A Real-time Configuration of the ARPS Data Analysis System to Support Operational Forecasting in East-central Florida
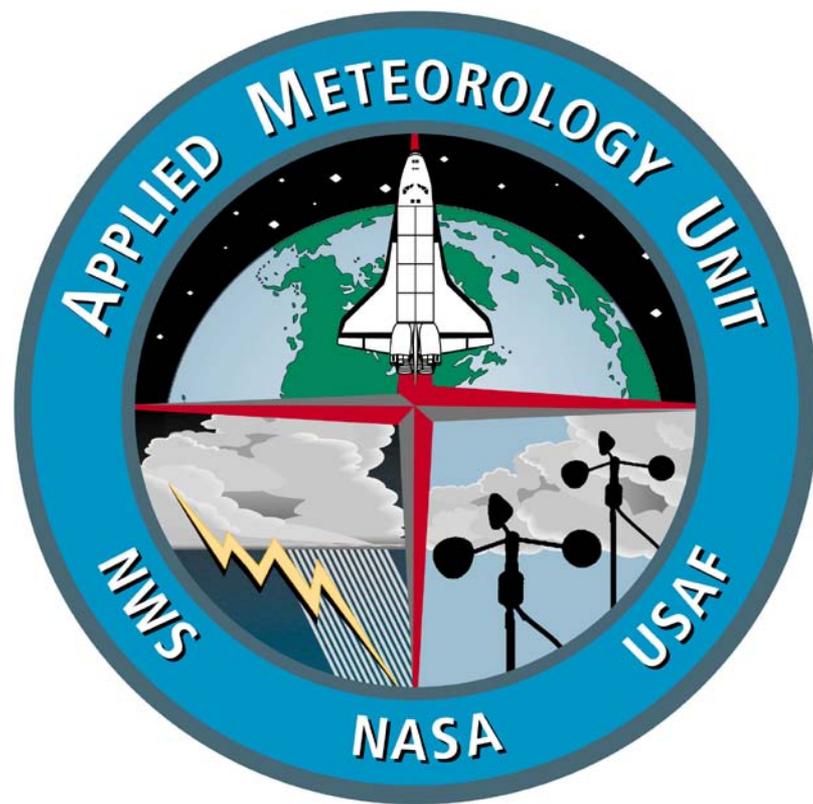
Jonathan L. Case
NASA-USAF-NWS Applied Meteorology Unit / ENSCO Inc.

Timothy D. Oram and Tim Garner
NASA Johnson Spaceflight Center / Spaceflight Meteorology Group (SMG)
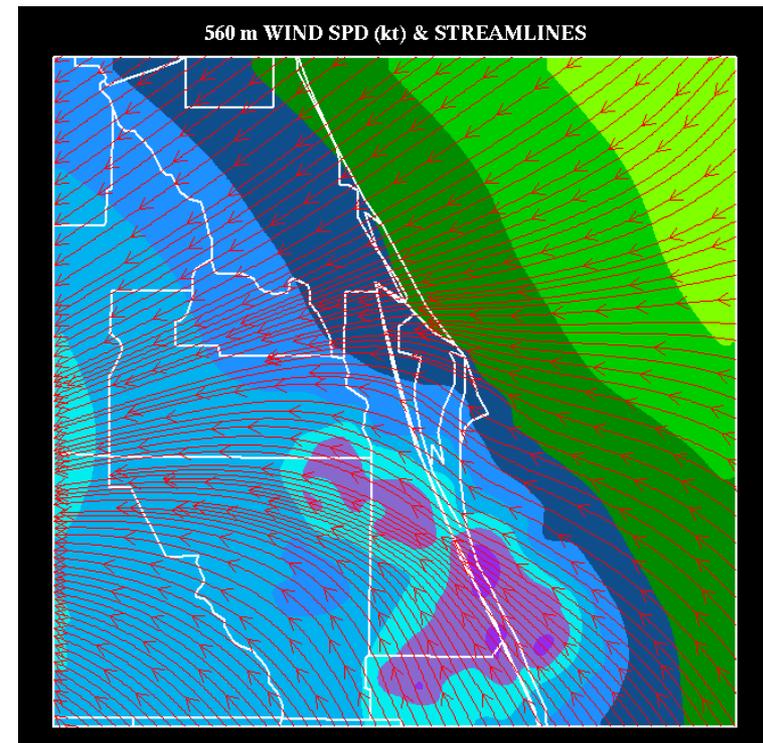
Peter F. Blottman and Scott M. Spratt
NOAA / National Weather Service (NWS) Melbourne, FL (MLB)

Talk Outline

- **Objective for Generating High-Resolution Analyses**

- **Software Configuration and Data Ingest**

- **Sample Results:**
  - **T.S. Gabrielle on 14 Sep 2001**
  - **Cloud Analysis Products**
  - **Wind Analyses**

560 m WIND SPD (kt) & STREAMLINES
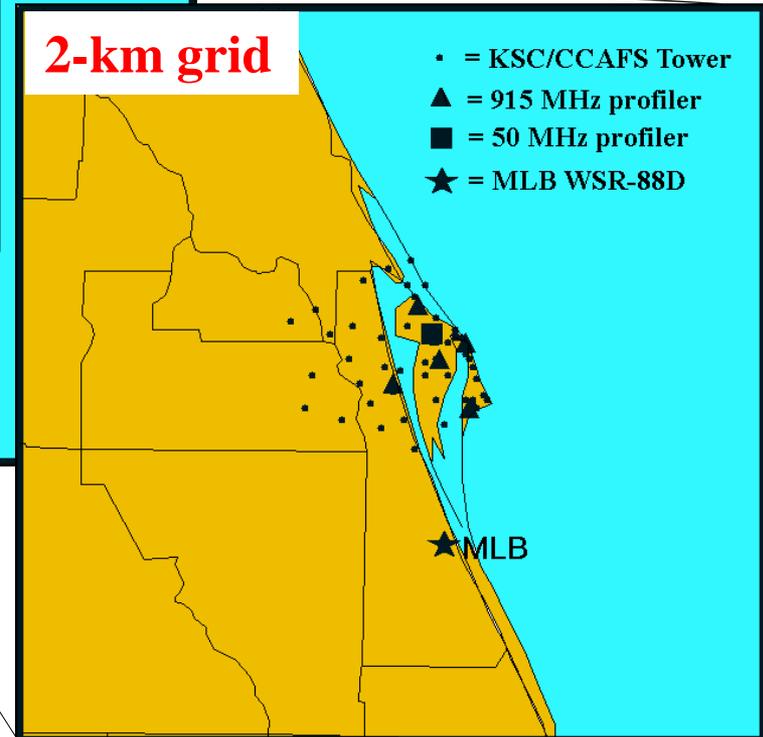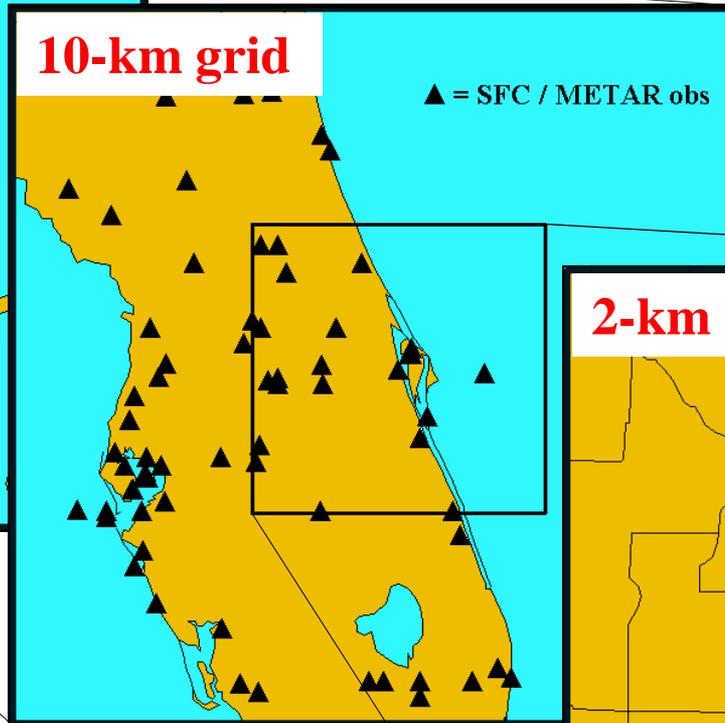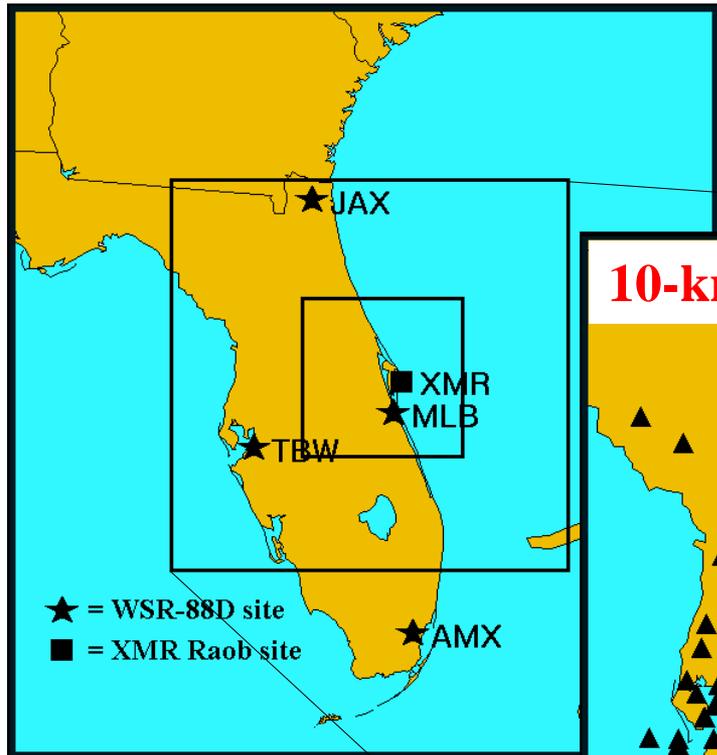
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Utility to Forecasters

• <u>Objective</u>: **To generate products that enhance / simplify nowcasts and short-range weather forecasts (< 6 h) at SMG, NWS MLB, and the 45th Weather Squadron**

• <u>Added Value</u>**:**

  – **Integrate all available data in central FL**

  – **High temporal and spatial resolution**

  – **Visualization, Time Animation, & Diagnostics**

• <u>Result</u>: **More comprehensive understanding of evolving fine-scale weather**

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Analysis Software

- **Advanced Regional Prediction System (ARPS)**
    - **Numerical weather prediction model from OU**
    - **Predicts weather over many spatial / temporal scales**

- **ARPS Data Analysis System (ADAS)**
    - **Analyses of wind, temperature, and moisture**
    - **3D cloud analyses (liquid, ice, precipitation)**
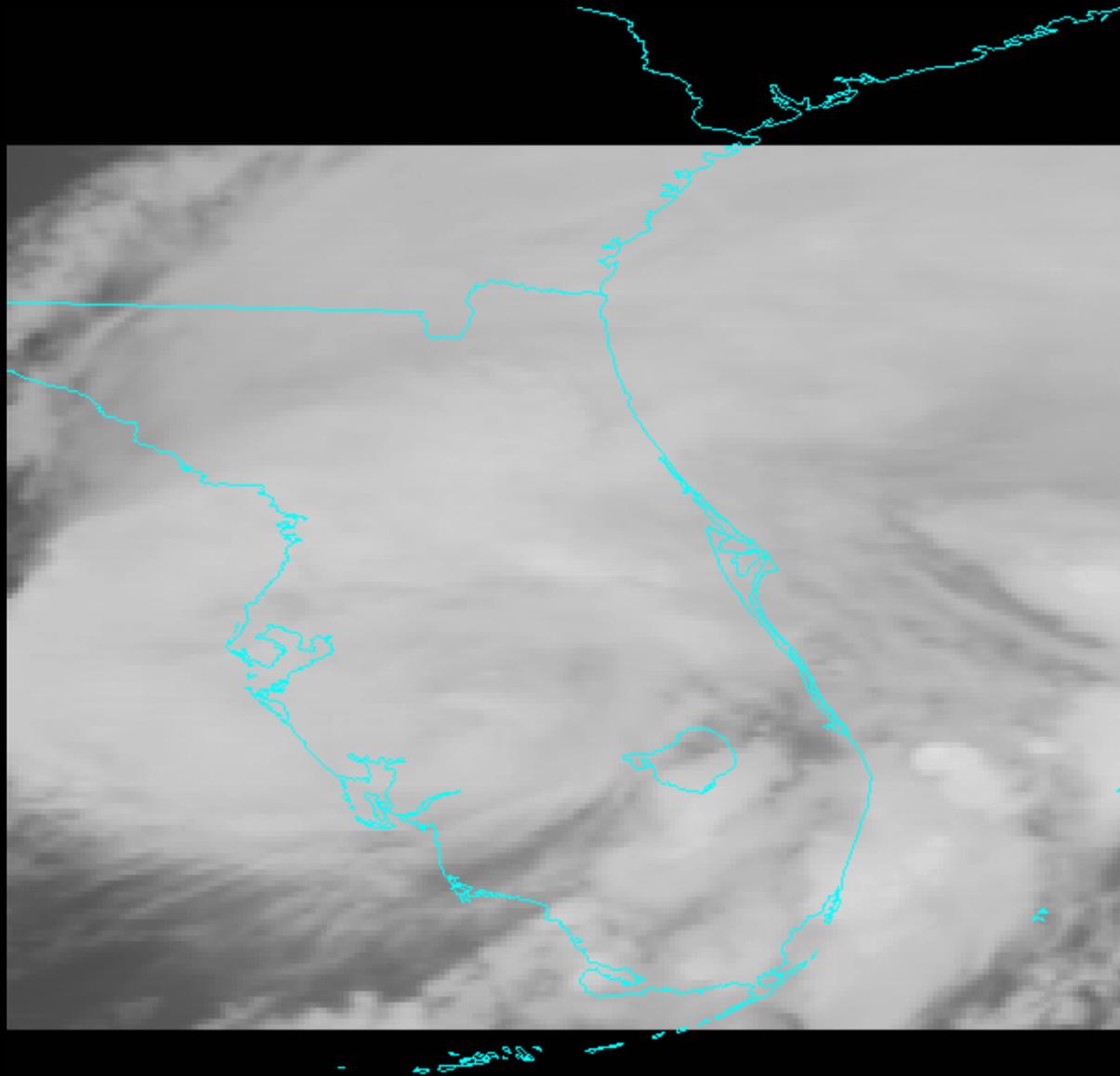   - **Fields used for initial condition in ARPS model**

Grid Configuration

- **Analysis frequency**: Every 15 minutes
- **Data Analyzed**: Surface, Local Obs, GOES-8, WSR-88D, ACARS

JAX

XMR
MLB

TBW

AMX

★ = WSR-88D site
■ = XMR Raob site

10-km grid

▲ = SFC / METAR obs

2-km grid

· = KSC/CCAFS Tower
▲ = 915 MHz profiler
■ = 50 MHz profiler
★ = MLB WSR-88D

MLB

Data Not Shown:
– APRS
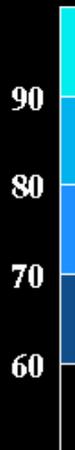– FAWN
– ACARS
– Satellite
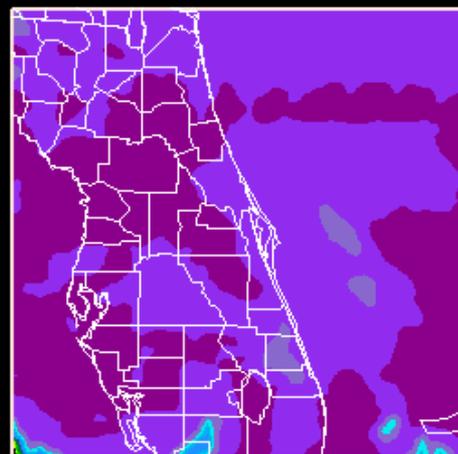
Tropical Storm Gabrielle: 14 Sep 2001

10001 G-8 IMG   04 14 SEP 01257 130200 04664 13872 01.33 McIDAS
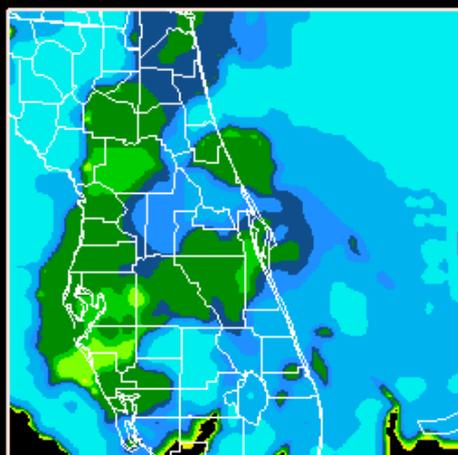
10-km Cloud Analyses: 1300–2300 UTC

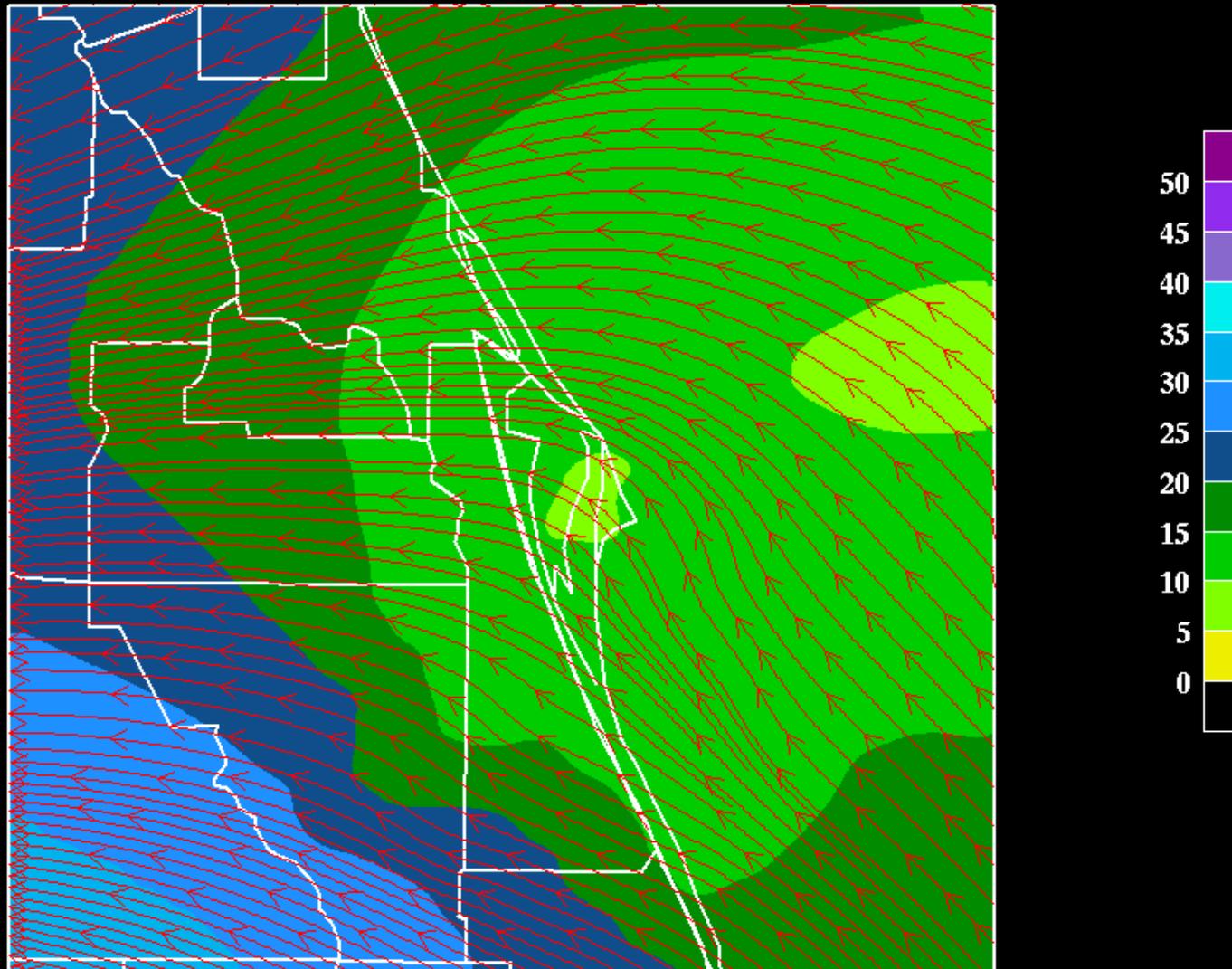**Total Cloud Cover (%)**

Cloud top heights (ft)

Ceiling heights (ft)

2-km Wind Analyses: 0900–1500 UTC

560 m WIND SPD (kt) & STREAMLINES

Summary

- **Real-time ADAS $\rightarrow$ Powerful tool for mesoscale diagnostics for nowcasts / short-range forecasts**

- **Ongoing / future work**
  - **Prognostic component (ARPS)**
  - **Additional data sets (Dial-up ASOS, GPS)**

- **Forthcoming WAF article** (case.jonathan@ensco.com)

- **SMG:**
  http://www.srh.noaa.gov/smg/adas_realtime.html

- **NWS Melbourne, FL:**
  http://www.srh.noaa.gov/mlb/ldis/ldis_realtime_top.htm

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