SOFTWARE RELEASE NOTES - GENERAL RELEASE

VERSION: 1.5.0 RELEASE DATE: 2/6/2023

NEW FUNCTIONALITY & FIXES, VERSION 1.5.0

This 1.5.0 software release is a system upgrade to enhance the capabilities of the FLIR Hadron electro-optical / infrared (EO / IR) 320 camera, as well as upgrades to the Teal Air Control (TAC) QGroundControl (QGC) firmware.

These enhancements are not related to any issue deemed to impact mission or system safety. However, since this release affects both the Golden Eagle sUAV and the TAC, Teal recommends updating the firmware on both to version 1.5.0 prior to the next flight to avoid any asynchronous system issues, as well as any automatic update attempts that may interfere with mission execution.

Please follow the instruction sheet, ***Updating System Software / Firmware,*** to ensure the 1.5.0 system upgrade for both the Golden Eagle and the TAC.

NOTE:
Please remove the SD card and clear any media stored on the Golden Eagle sUAV prior to updating the software, as this may cause the update to fail.

TAC / QGC HIGHLIGHTS

- Removed MISSION flight mode from the 4-castle switch default button mapping (see pages 2-3)
- Renamed the Photo Settings Storage button option from FORMAT to ERASE to properly reflect the function (see page 4)
- Added a toggle to the Teal Settings app to re-enter KIOSK MODE
- Renamed TEAL SECURE (KIOSK MODE) to TEAL FOCUS

CAMERA / GIMBAL HIGHLIGHTS

- Improved camera tuning for the FLIR Hadron 320 (see page 5)
- Improved image sensor processor tuning for the FLIR Hadron 320
- Incorporated thermal color palettes for the FLIR Hadron 320 (see pages 6-7)
- Fixed recording EO for randon durations that crashed the video feed
- Fixed video streaming that ceases when a failure to take a snaphsot occurs

DATA LINK & GROUND HIGHLIGHTS

- Eliminated dead space at the beginning of recorded video (EO & IR)
- KLV metadata for EO / IR streams are now available

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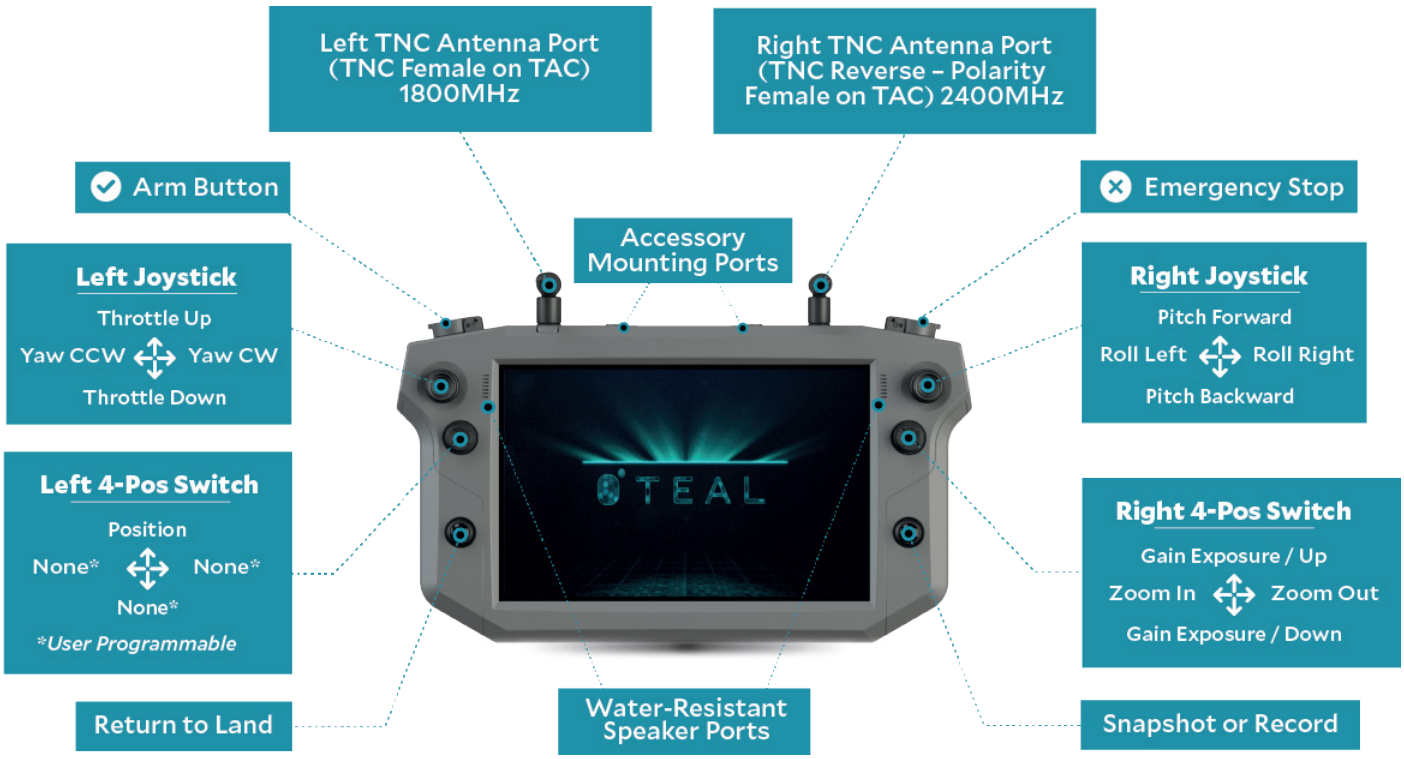
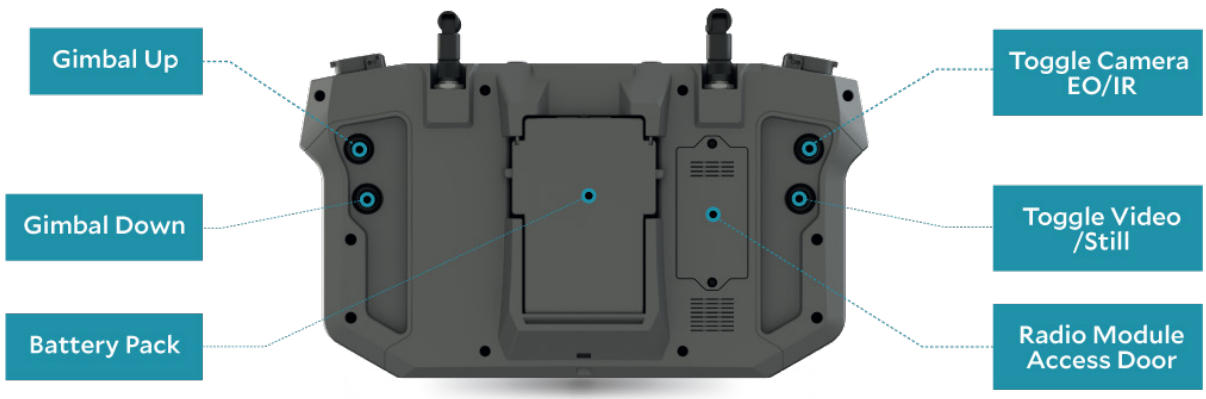
TAC CONTROLS OVERVIEW

Teal removed the MISSION flight mode from the Left 4-Position Switch to prevent accidentally engaging this option. The three user programmable options on this switch can be customized.

The updated out-of-the-box default programmed functions are shown here:

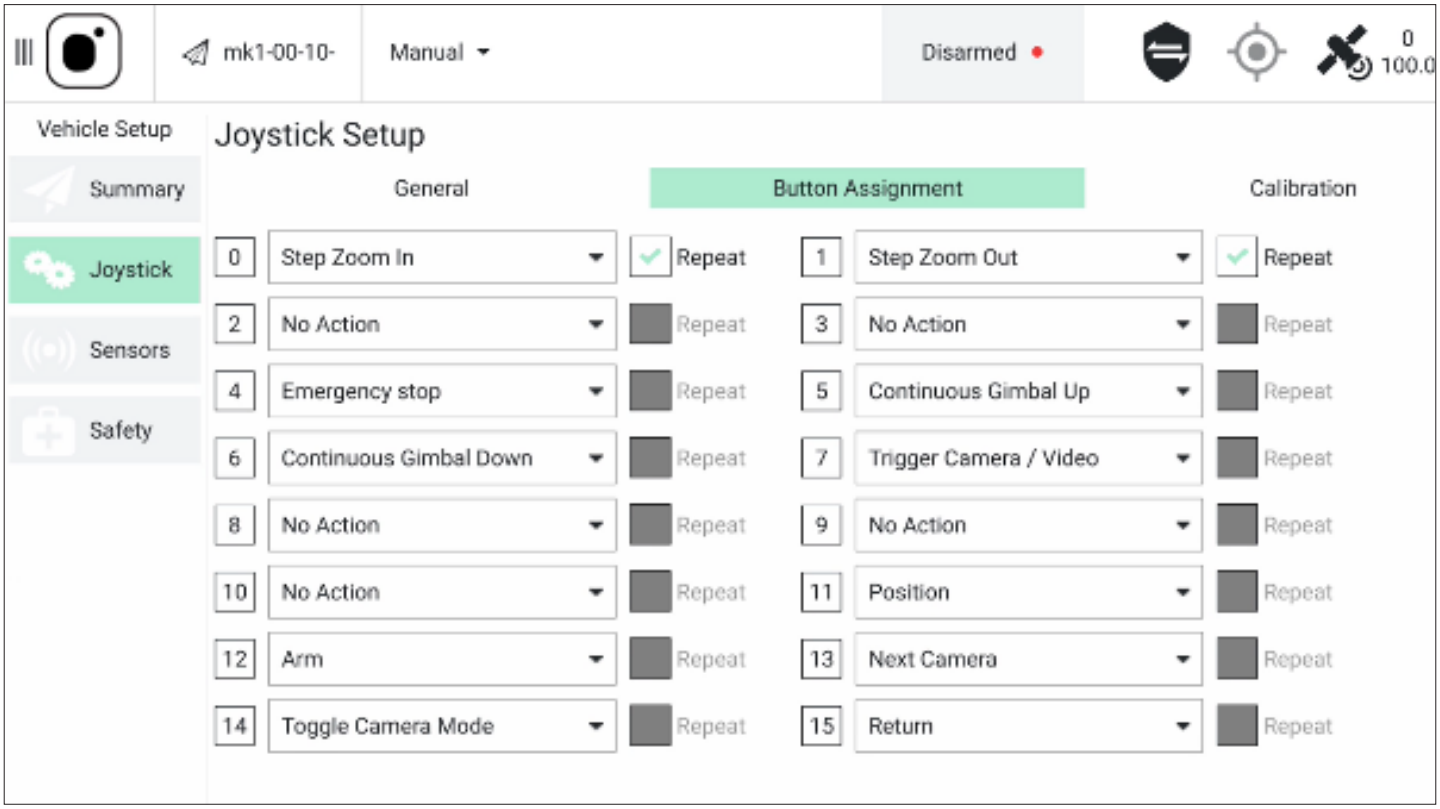




BUTTON& JOYSTICK SETUP

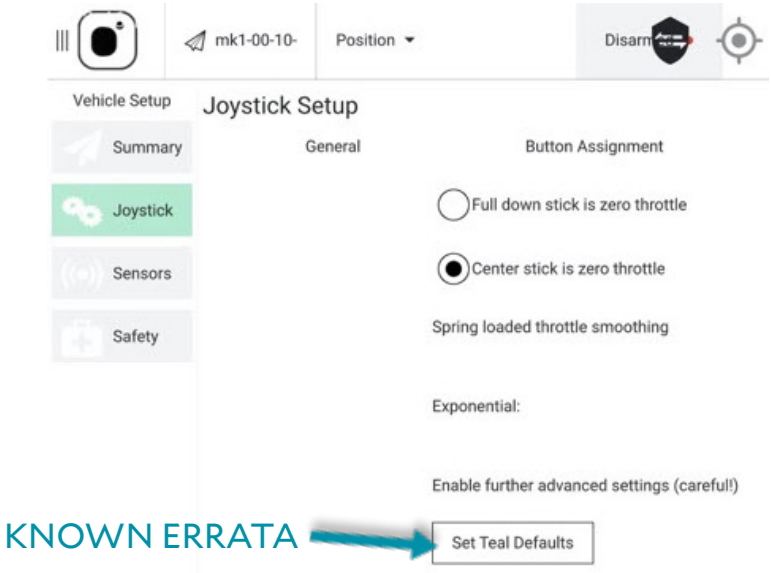
Teal removed the MISSION flight mode from the Left 4-Position Switch to prevent accidentally engaging this option. The three user programmable options on this switch can be customized.

The following diagram illustrates the new deafult button assignments:



KNOWN ERRATA:

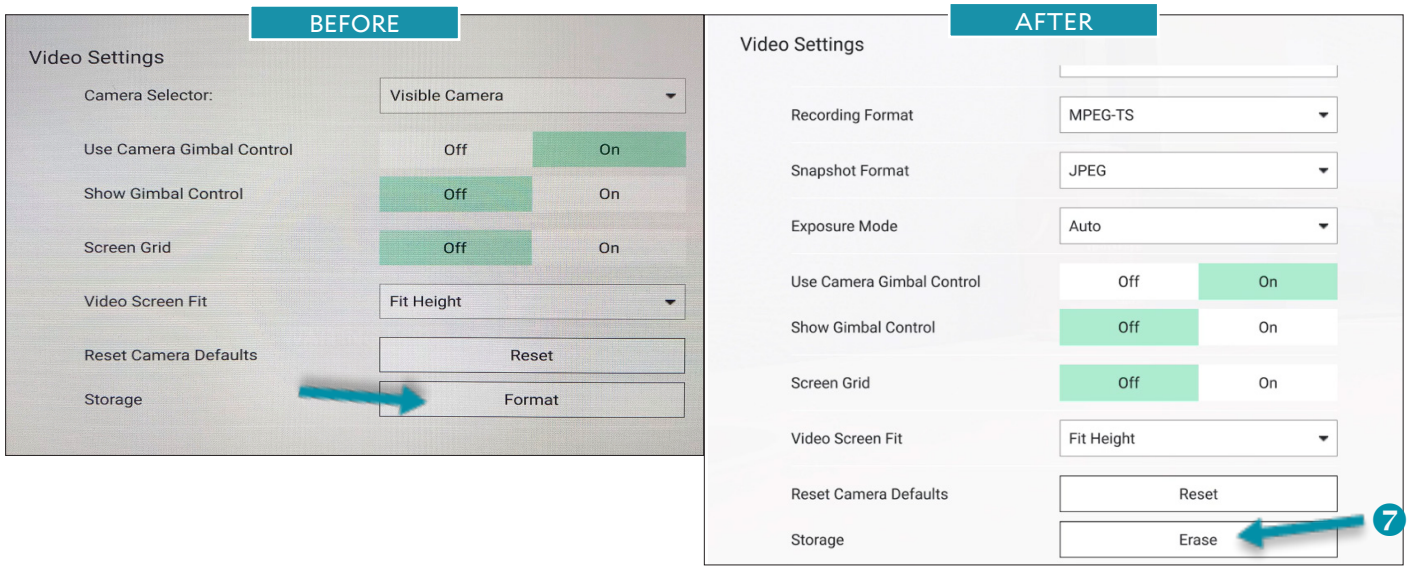
If a button, joystick, or switch is programmed from NO ACTION to some other action, such as MISSION flight mode, etc., tapping the SET TEAL DEFAULTS will **NOT** restore the NO ACTION default button assignment and will need to be manually reset to NO ACTION.



KNOWN ERRATA

CLEARING MEDIA - INTERNAL DRONE STORAGE & SD CARD

Teal renamed the Photo Settings and Video Settings Storage Button option from FORMAT to ERASE to properly reflect the function.



NOTE: Teal recommends clearing all media from the drone after each flight, and is critical if the storage available falls under 1 GB.

The following instructions are to erase all media from the internal storage from the drone, but can also successfully erase the content of the SD card if so desired. Therefore, be sure to remove the SD card to prevent unintended data loss.

❶ Power on and connect the TAC and Golden Eagle.

❷ Select the SETTINGS icon in the CAMERA CONTROL PANEL or the VIDEO CONTROL PANEL in the FLY SCREEN.

❸ Select VISIBLE CAMERA from the drop-down menu.

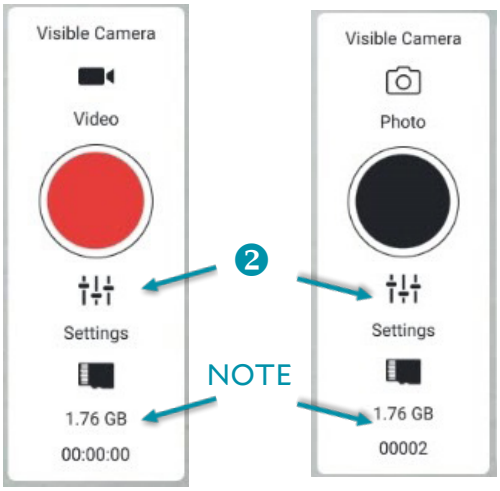
❹ Scroll to the bottom.

❺ Select ERASE.

- This will delete all the EO photos and videos on the drone.

❻ Select IR CAMERA from the drop-down menu.

❼ Select ERASE.



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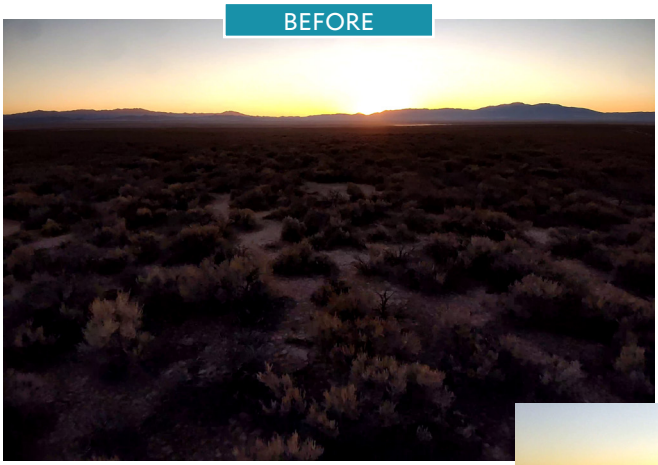
TEAL'S SOFTWARE OPTIMIZATION

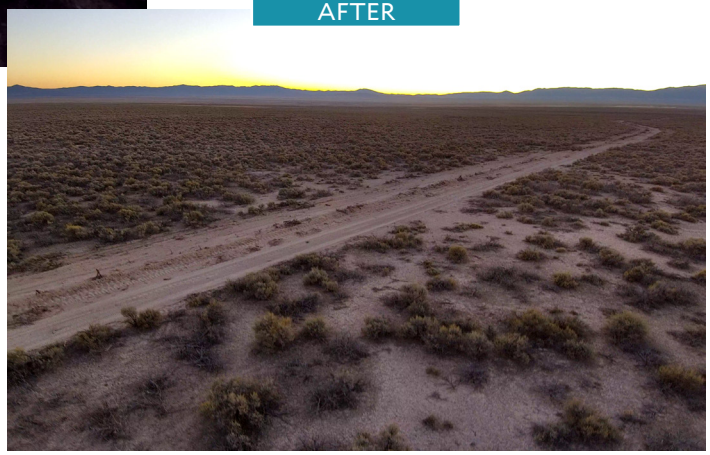
Teal has made significant software upgrades to the Golden Eagle's EO / IR camera, resulting in optimizing natural lighting conditions and extending the daylight operations window. Overcast, full sun, dusk, and dawn are now no longer limiting factors for clear images with the Golden Eagle.

BEFORE AND AFTER SOFTWARE UPGRADES, BOTH IMAGES TAKEN AT SUNDOWN

BEFORE



AFTER



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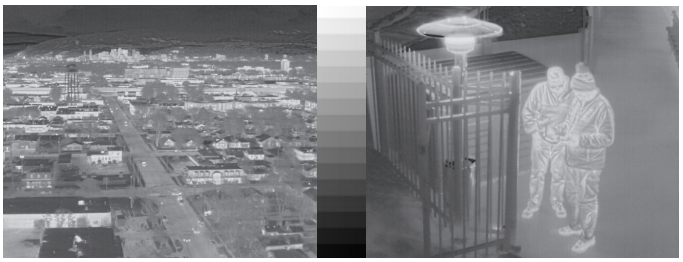
THERMAL COLOR PALETTE OPTIONS

Teal offers White Hot, Black Hot, Ironbow, Arctic, and Hottest thermal color palettes. Each thermal color palette could be advantageous for law or military operations, security and surveillance, search and rescue missions, or structural scans and inspections.

Teal has provided a quick reference guide, but which one to use ultimately comes down to personal preference, topography / terrain, time of day, and weather conditions.

WHITE HOT



BLACK HOT

Using White Hot vs Black Hot comes down to personal preference, with many operators switching between the two.

White Hot displays warmer objects in white and cooler objects in black with realistic detail. This would be best used in areas with dense vegetation or in urban areas to quickly pinpoint heat sources, and is used by law enforcement to quickly identify suspects and vehicles, by search and rescue to locate lost or missing hikers.

White Hot is useful when operating at night, as the screen is mostly dark and night vision is better preserved. It is also useful in certain climates, environments, and time of day, depending upon the surface temperature vs the temperature of the object of the search.

Black Hot is the inverted version of White Hot, displaying warmer objects as black and cooler objects as white.

For this reason, this option is found to be easier on the eyes than White Hot.

Black Hot displays body heat in a clear, stark image with a high level of detail, and is often used by law enforcement, military personnel, and search and rescue teams.

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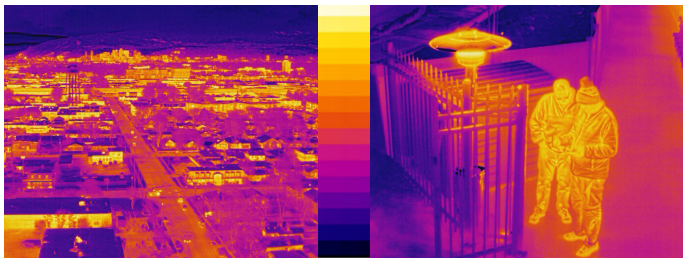
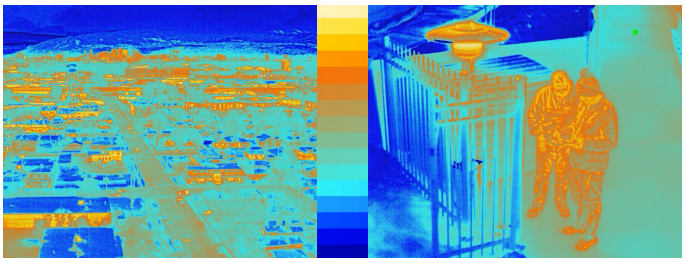
IRONBOW



The Ironbow color palette quickly identifies thermal anomalies by showing heat distribution and subtle details, and can be ideal in low contrast environments. Hot objects are shown in lighter, warm colors and colder objects are shown dark, cool colors.

This thermal color palette is useful for structural inspections, and is often used by firefighters and thermographers to assess strain or damage to infrastructure, or following a leak or fire to its source.

ARCTIC

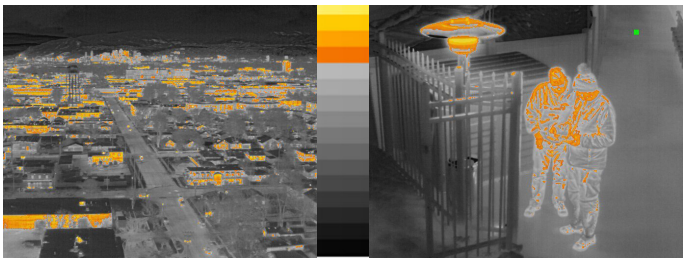


The Arctic color palette identifies warm objects with a golden color and colder objects with shades of blue. The lighter color contrasted against the darker shading aids in quickly detecting heat sources, and is useful to show slight temperature changes.

This option is used to spot objects against vast landscapes, and search and rescue crews would find the stark contrast of human body temperature against the cold ground useful.

This thermal color palette also provides easy tracking without the main target getting washed out, and is an option that many find to be easy on the eyes.

HOTTEST (ISOTHERM)



The Hottest isotherm / color palette is best used in high-contrast environmental conditions, as it instantly displays hot spots, such as fires, leaks, or body heat against a grayscale image.

Industrial thermographers may use this palette to alert them to hot equipment operating outside of safe limits or cold areas that might indicate a water leak. Firefighters may use this color palette to detect forest fires or to find the hottest areas of a particular fire. Search and rescue teams would find the high contrast with minimal background useful to do scans of large areas.

As always, it comes down to personal preference, topography / terrain, time of day, and weather conditions.

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