Satellite images of forest fires are reliable

September 3 2019, by K. Hovestad - Bekmann

Credit: CC0 Public Domain

Recently, there was a strong appeal in the newspapers from the Brazilian president Jair Bolsonaro that satellite images on the bush fires were not correct, i.e. that they were providing unreliable information. This is a rather strange statement, as satellite images have a regular coverage and are very well suited to monitor large areas of land. In particular remote and inaccessible areas can perfectly be monitored and the obtained

images can be used for a range of relevant purposes. Moreover, specific fire products are now available.

In a recent project, sponsored by the European Union, the faculty of Geo-information and Earth Observation (ITC) is supporting the fire fighters with remote sensing information. Traditionally this was already done by the development of models that predict the progress of bush fires, depending upon weather conditions, elevation and vegetation. Emphasis on the use of satellite images has widened to use the latest methods in the domain. First, before a fire, we estimate the vulnerability of forested areas to the emergence and spread of bush fires, using deep learning for that purpose. Second, modeling of bushfire spread has improved. Data become of a higher quality with higher resolution, new sensors (e.g. lidar and radar) and using drones. With the help of tools developed in big data science we are able to make the most out of these. We are thus able to better predict where the fires are going. Third, analysis tools have improved to understand the pattern of the fire locations within a region. This can tell us something about the cause of the fires, like whether the fires are close to roads, population centers, or electric wires. Such an analysis is usually done after the fires: the burned areas (scars) can then be identified precisely, and we can measure the size of the burnt area, understand the pattern of burnt scars in a larger region and identify potential causes of the fires.

Is Jair Bolsonaro then totally wrong? Not entirely, as despite all the progress there always remains uncertainty; the Amazon forest is huge, often covered by clouds and hence not every time a satellite passes it can give precise and detailed information. Also image resolution gives uncertain patches. But in all, satellite images are the best way to obtain the overview of bushfires before, during and after their burns. And, as a side issue, they are much safer to collect then sending controlling staff into the forest for inspection.