

**Brian Redman: Electrical & Computer Engineering**  
**Mentor: Joseph Shaw -- Electrical & Computer Engineering**  
***Testing a Low-cost All-Sky Infrared Cloud Imager***

Information about cloud patterns is useful for climate science studies and Earth-space optical communications research. Thermal infrared sky imaging is a technique that records cloud patterns by measuring the heat radiation emitted by the clouds. This method is particularly well suited for continuous ground-based measurements of cloud cover statistics because it functions equally well during day and night. Sophisticated infrared cloud imagers have been developed previously at Montana State University, but there is an interest in exploring the capabilities of lower-cost systems. A prototype of a low-cost infrared cloud imager capable of imaging the entire sky dome has been developed. The prototype of this system uses a metal dome to reflect the whole sky to an off-axis infrared camera. The algorithms to analyze the distorted image were also developed. In this presentation, an overview of the instrument design will be presented, and example images will be shown and described.