Radioremote Controlled Aircrafts (RC) for the Detection and Monitoring of Natural Hazards

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INTRODUCTION AND REGIONAL SETTING

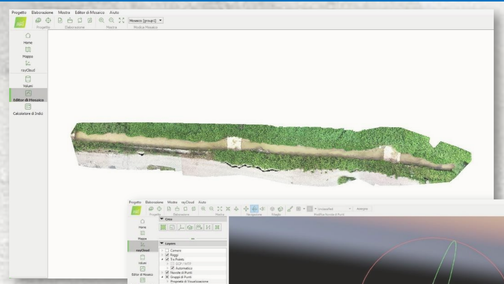
Radioremote Controlled (RC) aircrafts can provide a fast and accurate approach for surveying and monitoring any terrain, especially when natural hazards must be analyzed and assessed and even more to pinpoint human-originated factors which can alter the natural condition of equilibrium of a given habitat. These devices can provide a complete analysis of the examined areas through an innovative approach to surveying, that allows to better and more deeply evaluate conditions of risk and hazard on the ground and to adopt new, alternative approaches to analysis. The majority of residents in Regione Campania - Italy - along with structures and infrastructures in urbanized areas are exposed to many different natural hazards. The anthropic and hydrogeological ones are of course the most prominent, being the ones with both the highest impact in terms of damage/victims. The hydrographic network are the elements most heavily affected by the most recent anthropic-induced evolution of the habitat. More specifically, the network of canals in Campania are today the origin of flooding and inundation more and more frequently happen, often causing calamitous effects on both residents and infrastructures. In the Nola area, where the Campania Ignimbrites' deep quarrying has been historically an important activity, leaving many underground cavities, the human originated sinkholes are now another factor which adds up to an already quite complex geomorphological panorama.

The many different elements making certain parts of region Campania high hydrogeological risk areas can now be quickly and easily monitored with remote controlled aircraft. Reducing the time required to perform activities such as spotting points of hydraulic crisis on a wide scale - such as unauthorized laterals and/or junk and sediments build up on the bottom of channels - or earmarking potential anthropogenic sinkholes in probabilistic seismic scenarios can be a drastic improvement in the length of reaction times and risk management henceforth. Using RC aircrafts not only fulfills these aims but can also eliminate the risks deriving from on-site human presence when inspecting directly critical areas with field operators. In Nola area, an experimental survey with RC aircraft has been launched based upon analysis of the data collected from the devices.

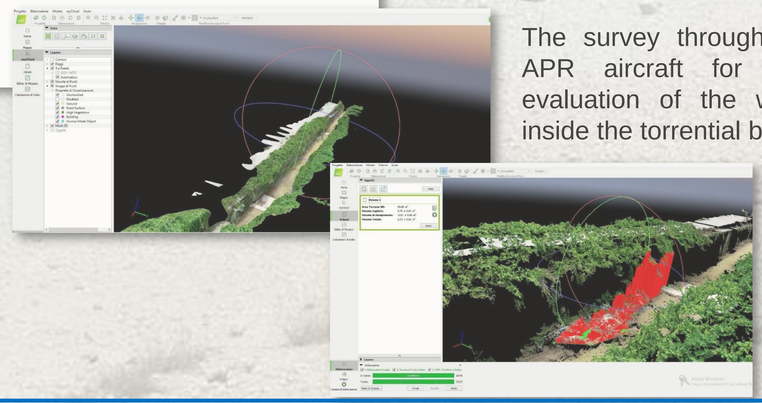
Investigated area (Area Nolana) in Campanian Region, in the South of Italy.

The drones used for experimentation

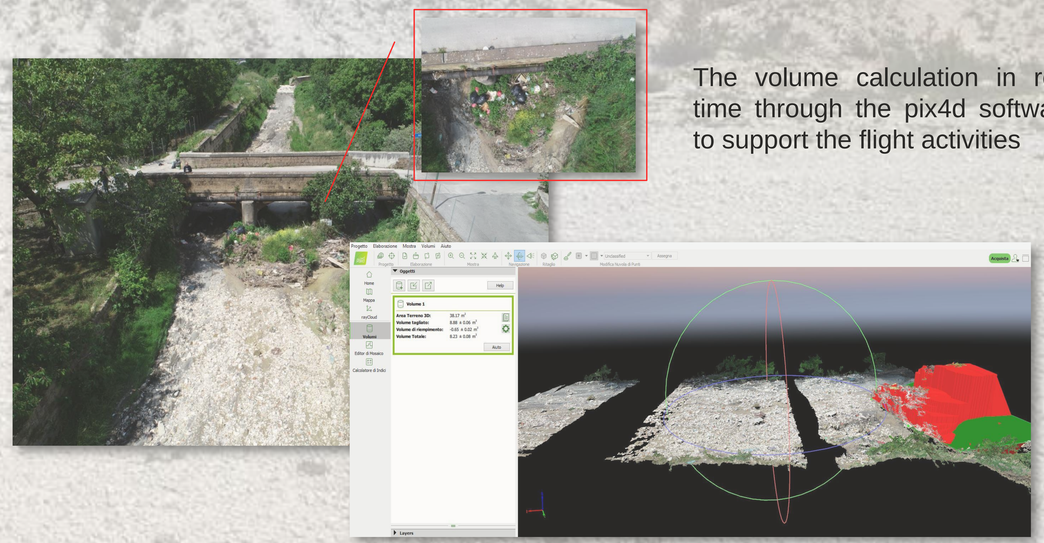
PRELIMINARY RESULT



The survey through the use of the APR aircraft on the terrential reverbeds in condition of flood risks



The survey through the use of the APR aircraft for the quantitative evaluation of the waste discharges inside the torrential beds



The volume calculation in real time through the pix4d software to support the flight activities