



European  
Commission

# JRC TECHNICAL REPORT

## Weekly analysis of wildfires in the Amazon region: December 07 - December 13, 2020

2020



JRC123465

This publication is a Technical report by the Joint Research Centre (JRC), the European Commission's science and knowledge service. It aims to provide evidence-based scientific support to the European policymaking process. The scientific output expressed does not imply a policy position of the European Commission. Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use that might be made of this publication. For information on the methodology and quality underlying the data used in this publication for which the source is neither Eurostat nor other Commission services, users should contact the referenced source. The designations employed and the presentation of material on the maps do not imply the expression of any opinion whatsoever on the part of the European Union concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries.

Contact information

Name: Global Wildfire Information System

Address: <https://gwis.jrc.ec.europa.eu>

Email: [jrc-effis@ec.europa.eu](mailto:jrc-effis@ec.europa.eu)

Tel.: +39 0332 786138

EU Science Hub

<https://ec.europa.eu/jrc>

JRC123465

Luxembourg: Publications Office of the European Union, 2020

© European Union, 2020



The reuse policy of the European Commission is implemented by the Commission Decision 2011/833/EU of 12 December 2011 on the reuse of Commission documents (OJ L 330, 14.12.2011, p. 39). Except otherwise noted, the reuse of this document is authorised under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence (<https://creativecommons.org/licenses/by/4.0/>). This means that reuse is allowed provided appropriate credit is given and any changes are indicated. For any use or reproduction of photos or other material that is not owned by the EU, permission must be sought directly from the copyright holders.

All content © European Union, 2020

How to cite this report: San-Miguel-Ayanz, J.<sup>1</sup>, Artes, T.<sup>1</sup>, Oom, D.<sup>1</sup>, Campanharo, W.<sup>2</sup>, Pfeiffer, H.<sup>3</sup>, Branco, A.<sup>3</sup>, Liberta, G.<sup>1</sup>, De Rigo, D.<sup>3</sup>, Grecchi, R.<sup>3</sup>, Maianti, P.<sup>3</sup>, Boca, R.<sup>3</sup>, Durrant, T.<sup>4</sup>, Ferrari, D.<sup>4</sup>, 2020. Weekly analysis of wildfires in the Amazon region: December 07 – December 13, 2020, Publications Office of the European Union, Luxembourg, JRC123465.

<sup>1</sup> European Commission, Joint Research Centre (JRC), Ispra, Italy

<sup>2</sup> Instituto Nacional de Pesquisas Espaciais (INPE), San Jose dos Campos, Brazil

<sup>3</sup> ARCADIA SIT, Milan, Italy

<sup>4</sup> Engineering Ingegneria Informatica S.p.A. Rome, Italy

**Contents**

Scope of this report and executive summary..... 1

1 Wildfires in the Brazilian Legal Amazon Region ..... 2

2 Wildfires in Brazil ..... 3

3 Wildfires in Bolivia ..... 4

4 Wildfires in Colombia ..... 5

5 Wildfires in Paraguay ..... 6

6 Wildfires in Peru..... 7

7 Wildfires in Venezuela ..... 8

8 Fire danger and fire weather forecast in the Amazon region ..... 9

## 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)<sup>1</sup>. Most of the Amazon region is in Brazil, specifically in the Brazilian Legal Amazon (BLA)<sup>2</sup>, 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.

- In the Brazil Legal Amazon (BLA), within Brazil, a **total of 33.30 Mha burnt since January 1 until December 13, 2020. This value is about 58% higher than that of 2019.** Last week 1005 fires occurred, which is a higher value than those in 2019 and 2018 for the same week. **During November 2020 the total burnt area is higher than previous years but with a considerable decreasing trend which points out to the end of the current fire season.**
- **47.21 Mha ha burnt in Brazil since January 1 until December 13, 2020,** with a total of 416,068 ha burnt in the last week. The value of the last week was still higher the value of the same week in 2019. So far, the total burnt area in Brazil is about **47% higher than that of 2019.** 3,535 fires occurred last week. The average fire size is similar to 2019 that was a critical year. **However, during November there is a decreasing trend showing an expected end of the fire season.**
- In **Bolivia**, the weekly burnt area and number of fires are stabilized to trends of previous years. However, **9.04 Mha burnt during 2020, which is 10% higher than the value in 2019,** mainly due to a significant increase of fires from mid-August to November.
- In **Colombia**, the **total burnt area in the country (3.41 Mha) remains approximately 24 % above the values of 2019,** due to the intensive fire activity from January to April 2020.
- **Paraguay, with 6.68 Mha burnt since January 1 until December 13, 2020, has reached values 85% above the values in 2019.** The fire activity remained higher than usual for November as compared with previous years.
- **A total of 2.79 Mha burnt in Peru since January 1 until December 13, 2020. This value is about 115% higher than that of 2019,** mainly because of the increase of the fire activity during July and August. The number of fires mapped in GWIS is nearly double of that in 2019.
- In **Venezuela, 7.06 Mha burnt in the current year, which is approximately 15% higher than the value in 2019,** mainly due to the intensive fire activity in the country between January and April. **The trend in the last week is lower to those of 2018 but higher to those in 2019 when the fire season was already showing signs of a starting season.**
- This week, fire danger will remain very high to extreme in the eastern part of Brazil and moderate to high in southern Bolivia.



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

<sup>1</sup> <https://gwis.jrc.ec.europa.eu>

<sup>2</sup> 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 33.30 Mha burnt in the BLA since January 1 until December 13, 2020, with 217,106 ha burnt in total the last week, similar for the same week in 2019. Until December 13, the total burnt area in 2020 in BLA is about 58% higher than that of 2019.

The number of fires recorded in GWIS in the last week was 1005 higher to the values in 2019 and 2018 in that week. The total number of fires in 2020 is above the figures in 2018 and 2019. On average, fires that occurred in the BLA in the last 2 months, were of a similar size in 2020 compared to 2019 and 2018. The number of thermal anomalies until December 13, 2020 (1,006,255) shows a typical trend in the region as compared to the trends in 2018 and 2019. A number of 6010 thermal anomalies was registered last week.

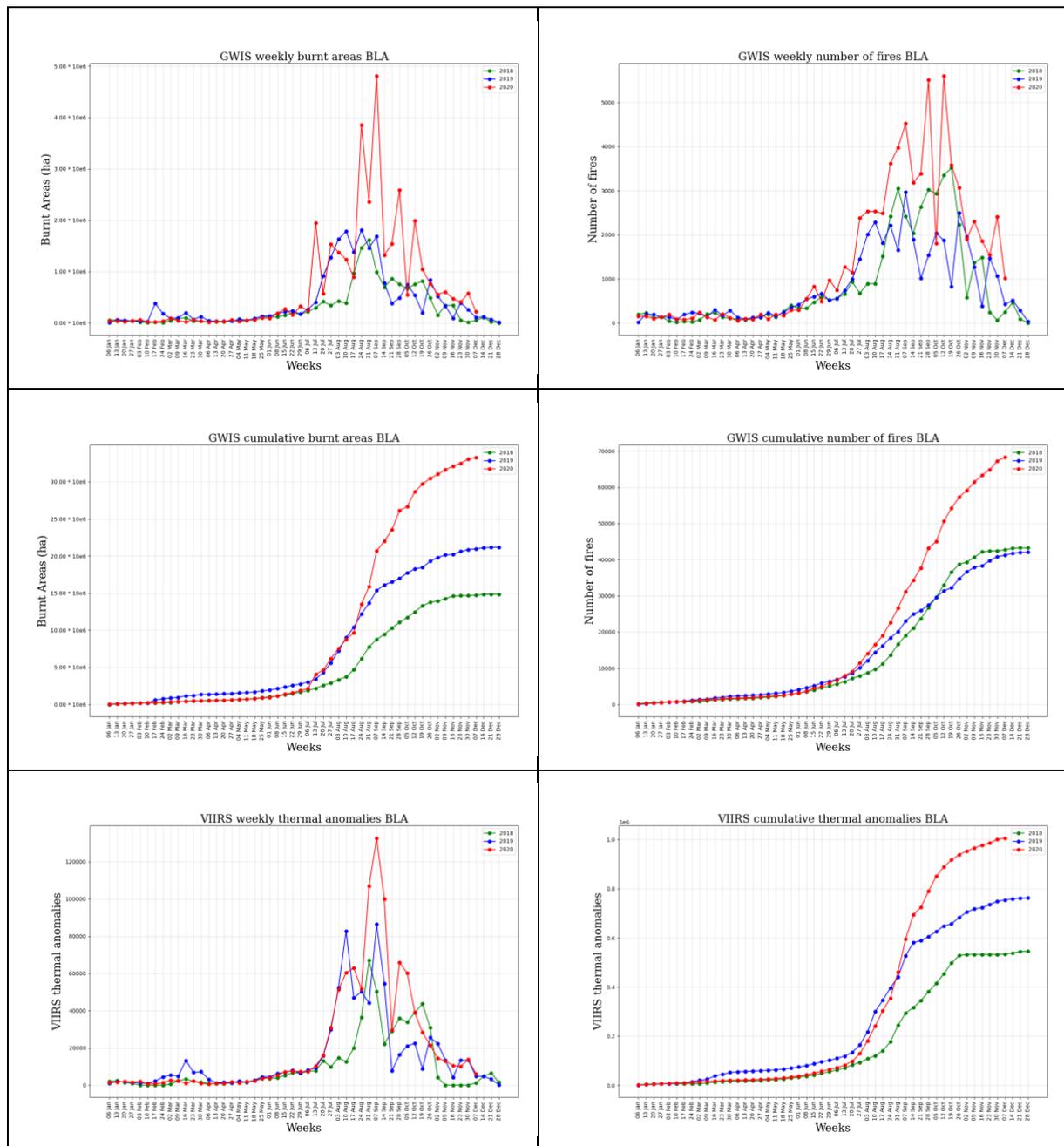


Figure 2. Trend of burnt areas and number of fires as compared to data in the last two years.

## 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 47.21 Mha ha burnt in Brazil since January 1 until December 13, 2020, with a total 416,068 ha burnt in the last week. The value of the week was higher than of the values for the same week in 2019. Until December 13, the total burnt area in Brazil is about 48% higher than that of 2019.

The number of fires recorded in GWIS in the last week was 1975, higher than the value in 2019 and 2018 in that week. The number of fires in 2020 up to December 13 is higher than that of 2019, although the average fire size is similar to 2019 that was a critical year. The number of thermal anomalies until December 13, 2020 (1,434,621) shows a typical trend in the region but with similar values as compared to the trends in 2019 and higher than 2018. 11427 thermal anomalies were registered last week.

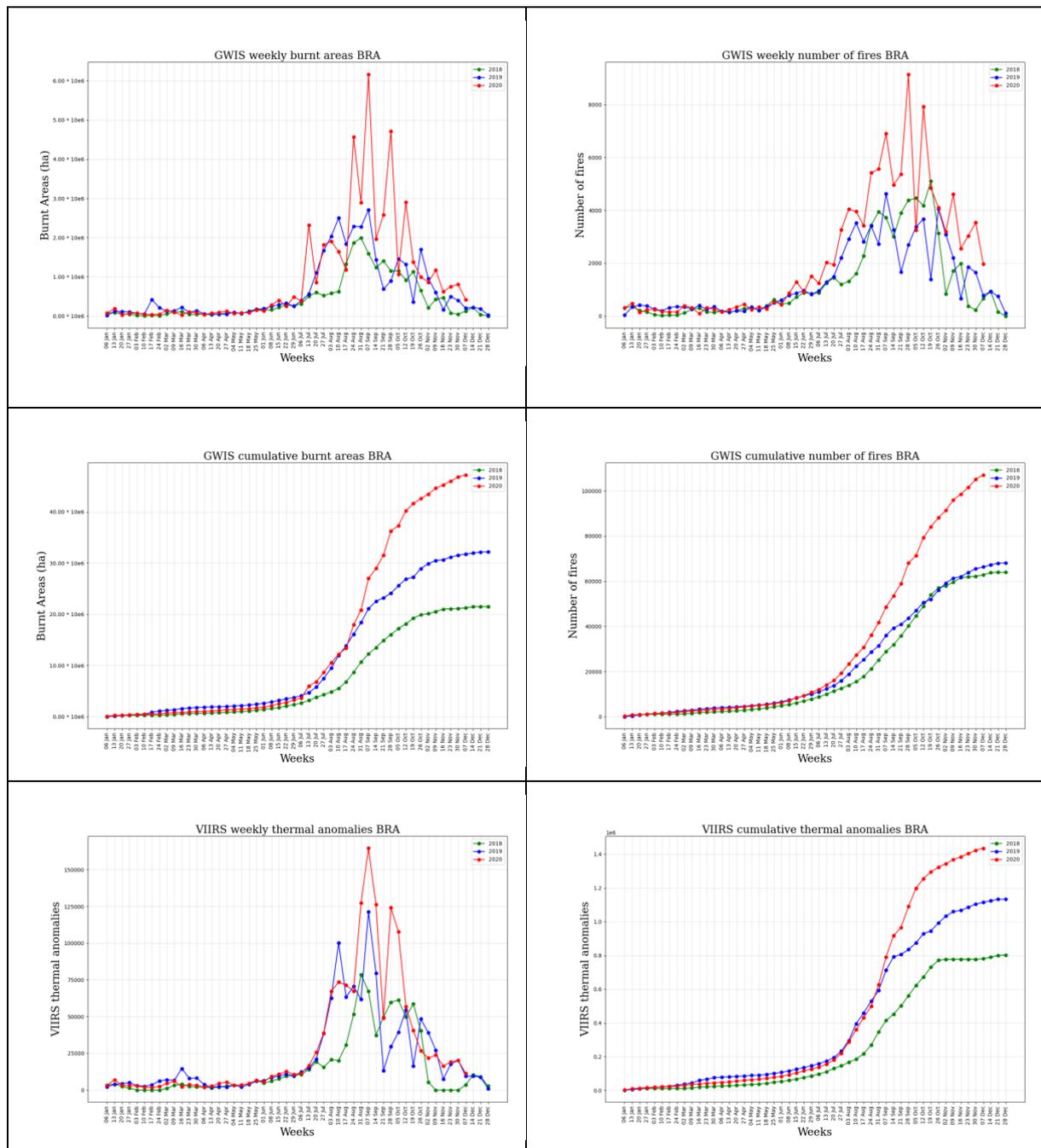


Figure 3. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

### 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 9.04 Mha ha burnt in Bolivia since January 1 until December 13, 2020, with 69,838 ha burnt in the last week. The last week had similar burnt area but higher number of fires than the same week in 2019. However, the average fire size remains similar to previous years and much lower from the peaks of the average fire size reached during July of 2019 (see Figure 18).

The number of fires recorded in GWIS in the last week was 275 higher than the number of fires in the same week in 2018 and 2019. The number of thermal anomalies until December 13, 2020 (276,260) shows a typical trend in the region. 1675 thermal anomalies were detected by VIIRS in the last week.

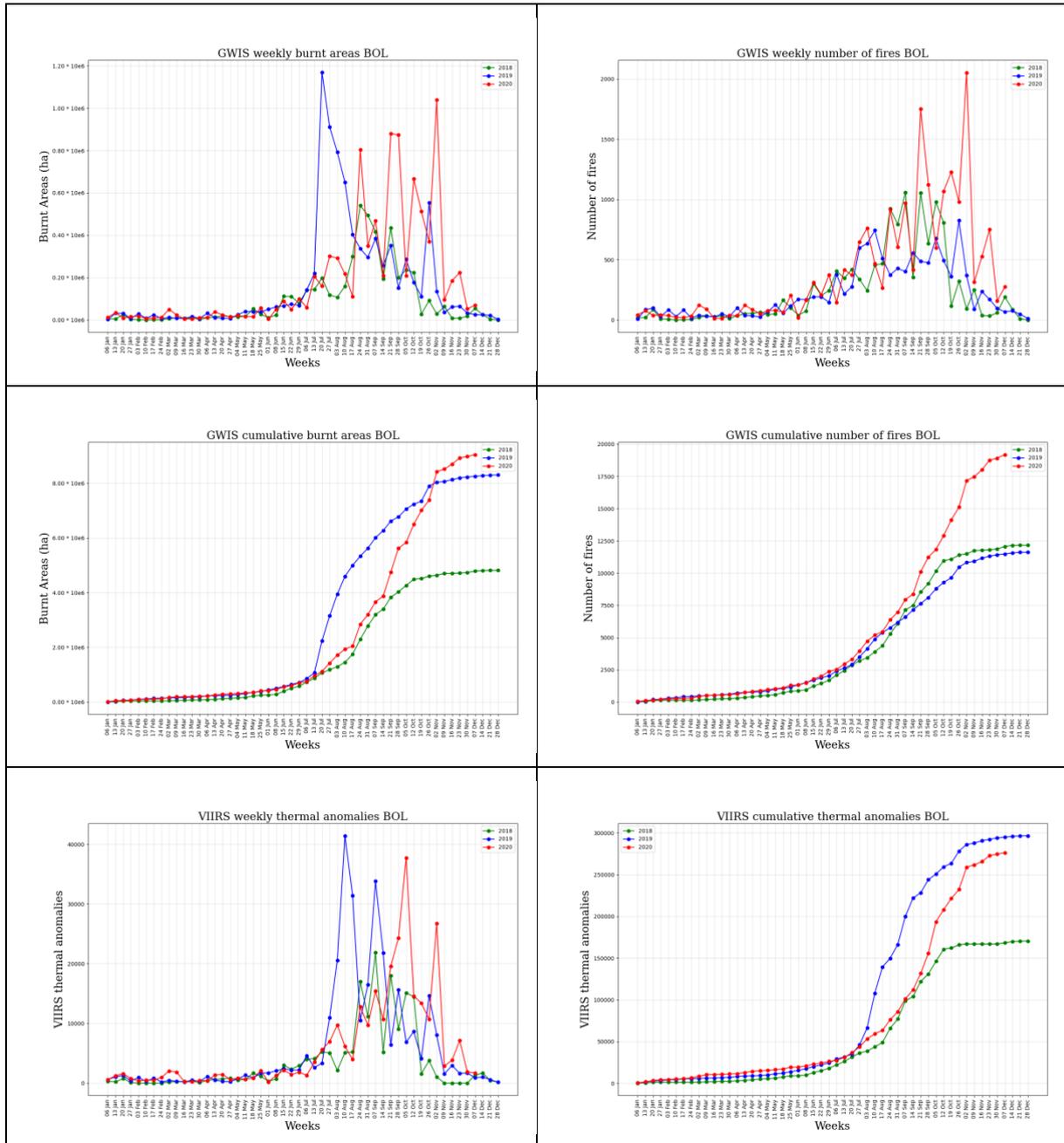


Figure 4. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

## 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 3.41 Mha burnt in Colombia since January 1 until December 13, 2020, with 41,553 ha burnt in the last week. The fire activity of last week is similar to those of previous years, the total burnt area in the country is approximately 24 % 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 160, which shows a stable trend in the last weeks, as compared to 2018 and 2019, but increasing from the last week. The number of fires is approximately 26% higher than that of last year. The number of thermal anomalies until December 13, 2020 (118,020) shows a typical trend in the region as compared to the trends in 2018 and 2019, with values approximately 20% higher than those in 2019. 802 thermal anomalies were detected by VIIRS during the last week, which is similar to the values in the same week in 2019 and 2018.

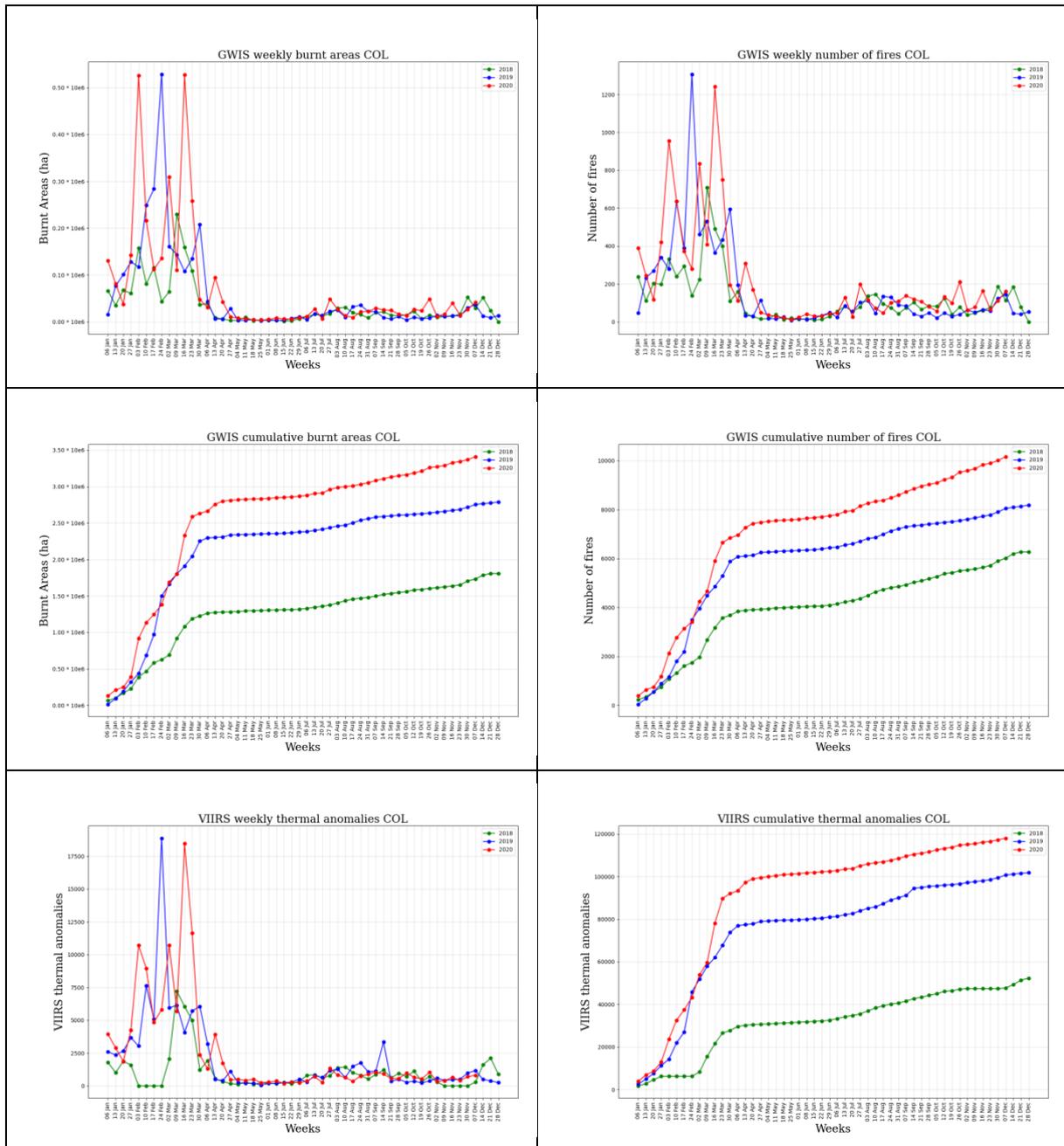


Figure 5. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

## 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 6.68 Mha burnt in Paraguay since January 1 until December 13, 2020, which is nearly two times the values of previous years like 2018 and 2019. Approximately 143,697 ha burnt in the country the last week, higher than the value of the same week of 2019 and 2018

The number of fires recorded in GWIS in the last week was 426, which is higher than the value in 2019 and 2018. The average fire size has decreased during the last 4 weeks and is similar of the same weeks of 2018 and smaller than 2019. The number of thermal anomalies until December 13, 2020 (209,071) follows a typical trend in the region, but with higher values, nearly the double as compared to 2018 and 2019. 3857 thermal anomalies detected by VIIRS last week.

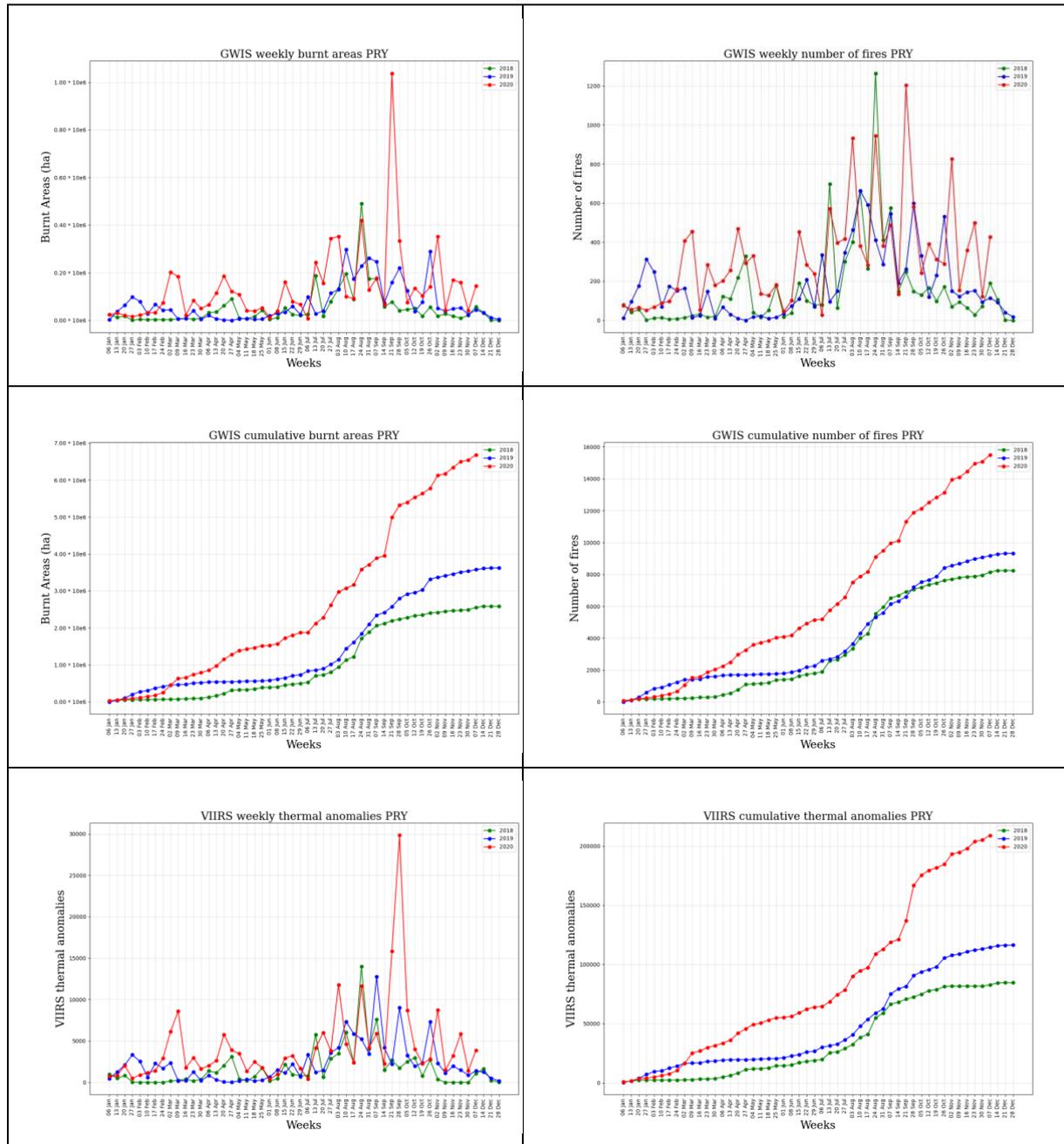


Figure 6. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

## 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 2.79 Mha burnt in Peru since January 1 until December 13, 2020. This value is almost the double than that of 2019. Approximately 6744 ha burnt in the last week, similar values than ones of 2018 and 2019 for the same week.

The number of fires recorded in GWIS in the last week was 37, similar value than ones of 2018 and 2019 for the same week. The total number of fires since the beginning of the year, above 8,000, is about double of that of 2019. Compared with previous years, the fire season in 2020 is taking more weeks to end than in 2018 and 2019. The number of thermal anomalies until August 30, 2020 (82,360) shows a typical trend in the region, with values higher than in 2018 and 2019. 230 thermal anomalies registered last week, increasing after the last week.

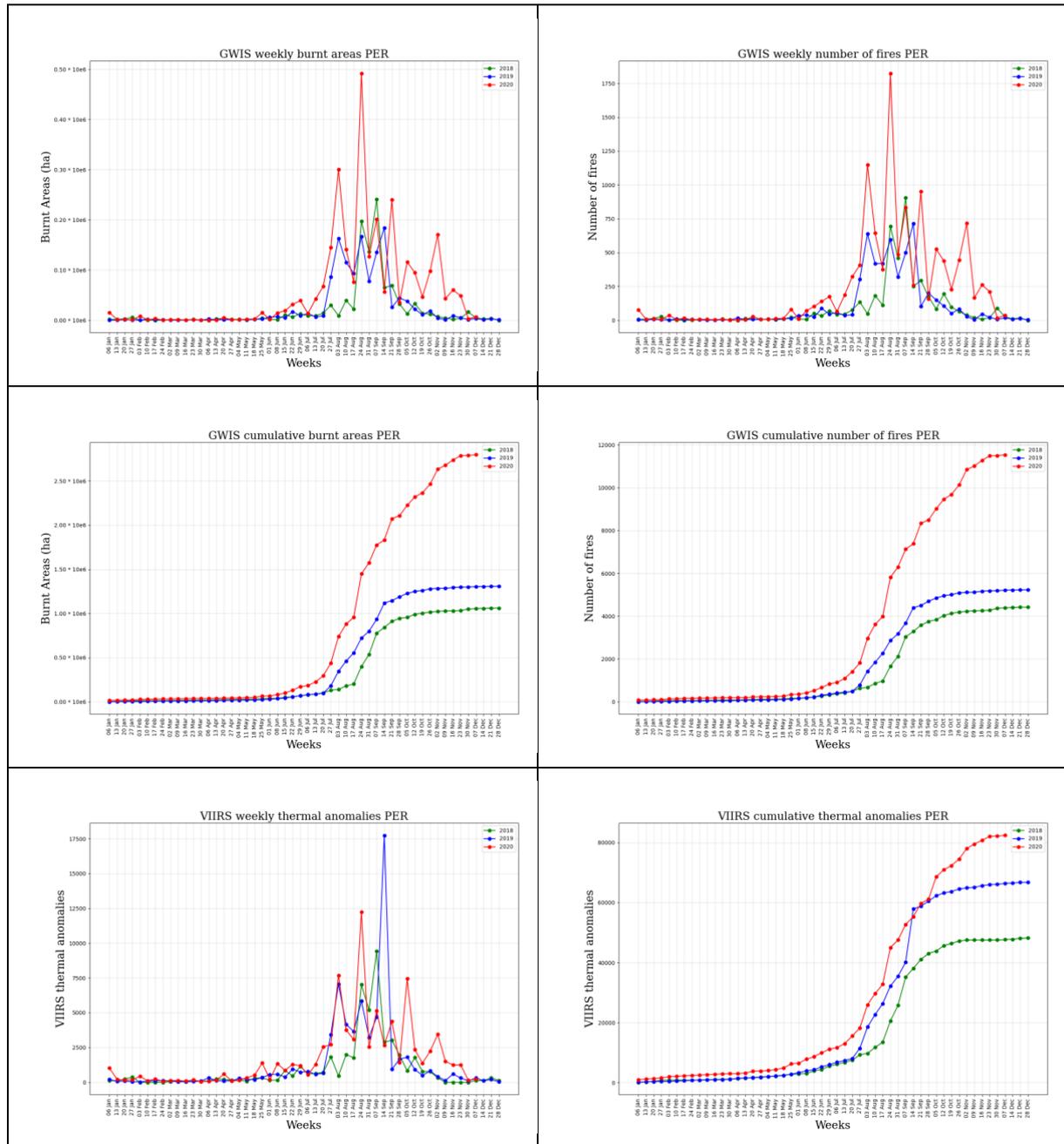


Figure 7. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

## 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 7.06 Mha burnt in Venezuela since January 1 until December 13, 2020, with 82,768 ha burnt in the last week. The value of the total burnt area in the country is approximately 14.64 % 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 lower than that of 2018 and 2019. The fire season in Venezuela is expected to be starting during the following weeks.

The number of fires recorded in GWIS in the last week was 324, which shows a stable trend comparable to those of the previous two years, although the total number of fires remains approximately 18% higher than in 2019. The number of thermal anomalies until December 13, 2020 (280,426) shows a typical trend in the region as compared to the trends in 2018 and 2019, but with approximately 30% higher value than the previous years. 2410 thermal anomalies were recorded by VIIRS during the last week, a value that is like those recorded in that week the previous two years.

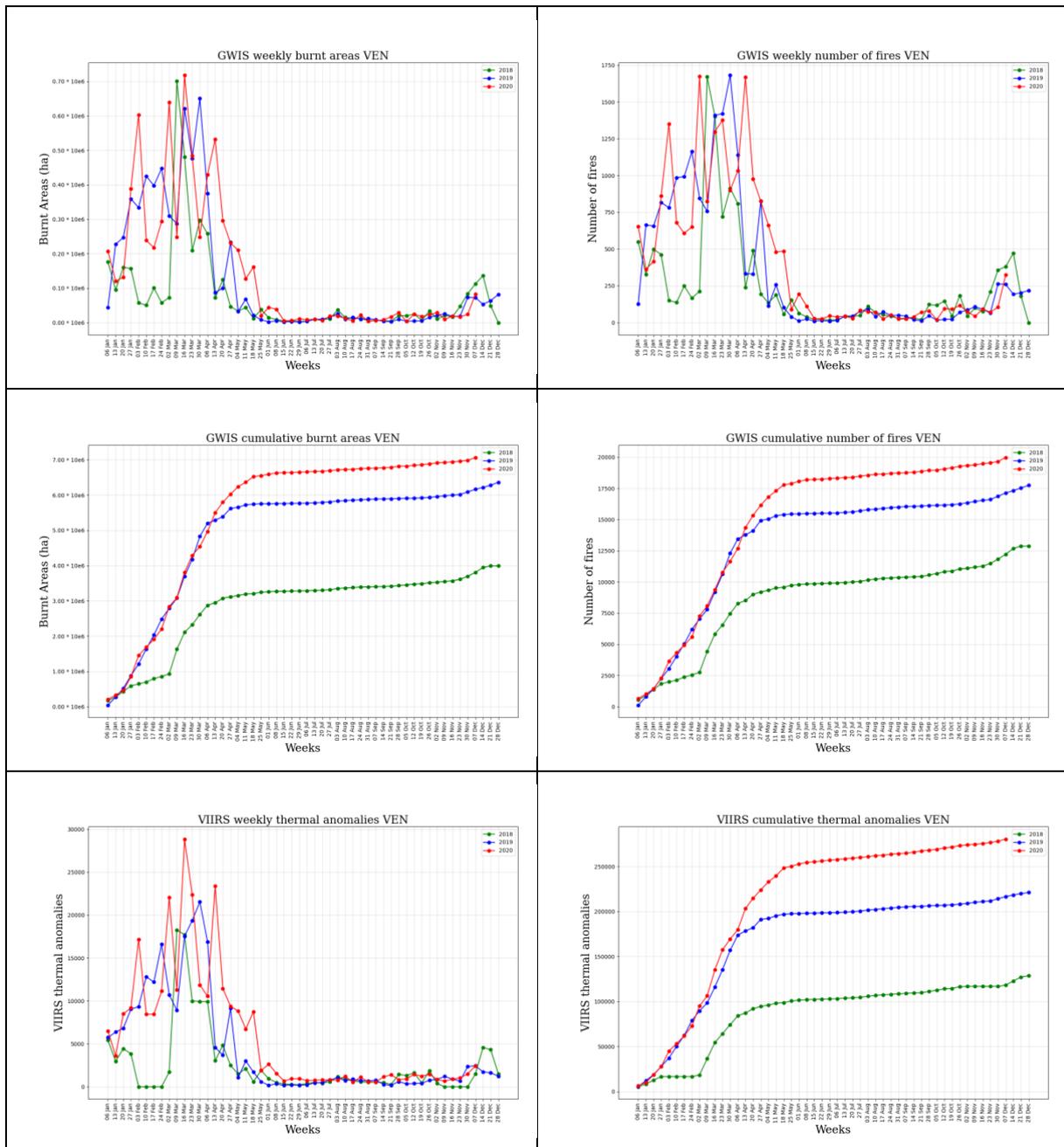


Figure 8. Trend of burnt areas, number of fires and thermal anomalies as compared to data in the last two years.

## 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 December 14 to December 20, 2020. This information is based on the daily fire danger forecast that is provided online in GWIS<sup>3</sup>. According to this forecast, it is expected that fire danger conditions will remain very high to extreme in the eastern part of Brazil and moderate to high in southern Bolivia.

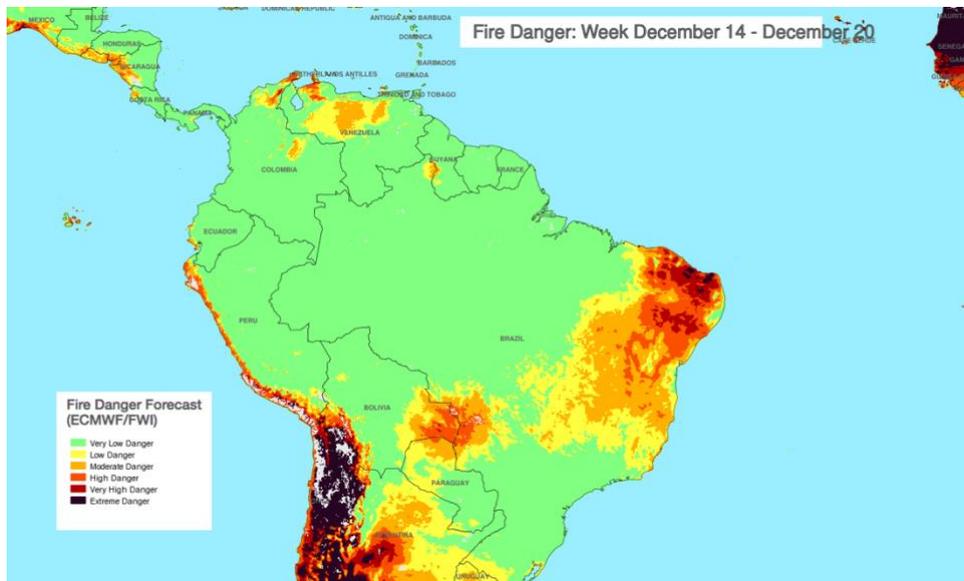


Figure 9. Average Fire danger forecast. Week, December 14 - December 20, 2020.

The weekly fire weather forecast of temperature and precipitation anomalies for this week is presented in Figure 10. Above average temperatures are forecasted for some areas of central and southeastern Brazil and southern Peru and Bolivia. The models estimate an above average precipitation rates for this week mainly in northern and Paraguay. Below average precipitation is foreseen mainly in central and southeastern Brazil, Peru and Bolivia.

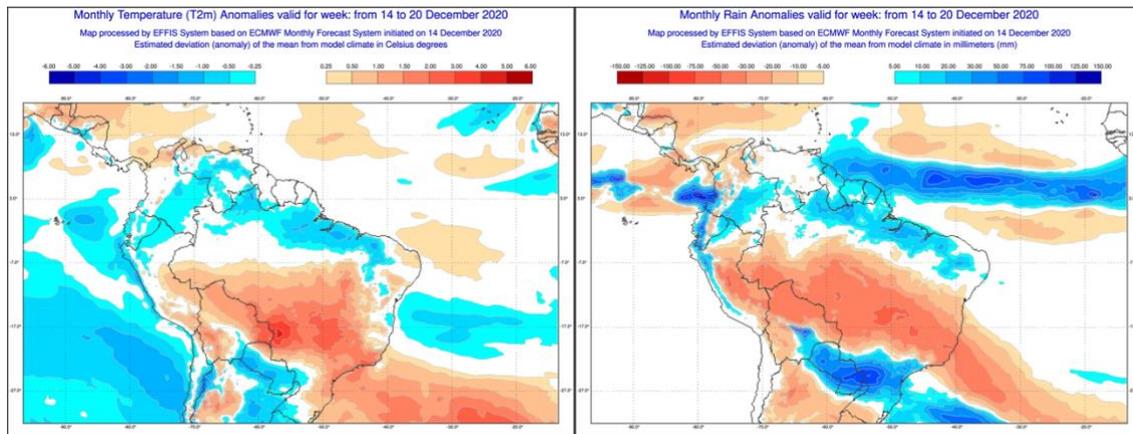


Figure 10. Fire weather anomalies of the current week, December 14 - December 20, 2020.

<sup>3</sup> [https://gwis.jrc.ec.europa.eu/static/gwis\\_current\\_situation/public/index.html](https://gwis.jrc.ec.europa.eu/static/gwis_current_situation/public/index.html)



## **GETTING IN TOUCH WITH THE EU**

### **In person**

All over the European Union there are hundreds of Europe Direct information centres. You can find the address of the centre nearest you at: [https://europa.eu/european-union/contact\\_en](https://europa.eu/european-union/contact_en)

### **On the phone or by email**

Europe Direct is a service that answers your questions about the European Union. You can contact this service:

- by freephone: 00 800 6 7 8 9 10 11 (certain operators may charge for these calls),
- at the following standard number: +32 22999696, or
- by electronic mail via: [https://europa.eu/european-union/contact\\_en](https://europa.eu/european-union/contact_en)

## **FINDING INFORMATION ABOUT THE EU**

### **Online**

Information about the European Union in all the official languages of the EU is available on the Europa website at: [https://europa.eu/european-union/index\\_en](https://europa.eu/european-union/index_en)

### **EU publications**

You can download or order free and priced EU publications from EU Bookshop at: <https://publications.europa.eu/en/publications>. Multiple copies of free publications may be obtained by contacting Europe Direct or your local information centre (see [https://europa.eu/european-union/contact\\_en](https://europa.eu/european-union/contact_en)).

## The European Commission's science and knowledge service

Joint Research Centre

### JRC Mission

As the science and knowledge service of the European Commission, the Joint Research Centre's mission is to support EU policies with independent evidence throughout the whole policy cycle.



**EU Science Hub**  
[ec.europa.eu/jrc](https://ec.europa.eu/jrc)



@EU\_ScienceHub



EU Science Hub - Joint Research Centre



EU Science, Research and Innovation



EU Science Hub



Publications Office  
of the European Union