trast analysis the two quantities should not be treated as the same. To compare the simulation temperature contrast with the measured pixel contrast, it is necessary to estimate the reflection temperature evolution. It is also necessary to estimate the incident heat flux. Ideally, the simulation should model the compound heat source flux evolution, which also includes the post-flash thermal afterglow. The effect of reflection temperature in the pixel intensity also should be accounted for to seek a better estimation of the temperature contrast evolution from the pixel intensity evolution data.

Using formulas given here, the reflection temperature evolution and the temperature contrast evolution can be estimated from the IRFT data. An emissivity factor, defined here, relates the temperature contrast to the pixel intensity contrast.

Reflection temperature evolution can be used to model the afterglow flux of the flash source in the simulation to estimate the temperature contrast evolutions and the pixel intensity contrast evolution on simulated voids.

An emissivity estimation technique was developed using the IR camera. If the IR camera is programmed with the reflection temperature formulas derived here, the camera can provide the object surface temperature directly even during the IRFT data acquisition. The IR camera can be programmed to estimate the object emissivity in real time using the technique provided here. Due to improvement in the contrast analysis, including the modeling of source in thermal simulation, void-like anomalies are characterized more precisely.

This work was done by Ajay M. Koshti of Johnson Space Center. Further information is contained in a TSP (see page 1).

This invention is owned by NASA, and a patent application has been filed. Inquiries concerning nonexclusive or exclusive license for its commercial development should be addressed to the Patent Counsel, Johnson Space Center, (281) 483-1003. Refer to MSC-24506-1.

Spectrally and Radiometrically Stable, Wideband, Onboard Calibration Source

NASA's Jet Propulsion Laboratory, Pasadena, California

The Onboard Calibration (OBC) source incorporates a medical/scientific-grade halogen source with a precisely designed fiber coupling system, and a fiber-based intensity-monitoring feedback loop that results in radiometric and spectral stabilities to within <0.3 percent over a 15-hour period. The airborne imaging spectrometer systems developed at the Jet Propulsion Laboratory incorporate OBC sources to provide auxiliary in-use system calibration data. The use of the OBC source will provide a significant increase in the quantitative accuracy, reliability, and resulting utility of the spectral data collected from current and future imaging spectrometer instruments.

This work was done by James B. Coles, Brandon S. Richardson, Michael L. Eastwood, Charles M. Sarture, Gregory R. Quetin, Michael D. Porter, Robert O. Green, Scott H. Nolte, Marco A. Hernandez, and Linley A. Kroll of Caltech for NASA's Jet Propulsion Laboratory. For more information, contact iaoffice@jpl.nasa.gov. NPO-47697