

UAV Presentation

Bill Timmins GIS Services





UAV copters can provide for a variety of sensors for solution requirements. Flight time depends on payload weight, temperature and altitude .

UAV



- **Unmanned Aerial Vehicles**

- It is an aircraft without a human pilot on board. Its flight is controlled either autonomously by computers in the vehicle, or under the remote control of a pilot on the ground or in another vehicle. *Wikipedia*

- Also known as *drone*, *remotely piloted Vehicle (RPV)*, *remotely piloted aircraft (RPA)*, or *remotely operated aircraft (ROA)*

Types of UAVs (not)



Rules

- **Recreational or Sport Use**
 - These "limited-size" unmanned aircraft flown in the USA's National Airspace System, flown solely for recreation and sport purposes such as models. These are generally flown under the voluntary safety standards of the Academy of Model Aeronautics which is the US national aero modeling organization.
- **Non-Recreation Use**
 - To operate a UA for non-recreational purposes in the United States, users must obtain a *Certificate of Authorization* (COA) to operate in national airspace. At the moment, COAs require a public entity as a sponsor.

Types of Civilian UAVs

- **Copters**
- **Planes (fixed wing)**



Copter Uses

- **Events**
 - Real time evaluation of a location
 - Emergency Response
- **Aerial Photography (AP)**
 - Usually for small areas
 - Can provide high resolution imagery

Training

- **Typically it is recommended that organizations purchase a training copter before using one for Aerial Photography or real time event response**
- **The majority of Aerial Photography operations will have preset flight plans.**

Copter Example for Aerial Photography

- 20 Mega Pixel Camera
- Remote Control

- GPS, Flight Planning Software; and
- Post Processing Aerial Photo Software.



Aerial Photography Examples

Typical Photograph



Oblique Photograph



Flight Specifications for Inexpensive Copter Solutions for Event Response (\$5K to \$10K)

- **Flight time 15 to 20 minutes**
- **Batteries switch out easily**
- **Camera with viewing goggles (light and powerful – such as GoPro)**
- **Interchangeable lens**

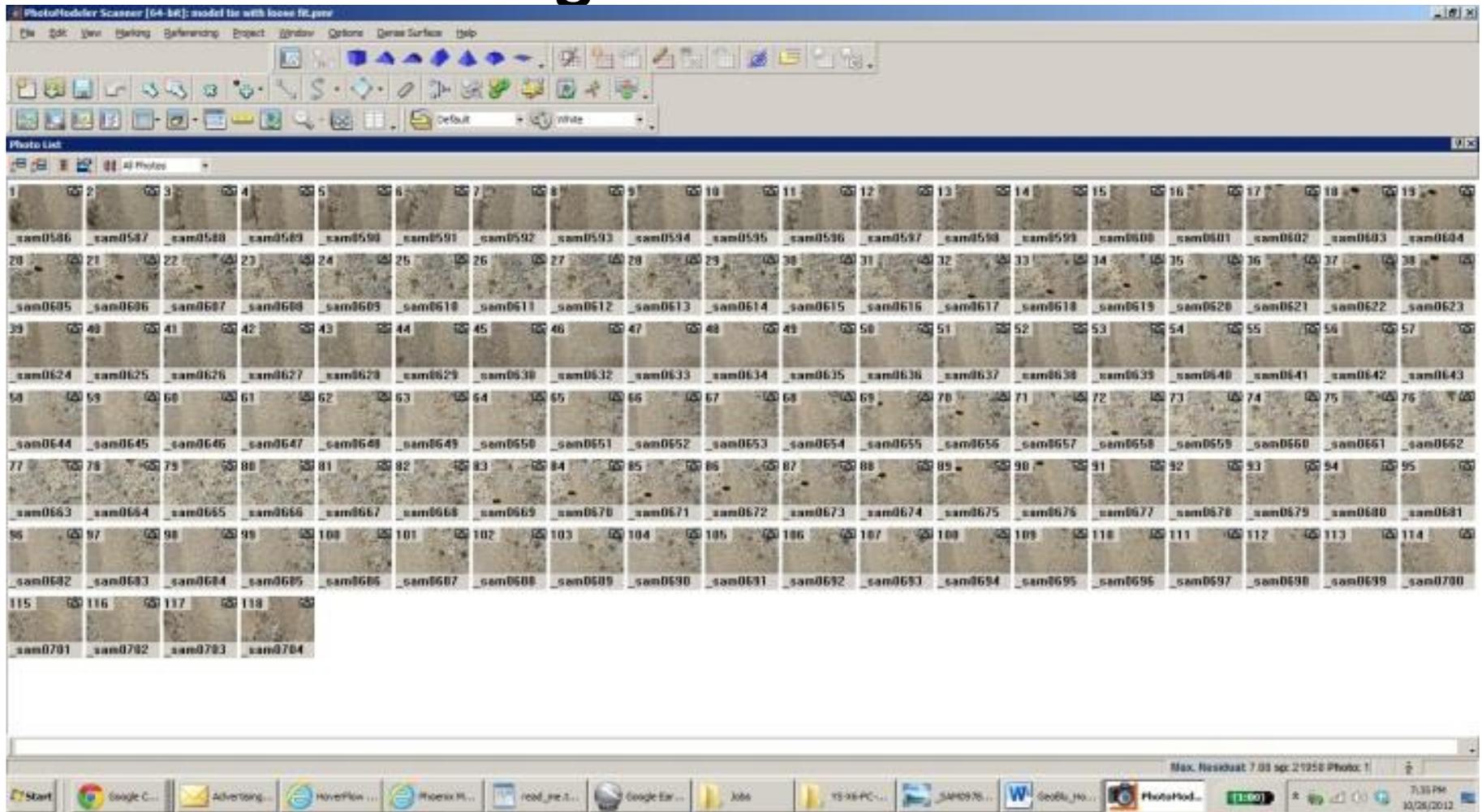
Mission Planning Example

- Copters auto-compensates for wind

The screenshot displays the Mission Planner interface. The main window shows a satellite map of a residential area with a flight path overlaid. The path is a grid of waypoints numbered 1 through 30. A red line connects waypoints 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30. A yellow line connects waypoints 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, and 30. A red pin is labeled 'Home' at waypoint 22. The interface includes a toolbar with icons for Flight Data, Flight Planner Configuration, Simulation, Parameters, Terminal, and Help. The top right shows 'COM15' and '13200'. The bottom status bar shows the system tray with the time 7:32 PM and date 10/26/2012.

Aerial Photography

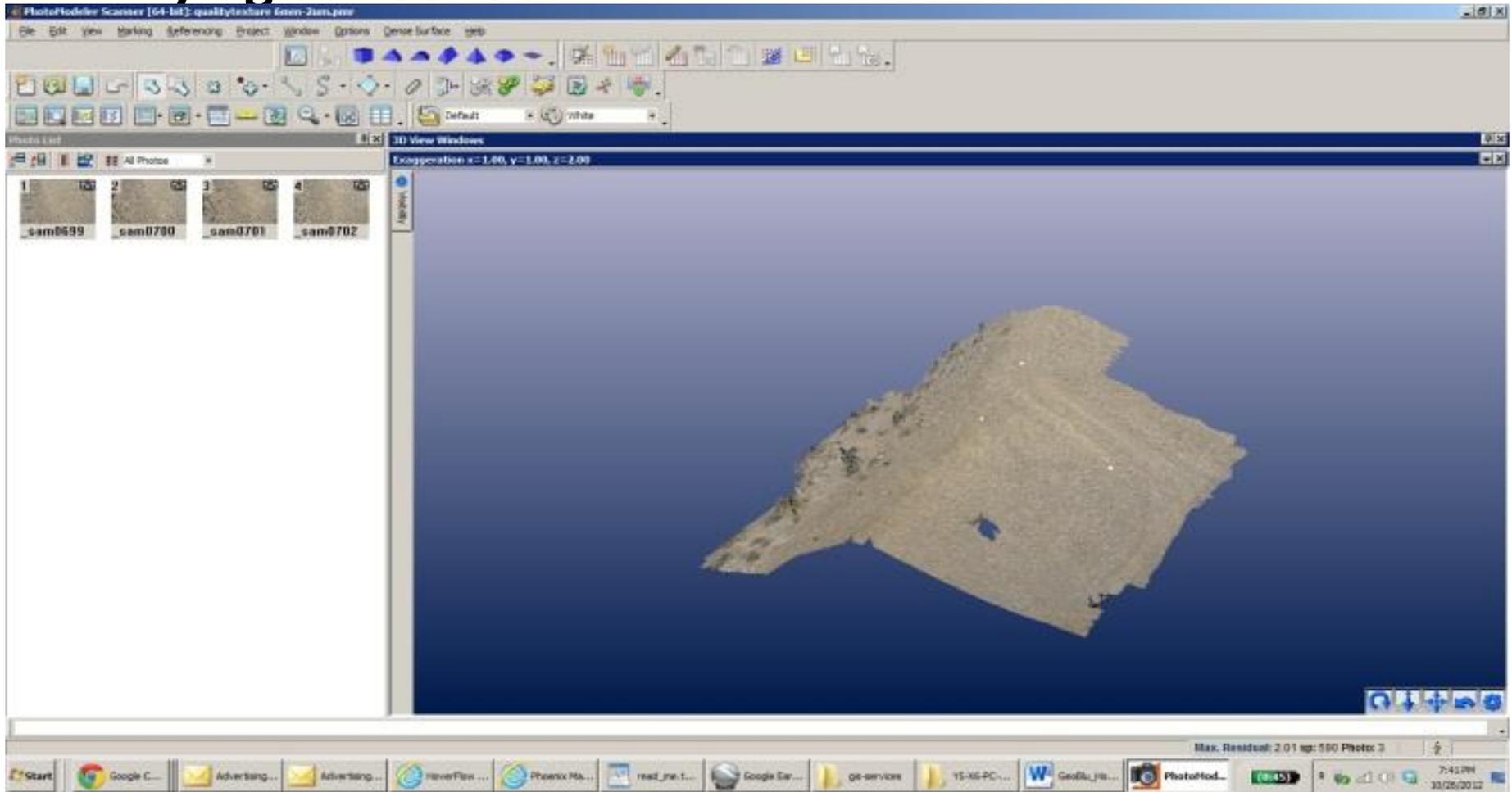
- Post Processing



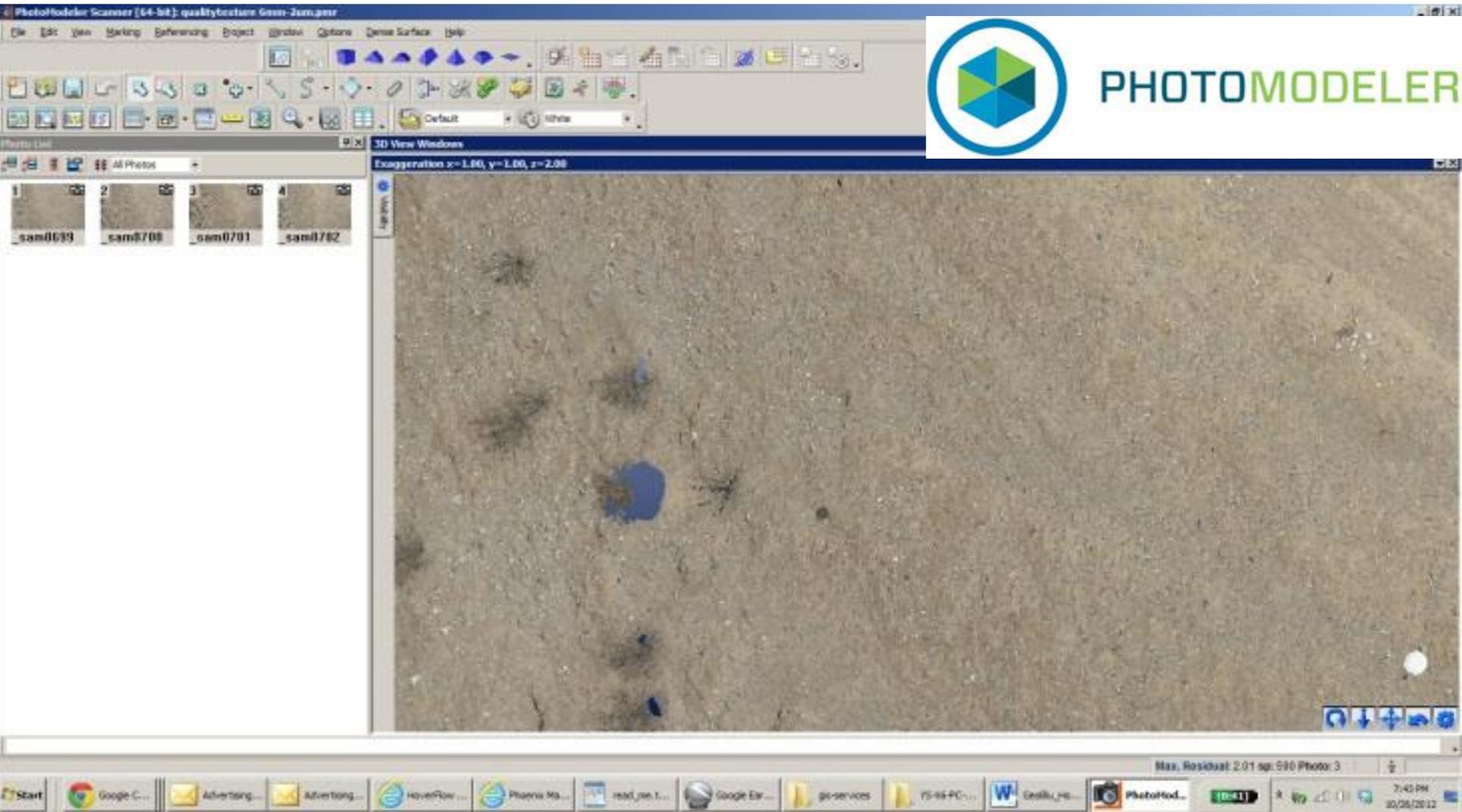
Aerial Photography Maricopa County

Flood Control Example

- **Surface Modeling provided 6mm vertical accuracy flying at 100 feet.**



Detail Surface Modeling



GPS MODULE



The plug and play GPS module will greatly enhance the performance for Aerial Photography providing:

**Accurate Position Hold,
Return-To-Home and
Intelligent Orientation Control functionalities.**

With the GPS Module, the multi-rotor will have position and altitude locked accurately even in windy conditions.

Copters for Events

- Can carry video cameras
- Provide GPS locations
- Real-time video to:
 - Tablets
 - Phones
 - Computers
- Using a remote control you can manually capture situational awareness or use preplanned flight plans and/or waypoints or determine your areas of interest and plan your flights and capture.



Mobile Copter Pack Custom Designed for AZ Counter Terrorism Information Center

- **Transmitter**
- **Antennae**
- **Batteries**
- **Goggles**
- **Remote Control**
- **Backpack**





Site Reconnaissance – Superior AZ



GeoBlu Explorer Quad

- Complete Set Up - Bench/Flight Tested and Tuned
- GPS, Return Home, Intelligent Orientation Control
- Flight Controller
- GoPro Hero 3 Black Edition - 16GB Class10 MicroSD Card
- Brushless Motor Stabilized Camera Gimbal for GoPro
- Pelican Travel Case
- 2 Flight Batteries
- Battery Charger
- Live View Goggles
- Video transmitter
- Battery Level Checker
- 2 sets - extra props
- Flight Training –
Pre/Post Flight Training



Questions?



Bill Timmins

Office 520-795-1162

Mobile 520-991-0727

Info@GISServices.net

