

## Helping make SAR effective

CRJ Key Network Partner, **PIX4D**, explores the merits of using drones in time-sensitive missions, such as search and rescue operations, to save precious time and resources

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Using drones in SAR missions can reduce time spent by responders trying to access remote areas  
Image supplied by PIX4D

In the past, firefighting teams helped co-ordinate search and rescue (SAR) efforts, but wider public safety bodies such as the police and specialised teams are now also part of the equation. Drones make the entire search process easier – they provide a view from above and can search bigger areas quicker. An aerial perspective gathers information about a search area faster than any team on foot and can be deployed within minutes of arriving on site. The live feed from the drone's camera is useful, but better yet are the images it collects. These can be compiled for use in software like PIX4Dreact, fast-mapping software tailored for public safety. It uses the images to create a 2D map in minutes, which can be annotated by organisers deploying teams of rescuers around a search zone. They can also use the software to measure distances, assigning specific units to certain locations, as well as quickly calculating areas, identifying risk zones or logging cleared locations. Depending on the weather conditions, drones can use thermal imagery to look for specific people at close range.

Although a live-stream video can be useful, the images are even more helpful. When looking at a video shot in 4K, individual screenshots from that video will only be an eight-megapixel image. This is not a very high resolution and might not be useful for mapping or for looking for signs of missing people. However, most drone cameras are currently capable of producing a far more detailed 20-megapixel image. The insights from a higher image resolution can help users to spot critical information for the recovery efforts. Emergency responders on site can deploy the

drone and gather initial data in around half an hour for a small area. Meanwhile, search teams can organise and prepare for deployment, wasting no time at the scene. PIX4Dreact then fast-maps the data in minutes without the need for an internet connection. Once the 2D orthomosaic is generated, it can easily be shared on smartphones or to relay information back to a command centre. Similarly, if thermal imagery is in use, this can be processed with more powerful software like PIX4Dmapper, which provides 3D models and a bigger range of outputs. The range of software gives SAR teams a choice in what they need to focus on for their projects.

The examples of drones in SAR are widespread. When Hurricane Dorian struck the Bahamas in 2019, the NGO GlobalMedic flew out to Grand Bahama and used PIX4Dreact to fast-map areas of the coast devastated by the storm. Its efforts saved the government from 'windshield assessments', where authorities would have to drive by car to a location to assess the damage. Instead, GlobalMedic provided situational awareness in a fraction of the time, using the drone to cover larger areas than people could access on foot and sparing assessors dangerous climbs through debris areas. GlobalMedic used this same rapid technique several years before after a landslide in Mocoa, Colombia, in 2017.

Fast, actionable data is critical in helping to make SAR effective. It's more than just pitching up with a drone – understanding how to gather the right data and processing it with the right software is the difference between missing and finding the key details of a site. 

■ PIX4D is a CRJ Key Network Partner; visit [pix4d.com](http://pix4d.com) for more details