Mark Miller, Robert Zahn, Virendra Ghate
Rutgers University

Kim Nitschke, Mike Alsop, Claudio Mazzoleni
Las Alamos National Laboratory
Experimental Design

- total, direct, and diffuse solar radiation above and below clouds
  - marine stratocumulus
  - marine fair weather cumulus
  - multiple spectral bands
- downwelling infrared radiation above and below
- three months (May through late August)

- enables the components of the radiation field to be plotted against cloud structural parameters
- works when there are cirrus above
Pico from above Graciosa (photo: Mike Alsop)
Pico Site

Pico-NARE Observatory
University of Azores
University of Colorado
Michigan Technical University
DOE ARM

Claudio Mazzoleni
Michigan Technical University
Clear at Pico—Cloudy at Graciosa
Cloudiness versus Optical Thickness

Coverage of Boundary Layer Clouds vs. Cloud Optical Thickness

May 2010
Loss of Sun’s Disk at Optical Thickness ~8

Red - Direct Beam
Blue - Diffuse

Green - Total

Time Index
Decomposition of Optical Thickness

Cloud Optical Thickness

Coverage of Boundary Layer Clouds

Total

Direct

Diffuse
Thanks!

• Analysis continuing
• Adding cloud geometry from cloud radar and other instruments
• Technique looks viable!