



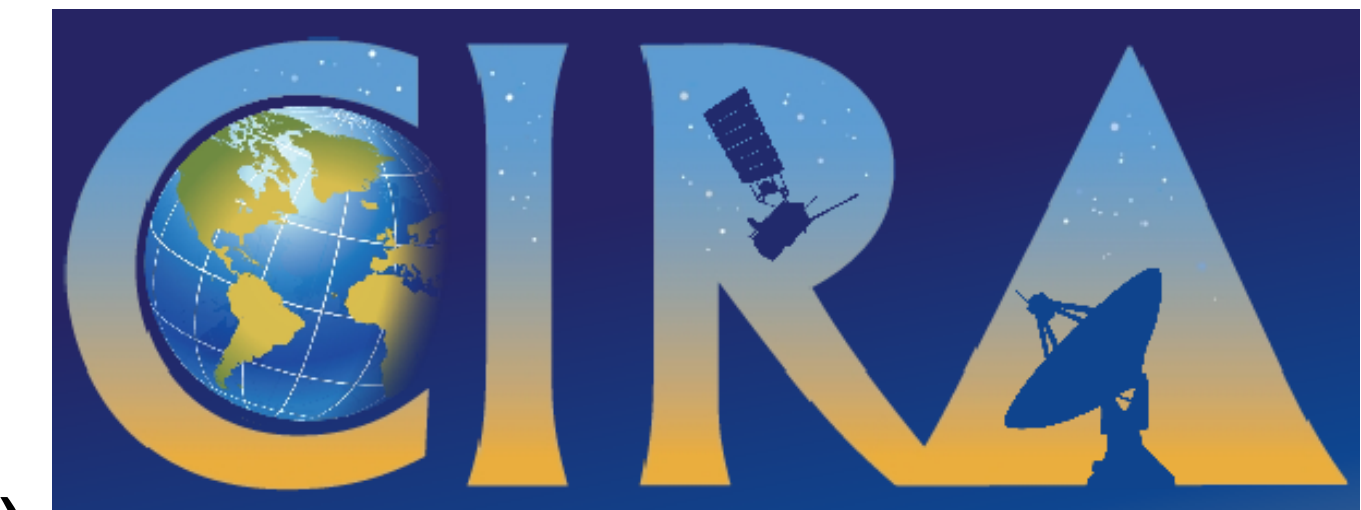
# An Overview of CIRA's Contribution to the GOES-R Proving Ground

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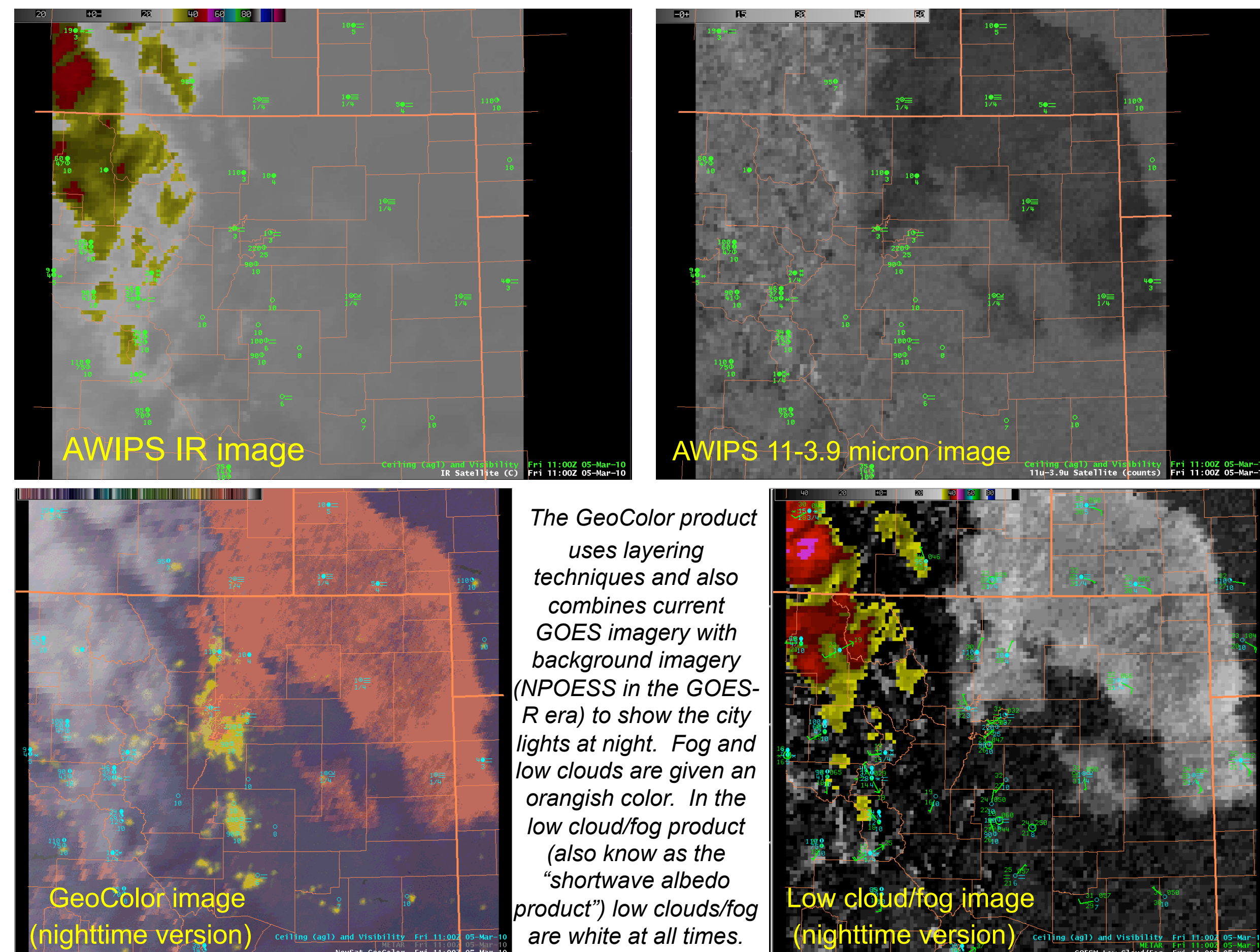
<sup>2</sup>NOAA/Earth System Research Laboratory (ESRL)/Global Systems Division (GSD)

<sup>3</sup>National Environmental Satellite, Data, and Information Services, Center for Satellite Applications and Research (NESDIS/STAR)

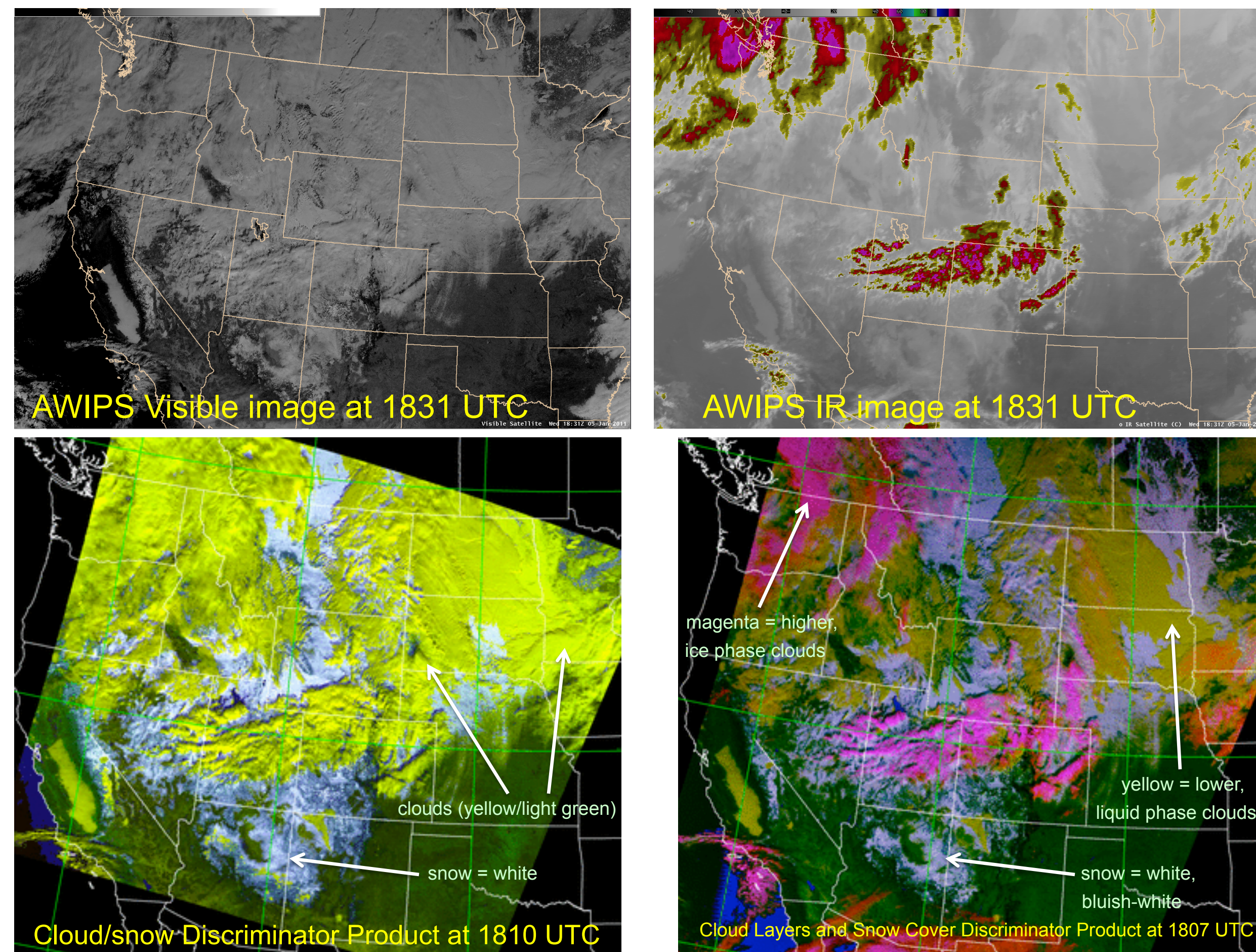


## CIRA WFO PG Products – Part 1

Example of CIRA GeoColor and Low cloud/Fog products compared to AWIPS IR and fog imagery (1100 UTC/5 Mar 10)

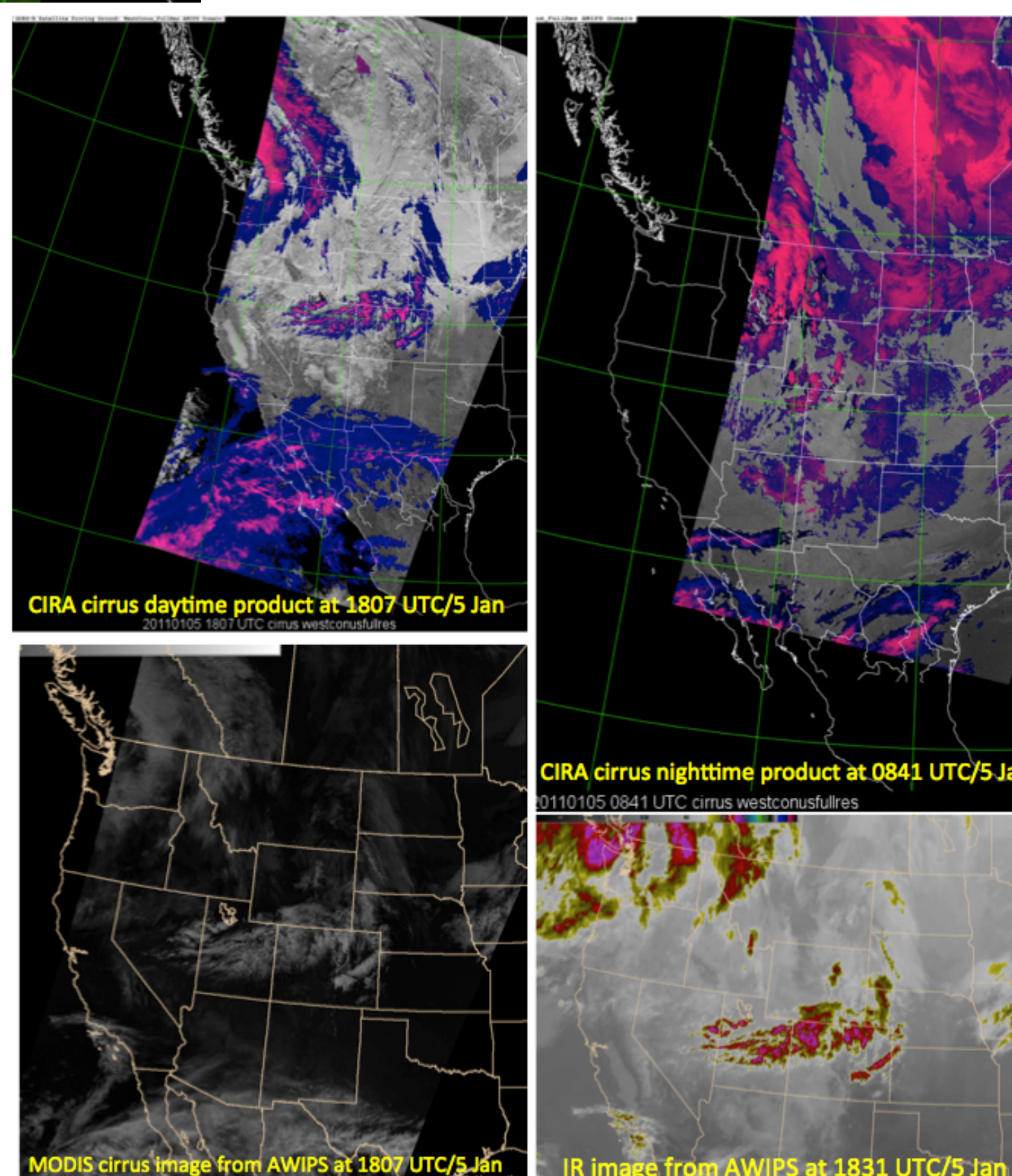


CIRA Cloud/snow Discriminator products compared to AWIPS visible and IR imagery for clouds over snow on 5 Jan 2011



### CIRA Cirrus Detection Product

The Cirrus Detection Product is a MODIS-based product that uses several channels (1.38, 3.9, 6.7, and 11  $\mu$ m) to detect cirrus in daytime and nighttime imagery. The cirrus is then given a distinct color, as seen in the examples.



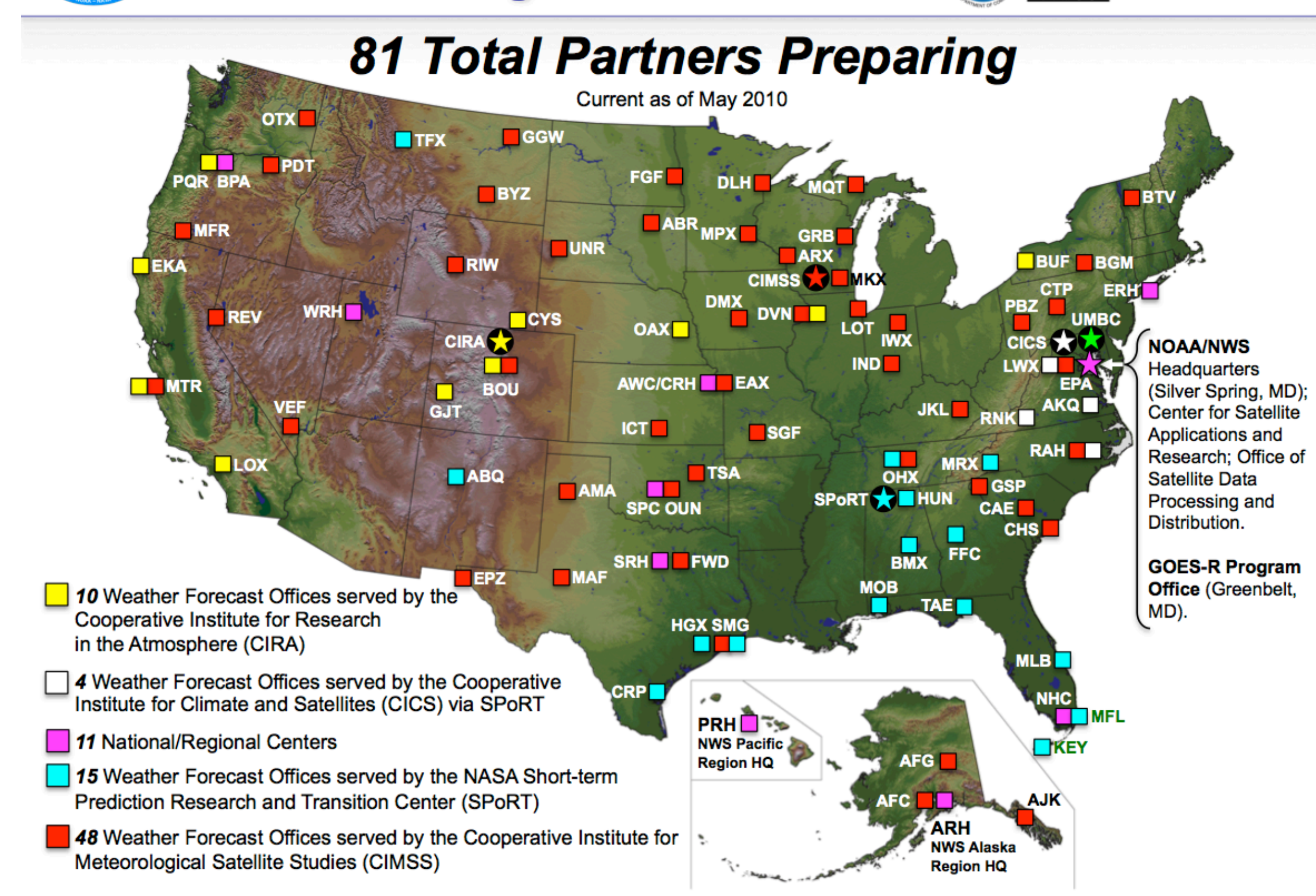
## Overview

CIRA is an active partner in the GOES-R Proving Ground (PG), interacting with a number of National Weather Service (NWS) Weather Forecast Offices (WFOs), and National Centers (see below).

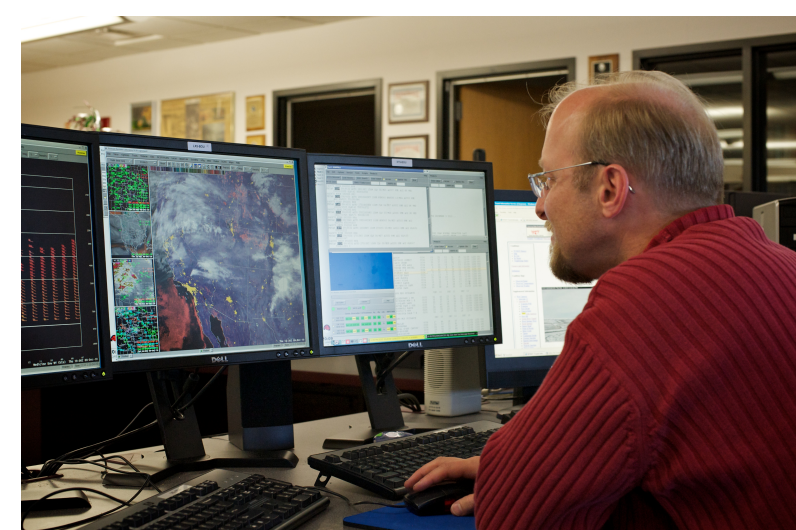
CIRA PG Products (see [http://rammb.cira.colostate.edu/research/goes-r/proving\\_ground/cira\\_product\\_list/](http://rammb.cira.colostate.edu/research/goes-r/proving_ground/cira_product_list/))

Product Name	Product Input	Demonstration Type	Demonstration Resolution	GOES-R Resolution	Product Status/Availability	Product Source
<a href="#">GeoColor Imagery</a>	GOES/MODIS/DMSP	New Imagery/Visualization Technique	GOES 4 km/30 min	2 km/5 min	Since Spring 2009	CIRA
<a href="#">True Color Imagery</a>	MODIS	New Product	0.5 - 1 km/3 hour	1 km/5 min	Since Spring 2010	CIRA
<a href="#">Low Cloud / Fog Imagery</a>	GOES	Product Variant	GOES 4 km/15 min	2 km/5 min	Since Fall 2009	CIRA
<a href="#">Cirrus Detection</a>	MODIS	New Product	1 km/3 hour	1 km/5 min	Since Spring 2010	CIRA
<a href="#">Orographic Rain Index (ORI)</a>	GOES/Radar/GFS	New Product	1 km/1 hour	2 km/1 hour	Since Winter 2009	CIRA
<a href="#">Marine Stratus Cloud Climatology</a>	GOES	New Product	GOES 4 km/1 hour	2 km/30 min	Summer 2010	CIRA
<a href="#">Blowing Dust Detection (Split-window technique)</a>	GOES	Product Variant	GOES 4 km/30 min	2 km/5 min	Since Fall 2009	CIRA
<a href="#">Blowing Dust (Blue-light absorption technique)</a>	MODIS	Product Variant	1 km/3 hour	2 km/5 min	Since Spring 2010	CIRA
<a href="#">Cloud / Snow Discriminator</a>	MODIS	Product Variant	1 km/3 hour	2 km/5 min	Since Fall 2009	CIRA
<a href="#">Cloud Layers &amp; Snow Cover Discriminator</a>	MODIS	Product Variant	1 km/3 hour	2 km/5 min	Since Fall 2009	CIRA
<a href="#">Snow / Cloud Discriminator (3-color technique)</a>	GOES	Product Variant	GOES 4 km/30 min	2 km/5 min	Summer 2010	CIRA
<a href="#">Volcanic Ash (PCI)</a>	GOES	Product Variant	GOES 4 km/30 min	2 km/5 min	Summer 2010	CIRA
<a href="#">Volcanic Ash (Blue-light absorption technique)</a>	MODIS	Product Variant	1 km/3 hour	2 km/5 min	Summer 2010	CIRA
<a href="#">Land Surface Temperature (LST)</a>	GOES	AWG Baseline Product	GOES 4 km/30 min	2 km/5 min	Summer 2010	CIRA
<a href="#">Vegetation (NDVI)</a>	MODIS	New Product	1 km/3 hour	1 km/5 min	Since Spring 2010	CIRA
<a href="#">SPC Hail Probability</a>	GOES / RUC	New Product	Probability forecast every 1 hour	Hourly	Since Spring 2010	CIRA
<a href="#">Synthetic NSSL WRF-ARW Imagery</a>	NSSL WRF-ARW	New Product	4 km/1 hour	2 km/5 min	Since Spring 2010	CIRA
<a href="#">NHC Lightning-based TC Intensity Prediction</a>	Ground-based lightning network/GFS/GOES	New Product	Probability forecast every 6 hours	6 hourly	Summer 2010	CIRA
<a href="#">MSG-based RGB Air Mass Product</a>	MSG	New Product	MSG 3 km/30 min	2 km/5 min	Summer 2010	CIRA
<a href="#">MSG-based RGB Dust Product</a>	MSG	New Product	MSG 3 km/30 min	2 km/5 min	Summer 2010	CIRA
<a href="#">Super Rapid Scan Imagery</a>	GOES	Product Variant	4 km/7 min	2 km/5 min	Summer 2010	CIRA

## GOES-R Proving Ground Partners



## CIRA NWS/WFO Partners and Status

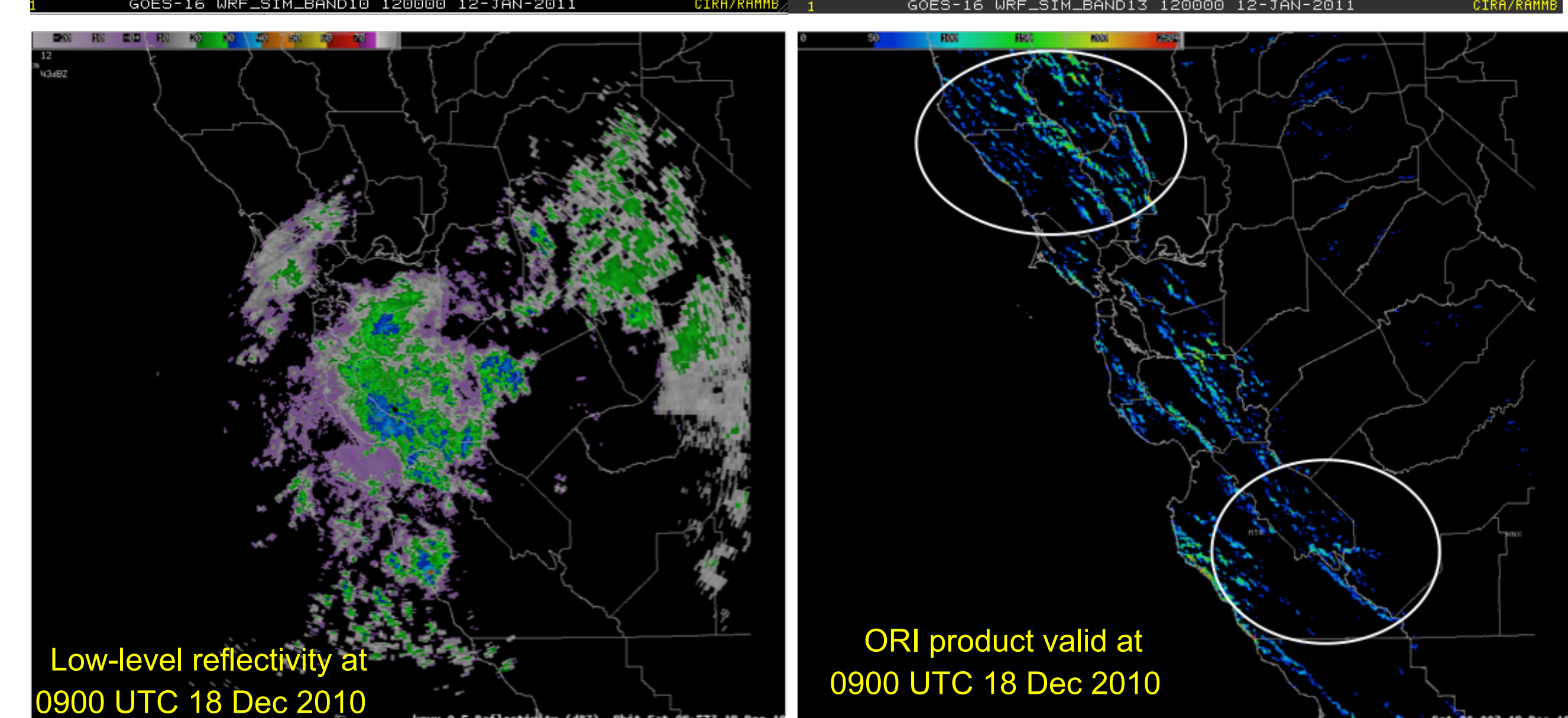
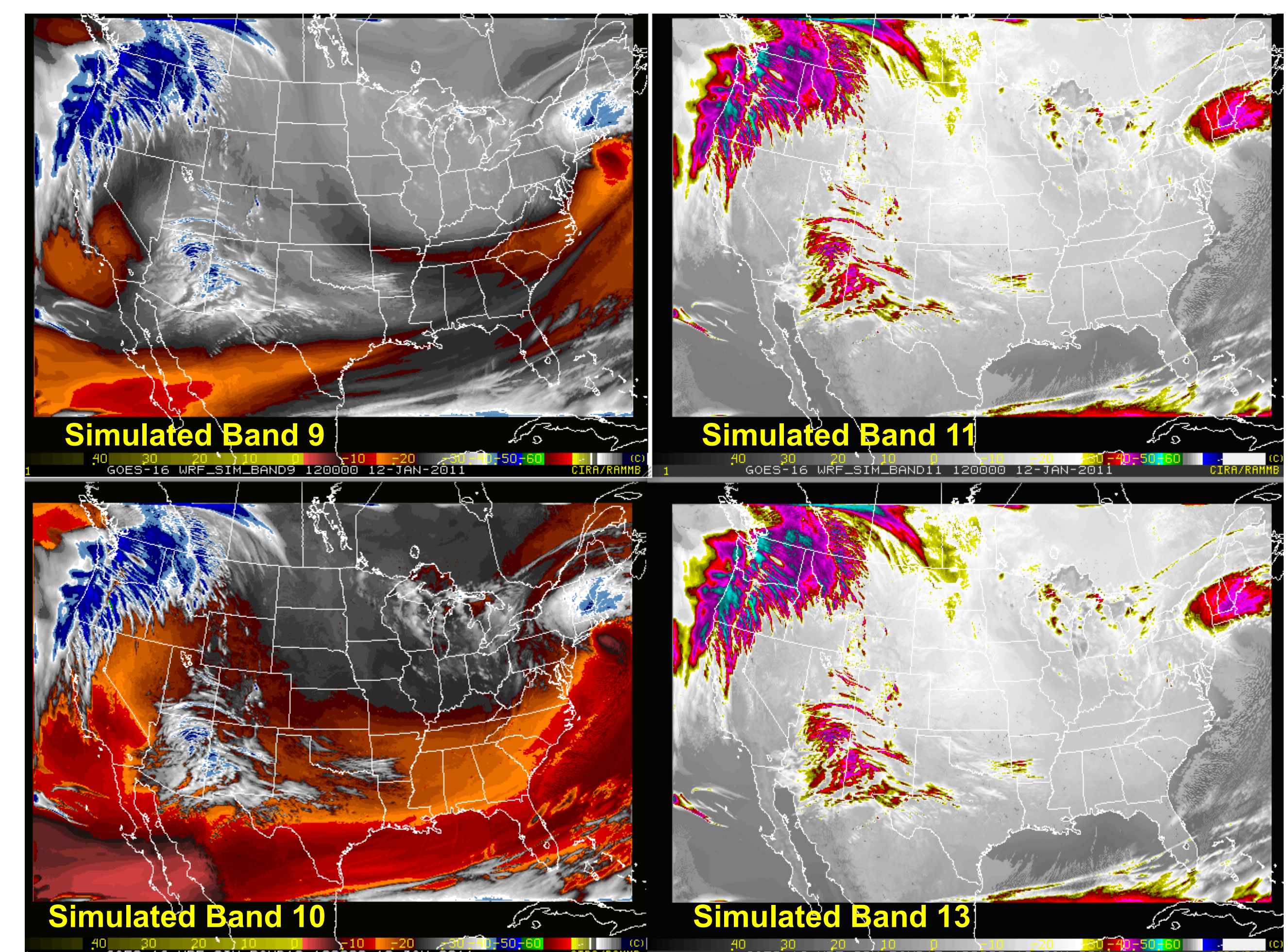


NWS forecaster Chad Gimmetstad (WFO BOU) studying the GeoColor product.  
Photo by Will vonDauster

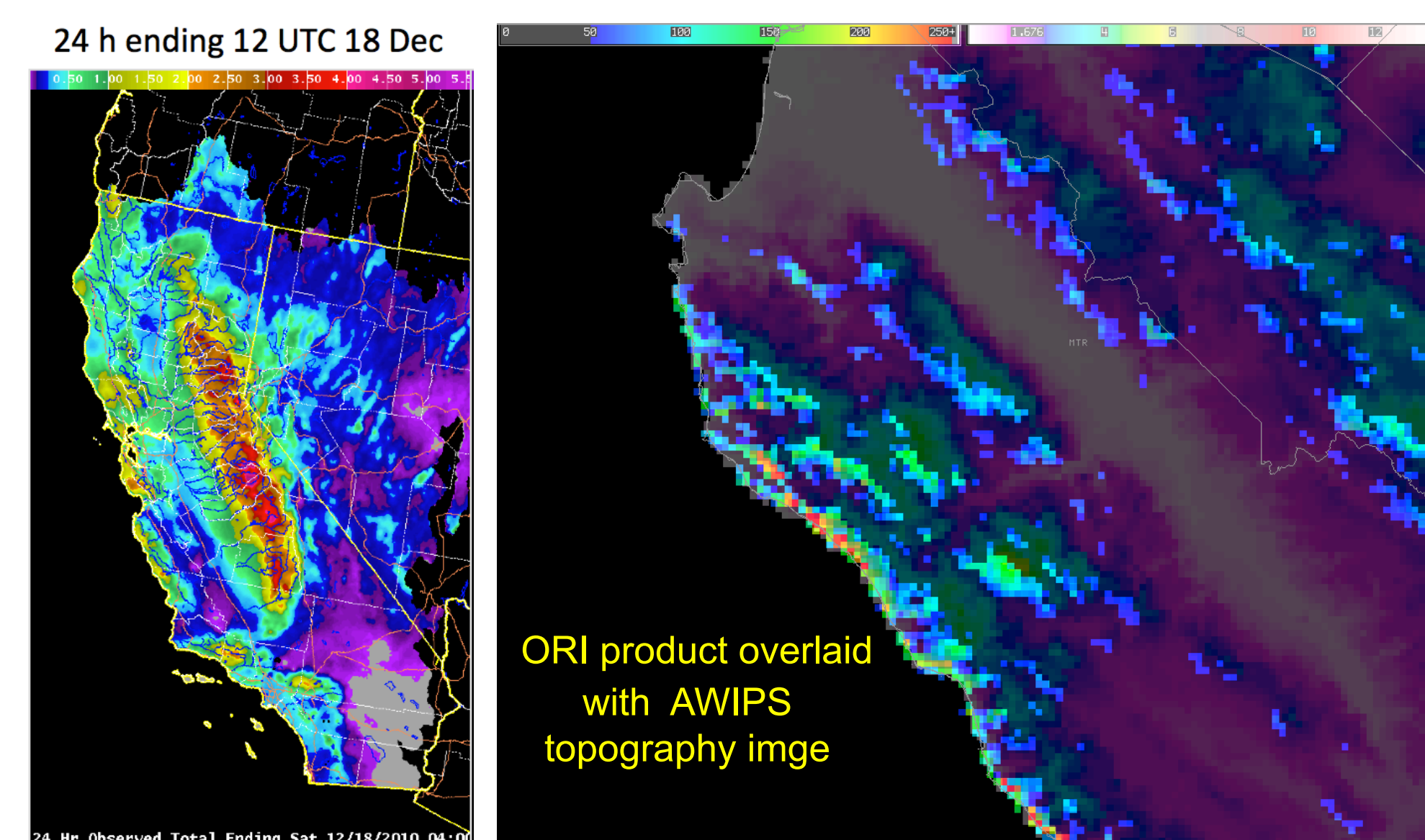
WFO	Products	Server	Status
BOU (Boulder, CO)	GeoColor	CRHQ	Since April 2009
	Low Cloud/Fog	CRHQ	Since October 2009
	Synthetic NSSL WRF-ARW Imagery	CRHQ	Since October 2010
	MODIS Snow	CRHQ	Pending
CYS (Cheyenne, WY)	GeoColor	CRHQ	Since April 2009
	Low Cloud/Fog	CRHQ	Since November 2009
	Synthetic NSSL WRF-ARW Imagery	CRHQ	Pending
RIW (Riverton, WY)	Synthetic NSSL WRF-ARW Imagery	CRHQ	Since November 2010
PUB (Pueblo, CO)	Synthetic NSSL WRF-ARW Imagery	CRHQ	Since November 2010
OAX (Omaha, NE)	GeoColor	CRHQ	Since March 2010
	Low Cloud/Fog	CRHQ	Since March 2010
BUF (Buffalo, NY)	GeoColor	CRHQ	Pending
	Low Cloud/Fog	CRHQ	Pending
	MODIS Snow	CRHQ	Pending
DVN (Davenport, IA)	GeoColor	CRHQ	Since May 2010
	Low Cloud/Fog	CRHQ	Since May 2010
MKE (Milwaukee, WI)	GeoColor	CRHQ	Pending
GJT (Grand Junction, CO)	GeoColor	CRHQ	Since October 2010
	Low Cloud/Fog	CRHQ	Pending
	Dust	CRHQ	Pending
	MODIS Snow	CRHQ	Pending
EKA (Eureka, CA)	ORI	WRHQ	Since February 2010
POR (Portland, OR)	ORI	WRHQ	Since May 2010
MTR (Monterey, CA)	ORI	WRHQ	Pending
LAX (Los Angeles, CA)	ORI	WRHQ	Pending

## CIRA WFO PG Products – Part 2

CIRA synthetic imagery created from the NSSL WRF-ARW model run at 4 km horizontal grid resolution at 0000 UTC, out to 36 h. Shown are 24-h forecasts valid 0000 UTC 12 Jan 2011.



The Orographic Rain Index (ORI) product is an example of a derived product that is created by combining the CIRA blended Total Precipitable Water product with short-range forecasts from the GFS to produce an index related to orographically induced precipitation.



## Forecaster Feedback on Proving Ground Products

The GOES-R Proving Ground strongly encourages forecaster feedback. Based on the forecaster's comments the PG product developers can change and improve their products. Feedback is being provided verbally, via on-line forms, via comments in shift logs, via email, by using BLOGS, and by mentioning the performance of a product in AFDs (see figure below).

AREA FORECAST DISCUSSION  
NATIONAL WEATHER SERVICE DENVER/BOULDER CO  
253 AM MST TUE JAN 11 2011

.SHORT TERM...STRONG QG SUBSIDENCE WILL BE OVER THE AREA EARLY IN THE PERIOD TRANSITIONING TO WEAK ASCENT BY 12Z WEDNESDAY. DRY AIR EARLY ON WILL ALSO MOISTEN UP JUST A BIT BUT MOSTLY IN THE MIDDLE AND ESPECIALLY THE HIGHER LEVELS. SYNTHETIC CLOUD IMAGERY FORECAST FROM CIRA SUGGESTS SOME WAVE CLOUD ACTIVITY TODAY OFF THE FRONT RANGE WHICH IS SUPPORTED BY CURRENT WATER VAPOR SATELLITE IMAGERY SHOWING SOME MOISTURE UPSTREAM FROM COLORADO AT 10Z. WINDS IN THE HIGHER ELEVATIONS SHOULD BE TAPERING OFF LATER TODAY AS HEIGHTS RISE