The version 2 Processing of Data from the OMPS Nadir Mapper and Profiler

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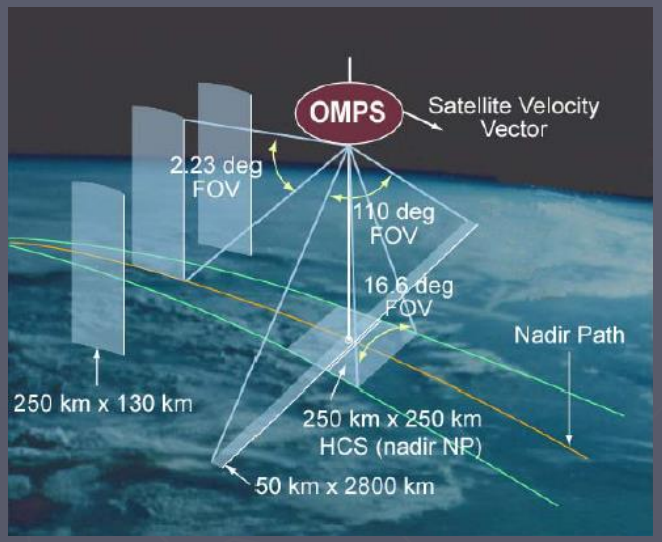
NPP meeting

December 3, 2014



OMPS Total Column Mapper

300 – 380 nm @ 1 nm
uses v8 retrieval algorithm with cloud height climatology from OMI
~1% degradation over 3 years

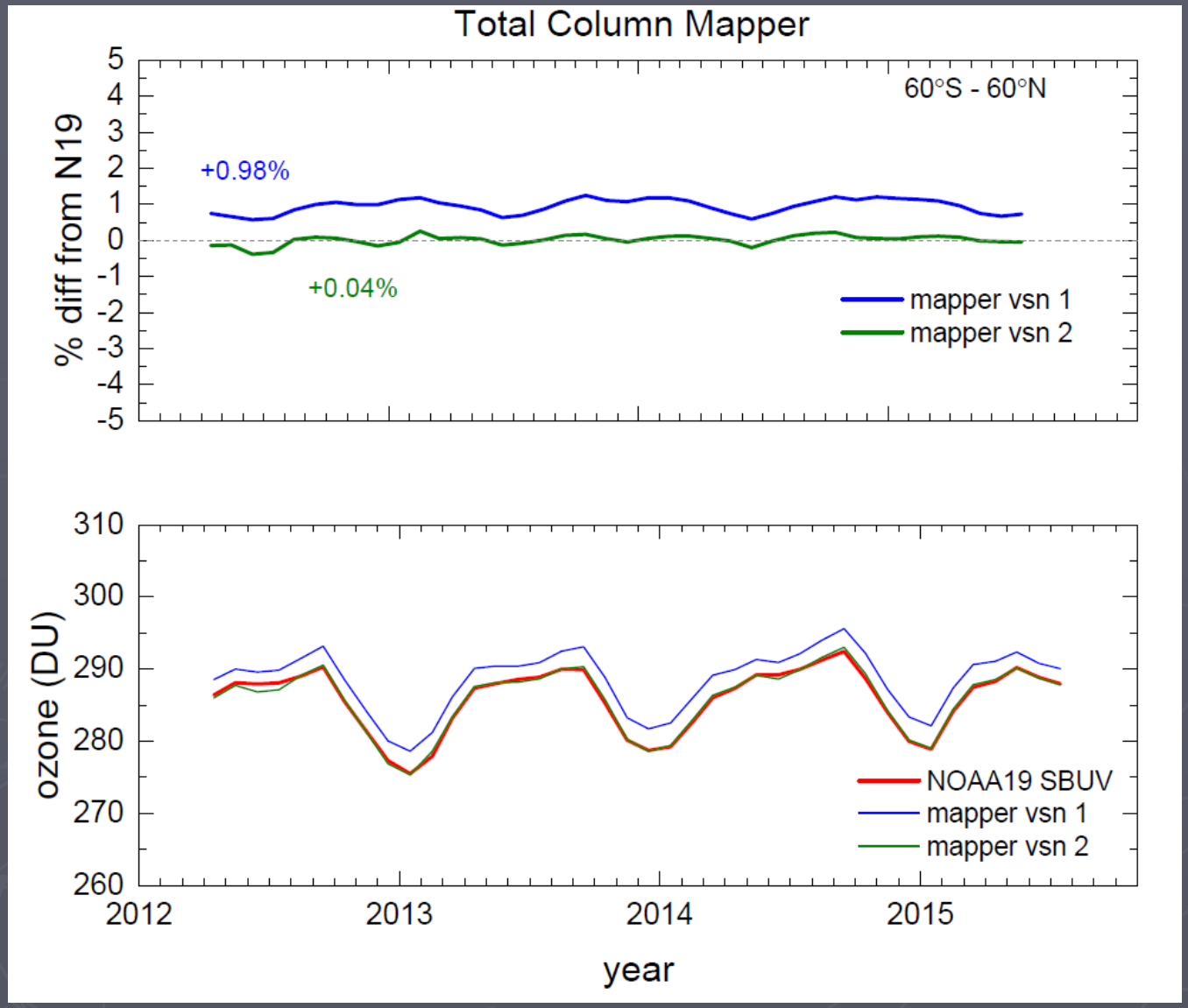
OMPS Nadir Profiler

250 – 310 nm @ 1 nm
uses v8.6 SBUV algorithm
adds info from Mapper for λ>300 nm

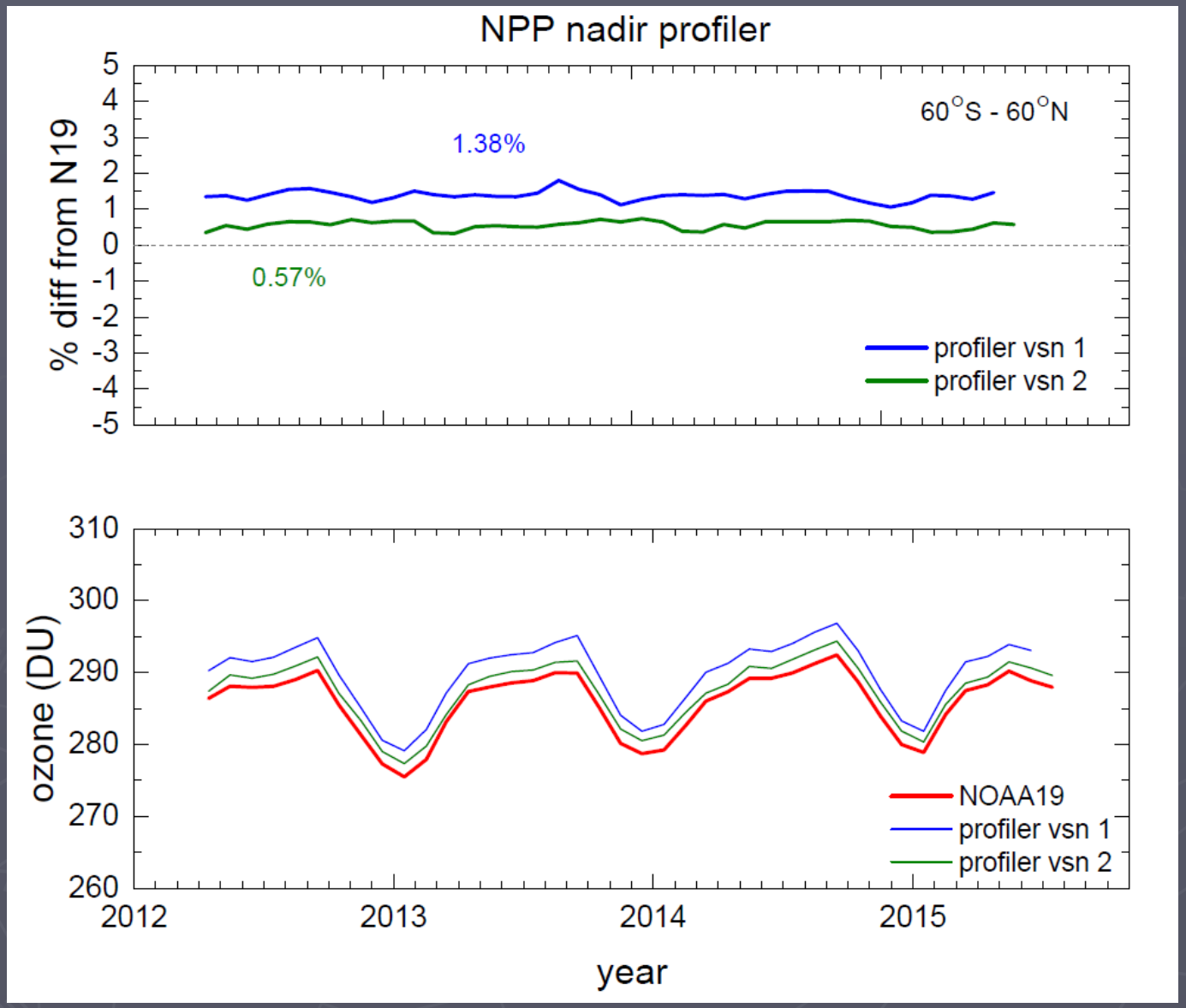
The Version 2 Processing

- refined "hard" calibration
  - *found error in pre-launch cal near 300 nm*
- Apply soft calibration (use ice reflectivity to set long wavelength calibration)
- Scattered light correction
- Produce revised L1b product
- Produce revised L2 product
  - Continue to use v8.0 / v8.6 algorithm

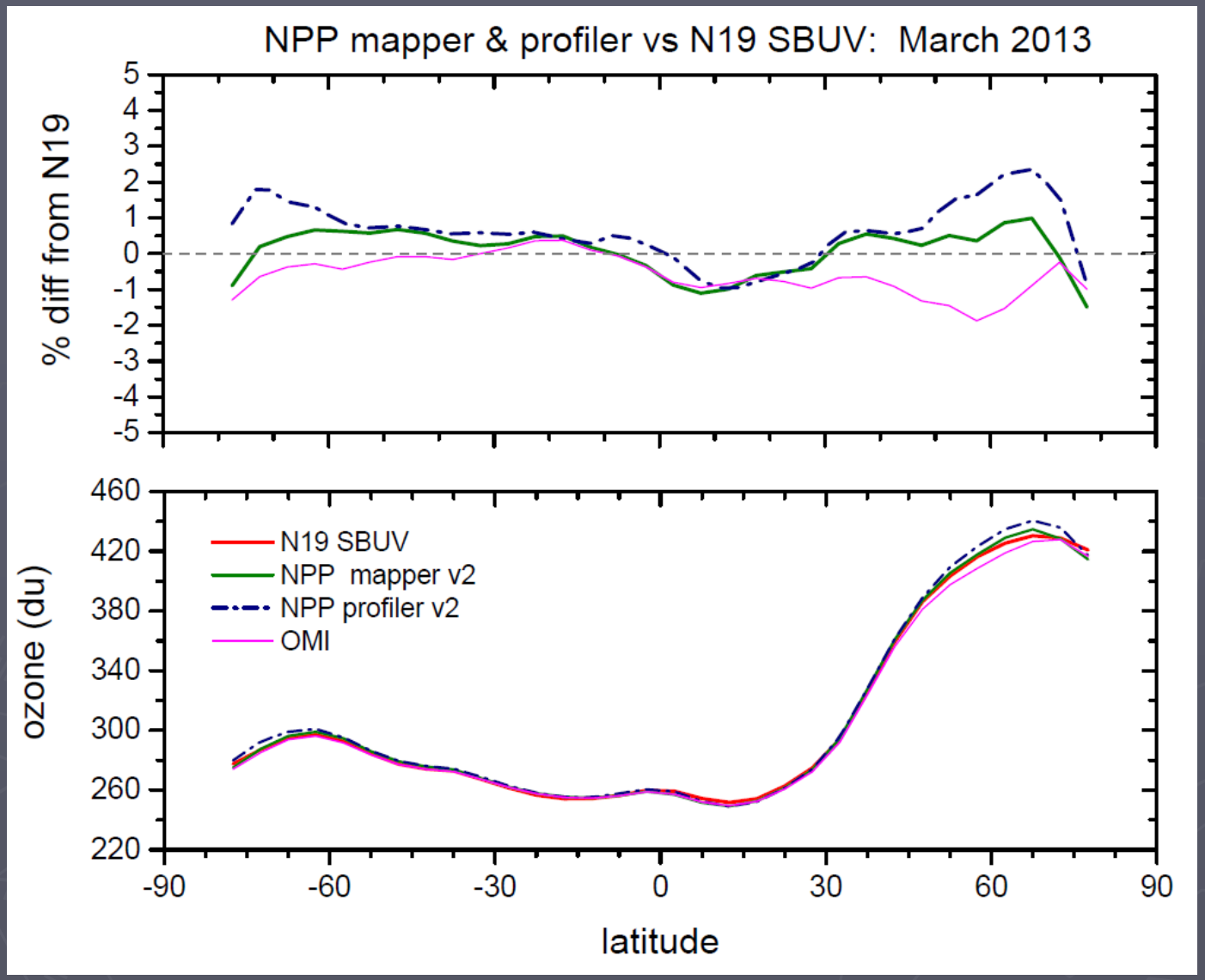
Evaluate by comparison with NOAA 19 SBUV/2 v8.6 data



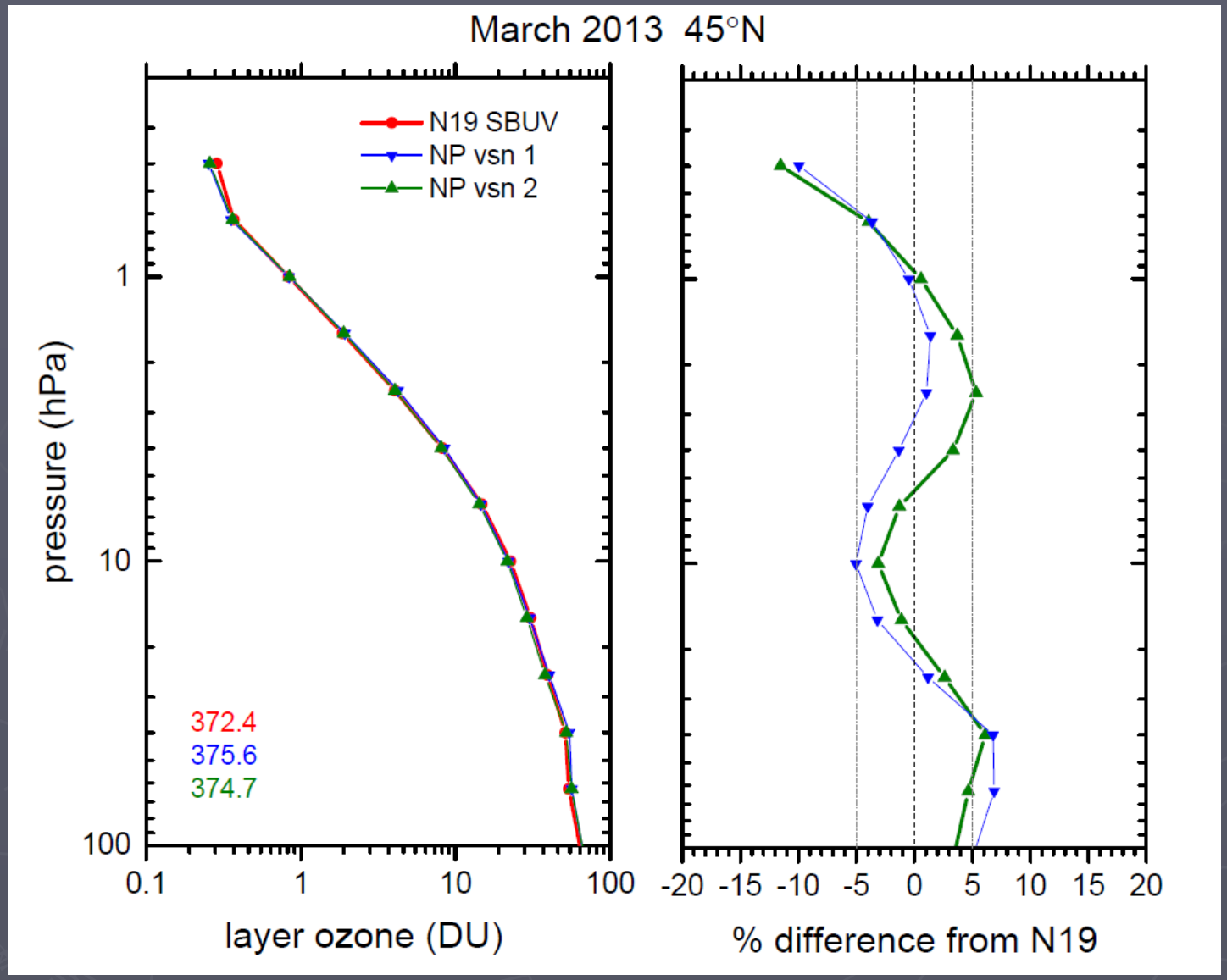
Near zero bias
No time dependence or seasonal error



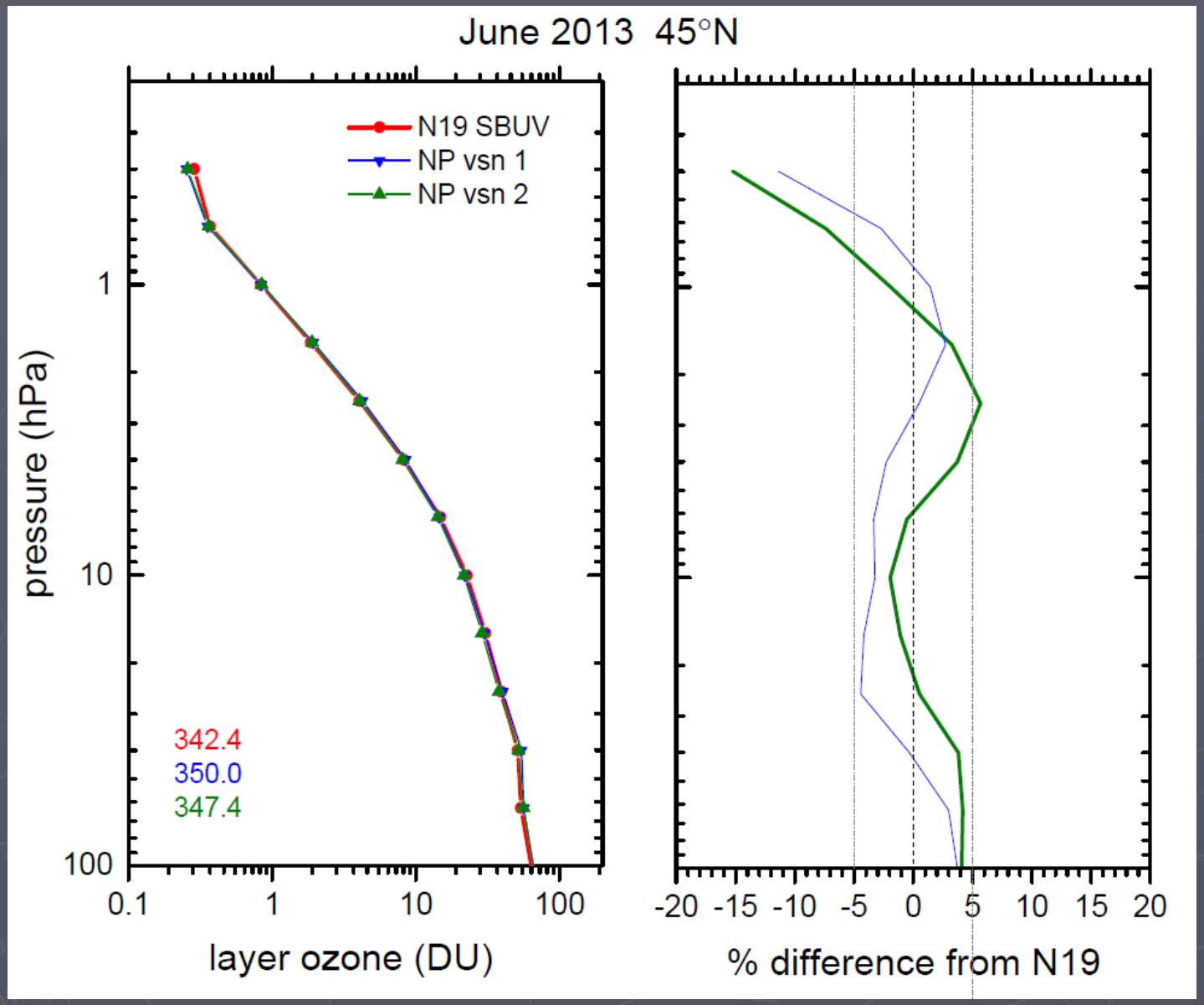
Reduced bias
No time dependence or seasonal error



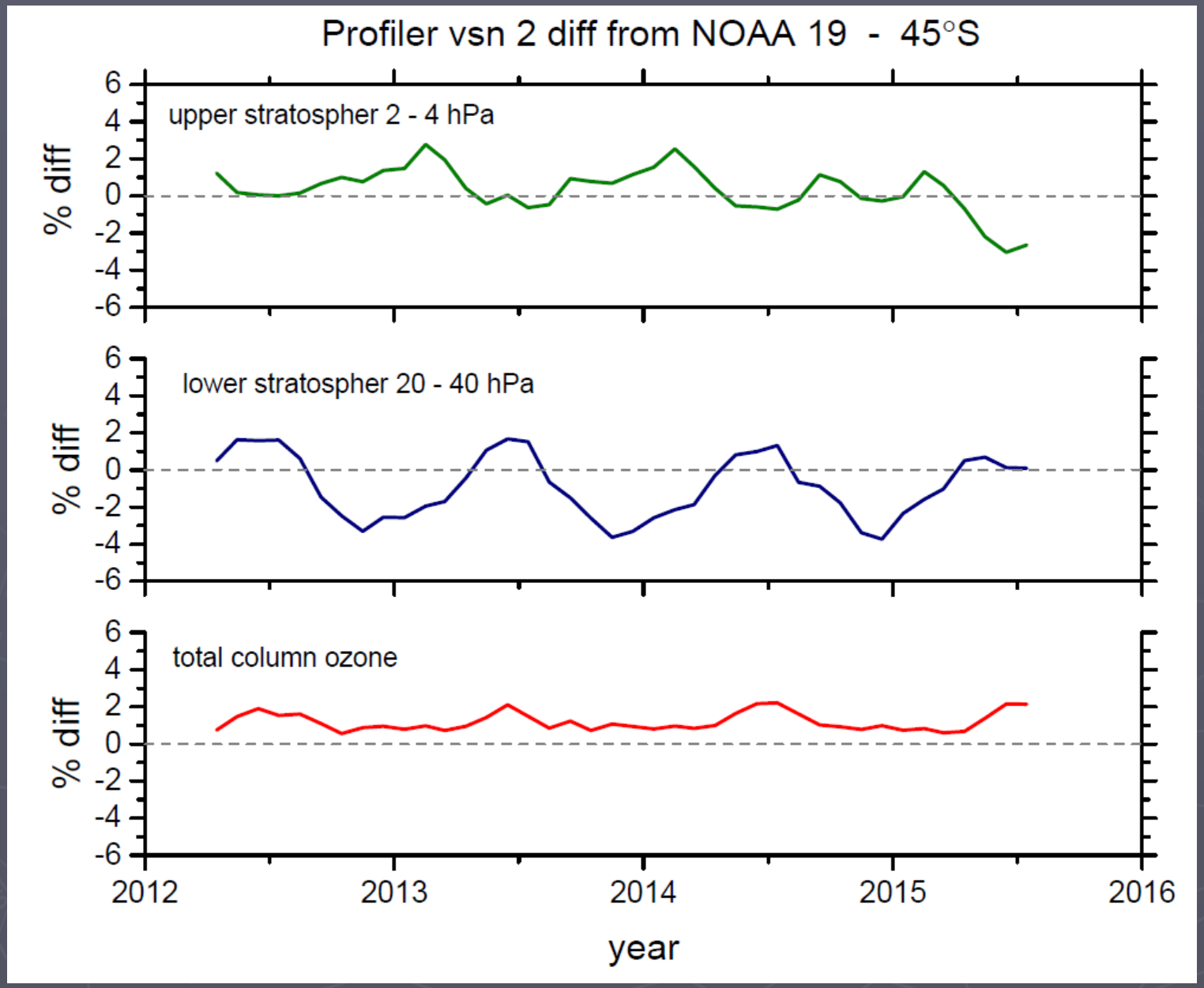
Small latitude dependence
Profiler total ozone difference at high latitude

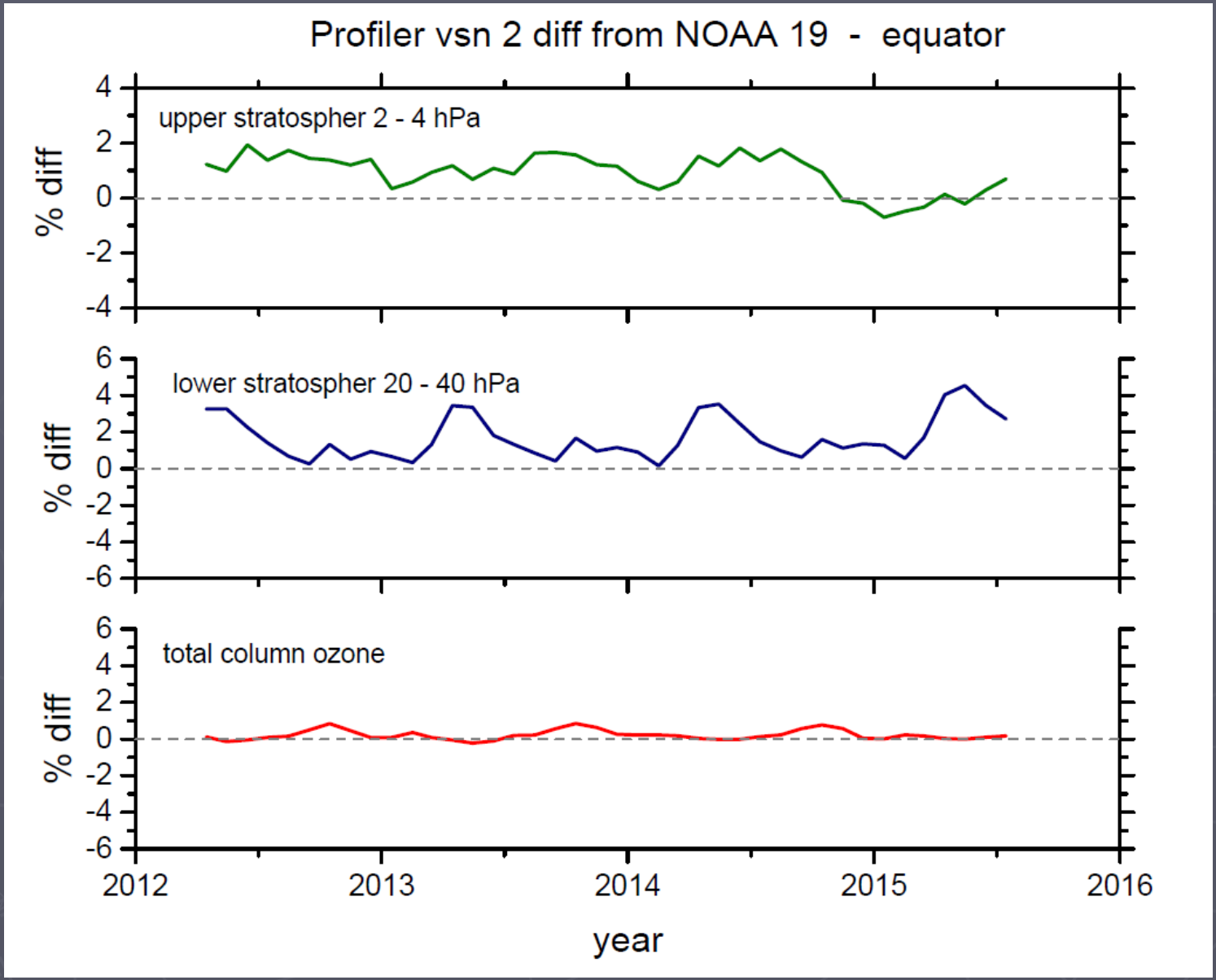


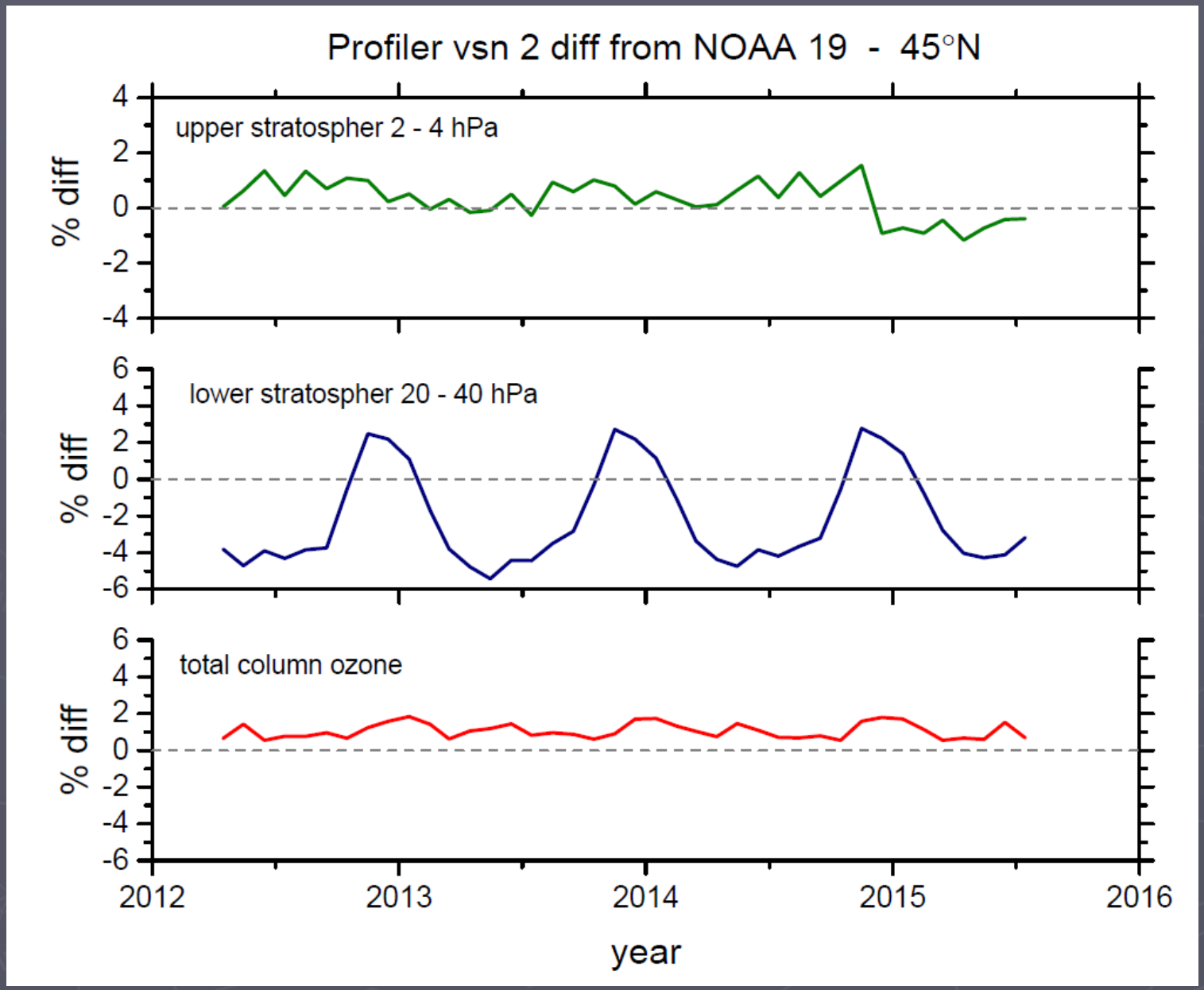
Altitude dependent ozone mostly agrees within ±5% of N19



Why is there a discrepancy above 1 hP level?


Profiler vsn 2 diff from NOAA 19 - 45°S
upper stratospher 2 - 4 hPa
lower stratospher 20 - 40 hPa
total column ozone
% diff
6
4
2
0
-2
-4
-6
2012
2013
2014
2015
2016
year


Profiler vsn 2 diff from NOAA 19 - equator
upper stratospher 2 - 4 hPa
lower stratospher 20 - 40 hPa
total column ozone
% diff
% diff
% diff
4
2
0
-2
-4
6
4
2
0
-2
-4
-6
6
4
2
0
-2
-4
-6
2012
2013
2014
2015
2016
year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4
2
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2012
2013
2014
2015
2016
year

Conclusions

- Version 2 processing possibly releasable?
  - Mapper bias near zero, profiler bias about half a percent
  - No long term time dependent change relative to NOAA 19
    - ±2% seasonal variation at mid-latitudes
  - Ozone profiles mostly within ±5% of NOAA 19 profiles
  - No significant latitude dependence
    - Profiler ozone difference larger at high latitudes