European Commission

JRC TECHNICAL REPORT

Weekly analysis of wildfires in the Amazon region and South America: October 25 - October 31 2021

2021

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Contents

Scope of this report and executive summary

This report describes the trends of wildfires in the Amazon in 2021 through the comparison with the fire activity in the region in previous fire seasons. It must be noted than 2019 and 2020 were critical years 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 "country profile application" in GWIS. 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] and the EU Project on support to wildfire management in LAC. Most of the Amazon region is in Brazil, specifically in the Brazilian Legal Amazon (BLA)[2], and in other neighbor countries. Figure 1 shows the geographical extent of the countries analyzed in this report.

- In the **Brazil Legal Amazon (BLA)**, within Brazil, a total of 11.28 Million ha (Mha) burnt since January 1 until October 31, 2021. This value the lowest of the last 6 years. **Last week, 240 fires occurred, following the decreasing trend from previous weeks.**
- **In Brazil, 19.17 Mha burnt since January 1 until October 31, 2021**, with a total of 543,868 ha burnt in the last week. In 2021, the total burnt area and number of fires in Brazil are lower than the values of the last 6 years in the same period. 2,502 fires occurred last week. The area burnt in the last week was the lowest value of the last 6 years for the same week. The average size of the fires is smaller than in all the previous 6 years.
- **In Bolivia**, the total burnt area (5.99 Mha) and number of fires (11,674 fires) decreased from the previous weeks; these are the lowest values for the same week in the last 6 years. The total burned area this year is below the values of 2019 and 2020.
- **In Colombia**, the total burnt area in the country (2.84 Mha) is above the values of 2018 and 2019 but approximately 10% below the values of 2020.The total number of fires since January 2021 is 9,753, which is the highest value since 2015 for the same period.
- **In Paraguay**, 3.1 Mha burnt since January 1 until October 31, 2021. This figure is above those of 2018 but below the value of 2019 and 26 % below the value of 2020.
- **In Peru,** since January 1 until October 31, 2021, the total burnt area is 2.1 Mha and total number of fires is 7,913. These are the second highest values recorded since 2015 (below 2020).
- **In Venezuela,** 4.13 Mha burnt in the current year until October 31. The value of the total burnt area in Venezuela is lower than that in 2019 and 2020.
- **In Chile,** 446,841 ha burnt in the current year until October 31, 2021. This value is 51% higher than that of 2020. This year, the number of fires (1735) is the highest since 2015.
- **In Argentina**, a total of 4.09Mha burnt since January 1 until October 31, 2021, which is less than half of what was burned in 2020 in the same period. A total of 13,596 fires were mapped in this period.
- **In Ecuador**, a total of 494 fires burnt 110,665 ha since January 1 until October 31, 2021. These values are similar to the values of the last 6 years.
- **In Uruguay**, a total of 48,050 ha burnt since January 1 until October 31, 2021. This value is higher than those of 2018 and 2019 but lower than the figure of 2020. 7 fires were recorded last week, an increase from the previous week.
- **In French Guiana** a total of 1,664 ha burnt since January 1 until October 31, 2021. This value is similar to those of the previous years. 3 fires were recorded last week.
- **In Guyana,** a total of 61,829 ha burnt since January 1 until October 31, 2021, a value higher than that of 2018 but lower than the values in 2019 and 2020. 18 fires were mapped last week.
- **In Suriname**, 25 fires burnt a total of 5,182 ha since January 1 until October 31, 2021, a value similar to that of 2018 and lower than 2019 and 2020. 1 fire was mapped last week.
- This week, fire danger conditions will be very high to extreme in southern Argentina, northern Chile and south western Bolivia. Eastern central part of Brazil will have moderate to high fire danger.

[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)

Figure 1. Areas analyzed in this report: Brazil Legal Amazon, Brazil, Bolivia, Colombia, Paraguay, Peru, Venezuela, Chile, Argentina, Ecuador, Uruguay, French Guiana, Guyana and Suriname

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, 2021 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 11.28 Mha burnt in the BLA from January 1 until October 31, 2021, with 47,024 ha burnt in total during the last week, which is lowest value of the last six years for the same week. The number of fires recorded in GWIS in the last week was 240, decreasing from the previous week. The number of thermal anomalies until October 31, 2021 (608,420) shows a typical trend in the region as compared to the trends in 2018 and 2020, but the values remain below. 2,640 thermal anomalies were registered last week.

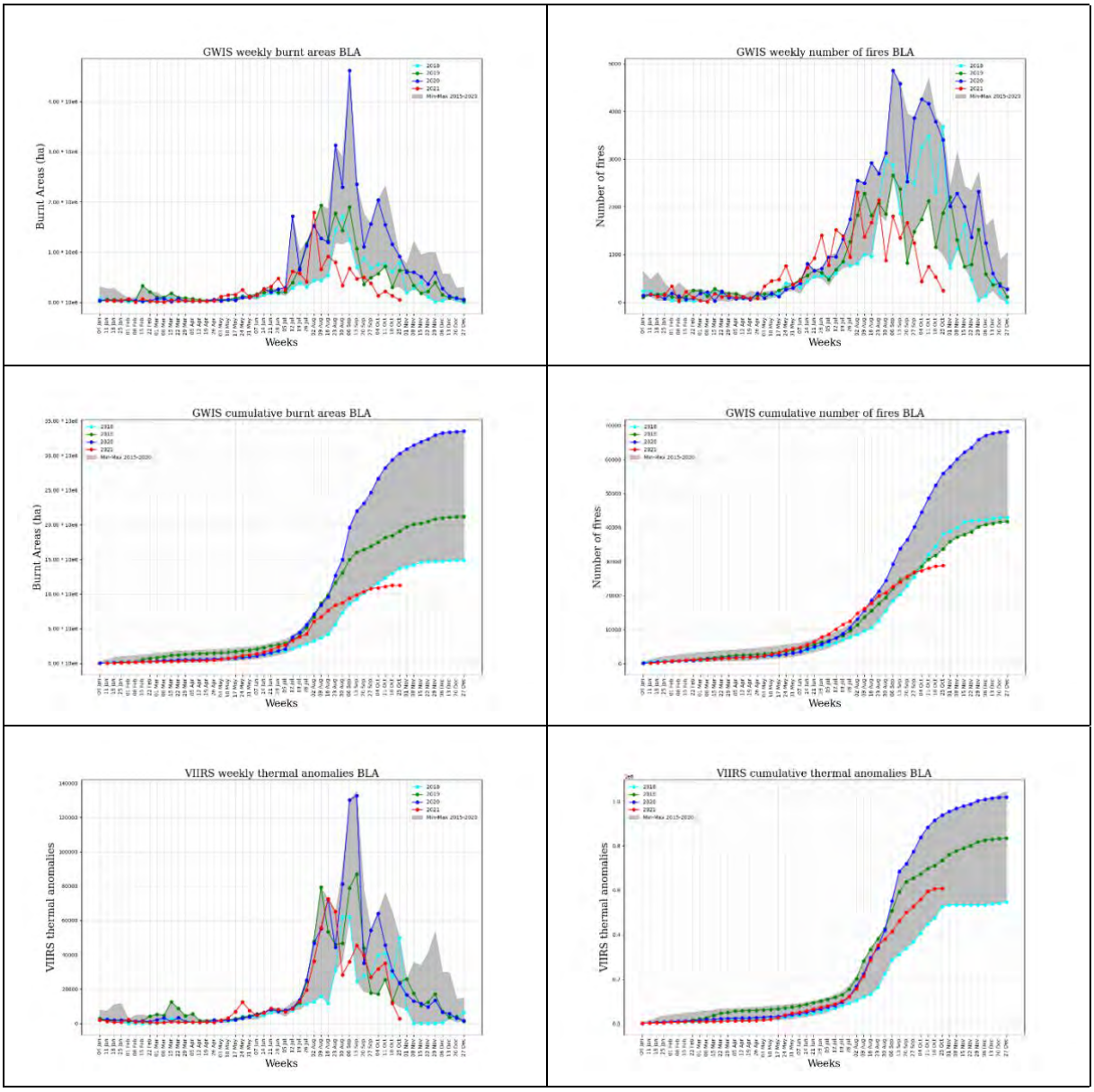

Figure 2. Trend of burnt areas and number of fires as compared to data in the last 6 years.

2 Wildfires in Brazil

Figure 3 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 19.17 Mha ha burnt in Brazil since January 1 until October 31, 2021, with a total 543,868 ha burnt in the last week. The total burnt area in the country remains below the values of the previous two years. The number of fires recorded in GWIS in the last week was 2,502, decreasing from the last week. The number of thermal anomalies until October 31, 2021 (1,111,193) shows a typical trend in the region. 9,593 thermal anomalies were registered last week.

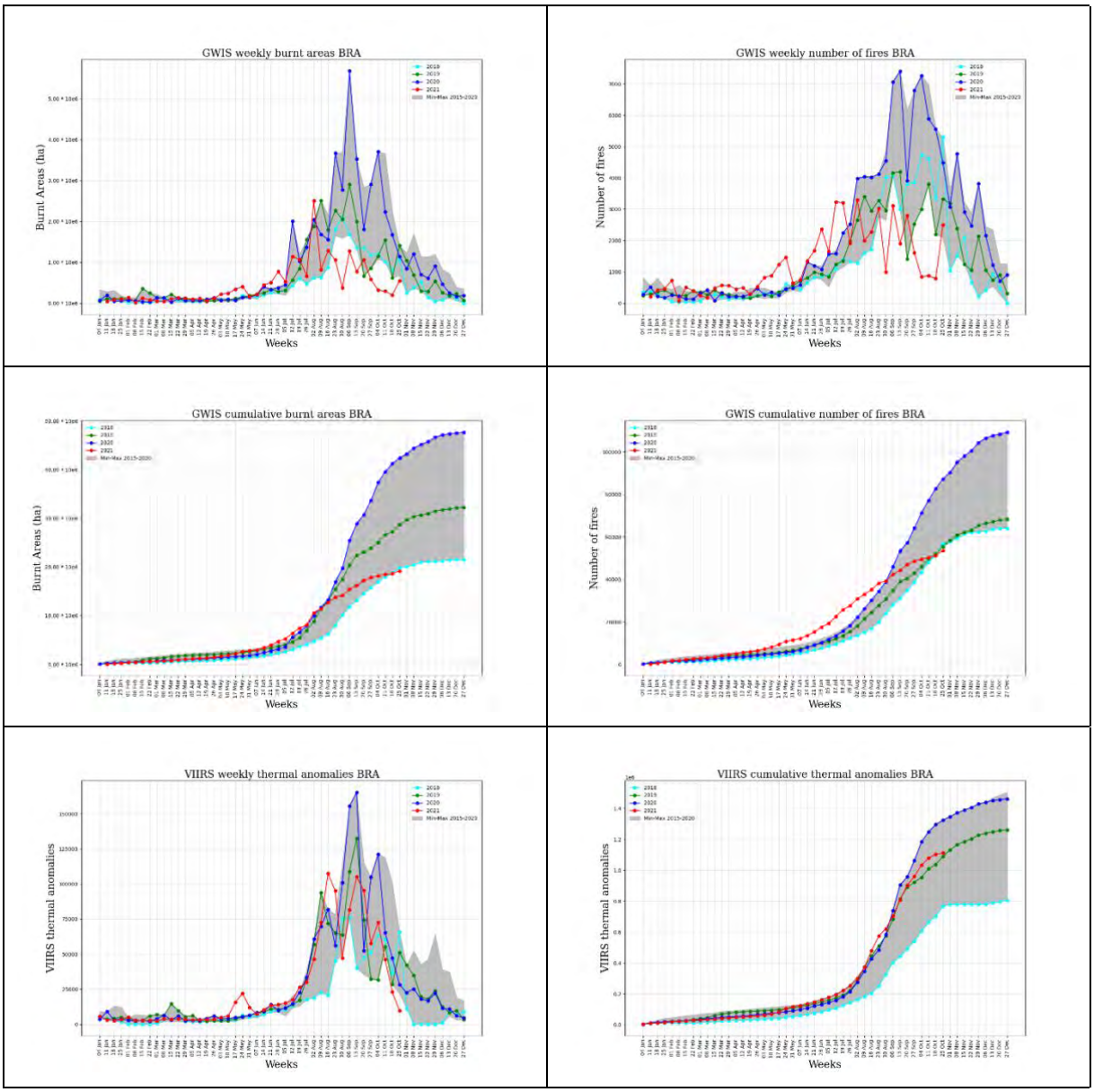

Figure 3. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

3 Wildfires in Bolivia

Figure 4 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 5.99 Mha ha burnt in Bolivia since January 1 until October 31, 2021, with 49,839 ha burnt in the last week, increasing from the last week. The number of fires recorded in GWIS in the last week was 202, higher than the number of fires in the same week from the last 6 years. The number of thermal anomalies until October 31, 2021 (263,940) is between the values of 2018 and 2020 the same period. 2,346 thermal anomalies were detected by VIIRS in the last week.

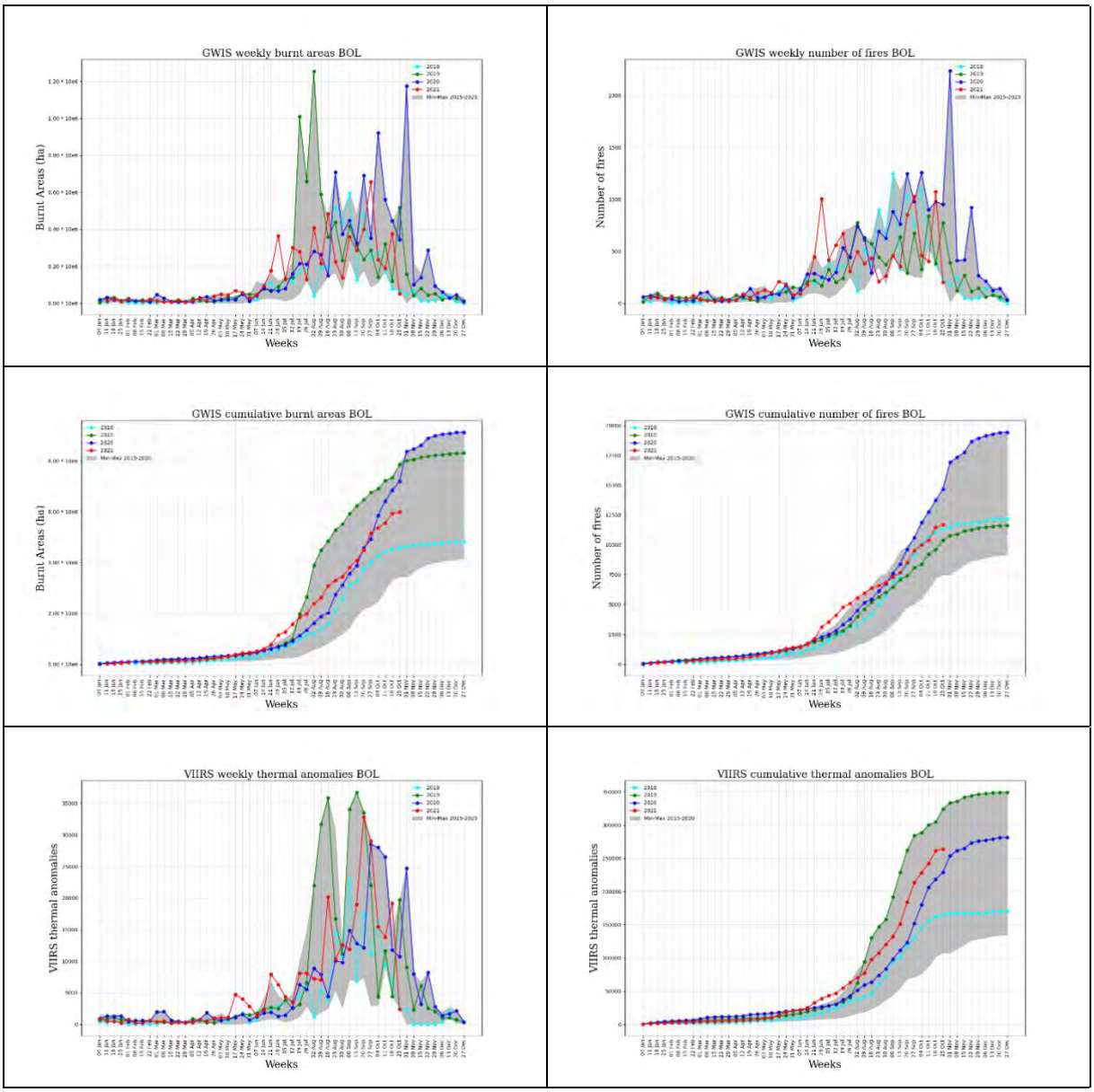

Figure 4. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

4 Wildfires in Colombia

Figure 5 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 2.84 Mha burnt in Colombia since January 1 until October 31, 2021. Approximately 7,355 ha burnt in the country the last week. The number of fires recorded in GWIS in the last week was 28 and the total number of fires since January 1 is the highest value since 2015 for the same period. The number of thermal anomalies until October 31, 2021 (69,896) follows a typical trend in the region with similar values of 2018 but way below of 2019 and 2020. 238 thermal anomalies recorded by VIIRS last week.

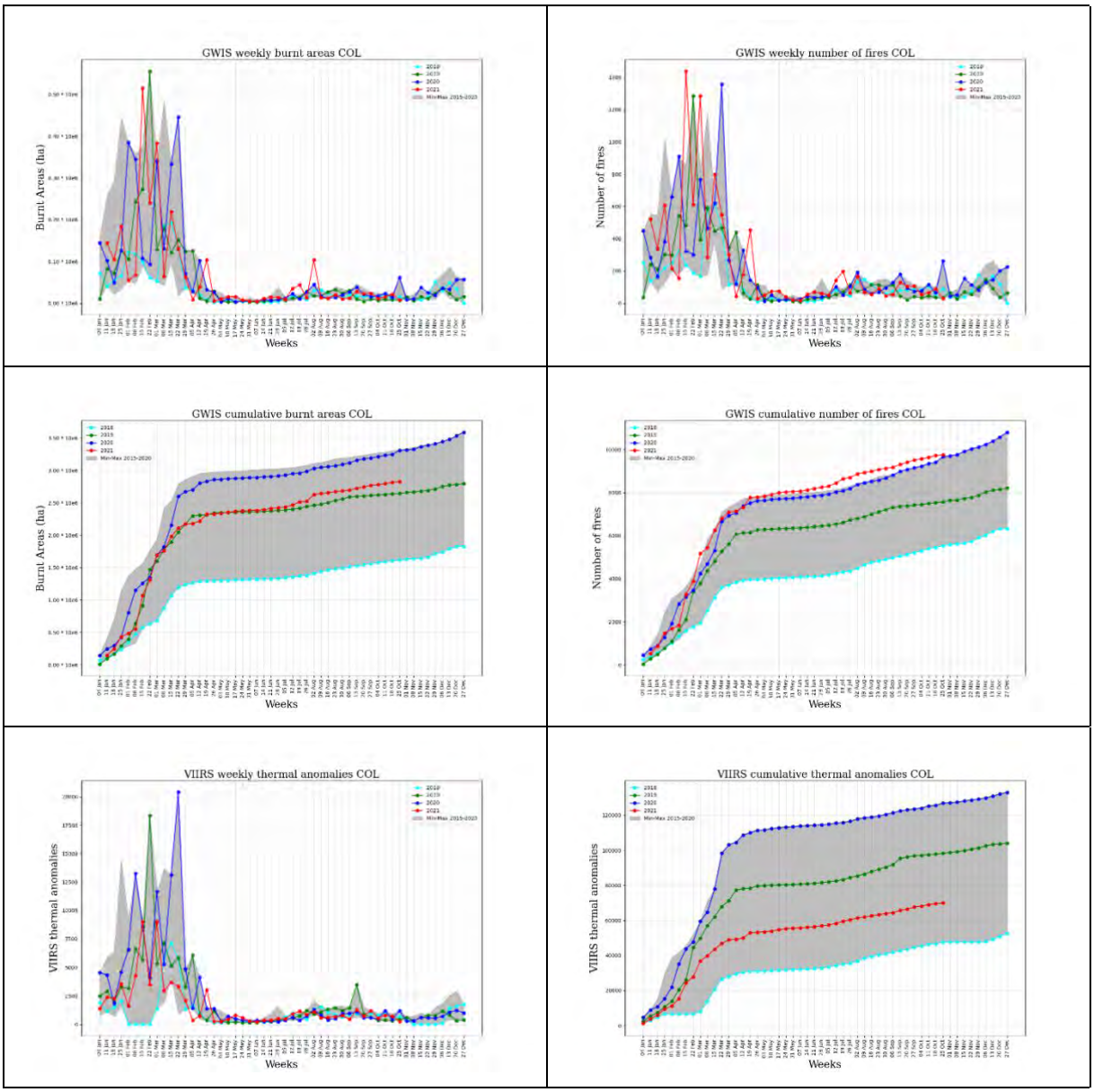

Figure 5. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

5 Wildfires in Paraguay

Figure 6 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 3.10 Mha burnt in Paraguay since January 1 until October 31, 2021. Approximately 34,128 ha burnt in the country the last week, decreasing from the previous week. The number of fires recorded in GWIS in the last week was 137. The number of thermal anomalies until October 31, 2021 (118,591) follows a typical trend in the region. 1809 thermal anomalies detected by VIIRS last week.

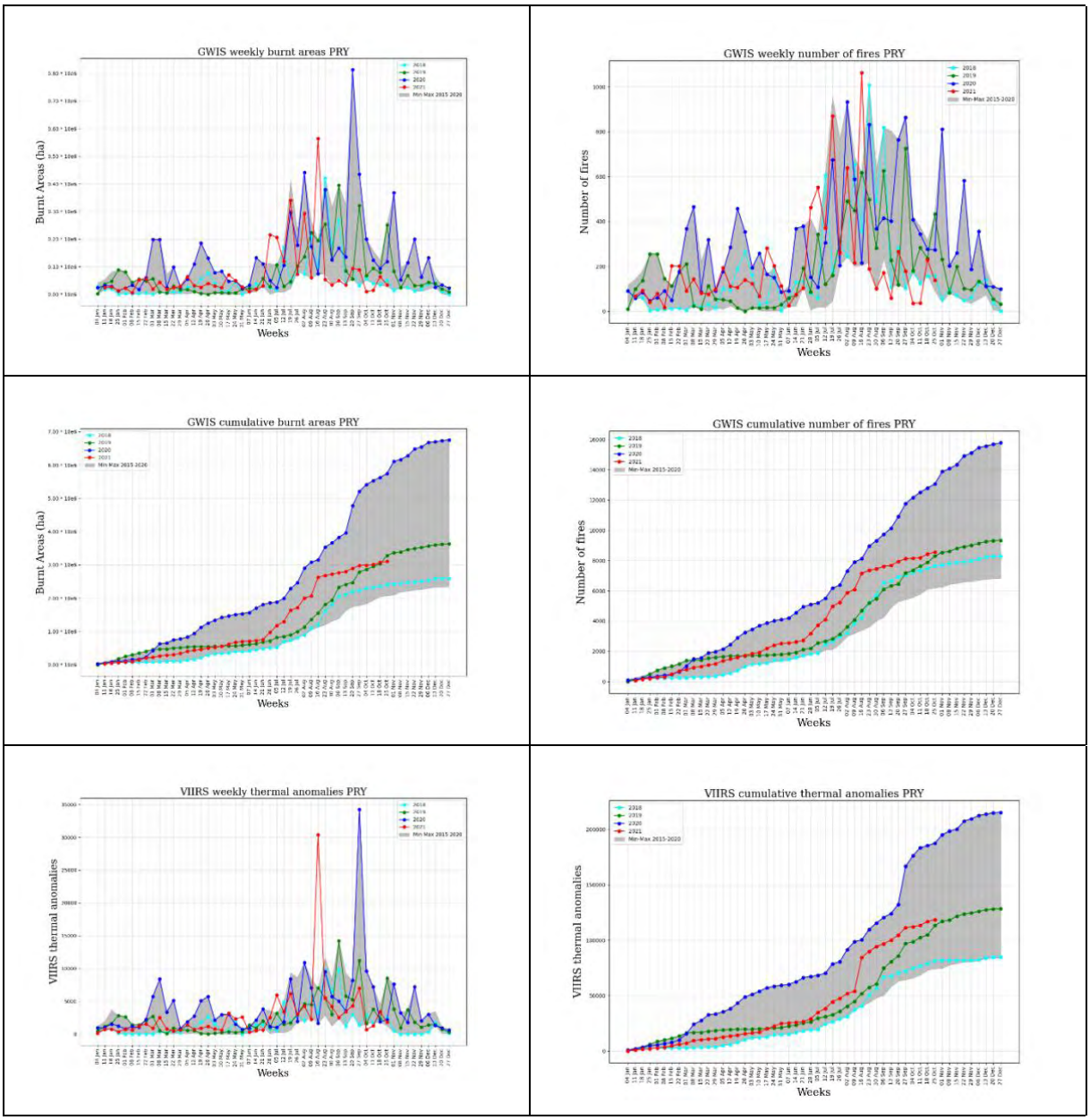

Figure 6. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

6 Wildfires in Peru

Figure 7 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 2.10 Mha burnt in Peru since January 1 until October 31, 2021, the second highest value since 2015 for the same period. Approximately 8,489 ha burnt in the last week, decreasing from the previous week. The number of fires recorded in GWIS in the last week was 41. The number of thermal anomalies until October 31, 2021 (56,303) shows a typical trend in the region. 320 thermal anomalies registered last week, decreasing after the last week.

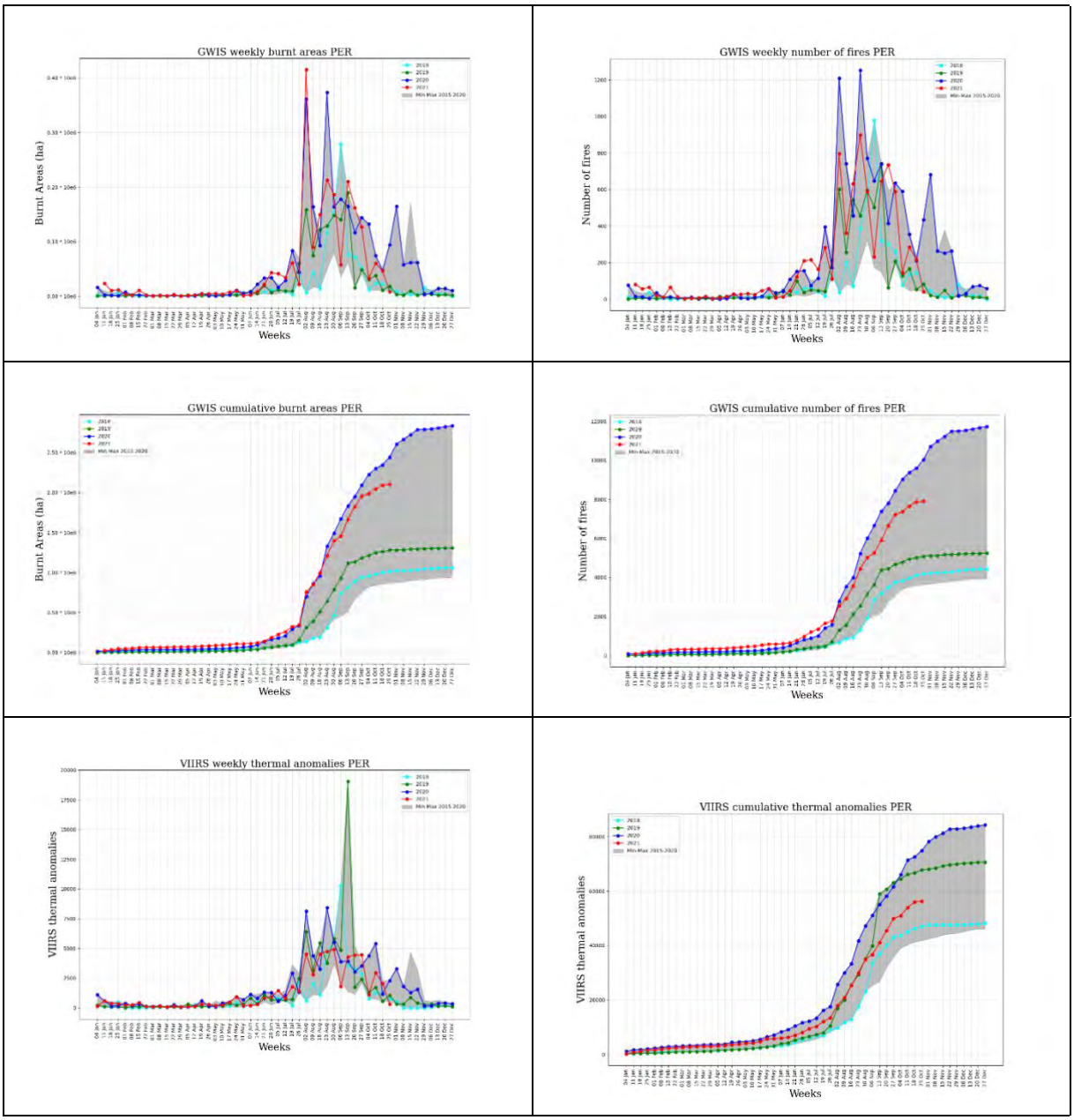

Figure 7. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

7 Wildfires in Venezuela

Figure 8 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 4.13 Mha burnt in Venezuela since January 1 until October 31, 2021, with 5,350 ha burnt in the last week. The number of fires recorded in GWIS in the last week was 33. The number of thermal anomalies until October 31, 2021 (136,132) shows a typical trend in the region. 420 thermal anomalies were recorded by VIIRS during the last week.

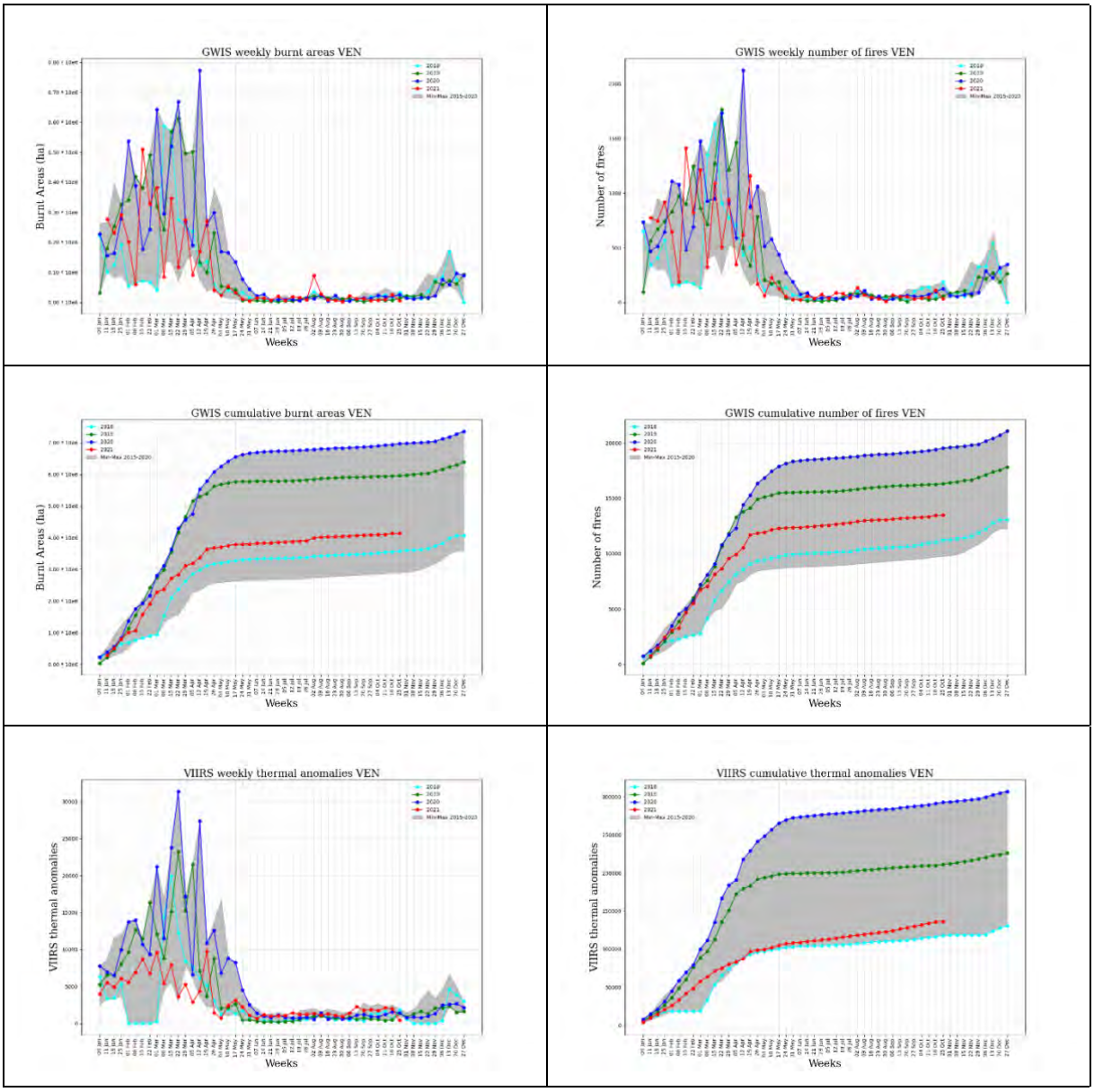

Figure 8. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

8 Wildfires in Chile

Figure 9 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 446,841 burnt in Chile since January 1 until October 31, 2021, with 1,573 ha burnt in the last week. The number of fires recorded in GWIS in the last week was 9. The number of thermal anomalies until October 31, 2021 (13,851) shows a typical trend in the region as compared to the trends during previous years. 138 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week during previous years.

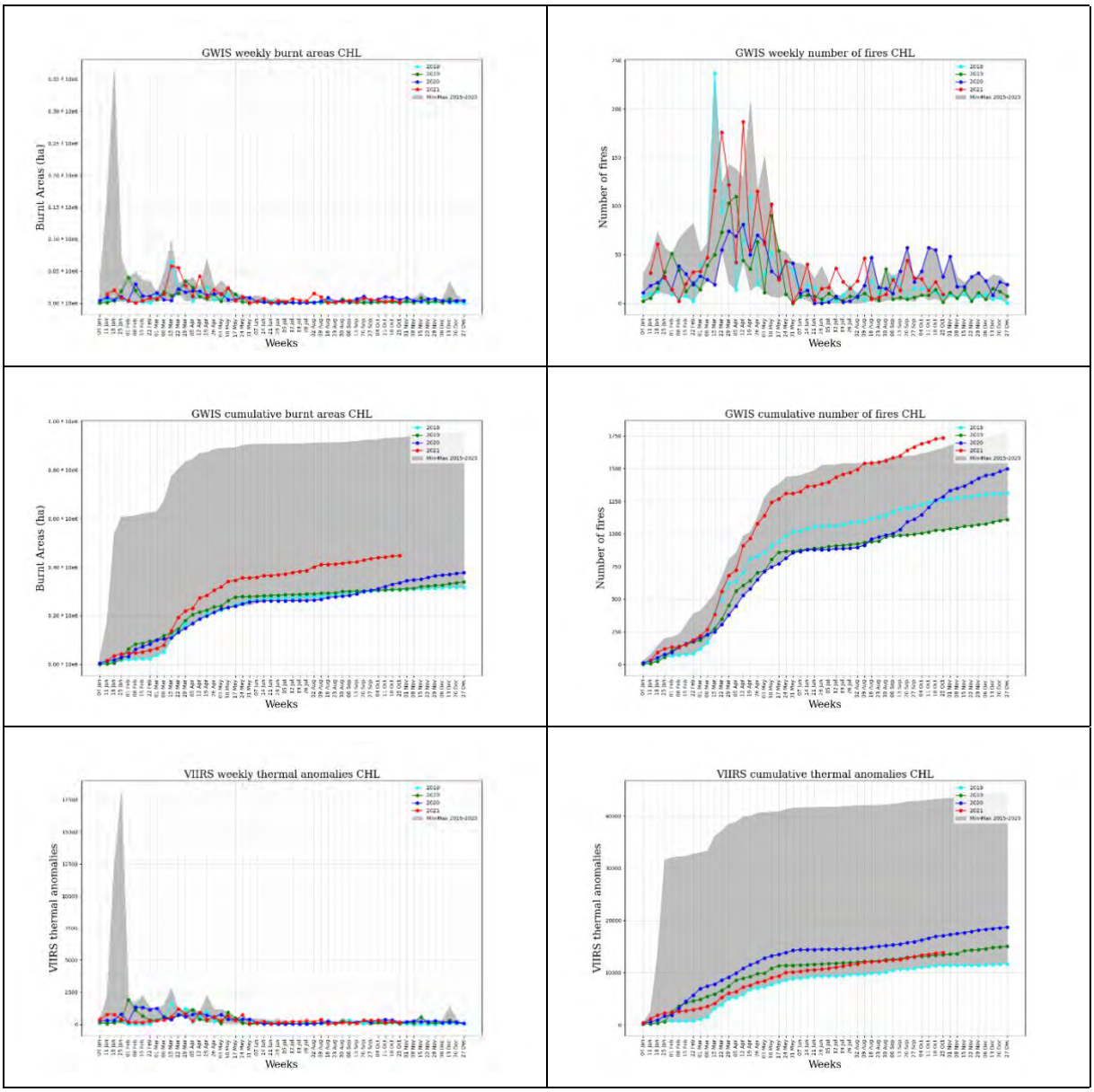

Figure 9. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

9 Wildfires in Argentina

Figure 10 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 4.09 Mha burnt in Argentina since January 1 until October 31, 2021, with 146,122 ha burnt in the last week. These values are the lowest since 2015 for the same week. The number of fires recorded in GWIS in the last week was 432, the lowest value since 2015 for the same period. The number of thermal anomalies until October 31, 2021 (143,702) shows a typical trend in the region. 5,970 thermal anomalies were recorded by VIIRS during the last week, a value that is like those recorded in that week for 2020.

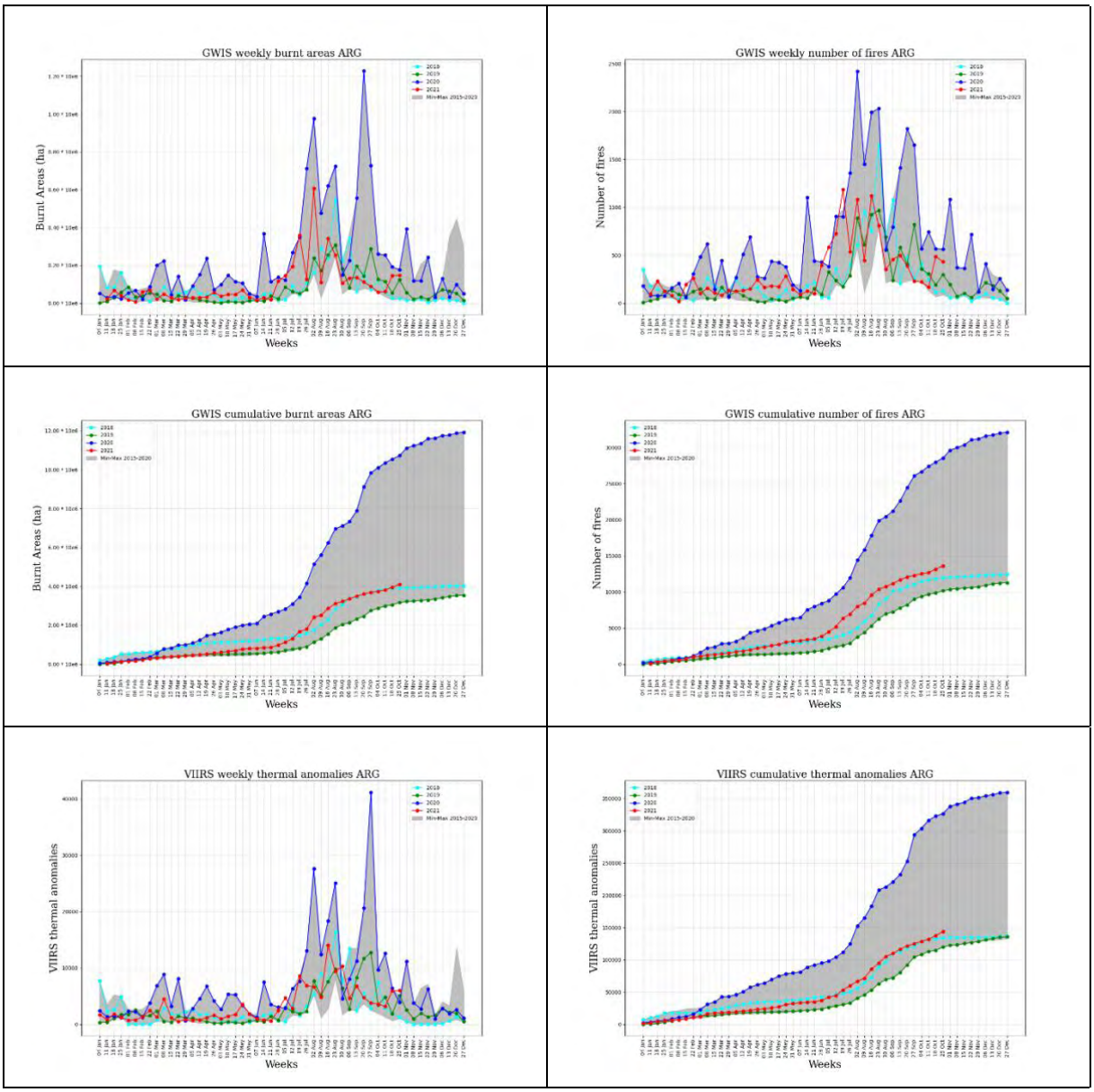

Figure 10. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

10 Wildfires in Ecuador

Figure 11 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 110,665 ha burnt in Ecuador since January 1 until October 31, 2021, similar values of 2020 for the same period, with 110,665 ha burnt in the last week. The number of fires recorded in GWIS in the last week was 2 the highest value since 2015 for the same period. The number of thermal anomalies until October 31, 2021 (3,583) shows a typical trend in the region. 10 thermal anomalies were detected by VIIRS in the last week.

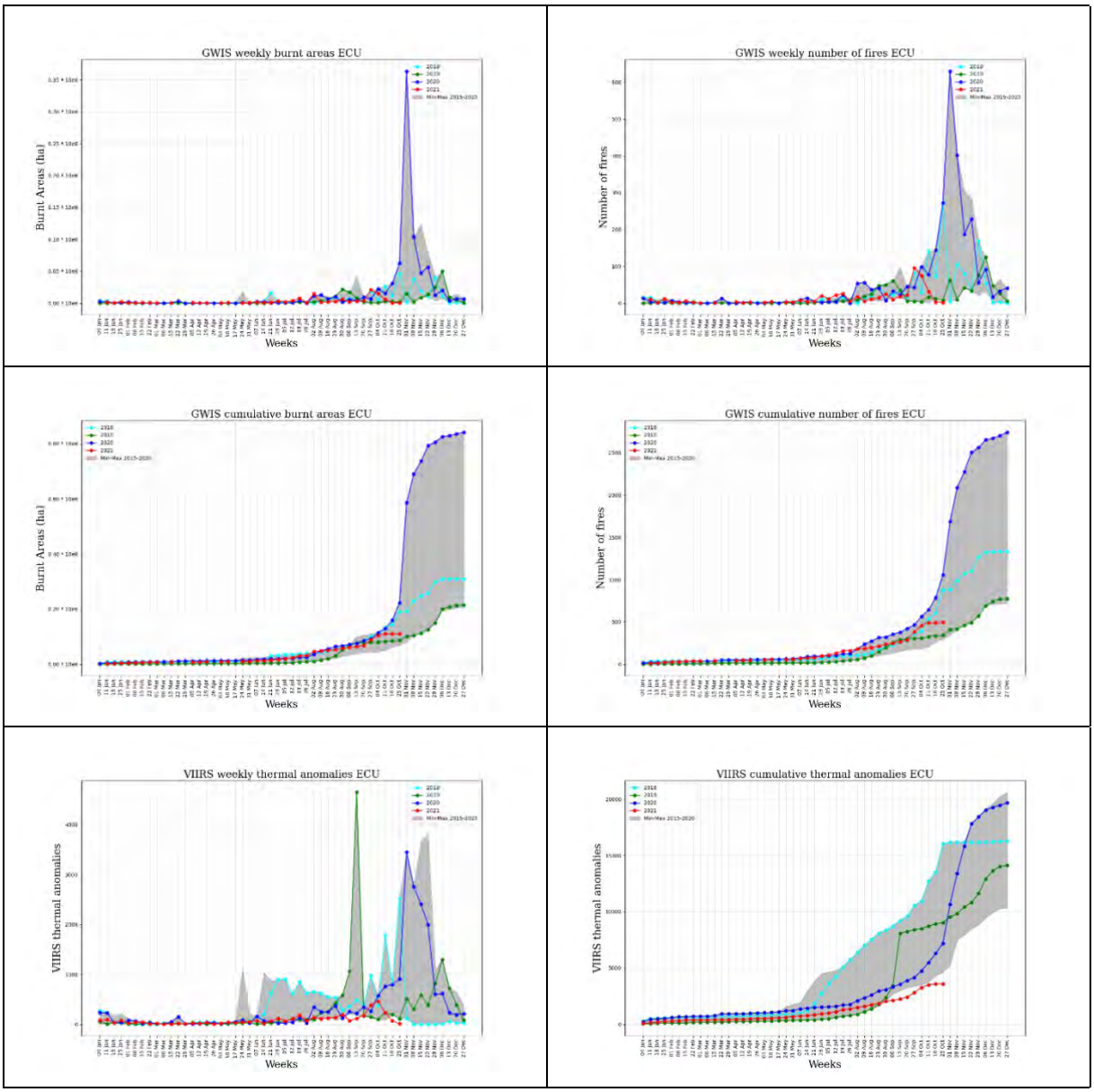

Figure 11. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

11 Wildfires in Uruguay

Figure 12 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 48,050 ha burnt in Uruguay since January 1 until October 31, 2021. 2 fires were recorded last week. The number of thermal anomalies until October 31, 2021 (1,896) shows a typical trend in the region.

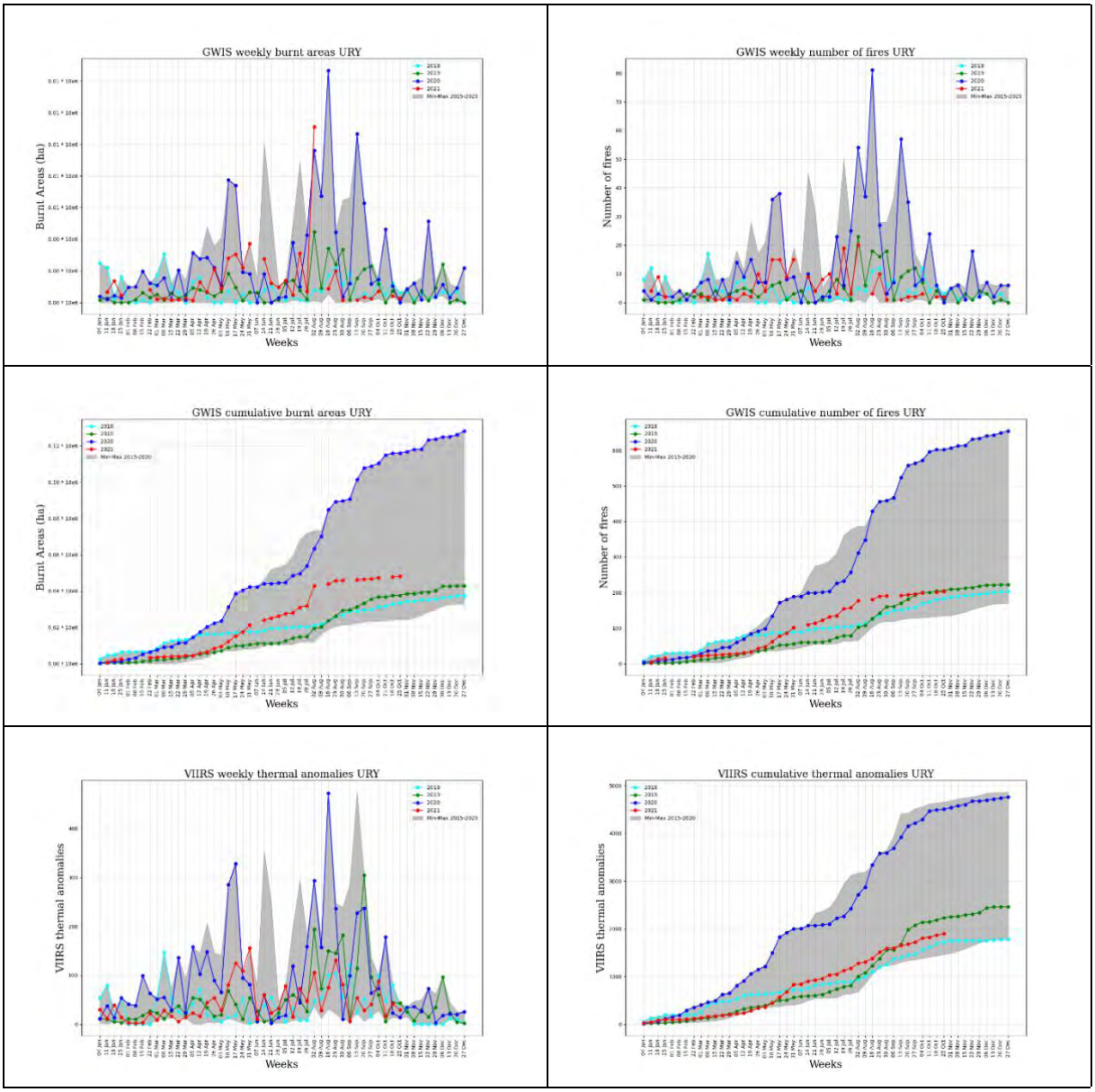

Figure 12. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

12 Wildfires in French Guiana

Figure 13 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 1,644ha burnt since January 1 until October 31, 2021, with 3 fires recorded last week. The number of thermal anomalies until October 31, 2021 (276) shows a typical trend in the region as compared to the trends during previous years. 7 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week during previous years.

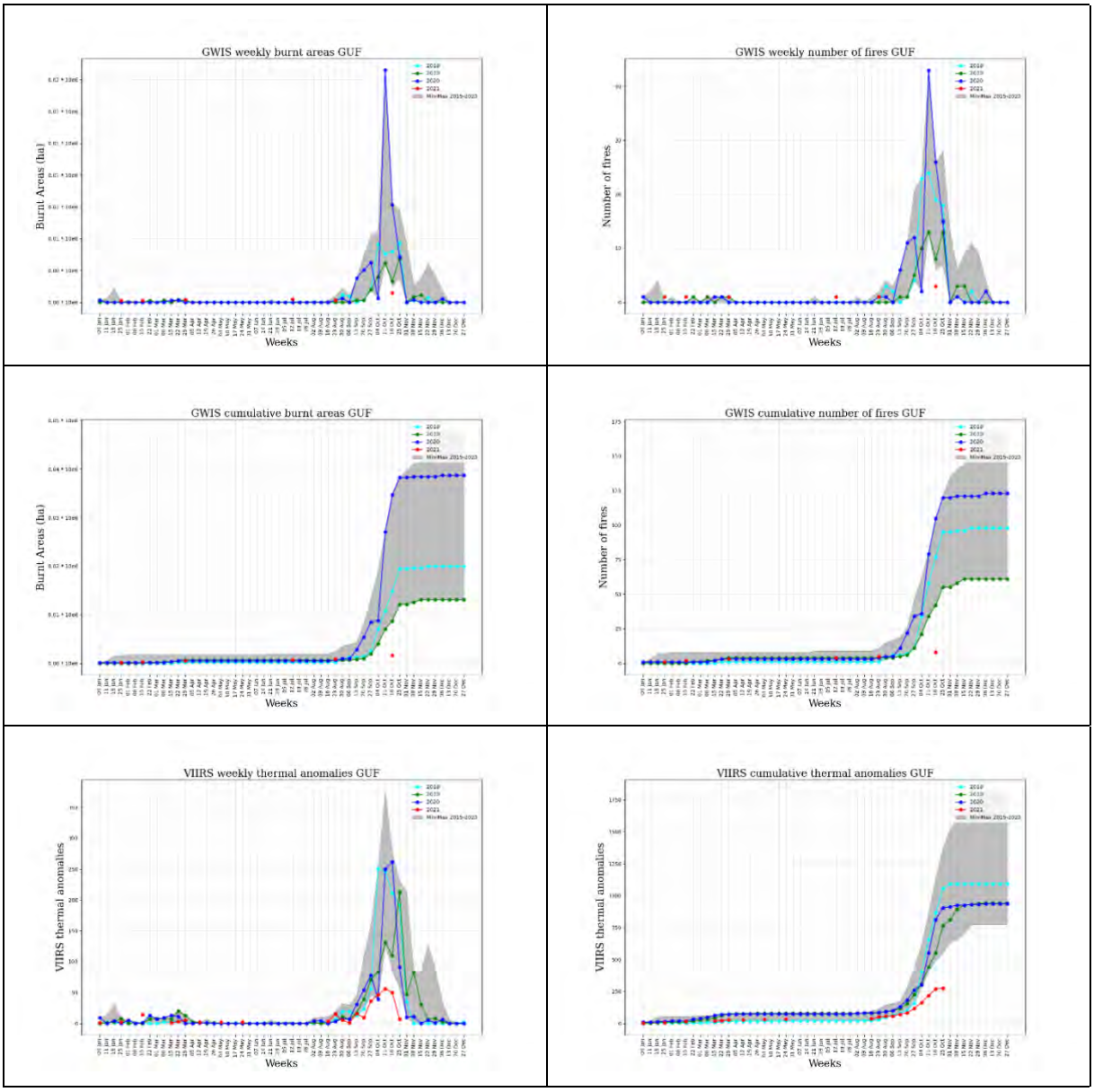

Figure 13. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

13 Wildfires in Guyana

Figure 14 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 61,829 ha burnt in Guyana since January 1 until October 31, 2021, with 1 fire recorded last week. The number of thermal anomalies until October 31, 2021 (3,100) shows a typical trend in the region as compared to the trends during previous years. 28 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week during previous years.

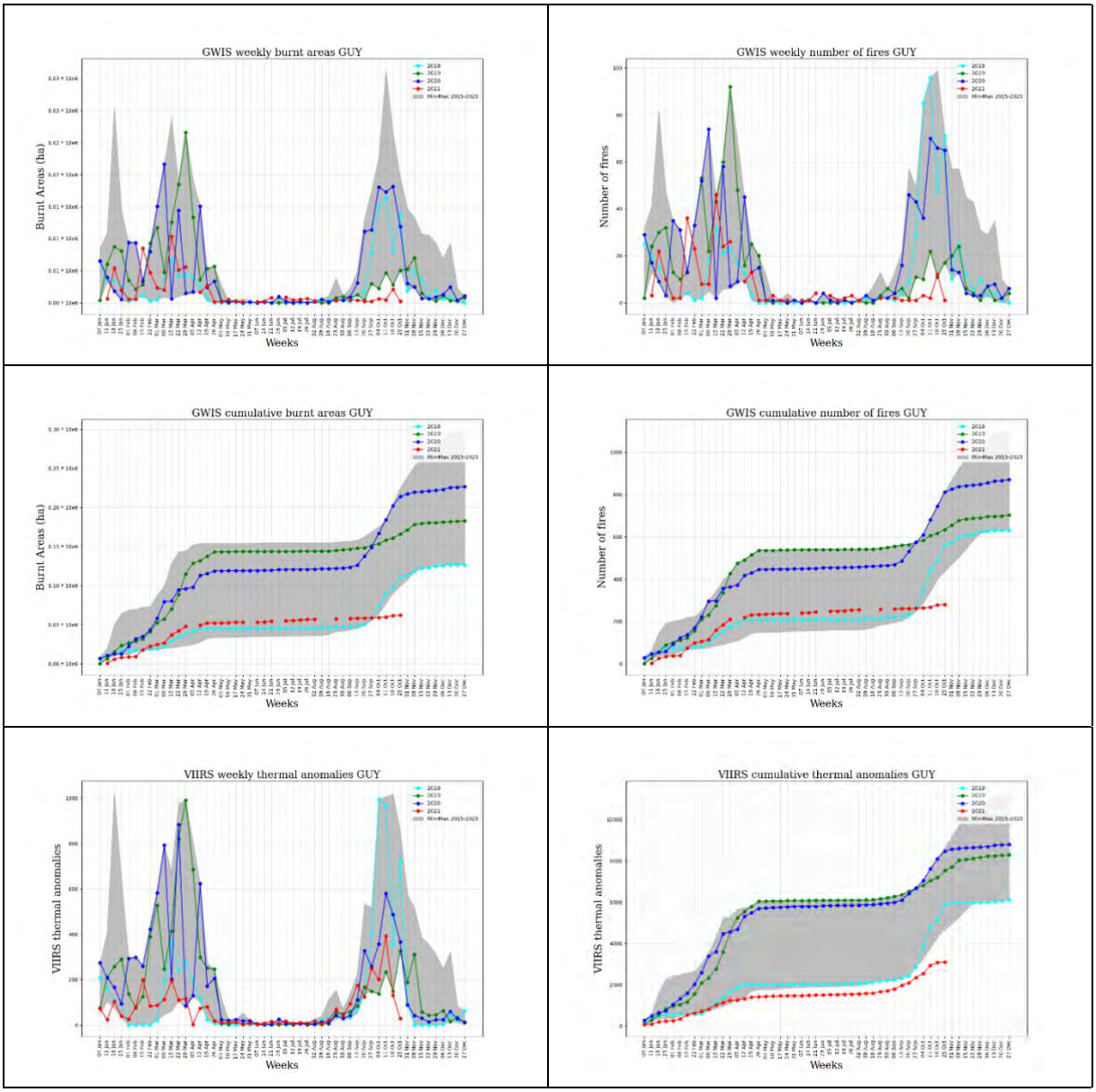

Figure 14. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

14 Wildfires in Suriname

Figure 15 shows the trends on the extent of burnt areas and the number of fires since January 1, 2021 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 5,182 ha burnt in Suriname since January 1 until October 31, 2021. 5 fires was recorded last week. The total number of fires since the beginning of the year is 25. The number of thermal anomalies until October 31, 2021 (705) shows a typical trend in the region. 36 thermal anomalies registered last week, increasing after the last week.

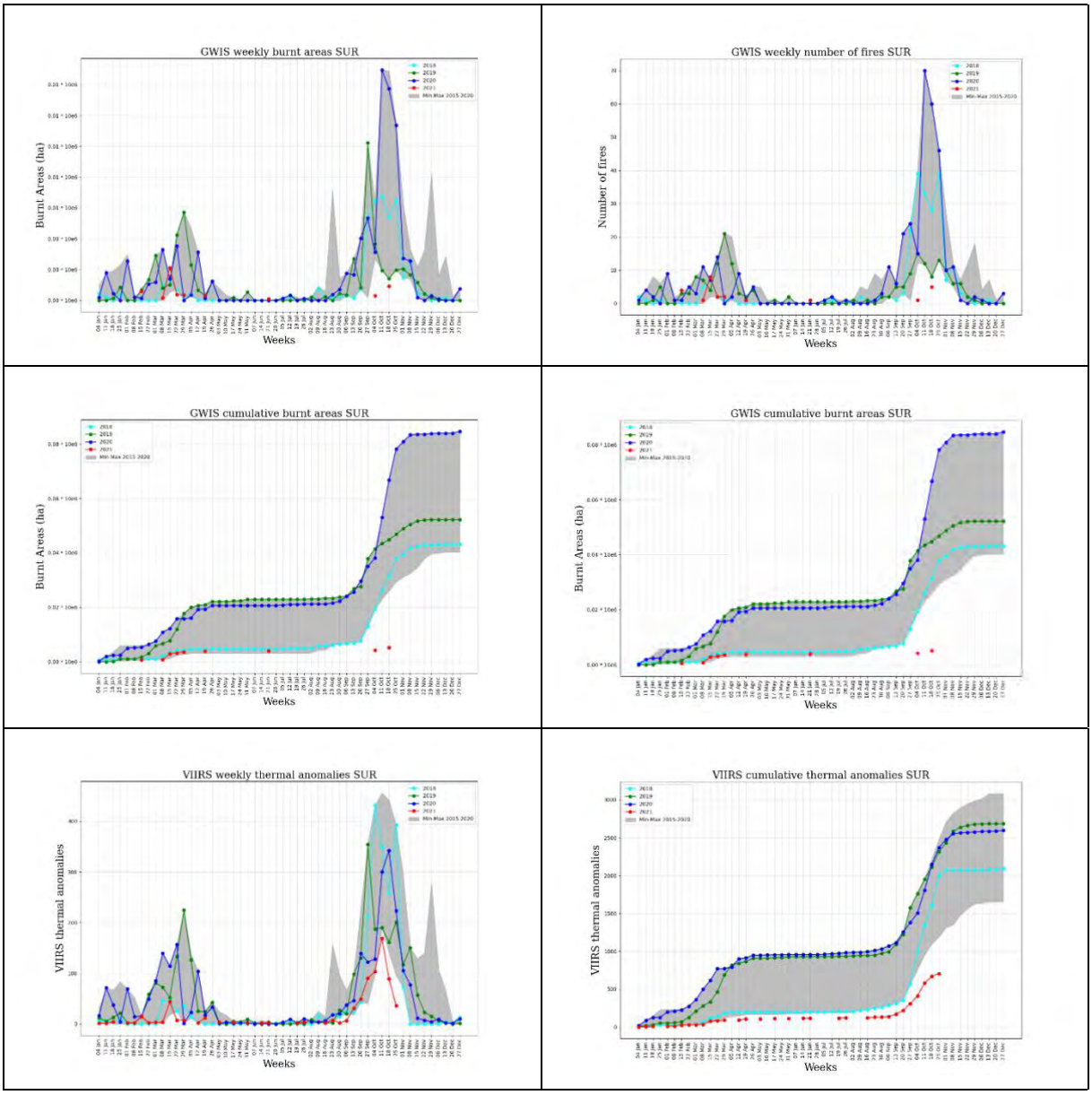

Figure 15. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

15 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 16 provides the average fire danger for the week of November 1 to November 7, 2021. This information is based on the daily fire danger forecast that is provided online in GWIS[3]. According to this forecast, it is expected that fire danger conditions will be very high to extreme in southern Argentina, northern Chile and south western Bolivia. Eastern central part of Brazil will have moderate to high fire danger.

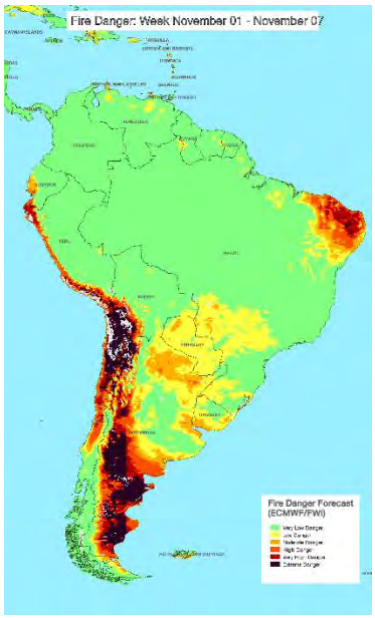

Figure 16. Average Fire danger forecast. Week, October 04 - October 10, 2021.

The weekly fire weather forecast of temperature and precipitation anomalies for this week is presented in Figure 17. Above average temperatures are forecasted for areas of southeastern Brazil, Paraguay and southern Argentina. Below average temperatures are forecasted in northeastern Brazil. The models estimate an above average precipitation rates for next week mainly in southern Brazil, Bolivia and southern Peru. Below average precipitation is foreseen mainly in southern Chile, southern Brazil, Venezuela and Colombia.

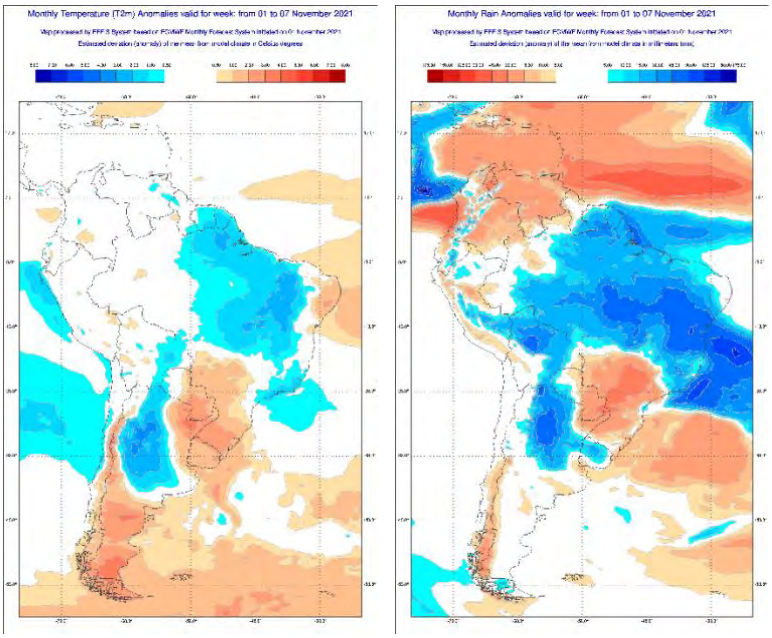

Figure 17. Fire weather anomalies of the current week, November 1 - November 7, 2021.

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

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