




Integrating Wind Profiling Radars and Radiosonde Observations with Model Point Data to Develop a Decision Support Tool to Assess Upper-level Winds For Space Launch

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Outline


- Problem
- Data
 - Observations
 - Model Point Data
- Graphical User Interface (GUI)
 - Model Initialization
 - Model Forecasts
 - Profilers
 - Rawinsonde
- Conclusions



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Problem



- **Launch Directors**
 - Want to know upper-level wind forecasts during launch countdown
 - Steering, aerodynamic loads and trajectory
- **Launch Weather Officers**
 - Should be able to provide the forecasts
 - Limited capability
- **Solution**
 - Develop GUI
 - Overlay vertical profiles of observations and model data


Keep these folks informed




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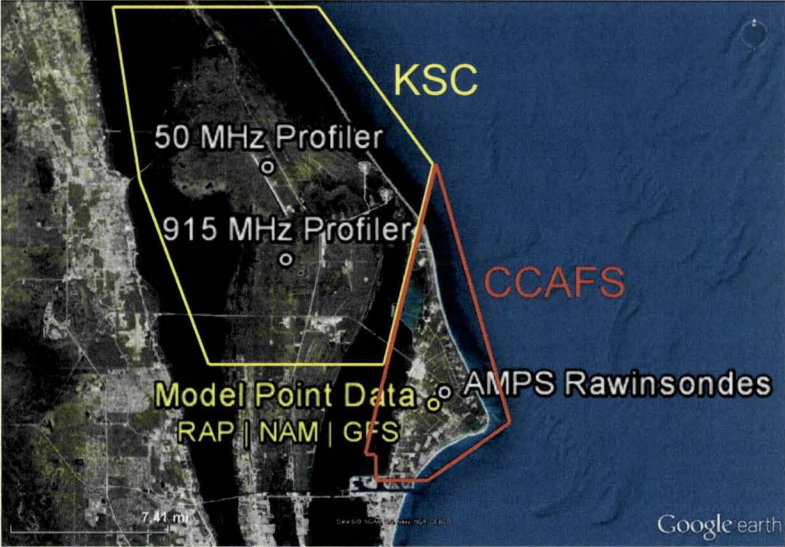
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Observations & Model Data







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GUI




- Launch Weather Officers requested Excel GUI
 - Windows PC workstation located in Range Weather Operations
- All code written in Visual Basic for Applications

```

        Dim objApp As Long
        Sheets("RAOB_GFS").Select


        Create header labels
        Range("B1") = "Sensor:"
        Range("B2") = "Location:"
        Range("B3") = "Date:"
        Range("B4") = "Time:"
        Range("C5") = "Height (ft)"
        Range("D5") = "Direction"
        Range("E5") = "Speed (kts)"

        Get header information from raw data
        charName$ = Mid(Worksheets("RAOB_GFS").Range("A9").12, 6) ' Gets the instrument RAOB (AMF/LR)
        charTime$ = Mid(Worksheets("RAOB_GFS").Range("A11").1, 5) ' Gets the UTC time of the RAOB Observation
        charDate$ = Mid(Worksheets("RAOB_GFS").Range("A11").5, 9) ' Gets the year of the RAOB Observation
            
```




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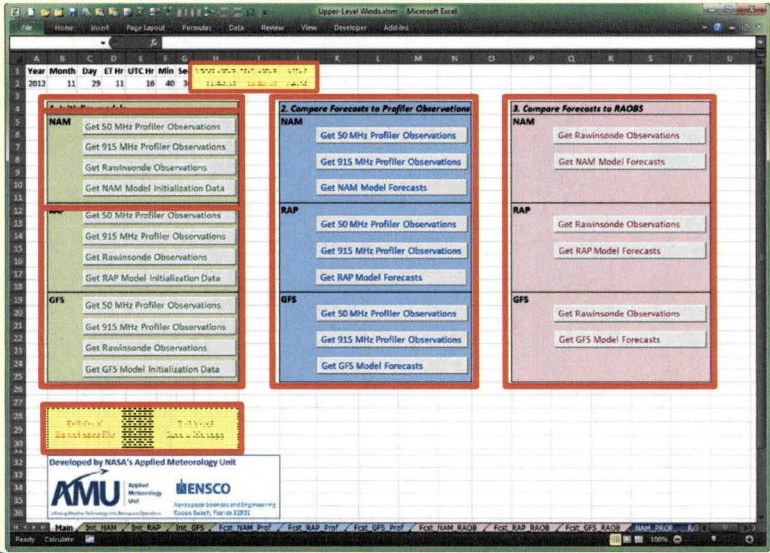







GUI




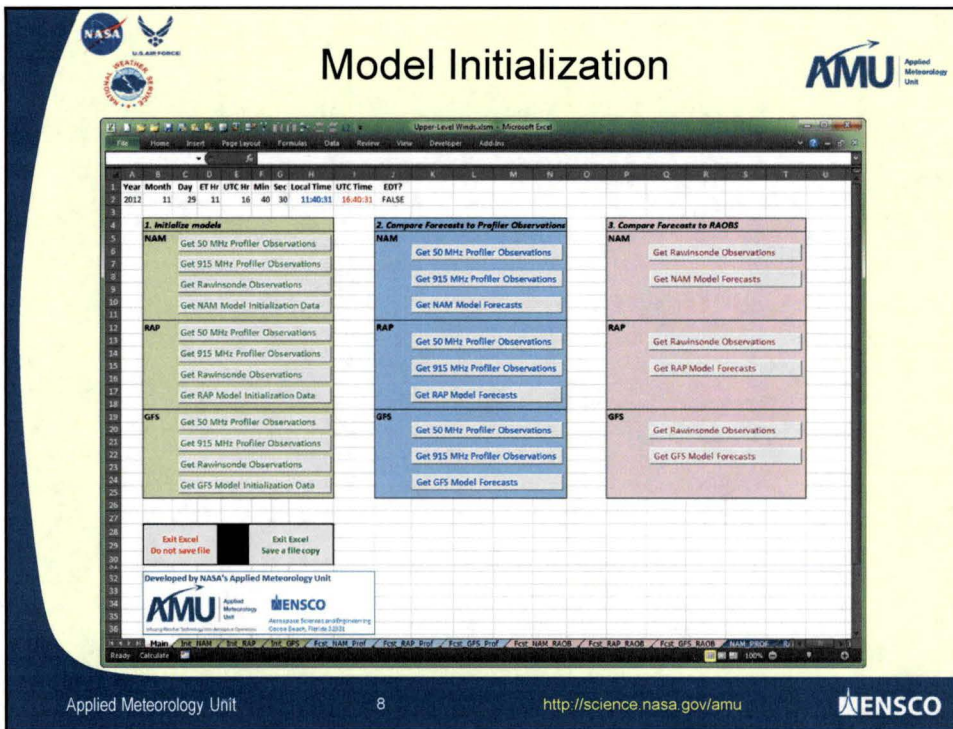
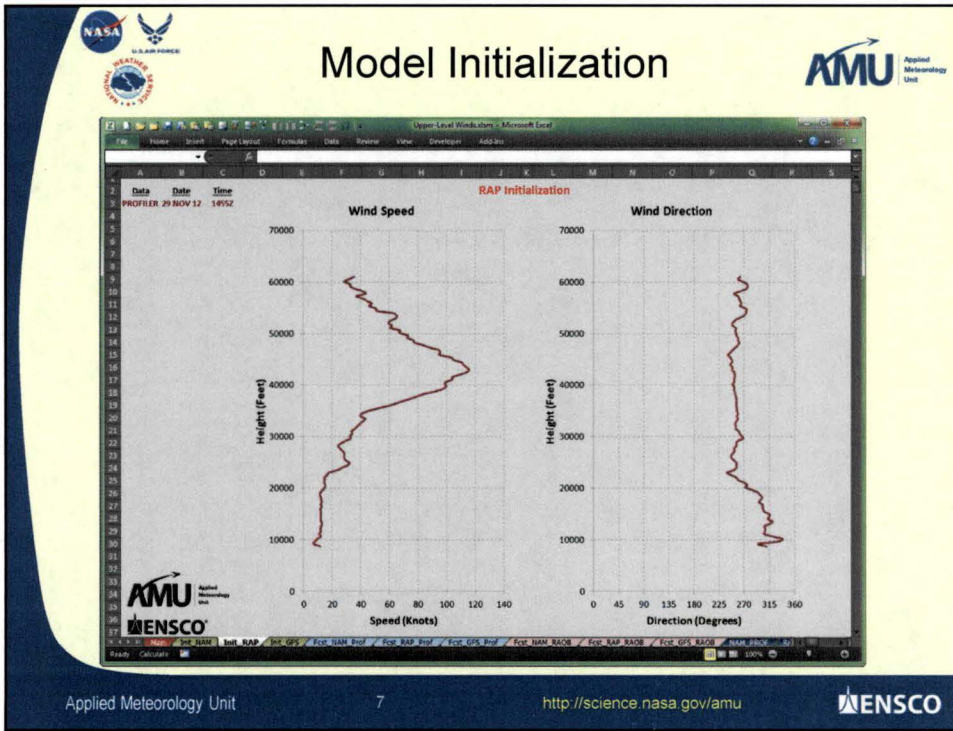


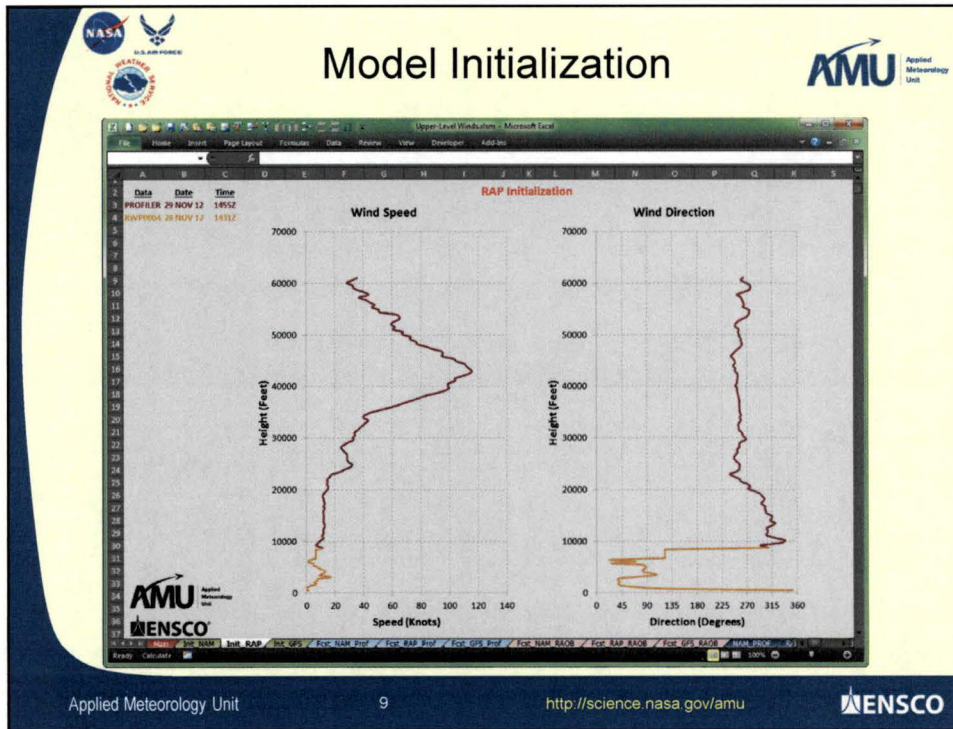


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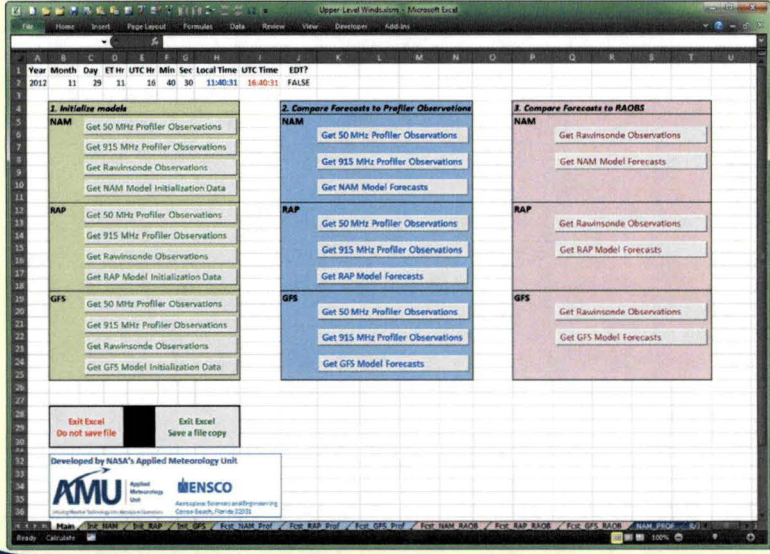






Model Initialization





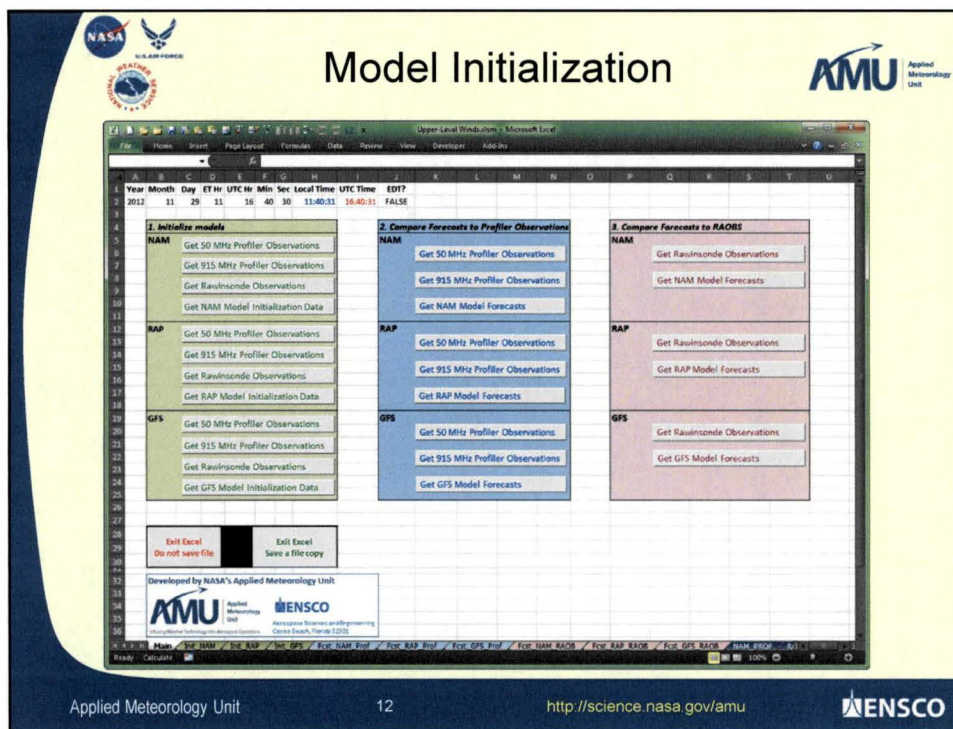
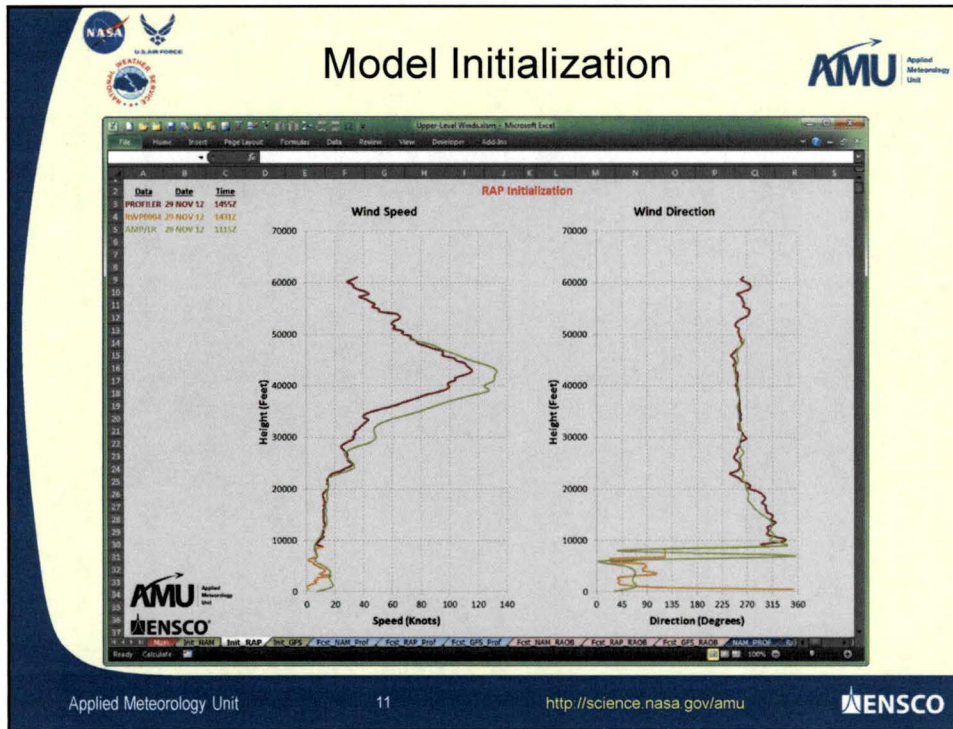


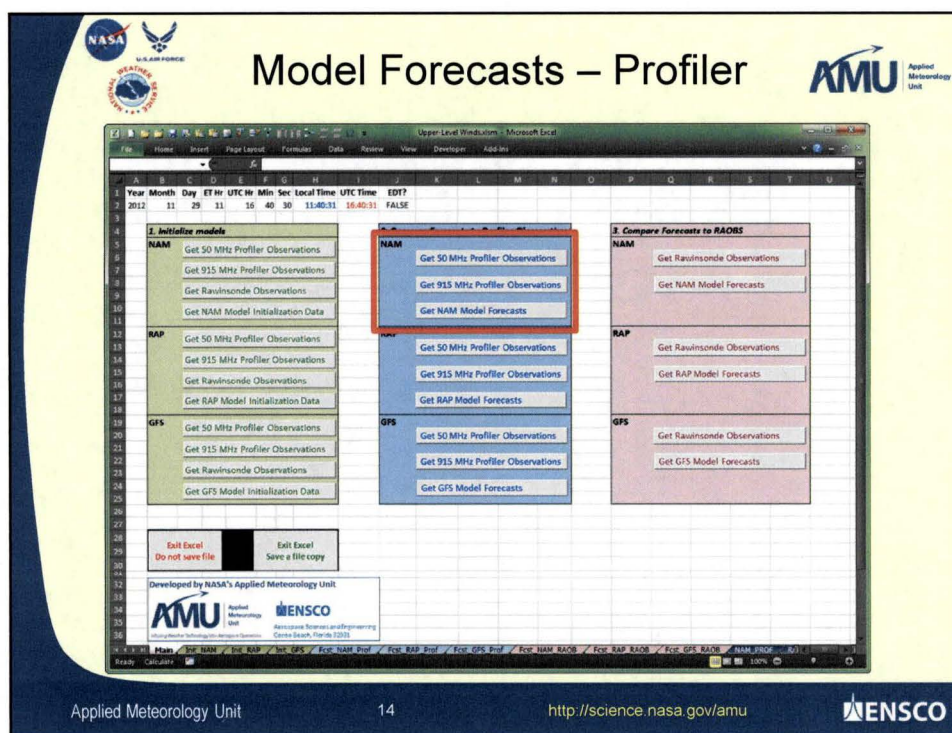
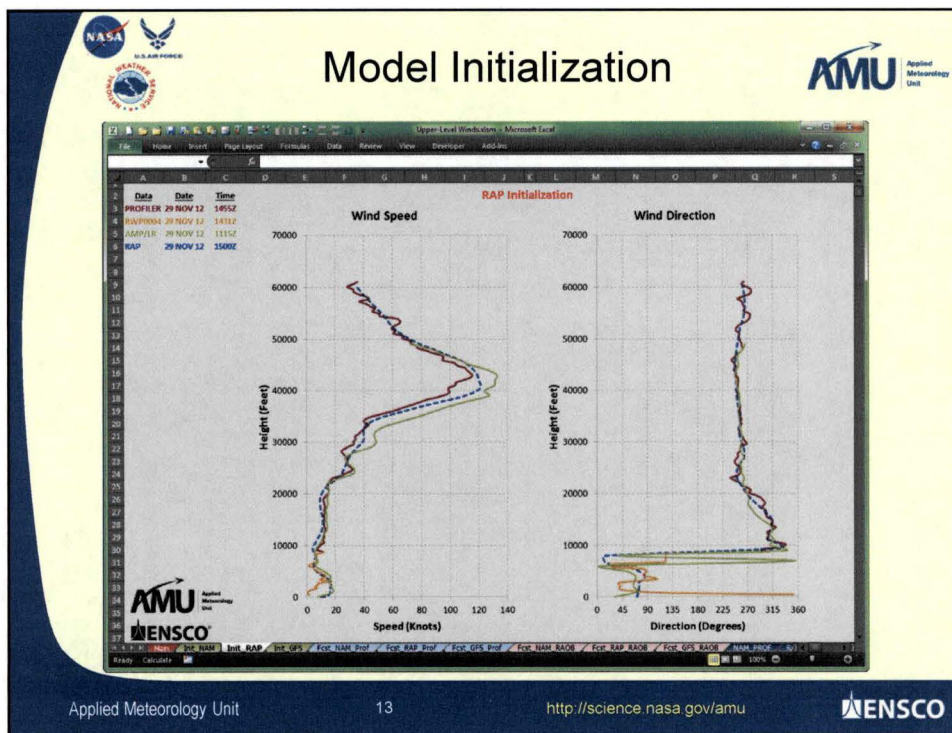
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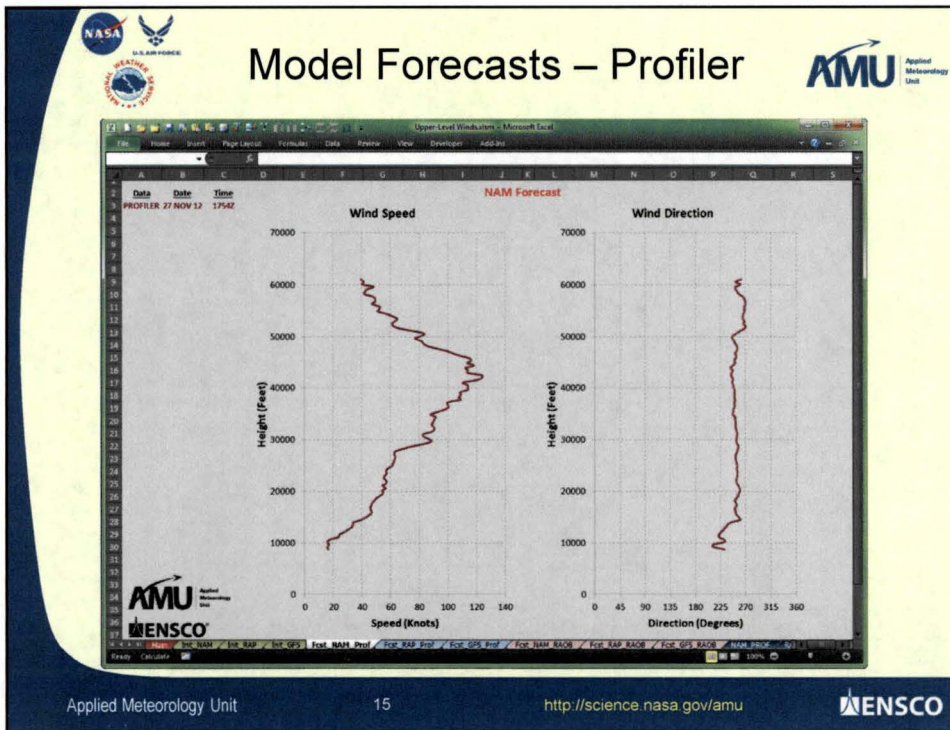
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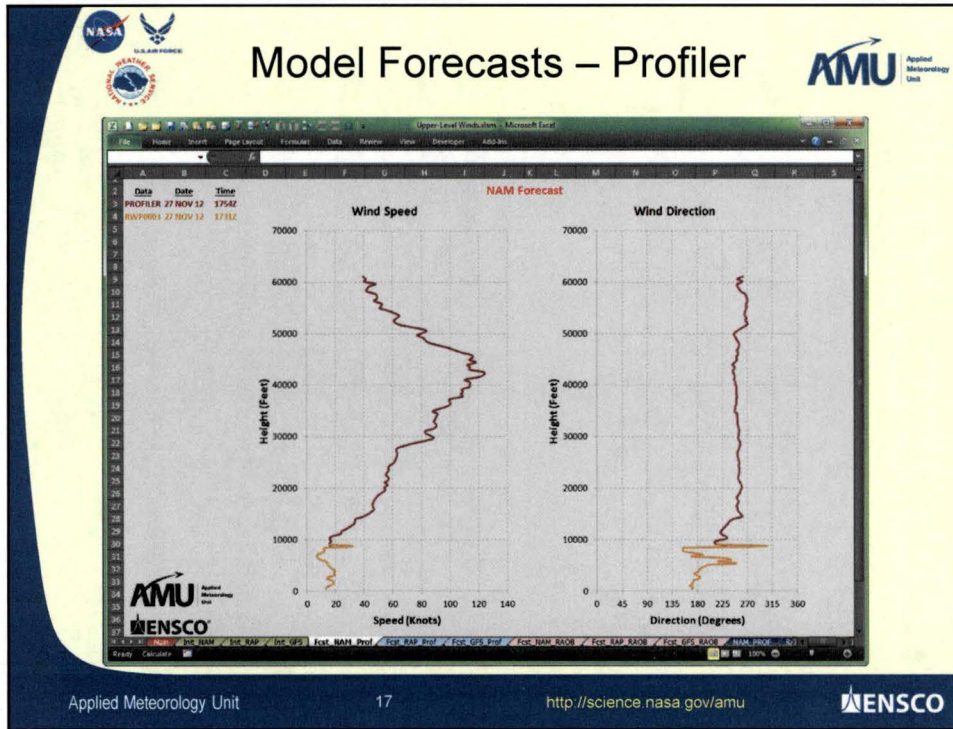






Model Forecasts – Profiler

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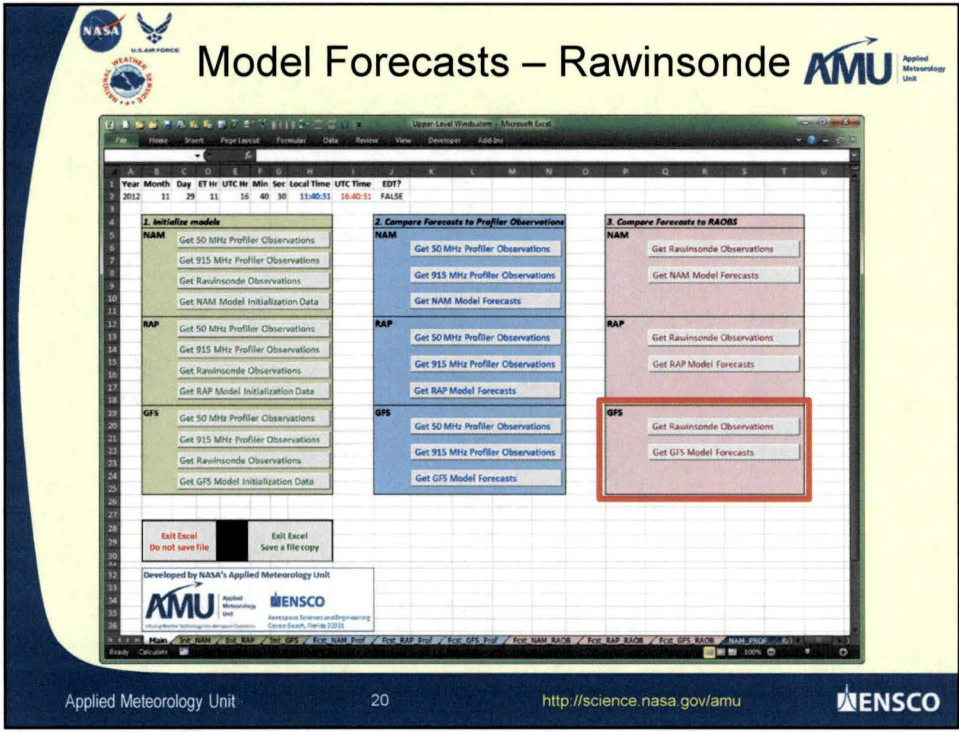
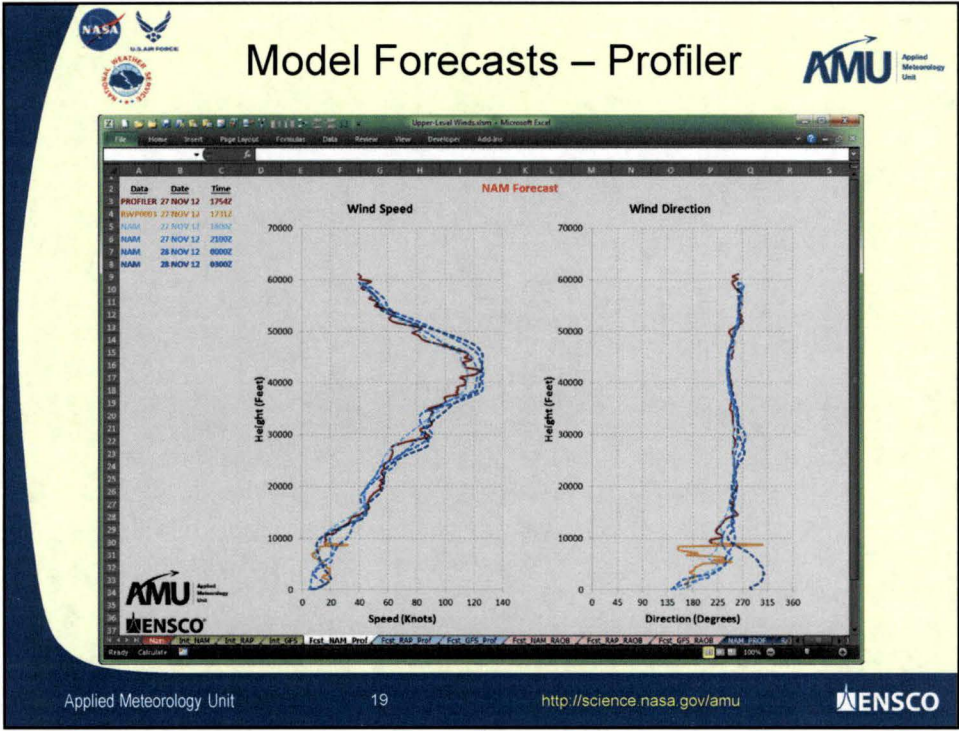
Model Forecasts – Profiler

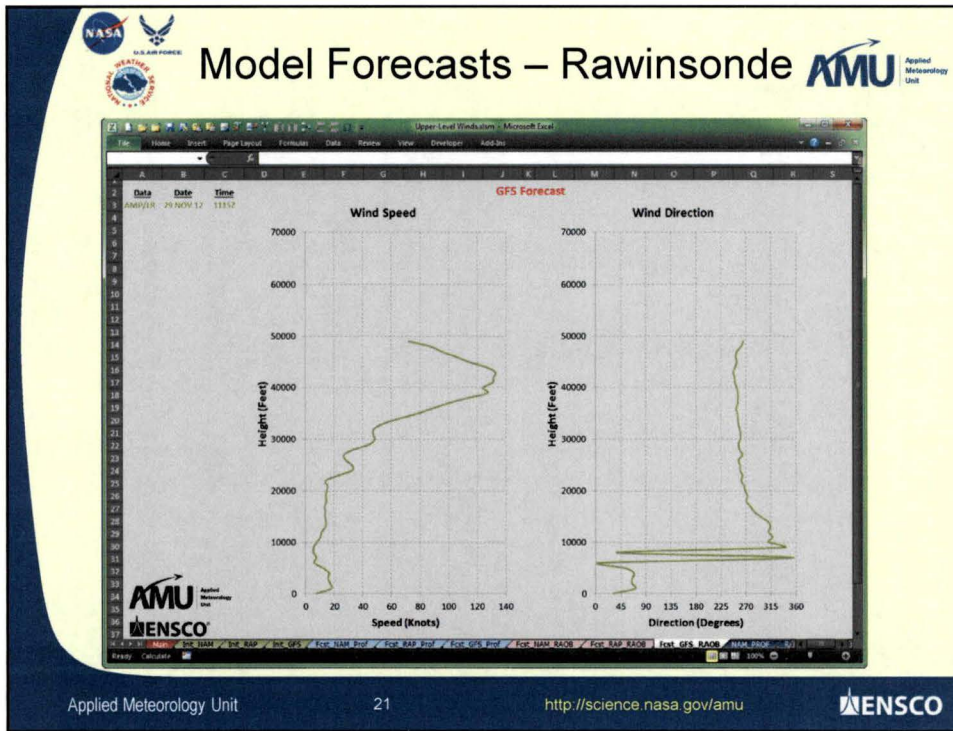
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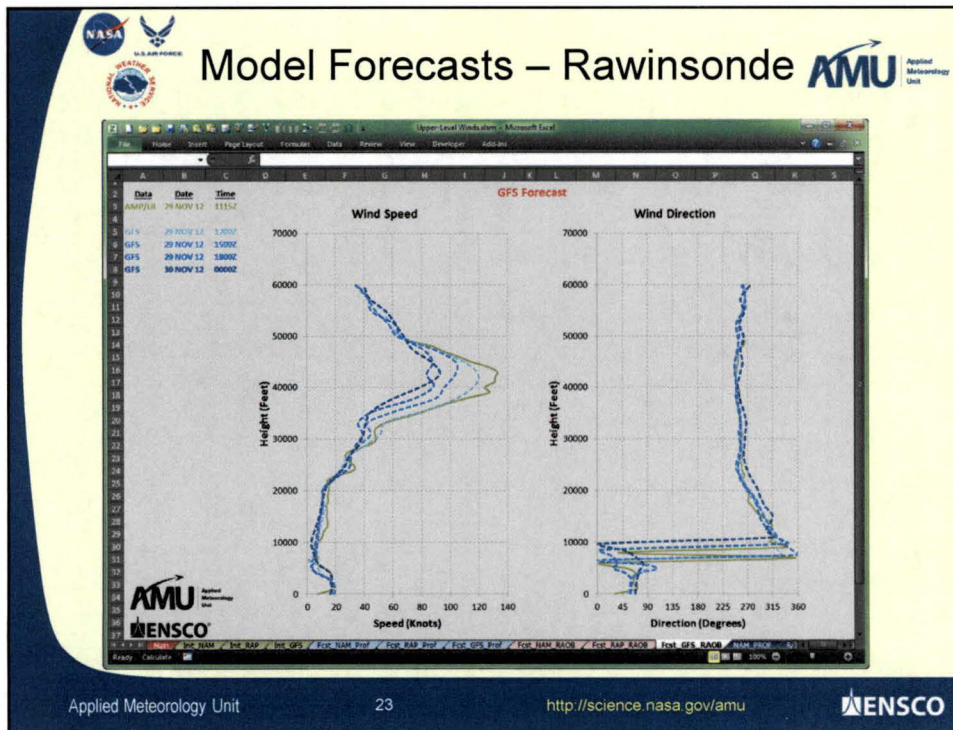
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Model Forecasts – Rawinsonde AMU Applied Meteorology Unit

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Conclusions AMU Applied Meteorology Unit

- Launch directors need to know upper-level wind forecasts
- Developed an Excel-based GUI to display upper-level winds
 - Rawinsonde at CCAFS
 - Wind profilers at KSC
 - Model point data at CCAFS

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