A Brewer For ARM?: P. Kiedron and P. Disterhoft

Brewer 135 on the roof of DSRC building, Boulder, Colorado

UV and Ozone Networks in North America

NOAA-EPA Brewers Network (NEUBrew)

Bondville,IL

Ft. Peck,MT

Raleigh,NC

Houston, TX

MKIV Brewers at Table Mt., Boulder, Colorado

History of Brewers

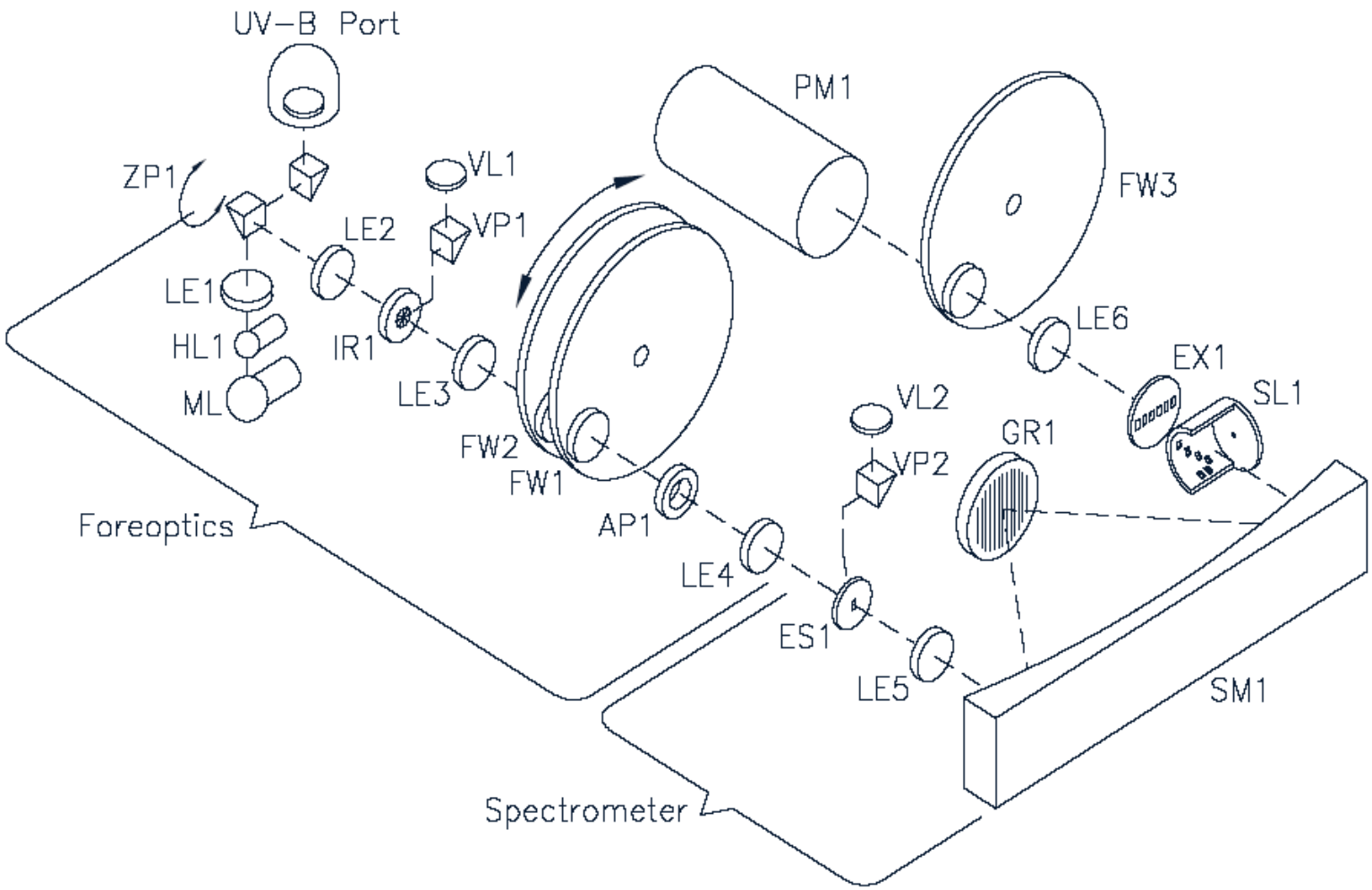
Brewer, A.W., A replacement for the Dobson Spectrophotometer?, Pure Appl. Geophys., 106-108, 919-927, 1973.

Kerr, J.B., C.T. McElroy, D.I. Wardle, R.A. Olafson, and W.F.J. Evans, The automated Brewer spectrophotometer, in Atmospheric Ozone, C.S. Zerefos and A. Ghazi, eds., Reidel, Dordrecht, p. 396, 1985

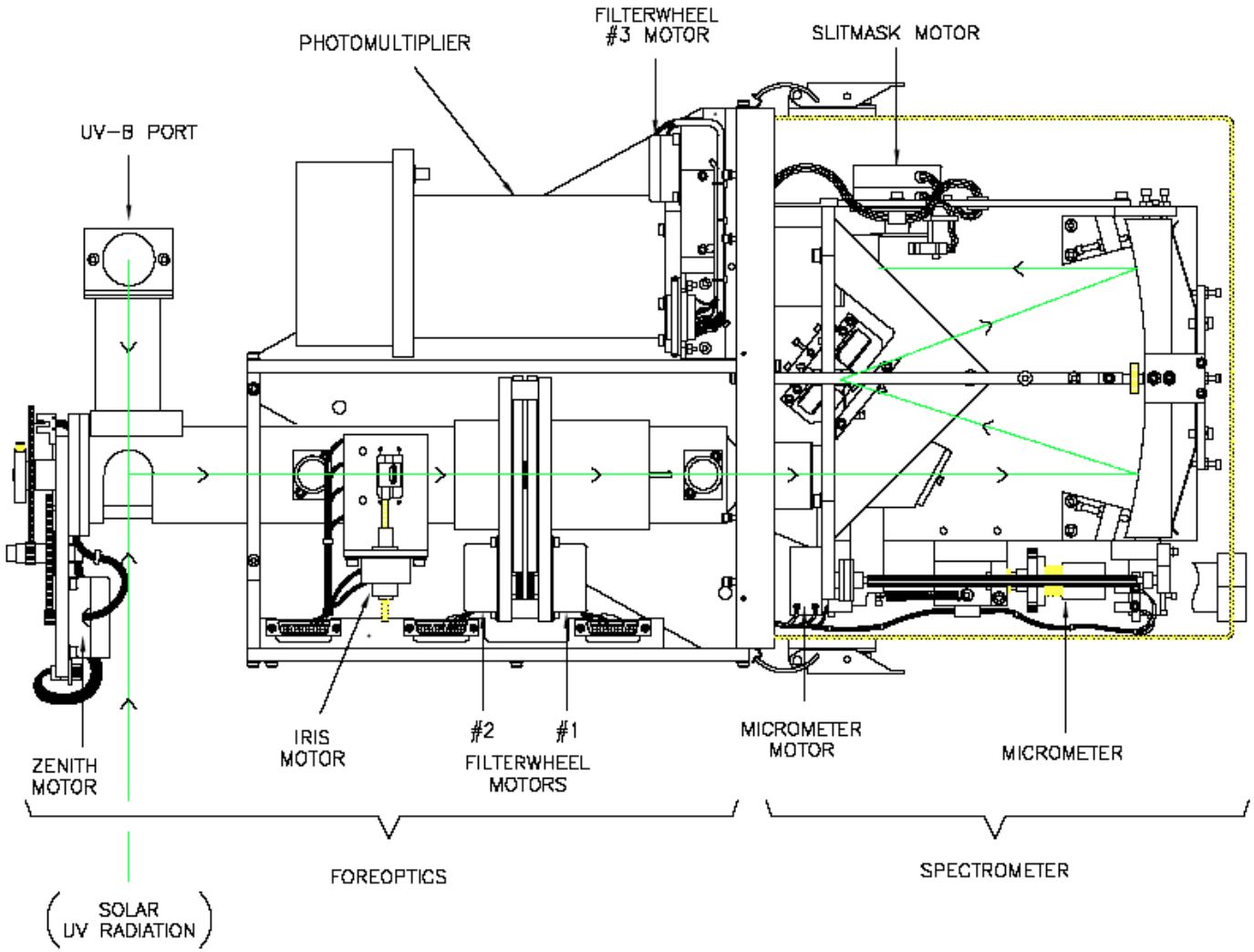
MKII: 55 single spectrometer, solar blind PMT
MKIV: 40 single spectrometer, solar blind filter
MKIVe: 50 single spectrometer, solar blind filter
MKIII: 60 double spectrometer (≈260k euro)

Sci-Tech Instruments (Canada) --> Kipp & Zonen (The Netherlands)

http://www.kippzonen.com/?productgroup/26142/Brewer+Spectrophotometer.aspx



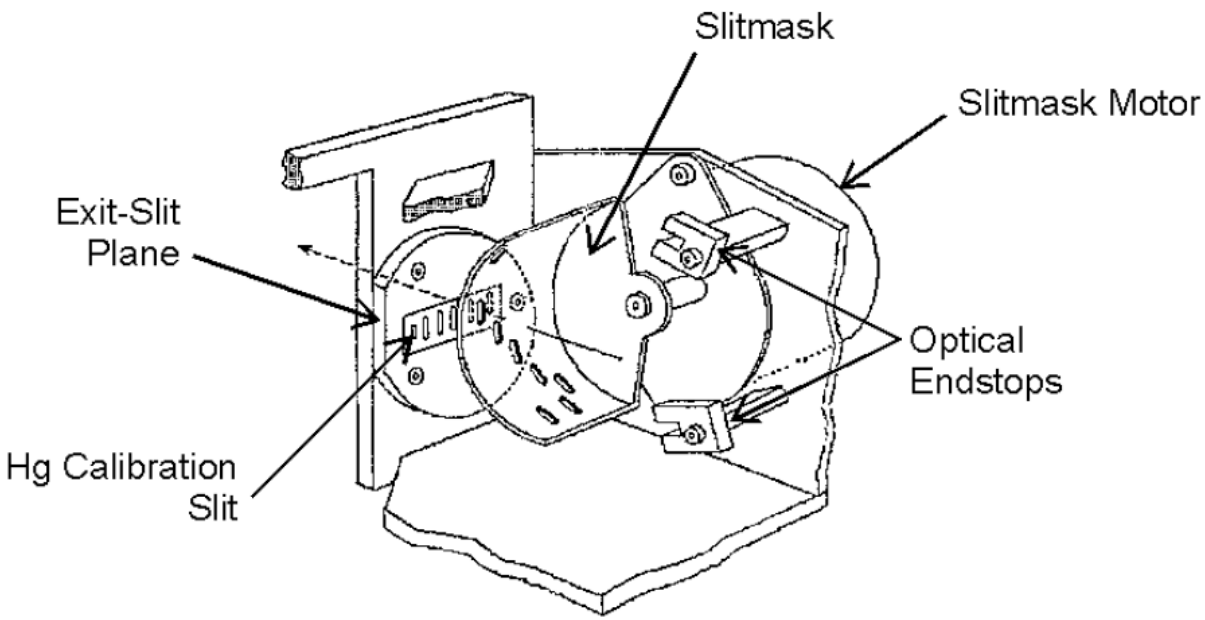
Optical Elements of Brewer Spectrophotometer



Top View of Spectrophotometer

Table 2-4: slit mask position vs nominal wavelength

Slit Mask Position	Wavelength Setting (nm)	
0	Hg Slit:	303.2nm (Cal=302.1)
1	Dark Count:	--------
2	Wavelength 1:	306.3/431.4
3	Wavelength 2:	310.1/437.3
4	Wavelength 3:	313.5/442.8
5	Wavelength 4:	316.8/448.1
6	Wavelength 5:	320.1/453.2
7	Wavelength 2 & 4 for Deadtime Test	



Brewer measurements

Ozone and SO_2 column: sun direct beam and zenith

Aerosol optical depth at O_3 and NO_2 wavelength

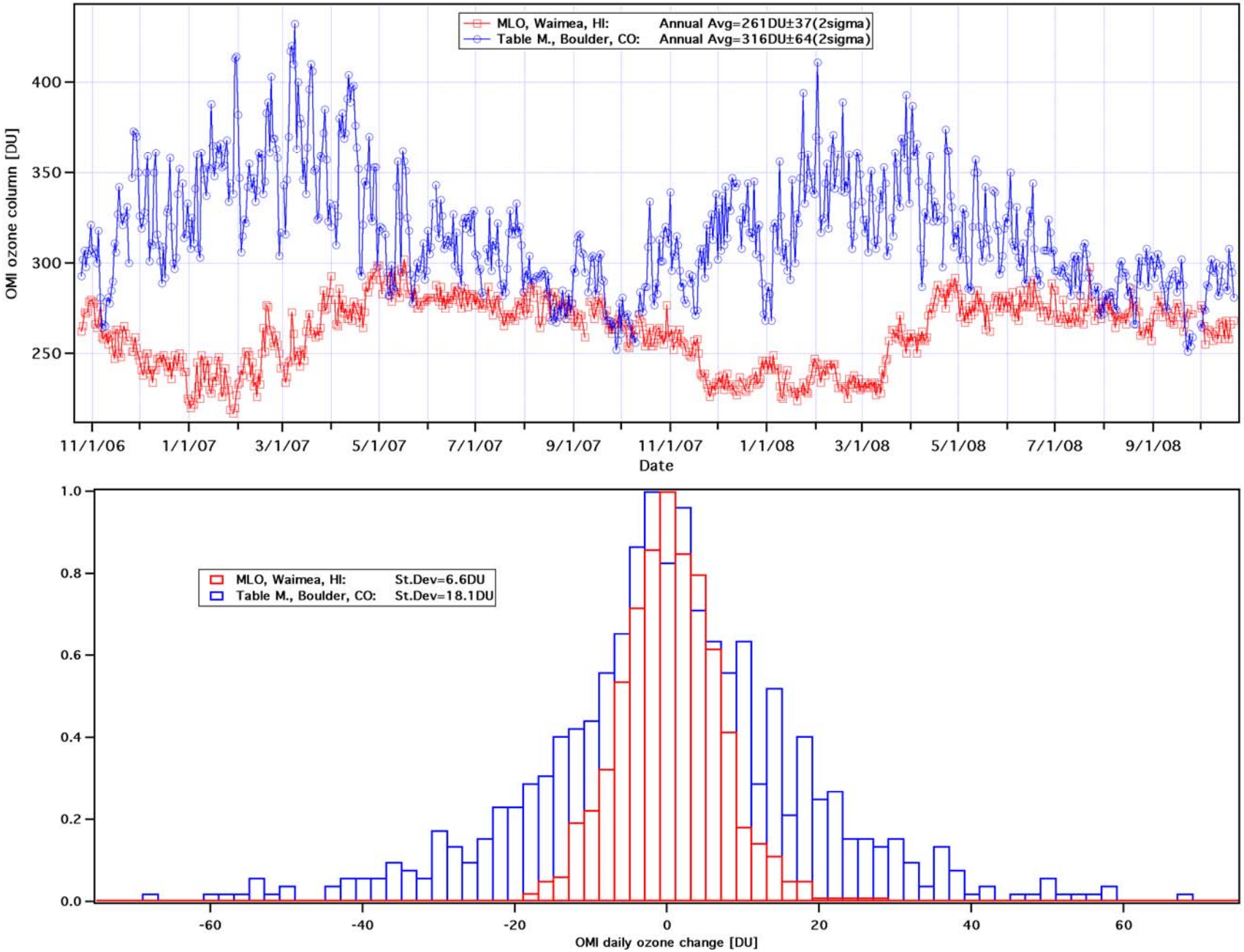
Ozone profile (Umkehr) up to 2 per day

UV scans (fwm≈0.8nm) 290nm-363nm ---> UV index

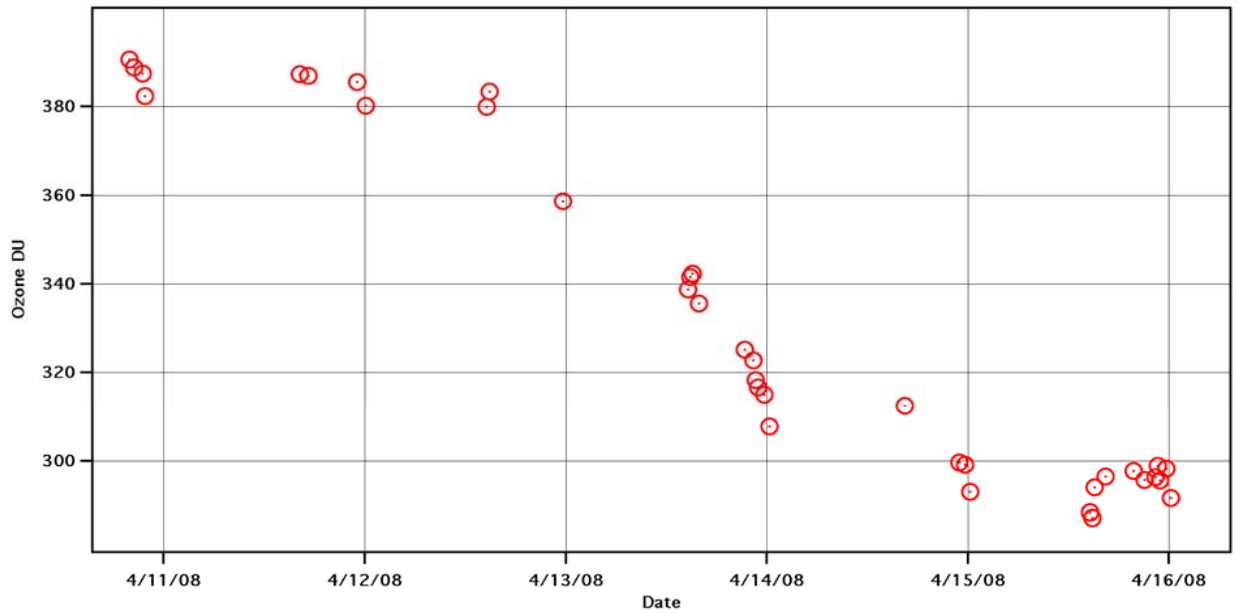
NO_2 column

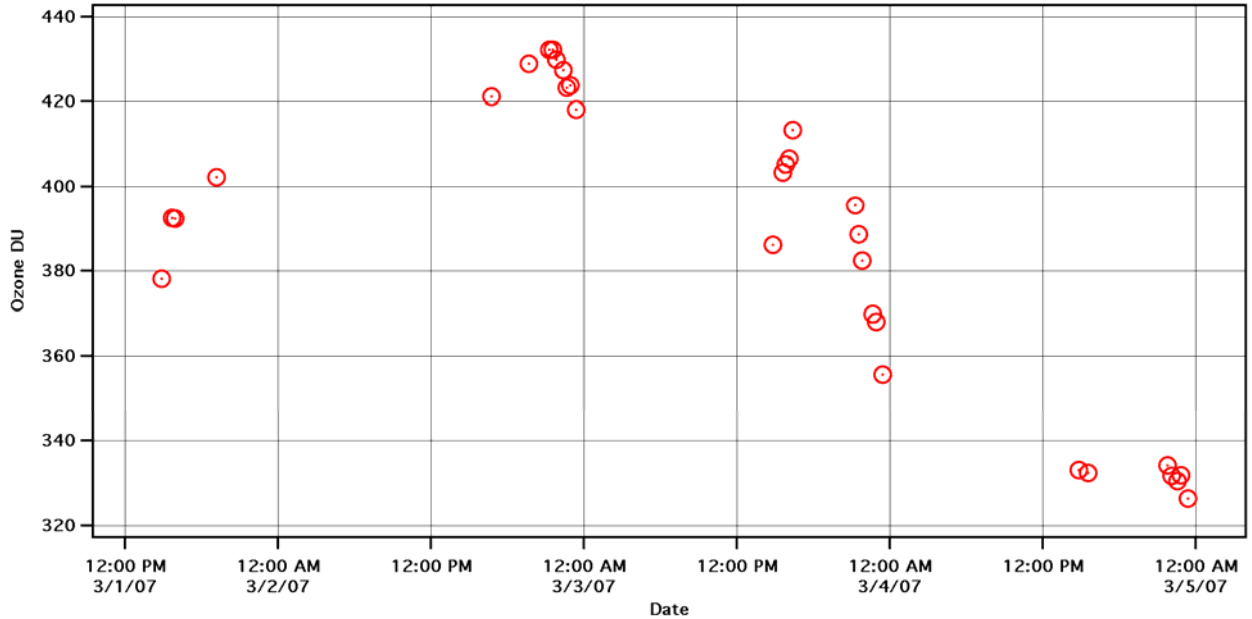
Ozone column from moonlight

OMI Daily Ozone

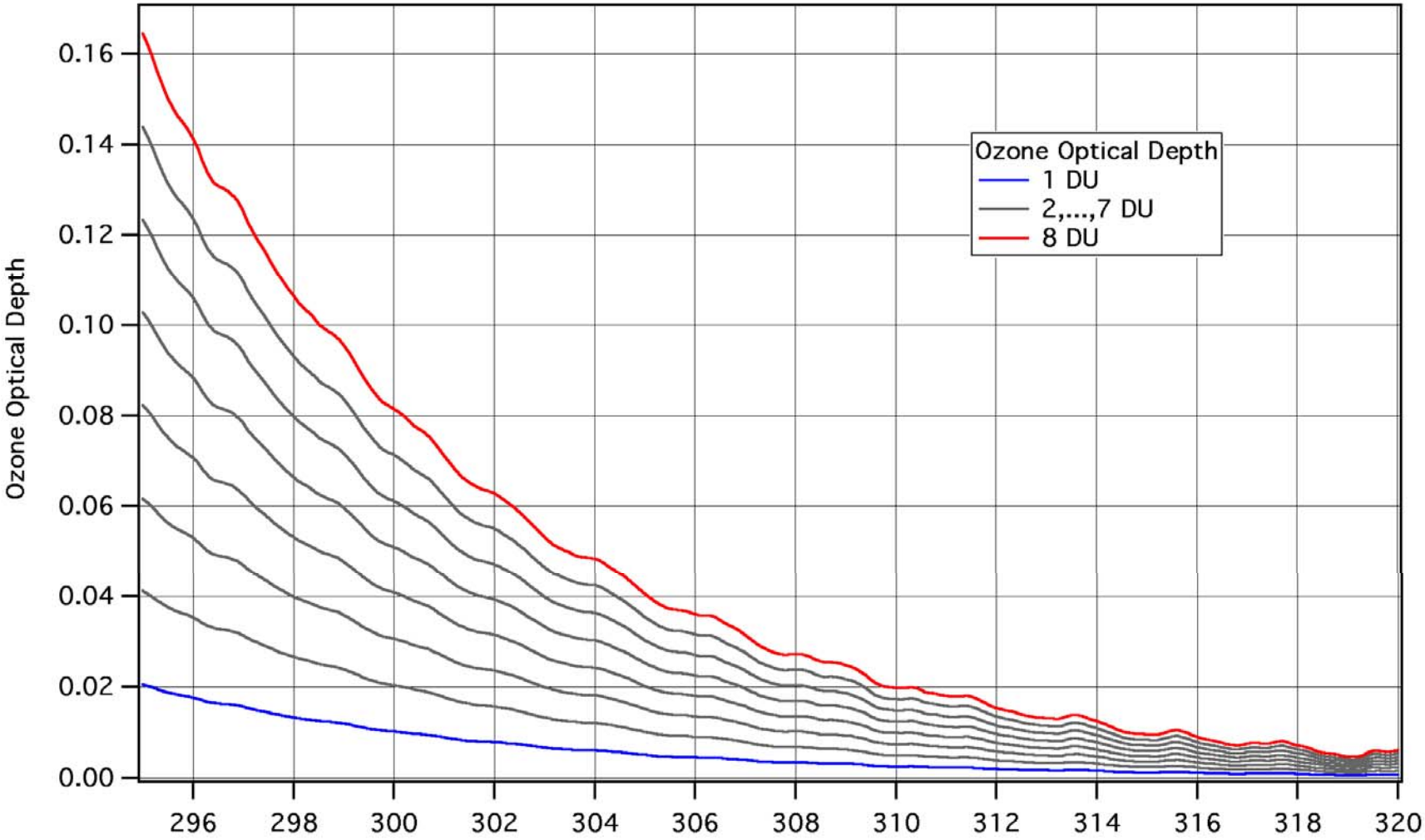


Brewer 134 Ozone Diurnal Changes, Table Mt., Boulder

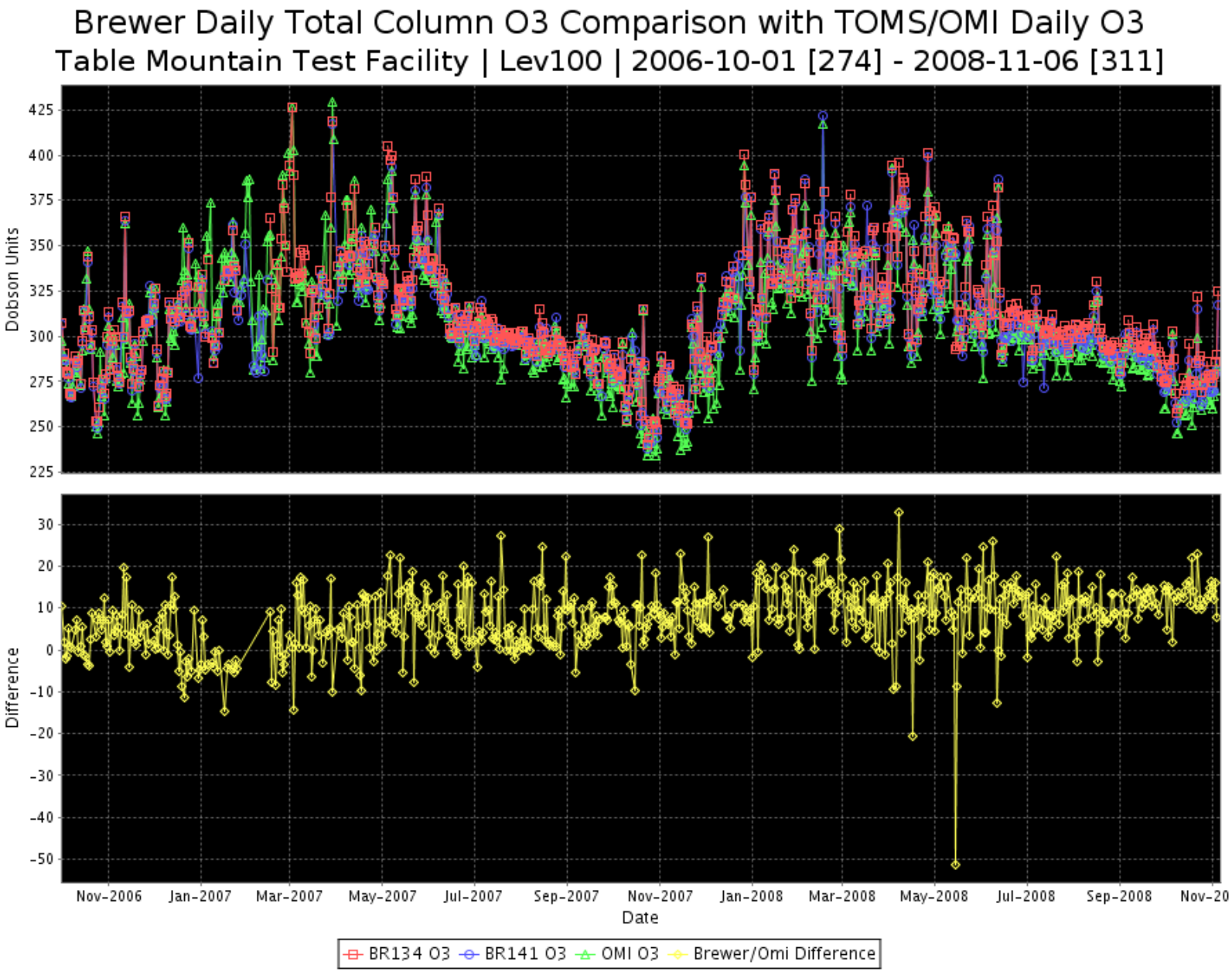




Ozone optical depth



NEUBrew Product Displays: http://esrl.noaa.gov/gmd/grad/neubrew/ProductDisplays.jsp



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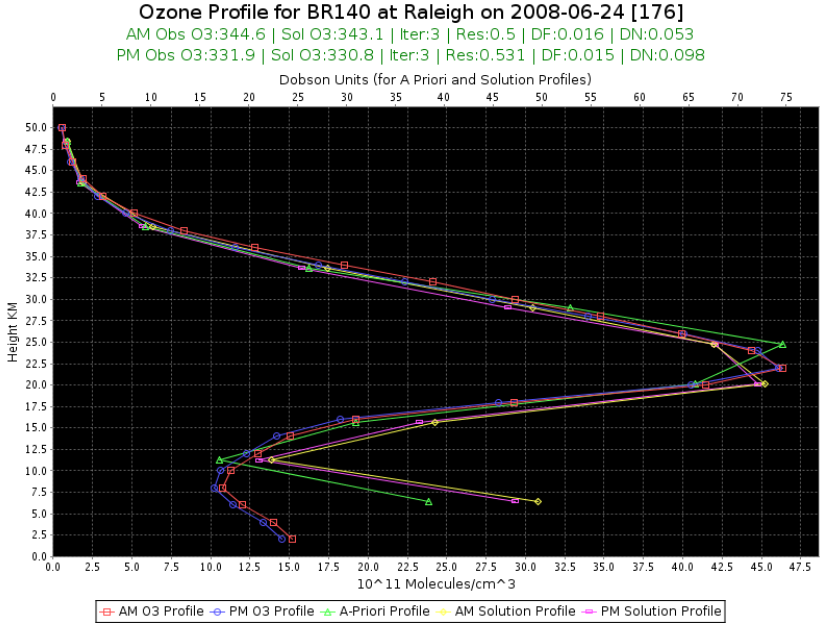

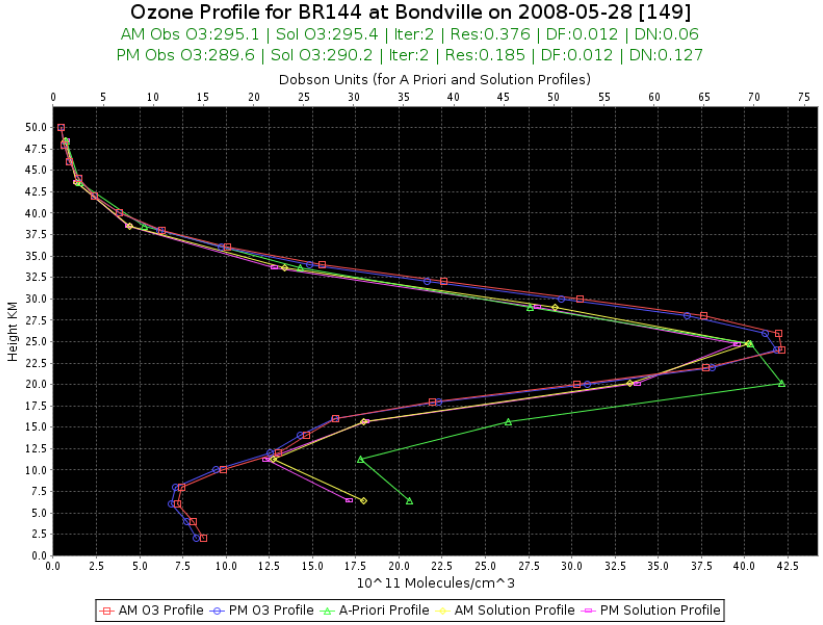

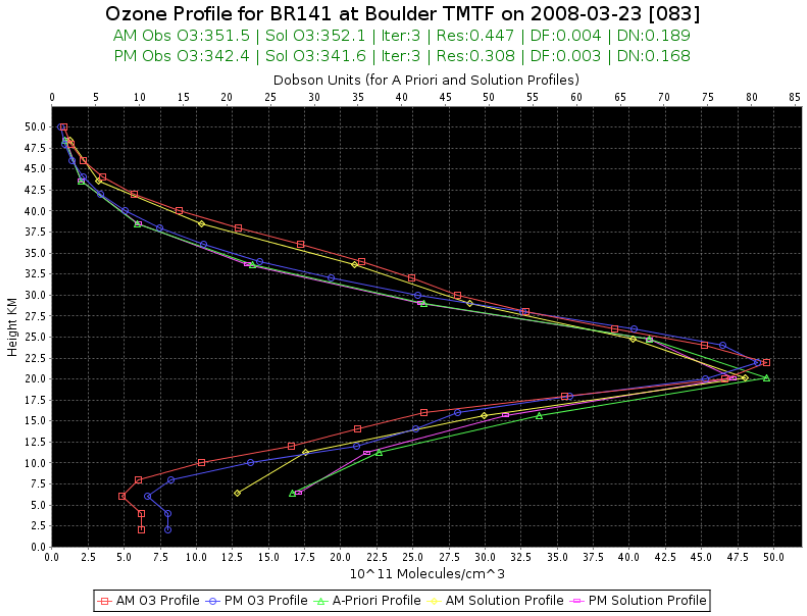

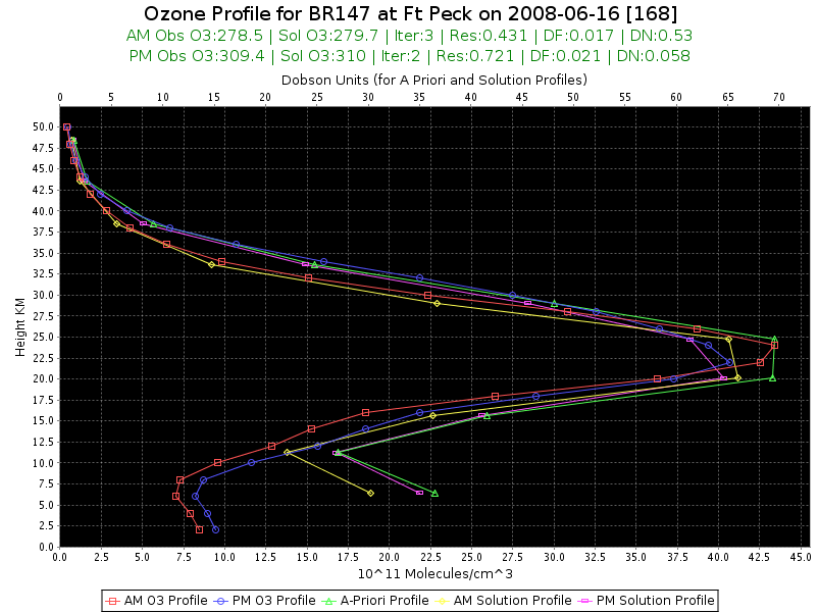

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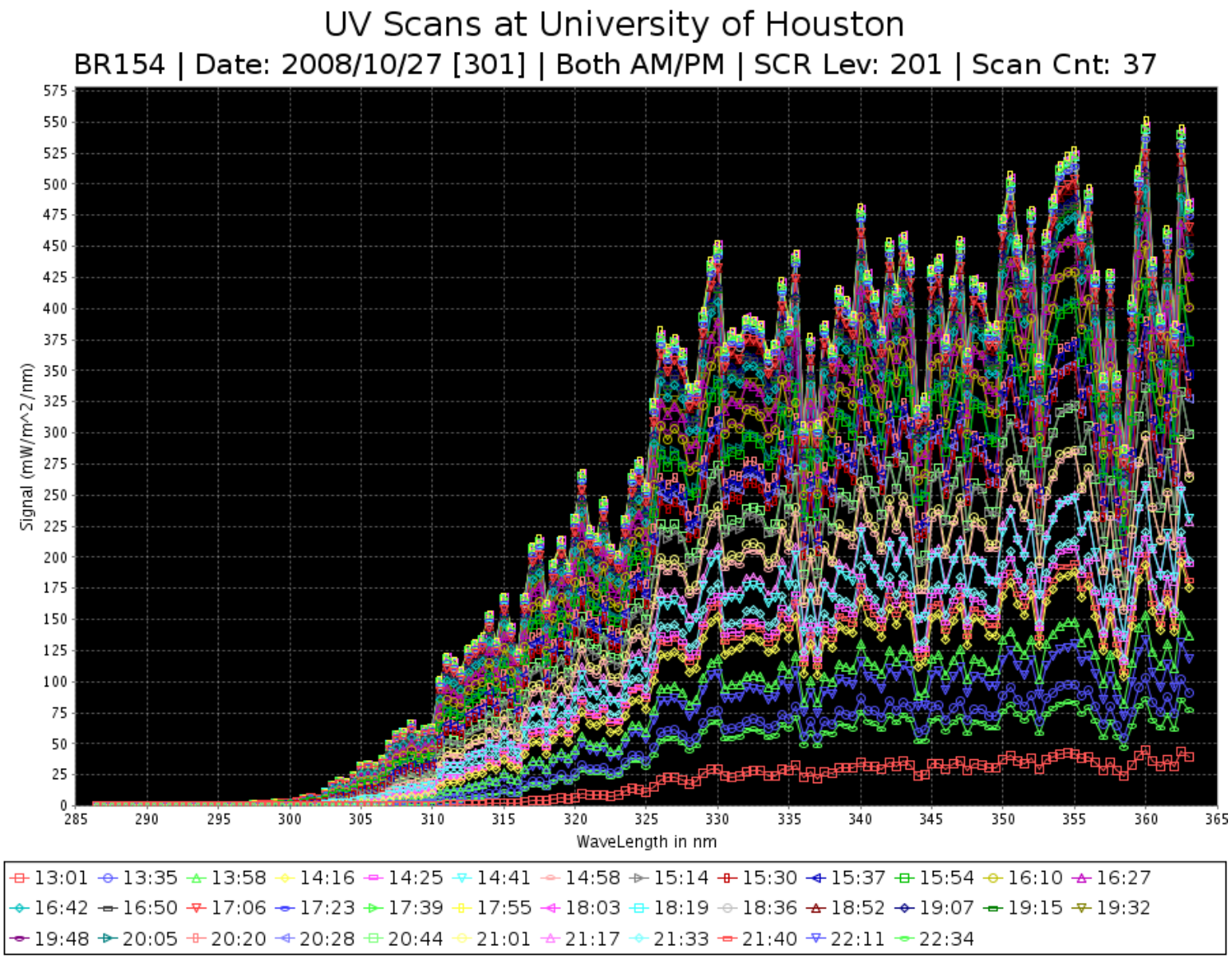

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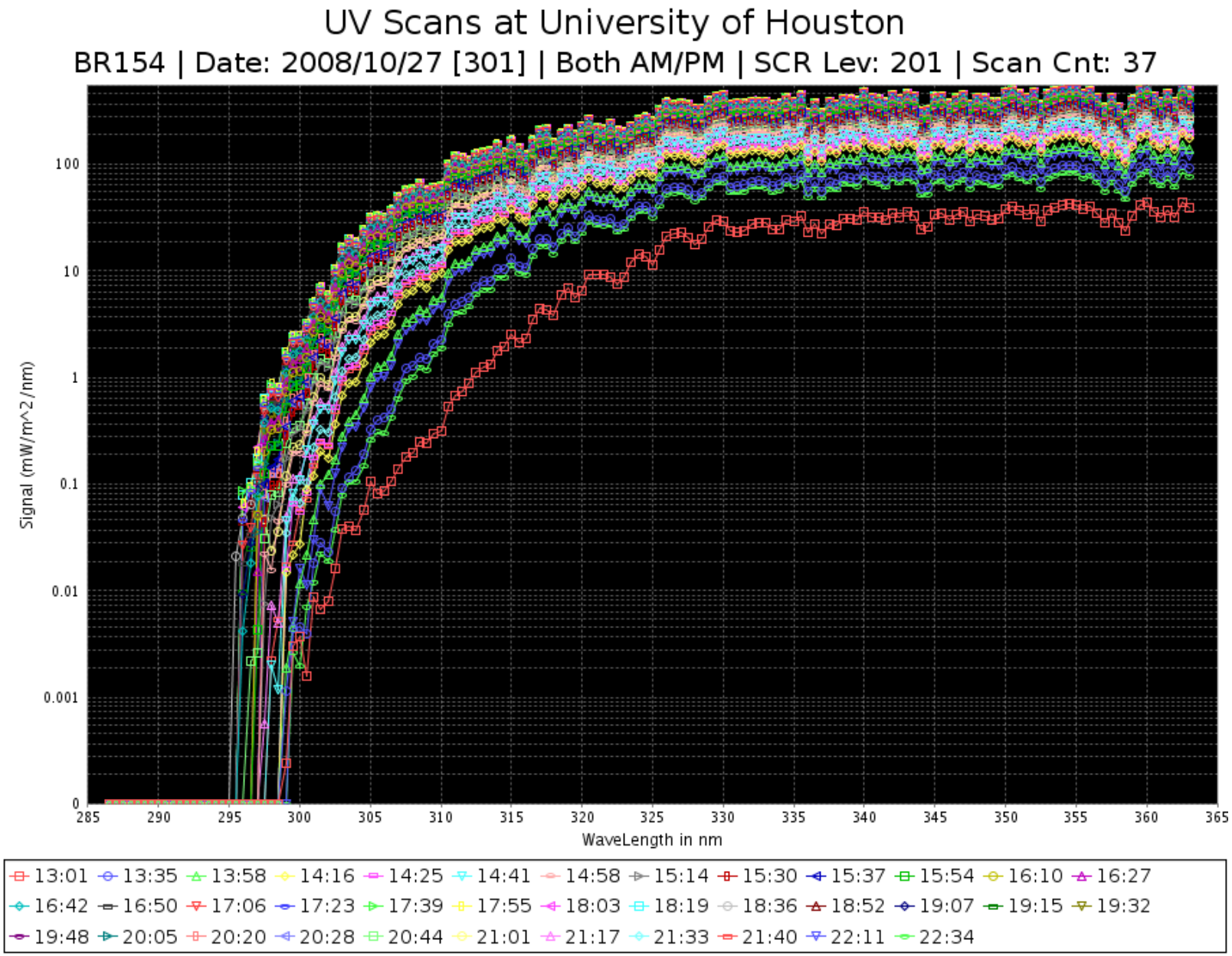

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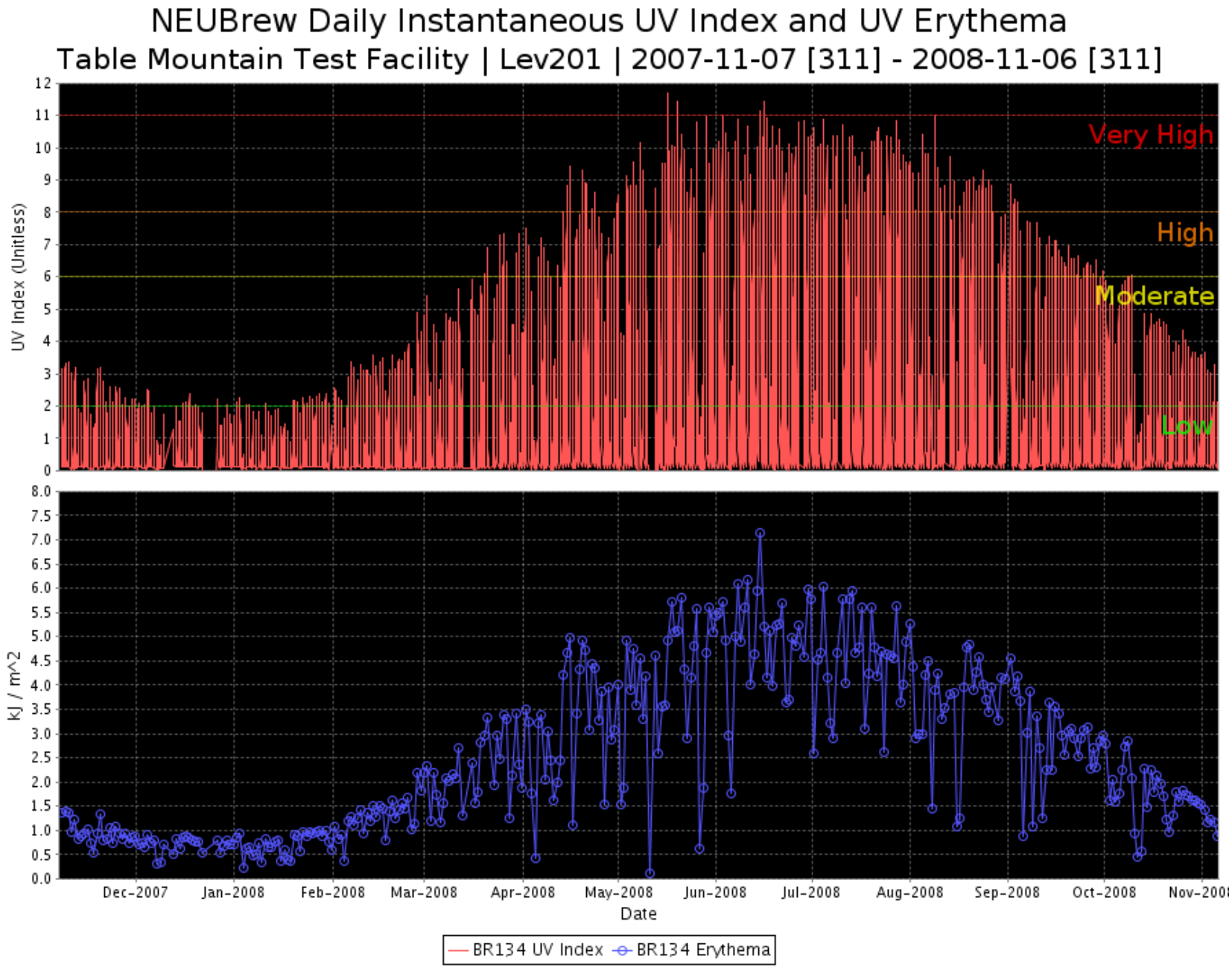
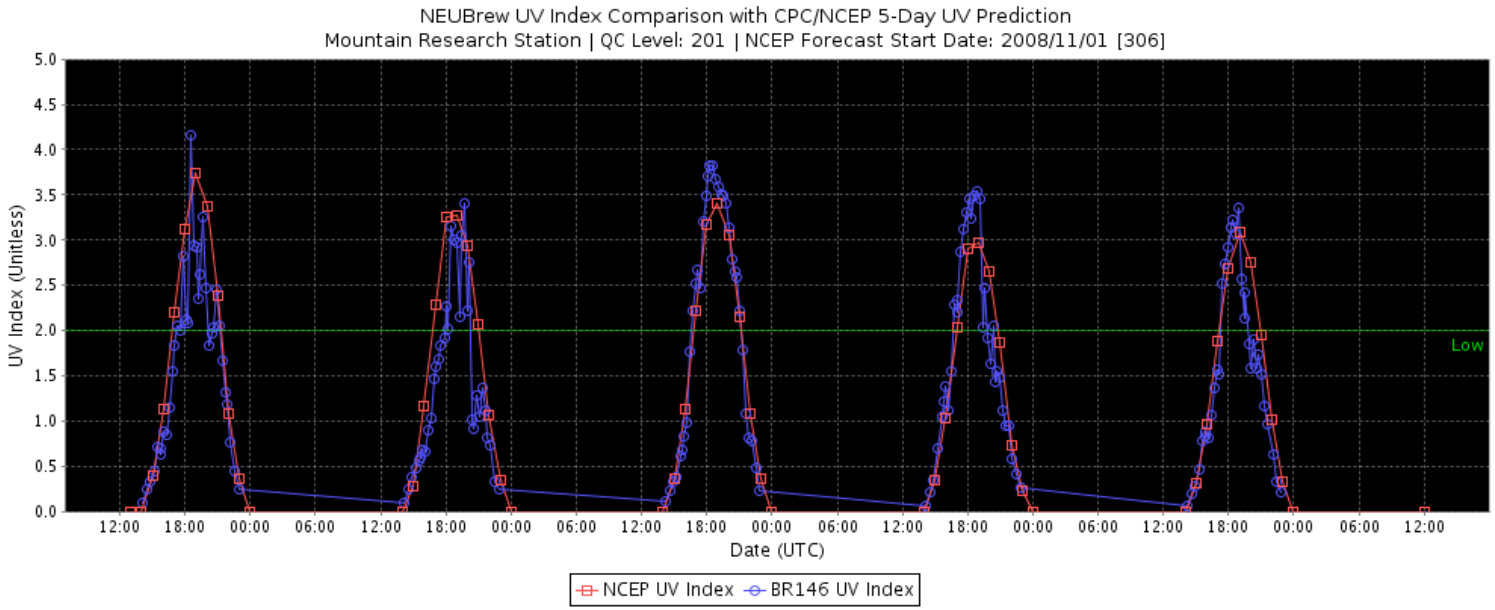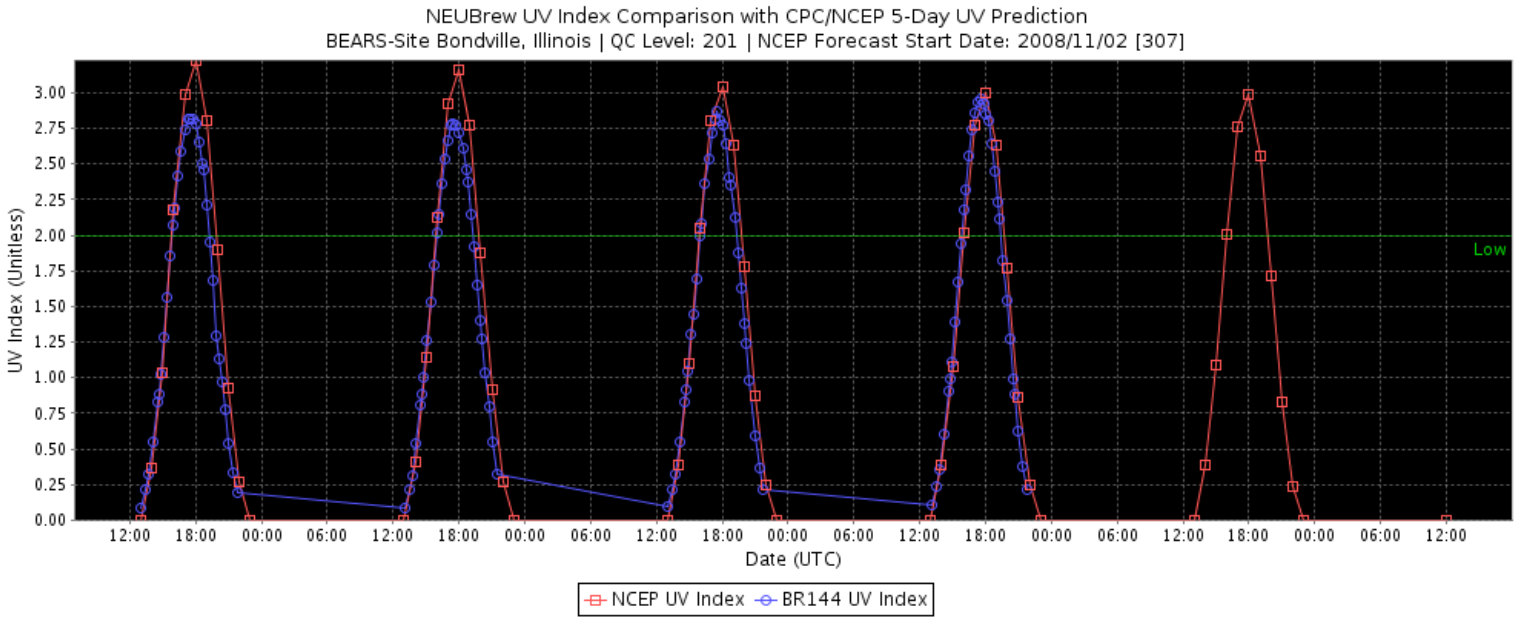
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