CIRiS- Compact Infrared Radiometer in Space
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Objective
- Validate in space an infrared imaging radiometer that uses an uncooled microbolometer and carbon nanotube calibration source.
- Verify that the radiometric uncertainty is compliant with Sustainable Land Imaging requirements.
- Measure the major components of radiometric uncertainty.
- Raise the TRL of the detector and source from 5 to 6.

Approach
Integrate a 6U CubeSat from Blue Canyon Technologies (BCT) with an imaging radiometer that uses a carbon nanotube blackbody for calibration.
- Measure thermal drifts in instrument components throughout the low Earth orbit.
- Using algorithm correct radiometer signal for component thermal drifts.
- Monitor source radiance to verify stability.
- Verify calibration uncertainty and repeatability by imaging deep space and Earth scenes.

Key Milestones
- Detector core procurement complete / PDR 06/16
- Payload design finalized / CDR 01/17
- Bus procurement complete 05/17
- Integration of instrument to spacecraft 09/17
- Environmental test complete / PSR 10/18
- Launch ready 10/19
- Initiate operation 04/20
- Analysis of instrument performance 12/21
- Artifact/thermal/drift characterization complete 06/22
- Optimize radiometric correction algorithms 07/22
- Measure optimized radiometric uncertainty 09/22

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TRL_{in} = 5  TRL_{current} = 6