



The Lusi drone: a multidisciplinary tool to access extreme environments.

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Active eruptions are notoriously inaccessible for monitoring and sampling. The “Lusi drone” is a hexacopter developed and assembled in order to complete multidisciplinary studies in such inaccessible environments. The Lusi drone is equipped with three gimbaled cameras that can complete video, photogrammetry, and thermal surveys during the missions. Two different prototypes of remote controlled gas containers can vacuum multiple samples when required. A remote controlled winch is able to deploy 1) a logger to monitor high temperature (up to 250° C) variations of erupted fluids (water-gas) and 2) a specifically designed sampler to collect solid and fluid specimens at preselected coordinates. A GPS-connected software allows to pre-plan the full mission of the drone and to constantly communicate and monitor its position. The device is solid, stable even with significant wind, affordable, and easy to transport. The Lusi drone has been successfully used at the active Lusi eruption site in Indonesia and proved to be an excellent tool to study harsh environments, where operations with more conventional methods are too expensive, dangerous or simply impossible.