

AERIAL SURVEY OF ARCHAEOLOGICAL EXCAVATIONS USING QUAD-ROTOR AND HEX-ROTOR AIRCRAFT – ARCH AERIAL

July 27, 2013 rbakerarae Day of Archaeology 2013, Italy, Survey 3D modeling, aerial imaging, Arch Aerial LLC, Archaeology, archaerial, Belize, Engineering, Etruscan, Excavation, hexcopter, Italy, Measurement, Murlo, photogrammetry, Poggio Civitate, Programme for Belize Archaeological Project, quadcopter, remote sensing, Science, site using 3D photogrammetry software, UMass

My name is Ryan Baker, and I'm the founder of [Arch Aerial LLC](#), a group dedicated to developing easy to use aerial photography platforms for research applications. During the 2013 field season we had teams all over the world working at archaeological excavations, but this week our final project for the summer is wrapping up at the [Poggio Civitate Archaeological Project](#) in Murlo, Italy.



On all of our projects this field season, we use quad and hex-rotor helicopters designed by our team to conduct aerial imaging of archaeological sites of varying scale. Friday, July 26th, 2013 was a typical day of work in Murlo: here at Poggio Civitate we begin with the thirty-minute walk through the Tuscan countryside to the site on the top of the hill. After arriving at the trenches for the 2013 field season, we immediately take aerial orthorectified photographs of the entire excavation area. Capturing the necessary photos takes around five minutes, and once they are offloaded from the camera's memory card, our technicians begin 3D modeling the excavation area on site using 3D photogrammetry software. Producing the 3D model of the excavation area takes around 20 minutes, and the excavation director is able to use this model to assess the progress of excavation and direct site staff on how to proceed for the day. In addition to 3D modeling of the excavation area, we are also able to do 3D modeling of artifacts using land-based photography. Below you can see an example of this in the form of a 3D model of a roofing antefix.



Once the 3D model of the excavation area is complete, our team continues survey of the entirety of the hill. One of our main goals for this season at Poggio Civitate is to produce both 2D and 3D imaging of the whole of Poggio Civitate and the surrounding area. Survey flights occupy the rest of the morning, and then around lunch our team leaves the hill to begin processing data from the first half of the day. For the remainder of the afternoon, our Field Operators georeference locus photos, finalize 3D models from the excavation area, and compile 2D and 3D imaging for the comprehensive view of Poggio Civitate and its surroundings.



In addition to Poggio Civitate our teams have conducted aerial imaging at the San Giovenale Tom Survey run by the Swedish Institute in Rome, and the Programme for Belize Archaeological Project at the Rio Bravo Conservation Management Area. The video below was not made with footage from July 26th 2013, but it depicts a typical day of survey at the [Programme for Belize Archaeological Project](#) and the 3D models we were able to produce while working there.

[Arch Aerial at PfBAP – Dos Hombres](#) on [Vimeo](#).

Although this isn't all we do in terms of remote sensing, it gives a glimpse into the world of aerial survey and how it can be applied to the field of archaeology. Looking forward to sharing a year's worth of developments on the next Day of Archaeology!

Interested taking a closer look at our work from this field season? Check out www.archaerial.com for more videos and updates from the field.