

Hyperspectral Atmospheric Sounders – working to improve the accuracy and timeliness of severe weather forecasting

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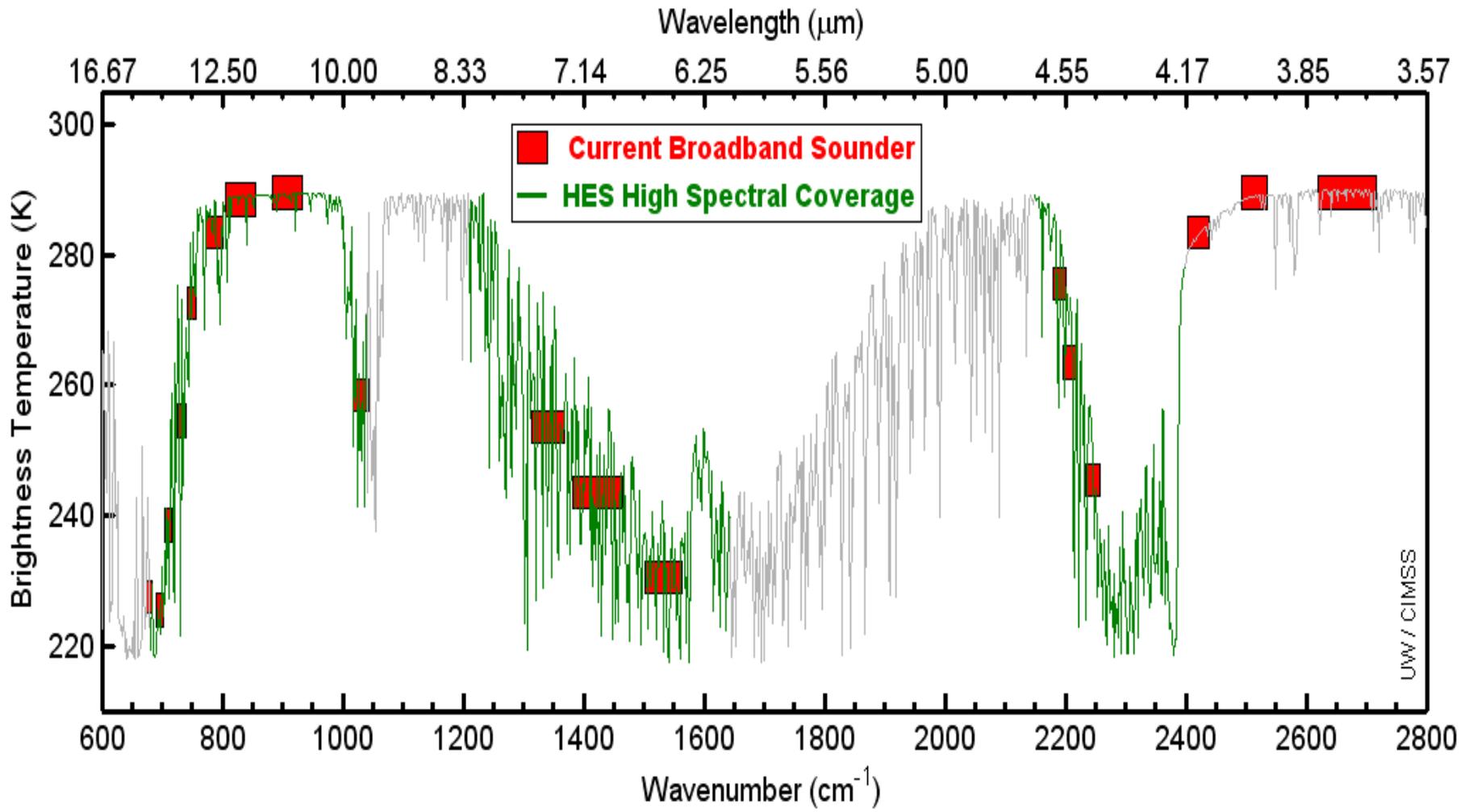
Forecast Applications Branch

August 14, 2013

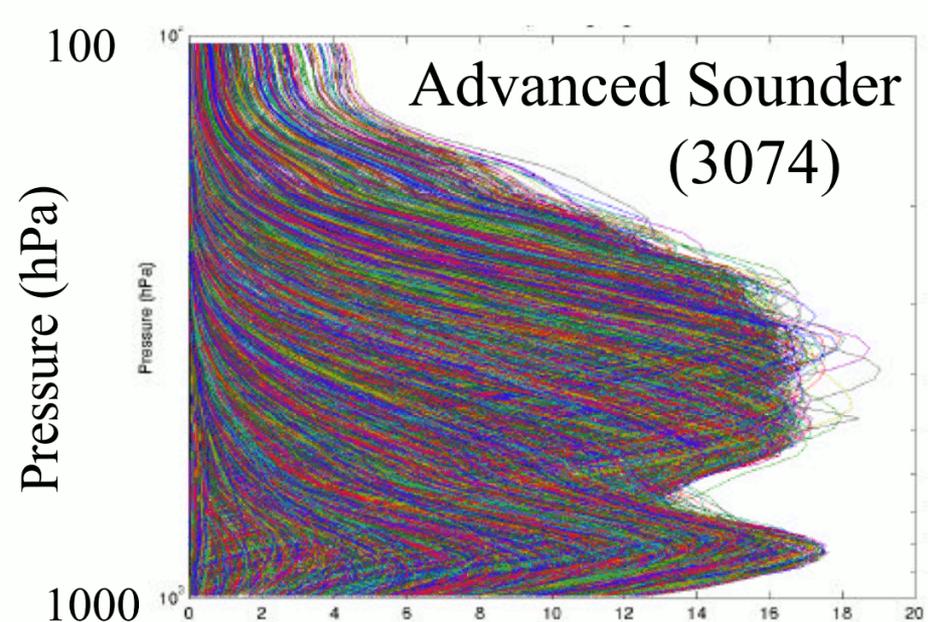
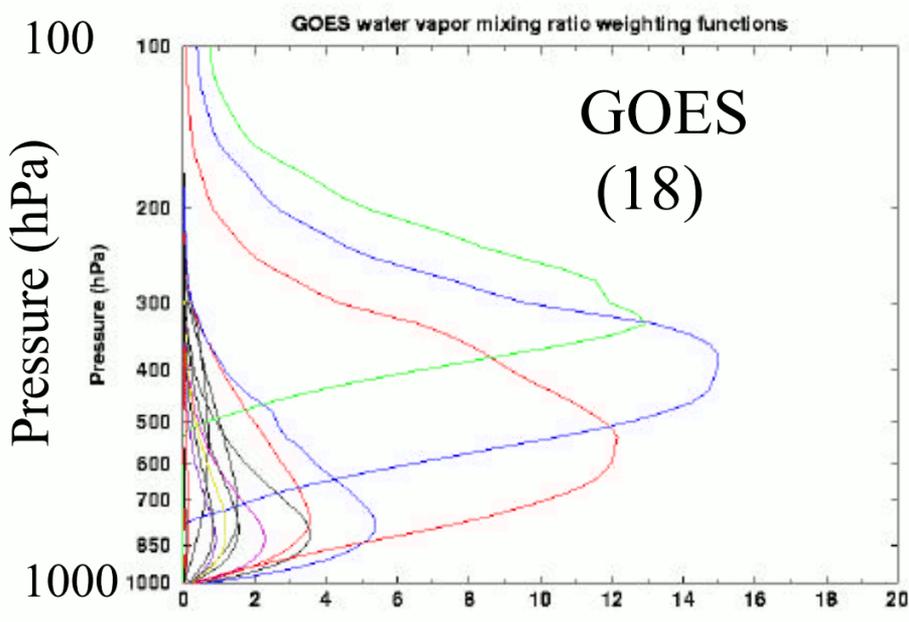
Overview

- Why hyperspectral? What's the deal, how is this better than what we currently have?
- Some examples
- Summarize highlights

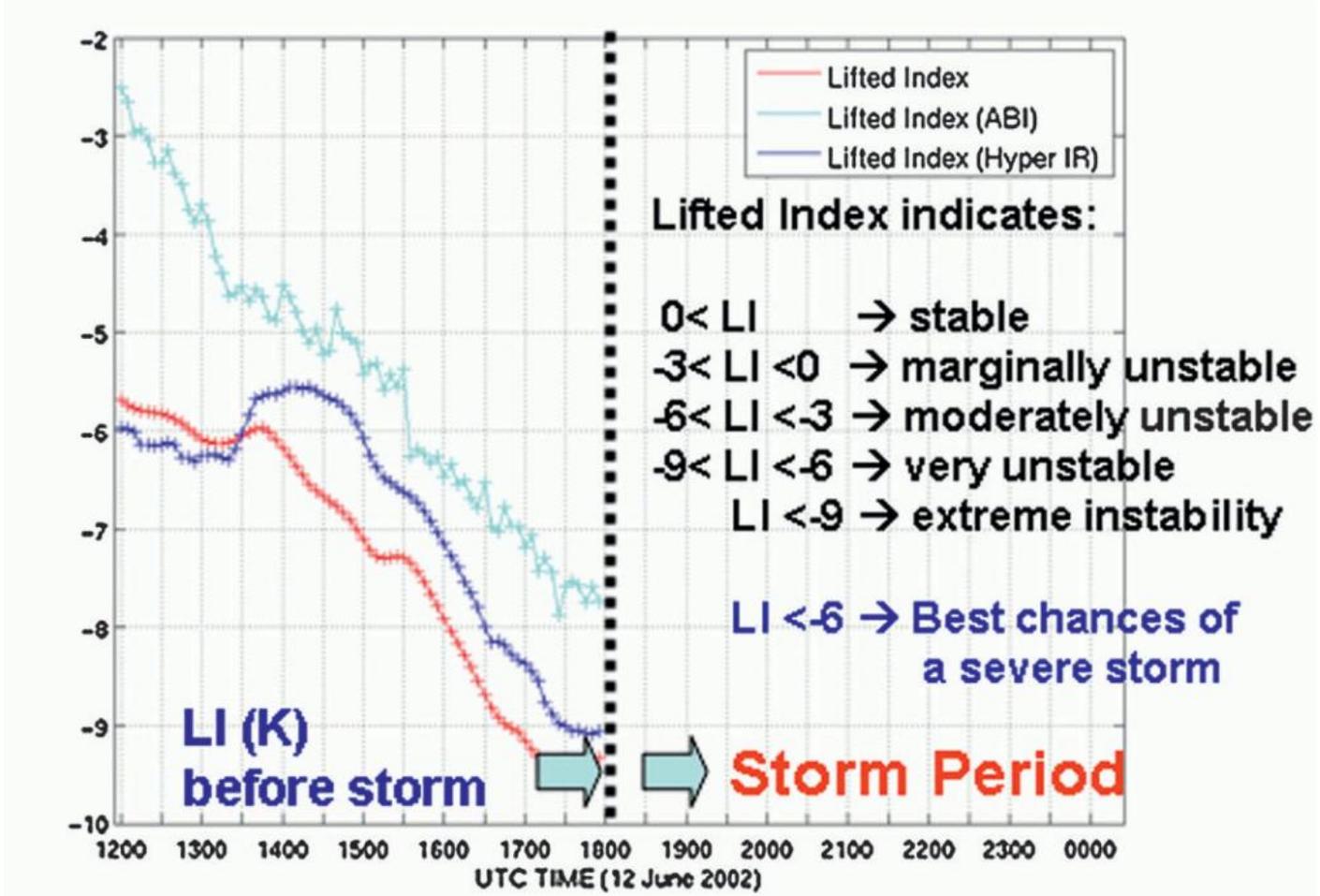
Defining Hyperspectral

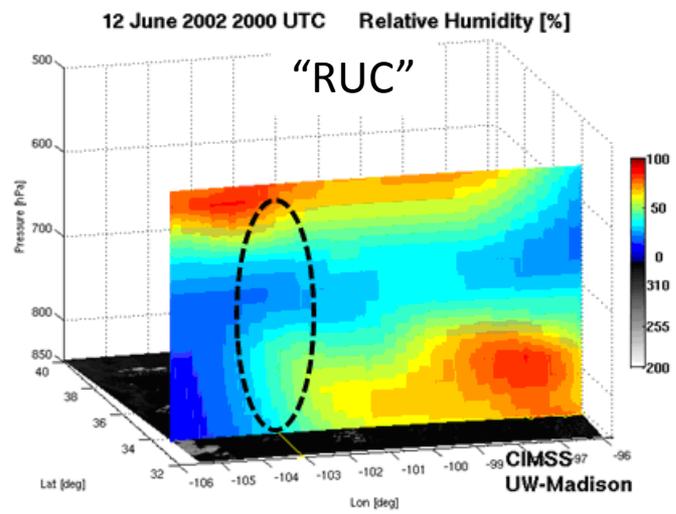
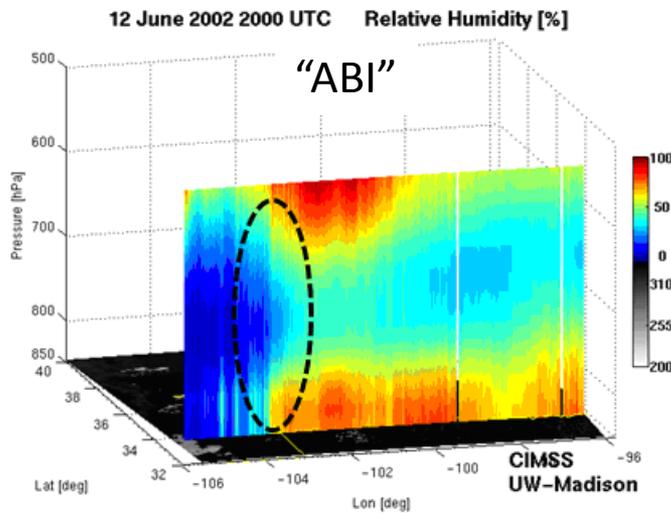
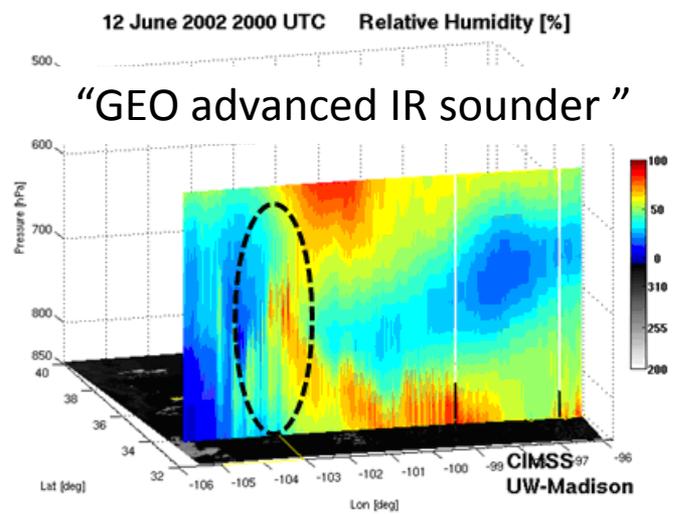
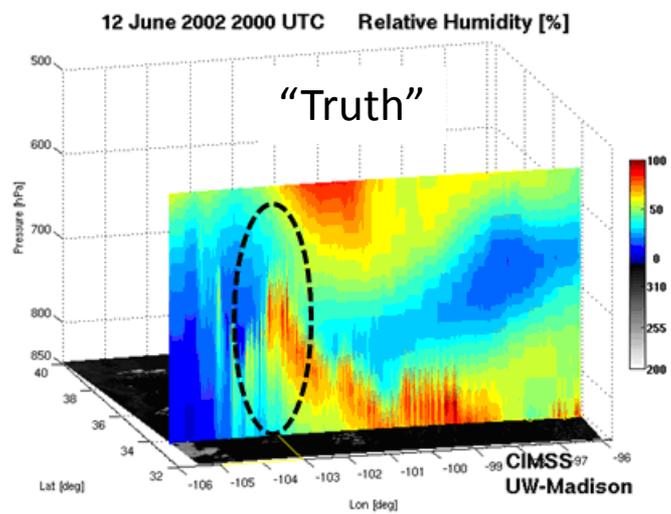


MORE DATA – and this is just moisture!



Moisture Weighting Functions





Highlights

- More data (~20 channels today - increases to thousands w/ hyperspectral)
- Eliminates first guess in retrievals (under- to over-determined problem)
- Self calibrating (reduces bias to potentially insignificant levels)
- Trace gas tracking and quantification possible (e.g. CO)
- Proposed systems will provide data more frequently & higher resolution
 - Generally 15min at 5km (3 min to 60 min depending on species)
- Socioeconomic benefit of hyperspectral is conservatively estimated to be **\$4.2 Bn/year** (MITRE corporation, 2002; Centrec Consulting Group, LLC)

*** Many thanks to Tim Schmit and others at CIMSS for providing much of this material presented today**