



European
Commission

JRC TECHNICAL REPORT

Weekly analysis of wildfires in the Amazon region and South America:

September 13 - September 19, 2021



GWIS

Global Wildfire Information System



2021

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

The screenshot displays the GWIS Current Situation Viewer interface. On the left, there are several control panels: 'Map Options' with checkboxes for Country Boundaries Layer, Human Settlement Layer, Protected Areas Layer, and CCI Landcover; 'Forecasts' with sections for FIRE DANGER FORECAST (Source: ECMWF (8 km res.), Index: Fire Weather Index (FWI)) and LIGHTNING FORECAST (Date: 21 Sep 2021); 'Rapid Damage Assessment' with date range selection (From: 13 Sep 2021, To: 19 Sep 2021) and buttons for Last 1 Day, Last 7 Days, Last 30 Days, and Fire Season; 'ACTIVE FIRES' (MODIS, VIIRS); 'BURNT AREAS' (MODIS, MODIS & VIIRS NRT); 'FIRE EMISSIONS' (Black Carbon, Methane, Carbon Dioxide, Carbon Monoxide, Sulfur Dioxide, Nitrogen Oxides, Organic Carbon, Particulate Matter, Non-Methane Hydro-Carbon, Total Carbon in Aerosols); and 'FUELS'. At the bottom left, there is an 'Analysis Tools' section with 'GWIS Estimates'. The main area is a map of South America with various data layers overlaid, including active fires (red dots) and burnt areas (shaded regions). A vertical toolbar on the right side of the map contains icons for map navigation and layer management. The bottom right corner of the interface shows the text 'JRC126514'.

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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 that 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 9.89 Million ha (Mha) burnt from January 1 until September 19, 2021. This value is below those of 2019 and 2020 in the same period. **Last week, 1,365 fires occurred**, which is below the values of the previous 6 years for the same week.
- **In Brazil, 16.25 Mha burnt from January 1 until September 19, 2021**, with a total of 0.62 Mha ha burnt in the last week. The total burnt area in Brazil is below the values of 2019 and 2020 in the same period and number of fires is just below that of 2020 (1,919 fires occurred last week).
- **In Bolivia**, the total burnt area in 2021 (3.90 Mha) is lower than that recorded for 2019, which was a critical year in the country. The total burnt area and number of fires are now close to the values reached in 2020 up to the same week. 363 fires were recorded last week. Critical fires are still taking place in the southeast near San Ignacio de Velasco, where similar critical fires occurred in 2019.
- **In Colombia**, the total burnt area in the country (2.80 Mha) is above the values of 2018 and 2019, but approximately 12% below the values of 2020. The total number of fires since January 2021 is 9,597, the highest value since 2015 for the same period.
- **In Paraguay**, 2.80 Mha burnt since January 1 until September 19, 2021. The area burnt and the number of fires in the last week are the lowest in the last 6 years for the same week. The total burnt area in 2021 is above those in 2018 and 2019 but below the values of the severe season of 2020.
- **In Peru**, for the period January 1 until September 19, 2021, the total burnt area (1.63 Mha) and total number of fires (5,947). The current fire season is still below the trend of the worst fire season of the last 6 years (2020) in the country. The burnt area and the number of fires increased from the last week.
- **In Venezuela**, 4.28 Mha burnt in the current year until September 19. The value of the total burnt area in Venezuela is lower than that in 2019 and 2020.
- **In Chile**, 435,966 ha burnt in the current year until September 19, 2021. This value is 51% higher than that in 2020. The number of fires until now (1,633), is the highest value since 2015.
- **In Argentina**, a total of 3.55 Mha burnt since January 1 until September 19, 2021, which is less than half of what burned in 2020. A total of 11,926 fires were mapped this year.
- **In Ecuador**, a total of 273 fires burnt 65,830 ha since January 1 until September 19. These values are similar to the values of the last six years, but the fire season is just starting.
- **In Uruguay**, a total of 47,194 ha burnt since January 1 until September 19 with 154 ha burnt last week. The total area is larger than the area burnt in 2018 and 2019 but lower than in 2020.
- **In French Guiana** a total of 893 ha burnt since January 1 until September 19, 2021. This value is similar to previous years. 1 fire was recorded last week.
- **In Guyana**, a total of 62,094 ha burnt from January 1 until September 19, 2021, a value higher than that of 2018 but lower than the values in 2019 and 2020. 1 fire was mapped last week.
- **In Suriname**, 21 fires burnt a total of 4,533 ha since January 1 until September 19, 2021, a value similar to that of 2018 and lower than 2019 and 2020. One fire was recorded last week.
- This week, fire danger conditions will continue to be very high to extreme eastern part of Brazil, southeast Bolivia, northern Chile and moderate to high in, Paraguay, and northern/western Argentina.
-

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 9.89 Mha burnt in the BLA since January 1 until September 19, 2021, with 0.41 Mha burnt in total during the last week, which is below the values of the same week for the last 6 years. The number of fires recorded in GWIS last week was 1,365, and the total number of fires up to September 19 is about the average value of the last 5 years. The number of thermal anomalies until September 19, 2021 (460,740) shows a typical trend in the region as compared to the trends in 2019 and 2020. 45,298 thermal anomalies were registered last week.

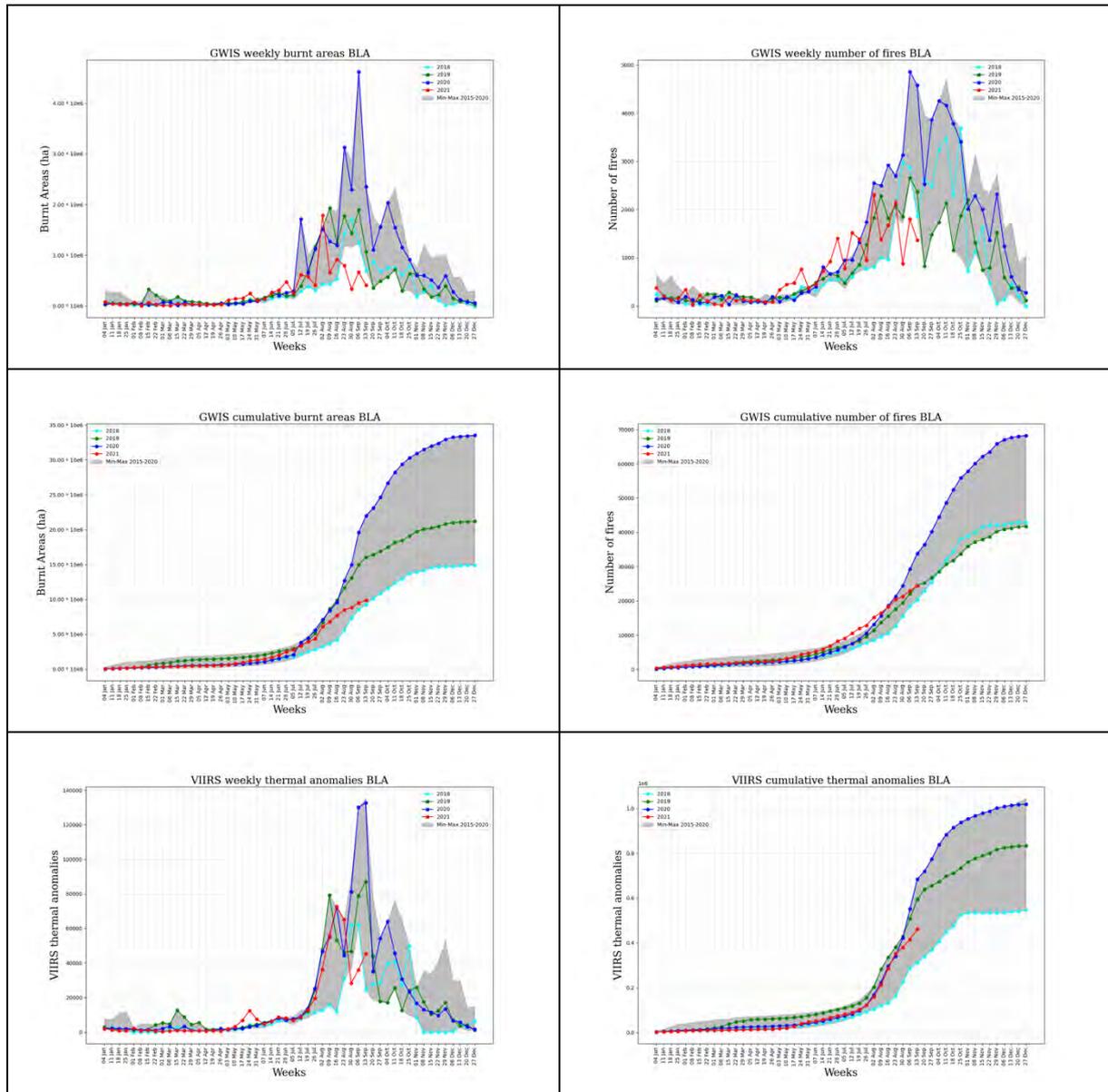


Figure 2 Trend of burnt areas and number of fires as compared to data in the last 6 years.

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 16.25 Mha ha burnt in Brazil since January 1 until September 19, 2021, below the burnt area of 2019 up to the same date, with a total 0.62 Mha burnt in the last week. The number of fires recorded in GWIS in the last week was 1,919; the total of number of fires up to the 12 of September is close to the values in 2020 for the same period. The number of thermal anomalies until September 19, 2021 (807,042) shows a typical trend in the region. 105,216 thermal anomalies were registered last week.

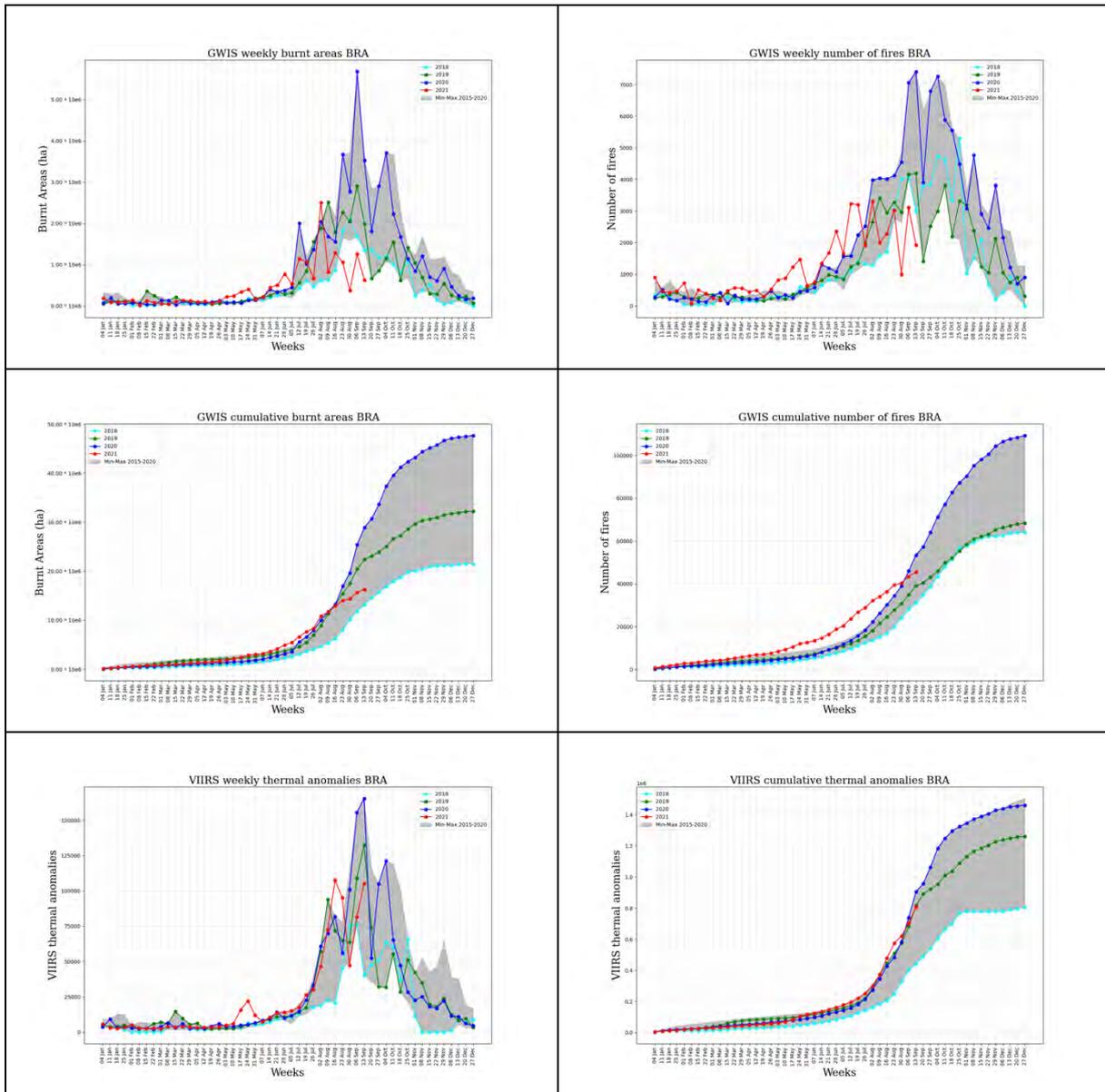


Figure 3. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 3.90 Mha ha burnt in Bolivia since January 1 until September 19, 2021, with 164,216 ha burnt in the last week. The cumulative values of burnt areas are higher than 2018 and 2020 but lower than 2019. The number of fires recorded in GWIS in the last week was 363. The trend of number of fires in 2021 is lower than in the year 2020 for the same period. The number of thermal anomalies until September 19, 2021 (151,255) is the second highest value since 2015 for the same period. 19,016 thermal anomalies were detected by VIIRS in the last week. Critical fires are still active in the southeast of the country.

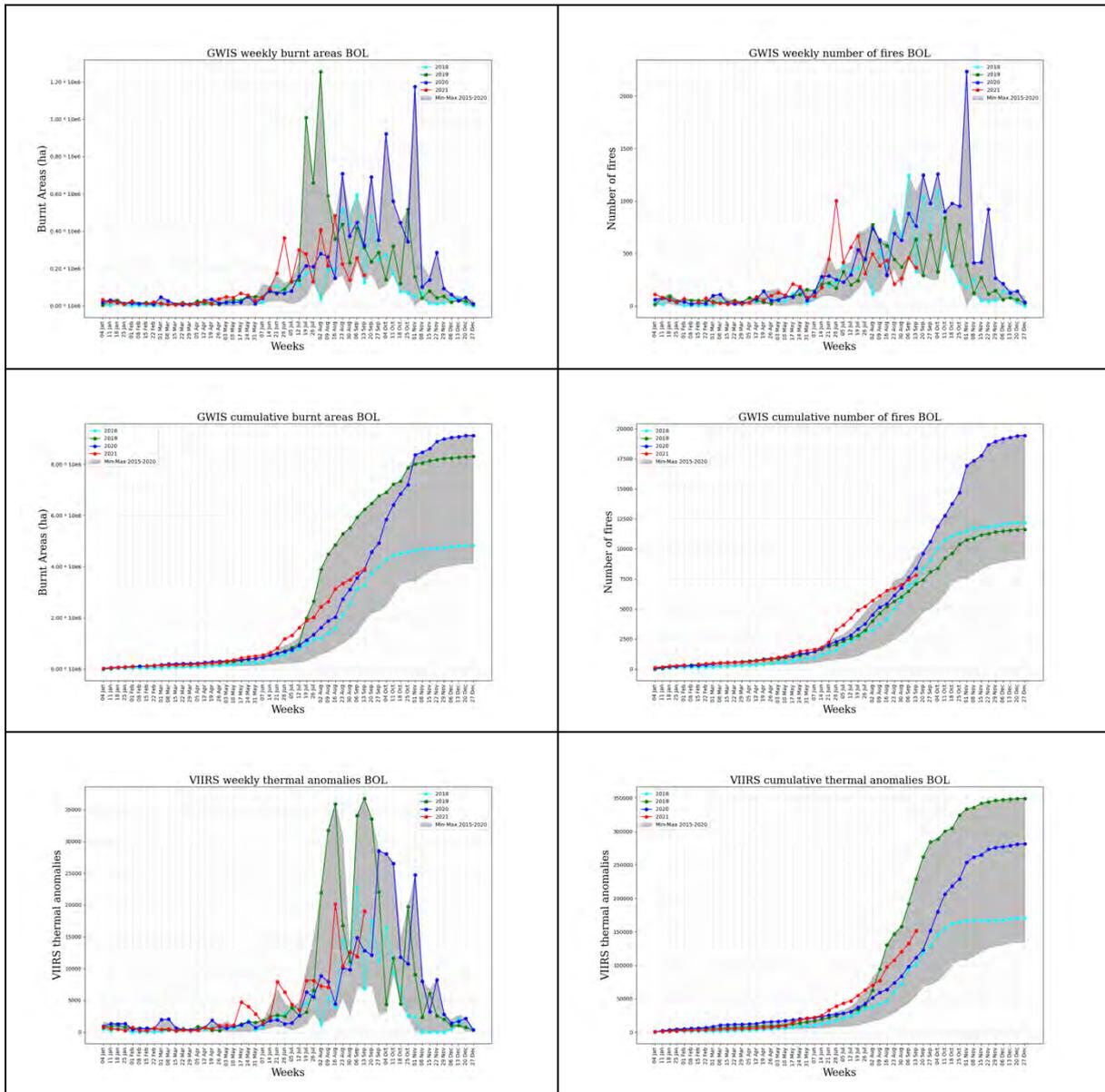


Figure 4. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 2.80 Mha burnt in Colombia since January 1 until September 19, 2021. Approximately 27,995 ha burnt in the country the last week increasing from the previous week. The number of fires recorded in GWIS in the last week was 129. The number of thermal anomalies until September 19, 2021 (65,676) follows a typical trend in the region with similar values of 2018 but way below of 2019 and 2020. 1,272 thermal anomalies detected by VIIRS last week.

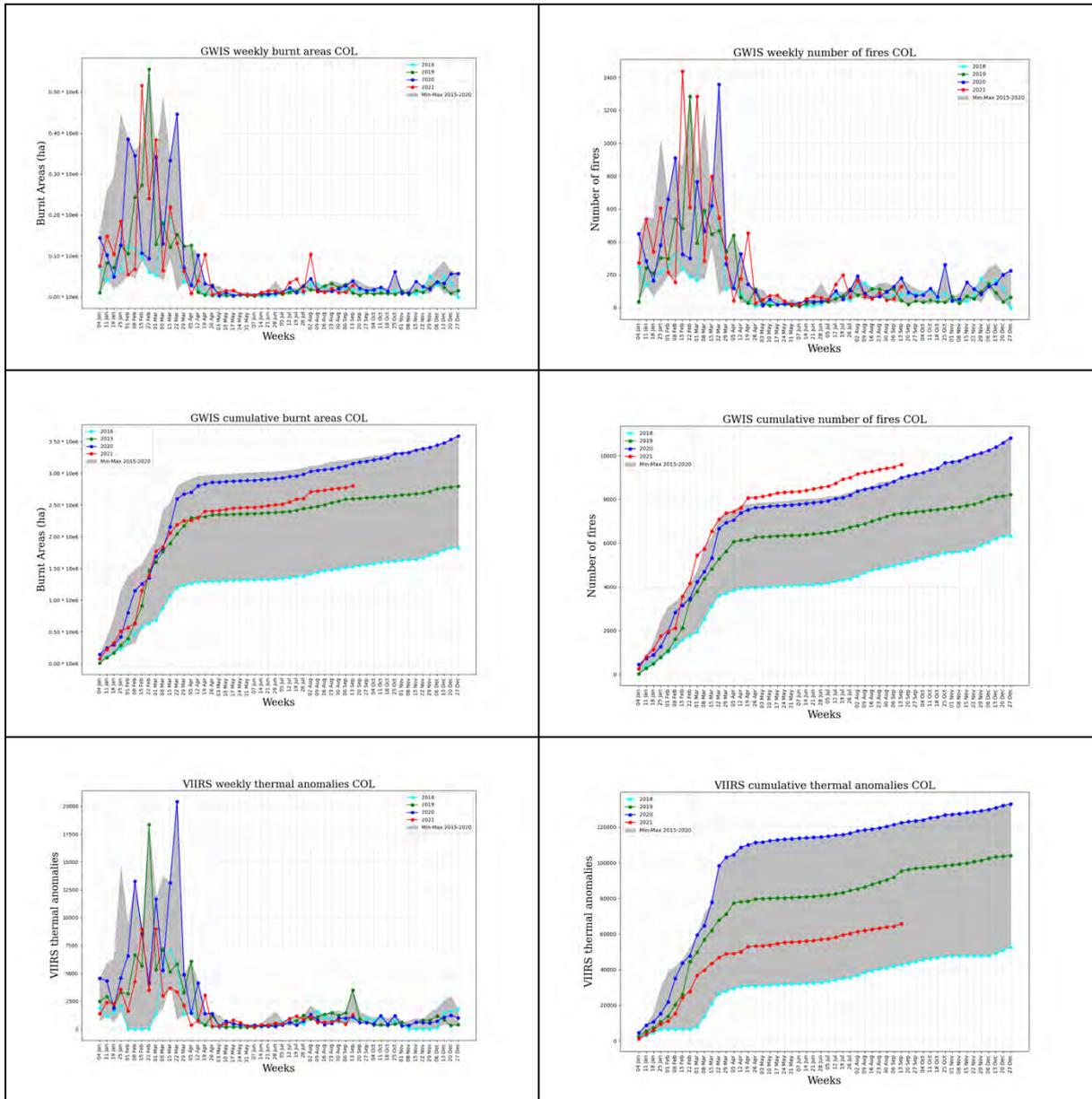


Figure 5. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 2.80 Mha burnt in Paraguay since January 1 until September 19, 2021. Approximately, 23,018 ha burnt in the country the last week, being this the lowest value for this week in the last 6 years. The number of fires recorded in GWIS in the last week was 59, also below the values of the last 6 years for the same week. The number of thermal anomalies until September 19, 2021 (100,107) follows a typical trend in the region. 3,416 thermal anomalies detected by VIIRS last week, which is the highest value in the last 6 years.

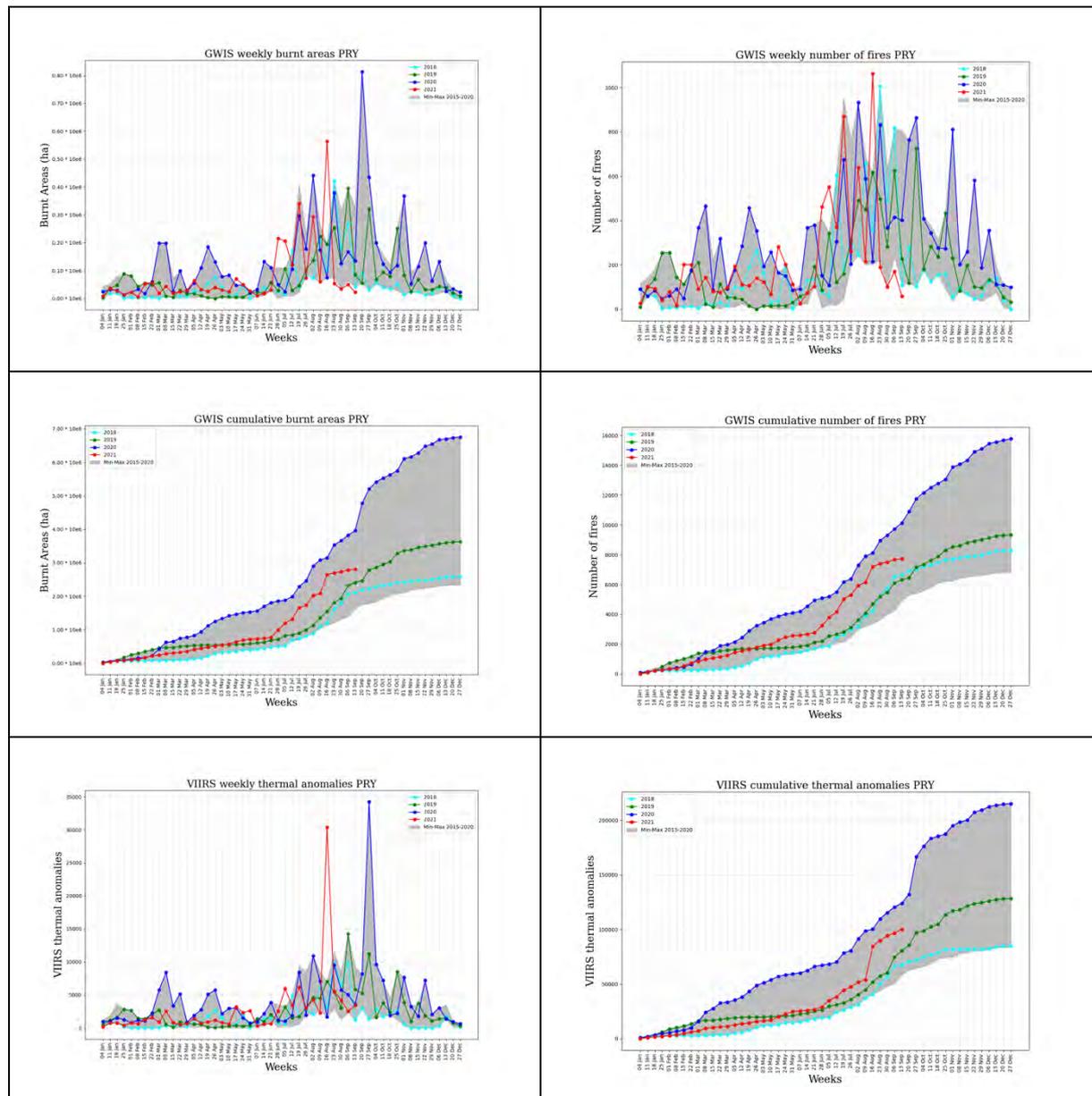


Figure 6. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 1.63 Mha burnt in Peru since January 1 until September 19, 2021, the second highest value since 2015 for the same period, lower than 2020. Approximately, 179,160 ha burnt in the last week. The number of thermal anomalies until September 19, 2021 (40,994) shows a typical trend in the region. 4,284 thermal anomalies registered last week, increasing after the last week.

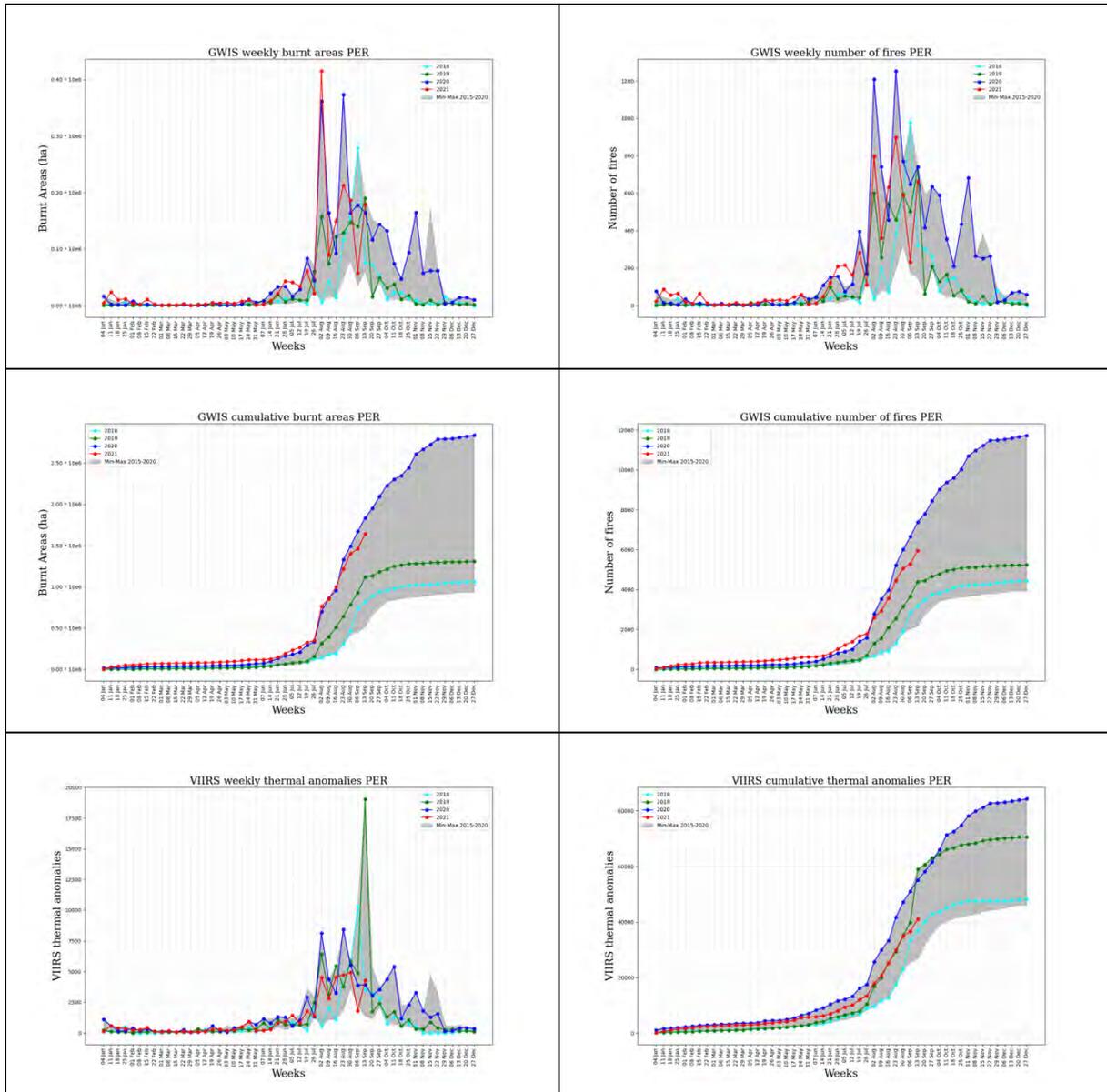


Figure 7. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 4.28 Mha burnt in Venezuela since January 1 until September 19, 2021, with 11,141 ha burnt in the last week. These values are below the values of 2019 and 2020. The number of fires recorded in GWIS in the last week was 52. The number of thermal anomalies until September 19, 2021 (126,339) shows a typical trend in the region. 2,286 thermal anomalies were recorded by VIIRS during the last week.

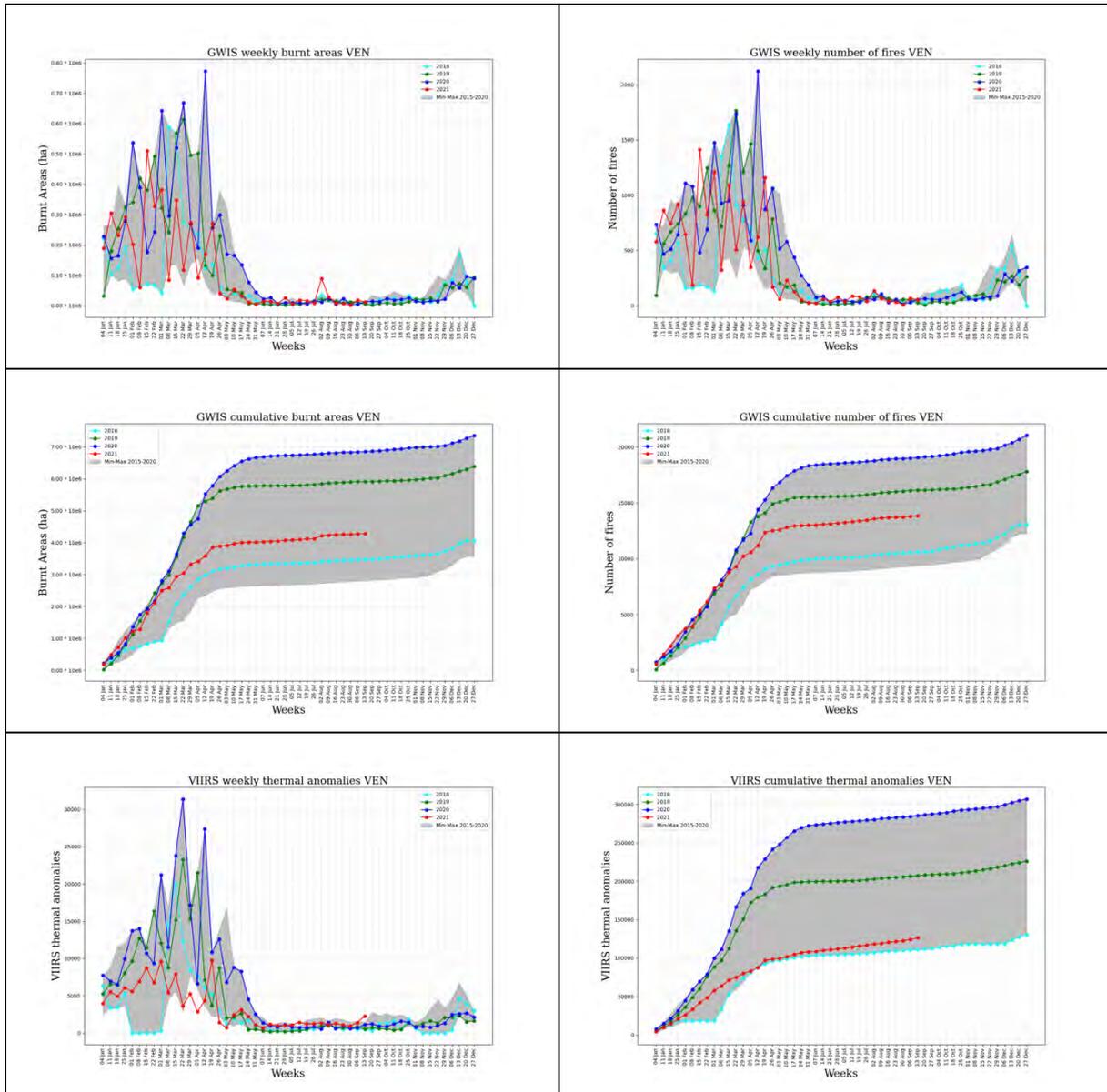


Figure 8. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 435,966 ha burnt in Chile since January 1 until September 19, 2021, with 1,964 ha burnt in the last week. The number of fires recorded in GWIS in the last week was 13, while the number of fires remains above the numbers of the last 6 years. The number of thermal anomalies until September 19, 2021 (12,477) shows a typical trend in the region as compared to the trends during previous years. 69 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week during previous years.

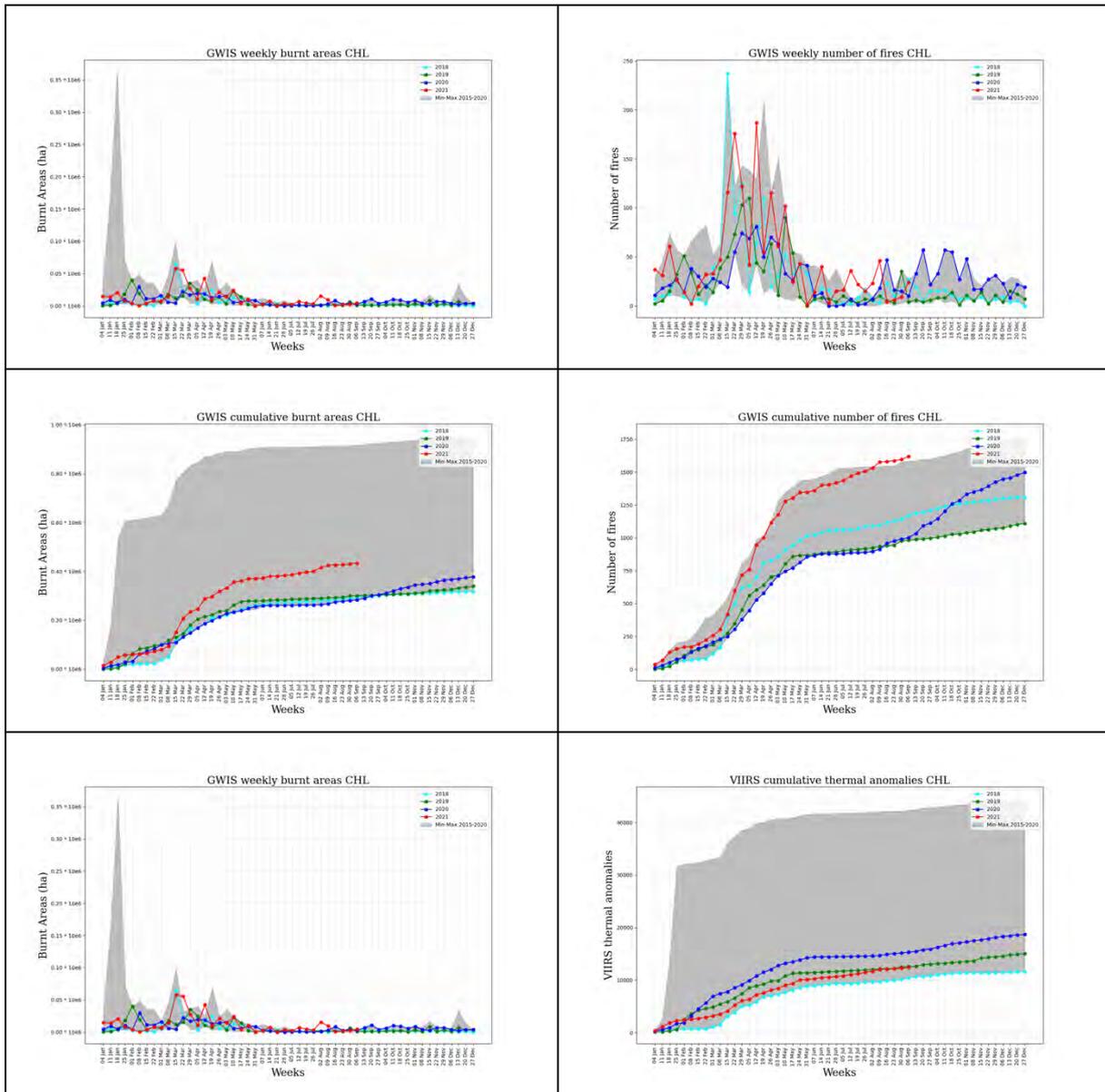


Figure 9. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 3.55 Mha burnt in Argentina since January 1 until September 19, 2021, with 0.132 Mha burnt in the last week. These values are below of those of 2020 and 2019 but above to the ones reached in 2018 for the same week. The number of fires recorded in GWIS in the last week was 499. The number of thermal anomalies until September 19, 2021 (116,550) shows a typical trend in the region. 6,751 thermal anomalies were recorded by VIIRS during the last week.

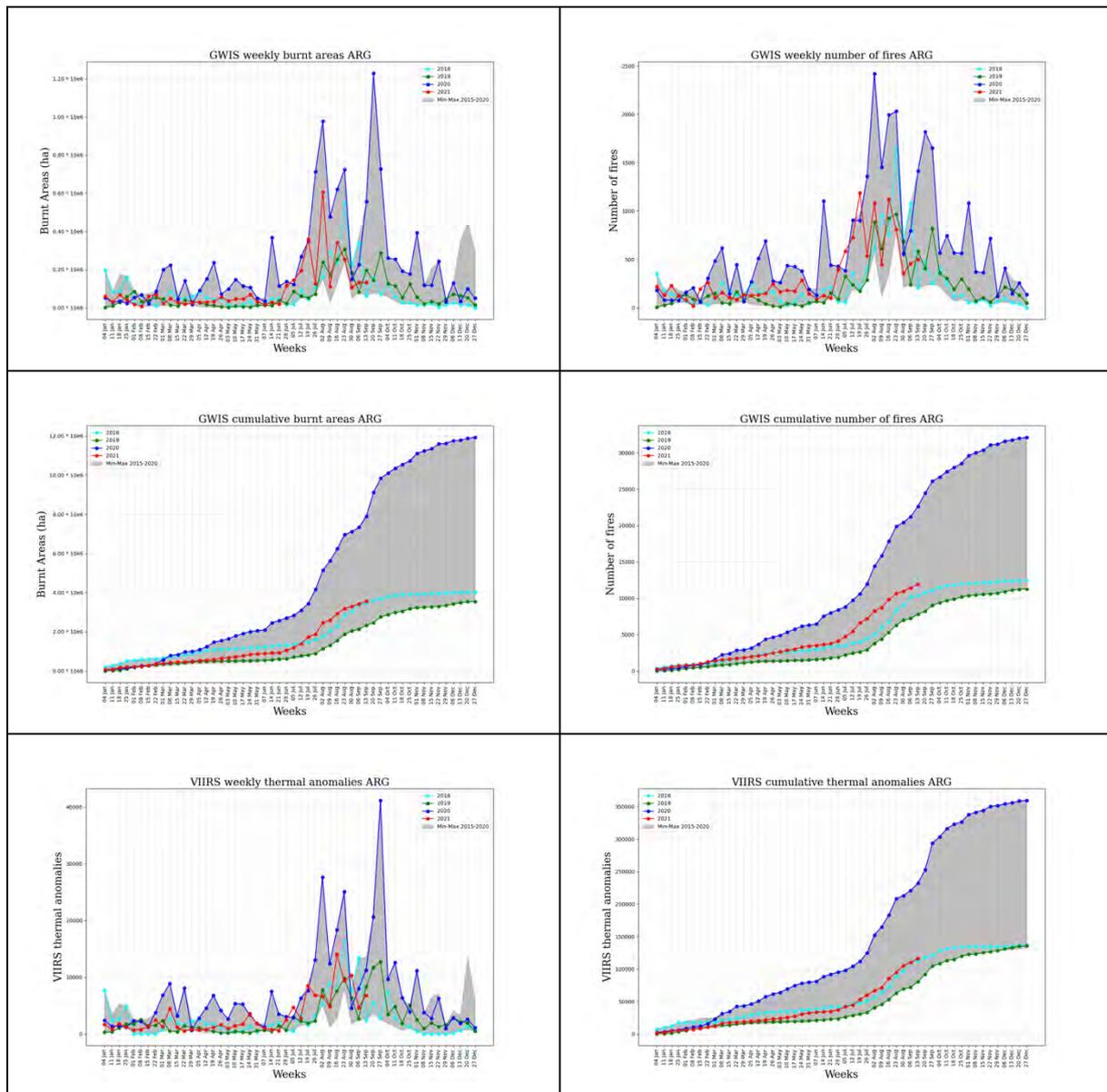


Figure 10. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 65,830 ha burnt in Ecuador since January 1 until September 19, 2021, with 3,387 ha burnt in the last week. The number of fires recorded in GWIS in the last week was 18. The trends of the areas burnt and the number of fires in the country are similar to those of the previous 6 years. The number of thermal anomalies until September 19, 2021 (2,250) shows a typical trend in the region. 118 thermal anomalies were detected by VIIRS in the last week.

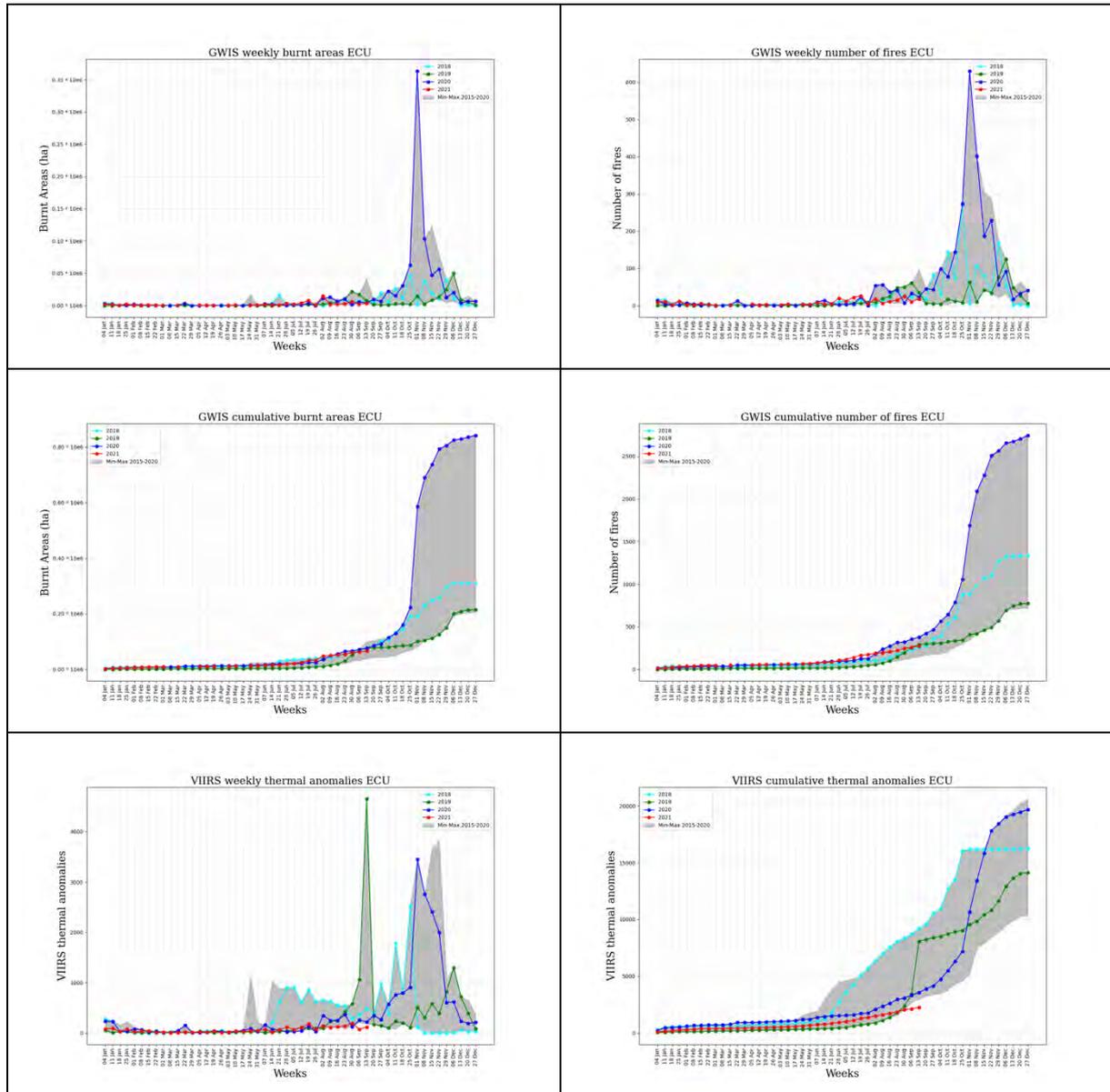


Figure 11. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 47,194 ha burnt in Uruguay since January 1 until September 19, 2021, with 154 ha burnt last week, which is the lowest weekly value in 2021. One fire was recorded last week. The number of thermal anomalies until September 19, 2021 (1,652) shows a typical trend in the region.

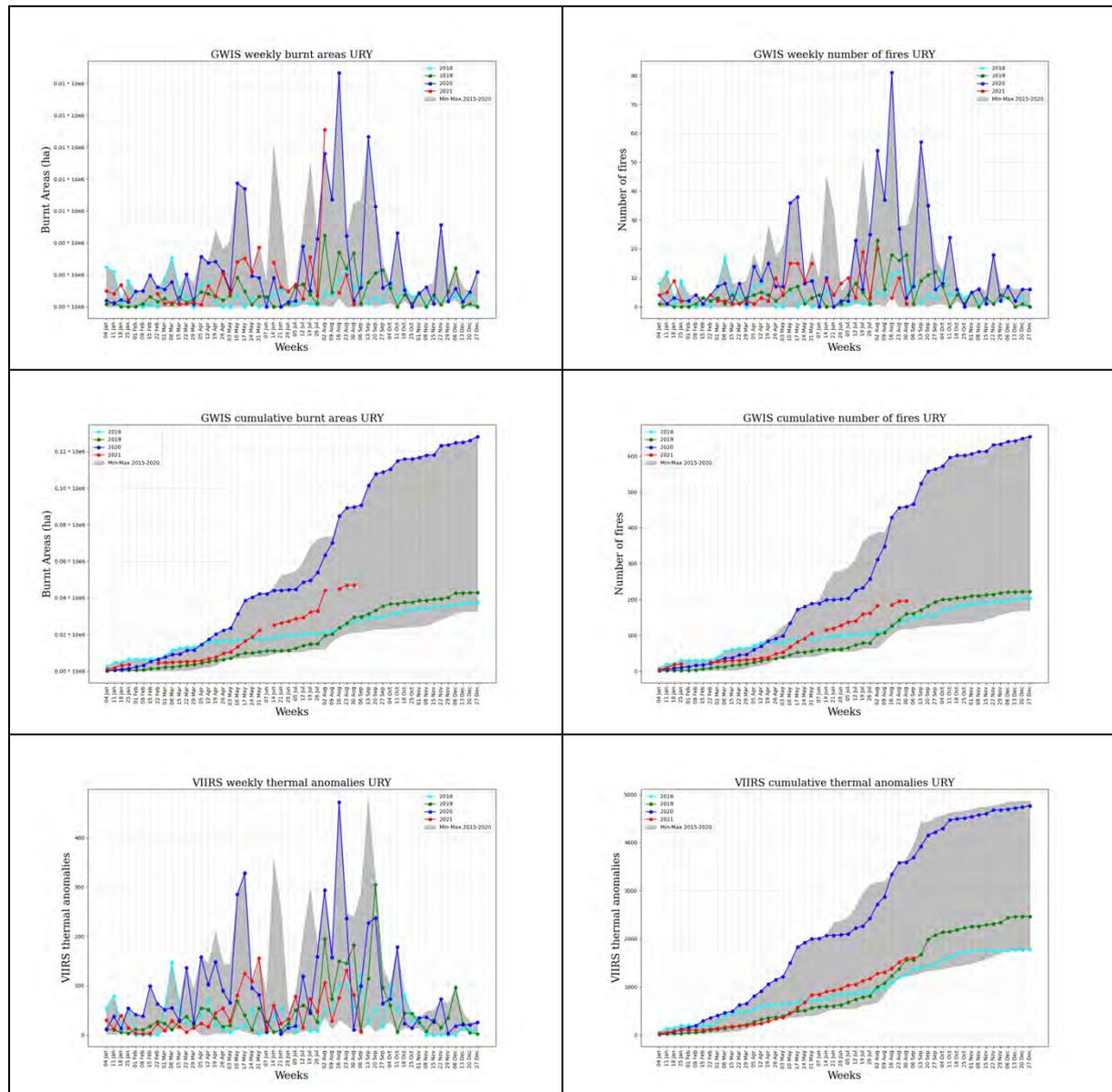


Figure 12. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 893 ha burnt since January 1 until September 19, 2021, in French Guiana, 1 fire was recorded last week. The number of thermal anomalies until September 19, 2021 (72) shows a typical trend in the region as compared to the trends during previous years. 16 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week during previous years.

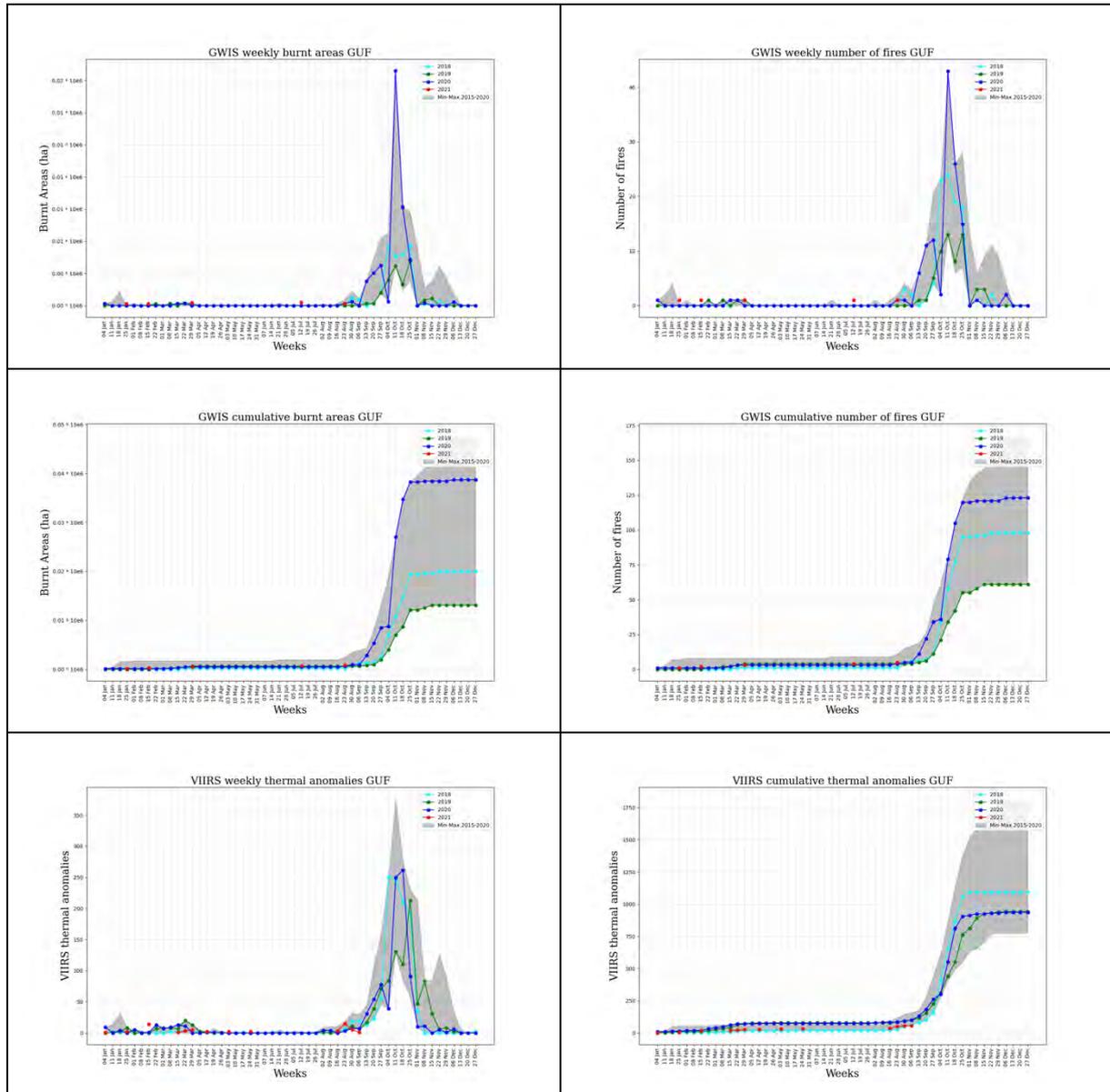


Figure 13. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 62,094 ha burnt in Guyana since January 1 until September 19, 2021, with 375 ha burnt and 1 fire recorded last week. The total number of thermal anomalies until September 19, 2021 (1,973) are the lowest of the last 6 years s. 175 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week during previous years.

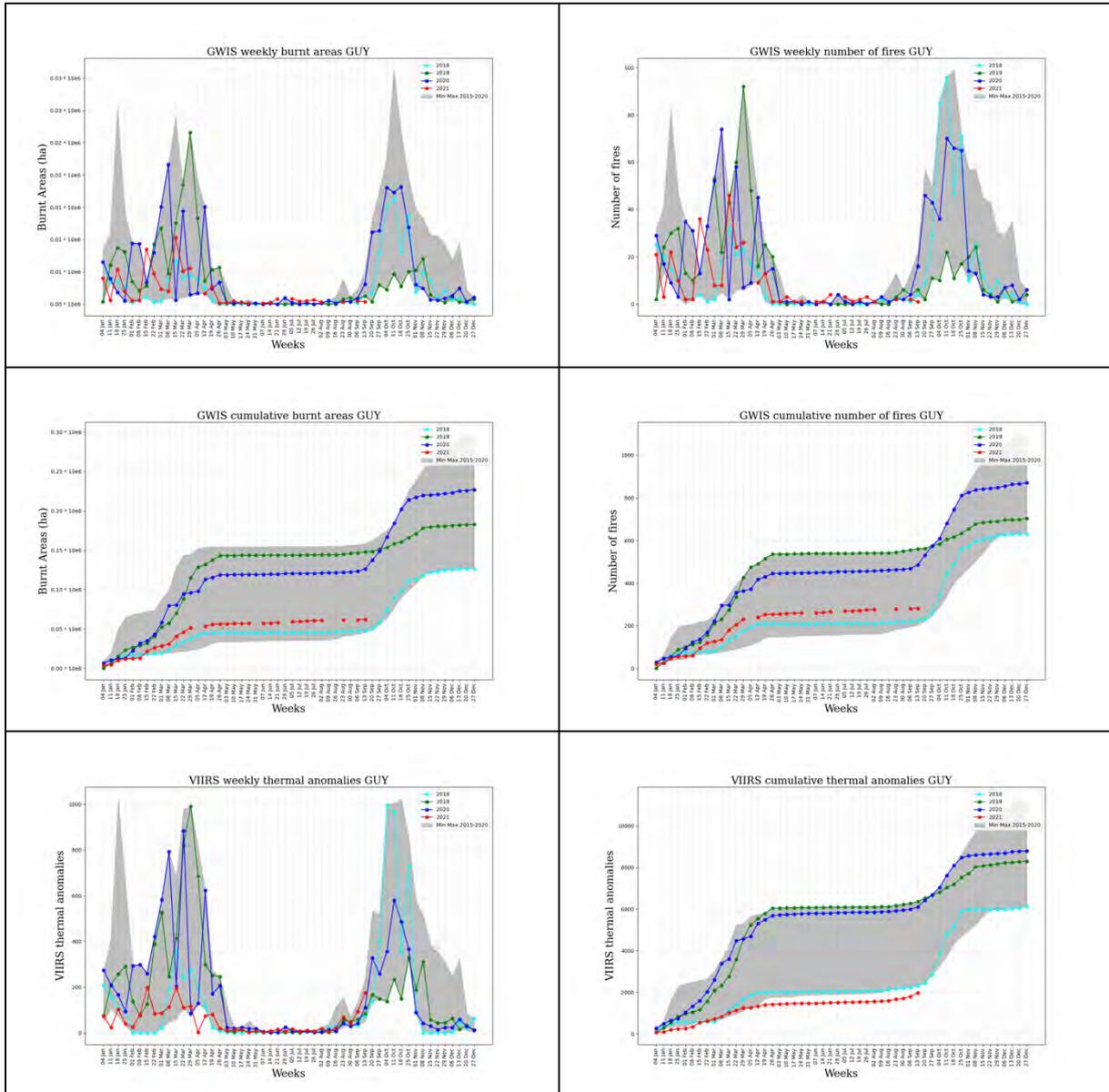


Figure 14. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 4,533 ha burnt in Suriname since January 1 until September 19, 2021. One fire was recorded last week. The total number of fires since the beginning of the year is 21. The number of thermal anomalies until September 19, 2021 (170) shows a typical trend in the region. 31 thermal anomalies were registered last week.

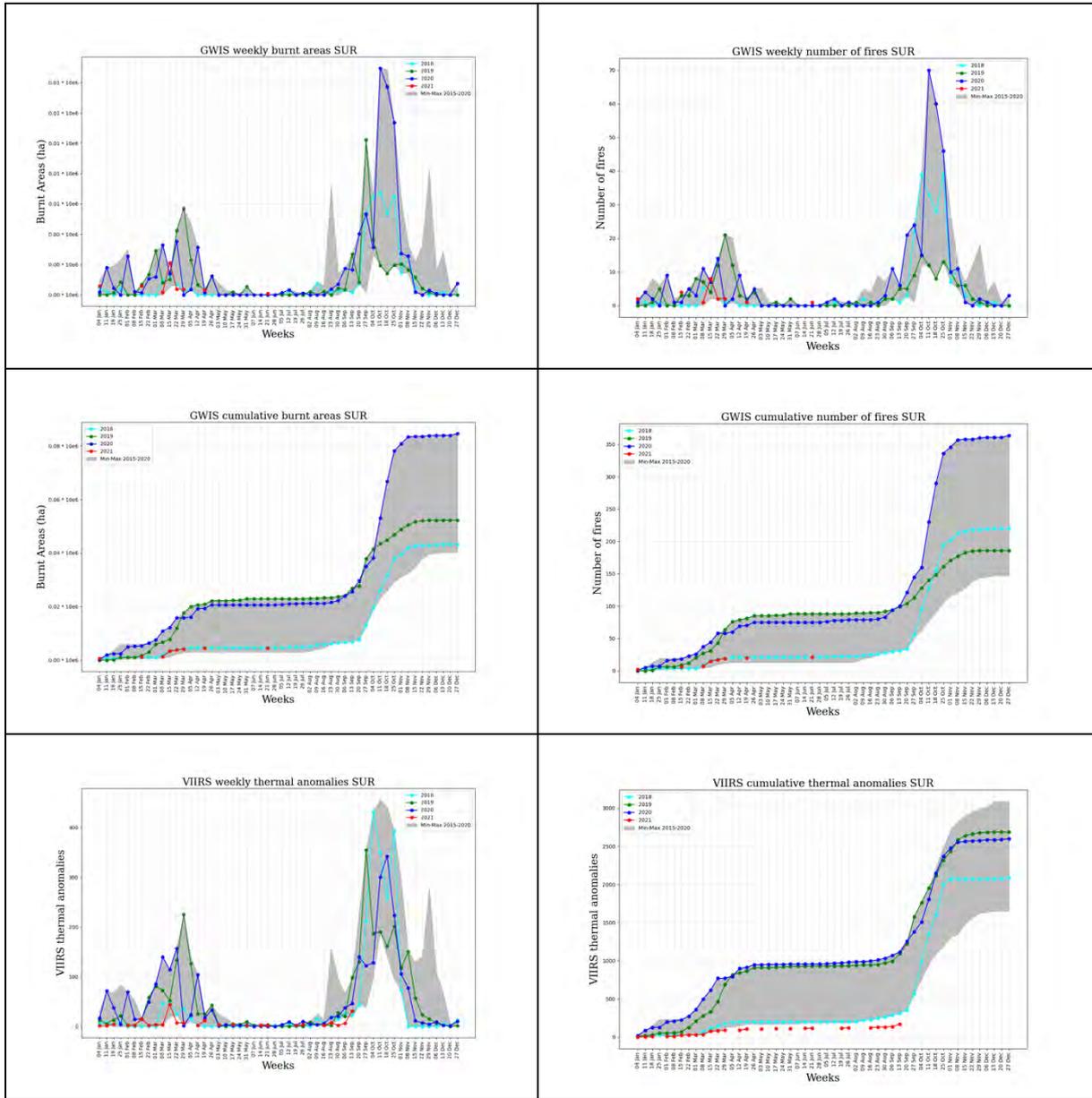


Figure 15. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last 6 years.

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 September 20 to September 26, 2021. This information is based on the daily fire danger forecast that is provided online in GWIS³. According to the forecast, it is expected that fire danger conditions will continue to be very high to extreme in eastern part of Brazil, southeast Bolivia, northern Chile and moderate to high in, Paraguay, and northern/western Argentina.

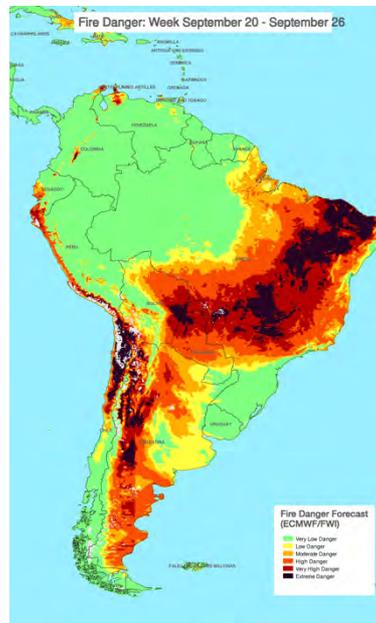


Figure 16. Average Fire danger forecast. Week, September 20- September 26, 2021.

The weekly weather forecast of temperature and precipitation anomalies are presented in Figure 17. Below average temperatures are forecasted for areas of northern Brazil. Above average temperatures are forecasted in Paraguay, northern Bolivia, southeastern Brazil, southern Argentina and Chile. The models estimate below average precipitation for next week in northern Bolivia, Paraguay, southeastern Brazil and eastern Argentina. . An above average precipitation is expected in Colombia, Venezuela, central-northern Brazil, southern Paraguay, and northern Peru.

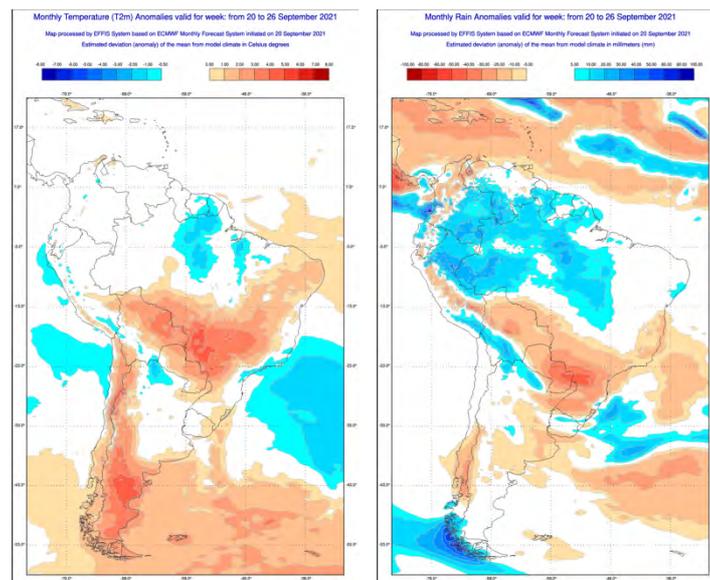


Figure 17. Temperature and rain anomalies of the current week, September 20 - September 26, 2021.

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

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