

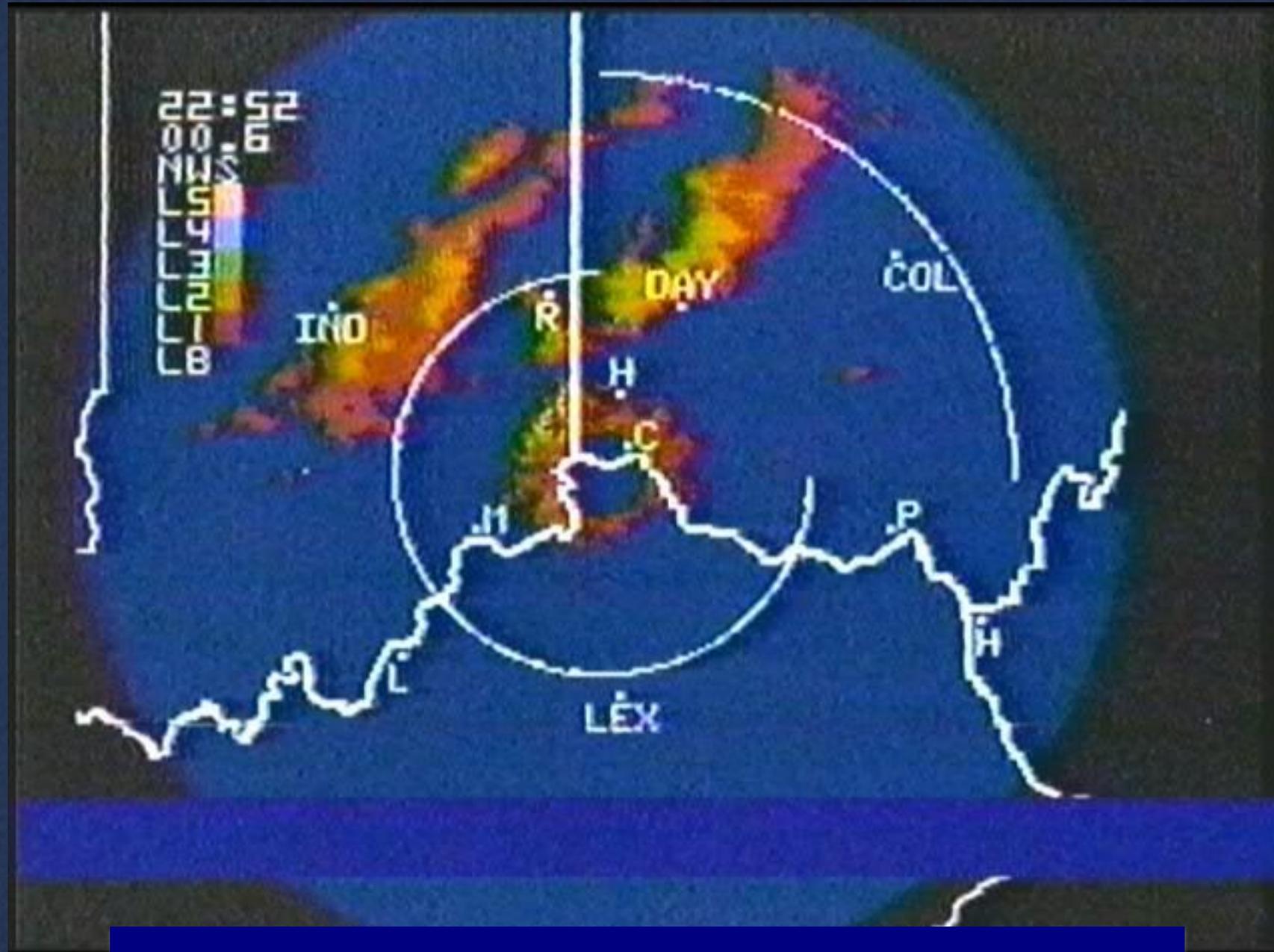
Going From A Trickle



Dan Satterfield
B.S. Meteorology Univ. Okla.
M.S. Earth Sci. Miss. State Univ.

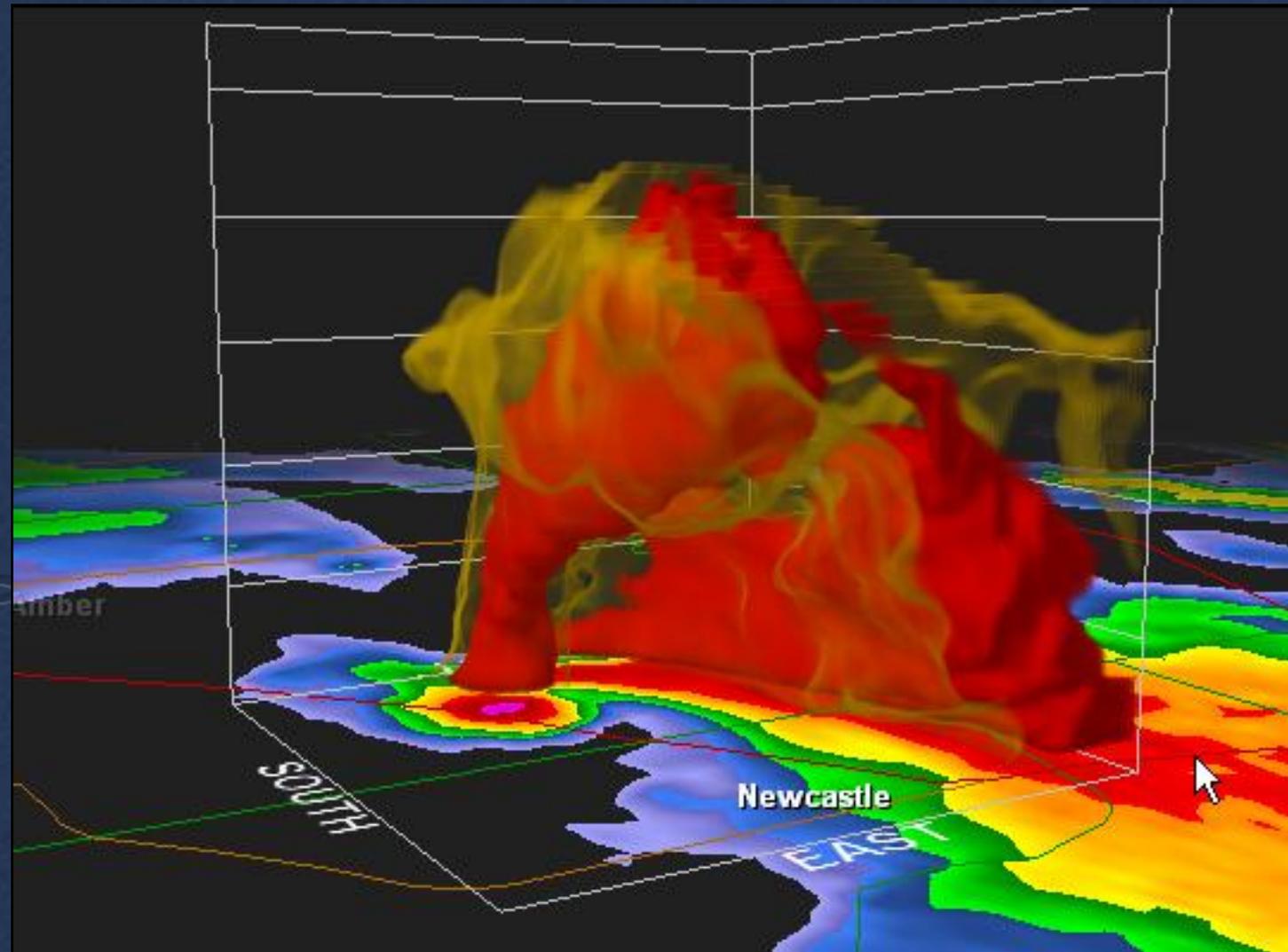
To A Fire Hose!

Radar Meteorology Has Changed Dramatically



This Was Cutting Edge in 1987

Radar Meteorology Has Changed Dramatically



This was 1999

Radar Meteorology Has Changed Dramatically



This was 2011

Are We Forgetting That Forecasting is More than Just Radar and NWP?



Try Using Just NWP & Radar Here!

Or Here Even!



Satellite Meteorology Is Changing Rapidly



1995

But Not On TV Weathercasts!

Satellite Meteorology Is Changing Rapidly



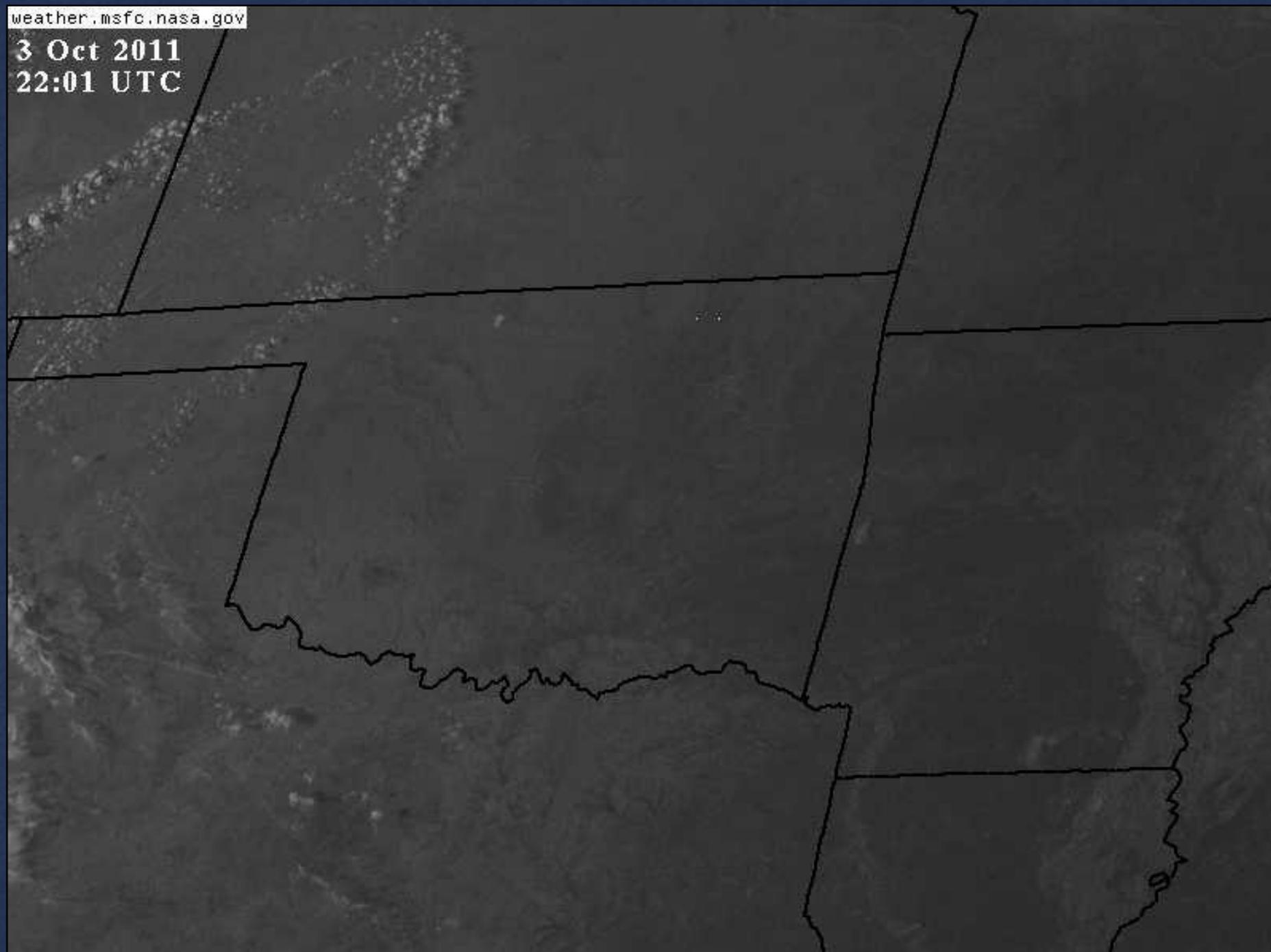
But Not On TV Weathercasts!

Satellite Meteorology Is Changing Rapidly



But Not On TV Weathercasts!

We May Be Going Backwards!



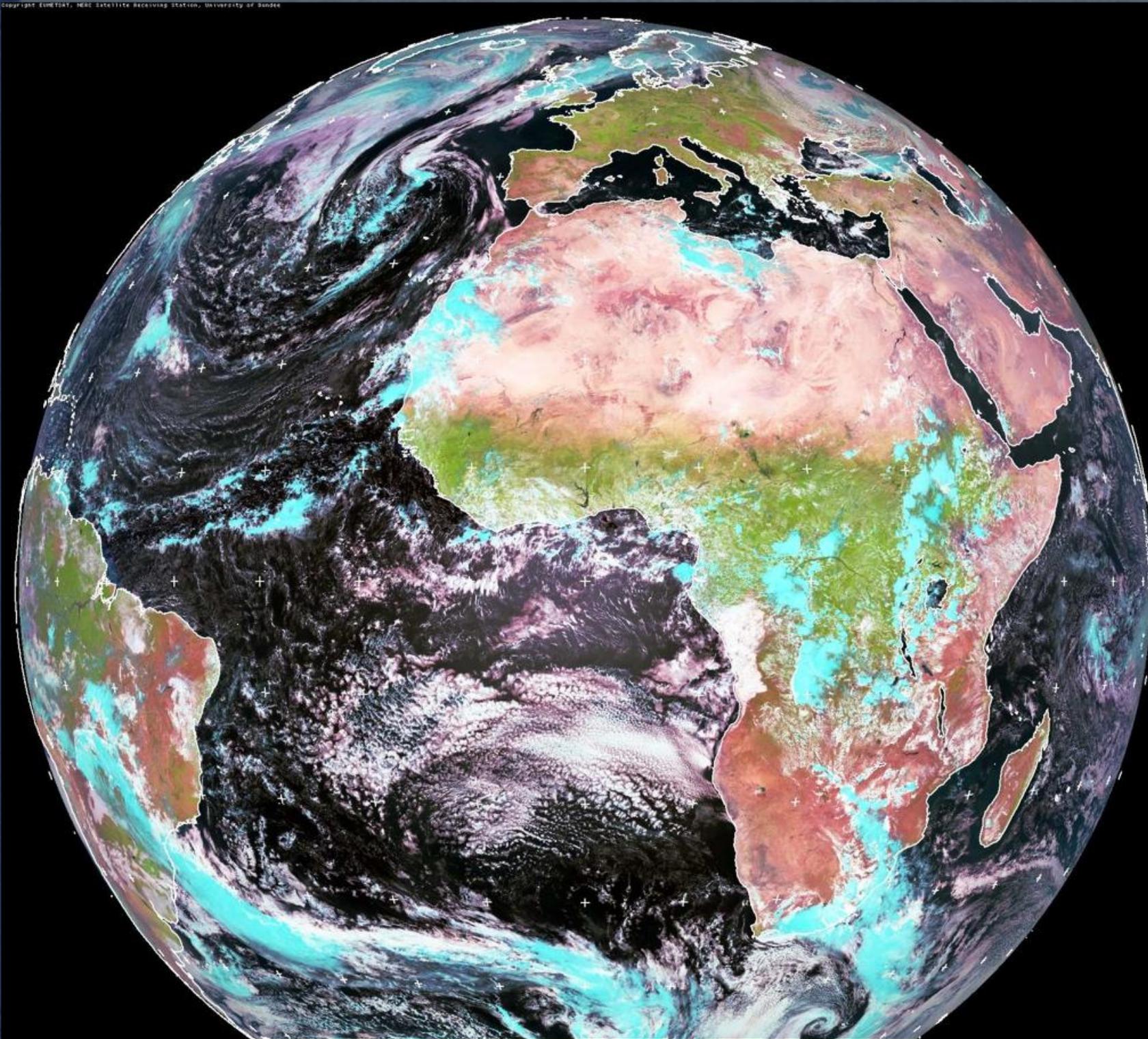
Gary England Starcom 9

GOES R Is About To Rock Your World



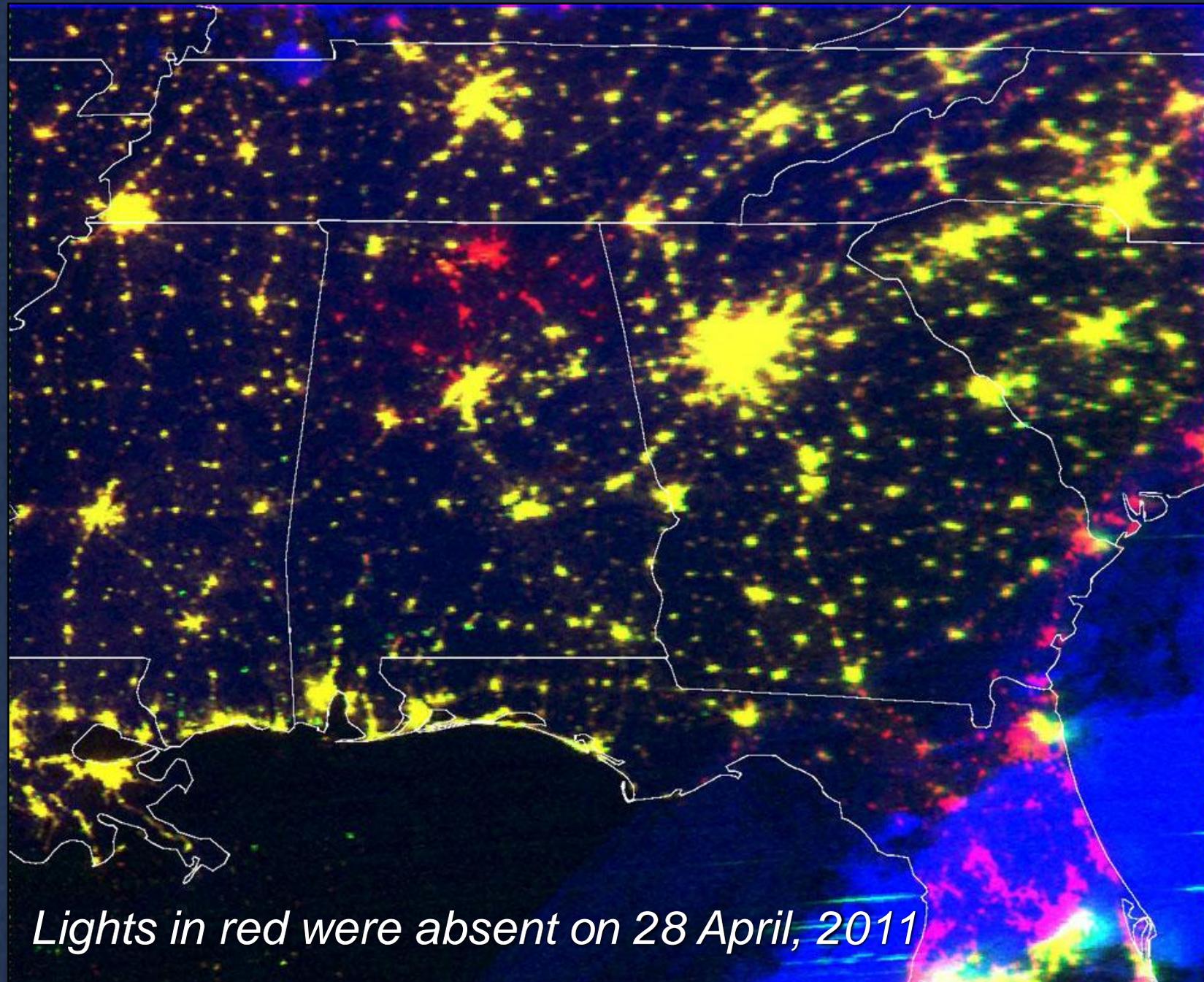
But it's already shaking..

Meteosat's SEVIRI Sensor



False Color Image Oct 2, 2011 shaking!

We Can Do Better Right Now



City Lights from DMSP

MODIS Sensor on Terra/Aqua

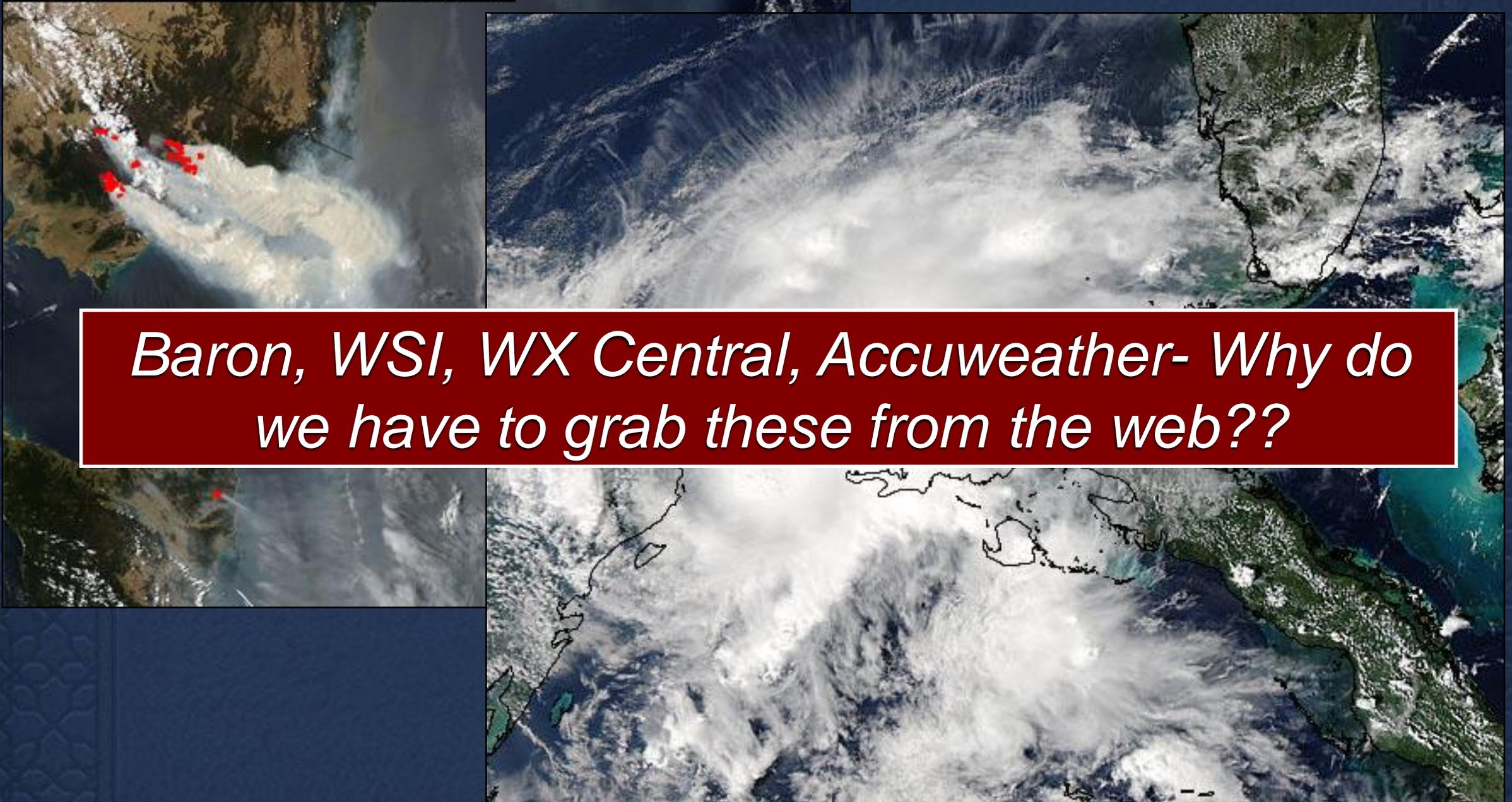
MODIS True Color + Fire Overlays 11 Jan 2007 0345 UTC



Amazing True Color Images!

MODIS Sensor on Terra/Aqua

MODIS True Color + Fire Overlays 11 Jan 2007 0345 UTC



Baron, WSI, WX Central, Accuweather- Why do we have to grab these from the web??

Amazing True Color Images!

Pop Quiz

How Do We Know The Following Recent Scientific Discoveries are True??

HUBBLE MEASURES THE EXPANDING UNIVERSE

LATEST RESULTS FROM THE HUBBLE SPACE TELESCOPE
PIN DOWN THE AGE OF THE UNIVERSE

FROM A NASA HQ PRESS RELEASE

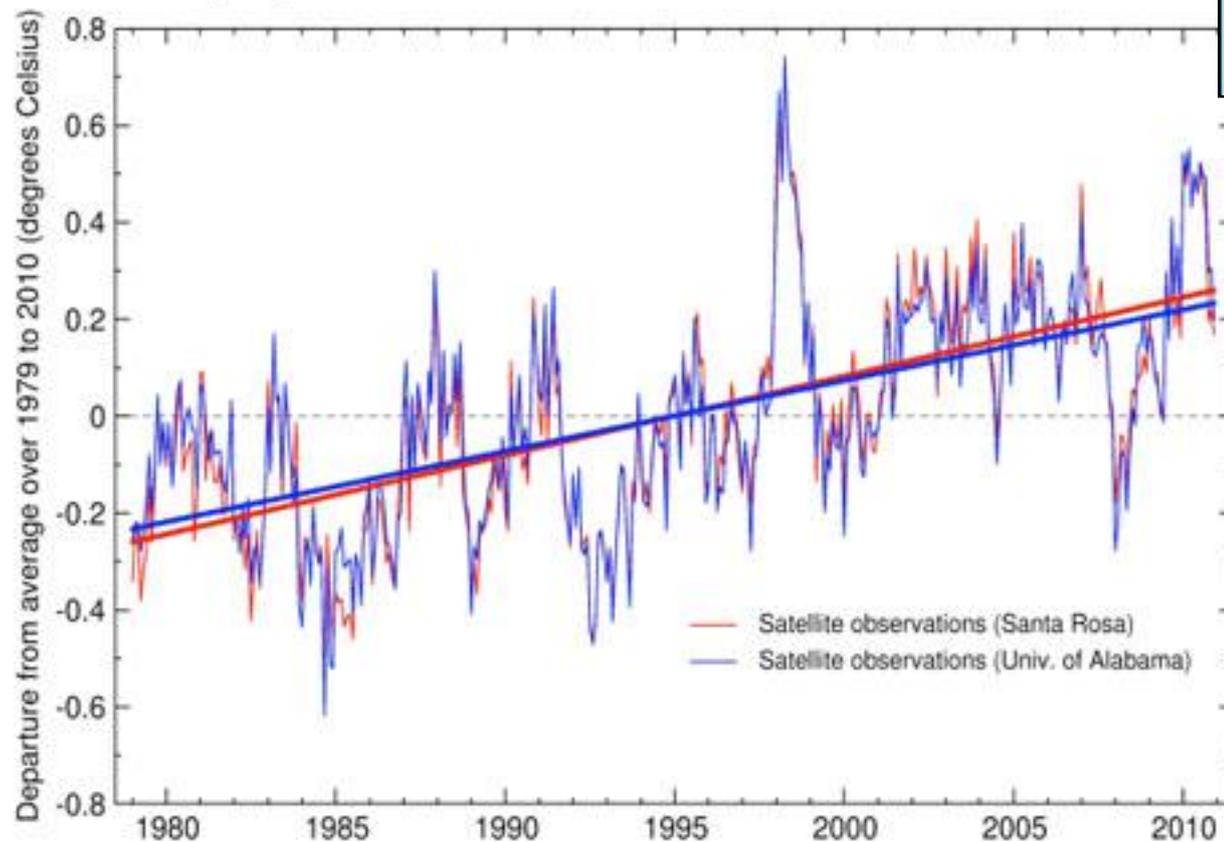
Article:

Arctic Sea Ice Hits Record Low, According to One Measure

Wynne Parry, LiveScience Senior Writer

Date: 12 September 2011 Time: 06:40 PM ET

Observational TLT data show global-scale warming of the lower troposphere

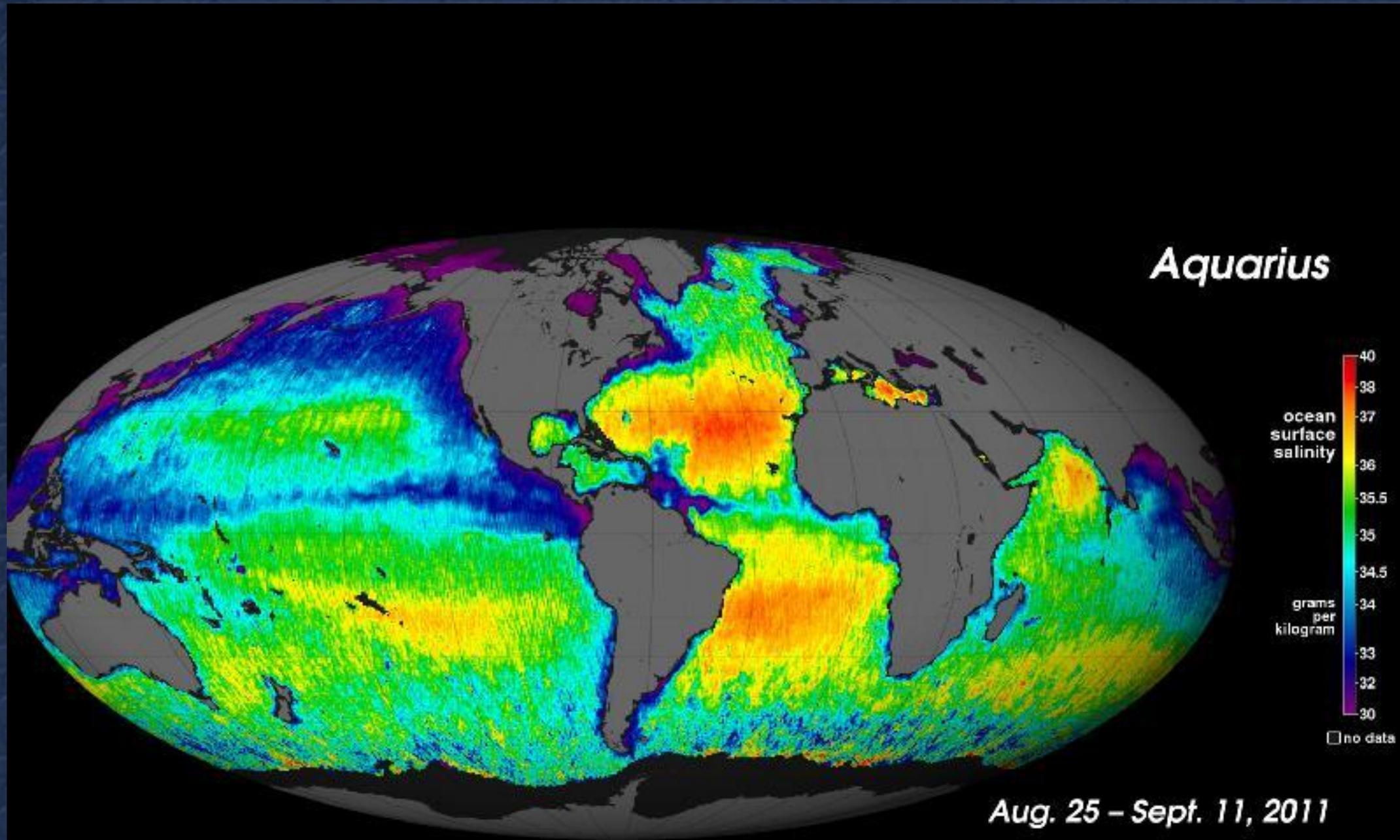


NOAA: 2010 Tied For Warmest Year on Record

January 12, 2011

According to NOAA scientists, 2010 tied with 2005 as the warmest year of the global surface temperature record, beginning in 1880. This was the 34th consecutive year with global temperatures above the 20th century average. For the contiguous United States alone, the 2010 average annual temperature was above normal, resulting in the 23rd warmest year on record.

Pop Quiz



How Do We Measure The Salinity of The Oceans from Space??

Here is a BIG Hint!

THE ELECTROMAGNETIC SPECTRUM

THESE WAVES TRAVEL THROUGH THE ELECTROMAGNETIC FIELD. THEY WERE FORMERLY CARRIED BY THE AETHER, WHICH WAS DECOMMISSIONED IN 1897 DUE TO BUDGET CUTS.

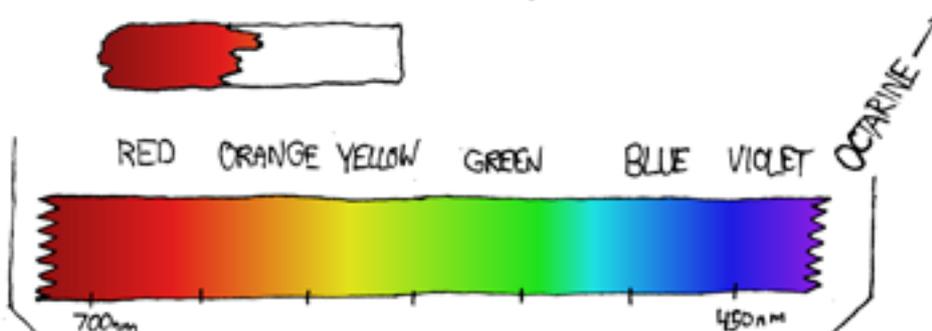
ABSORPTION SPECTRA:

HYDROGEN:

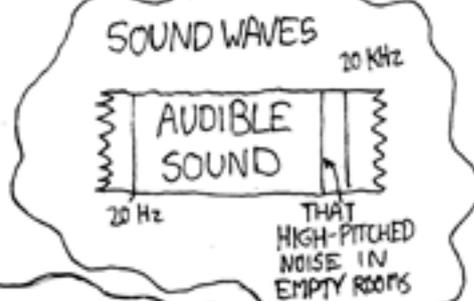
HELIUM:

DEPENDS®:

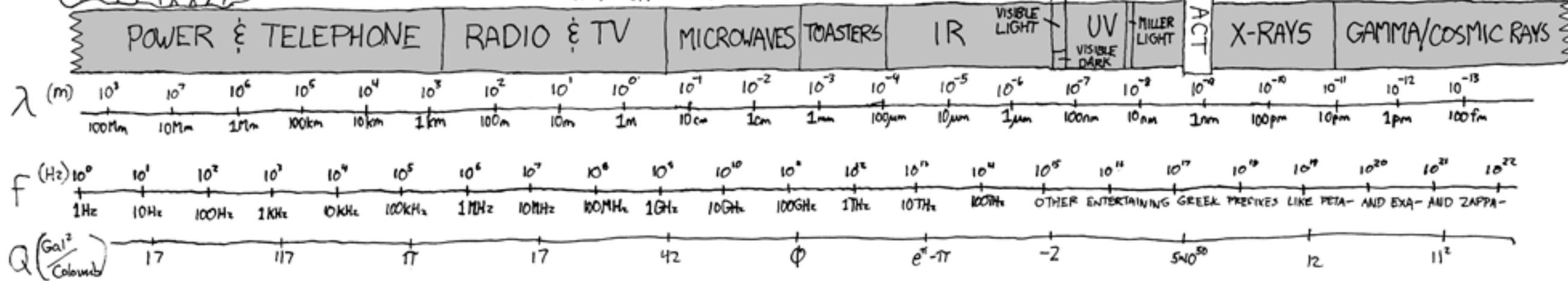
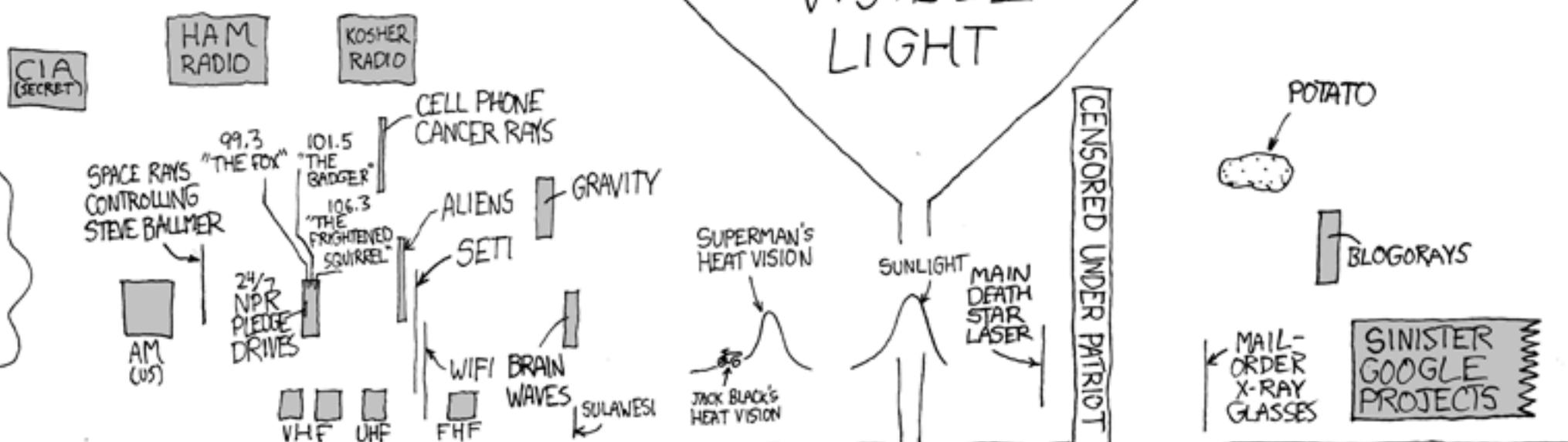
TAMPAX®:



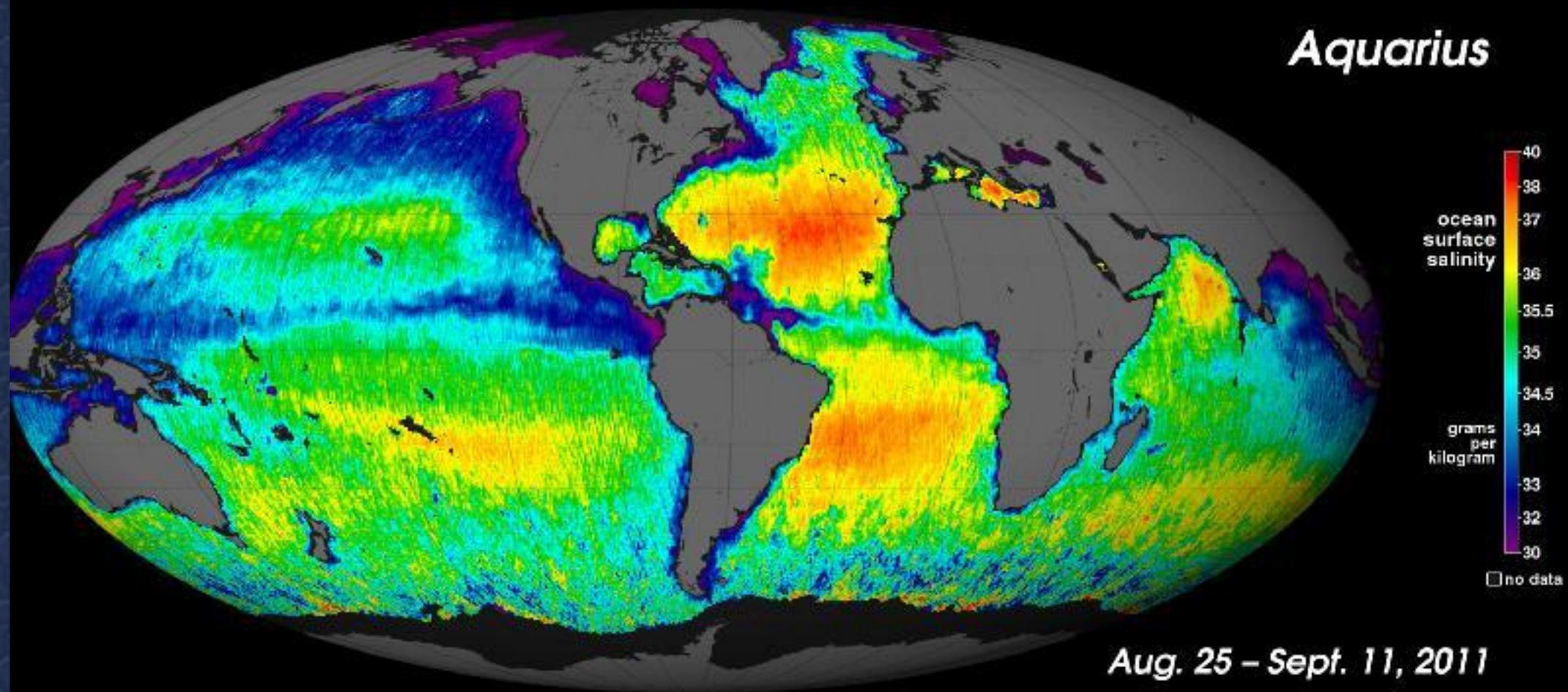
OTHER WAVES:



SHOUTING CAR DEALERSHIP COMMERCIALS

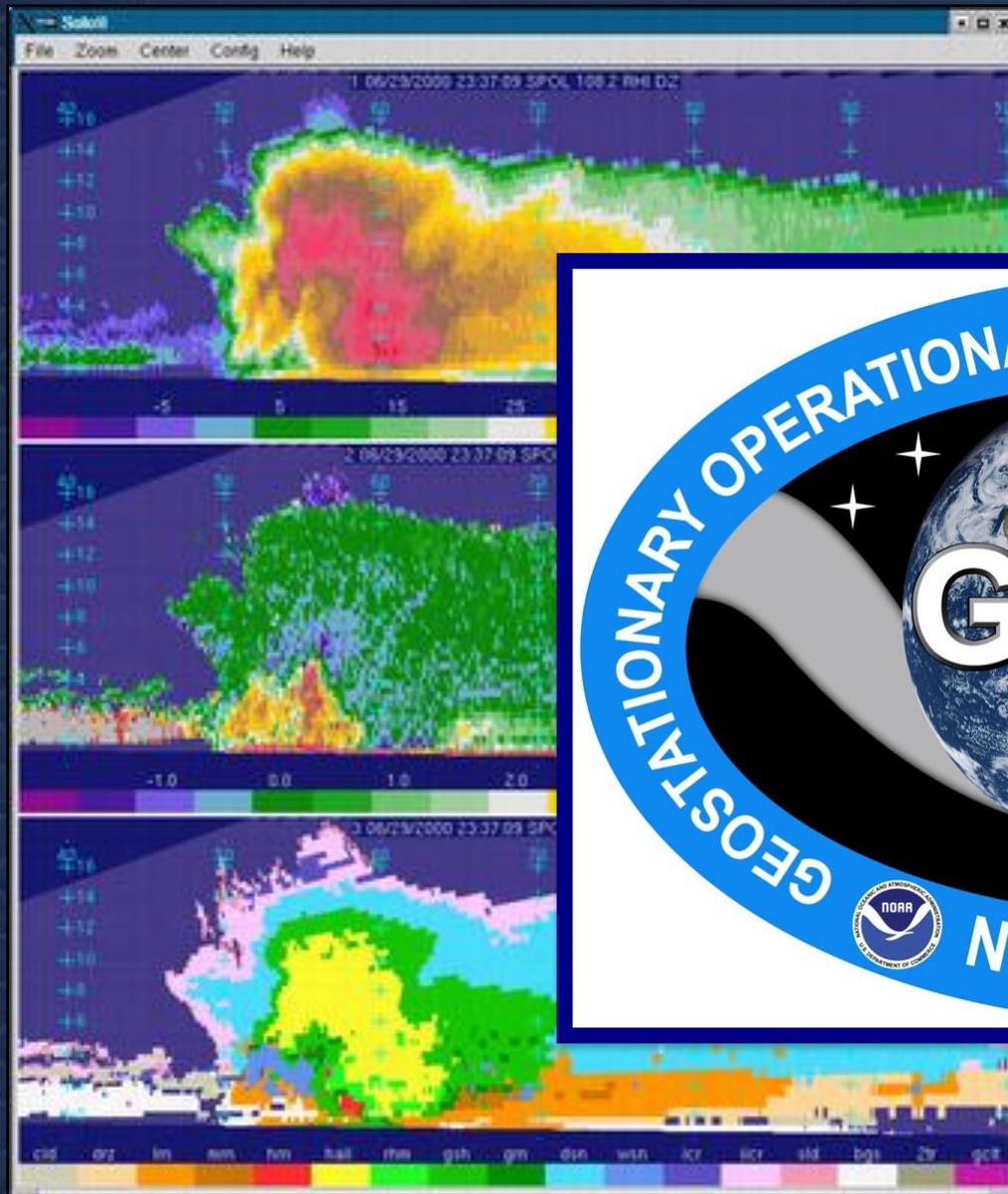


Salty Water Emits Differently Than Fresh Water!

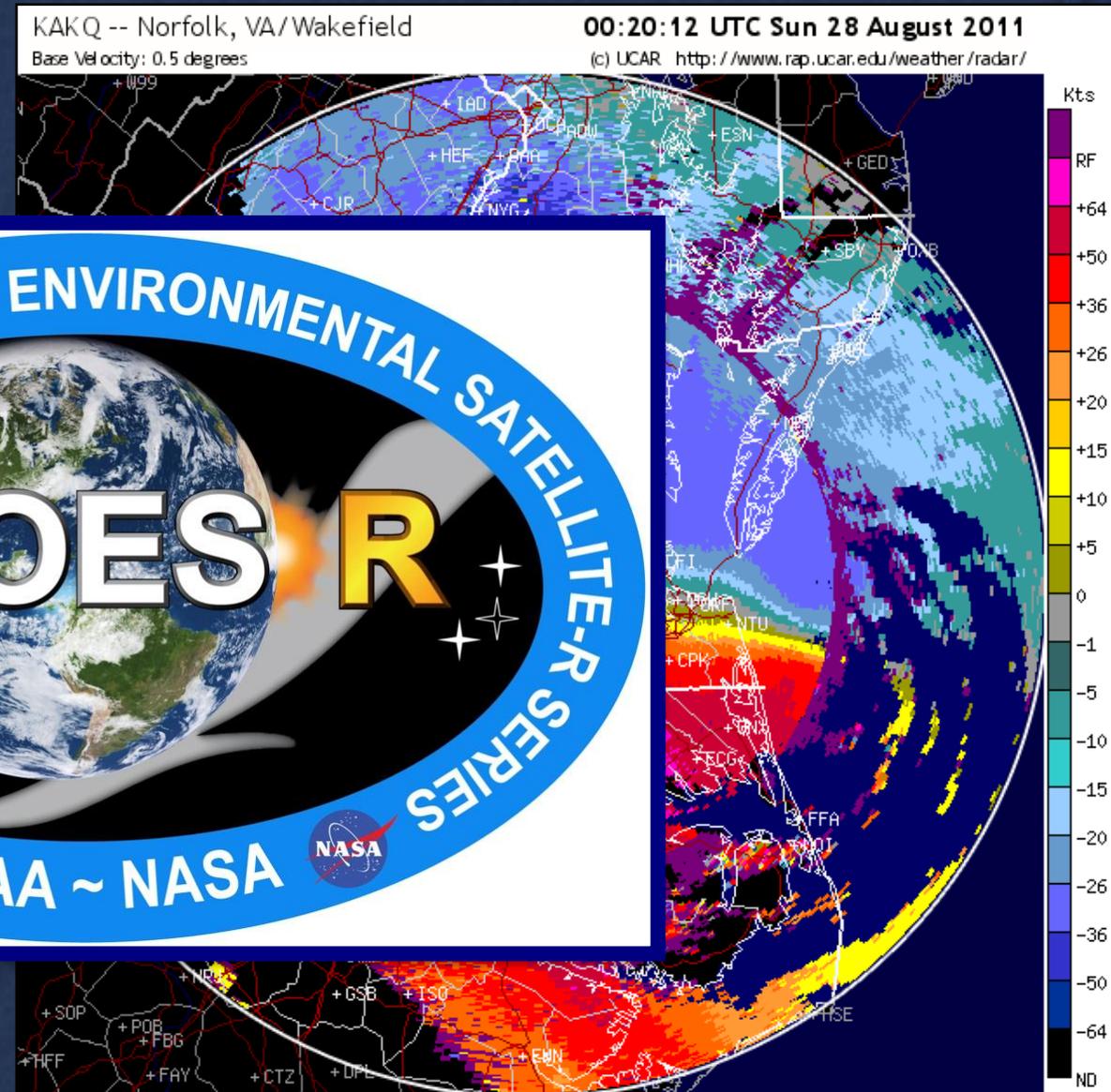


How Do We Measure The Salinity of The Oceans from Space??

GOES R Is The Satellite Version of The Doppler and Dual Pole Revolution!



From NCAR

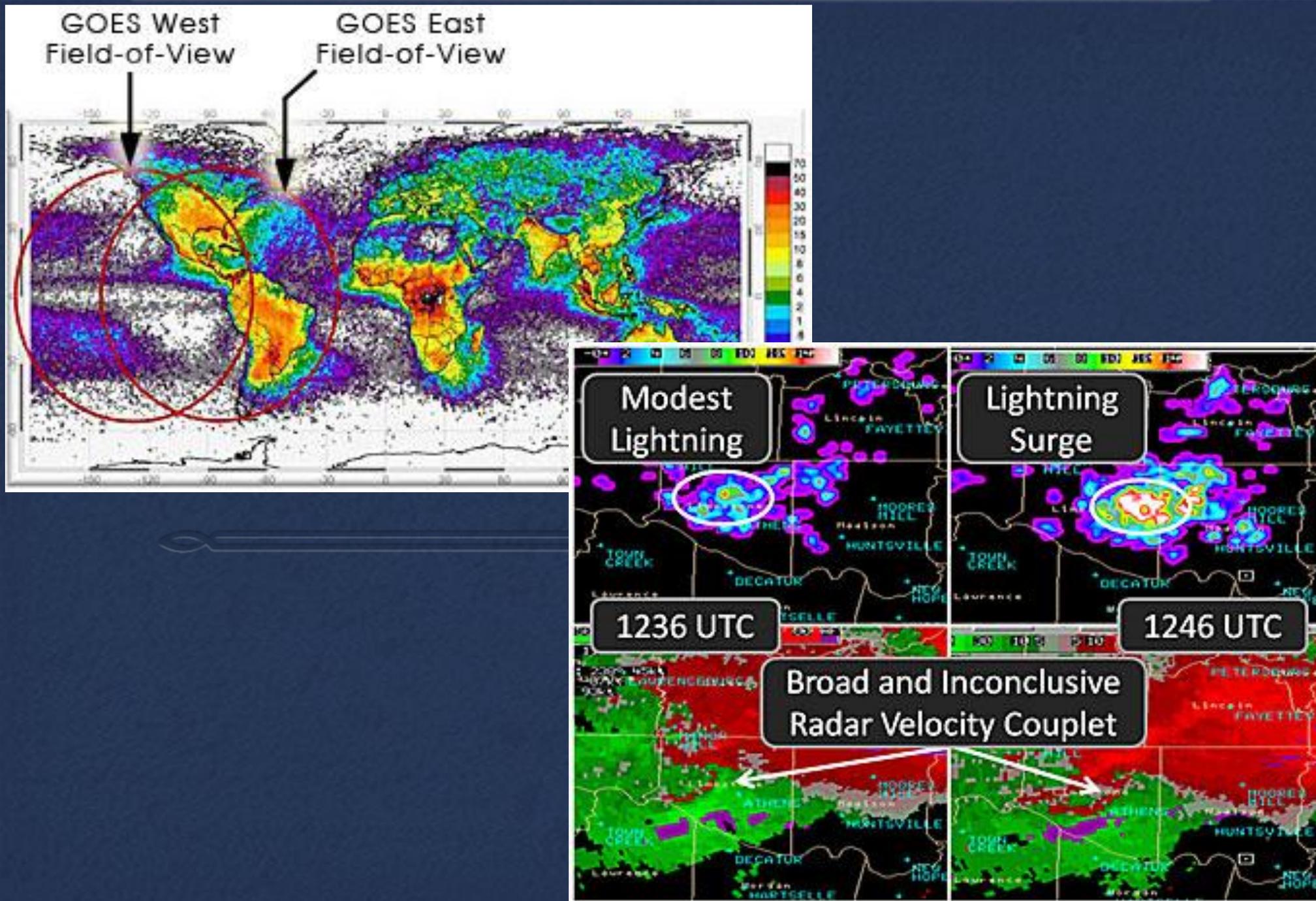


From UCAR



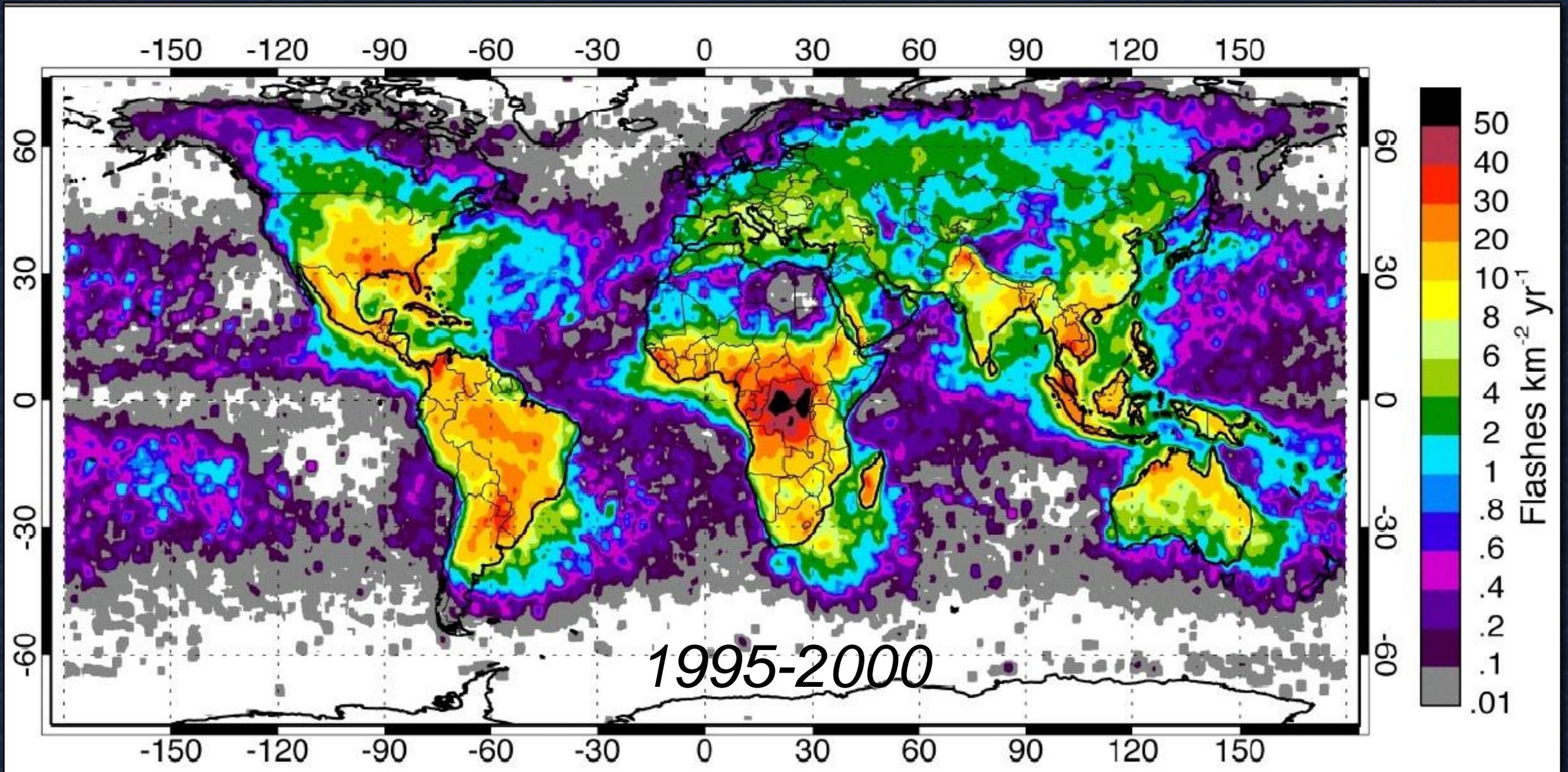
It's Time To Get Ready

GOES R Is A Whole New World



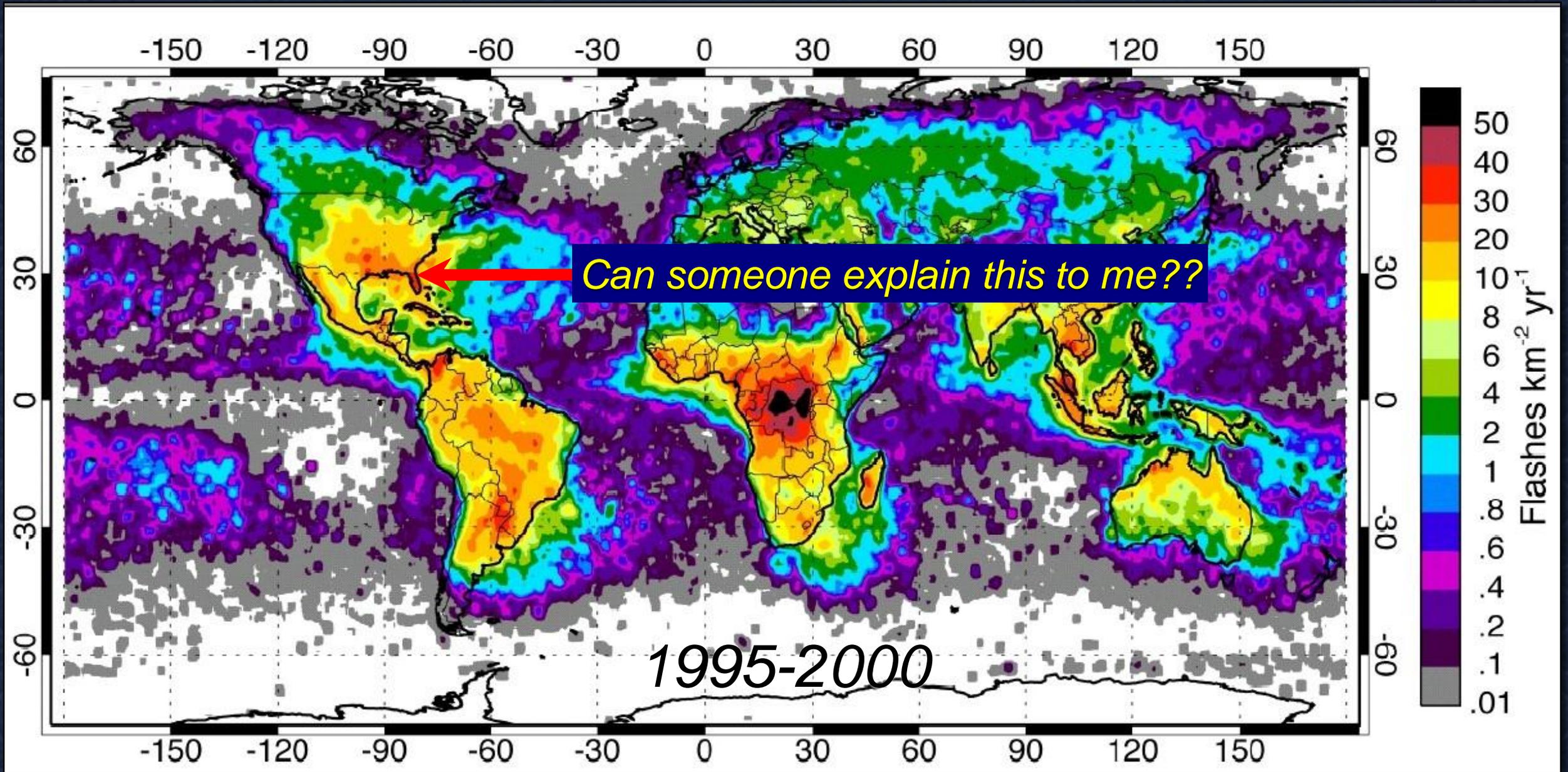
Lightning Detection From Space

The OTD Was First



Developed at NASA MSFC

The OTD Was First



Developed at NASA MSFC

GOES R GLM (Geostationary Lightning Mapper)



The Geostationary Lightning Mapper (GLM) on the GOES-R Series:

**A new operational capability to improve storm
forecasts and warnings**

¹Steven Goodman, ²R. Blakeslee, ²W. Koshak, ²W. A. Petersen, ³L. Carey, and ³D. Mach

¹NOAA/NESDIS/GOES-R Program Office, ²NASA MSFC, ³UAHuntsville

Greenbelt, MD 20771 USA

(steve.goodman@noaa.gov)

AMS 6th Annual Symposium on Future National
Symposium on Operational Environmental
Satellite Systems-NPOESS and GOES-R

Atlanta, GA
20 January 2010

1

Go Here:

<http://www.goes-r.gov/downloads/2010-AMS/GLM-Goodman.pdf>

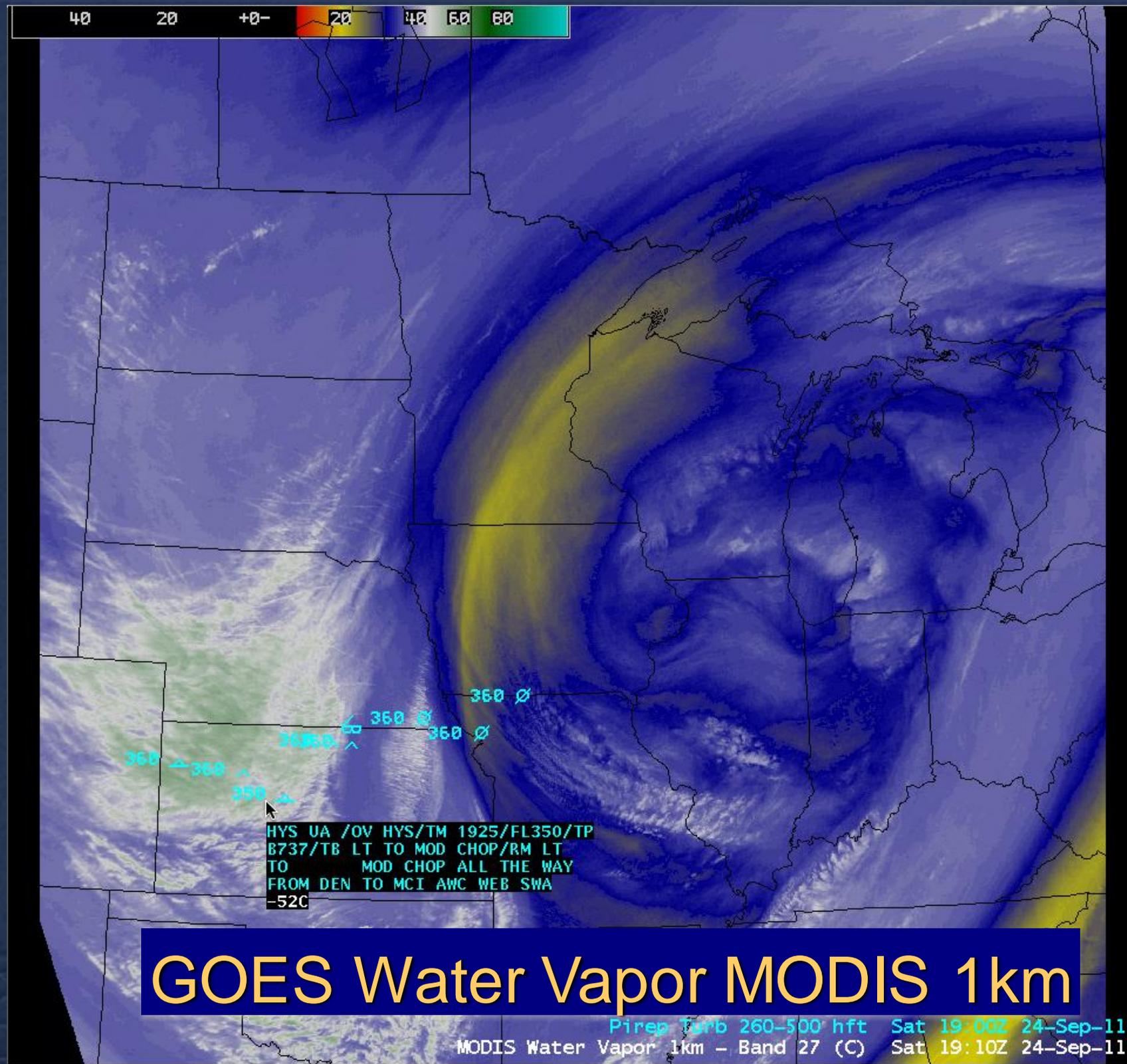
The Advanced Baseline Imager (ABI)

QuickTime™ and a
GIF decompressor
are needed to see this picture.



GOES Water Vapor Now

The Advanced Baseline Imager (ABI)



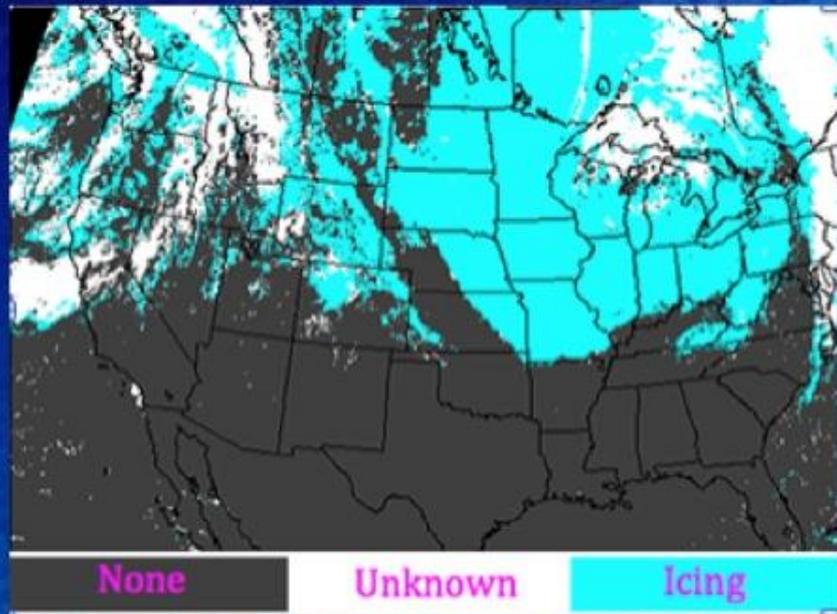
GOES Science In The Pipeline Now



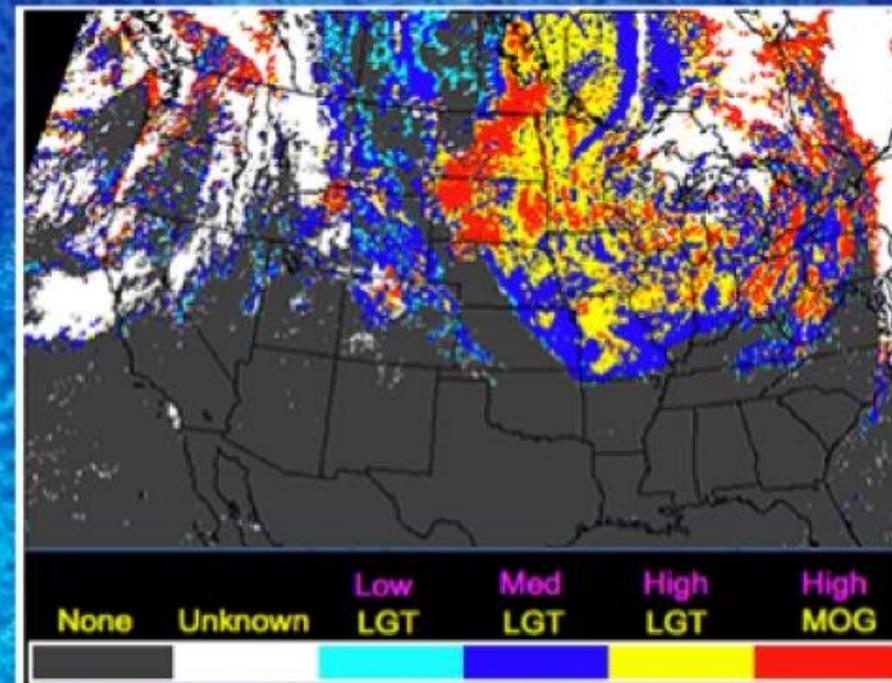
Flight Icing Threat Product Output

Example Using Current GOES/LaRC Algorithms as Proxy

Nighttime



Daytime



Icing Threat Algorithms

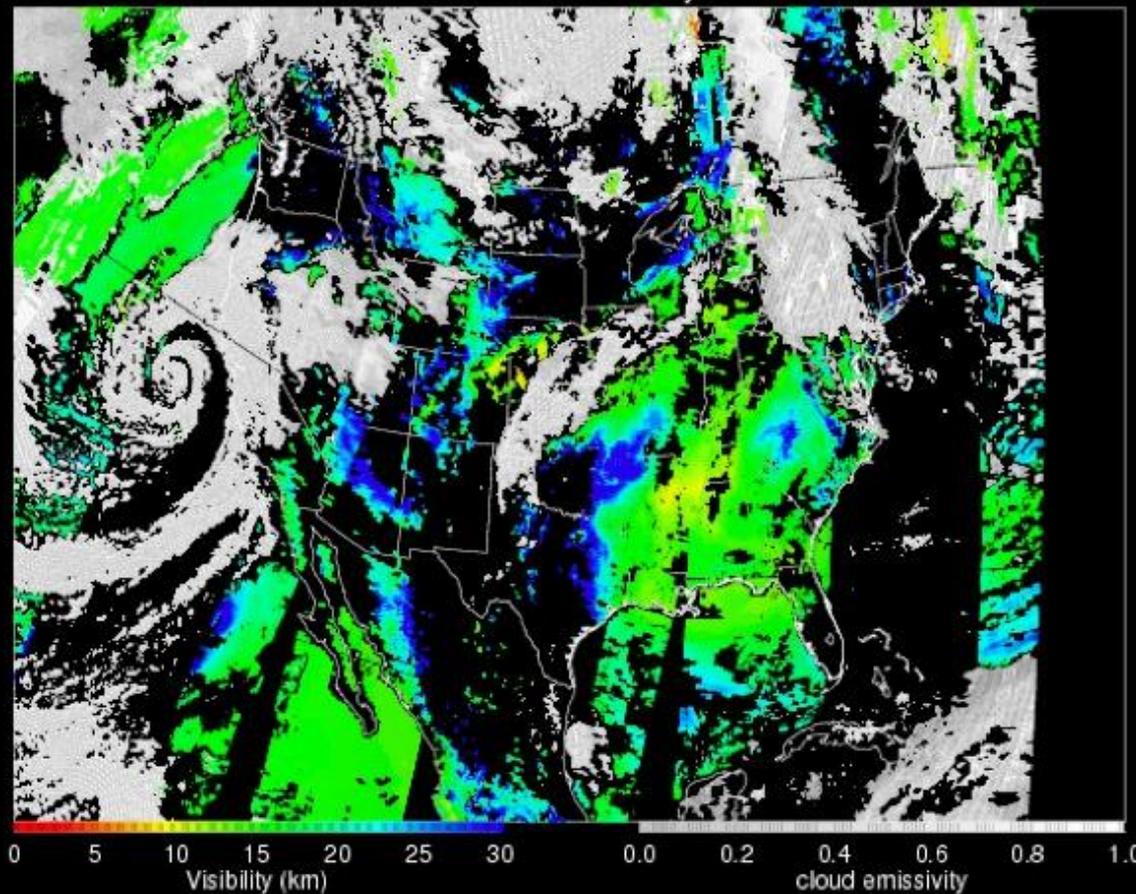
GOES Science In The Pipeline Now



Example Product Output

June 4th, 2011 MODIS Terra Visibility Retrieval

GEOCAT GOES-R ABI Terra Visibility Retrieval 2011155



Smoke from Wallow fire in Arizona led to reduced visibility in NE Colorado and Nebraska.

Regional enhancement of sulfate aerosols due to stagnate conditions within a stationary high pressure system led to reduced visibility in the SE US.

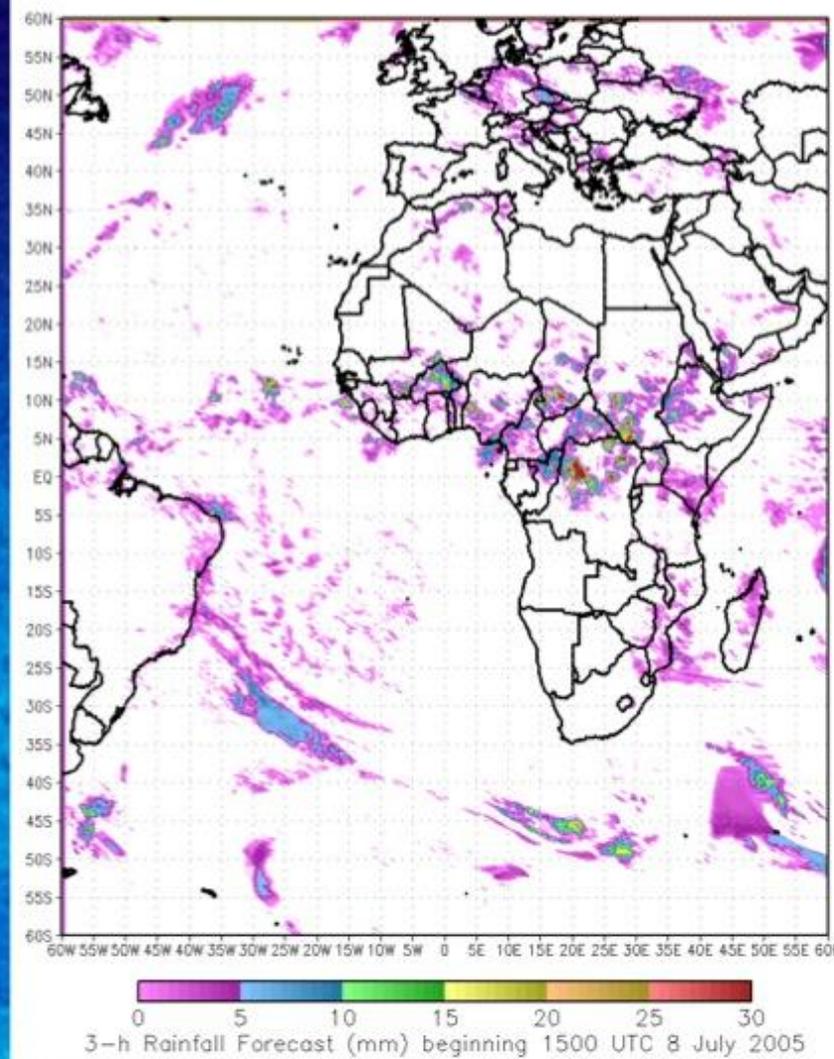
Surface Visibility

GOES Science In The Pipeline Now



Example Product Output

Rainfall Potential
from 1500-1800
UTC 8 July 2005
derived from
Rainfall Rate fields
(retrieved from
SEVIRI data) at
1445 and 1500
UTC.



GRADS: COLA/IGES



Rainfall Potential

GOES Science In The Pipeline Now



Example Product Output

Ice concentration over Great Lakes



Lake ice concentration (%) with MODIS Aqua data (left), MODIS true color image (middle), and from AMSR-E (right) over Great Lakes on February 24 2008.

Ice Concentration

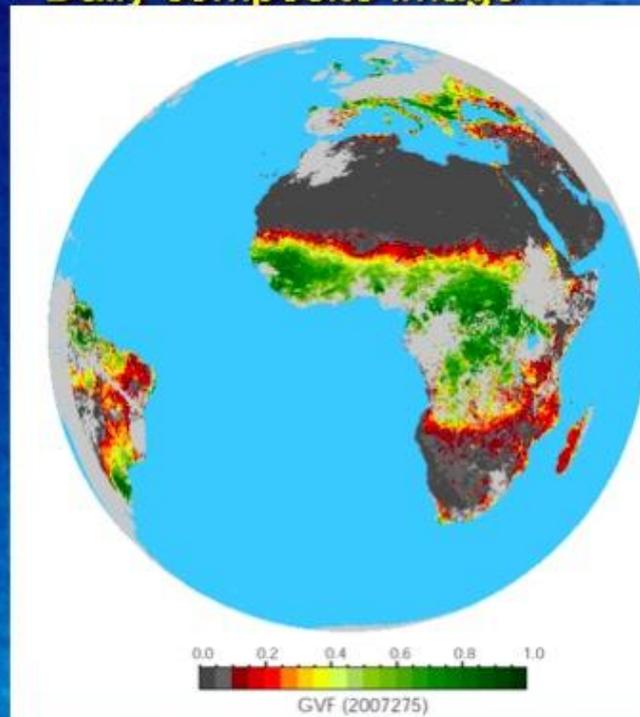
GOES Science In The Pipeline Now



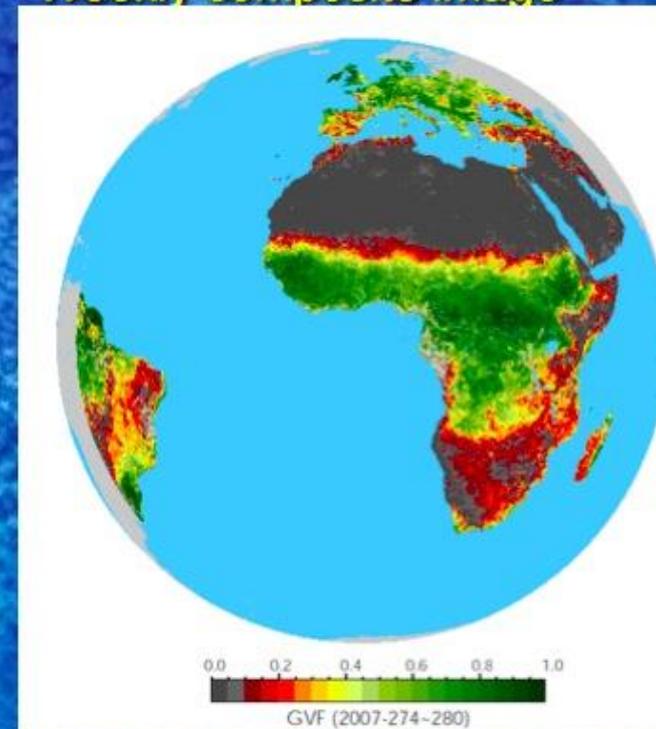
GVF Product

Daily composite data vs. weekly composite data

Daily composite image



Weekly composite image



Light gray: clouds and area with satellite view zenith angle above 70 deg

Green Vegetation

How Do I Learn More??

INTRODUCING THE NEXT- GENERATION ADVANCED BASELINE IMAGER ON GOES-R

BY TIMOTHY J. SCHMIT, MATHEW M. GUNSHOR, W. PAUL MENZEL, JAMES J. GURKA, JUN LI,
AND A. SCOTT BACHMEIER

The ABI will begin a new era in U.S. environmental remote sensing with more spectral bands, faster imaging, and higher spatial resolution than the current imager.

BAMS Aug. 2005

<http://epssi.mtu.edu/seminar/i1520-0477-86-8-1079.pdf>

Must Read Blog!

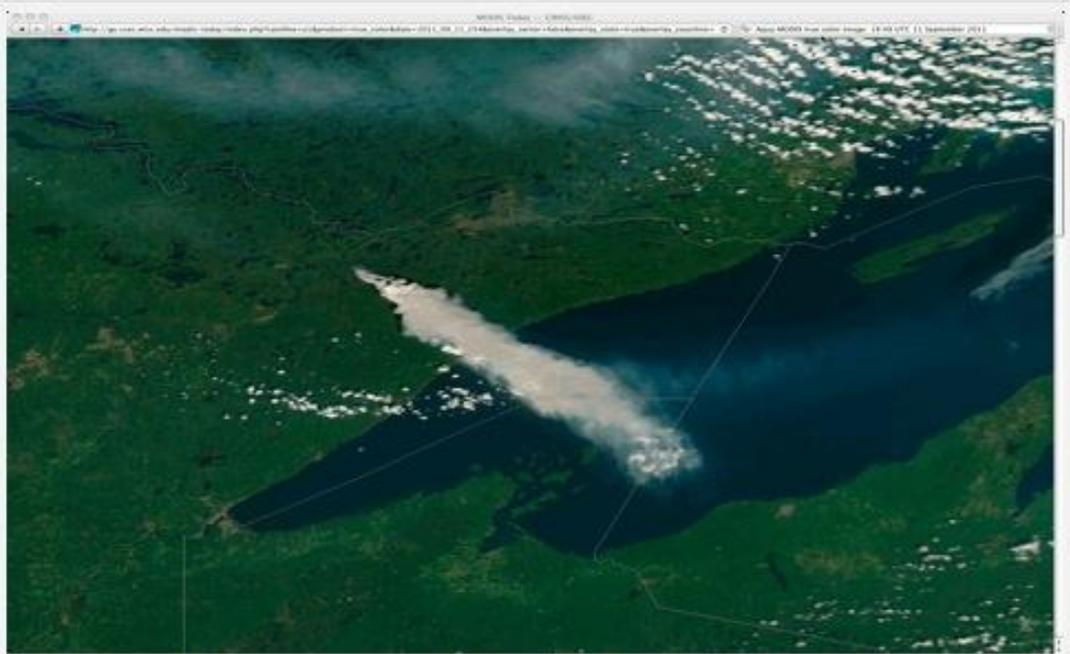
University of Wisconsin-Madison / Space Science and Engineering Center

CIMSS Satellite Blog

/ CIMSS / CIMSS Satellite Blog / Search for: Search

Pagami Creek wildfire in northeastern Minnesota

September 12th, 2011



MODIS true color and false color RGB images (11 September)



Pages

- » About this site
- » CIMSS "Satellite Proving Ground"
- » Contact us
- » Mobile users
- » POES/AVHRR in AWIPS
- » SatePedia
- » VISIT / SHyMet Training Topics

October 2011

M	T	W	T	F	S	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

« Sep

Categories

- » Air quality
- » Antarctic
- » Arctic
- » AVHRR
- » Aviation
- » AWIPS II
- » Convective Initiation
- » GOES-10
- » GOES-11
- » GOES-12
- » GOES-13
- » GOES-14
- » GOES-15
- » GOES-R

<http://cimss.ssec.wisc.edu/goes/blog>

How Do I Learn More??

MetEd

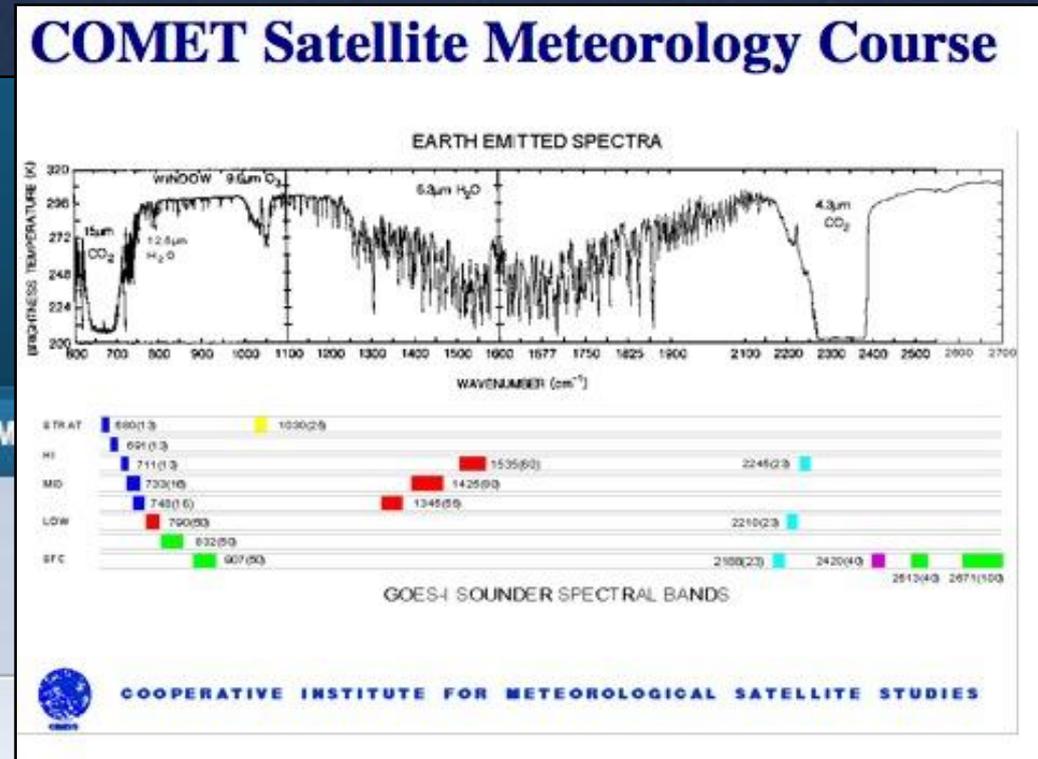
HOME EDUCATION & TRAINING COMM

Module Listing » Satellite Meteorology

Satellite Meteorology

Topics: Languages:

In this topic area, find out how current and future satellites and their sensors work, how to interpret what they tell us, and how to make forecasts and other weather products from their data.



COMET Has 49 Modules!

How Do I Learn More??

VISIT

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[The VISIT Program](#)

[VISIT People](#)

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[Links / Tutorials](#)

[RAMSDIS Online](#)

[VISIT Blog](#)



CIMSS



Satellite Tutorials and Links

- [VISIT AWIPS Enhancements Repository](#)

Tutorials:

- [NESDIS/CIRA Introduction to GOES](#)
- [NESDIS/CIRA Using the GOES 3.9 um Imagery](#)
- [NESDIS/CIRA Advanced GOES Imagery Applications](#)
- [NESDIS/CIRA-CIMSS Using GOES to Detect Low-level Thunderstorm Outflows at Night](#)
- [NESDIS/CIRA A Satellite and Sounding Perspective of a 63 Inch Lake Effect Snow Event](#)
- [NESDIS/CIRA Using Satellite Data for 4 July 95 Moberly Tornado](#)
- [NESDIS/CIRA Satellite Interpretation Discussions](#)
- [NESDIS/CIRA GOES Image Calibration/Scaling/Noise Information](#)
- [NESDIS/CIMSS Using the GOES Sounder](#)
- [NESDIS/CIMSS Water Vapor Imagery Interpretation](#)
- [NESDIS/CIMSS GOES Gallery](#)
- [NESDIS/CIMSS GOES Winter Weather](#)
- [SPC/NSSL Winter Weather Training](#)
- [GOES Imager Channel Notation](#)
- [Sensitivity of the GOES Imager Infrared Channels](#)

Links to satellite products:

- [NESDIS/FPDT GOES High Density Winds](#)
- [NESDIS/FPDT GOES Microburst Products](#)
- [NESDIS GOES sounder single field of view \(SFOV\) product images](#)
- [NESDIS GOES sounder single field of view \(SFOV\) soundings](#)
- [NRL Combined GOES and SSM/I Rainrates](#)
- [CIMSS/SSEC MODIS Imagery](#)
- [NASA MODIS Rapid Response System](#)
- [CIMSS Experimental Wildfire ABBA Fire Product](#)

VISIT MODULES