



Maintaining a Local Data Integration System in Support of Weather Forecast Operations

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http://science.nasa.gov/amu

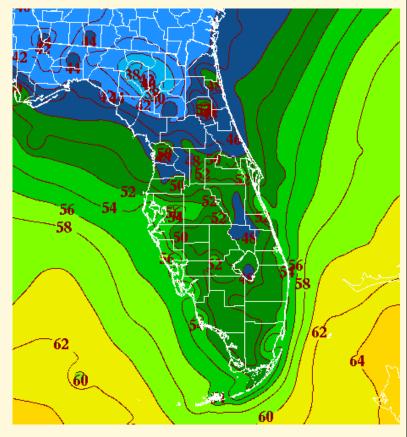




Project Objectives



- Update local data integration system (LDIS) at NWS
 - LDIS developed by AMU in 1998
 - Provides 3-D analyses every
 15 min across Florida
 - Advanced Regional Prediction
 System (ARPS) Data Analysis
 System (ADAS)
- Goals:
 - Update LDIS with latest ADAS
 - Incorporate new observation types
 - Make adjustments to scripts that govern system
 - Update existing ADAS GUI using the newest scripts



Sample ADAS temperature analysis from NWS MLB

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LDIS Configuration



- A series of scripts run the complete system
- Each script accesses a user-configurable file
- Input parameters: domain information, model integration time, directory structure, etc.
- Scripts consist of 3 steps:
 - Preprocessing
 - Main model integration
 - Post-processing

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🖉 Quick Connect 📄 Profiles 👻			
Welcome! Starting ARPS/WRF cycle at: Thu De	c 10 16:29:01 2009		
Main User Input Parameters: Main working directory: /home/lwatson/ADASt ARPS software is located: /home/lwatson/arp ARPS version: 5.2.11 Horizontal grid spacing (m): 4000 Average/minimum vertical grid spacing (m): Domain size: 177 x 179 x 40 Number of processors in x/y: 2/2 Stop time for model integration: 10800 Center Lat/lon: 27.70 -81.00	sl		
Initialization time: 2009-12-10.16:15:00 Map projection: 2 True latitude 1/2: 27.70 27.70 True longitude: -81.00			
START BACKGROUND MODEL at Mon Nov 30 13:09: In directory /export/diskl/home/lwatson/ADA			
EXT2ARPS User Input Parameters: Raw Model Data Directory: /home/lwatson/arp Output Directory: /home/lwatson/ADAStask/ex Background model: ruc Vertical coordinate, resolution: hybrid 13 Model prefix: rucl3 Using updated boundary conditions every 108 Using ARPS naming convention	sl/DATA/RUC t2arps		
Initialization time is 2009-11-30.13:00:00			
External data source option (extdopt) is ll Using 003 hour forecast from 2009-11-30.10: Number of external data files to process is Boundary condition interval in hours is 3	00:00 model run.		
External data times: 2009-11-30.10:00:00+003:00:00		1,1	Top





LDIS Configuration



- Preprocessing
 - Prepares 2-D terrain and surface characteristics data sets
 - Four raw terrain data sets to create the 2-D fields:

1°x1° (~110 km) 5'x5'(~10km) 30"x30" (~1km) 3"x3" (~1/10 km)

- Interpolates the external forecast grids to ARPS model grid
 - Large scale model for first-guess field for model initialization
- Prepares the objective analysis for model initialization
 - Interpolates observations onto ARPS grid, combines observed information with background field
- Quality control data 2 methods:
 - Compare obs with neighboring data, background fields
 - Manually exclude data at specified surface stations

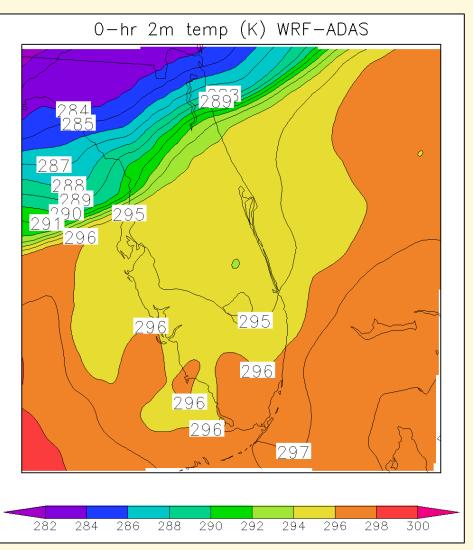


LDIS Configuration



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- Main model integration
 - Runs the model and creates forecast
 - Option of using ARPS or WRF model
- Post-processing
 - Outputs desired products
 - Interpolates native model levels to height or pressure vertical coordinates



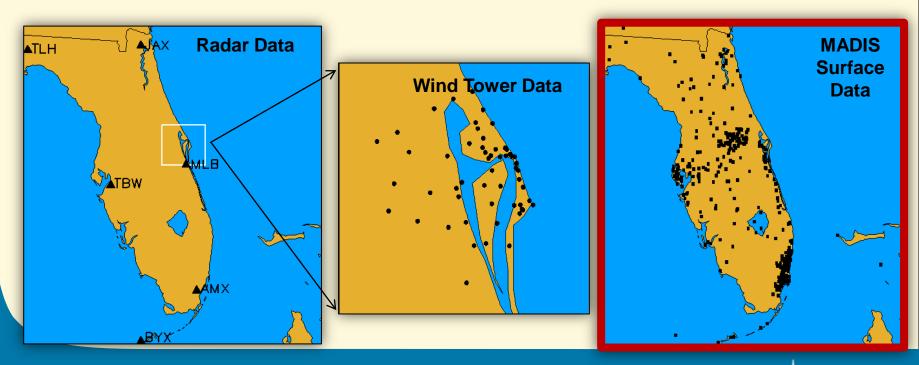


Real-Time Data Ingest



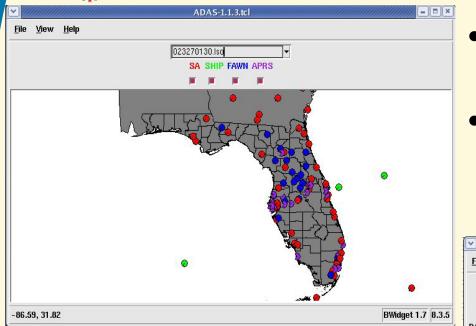
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- LDIS configuration ingests:
 - Level II WSR-88D data from 6 Florida radars
 - GOES visible and infrared satellite imagery
 - KSC/CCAFS wind tower network data
 - Florida surface and upper air observations from MADIS



ADAS GUI





- GUI created using Tool **Command Language** (TCL) and its associated GUI toolkit, TK
- **Developed in 2004**

- Needs user-friendly GUI to easily interact with ADAS
- Allows forecasters to manage data ingest without prior ADAS experience

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Conclusions



- Improved existing LDIS by:
 - Updating LDIS with latest version ADAS
 - Incorporating all data available from MADIS
 - Making adjustments to scripts that run system
 - Updating existing ADAS GUI
- Helps enhance synoptic and mesoscale features in initial conditions of a model run

