

# Interactive Web-based Tools for Comparing and Retrieving Satellite-derived Cloud Properties during CRYSTAL-FACE



L. Nguyen, P. Minnis, W. L. Smith, Jr.  
NASA Langley Research Center, Hampton VA

D. R. Doelling, D. N. Phan, Y. Yi, and P. W. Heck  
Analytical Services and Materials, Inc., Hampton VA

Corresponding author email: L.Nguyen@larc.nasa.gov

## Introduction

The NASA CRYSTAL-FACE (C-F) field experiment was an intensive measurement campaign conducted in Florida during July 2002. C-F resources include six aircraft platforms, two ground sites, several satellites, and hundred of instruments. These resources presents many opportunities to compare coincident cloud properties produced with the Visible Infrared Solar-Infrared Split Window Technique (VISST) cloud algorithm.

The VISST (P. Minnis et al.) satellite derived cloud products are available on the NASA Langley Satellite Group's website. This poster describes web-based tools to access the cloud products that are available online at <http://www-angler.larc.nasa.gov/crystal/>. These tools enable anyone with a web browser to access, retrieve, and display an array of satellite products, and is designed to enhance comparison with surface based and aircraft in-situ measurements.

## VISST Cloud Products Available Online

0.65um reflectance	Ice Water Path
1.6 um reflectance	Effective Cloud Temperature
3.7 um brightness temperature	Cloud-Top Pressure
10.8 um brightness temperature	Effective Cloud Pressure
12.0 um brightness temperature	Cloud-Base Pressure
IR Emission	Cloud-Top Height
Phase / Scene-ID Map	Effective Cloud Height
Optical Depth	Cloud-Base Height
Water Radius	Broadband Longwave Flux
Table 1: 12.0 um VISST cloud product	Broadband Albedo
Liquid Water Path	NEXRAD Radar BREF1

## Web-based Tools to Access VISST Cloud Products

- Online web browser for searching and displaying satellite products
- Interactive Java-based VISST cloud analysis tool and viewer
- Web tool to match cloud products along all C-F aircraft flight tracks
- Web tool to retrieve cloud products at the C-F Western and Eastern Ground Sites
- Output format includes GIFS, ASCII, NetCDF, & McIDAS Areafiles

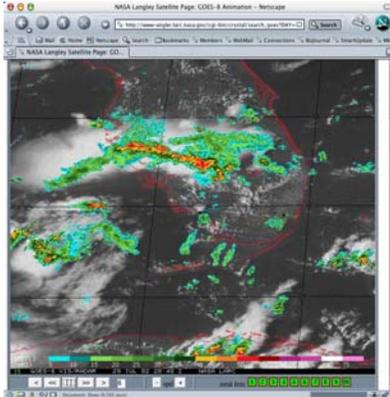
**CRYSTAL-FACE Official Homepage**  
 GOES-8 Imagery  
 GOES-8 Data  
 MODIS  
 Cloud Product  
 GOES-8 (Florida)  
 MODIS (Florida)  
 MODIS (Global)  
 Earth 2A Metadata  
 GOES-8 (Global)  
 Orbital Products  
 The Products  
 VISST  
 AIRS  
 Clouds  
 High Fly Overlay  
 AIRS  
 NASA ER-2  
 WB-57  
 DC-8  
 DC-10  
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<http://www-angler.larc.nasa.gov/crystal/>  
<http://www-pm.larc.nasa.gov>

## GOES-8 and NEXRAD Imagery

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 VIS 1km [640x480] [6 frames] [skip 0]  
 JavaScript JPEG Loop [Display]

### Animation of GOES-8 1km Vis Imagery with NEXRAD Overlay

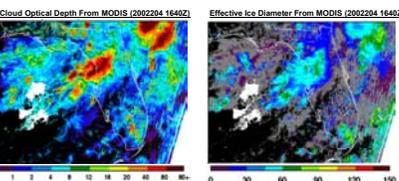


## Interactive Web-based Analysis Tool: The VISST Cloud Product Viewer

- Uses Java and VisAD components
- Supported platforms: SUN, SGI & PC
- Pixel and regional data extraction
- Statistical tools and plots

starting yyyyddd 2002189 h:mm 1400 list archive summary  
 panel 1 scene ID panel 2 10.8 um image  
 panel 3 optical depth panel 4 ice effective diameter  
 6 fms [1/2 hourly] [Java Loop] [Display]

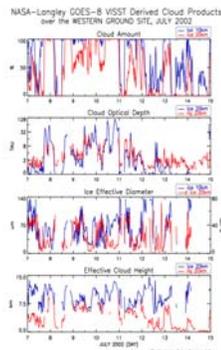
## MODIS Derived Cloud Products



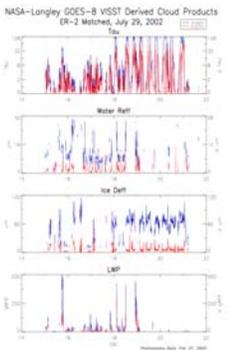
## Tools for Retrieving GOES-8 Derived Cloud Properties over C-F Ground Sites and Along Aircraft Flights

Message or Cloud Product	Panel ID	Scene ID	Scene Date	Scene Time
Cloud Mask	0	000	2002	07
Cloud Optical Depth	1	000	2002	07
Effective Ice Diameter	2	000	2002	07
Effective Cloud Height	3	000	2002	07
Effective Cloud Pressure	4	000	2002	07
Ice Water Path	5	000	2002	07
Liquid Water Path	6	000	2002	07

### Cloud Properties at Ground Sites



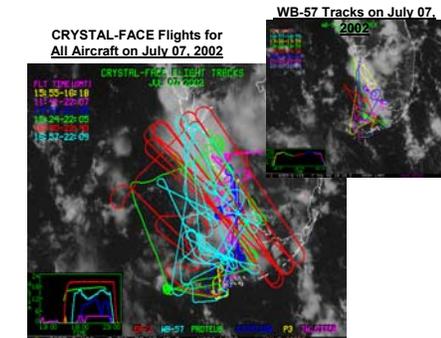
### Results along Aircraft Flight Tracks



## GOES-8 Derived Cloud Product Animation

Animation of GOES-8 Derived Cloud Products

## C-F Aircraft flight track Overlay on GOES



WB-57 Tracks on July 07, 2002