Message

From: Tonnesen, Gail [Tonnesen.Gail@epa.gov]
Sent: 4/18/2017 3:21:33 PM
To: Payton, Richard [Payton.Richard@epa.gov]; Dolwick, Pat [Dolwick.Pat@epa.gov]; Kotchenruther, Robert [Kotchenruther.Robert@epa.gov]; Evangelista, Mark [Evangelista.Mark@epa.gov]; Bridgers, George [Bridgers.George@epa.gov]; Bohnenkamp, Carol [Bohnenkamp.Carol@epa.gov]; Bohning, Scott [Bohning.Scott@epa.gov]; Kay, Rynda [Kay.Rynda@epa.gov]; james.j.szykman@nasa.gov; Scheffe, Rich [Scheffe.Rich@epa.gov]; Keating, Terry [Keating.Terry@epa.gov]; Possiel, Norm [Possiel.Norm@epa.gov]; Sather, Mark [sather.mark@epa.gov]; Snyder, Erik [snyder.erik@epa.gov]; Matichuk, Rebecca [Matichuk.Rebecca@epa.gov]; Jackson, Scott [Jackson.Scott@epa.gov]; Beaver, Melinda [Beaver.Melinda@epa.gov]; Henderson, Barron [henderson.barron@epa.gov]; Chu, Shao-Hang [Chu.Shao-Hang@epa.gov]; blebaron@utah.gov; bocall@utah.gov; kkreykes@utah.gov; rick.hardy@deq.idaho.gov; Sara.Strachan@deq.idaho.gov; Rong.Li@deq.idaho.gov; rmccammon@blm.gov; cara.keslar@wyo.gov; clint@ecy.wa.gov; rdha461@ecy.wa.gov; ALLEN.Philip@deq.state.or.us; LAZAREV.Svetlana@deq.state.or.us; Keith.McFall@doh.hawaii.gov; huys@clarkcountynv.gov; Paul.Fransioli@ClarkCountyNV.gov [Paul.Fransioli@clarkcountynv.gov]; jkarmazyn@utah.gov; bright.dornblaser@tceq.texas.gov; zli@co.clark.nv.us; chyatt@nd.gov; mark.jones@state.nm.us; Tekniepe@ClarkCountyNV.gov [Tekniepe@clarkcountynv.gov]; Sharac, Timothy [Sharac.Timothy@epa.gov]; Lear, Gary [Lear.Gary@epa.gov]; Shobha.Kondragunta@noaa.gov; david.nunes@valleyair.org; Templeton.Ryan@azdeq.gov; scott.landes@state.co.us; dan.welsh@state.co.us; amber.ortega@state.co.us; andrew.o.langford@noaa.gov; Mike.Hardesty@noaa.gov; David.D.Parrish@noaa.gov; Owen.R.Cooper@noaa.gov; pfister@ucar.edu; Tom Moore [tmoore@westar.org]; lawrence.e.flynn@noaa.gov; akaduwel@arb.ca.gov; fforsgre@ndep.nv.gov; sfontaine@ndep.nv.gov; baanderson02@fs.fed.us; emmons@ucar.edu; audra.mcclure@noaa.gov; Robert.B.Chatfield@nasa.gov; rwhite@nd.gov; David.Lighthall@valleyair.org; irina.petro@noaa.gov; Bryan.Johnson@noaa.gov; lesley.e.ott@nasa.gov; bryan.n.duncan@nasa.gov; katherine.e.knowland@nasa.gov; barkley_sive@nps.gov; Palma, Elizabeth [Palma.Elizabeth@epa.gov]; Fox, Tyler [Fox.Tyler@epa.gov]; Terry, Sara [Terry.Sara@epa.gov]; Naess, Liz [Naess.Liz@epa.gov]; Brad Pierce - NOAA Federal [brad.pierce@noaa.gov]
Subject: RE: Stratospheric Intrusion Workgroup call Tuesday April 18th
Attachments: plots for April SI call.pptx

All,

For the call today, I attached a PPT that includes plots for NM and CO for April 9, 2017. For the New Hampshire March 18th event, please download Brad's PPT from:
ftp://ftp.ssec.wisc.edu/pub/raqms/SI_workgroup/SI_WG_March_18_2017_Mt_Washington_RAQMS.pptx

Agenda:
April 18: 9 am PDT, 10 am MDT, noon EST
Call In Number: **Conference Line/Code / Ex. 6**

1. April 9, 2017 in NM and CO.

2. New Hampshire March 17-18, 2017

Thanks,
Gail

From: Brad Pierce - NOAA Federal [mailto:brad.pierce@noaa.gov]
Sent: Monday, April 17, 2017 11:34 AM
To: Tonnesen, Gail <Tonnesen.Gail@epa.gov>
Subject: Re: Stratospheric Intrusion Workgroup call Tuesday April 18th

Gail,

I've put together some slides for the Mt Washington case study to discuss at tomorrow's telecon. RAQMS doesn't show much evidence of a SI event, but there could have been some influence from agricultural fires in the Central and SE US.

Slides are at:

ftp://ftp.ssec.wisc.edu/pub/raqms/SI_workgroup/SI_WG_March_18_2017_Mt_Washington_RAQMS.pptx

Brad

On Wed, Apr 12, 2017 at 9:32 AM, Tonnesen, Gail <Tonnesen.Gail@epa.gov> wrote:

All,

We have an SI Workgroup call scheduled for Tuesday April 18th, 9 am PT, 10 am MT, noon ET. There are two possible SI events that we can discuss on the call. I'm forwarding an email below from Richard with data for March 18, 2017 at Mt. Washington, NH. Our group has been mostly focused on western states so let's discuss on the call how much we want to focus on the eastern U.S., or should there be a separate workgroup for eastern states? I will also forward a second email from Richard with data for a possible SI event in Colorado on Sunday, April 9.

Call In Number: Conference Line/Code / Ex. 6

Code: Conference Line/Code / Ex. 6

Thanks,

Gail

303-312-6113

From: Payton, Richard
Sent: Monday, April 03, 2017 10:00 AM
To: Tonnesen, Gail <Tonnesen.Gail@epa.gov>
Subject: e-mail to Strat Intrusion Workgroup RE: March 18, 2017 Mt. Washington, NH data

Gail:

Draft e-mail for SI Workgroup; feel free to forward if you want.

Richard

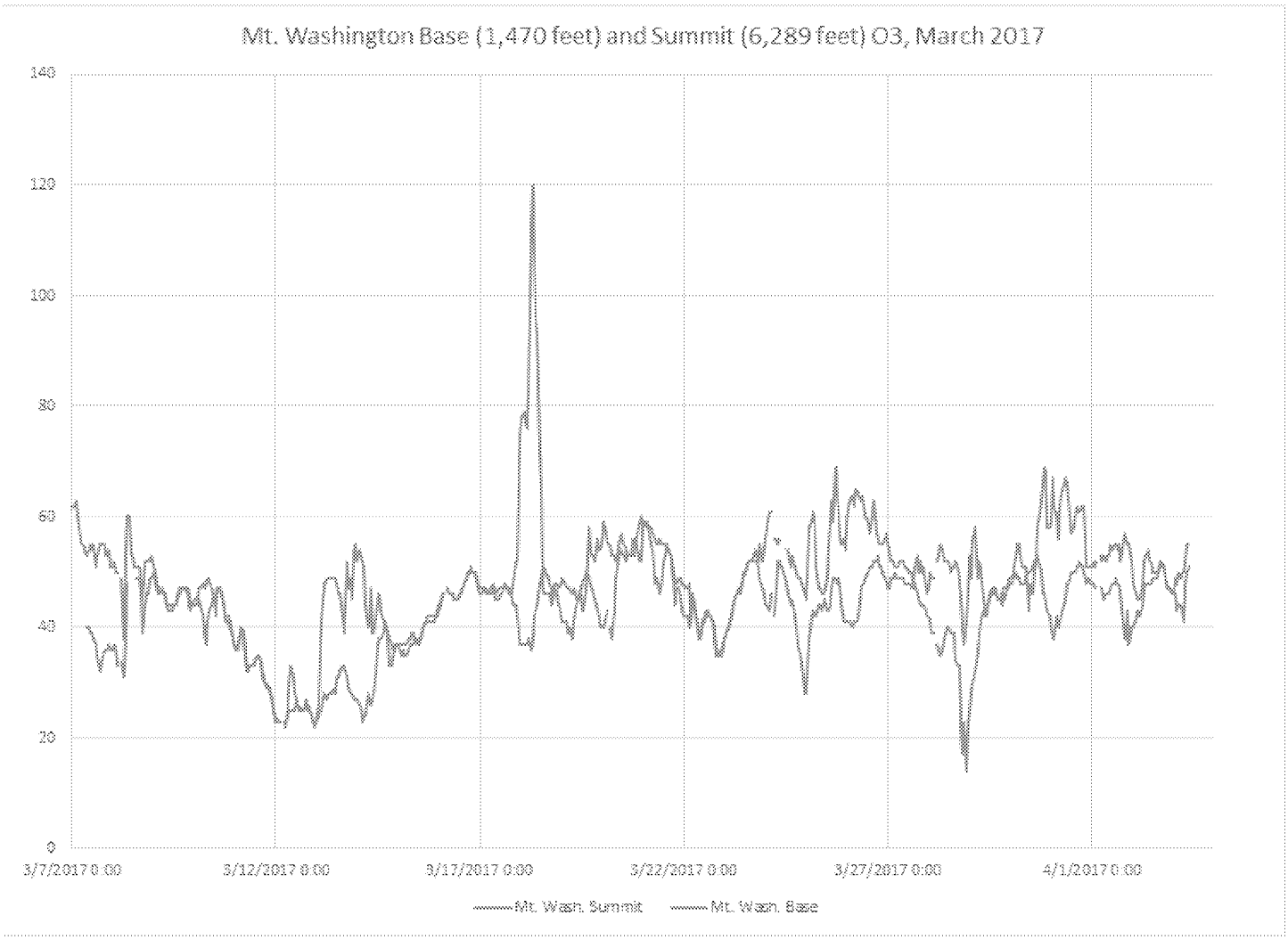
Stratospheric Intrusion Workgroup:

A possible topic for the April 18 call is some high ozone data recorded at Mt. Washington, NH (elevation 6,289 feet, 1,917 m; 44.270167, -71.303750) overnight March 17 to 18, 2017. Peak hour was 7:00 am at 120 ppb, with an 8-hour average of 95.9 ppb from 3:00 am to 10:00 am. A quick look at available data is fairly ambiguous as to whether this was a stratospheric intrusion, or due to some other cause. It would be useful if members of the workgroup could look into this data a little deeper.

Date/Time	1 hr (ppb)
3/17/2017 19:00	46
3/17/2017 20:00	48
3/17/2017 21:00	52
3/17/2017 22:00	52
3/17/2017 23:00	65
3/18/2017 0:00	75
3/18/2017 1:00	78
3/18/2017 2:00	79
3/18/2017 3:00	77
3/18/2017 4:00	76
3/18/2017 5:00	83
3/18/2017 6:00	113
3/18/2017 7:00	120
3/18/2017 8:00	109
3/18/2017 9:00	96
3/18/2017 10:00	93
3/18/2017 11:00	72
3/18/2017 12:00	66
3/18/2017 13:00	48
3/18/2017 14:00	46
3/18/2017 15:00	46

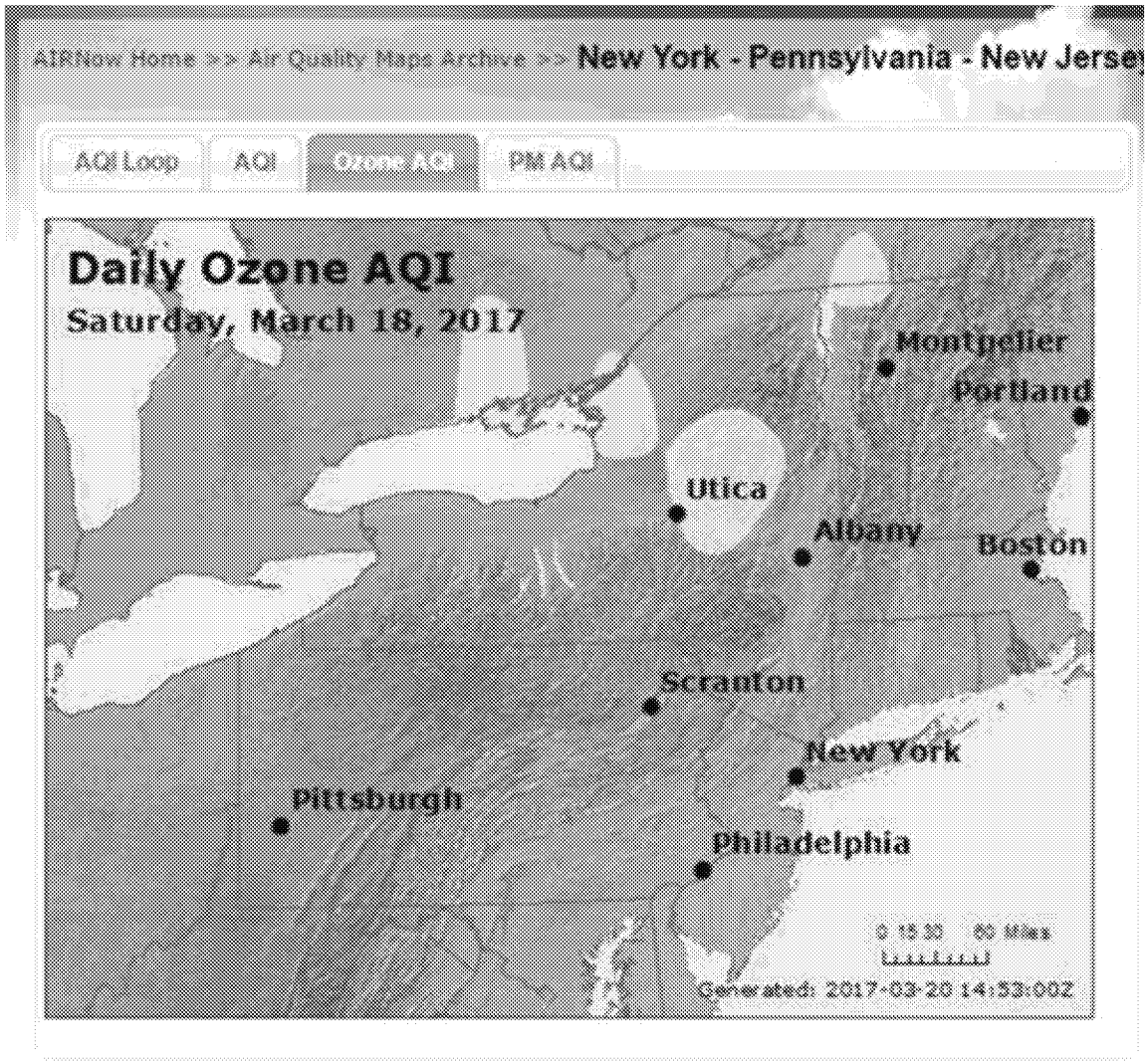
3/18/2017 16:00	46
3/18/2017 17:00	46
3/18/2017 18:00	44
3/18/2017 19:00	44
3/18/2017 20:00	48
3/18/2017 21:00	48
3/18/2017 22:00	47
3/18/2017 23:00	47

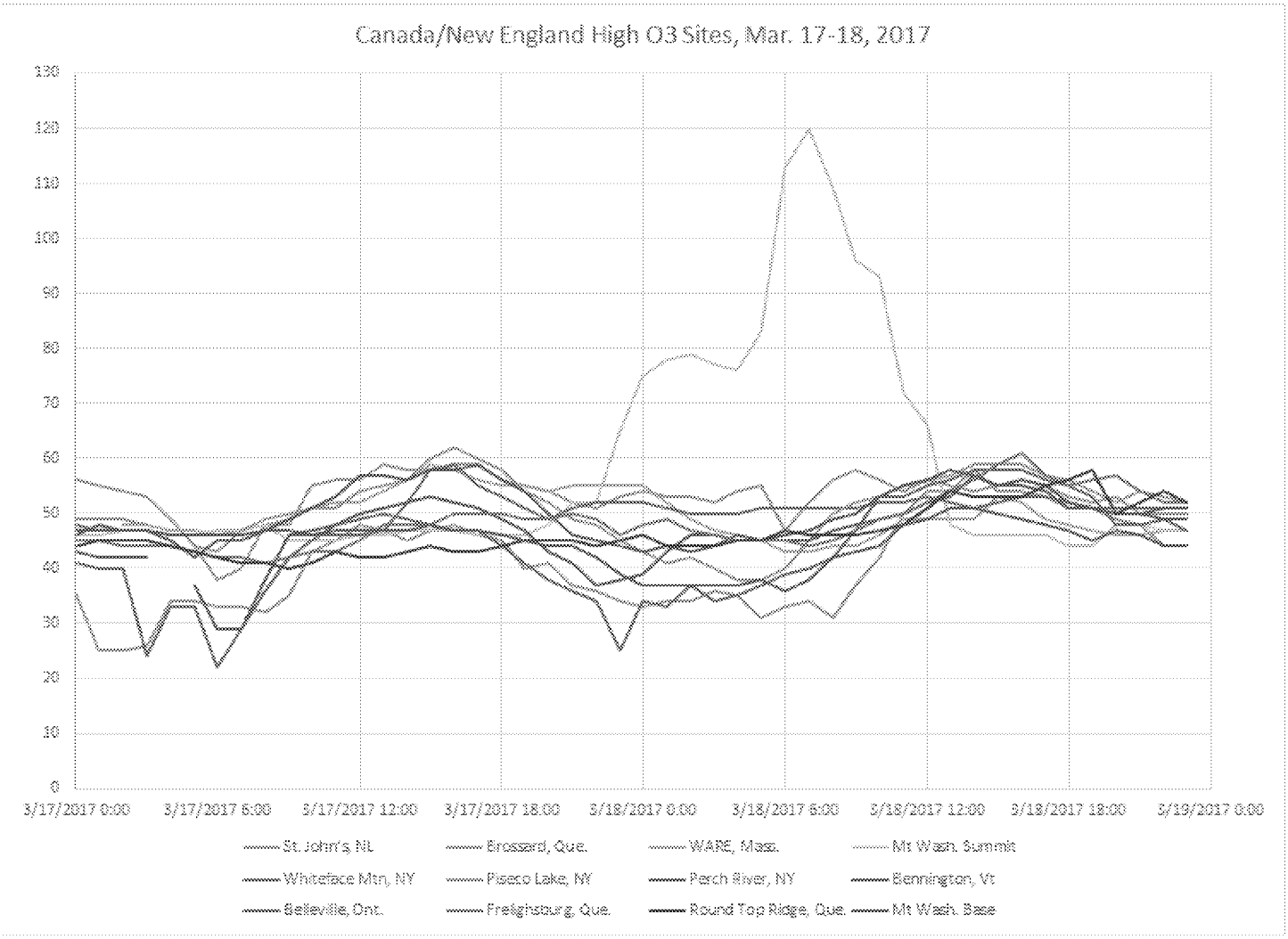
Monitors operate at the summit of Mt. Washington, and 5 miles north at an elevation of 1,470 feet (451 m). The two monitors were tracking each other on March 15-17, then diverged at 6:00 pm on the 17th.



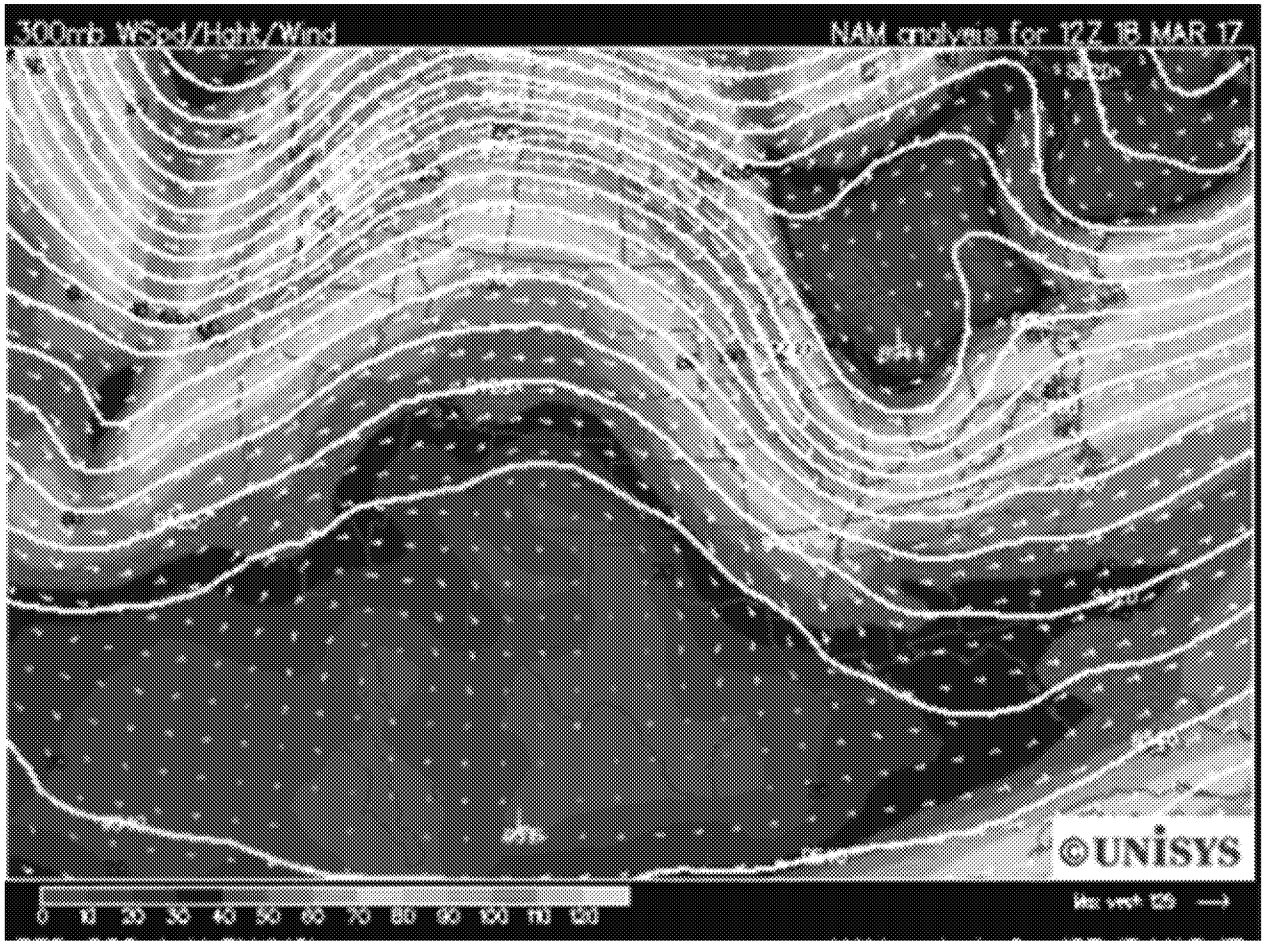
A few sites in Eastern Canada and New York got 8-hour average ozone between 55 and 60 ppb (shown in yellow below) on March 18. PM2.5 was also locally elevated in parts of the same region, showing some widespread moderate pollution through the area ahead of a low pressure system over Michigan. Piseco Lake in New York, at 1,700 feet, west of Saratoga Springs had hourly ozone of 62 ppb on March 17, and Frelighsburg, Quebec, 40 miles north of Burlington, VT at 640 feet hit 61 ppb at 4:00 pm on March 18. Mt Washington data

(approximately under the "p" of Montpelier in the map) is not mapped below, because the automated AirNow system placed a "suspect" QA flag on the high data. New Hampshire Department of Environmental Services has done a preliminary assessment of the data, and finds no indication of instrument malfunction.

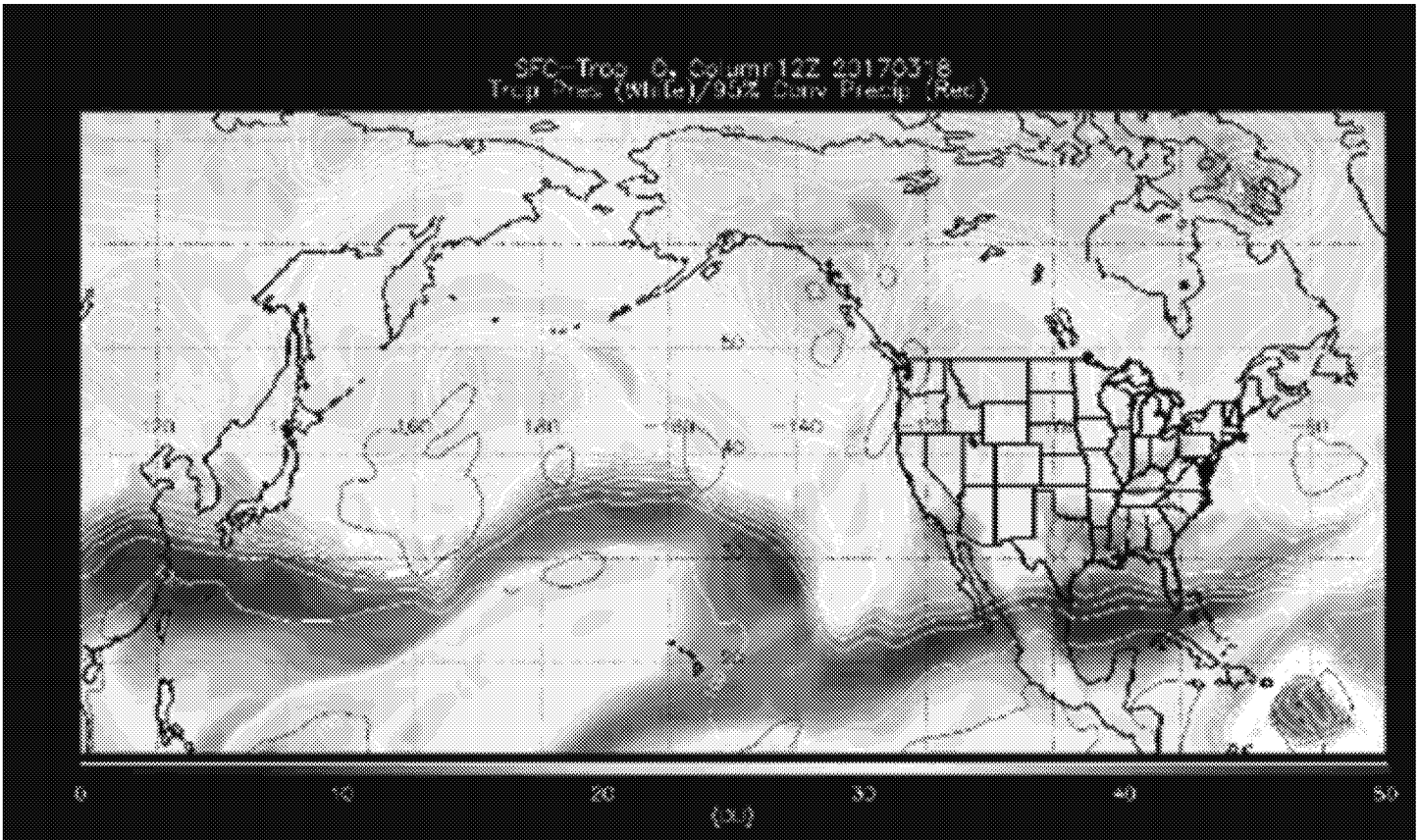


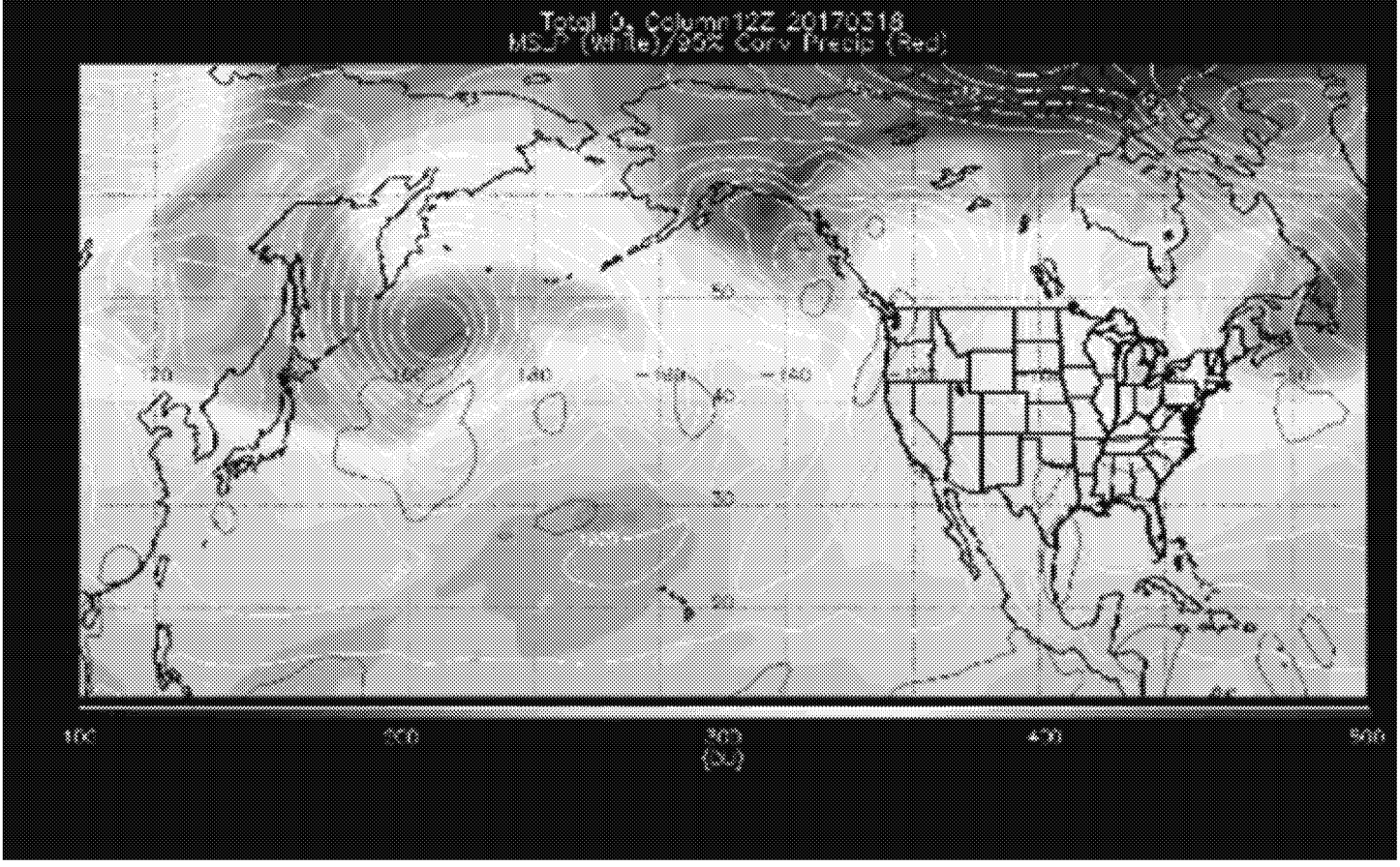


A trough was approaching from the west; an area of somewhat elevated jet stream winds from the north was above Mt Washington at 5:00 am on the 18th:

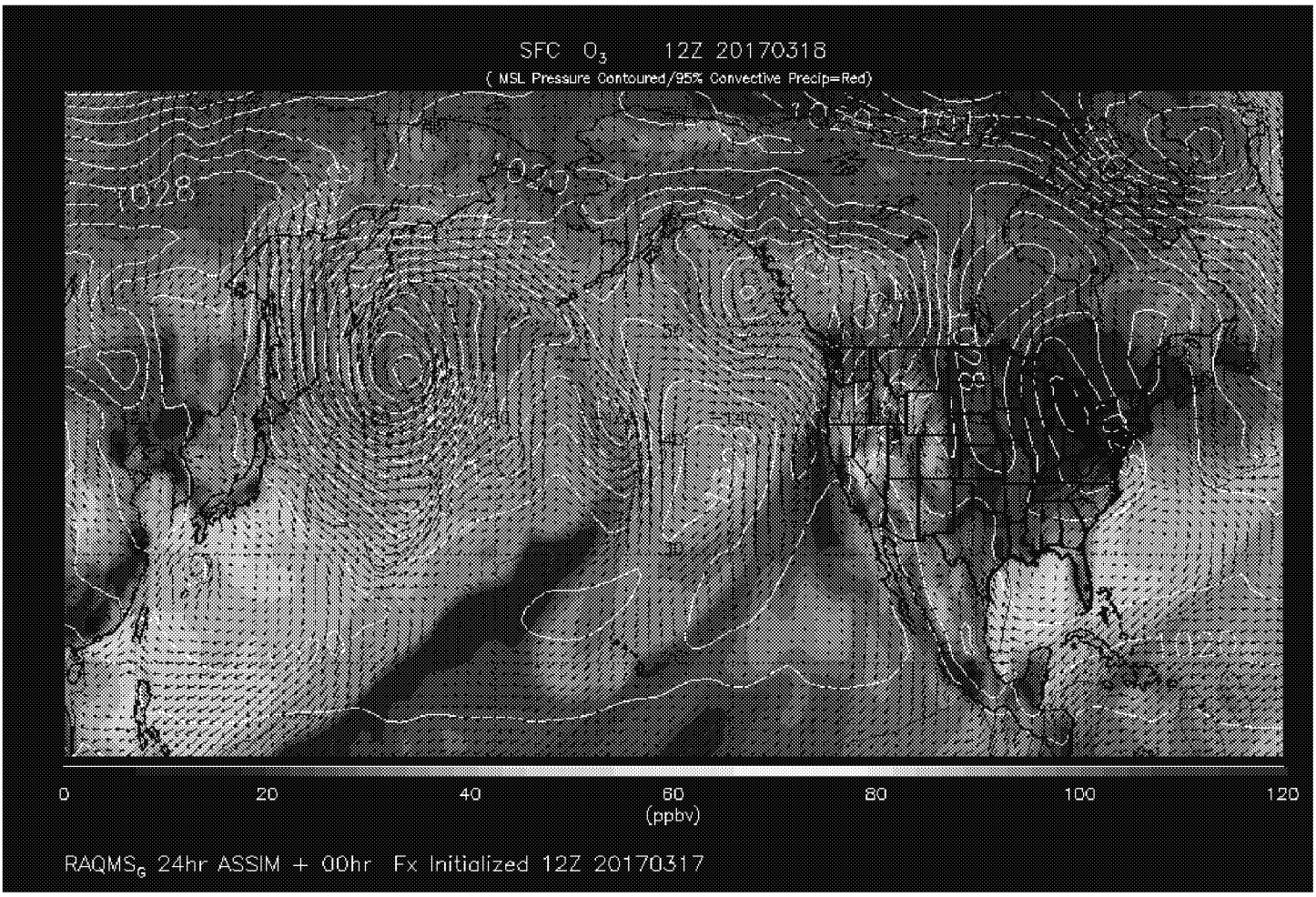

300mb WSpd/Hght/Wind
NAM analysis for 12Z 18 MAR 17
©UNISYS

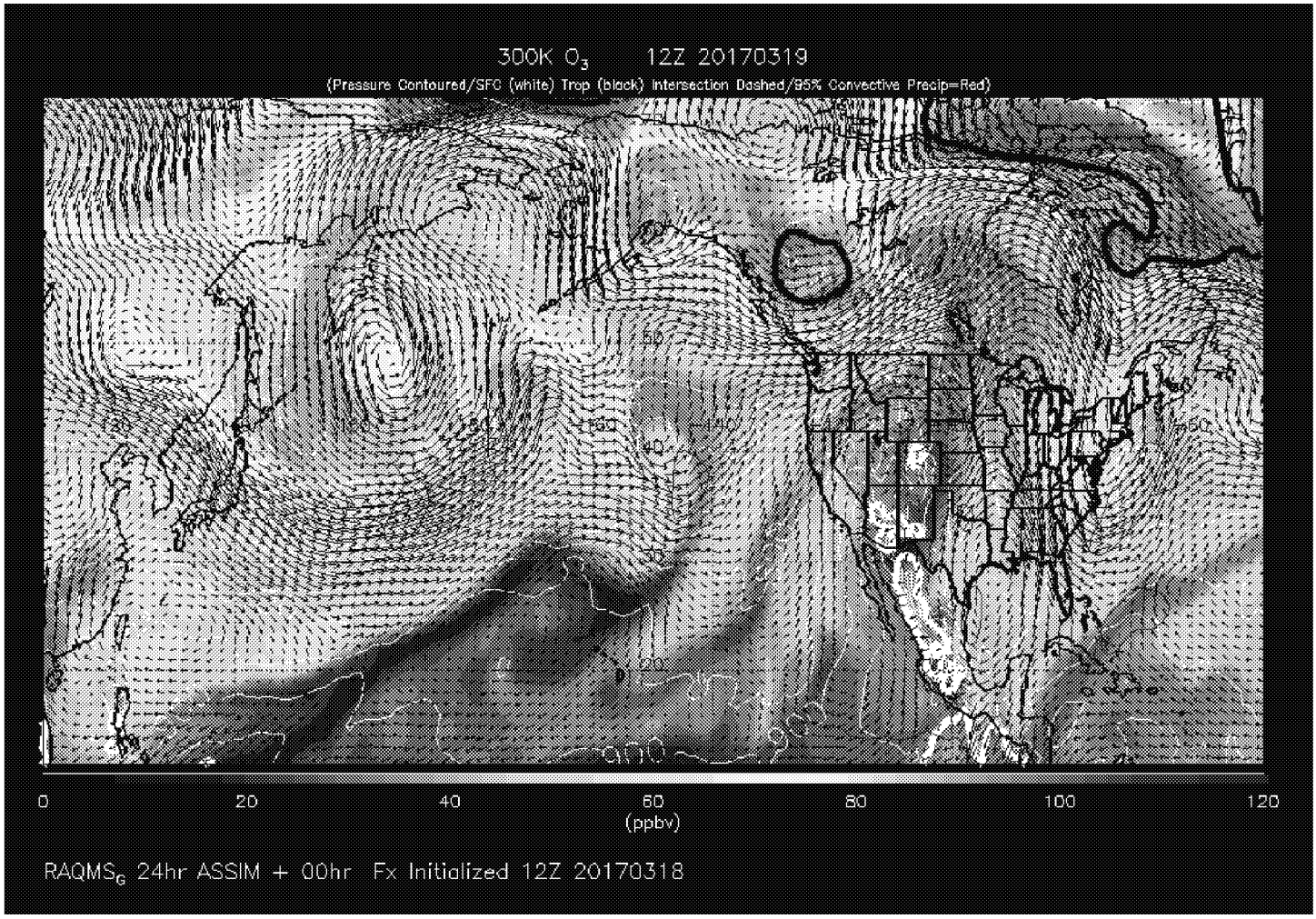
RAQMS shows some slight surface to Troposphere column enhancement over northern New England, and total column enhancement over the Maritime Provinces of Canada.


SFC-Trop O3 Column 12Z 20170318
Trop Pres (White)/002 Conv Precip (Red)
(DU)

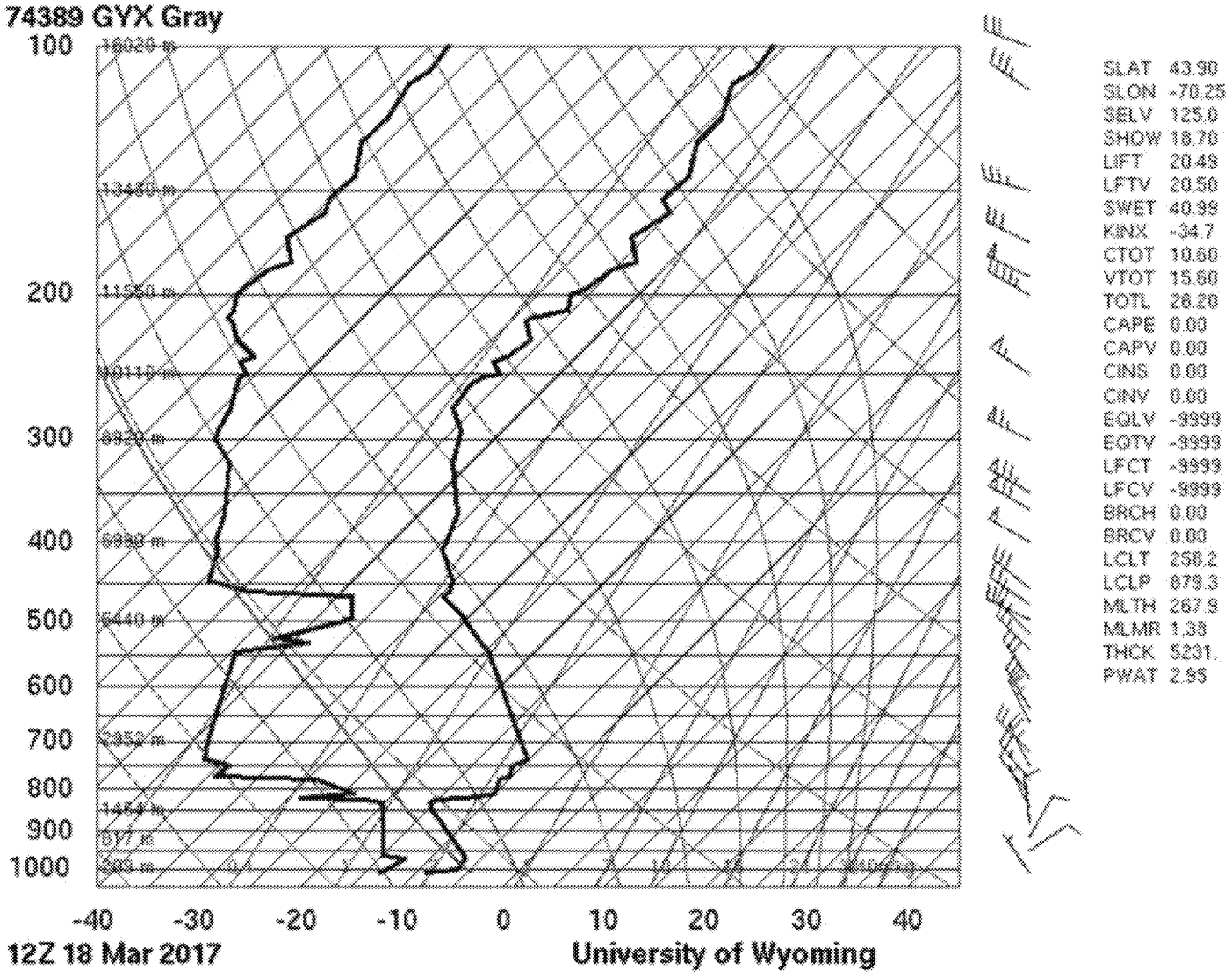

Total O3 Column 12Z 20170318
MSLP (White)/002 Conv Precip (Red)
(DU)

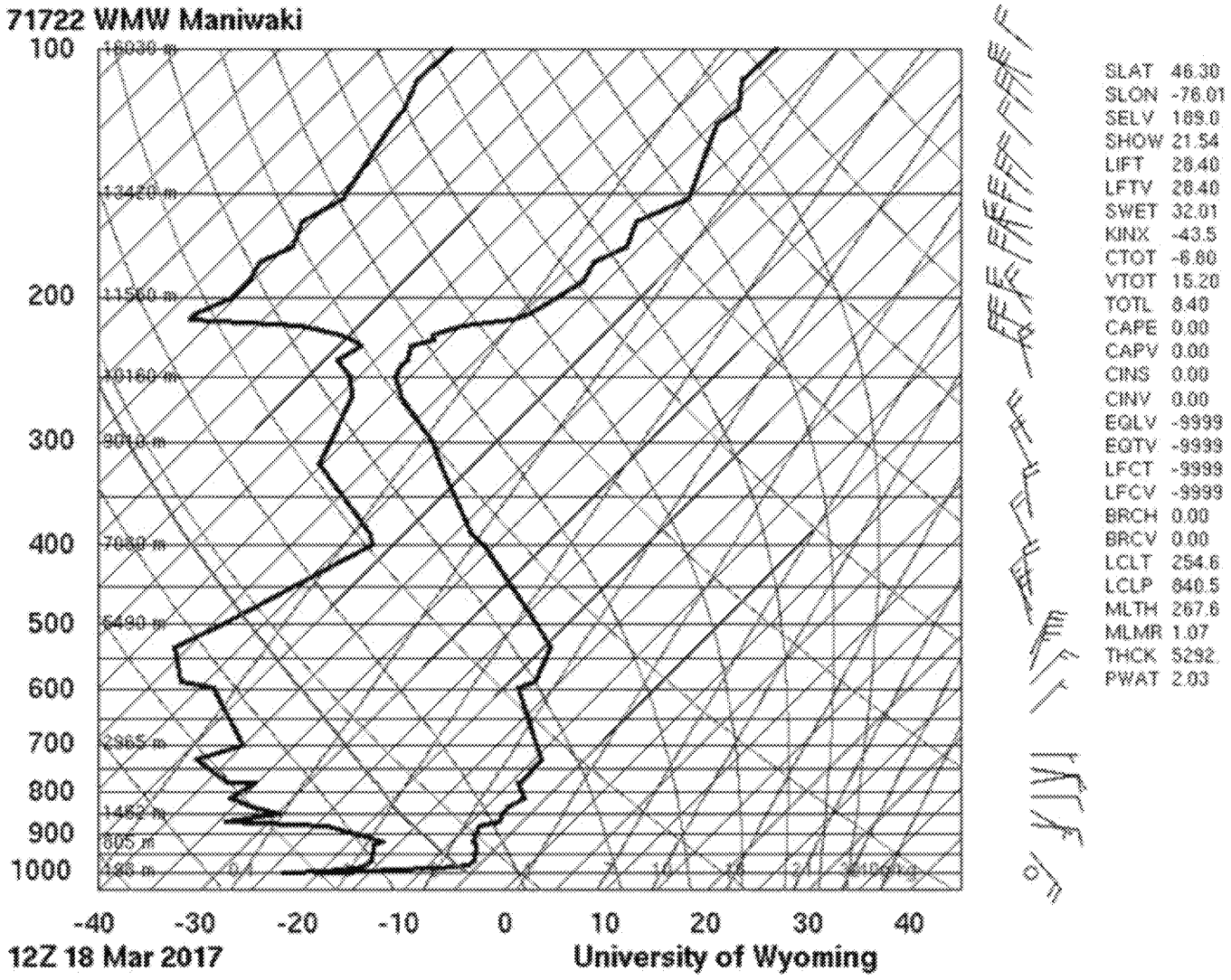
The RAQMS surface prediction for 7:00 am did not show enhanced ozone over New Hampshire, but, it is not clear that the RAQMS surface prediction can resolve a terrain feature like Mt. Washington (Brad?). The 300K surface shows a large area of enhance ozone east of Hudson Bay, with some enhancement extending south toward New England.





Nearby balloon soundings, from Gray, Maine and from Maniwaki, Quebec show some dry air as low as 1,000 to 2,000 meters.


74389 GYX Gray
100
200
300
400
500
600
700
800
900
1000
-40
-30
-20
-10
0
10
20
30
40
12Z 18 Mar 2017
University of Wyoming
SLAT 43.90
SLON -70.25
SELV 125.0
SHOW 18.70
LIFT 20.49
LFTV 20.50
SWET 40.99
KINX -34.7
CTOT 10.60
VTOT 15.60
TOTL 26.20
CAPE 0.00
CAPV 0.00
CINS 0.00
CINV 0.00
EQLV -9999
EQTV -9999
LFCT -9999
LFCV -9999
BRCH 0.00
BRCV 0.00
LCLT 258.2
LCLP 879.3
MLTH 267.9
MLMR 1.38
THCK 5231.
PWAT 2.95



Description of the sounding indices.

All in all, this seems an ambiguous case for an intrusion claim, but more data might help to clarify this.

Richard Payton

EPA Region 8 Air Quality Monitoring
(303) 312-6439

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R. Bradley Pierce

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