National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

Comparison of Upper Tropospheric Water Vapor from AIRS and Cryogenic Frostpoint Hygrometers

Eric J. Fetzer

Jet Propulsion Laboratory, California Institute of Technology, Pasadena CA

Holger Vömel

CIRES / CMDL Boulder CO

Eric.J.Fetzer@jpl.nasa.gov

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

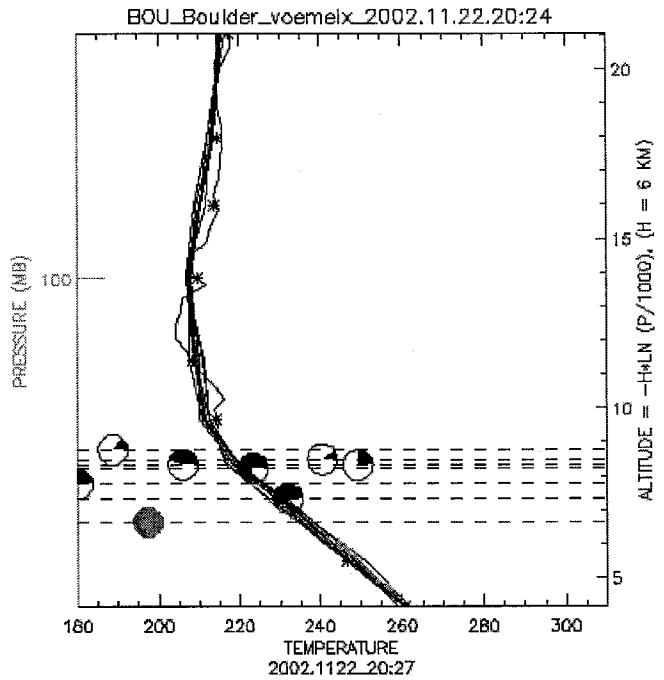
ABSTRACT

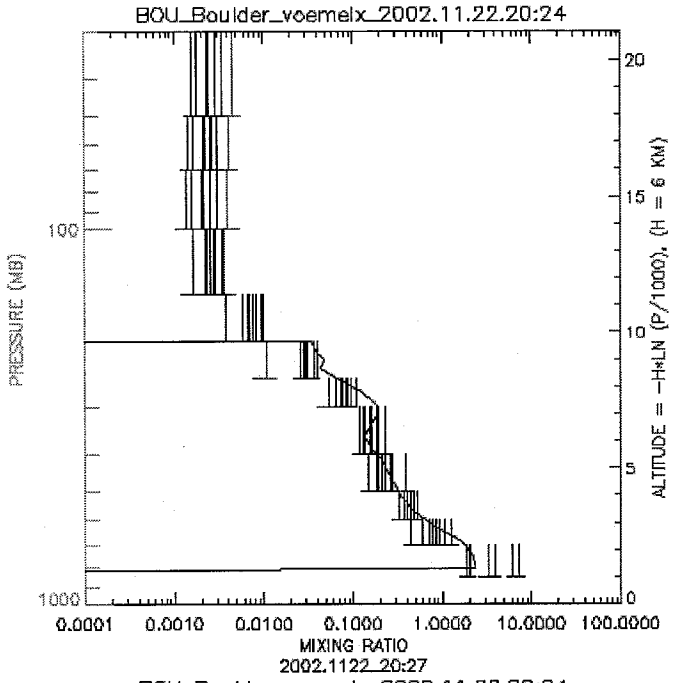
Upper tropospheric water vapor (UTWV) from the Atmospheric Infrared Sounder (AIRS) experiment on NASA's Aqua spacecraft has the potential of addressing several important climate questions. The specified AIRS system measurement uncertainty for water vapor is 20 percent absolute averaged over 2 km layers. Cryogenic frostpoint hygrometers (CFH) are balloon-borne water vapor sensors responsive from the surface into the lower stratosphere. Several dozen coincident, collocated CFH profiles have been obtained for AIRS validation. The combination of CFH sensitivity and sample size offers a statistically compelling picture of AIRS UTWV measurement capability. We present a comparison between CFH observations and AIRS retrievals. We focus on the altitude range from the middle troposphere up to heights at the limits of AIRS sensitivity to water vapor, believed to be around 100-150 hPa.

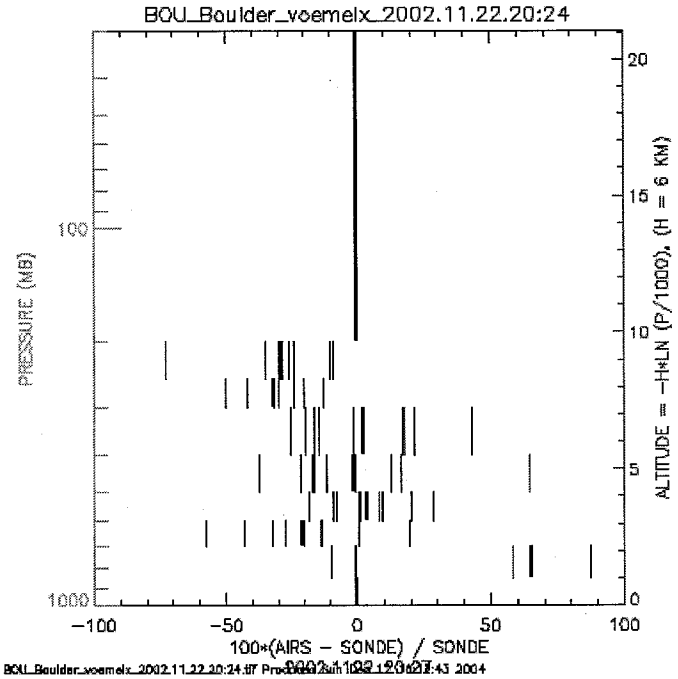
Eric.J.Fetzer@jpl.nasa.gov

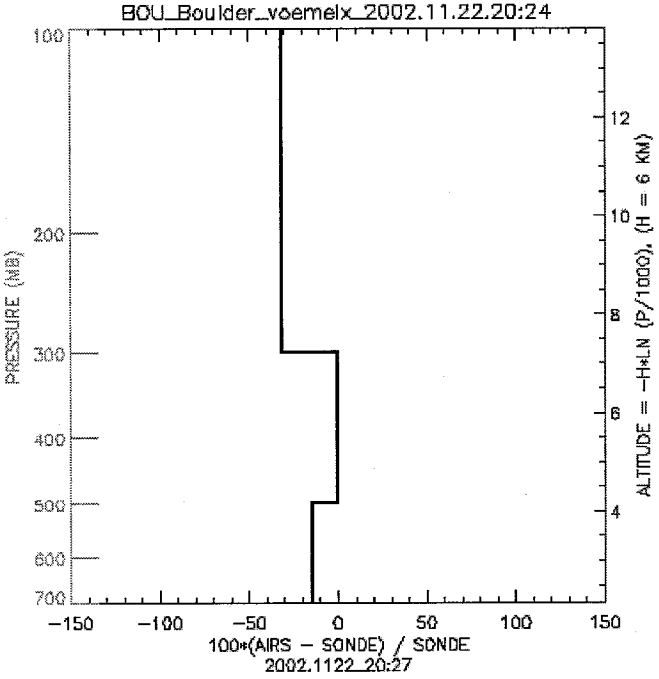
National
Space

Jet Pr
Californ
Pasade

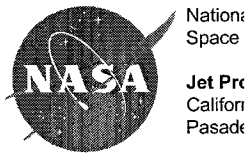






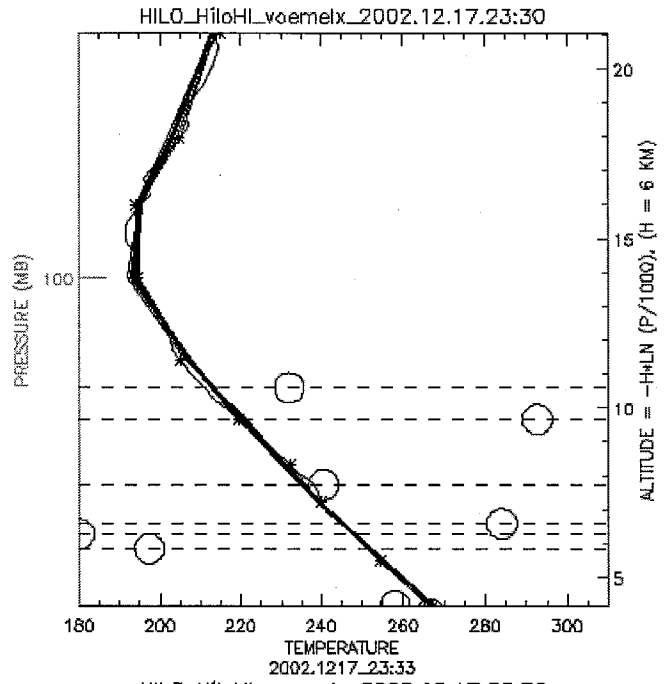


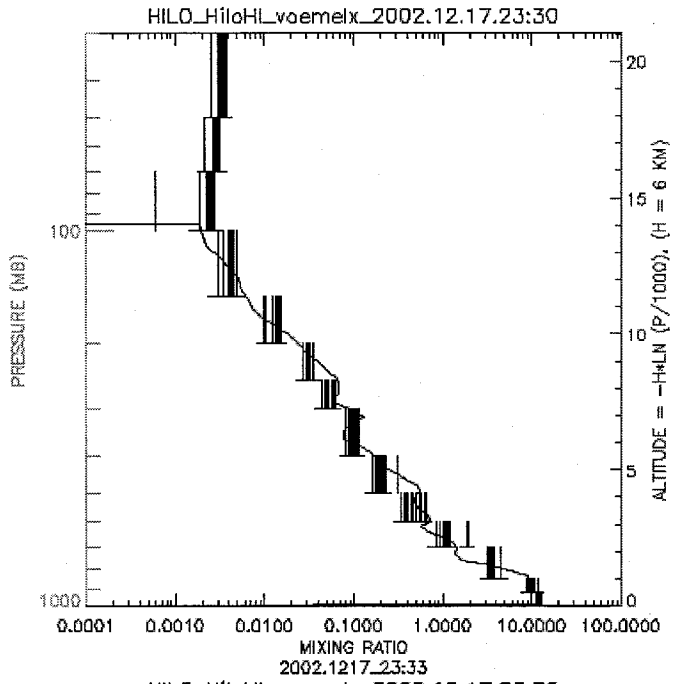
Eric.J.Fetzer@jpl.nasa.gov

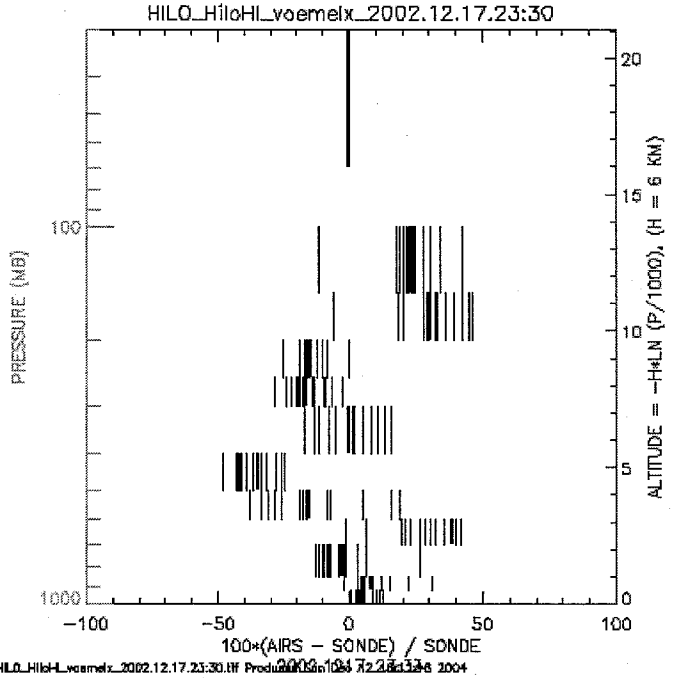


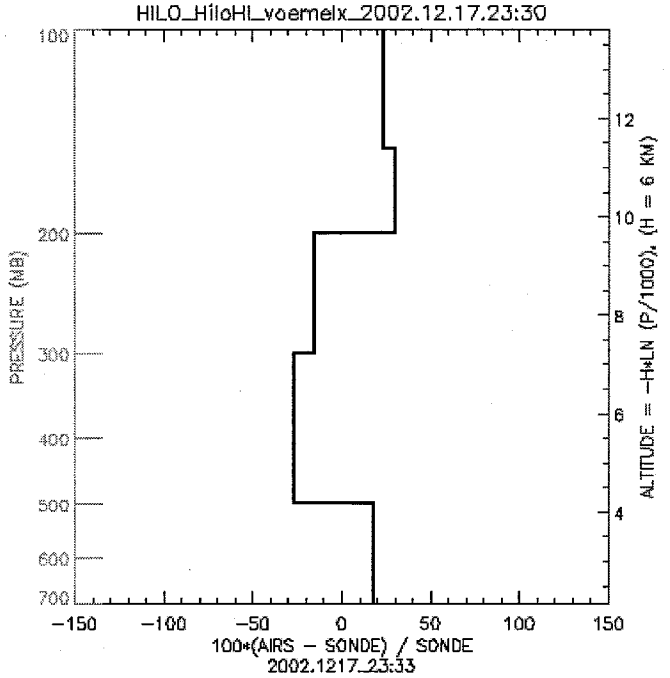
National
Space

Jet Pr
Californ
Pasade





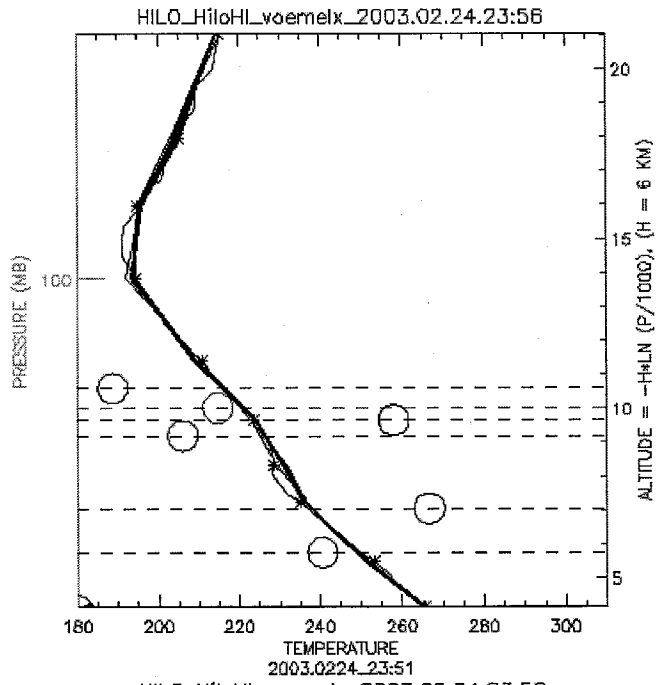


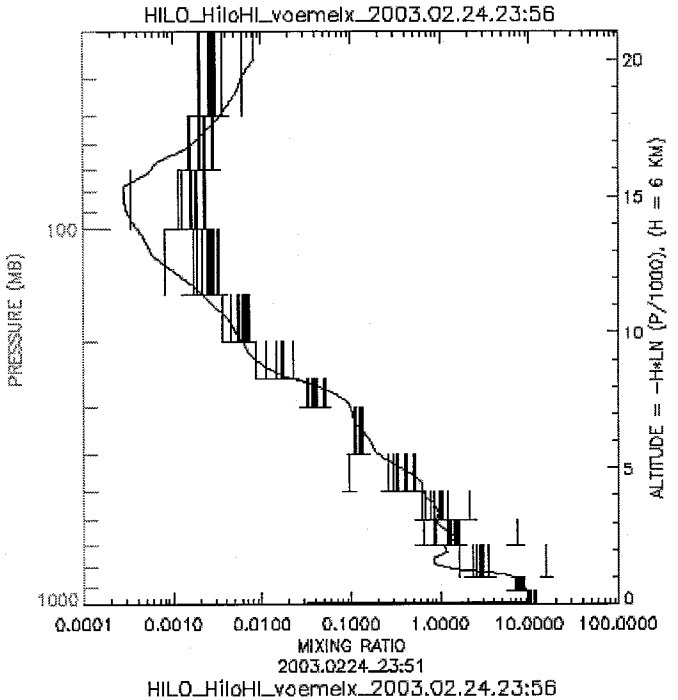


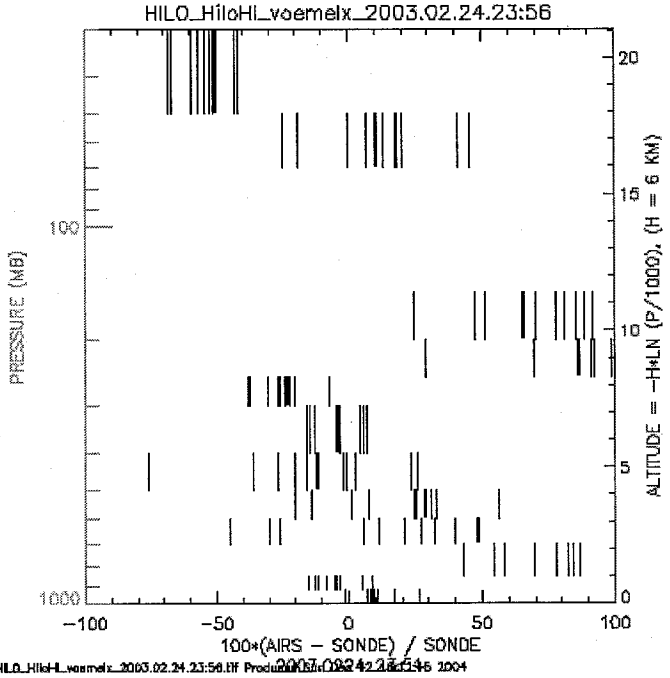
Eric.J.Fetzer@jpl.nasa.gov

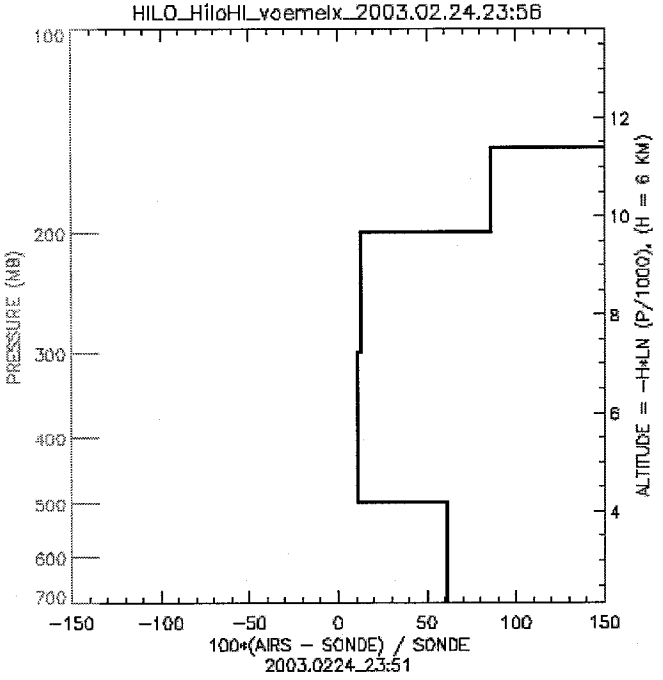
Nationa
Space

Jet Pro
Californ
Pasade

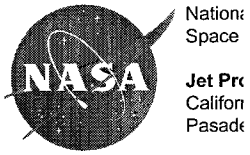






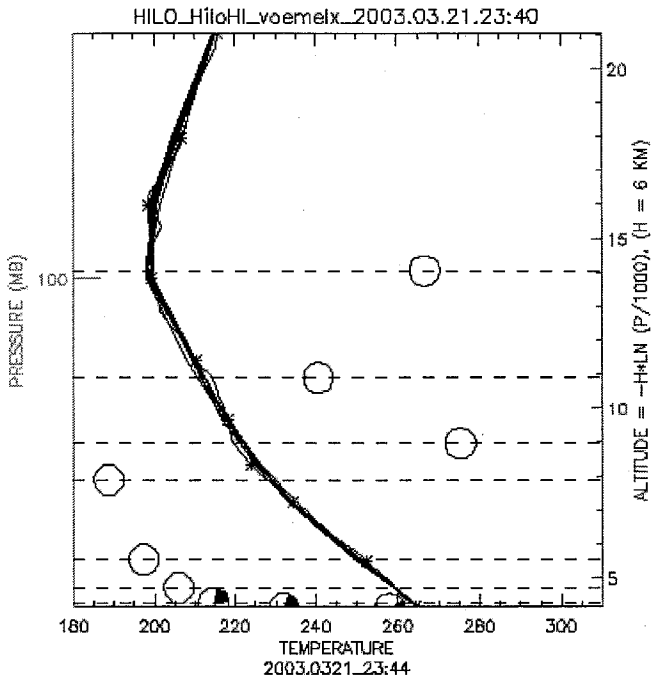


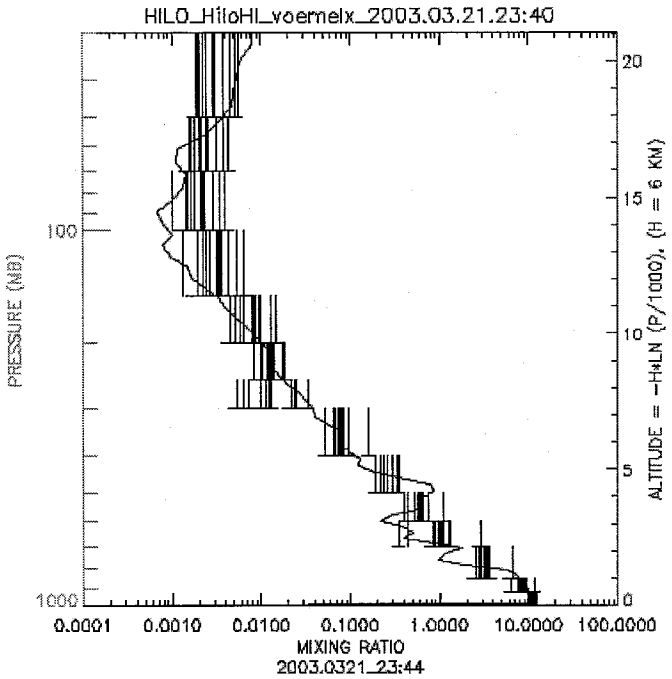
Eric.J.Fetzer@jpl.nasa.gov

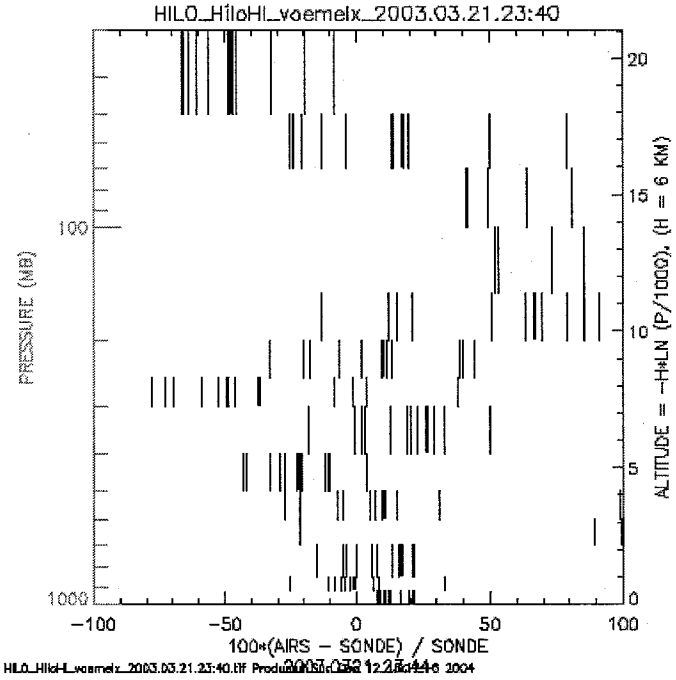


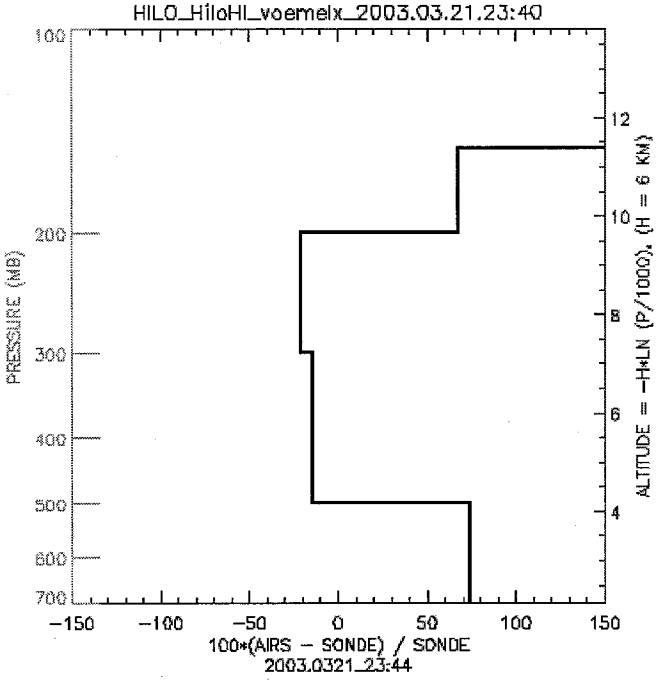
National
Space

Jet Pr
Califor
Pasade

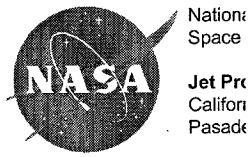






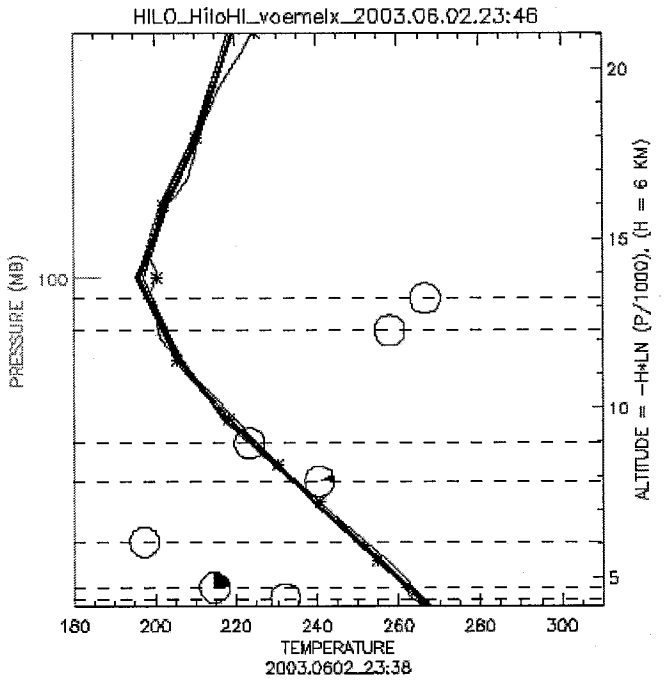


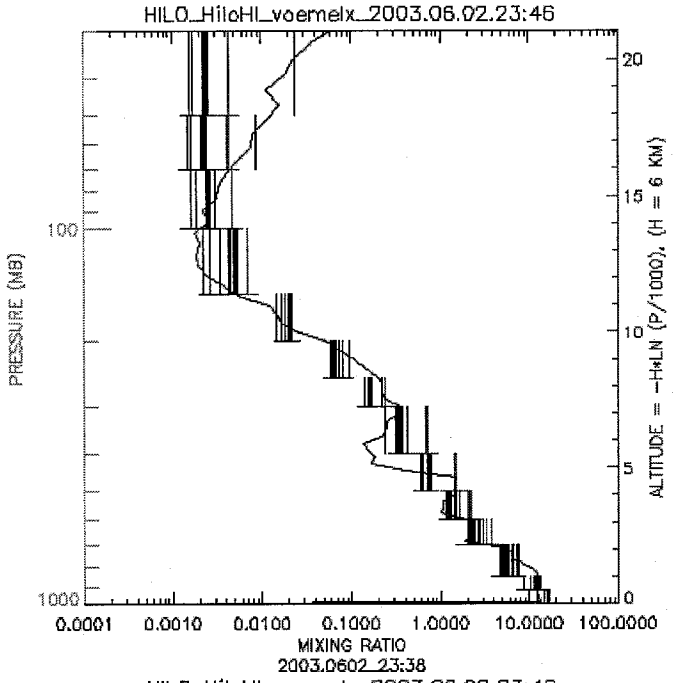
Eric.J.Fetzer@jpl.nasa.gov

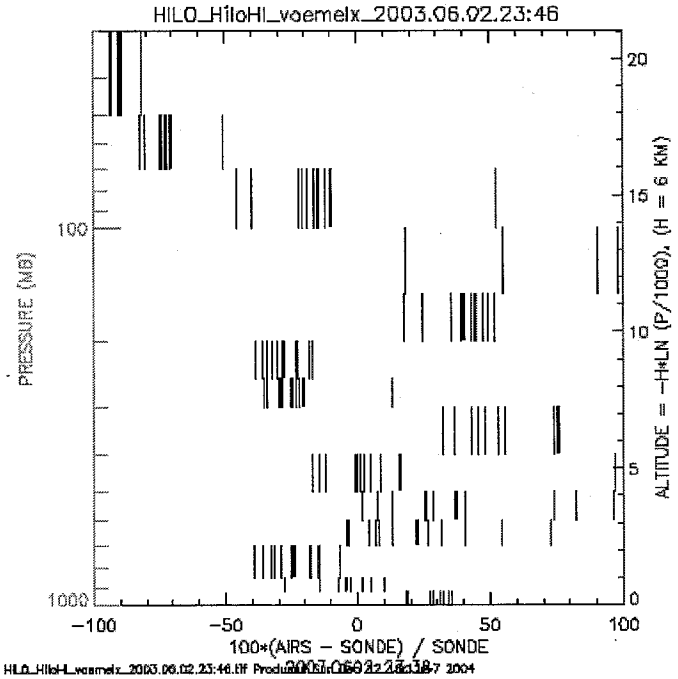


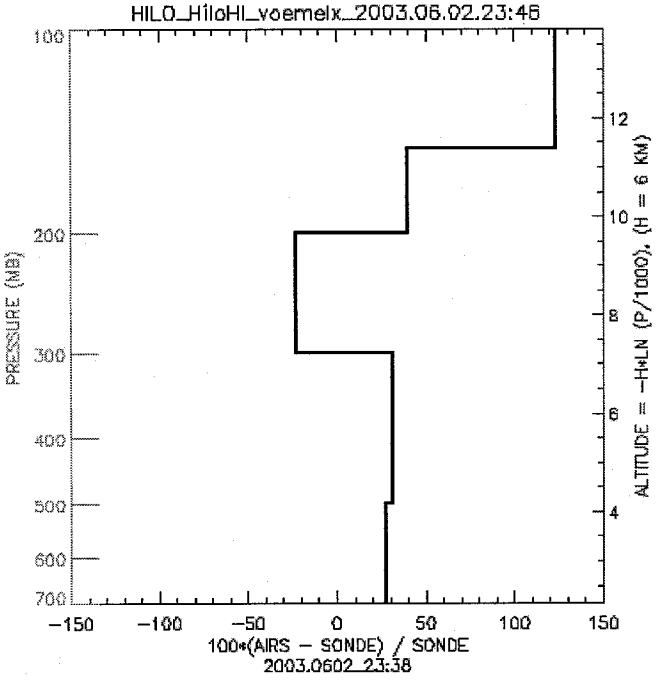
National Space

Jet Pr
Californ
Pasade

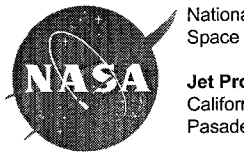






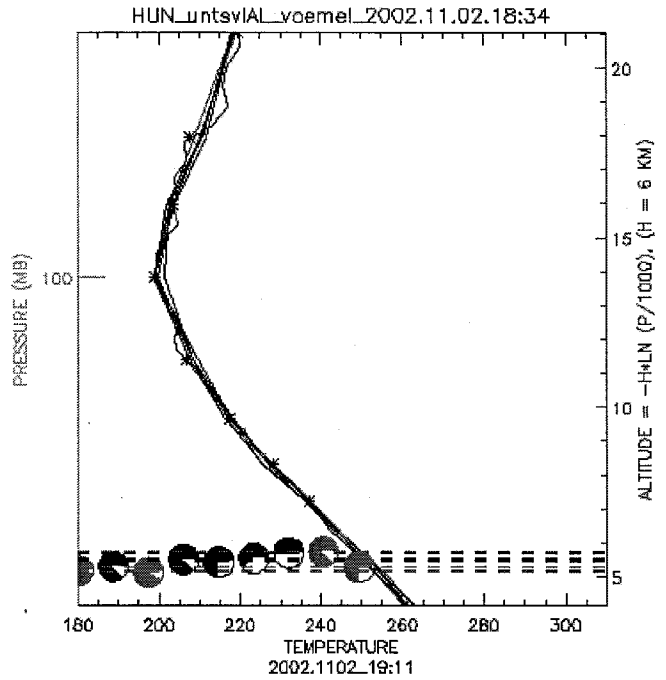


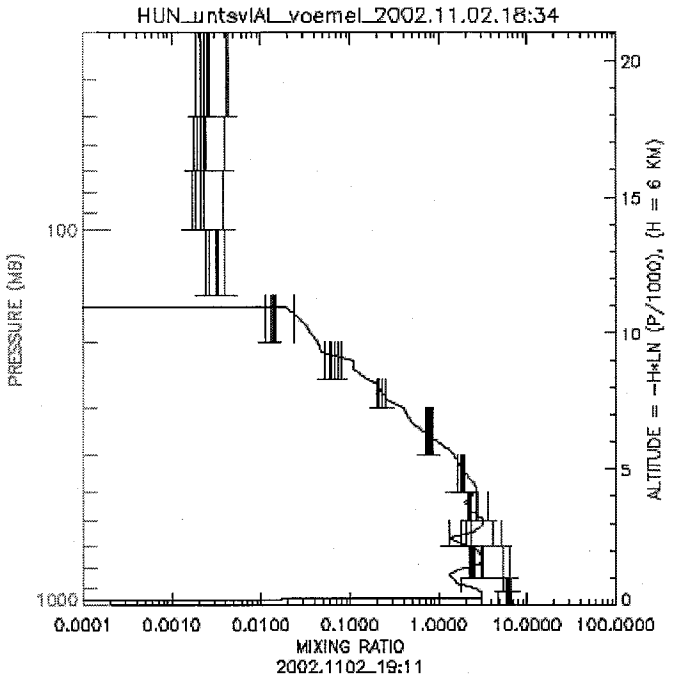
Eric.J.Fetzer@jpl.nasa.gov

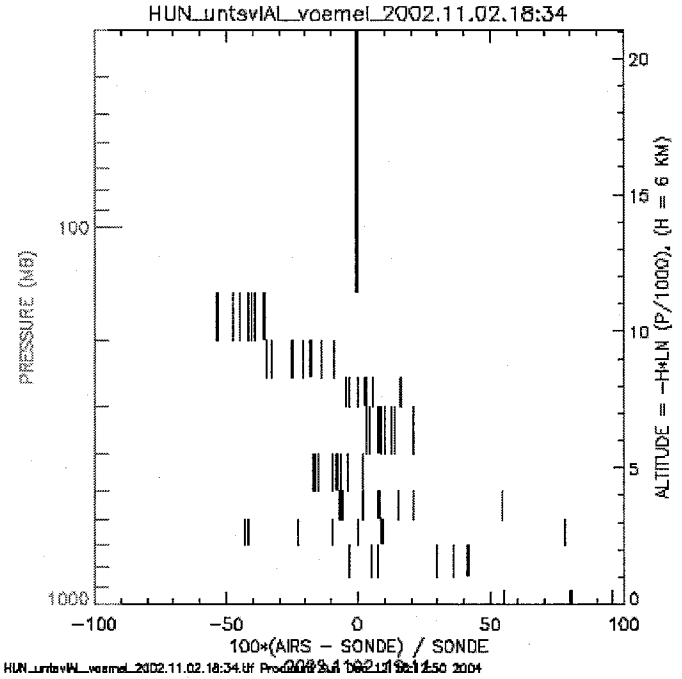


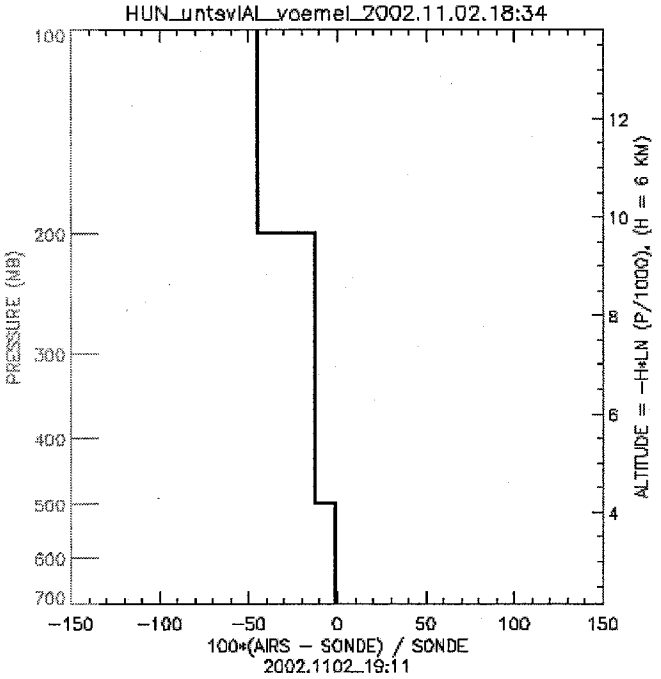
National Space

Jet Pr
Califor
Pasade





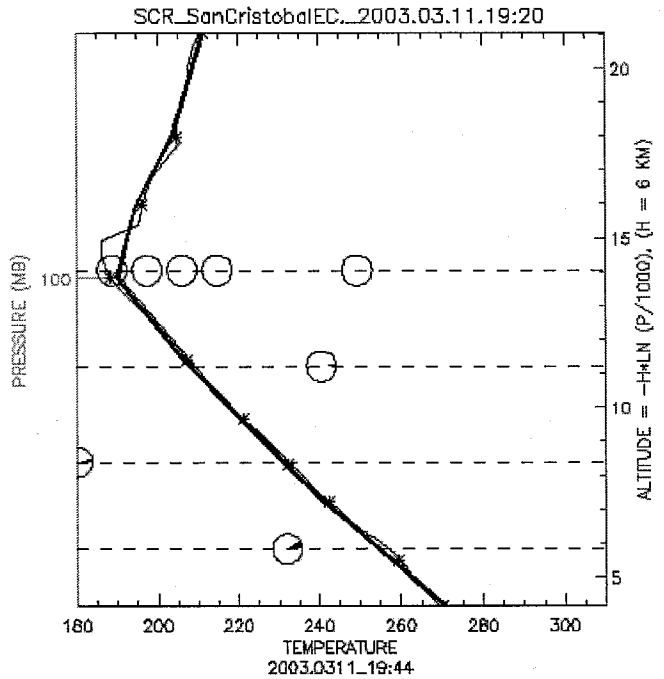


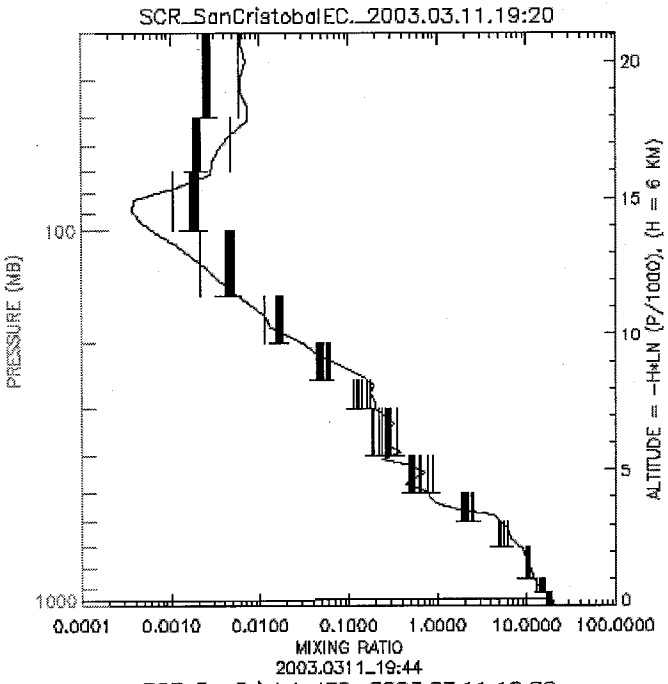


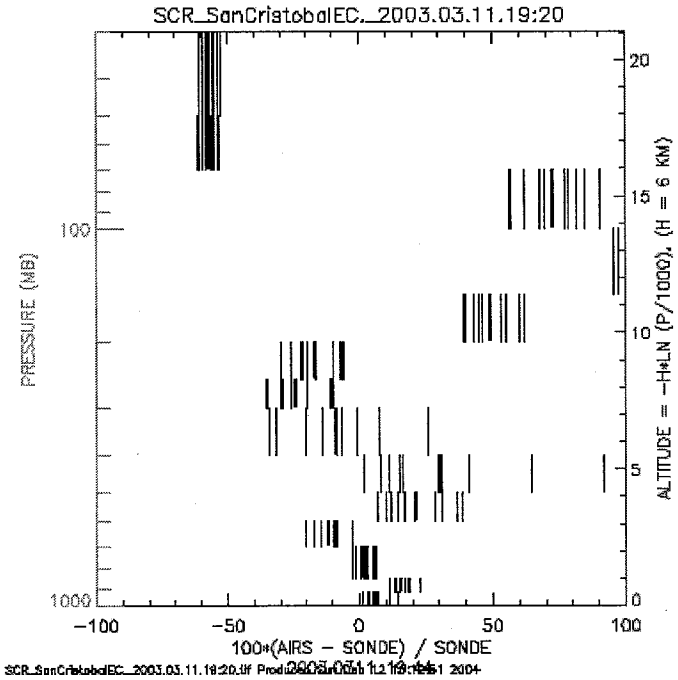
Eric.J.Fetzer@jpl.nasa.gov

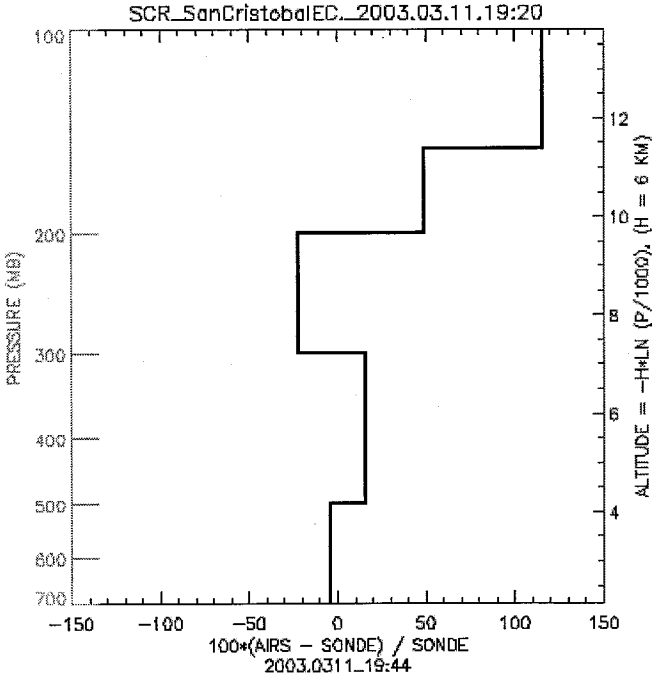
Nationa
Space

Jet Pr
Califor
Pasade





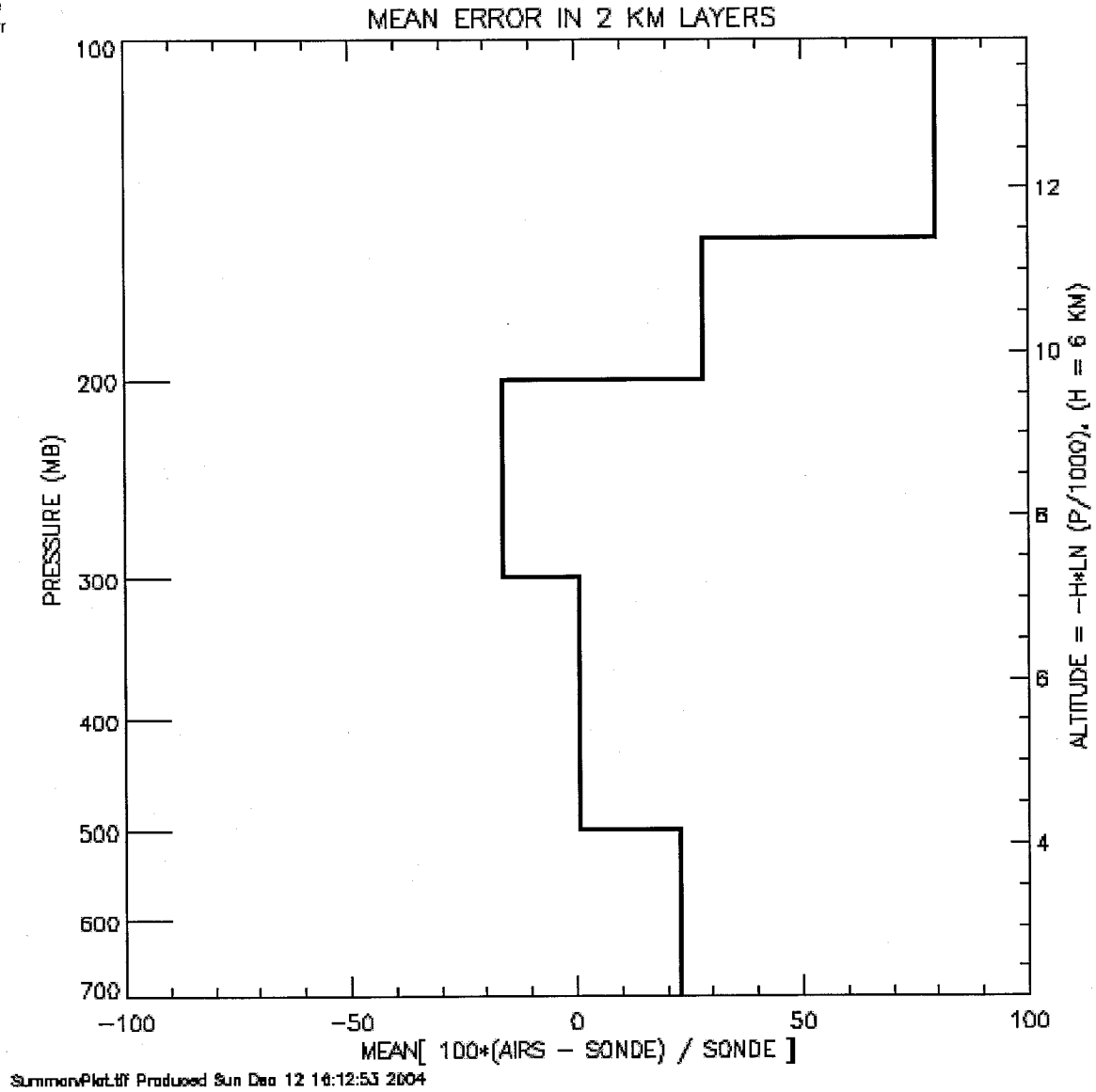




Eric.J.Fetzer@jpl.nasa.gov

National Aeronautics and
Space Administration

Jet Propulsion Laboratory
California Institute
Pasadena, Californ



Eric.J.Fetzer@jpl.nasa.gov