

VALIDATING OUTPUTS FROM THE TET-1 SATELLITE SENSING SYSTEM

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Abstract –

The DLR (German Aerospace Centre) FIREBIRD program has the aim of deploying a constellation of small satellites tasked with hotspot detection and characterization, with the main target being wildfire detection and monitoring. The first satellite of this constellation is the TET-1 satellite which was launched in July 2012. The TET-1 payload includes two Infrared cameras (MWIR 3.8 μ m and LWIR 8.9 μ m) along with a visible camera with three channels (Red 0.645 μ m, NIR 0.86 μ m and Green 0.51 μ m).

Since launch, testing and calibration tasks have been continuing, with one aspect of the testing regime including validation of the outputs from the camera systems. Validation is currently being performed on the geo-location of the output images from the camera systems. This is important in respect to the main mission of the satellite, with accurate location of detected wildfires vital in communicating wildfire details to emergency services and management agencies. Preliminary results give a variation in the reported geo-location of the IR cameras of $\pm 0.2^\circ$ and the VIS cameras of $\pm 0.8^\circ$, which are not optimal and further investigation into causes continues.

Future validation experiments are planned to be performed on the products generated by TET-1 from the detection and characterization algorithm, including field campaigns in Australia with in-situ measurements and the possible inclusion of airborne cameras, for later in the year.