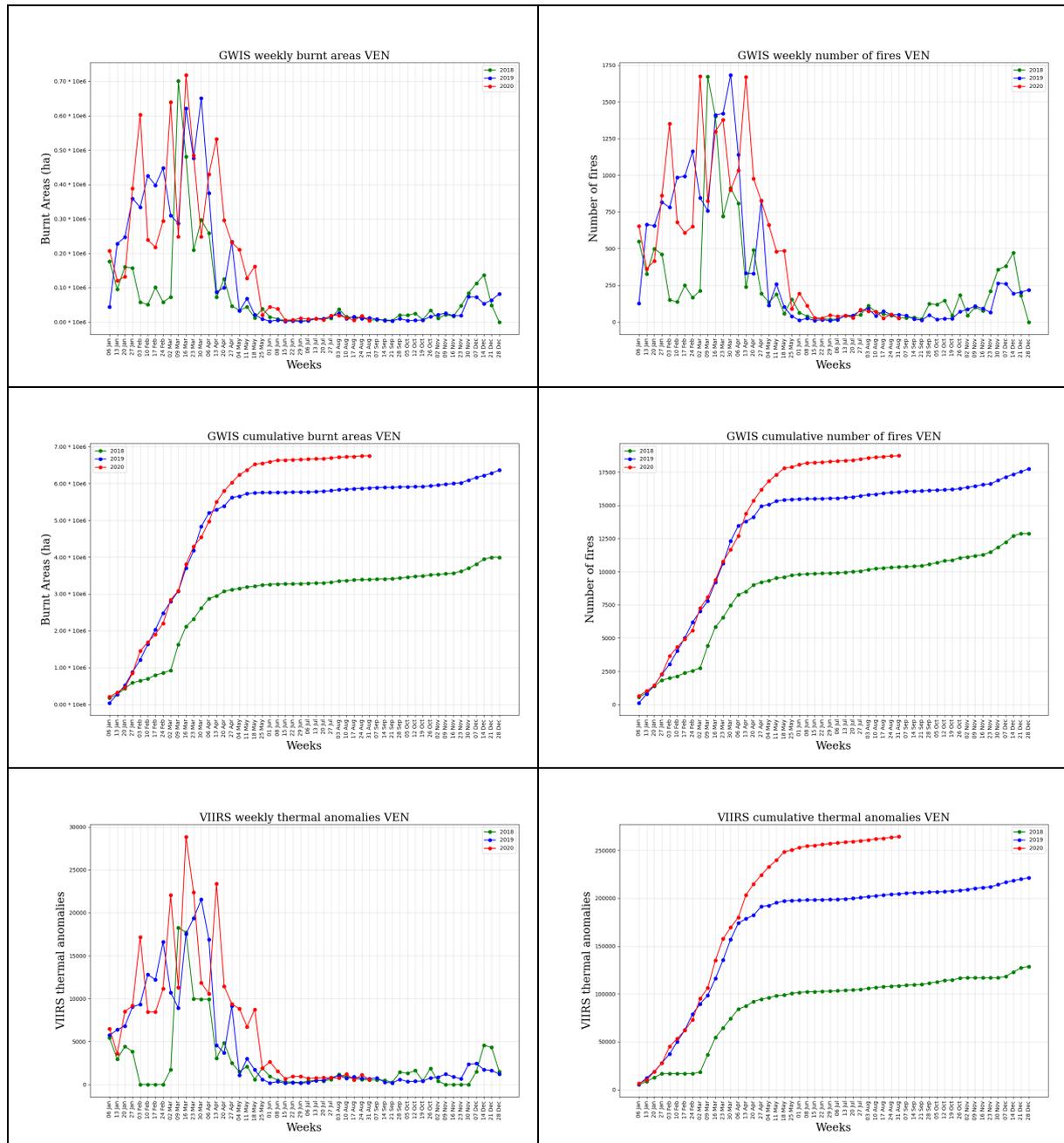


Figure 8. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

8 Fire danger and fire weather forecast in the Amazon region

This section provides information on the fire danger forecast in the Amazon region for the current week. High levels of fire danger facilitate fire ignitions and the propagation of ongoing fires. Figure 9 provides the average fire danger for the week of September 7 to September 13, 2020. This information is based on the daily fire danger forecast that is provided online in GWIS³. According to this forecast, it is expected that fire danger conditions will be extreme in a great part of Brazil, especially on central, northeastern and southeastern Brazil. This also includes the south and eastern part of BLA, which concentrate the highest amount of fires. Moderate or high fire danger is expected in Paraguay and eastern and southern Bolivia. The overall fire danger levels will be very similar with the previous week except for the southern Bolivia, and northern Paraguay where the values are expected to be higher.

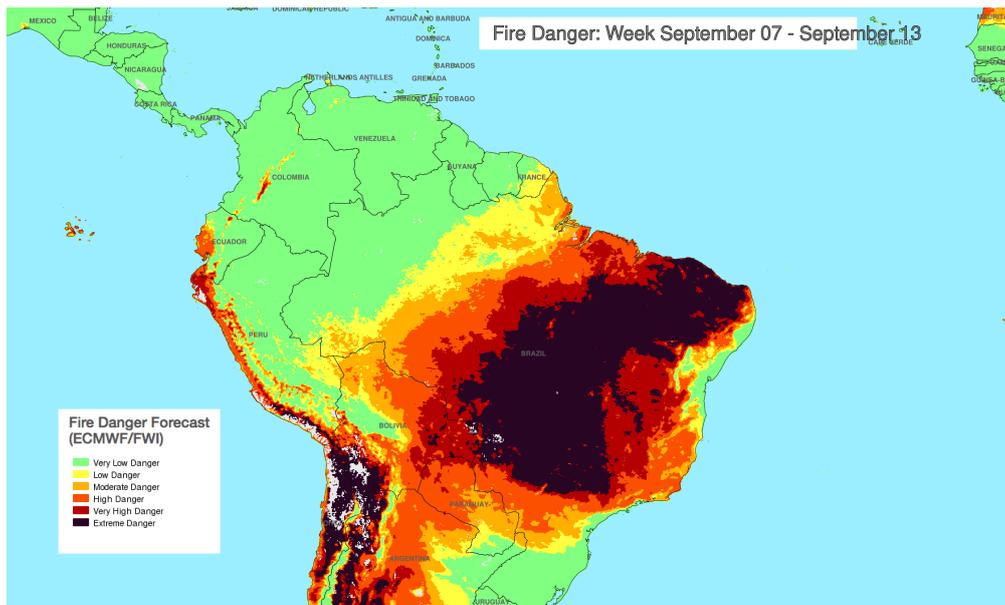


Figure 9. Average Fire danger forecast. Week, September 7-September 13, 2020.

The weekly fire weather forecast of temperature and precipitation anomalies for this week is presented in Figure 10. High values on temperature are forecasted for south/southeastern Brazil, and southeastern Bolivia and northern Paraguay. Moderate values also are expected on the BLA, Bolivia, Peru and southern Colombia. Additionally, negative trends on temperature are foreseen in the north of BLA (Amapá state). The models estimate a increase on precipitation rates for this week mainly in southern Brazil and north of Venezuela and Colombia. Below average precipitation is expected in northern and mid-west Brazil, Colombia, central Bolivia and southeastern Paraguay, in the border with Brazil.

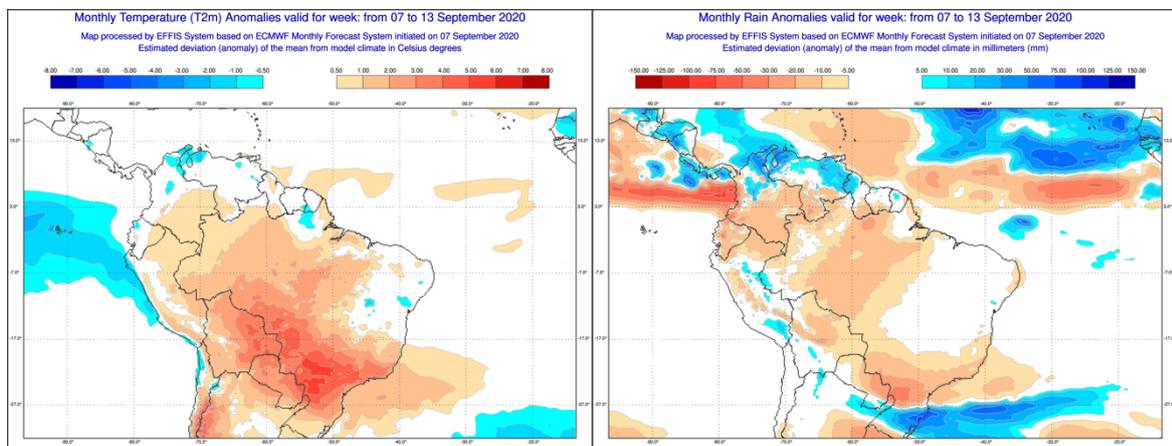


Figure 10. Fire weather anomalies of the current week, September 7-September 13, 2020.

³ https://gwis.jrc.ec.europa.eu/static/gwis_current_situation/public/index.html

9 Monthly analysis (up to 31 August 2020)

9.1 Brazilian Legal Amazon (BLA)

Figure 11 shows the spatial distribution of burnt areas for 2020 mapped by the Near-Real Time (NRT) process in GWIS in the Brazilian Legal Amazon region, within Brazil.

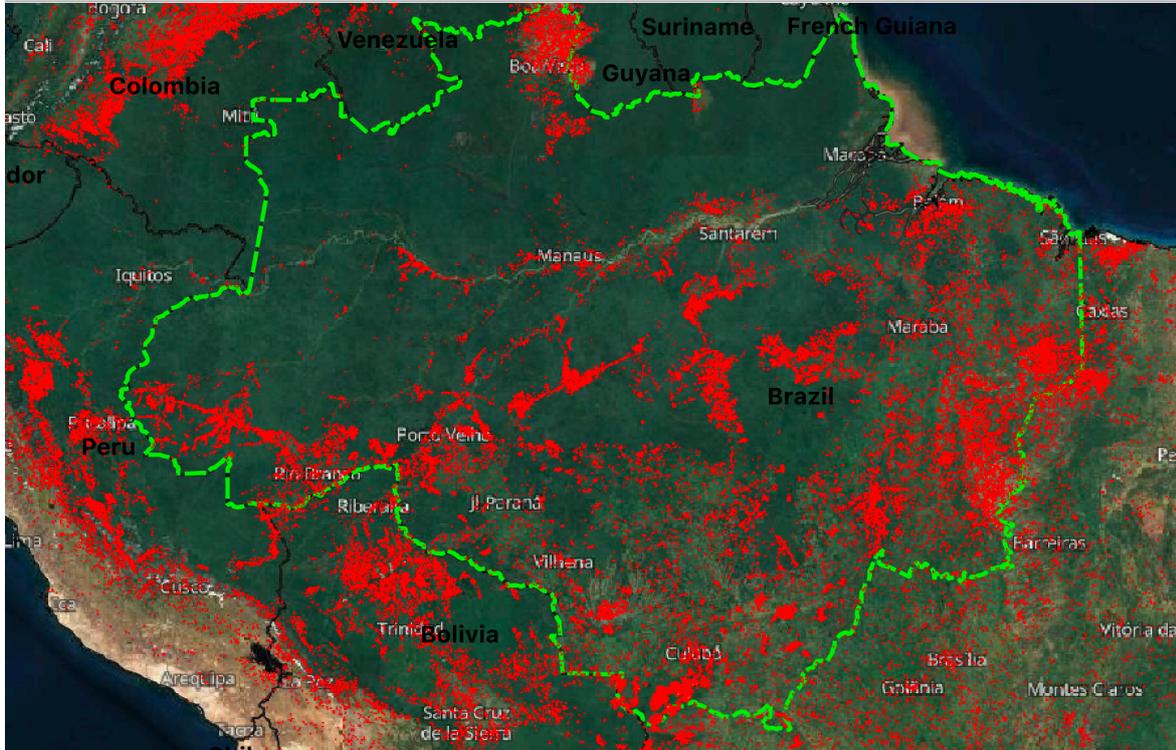


Figure 11. GWIS burnt areas for 2020 in Brazilian Legal Amazon (BLA). Burnt areas until 31 August.

The 2020 fire season in the BLA has followed similar trends of the last years, as shown in Figure 12. By the end of August, about 11,7 Million ha were mapped by GWIS in the region, which is a similar value to that of 2019 and higher than that in 2018 until the same date. By the end of August, the number of fires mapped in GWIS in 2020 (23,153 fires) was higher than in 2019 (18,639 fires) and also those of 2018 for the same period (13,804 fires). So far, the fire season in the BLA follows that of previous fire seasons. The average fire size is below that of the previous two years, especially that of 2019 which was a critical year

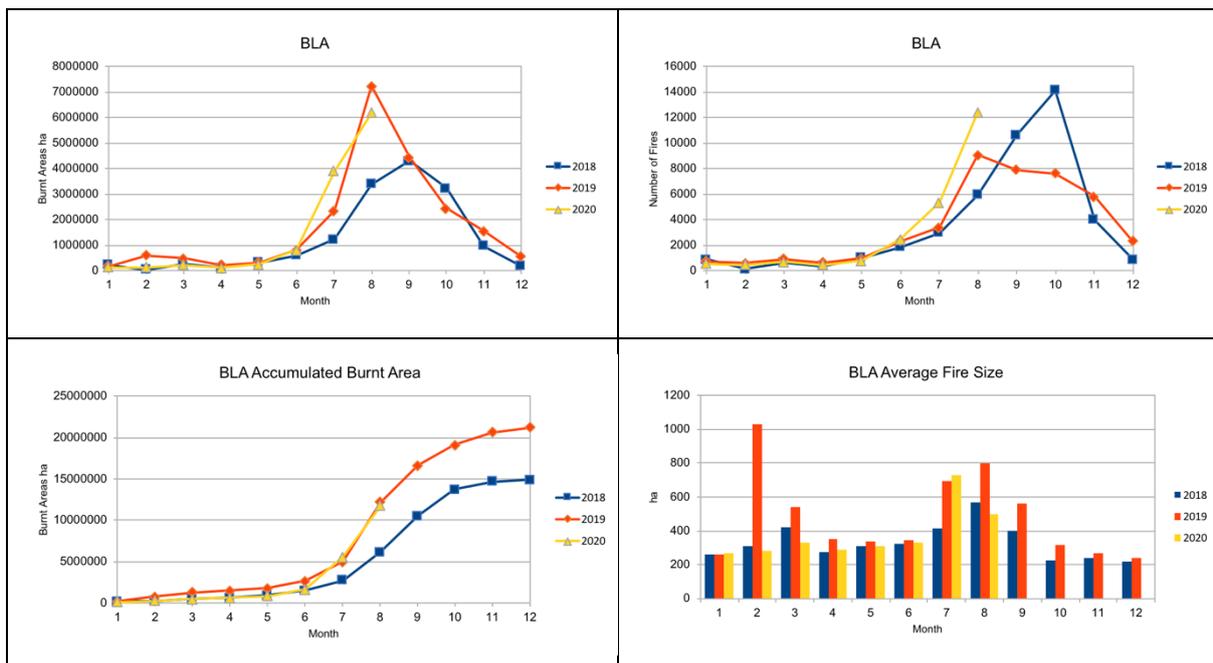


Figure 12. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of the number of **active fire spots retrieved directly by the VIIRS sensor, 2020 presents a number of active fire spots from May to August above the average for the period between 2012 and 2019** as shown in Figure 13. These type of data are those often reported in the media, which point out to a higher number of fires this year as compared to past years.

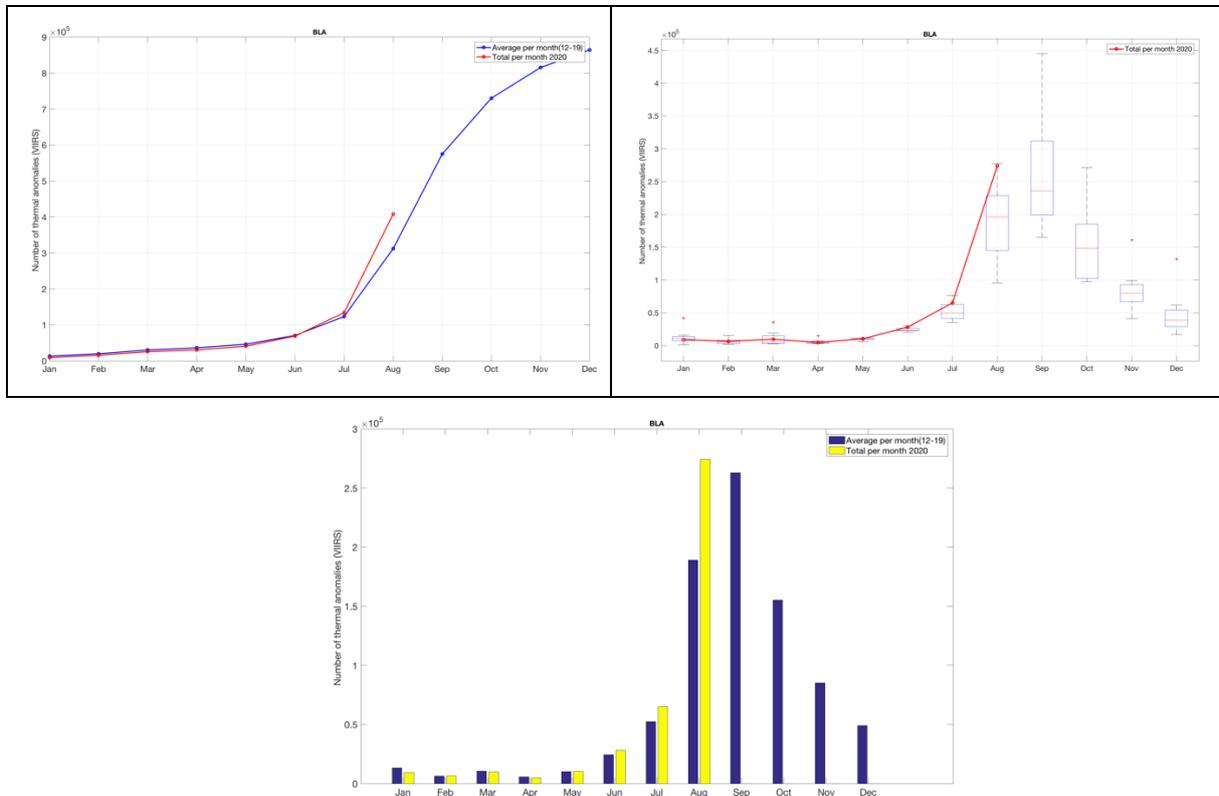


Figure 13. Trend of burnt areas and number of fires as compared to data in the last two years.

9.2 Brazil

The spatial extent of the burnt areas mapped by the Near-Real Time (NRT) process in GWIS is presented in Figure 14. Although most of the burnt areas occurred in the center of the country (Cerrado Biome), the fire activity and the resulting burnt areas show a wide spread from north to south, including the humid Amazon forest.

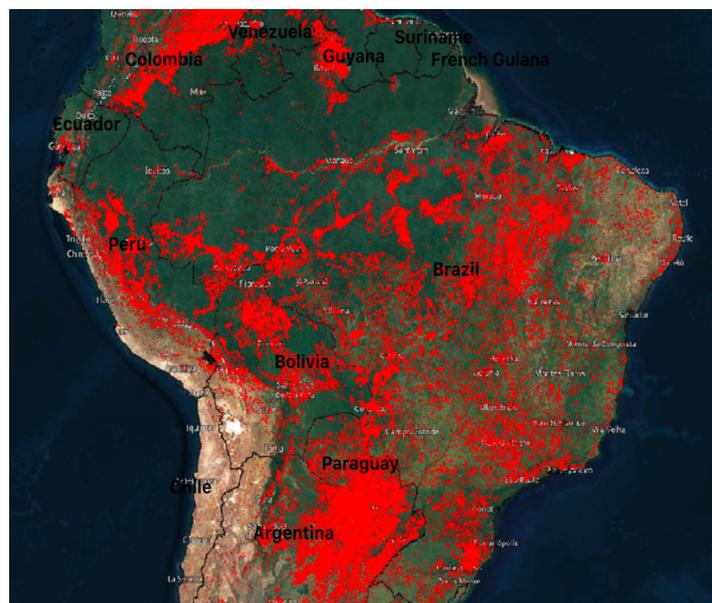


Figure 14. GWIS burnt areas for 2020 in Brazil. Burnt areas until 31 August.

The 2020 fire season in Brazil has followed similar trends to those of the last 2 years, as shown in Figure 15. Since June until August about 14.4 Mha were burnt, which is above the values of 2019 and 2018 for the same period. Until the end of August 2020, around 16 Mha of burnt areas have been mapped by GWIS in the country, a similar value to that of 2019. The average fire size is below that of the previous two years, especially that of 2019 which was a critical year.

In 2020, from January to August, the number of fires mapped in GWIS was above that of 2018 and 2019 for the same period. Between June and August the number of fires in 2020 was higher of all the three years.

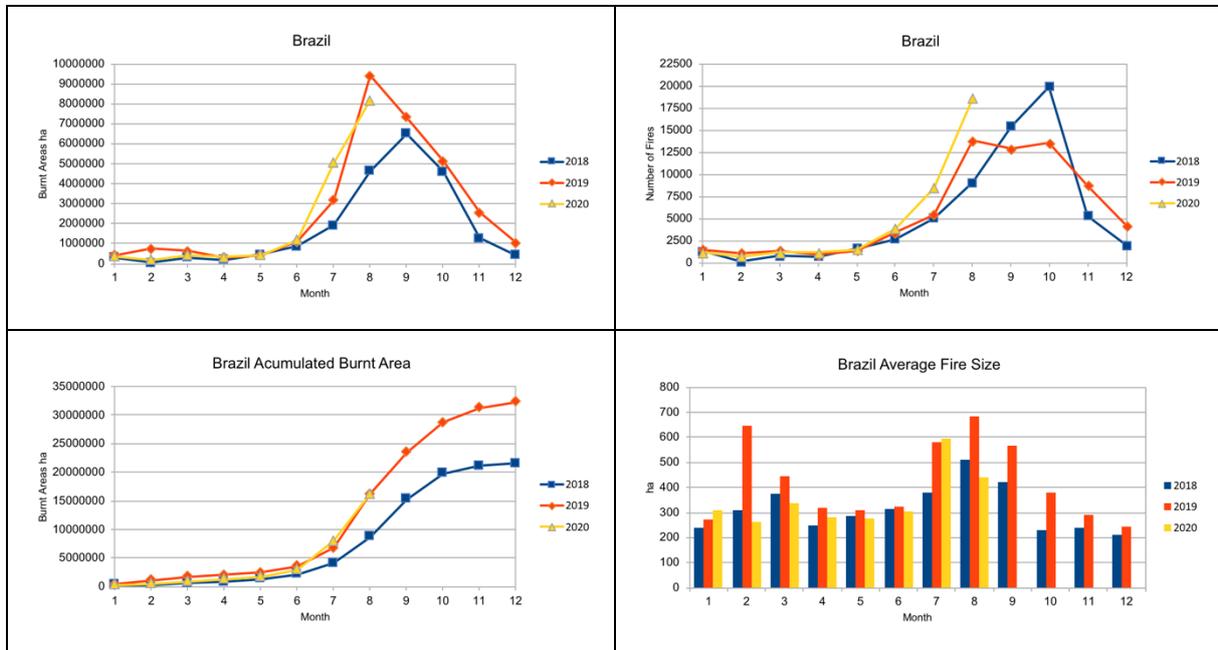


Figure 15. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of active fire spots detected by VIIRS, 2020 presents a number of active fire spots in the period between March and August (specially August) above the average for the period between 2012 and 2019 as shown in Figure 16.

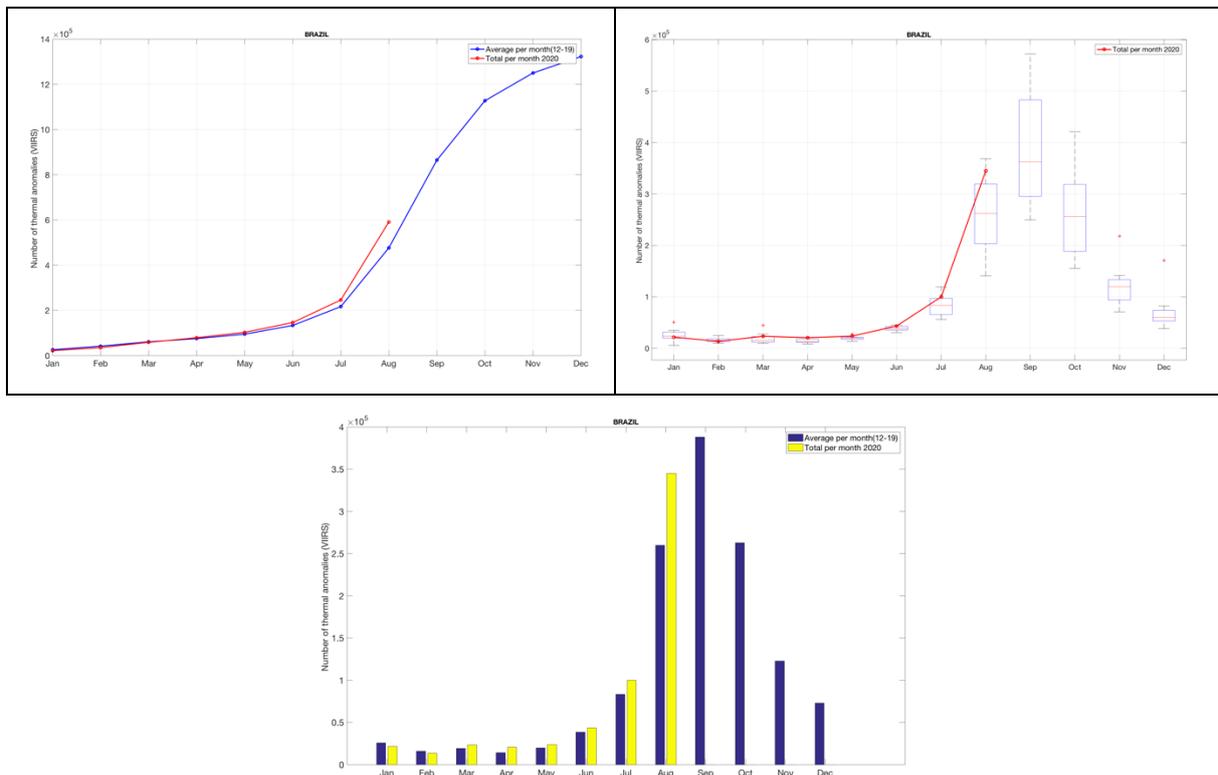


Figure 16. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of active fire spots detected by VIIRS, 2020 presents a number of active fire spots in the period above between January and July above the average and below the average in August compared with the average for the period between 2012 and 2019 as shown in Figure 19.

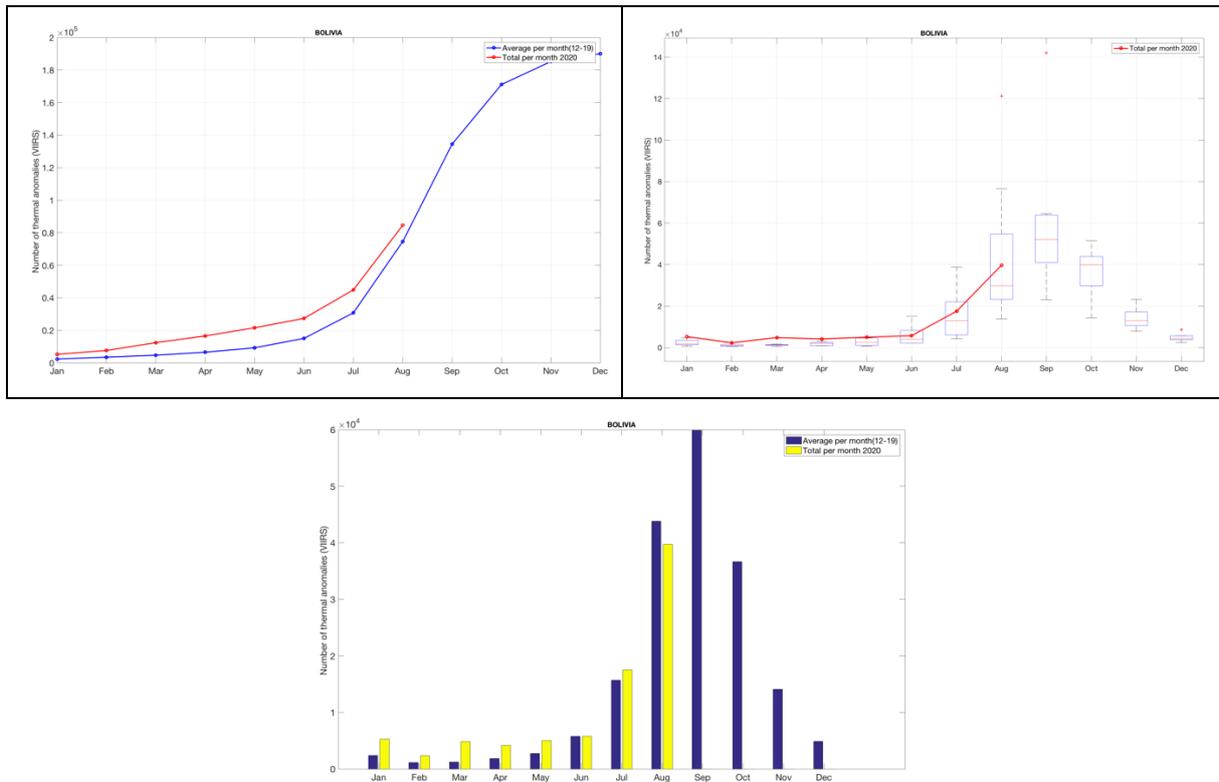


Figure 19. Trend of burnt areas and number of fires as compared to data in the last two years.

9.4 Colombia

The spatial distribution of burnt areas in Colombia in 2020 mapped by the Near-Real Time (NRT) process in GWIS is shown in Figure 20.



Figure 20. GWIS burnt areas for 2020 in Colombia. Burnt areas until 31 August.

The current fire season has been more severe than the last two years, 2018 and 2019, with larger burnt areas and number of fires. About 3 Mha of burnt areas have been mapped in the country until end of August.

Figure 21 shows how the number of fires is considerable higher in March of 2020. The same happens with the burnt area and the average monthly fire size. This fact points out to a considerable increase of fire activity, having more uncontrolled fires. The fires are mainly located on the center and south-west of the country, a region designated as “Llanos”, a complex savanna ecosystem which undergoes periodic, human-induced and natural biomass burning during the dry season, usually between November and April.

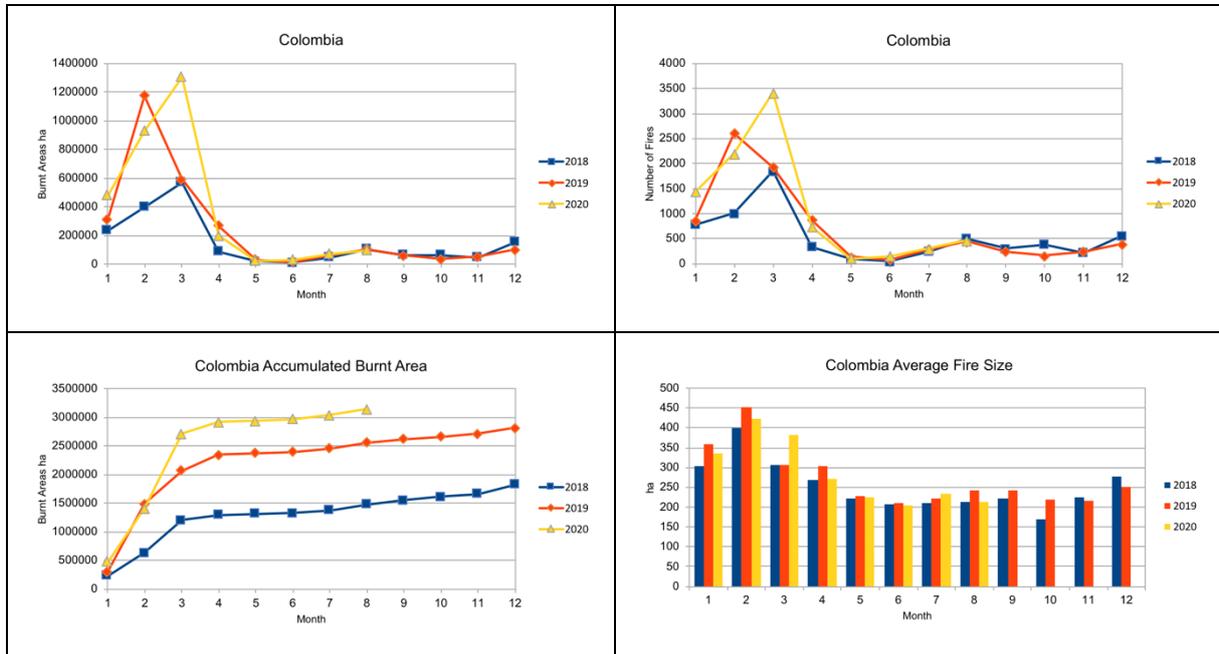


Figure 21. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of active fire spots detected by VIIRS, 2020 presents a number of active fire spots in the period between January and May above the average for the period between 2012 and 2019 as shown in Figure 22.

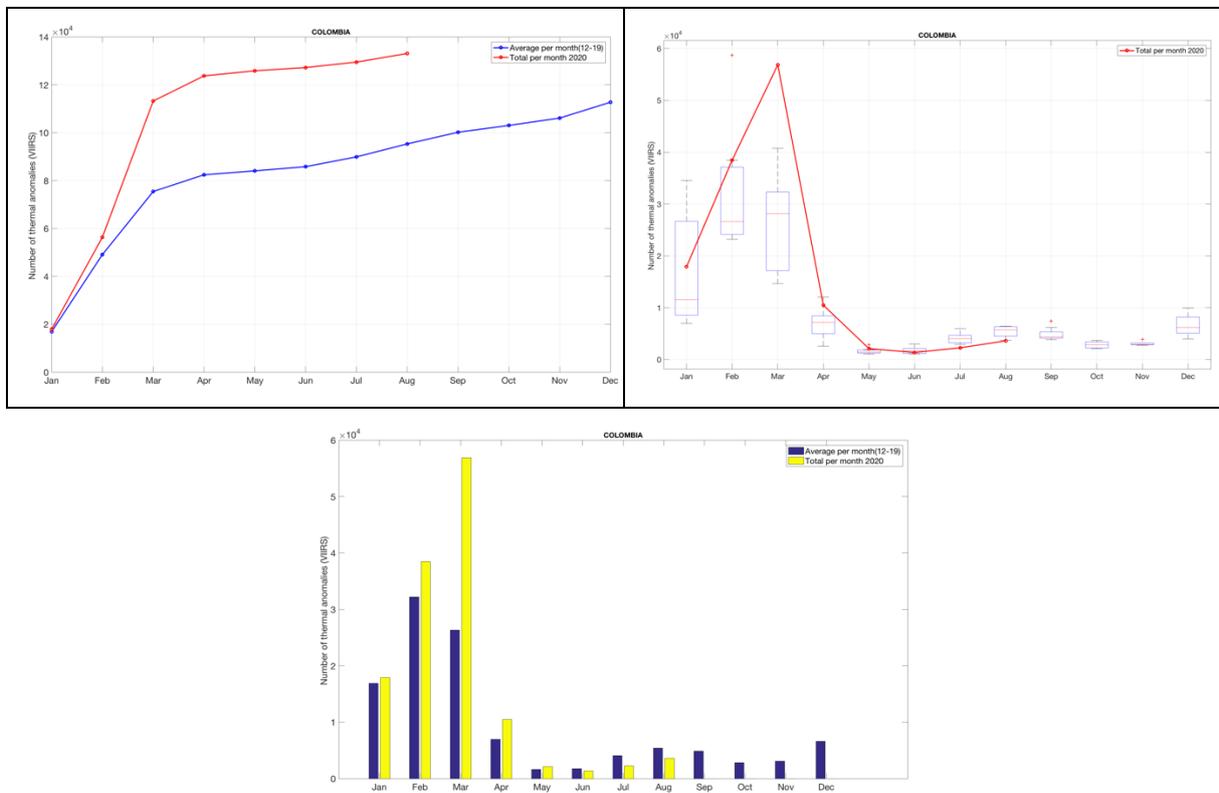


Figure 22. Trend of burnt areas and number of fires as compared to data in the last two years.

9.5 Paraguay

In 2020, the spatial extent of the burnt areas in the country mapped by the Near-Real Time (NRT) process in GWIS is presented in Figure 23.

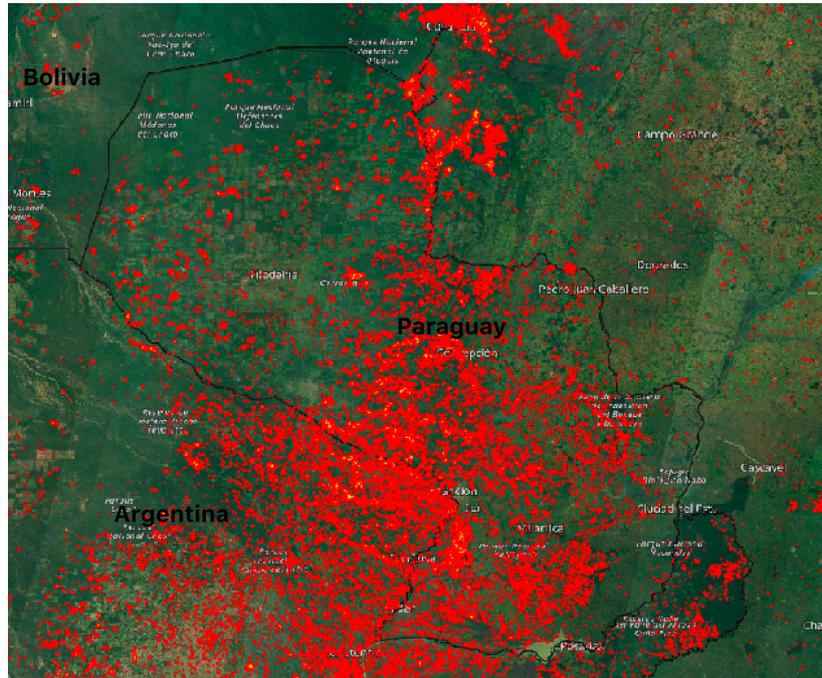


Figure 23. GWIS burnt areas for 2020 in Paraguay. Burnt areas until 31 August.

The 2020 fire season in Paraguay has been atypical as compared with 2018 and 2019 (see Figure 24). Until 31 August 2020, almost 3.6 Mha of burnt areas have been mapped by GWIS in the country, doubling the values of 2018 and 2019 for the same period. Also the number of fires and fire size are higher than 2018 and 2019.

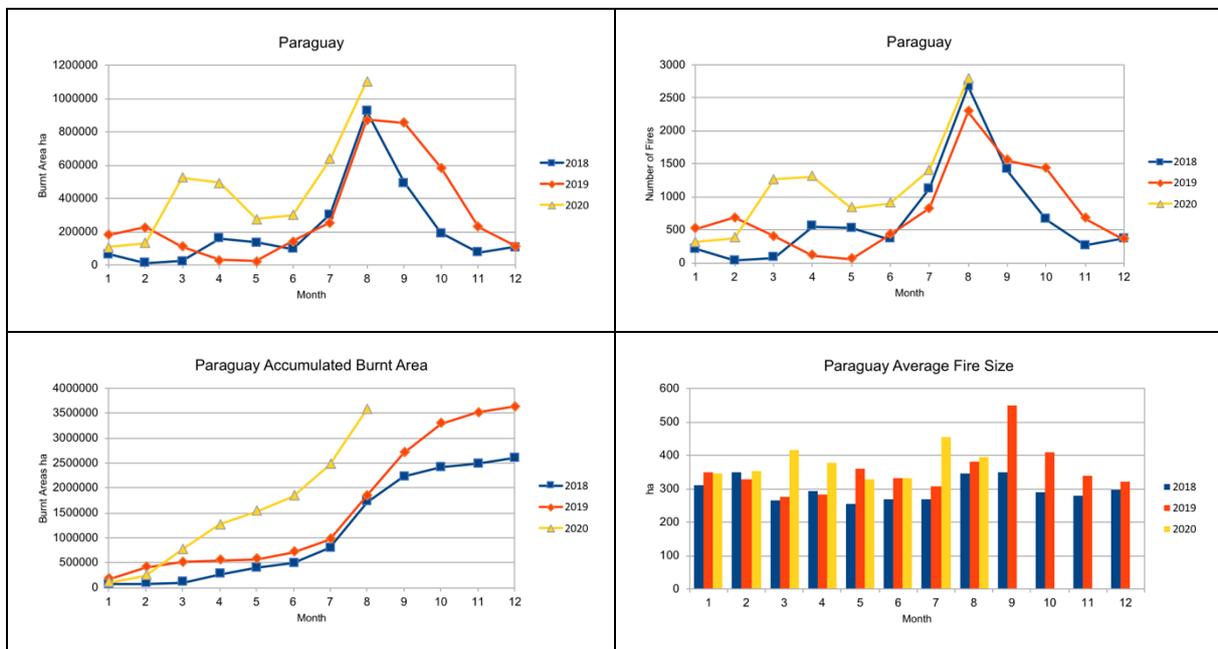


Figure 24. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of active fire spots detected by VIIRS, 2020 presents the same atypical trend of the burned area and number of fires shown in Figure 24, with a number of active fire spots in the first eight months of the year above the average for the period between 2012 and 2019, as shown in Figure 25.

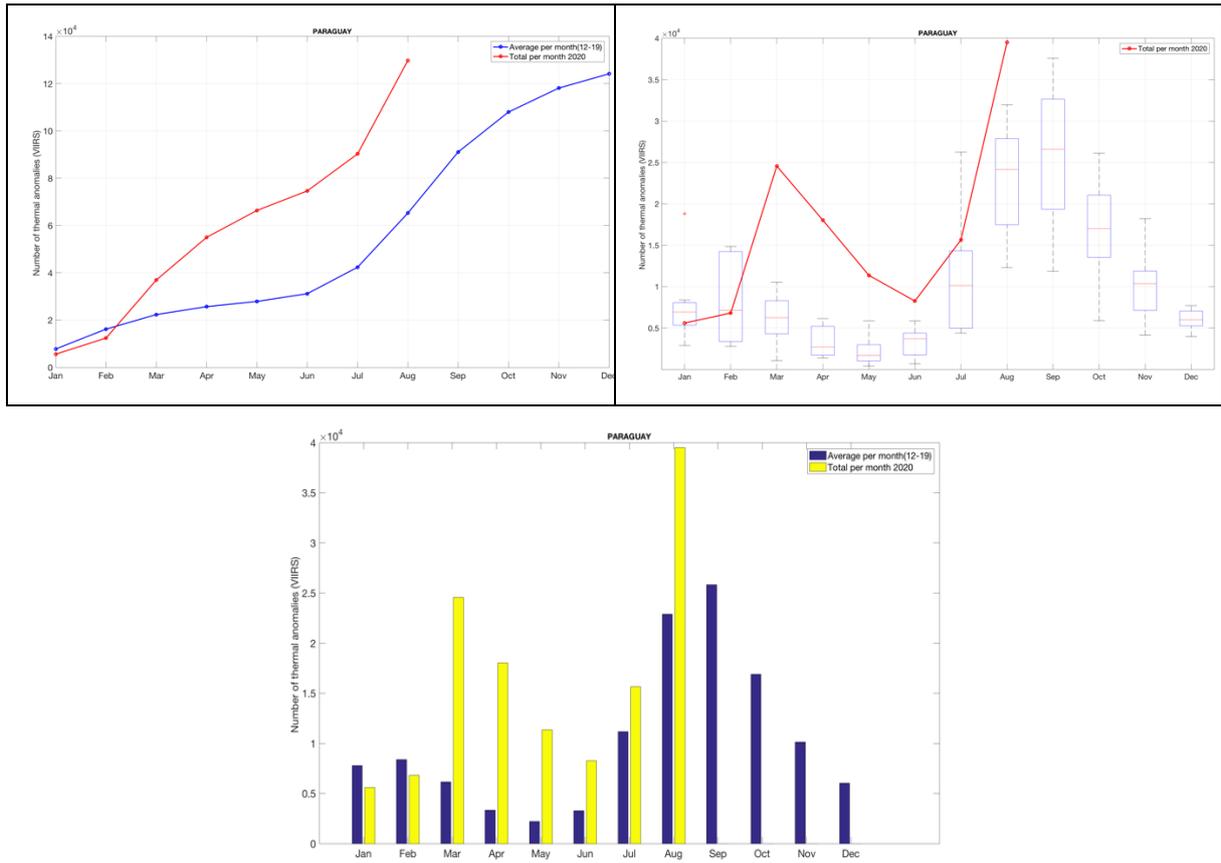


Figure 25. Trend of burnt areas and number of fires as compared to data in the last two years.

9.6 Peru

The spatial extent of the burnt areas in the country in 2020 mapped by the Near-Real Time (NRT) process in GWIS is presented in Figure 26.

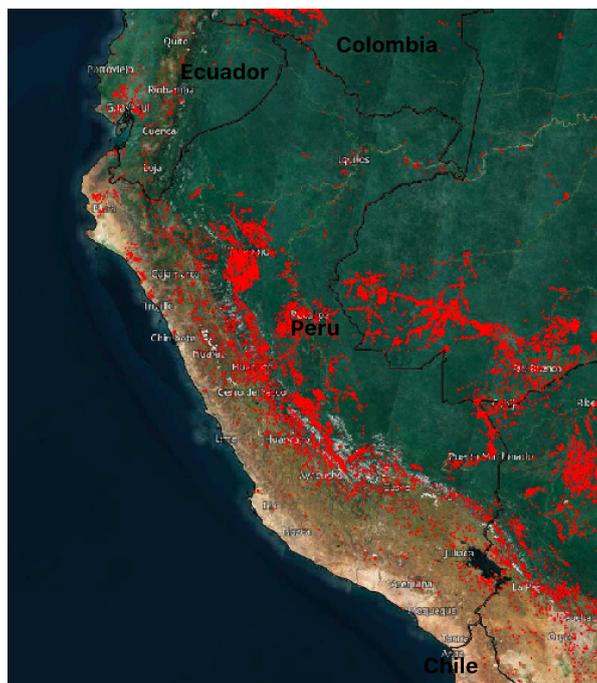


Figure 26. GWIS burnt areas for 2020 in Peru. Burnt areas until 31 August.

The 2020 fire season in Peru has followed similar trends of the last 2 years, as shown in Figure 27 but with higher values of burnt area in the first seven months of the year compared with 2018 and 2019. August was the month with the highest record of burnt areas since the beginning of the year, with around 1.1 Mha burnt, more than double the figure recorded in 2018 and 2019 for the same month. Until 31 August 2020, about 1.4 Mha of burnt areas have been mapped by GWIS in the region, which are values above those of 2018 and 2019, mainly due to August.

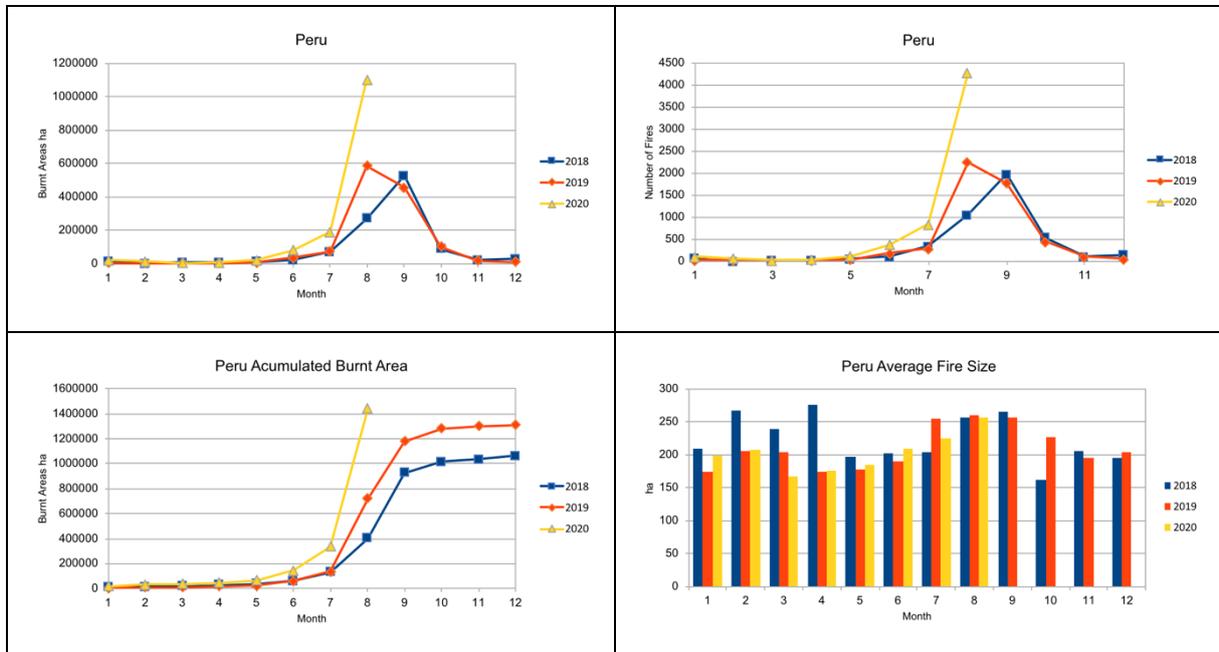


Figure 27. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of active fire spots detected by VIIRS, 2020 presents the same trend of the burned area and number of fires shown in Figure 27, with a number of active fire spots in the first eight months of the year above the average for the period between 2012 and 2019, especially in August, as shown in Figure 28.

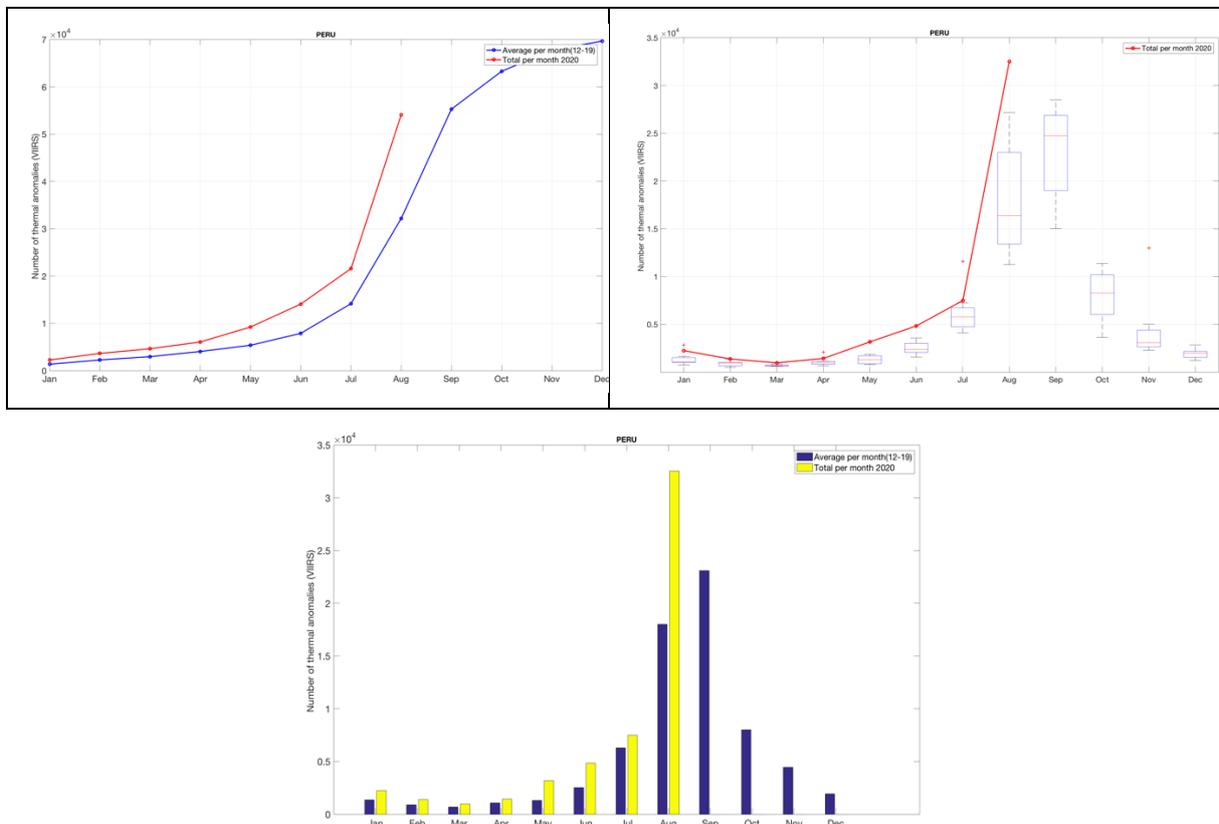


Figure 28. Trend of burnt areas and number of fires as compared to data in the last two years.

9.7 Venezuela

In 2020, wildfires in Venezuela spread over the central and northern areas of the country, with very large fires on the west of the country, such as those on the west side of Maracaibo lake. (Figure 29). This region is part of the designated “Llanos”, a complex savanna ecosystem where it undergoes periodic, human-induced and natural biomass burning during the dry season, usually between November and April.

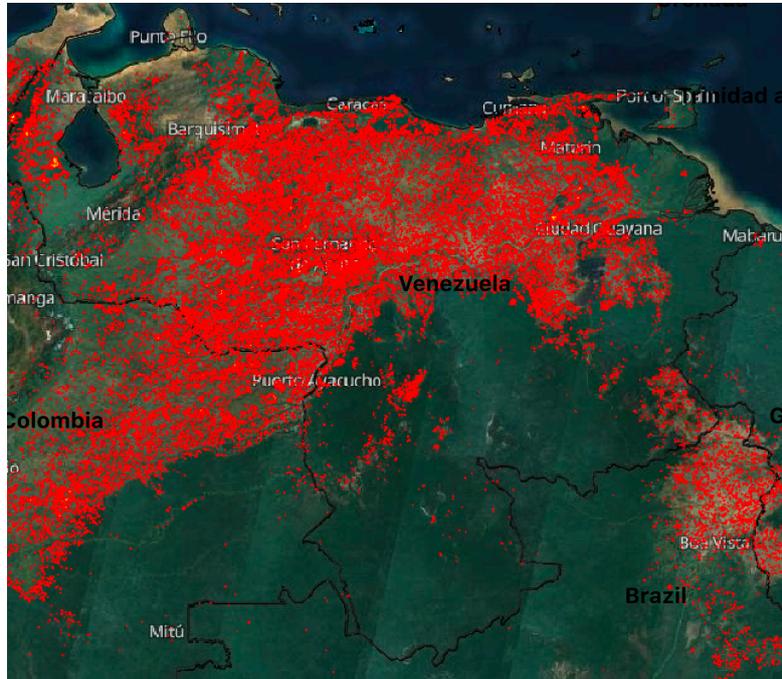
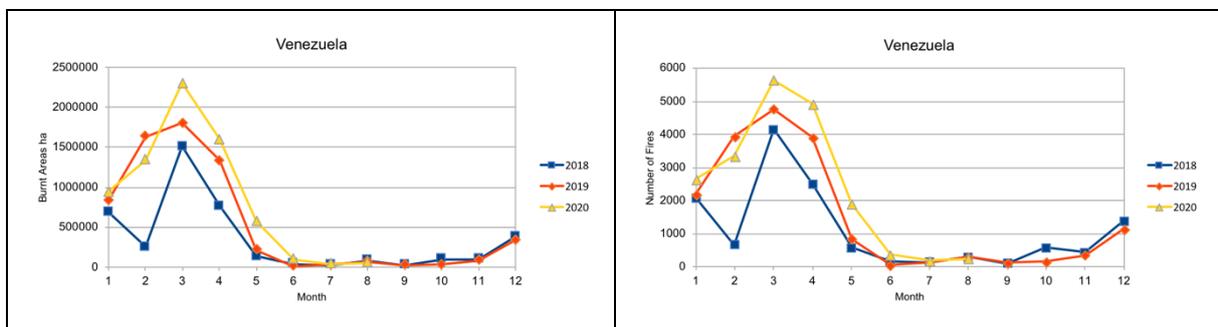


Figure 29. GWIS burnt areas for 2020 in Venezuela. Burnt areas until 31 August.

The current fire season for 2020 is above the last two years in all terms, see Figure 30. The total burnt area is slightly above the previous year, 2019, and considerable higher than that of the 2018 fire season. Besides, the number of fires also increased. Looking at the average fire size, the largest fires occurred in March, instead of February, as in 2018 and 2019. The average fire size was like previous years until February, afterwards the monthly average fire size in 2020 is above the 2018 and 2019. During March, there was an increase of burnt areas, number of fires, and size of the fires. Until 31 August 2020, almost 7 Mha of burnt areas have been mapped by GWIS in the region, which are higher values than that in 2019 and almost double the value of 2018.



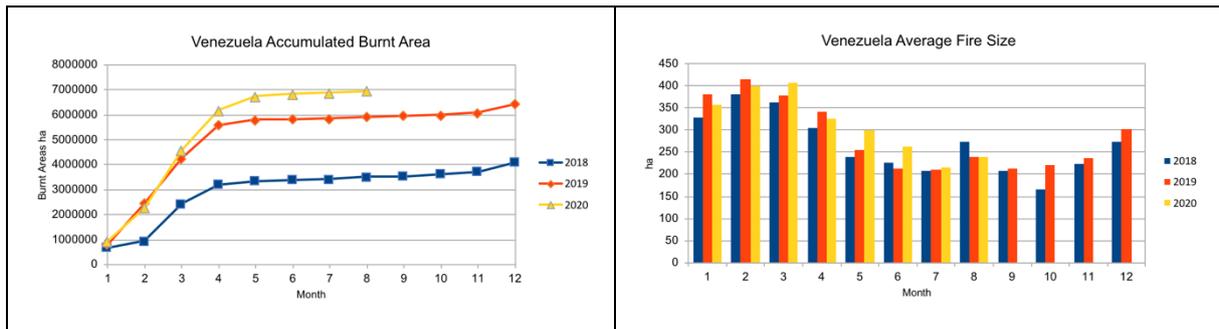


Figure 30. Trend of burnt areas and number of fires as compared to data in the last two years.

In terms of active fire spots detected by VIIRS, 2020 presents the same trend of the burned area and number of fires shown in Figure 30, with a number of active fire spots in the first five months of the year above the average for the period between 2012 and 2019, especially in March, as shown in Figure 31.

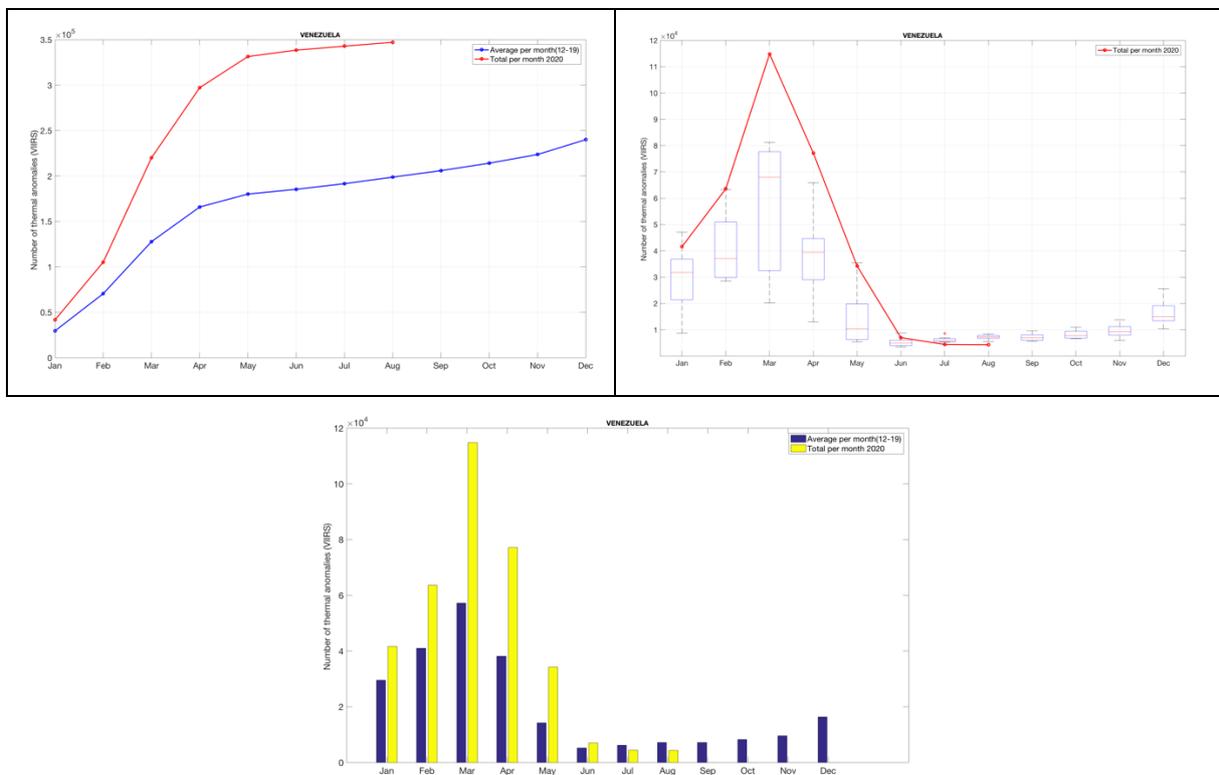


Figure 31. Trend of burnt areas and number of fires as compared to data in the last two years.

9.8 Fire danger and fire weather forecast in the Amazon region

The monthly fire weather forecast of temperature and precipitation anomalies for September is presented in Figure 32. **A strong average temperature anomaly is forecasted for mid-west and southern Brazil, extending to Bolivia and Paraguay. However above average temperatures are also expected in the BLA, Peru, southern Colombia and Venezuela.** Additionally, negative trends on temperature are foreseen in the eastern states of Brazil. The models estimate an increase on precipitation rates for this month in the Brazilian Amazonian state, southern Colombia, northern Peru, northern Venezuela and southern Brazil. Below average precipitation is expected specially in mid-west, reaching part of eastern Colombia, Paraguay, up to the south and southeast of Brazil.

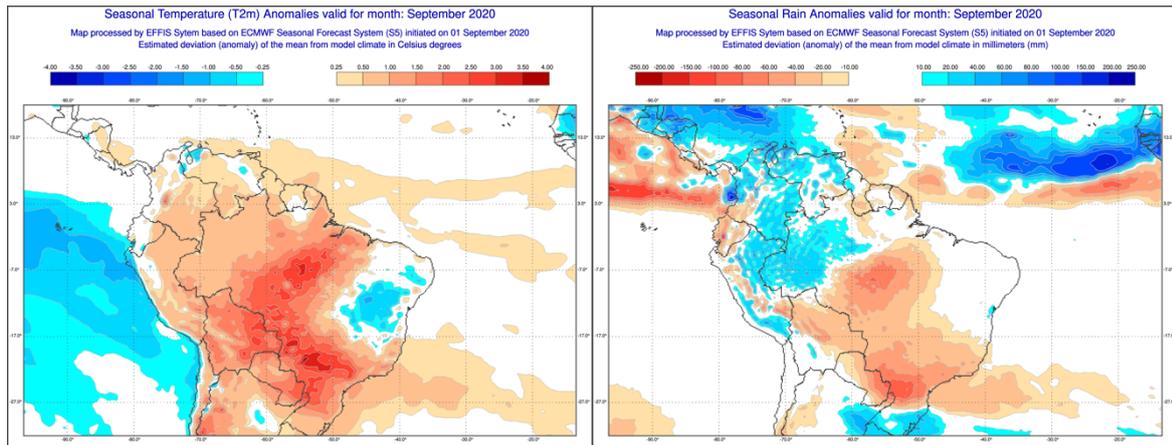


Figure 32. Fire weather anomalies of the current month, September, 2020.

At the current date, its foreseen that October will present slight above average temperature anomalies values over the region and increasing precipitation rates in the Brazilian Amazonian state and south-eastern part of the country (Figure 33). The forecast for October will be updated at the beginning of the October.

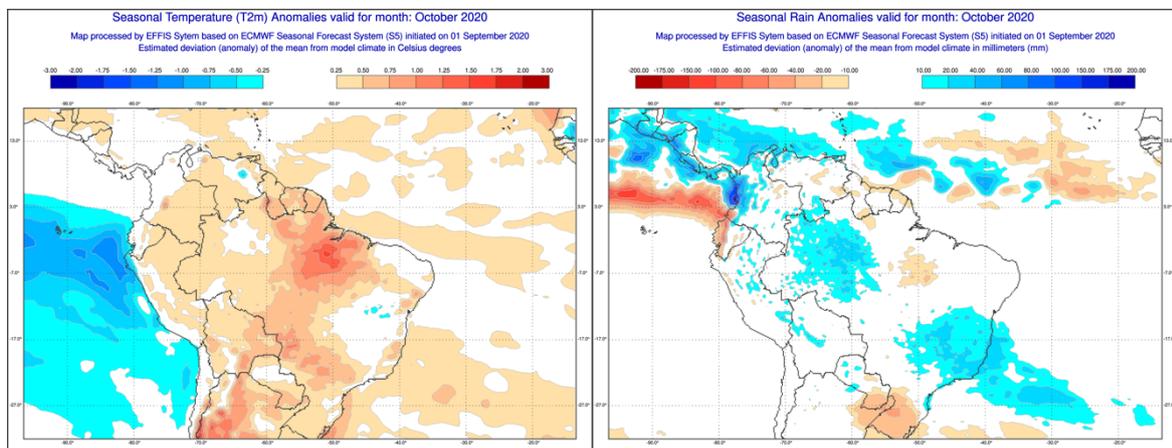


Figure 33. Fire weather anomalies of October, 2020.

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