

## Practical evaluation of small drone's survey for active faults, Kumamoto

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Active faults appeared Kumamoto Earthquake 16, April, 2016 are the first active faults in Japan since practical small drones have been available commercially. We carried a small drone, DJI Phantom4 by air as carry-on baggage from Tokyo. We surveyed the active faults and accompanied small cracks by Phantom4 at Kamijin of Mashiki-Town and Kurokawa of Minami-Aso-Village on 1st and 2nd May. Total duration of flight was 108 minutes at an altitude less than 65m.

Diagonal FOV of Phantom4 camera is 94°, image size is 4000x3000 pixels at still mode, and 3840x2160 pixels (4K) at video mode. Spatial resolution is about 1cm at an altitude of 10 m. Although vertical FOV is 72% at video mode compared with at still mode, information is much larger owing to 30 fps, and quality of capture image is good. Bird's-eye 4K video is very impressive, and useful for research, education and public information.

At September 2016, a part of Civil Aeronautics Law has changed, a new flight rule of Unmanned Aerial Vehicles such as drones put into effect on 10th December 2016. As flight areas are near Kumamoto Airport, there is a possibility we need permission from Kumamoto Airport or MLIT. We will discuss this problem.

Keywords: Kumamoto Earthquake, active fault, drone, 4K video, Civil Aeronautics Law