



NOAA Satellite Conference

Special Panel

on the Importance

of NOAA Satellites

Tom Fahey, Mgr. Meteorology &
Chair A4A Meteorology Work Group
April 12, 2013
NOAA Center for Weather & Climate Prediction
College Park, Maryland



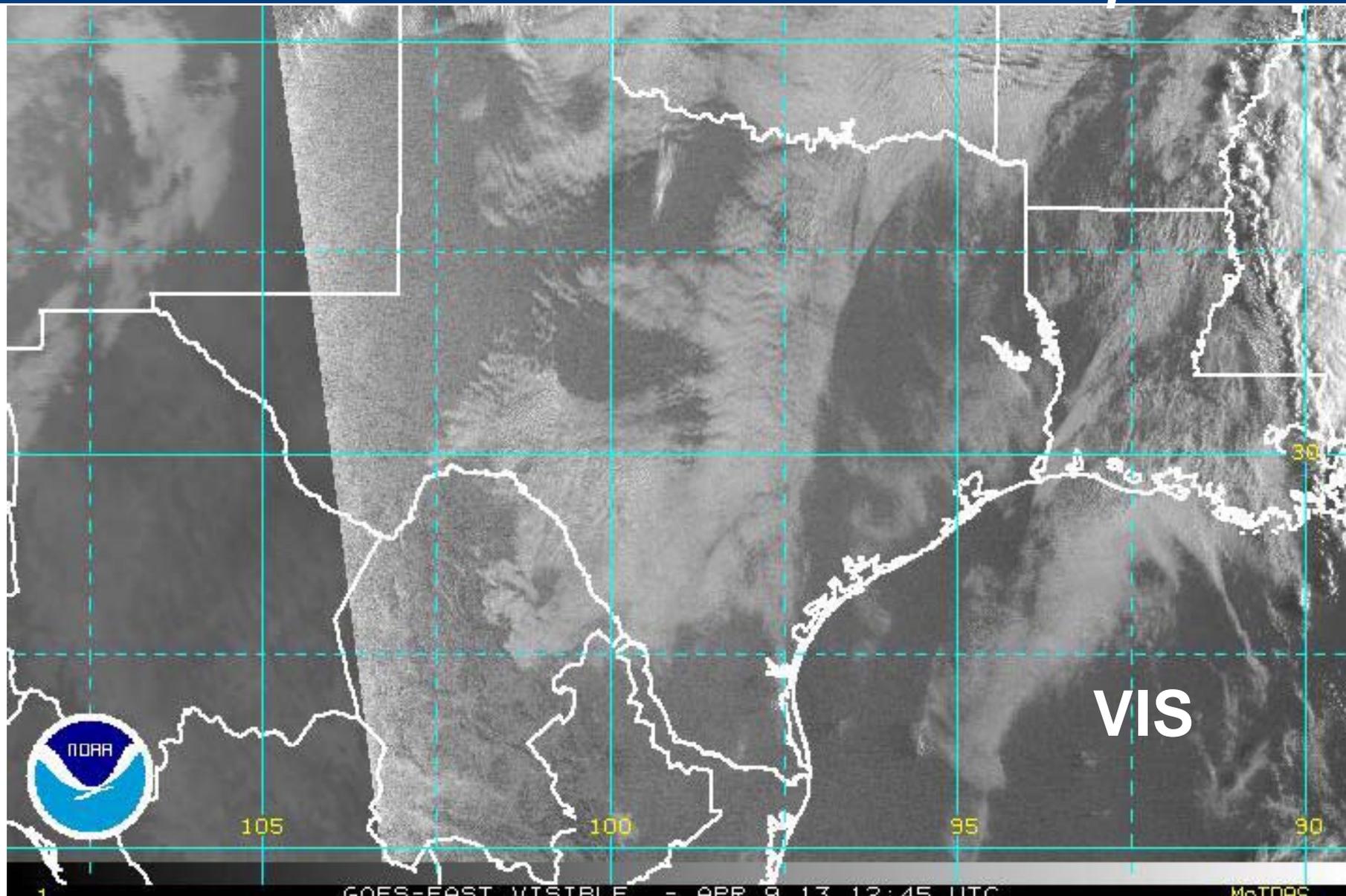
Importance of NOAA Satellites

- **Current Location of Aviation Wx Hazards**
 - Vicinity of Airports
 - Fog & Low Clouds
 - En Route
 - Thunderstorms
 - Turbulence associated with:
 - Gravity Waves from thunderstorms
 - Transverse bands in the vicinity of jet streams
 - Mountain Wave Activity
 - Volcanic Eruptions & resultant ash clouds

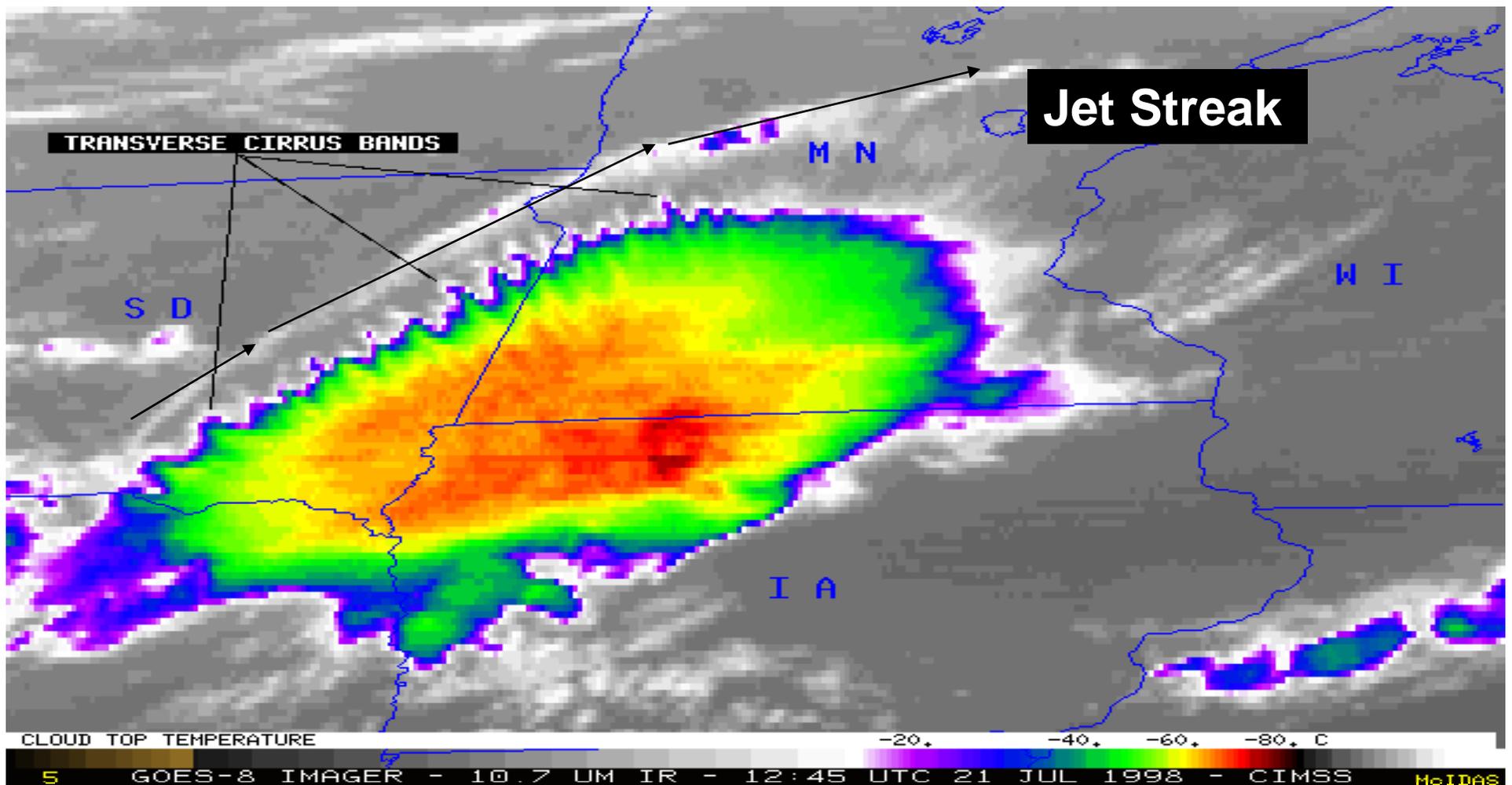


Fog & Low Clouds

09 April 2013



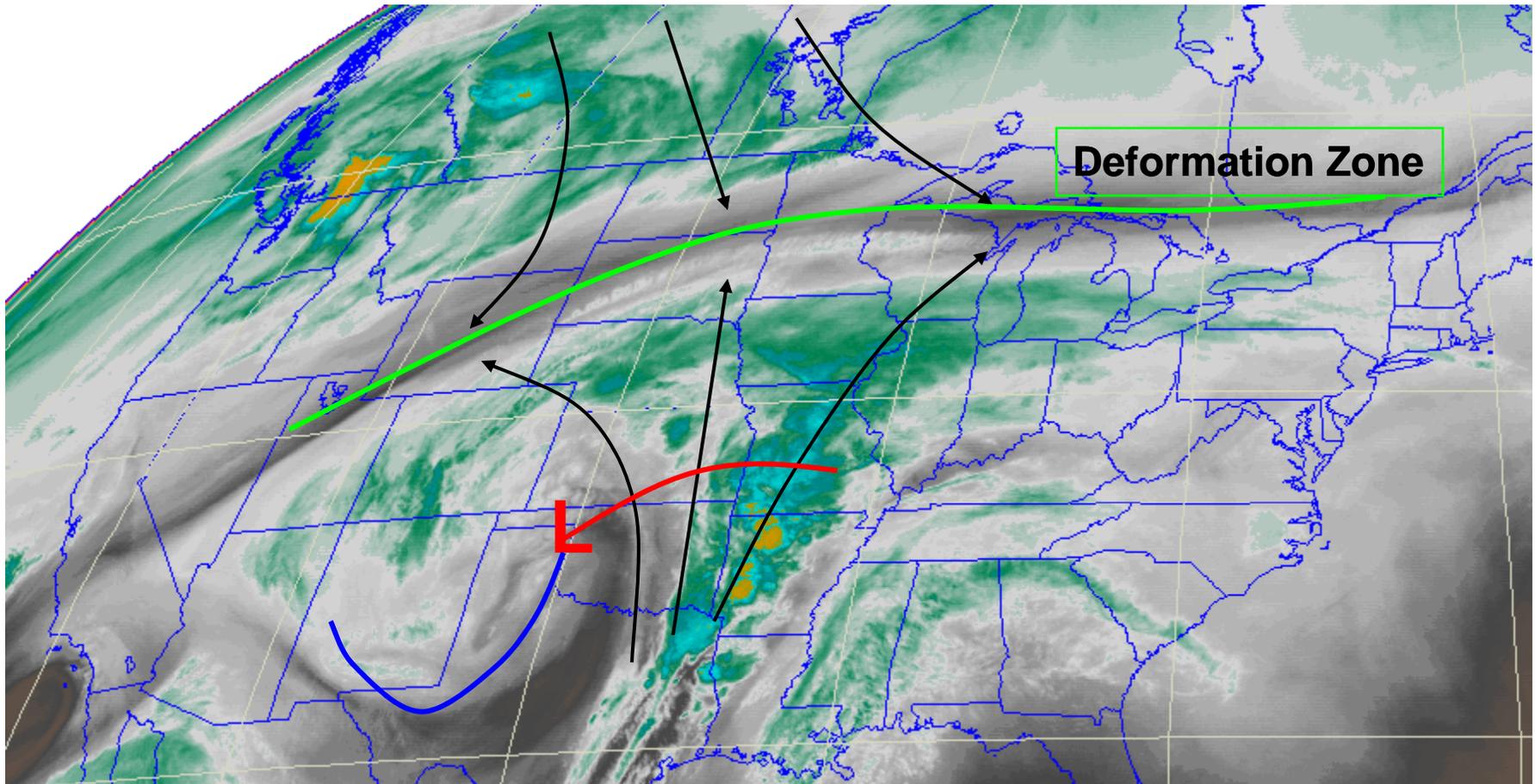
Thunderstorm Subtle Features



**Transverse Bands/Gravity Waves
in a convectively forced Jetstream - 21 July 1998**



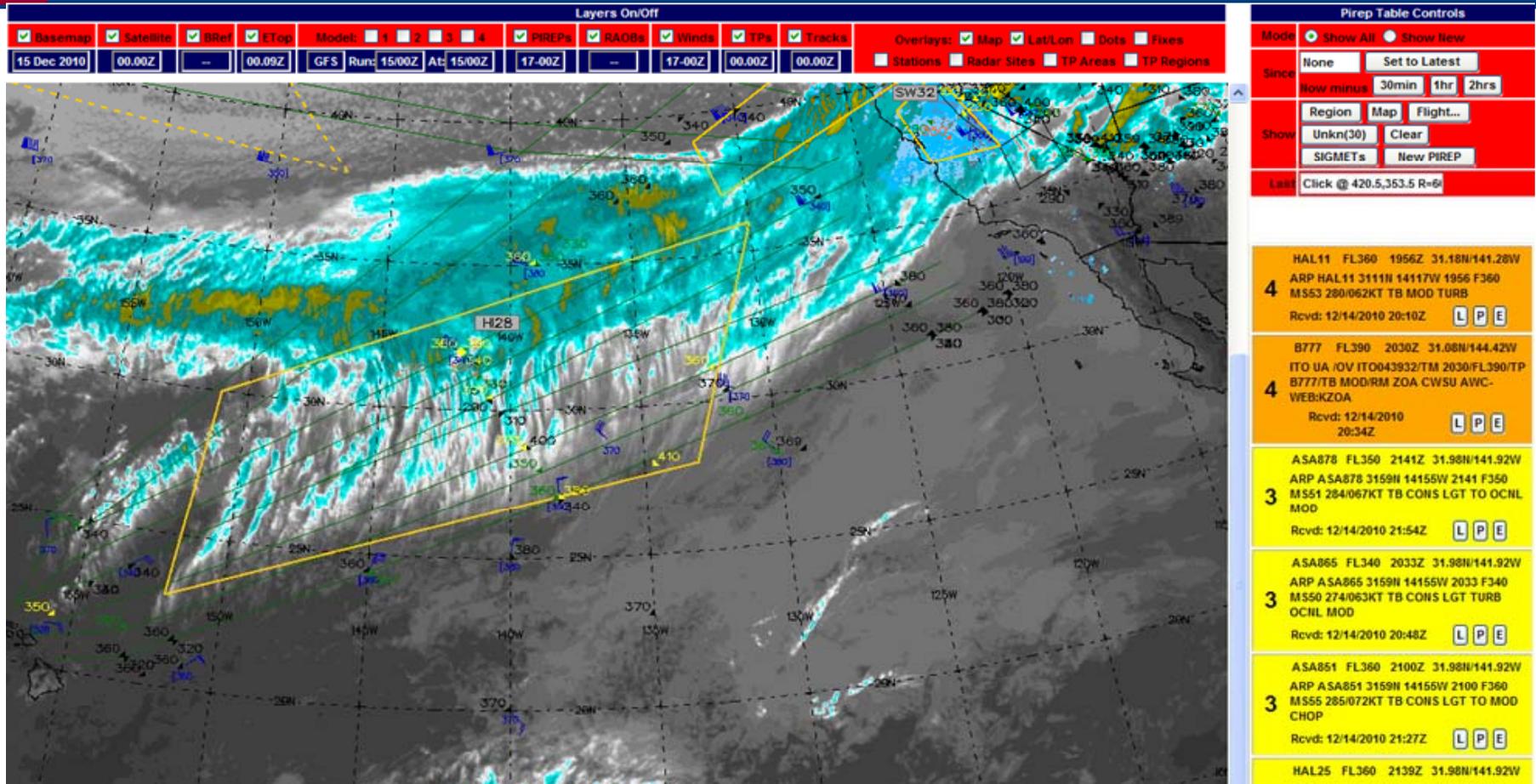
Turbulence Assessment Capability



**Deformation Zone: Produced Severe turbulence
in Trof undercutting Jet over So. Dak-MSP
December 20, 2011**

Turbulence

Integrated into Reporting & Fcst Tools

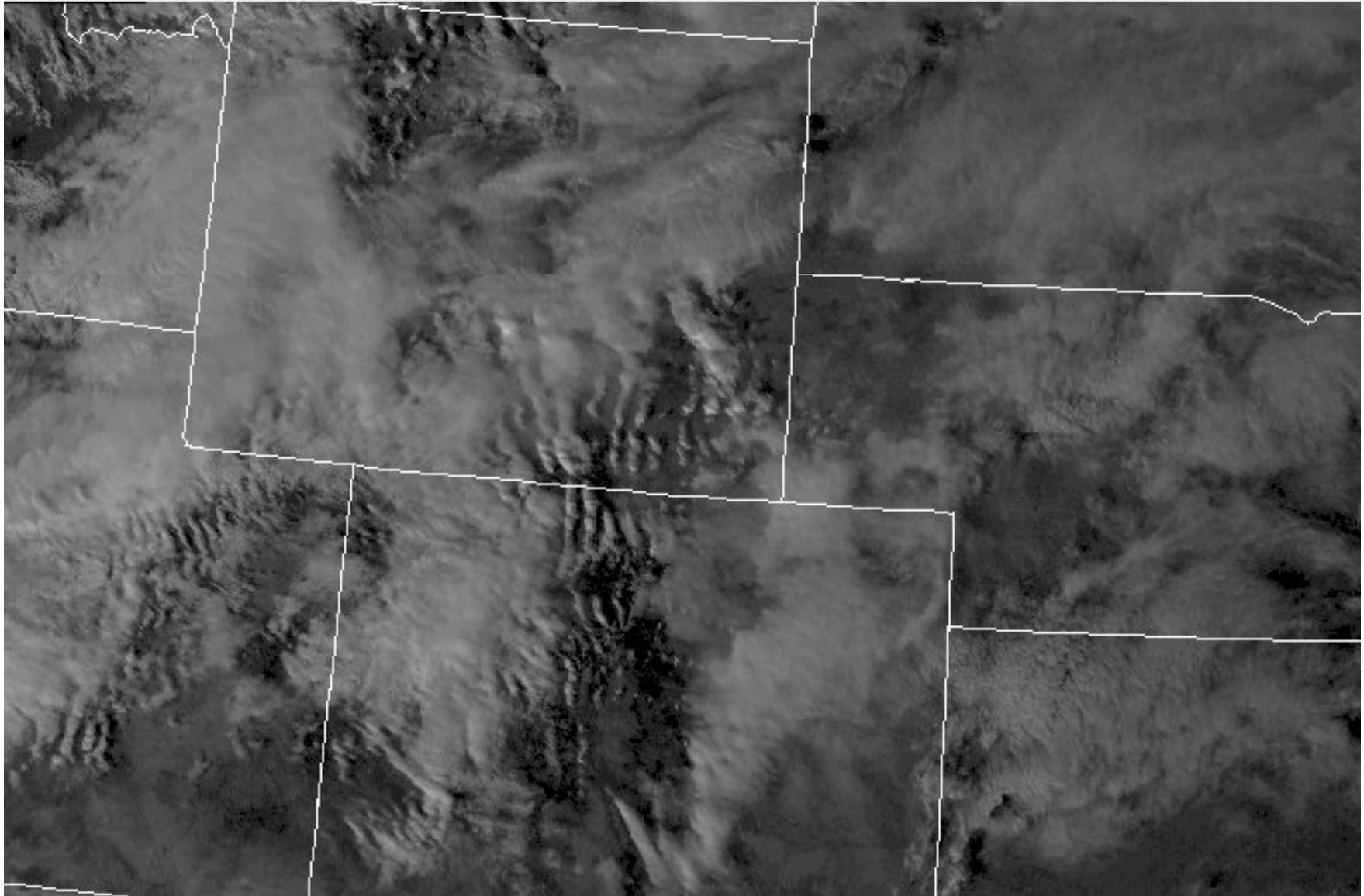


Delta Meteorology Turbulence Management System
Moderate Turbulence Over Hawaiian Routes
Transverse Bands, Vcnty Jet Stream 00z 15 Dec'10



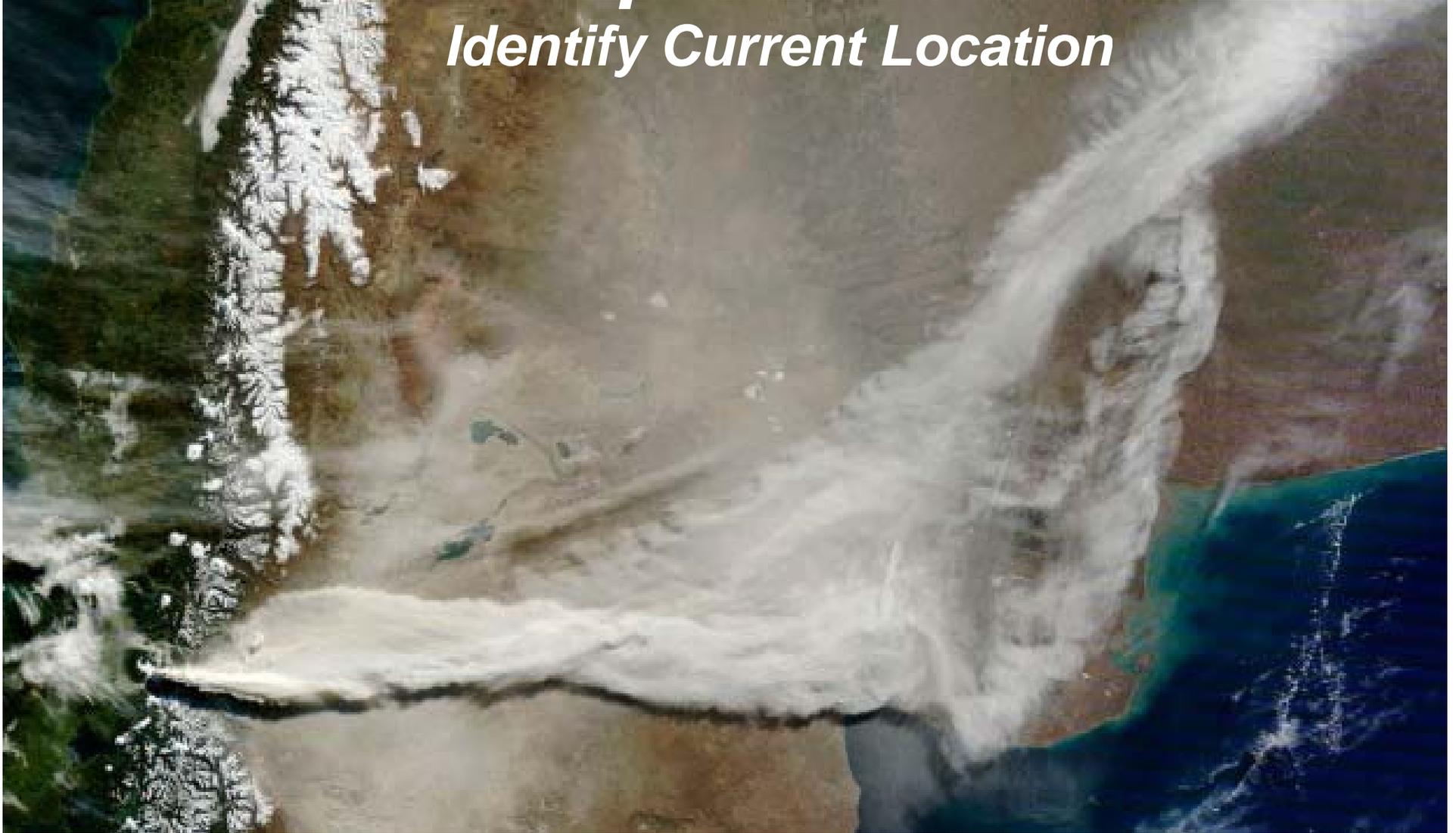
Mountain Wave *Identify Current Activity*

2045 UTC 05 Dec 2012 Visible Image (c)2012 UCAR <http://www.rap.ucar.edu/weather/satellite/>



Volcano Eruptions & Ash Clouds

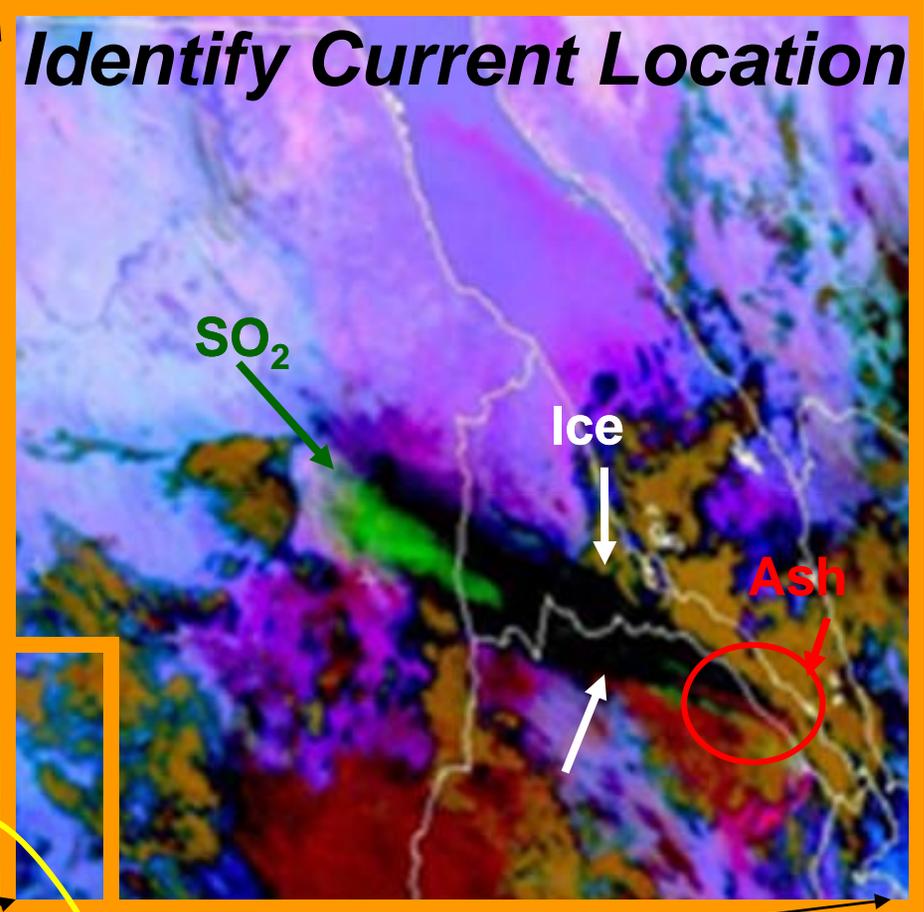
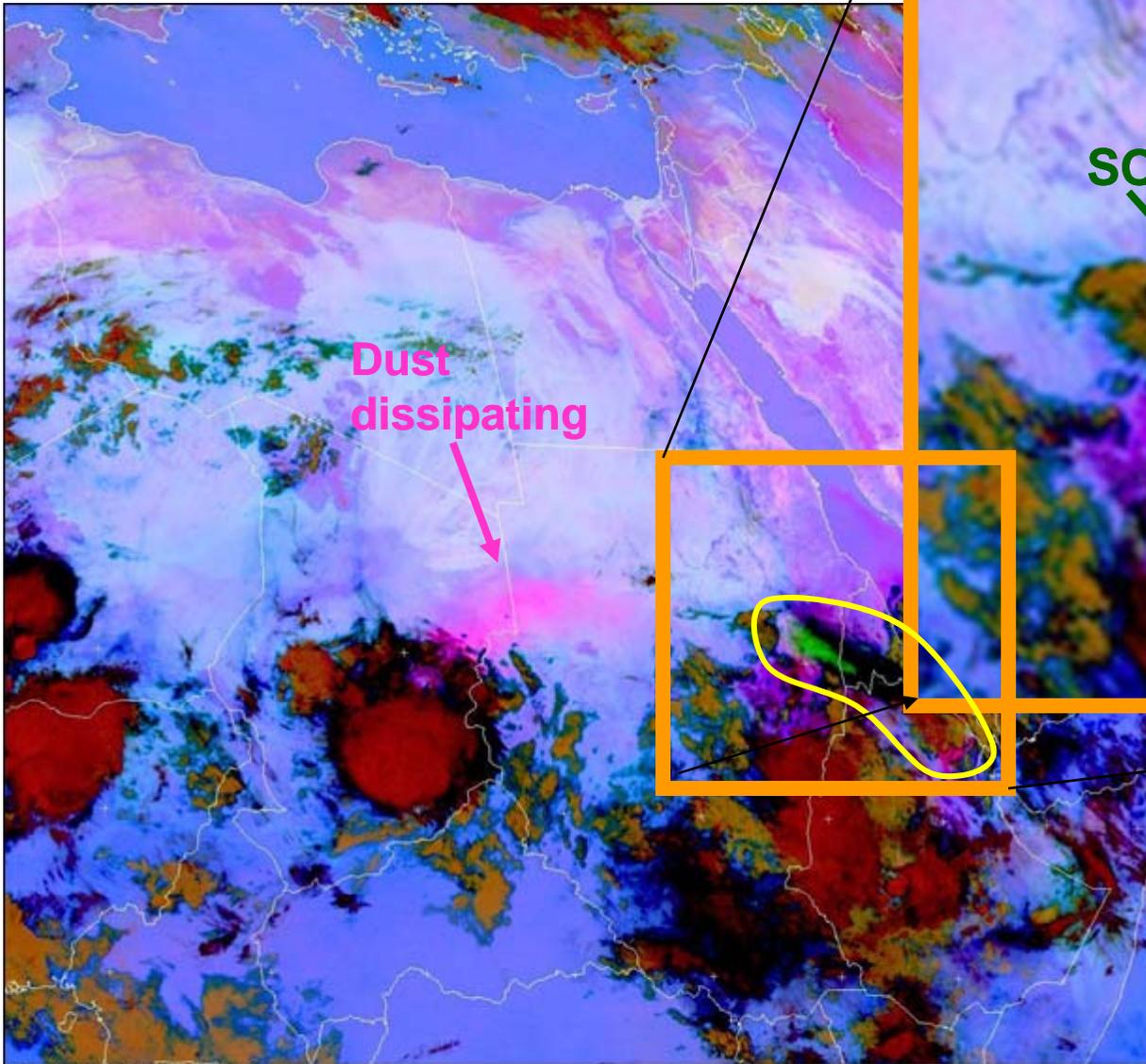
Identify Current Location



***Puyehue-Cordon Caulle on Chile/Argentina Border
June 13, 2011 (Polar Orbiter Visible Image)***

Volcano Eruptions & Ash Clouds

Identify Current Location



Nabro Volcano
13 June 11- 03Z
Dust RGB
MeteoSat



Need Accurate Forecasts

- Yes, NOAA Satellites are Important to **Aviation**,
- As well as **the US Economy as a whole.**
- **Need Continued Focus on Improving Computer Model Forecasting.**
- Satellite Observations & Derived Data are important for Model Initialization & future Computer Model Forecast Improvement!

But, Are Satellites the most important Observation Network for future Model Forecast Improvements?



Wx Computer Model Improvement

Why are Airlines interested ?

- Examples of Airline Costs Due to Weather
 - Convection/Thunderstorms: 18 March 2013, ATL
 - 78 Aircraft Diverted in less than 2 hrs (by 1 airline)
 - 14 Aircraft required hail inspection, 7 out of service
 - Costs?
 - Winter Weather: 06 March 2013
 - 4-8 inches snow forecasted for Washington DC area*
 - 100 of flights cancelled by airlines
 - Actual accumulation at IAD & DCA = very little
 - Costs?

***Delta Meteorology had very similar forecast to Nat'l Weather Service 24 hours prior to the event.**



Forecast Model Improvement Initiative

American Meteorological Society (AMS)
Commission on Weather & Climate Enterprise
Board on Enterprise Communication
Forecast Model Improvement

- **Goal:** Consensus & Recommendations/Plan to improve computer model forecasting capability in US.
- **Focus:** Day 0 to day 10, & primarily Global Model.



Forecast Model Improvement

Draft Recommendations

- **Collaborative effort between:**
 - **Public, Private, Academic & User Communities to assure economic ROI, efficient development, & efficient use of the improved forecasting capability.**

Areas of focus for the Collaborative Effort:

- Increase Computing Power: Development & Delivery
- Global Models: Developing & Running
- Observations



Conclusion

- Are Satellites the most important Observation Network for future Model Forecast Improvements?

- This Question still needs to be answered.
- To be successful will require:
 - Embracing alternative Data Sources
 - Embracing alternative business models
 - Prioritizing value of all observational data using ROI