

The chemical transport model Oslo CTM3

Supplementary material

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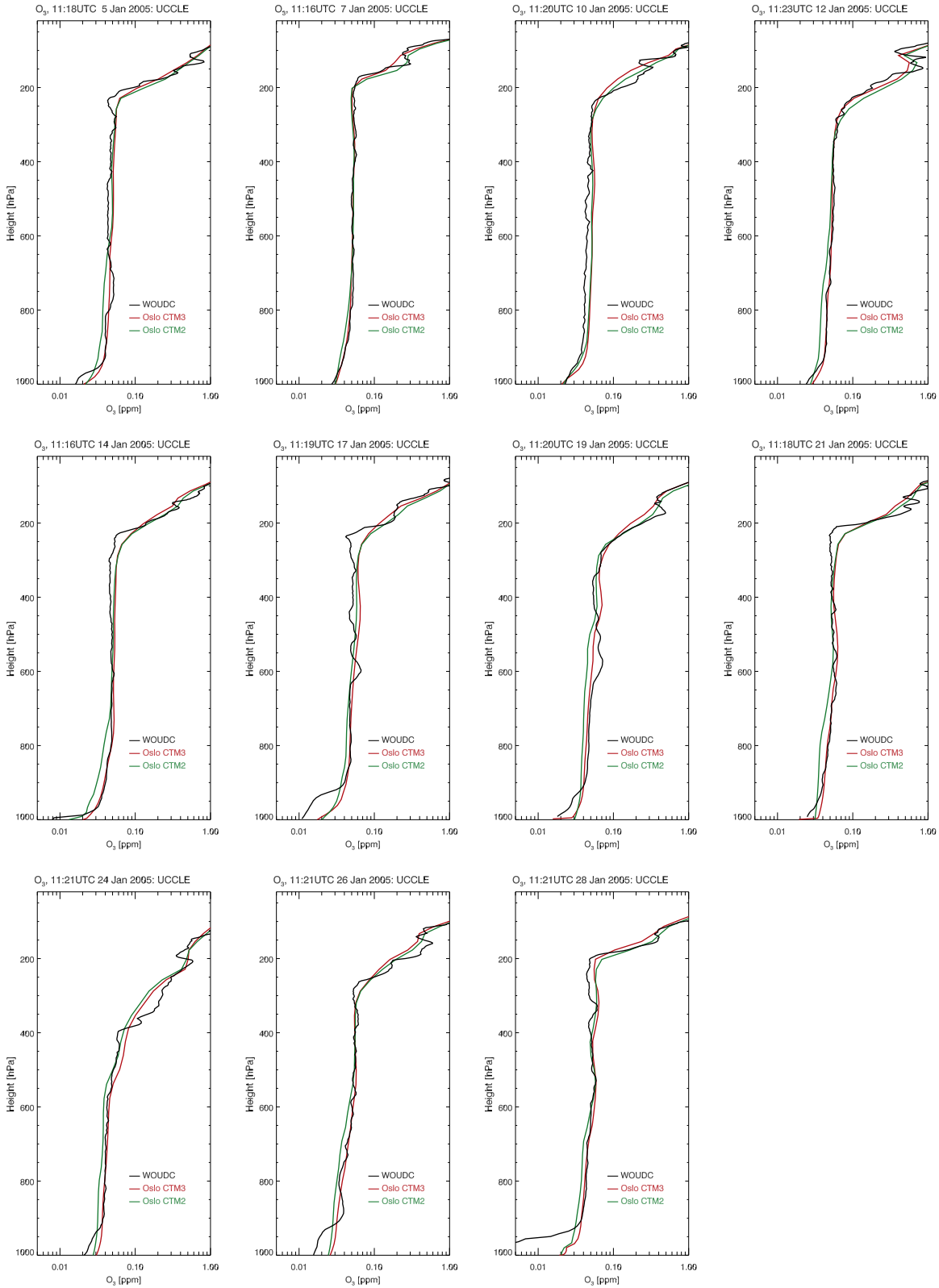
Geoscientific Model Development, gmd-2012-0039

Contents

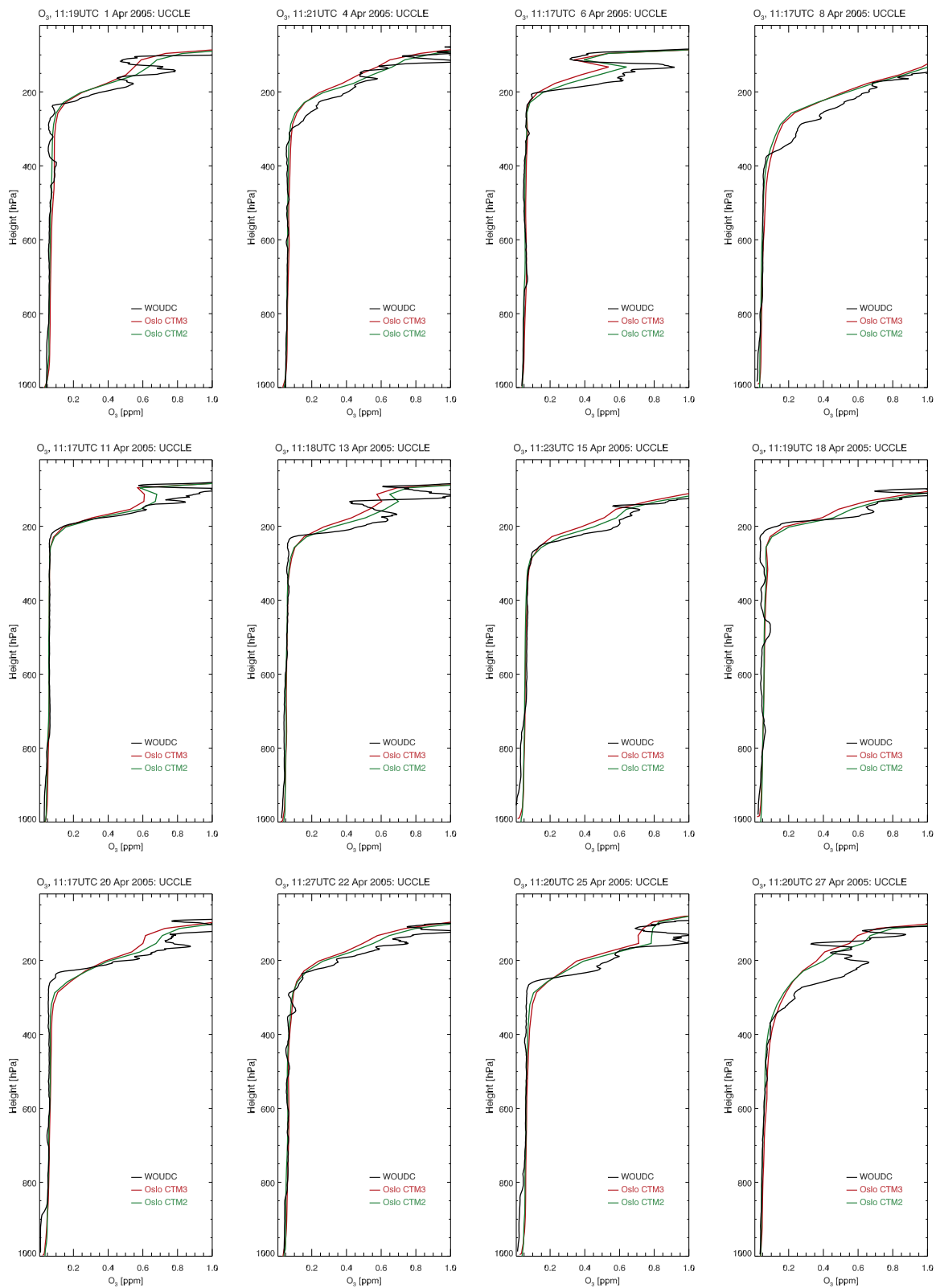
1	Single O₃ sondes 2005	2
1.1	Uccle – January 2005	2
1.2	Uccle – April 2005	3
1.3	Uccle – July 2005	5
1.4	Uccle – October 2005	6
1.5	Ascension Island – January 2005	7
1.6	Ascension Island – April 2005	7
1.7	Ascension Island – June 2005	8
1.8	Ascension Island – October 2005	8
1.9	Lerwick – January 2005	9
1.10	Lerwick – April 2005	9
1.11	Lerwick – July 2005	10
1.12	Lerwick – October 2005	10
1.13	Ny-Ålesund – January 2005	11
1.14	Ny-Ålesund – April 2005	12
1.15	Ny-Ålesund – July 2005	13
1.16	Ny-Ålesund – October 2005	13
1.17	Eureka – January 2005	14
1.18	Eureka – April 2005	15
1.19	Eureka – July 2005	16
1.20	Eureka – October 2005	16
2	Average O₃ sondes 2000	17
3	Single O₃ sondes 2000	18
3.1	Uccle – January 2000	18
3.2	Uccle – April 2000	19
3.3	Uccle – July 2000	20
3.4	Uccle – October 2000	21
3.5	Ascension Island – January 2000	22
3.6	Ascension Island – April 2000	22
3.7	Ascension Island – July 2000	23
3.8	Ascension Island – November 2000	23
3.9	Lerwick – January 2000	24
3.10	Lerwick – April 2000	25
3.11	Lerwick – July 2000	26
3.12	Lerwick – October 2000	26
3.13	Ny-Ålesund – January 2000	27
3.14	Ny-Ålesund – April 2000	29
3.15	Ny-Ålesund – July 2000	30
3.16	Ny-Ålesund – October 2000	30
3.17	Eureka – January 2000	31
3.18	Eureka – April 2000	32
3.19	Eureka – July 2000	33
3.20	Eureka – October 2000	33
4	Surface observations of CO	34

1 Single O₃ sondes 2005

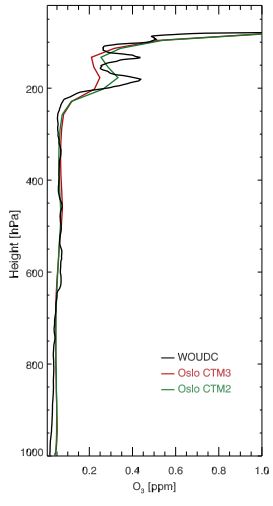
1.1 Uccle – January 2005



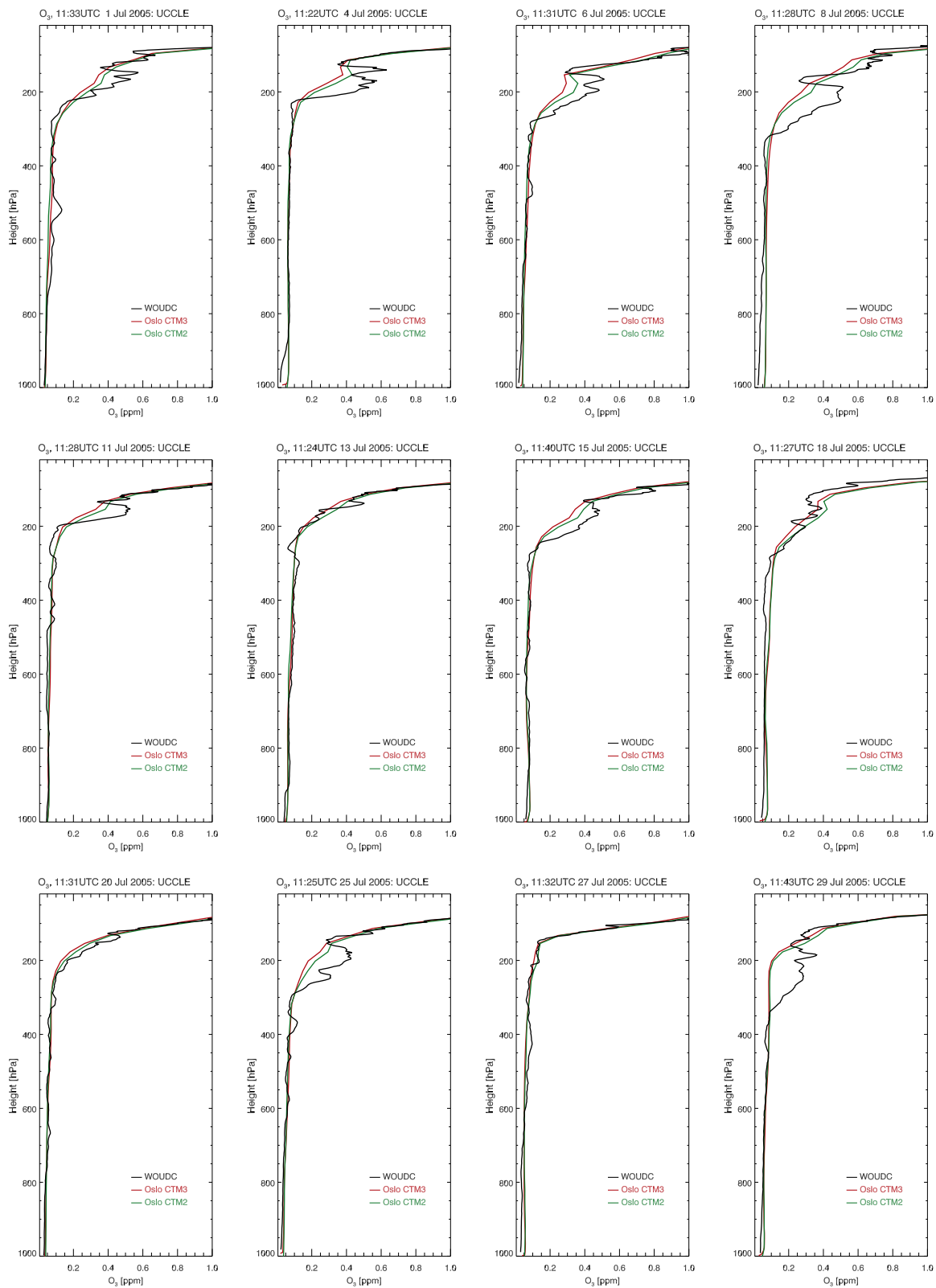
1.2 Uccle – April 2005



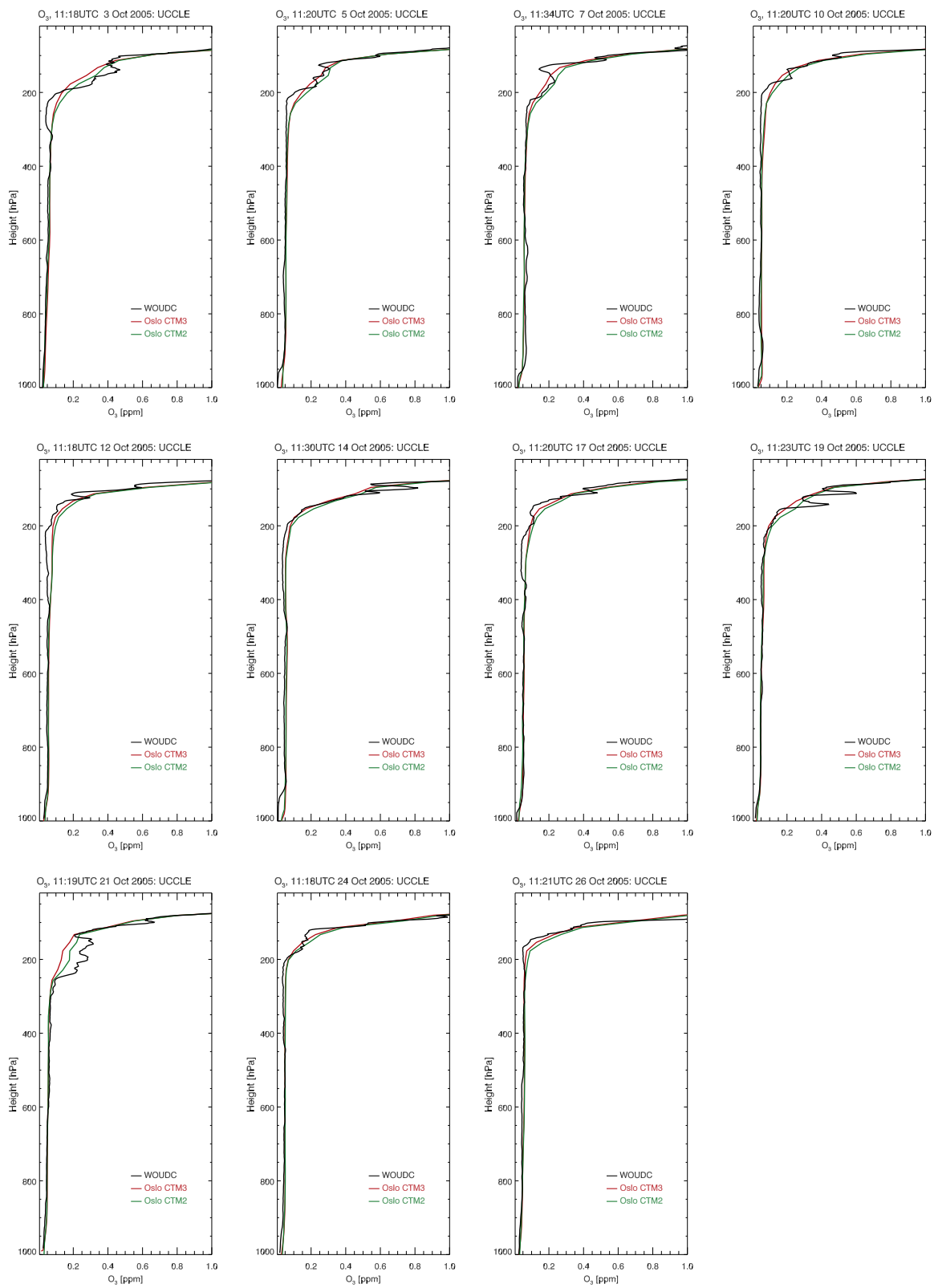
O₃, 11:31UTC 29 Apr 2005: UCCLL



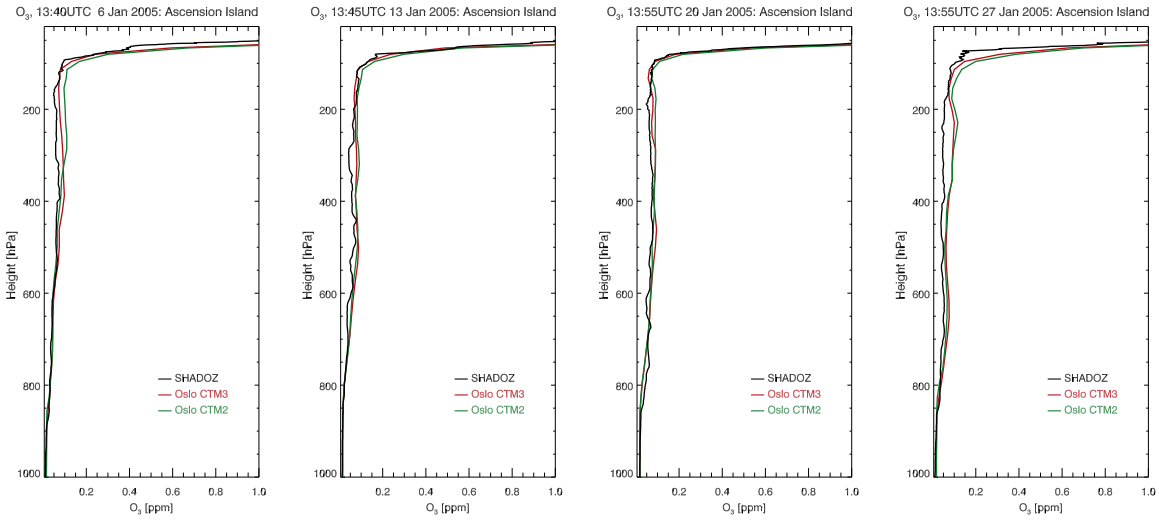
1.3 Uccle – July 2005



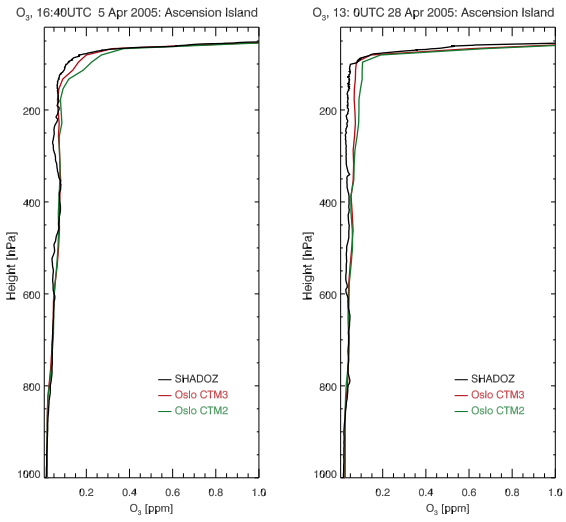
1.4 Uccle – October 2005



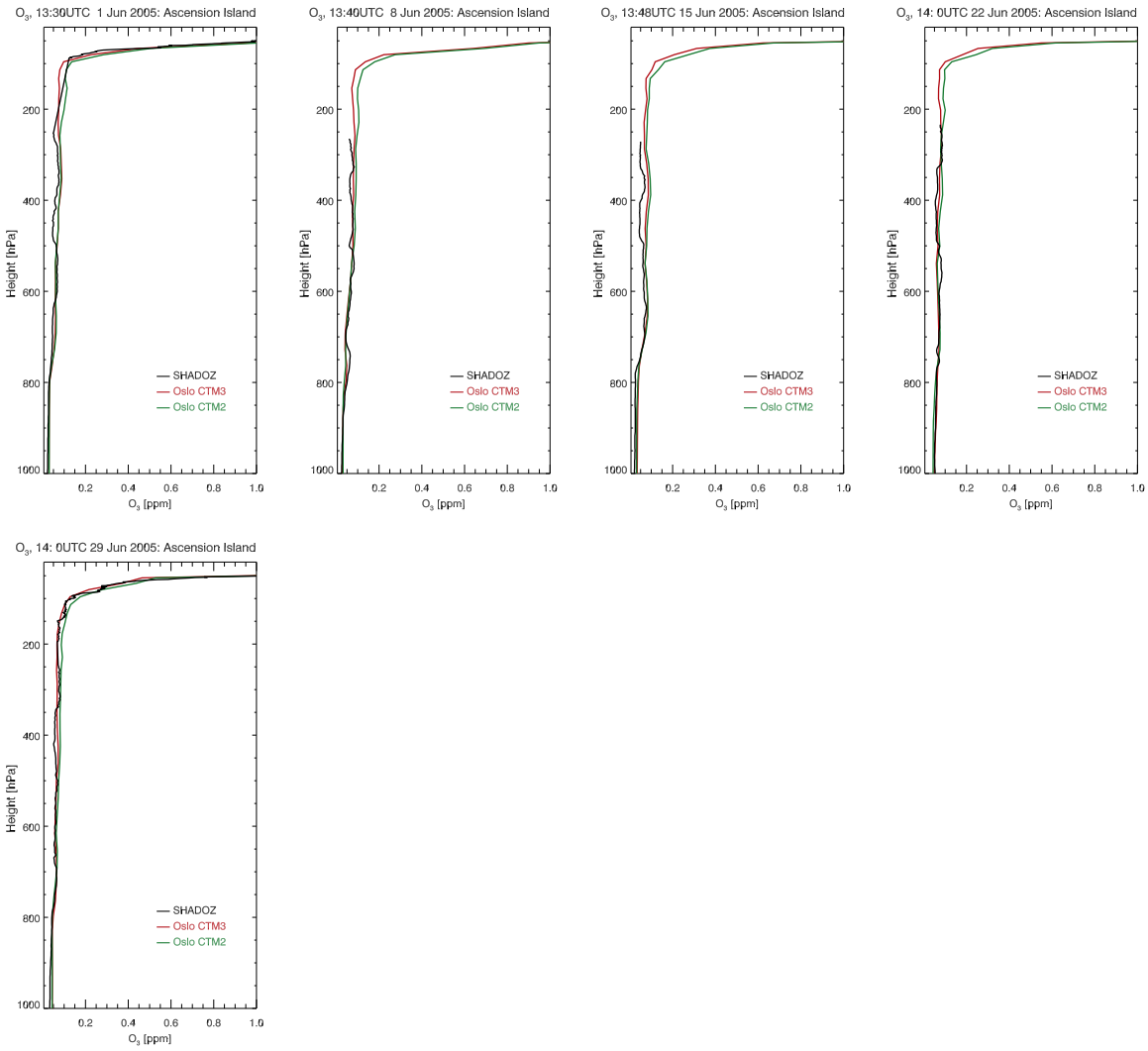
1.5 Ascension Island – January 2005



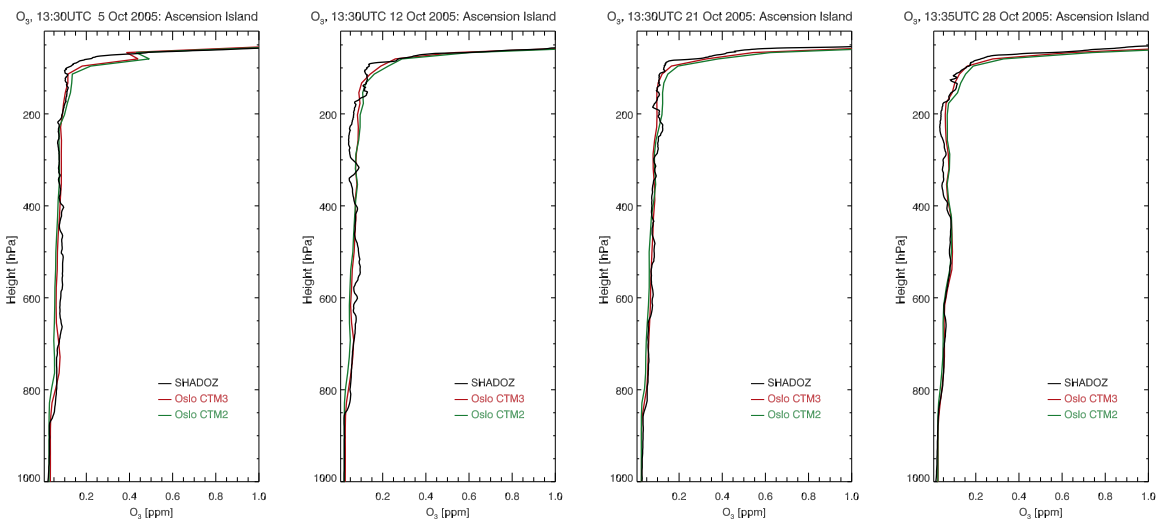
1.6 Ascension Island – April 2005



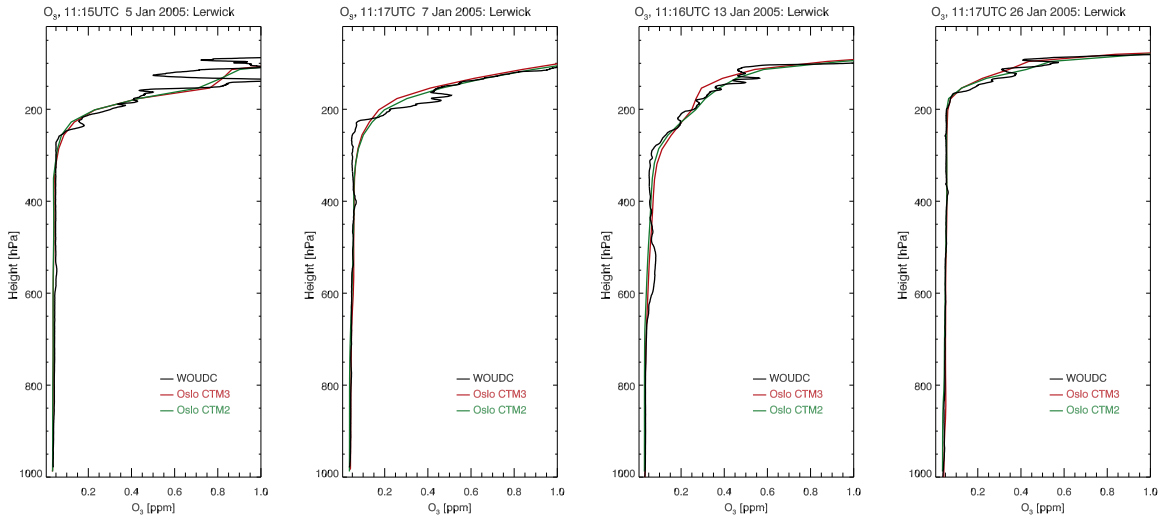
1.7 Ascension Island – June 2005



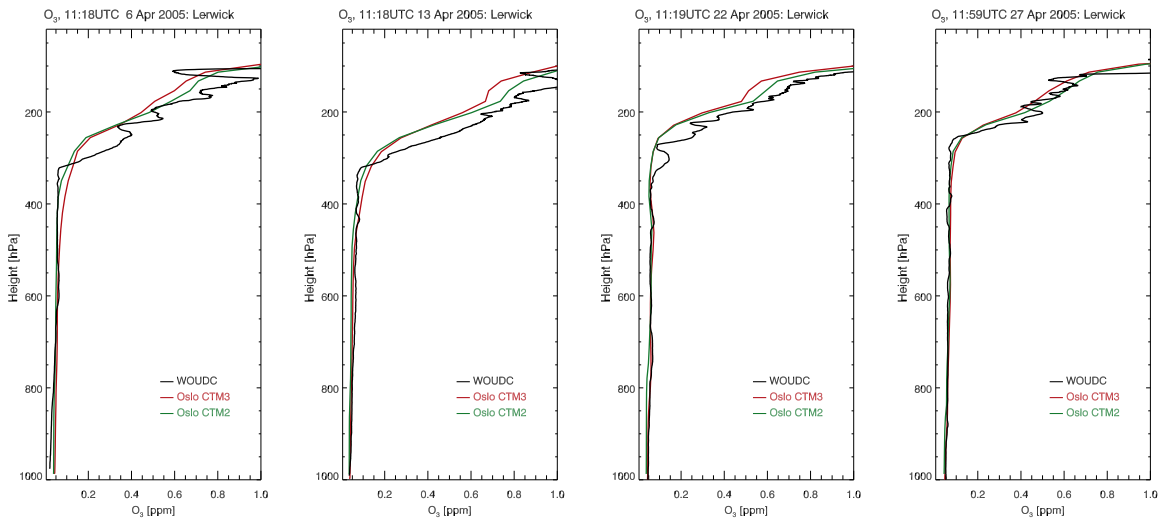
1.8 Ascension Island – October 2005



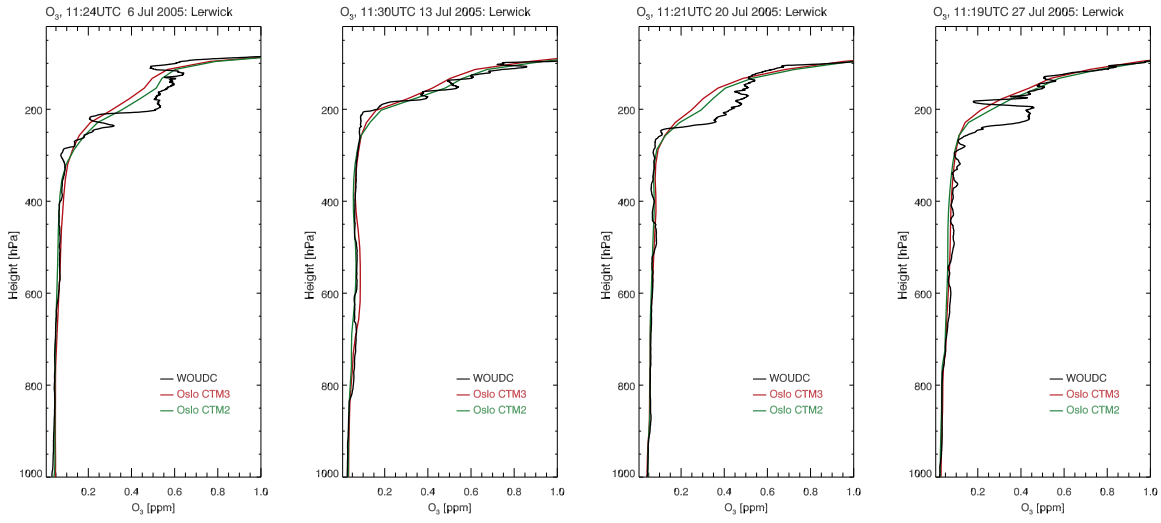
1.9 Lerwick – January 2005



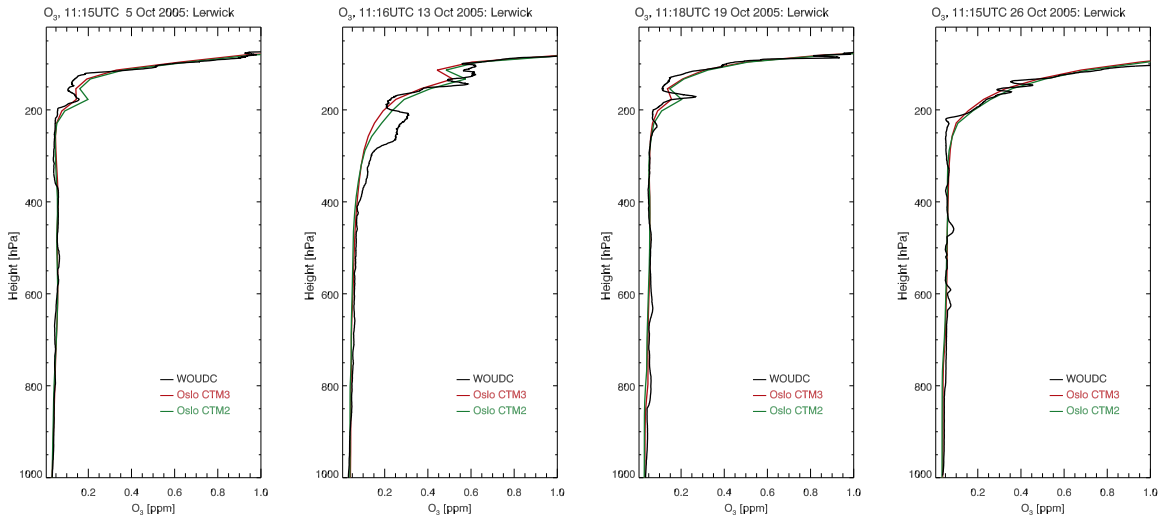
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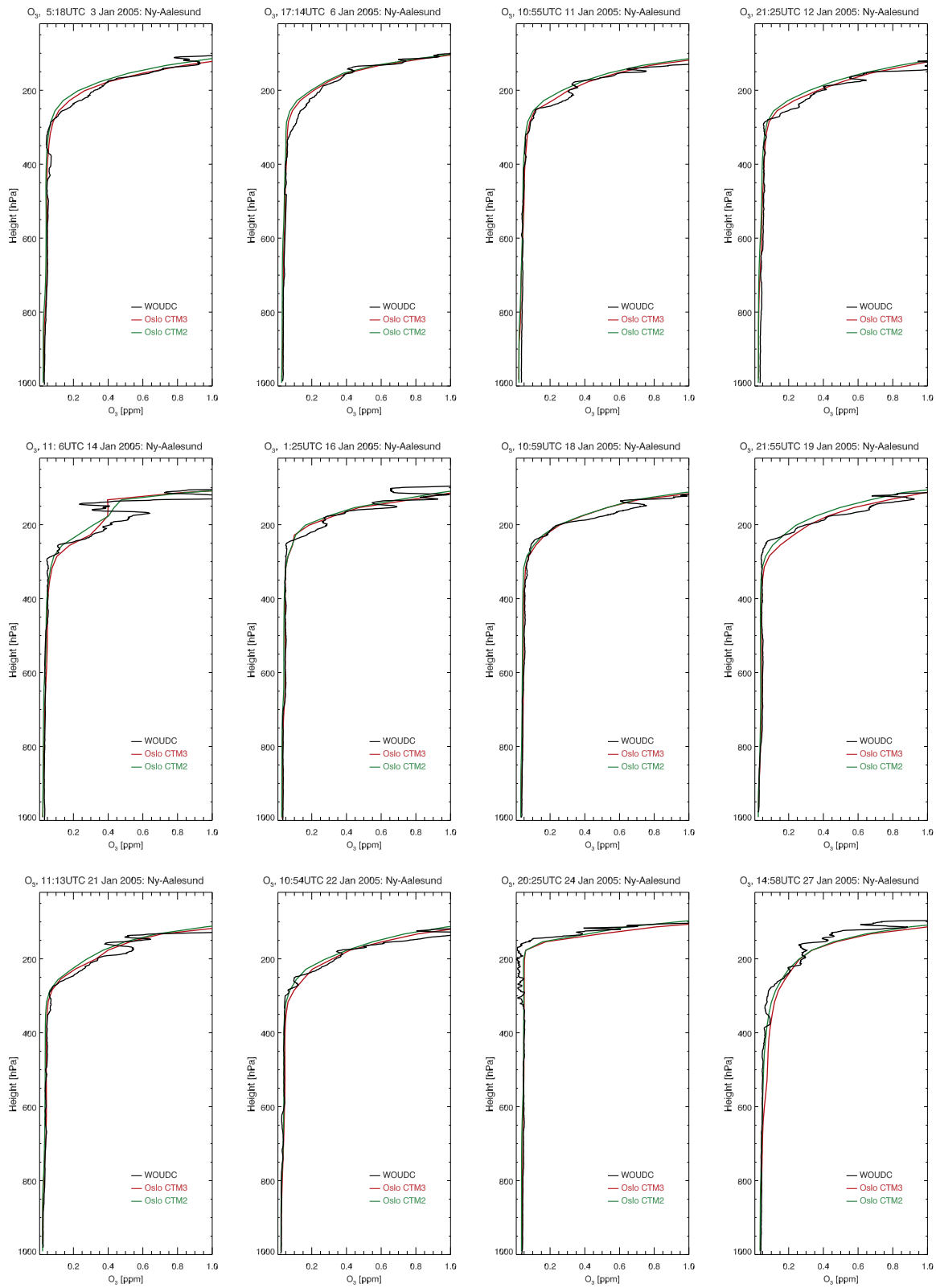
1.11 Lerwick – July 2005



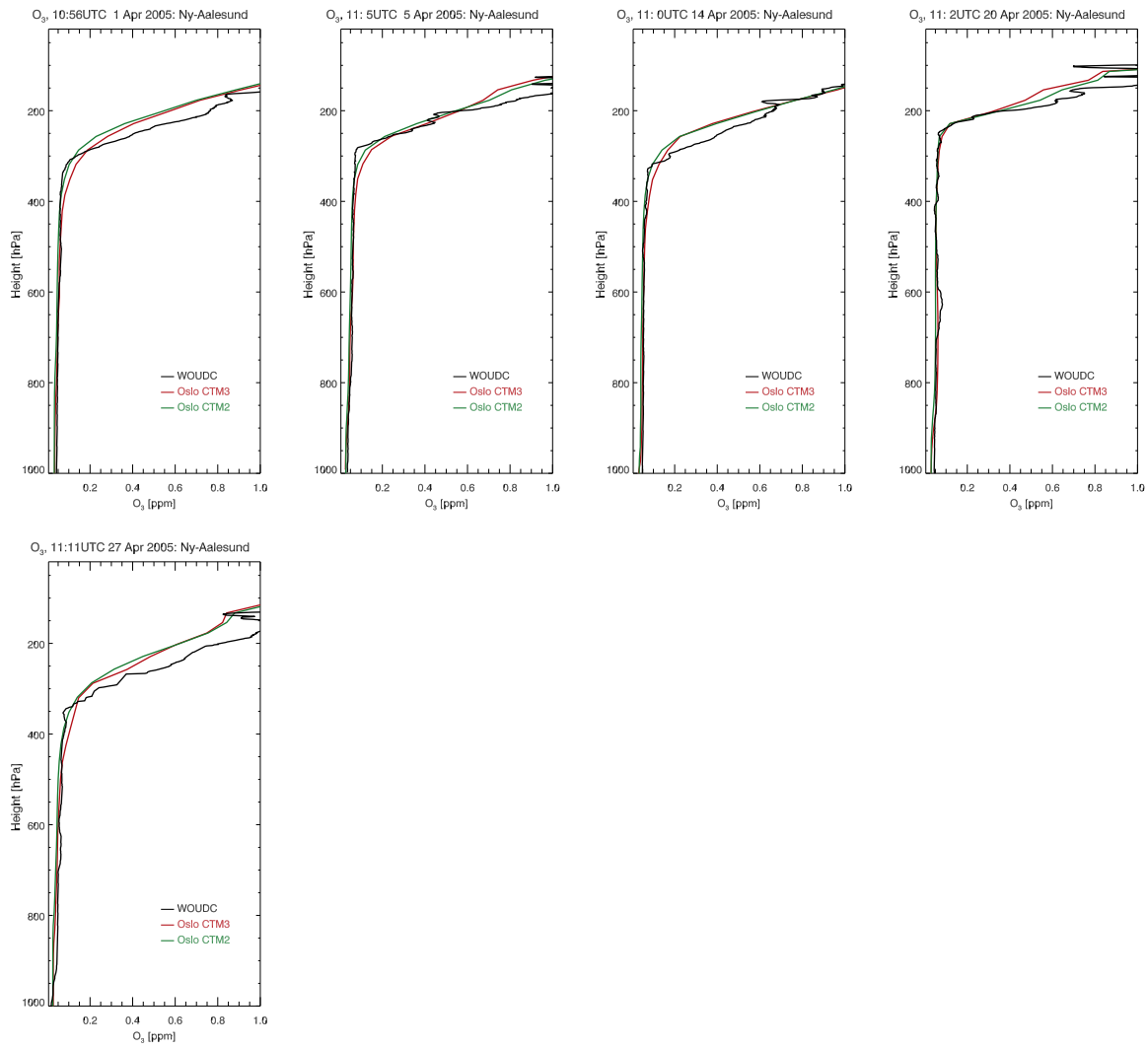
1.12 Lerwick – October 2005



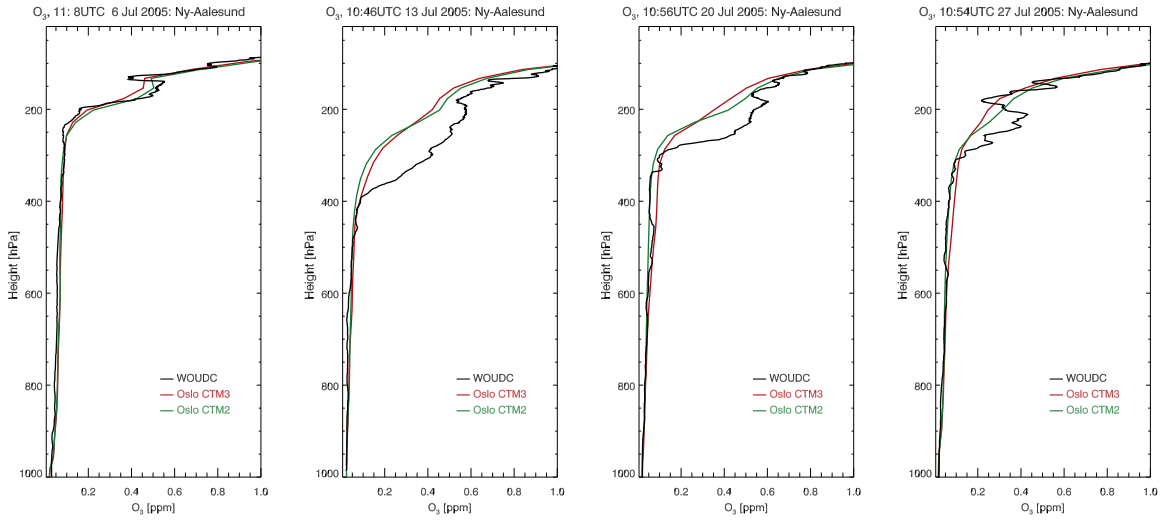
1.13 Ny-Ålesund – January 2005



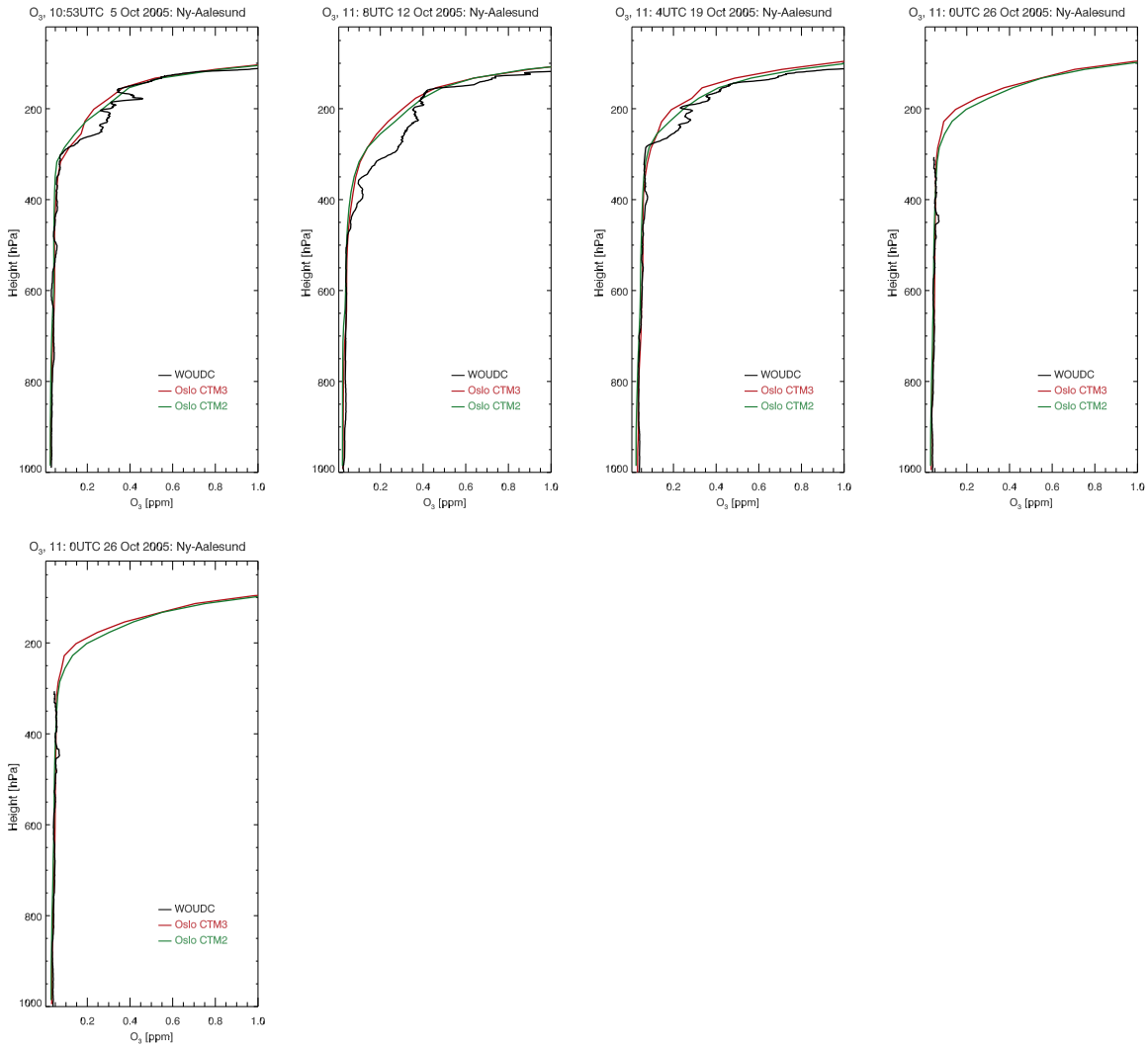
1.14 Ny-Ålesund – April 2005



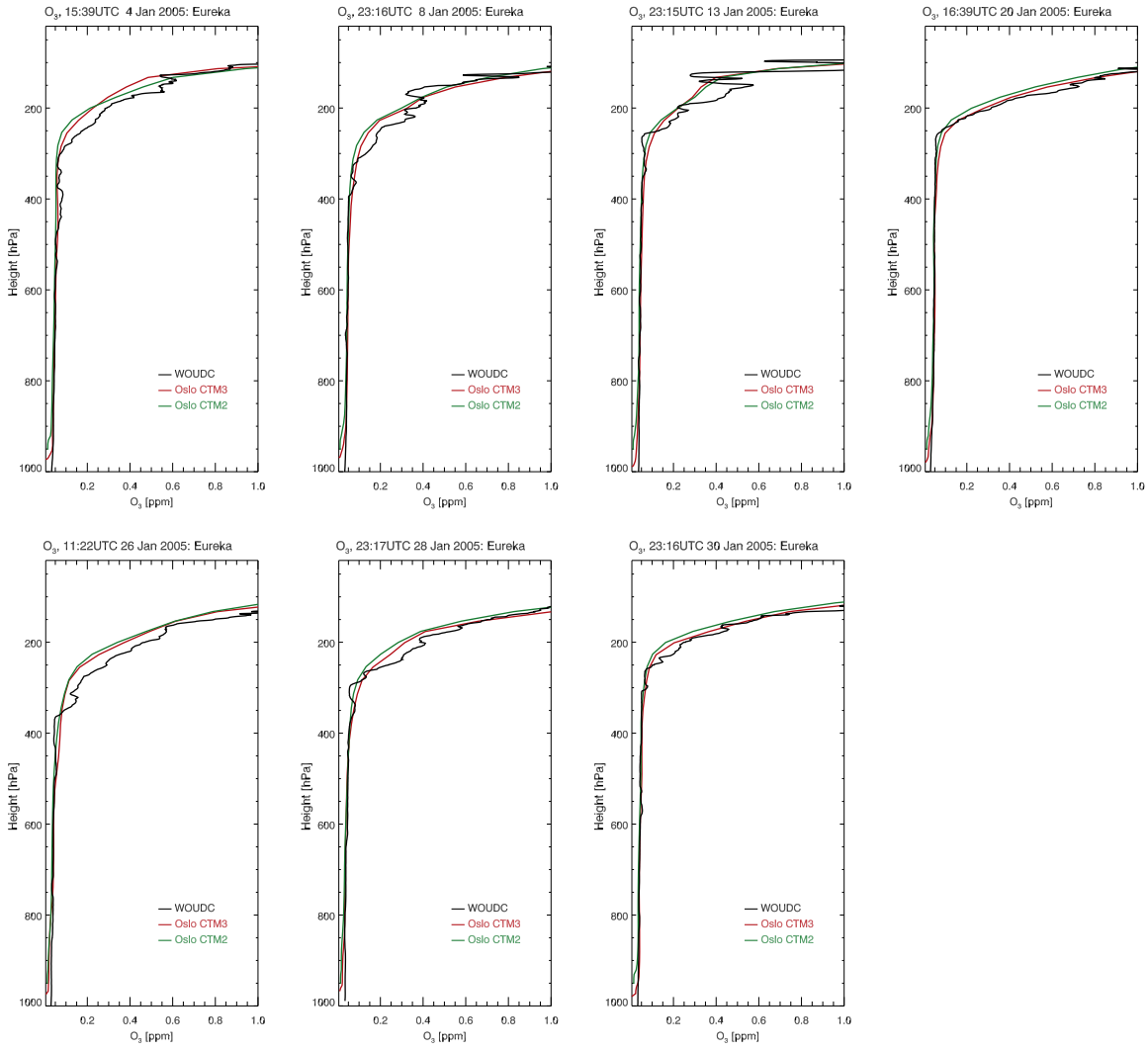
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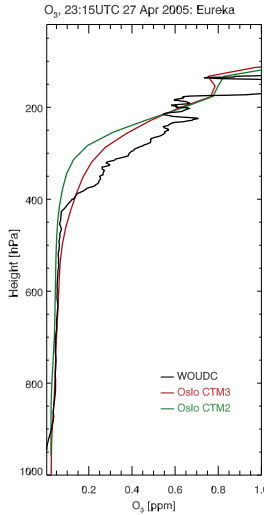
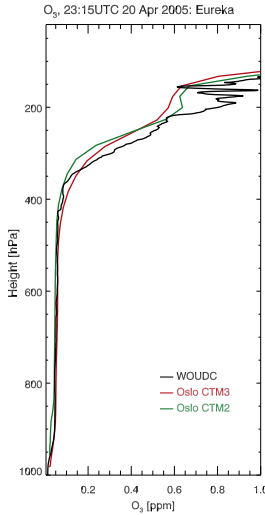
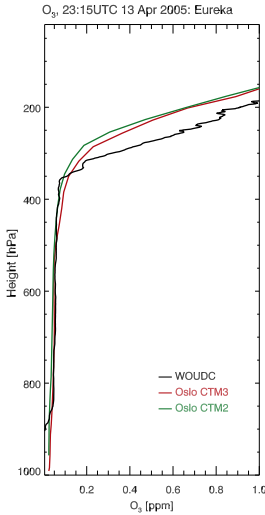
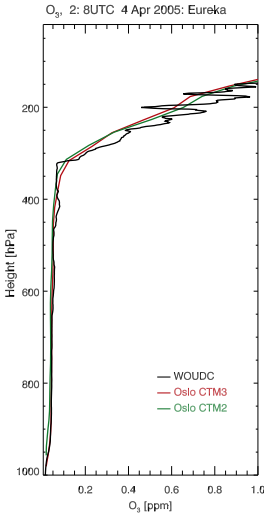
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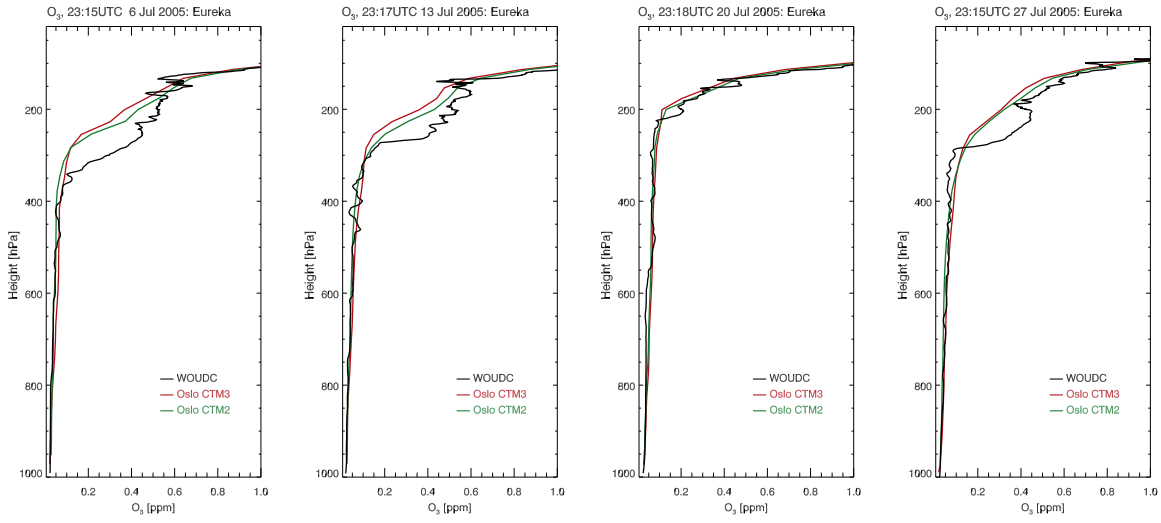
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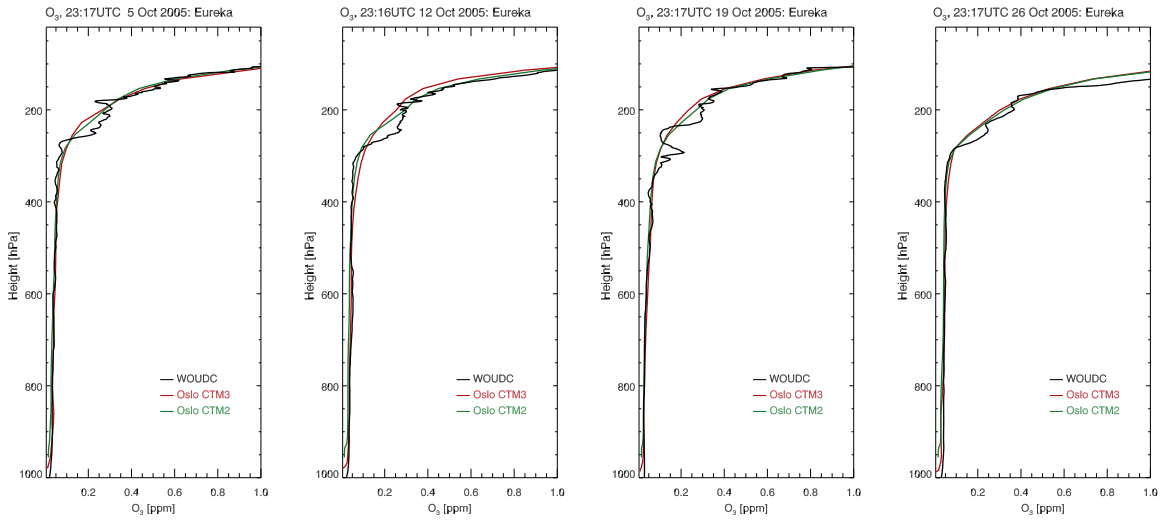
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1.19 Eureka – July 2005

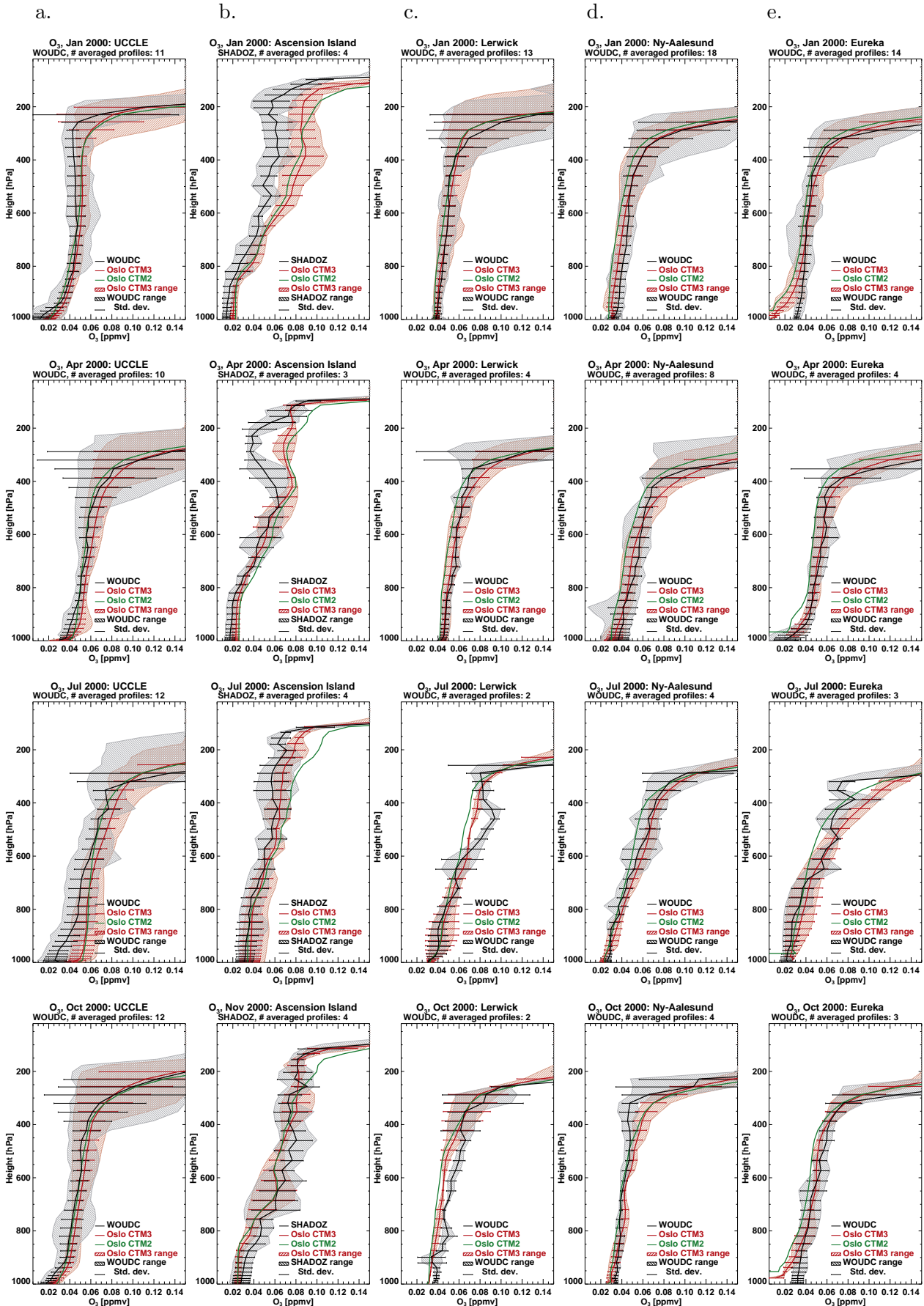


1.20 Eureka – October 2005



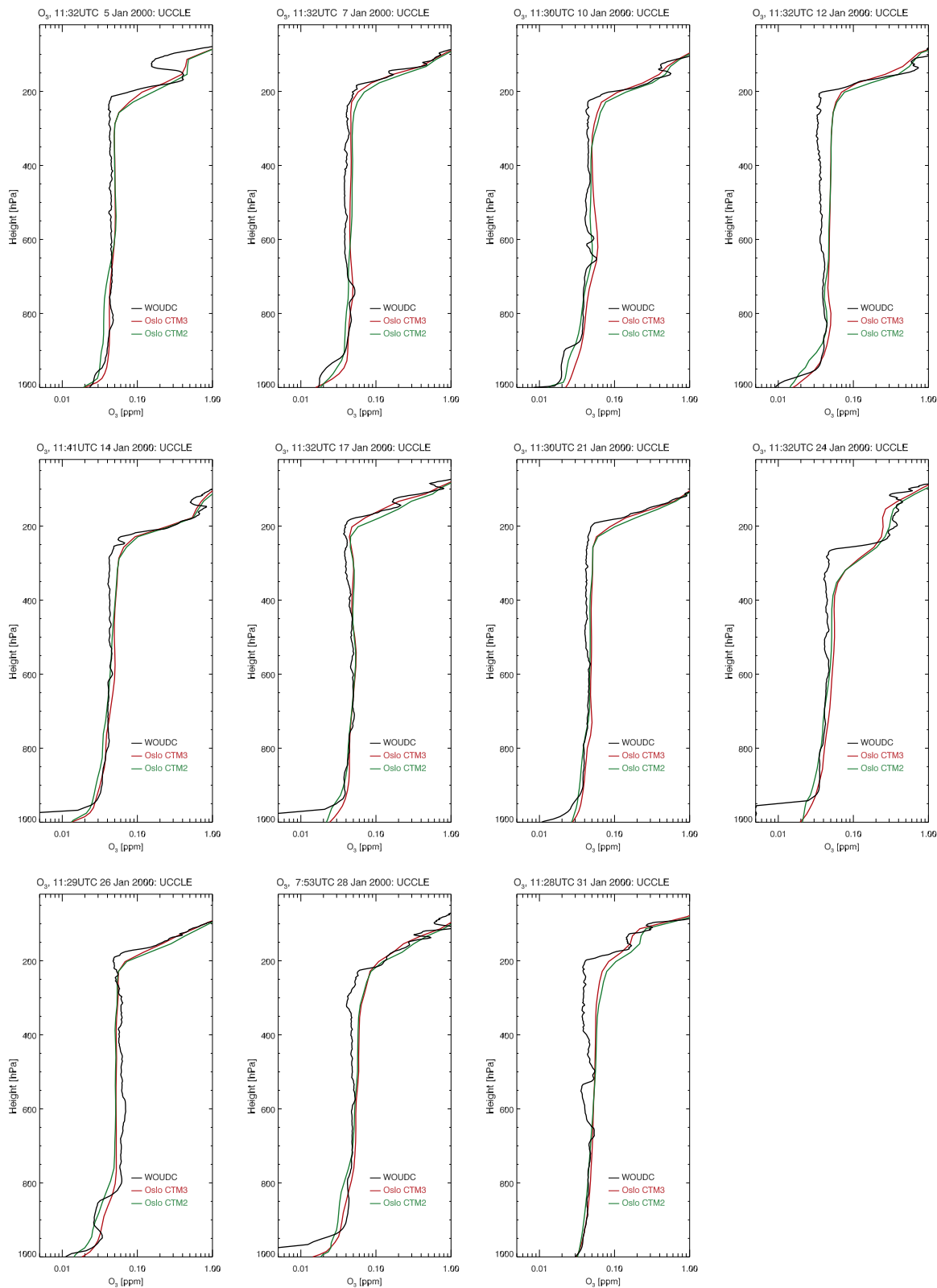
2 Average O₃ sondes 2000

Because the emissions used in the CTM3 are for the year 2000, it may be better to compare near-surface measurements for the year 2000. Whereas the distribution of emissions are probably similar, the amounts may be different. Therefore we include the evaluation for year 2000 here.

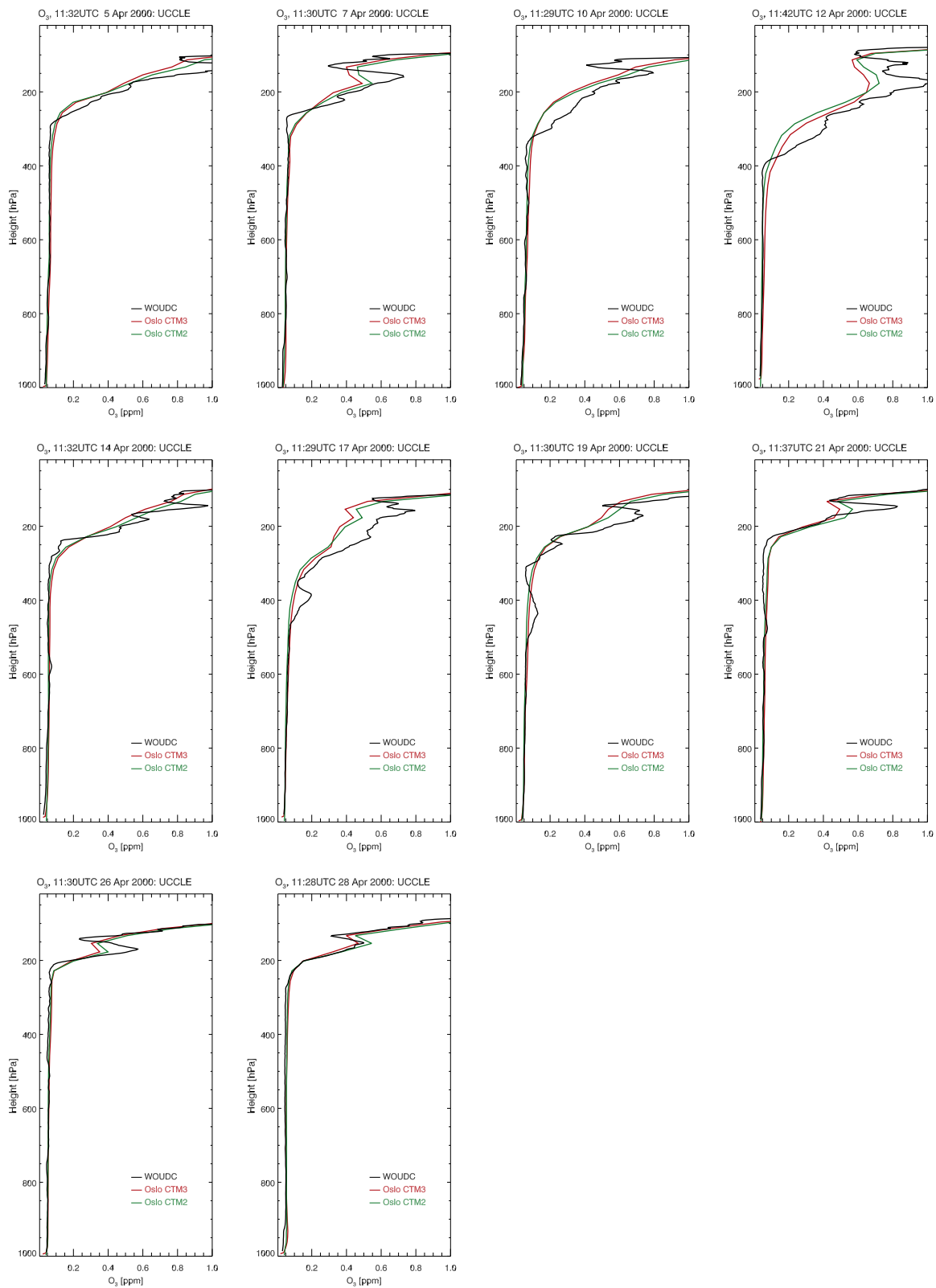


3 Single O₃ sondes 2000

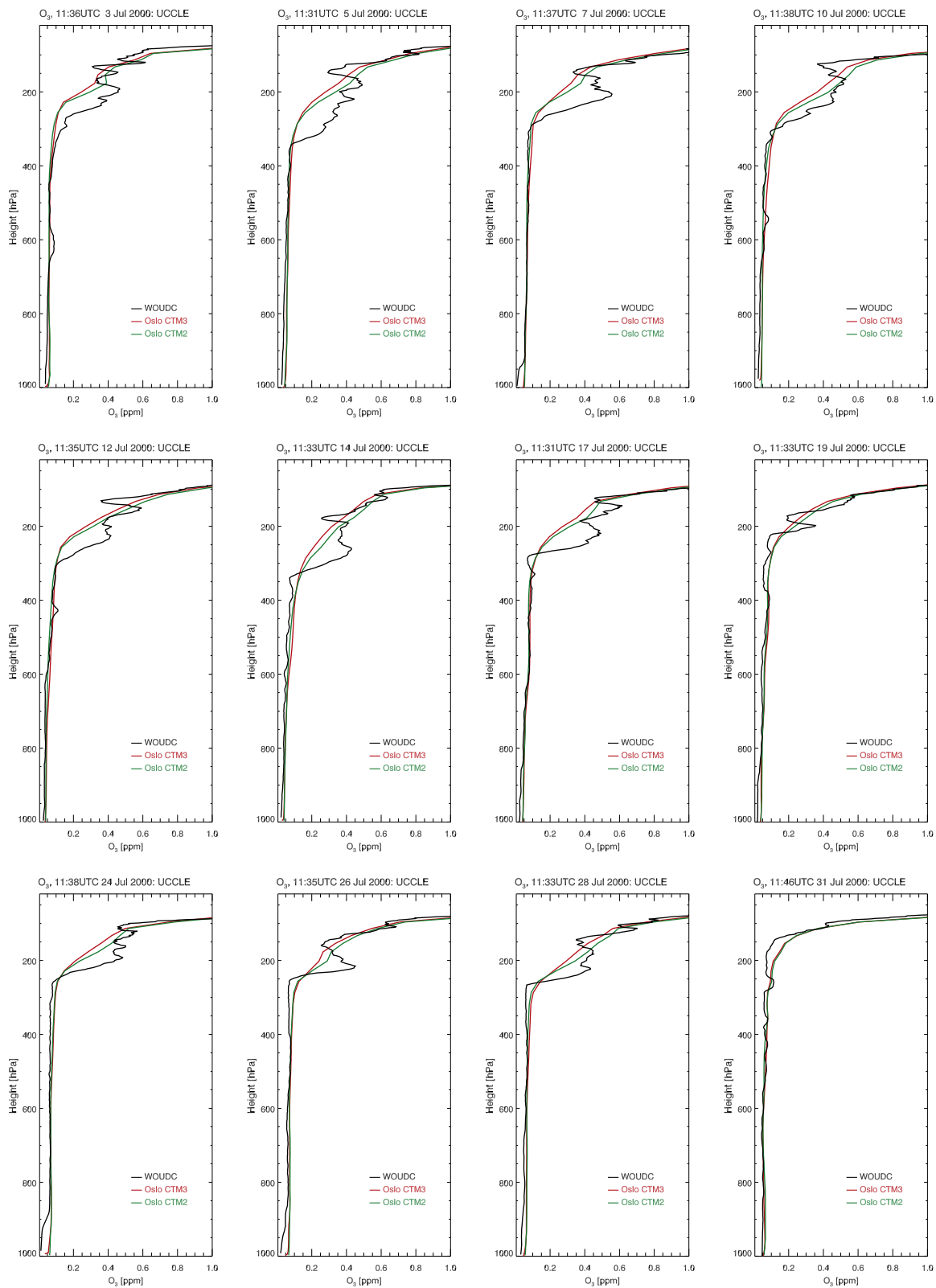
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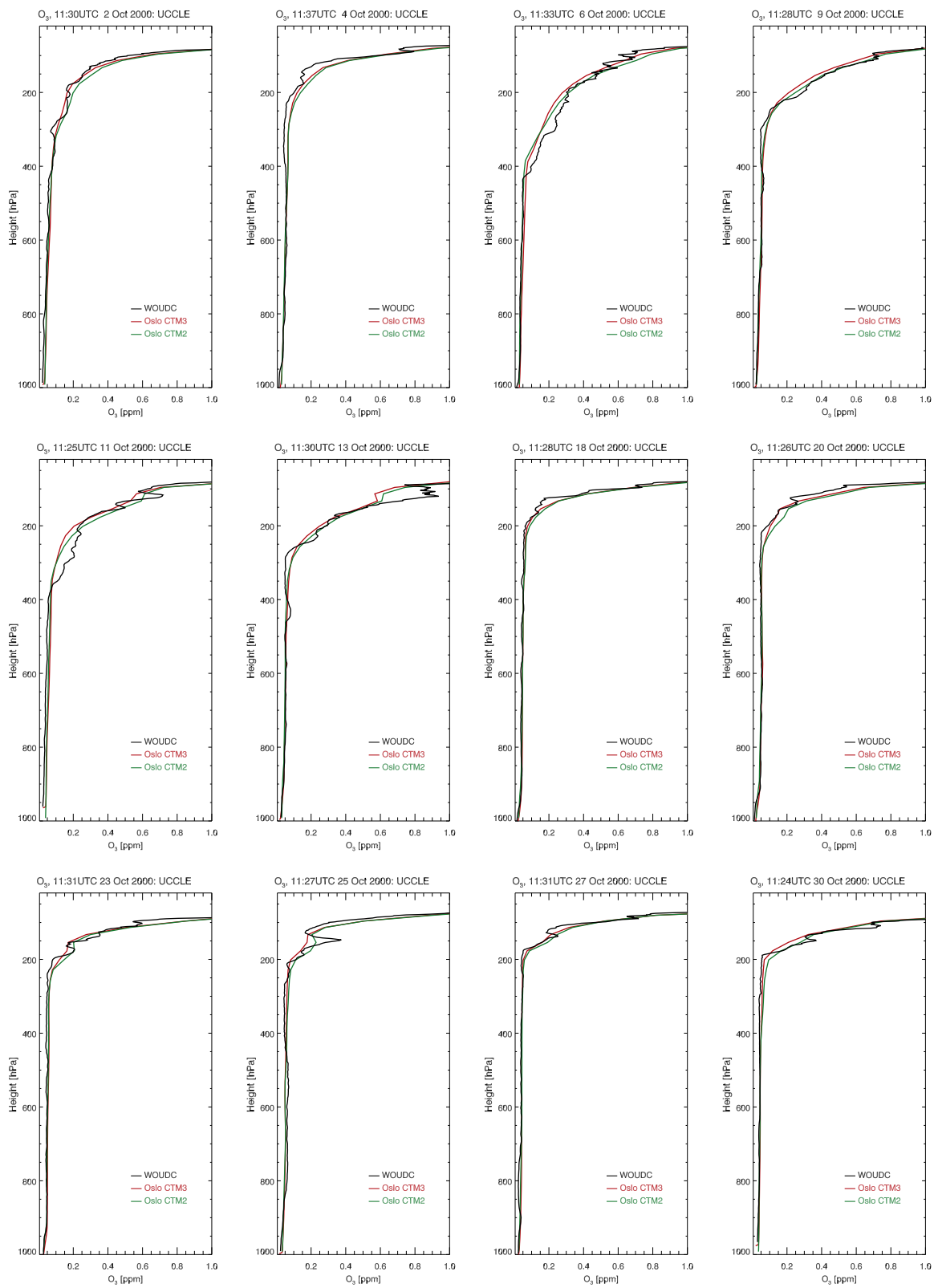
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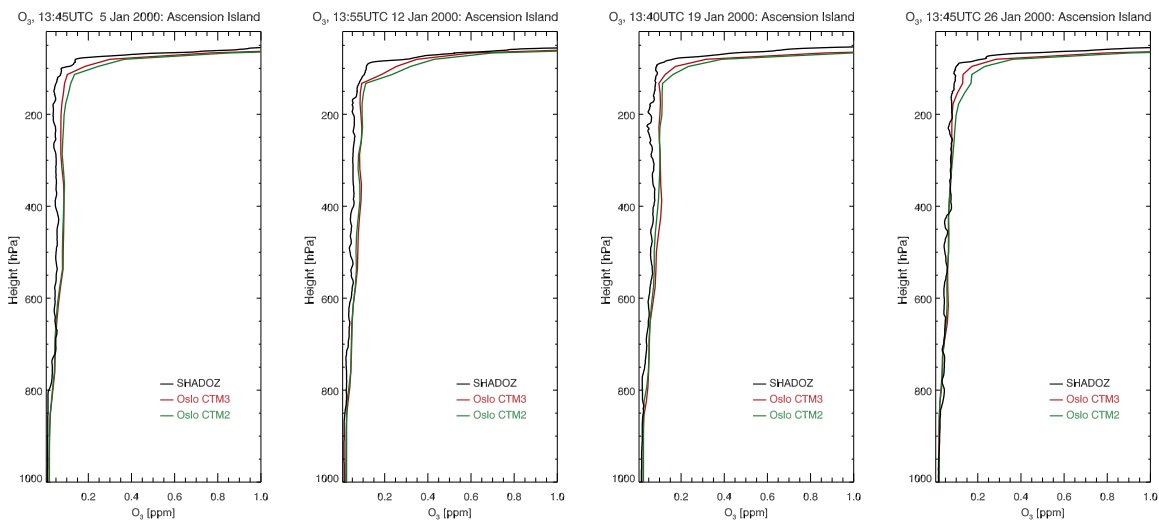
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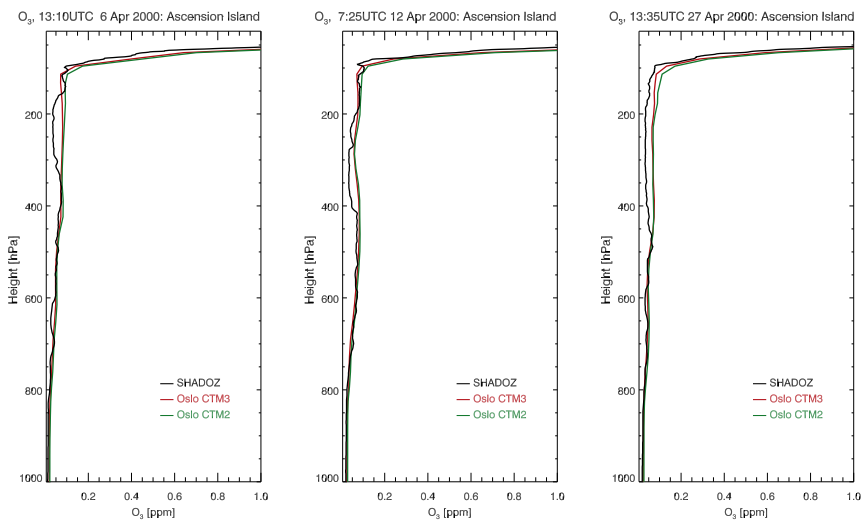
3.4 Uccle – October 2000



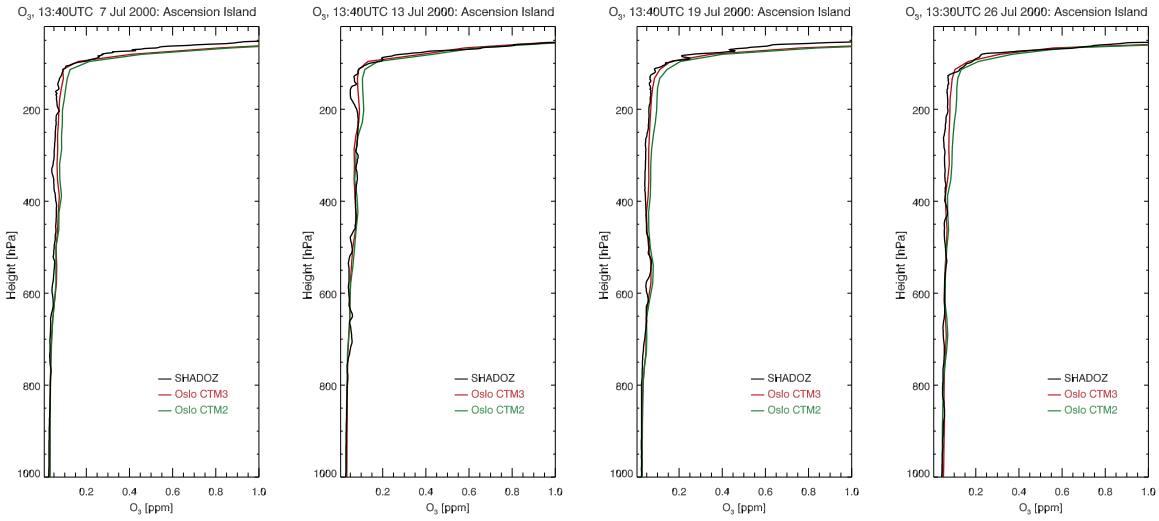
3.5 Ascension Island – January 2000



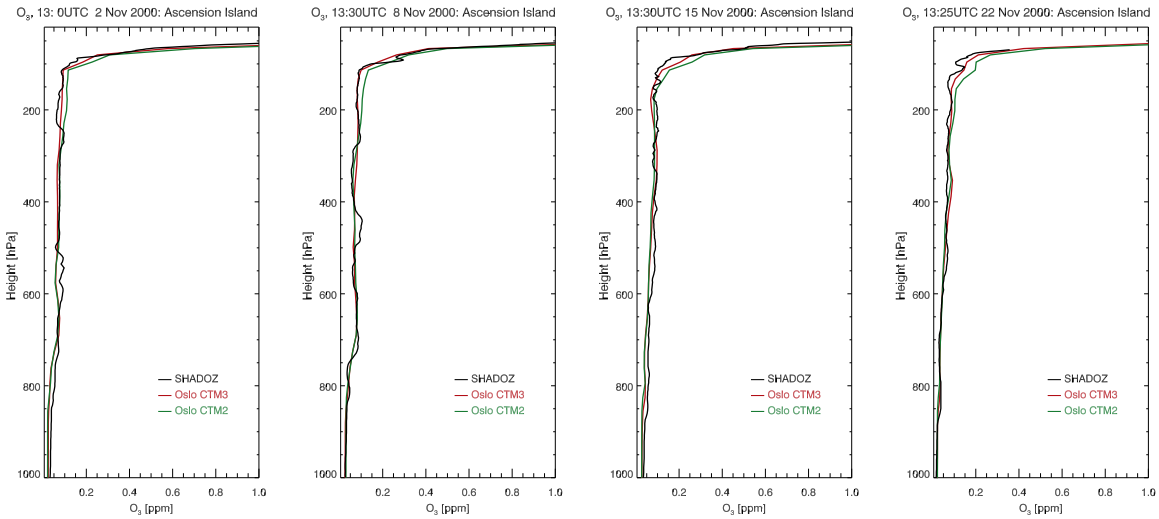
3.6 Ascension Island – April 2000



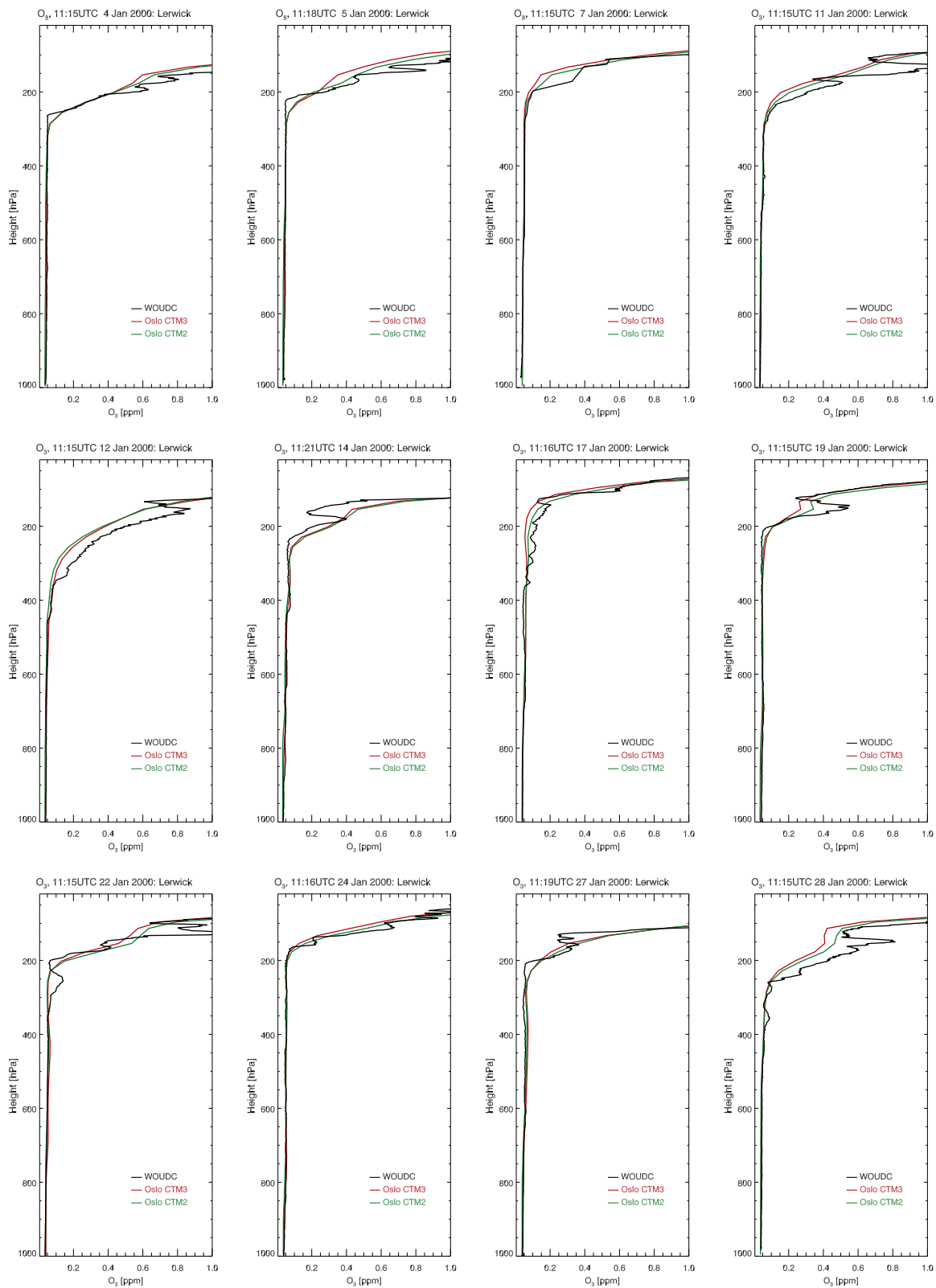
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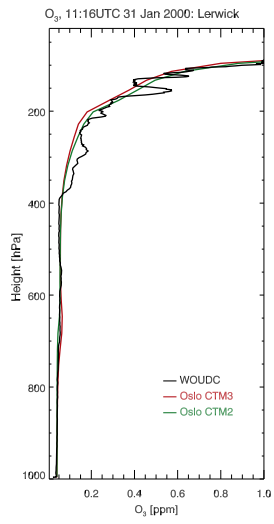


3.8 Ascension Island – November 2000

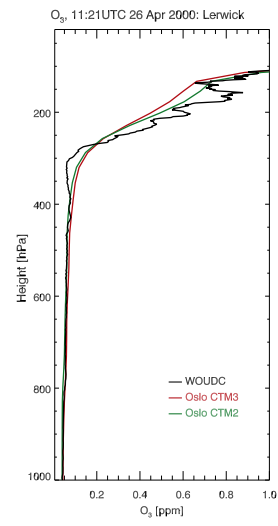
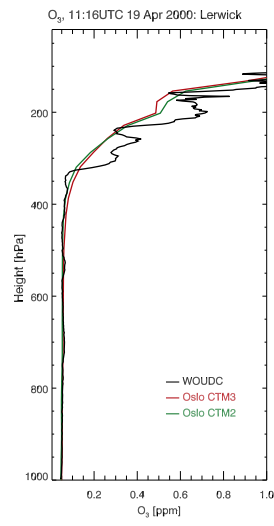
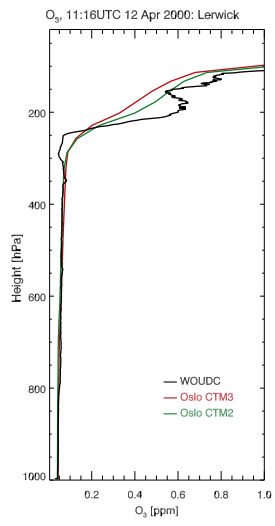
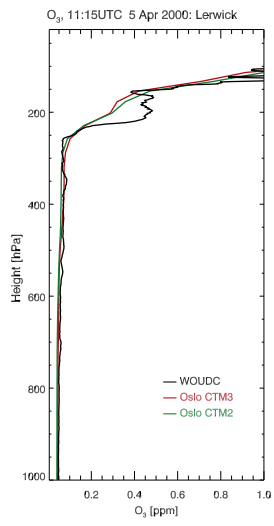


3.9 Lerwick – January 2000

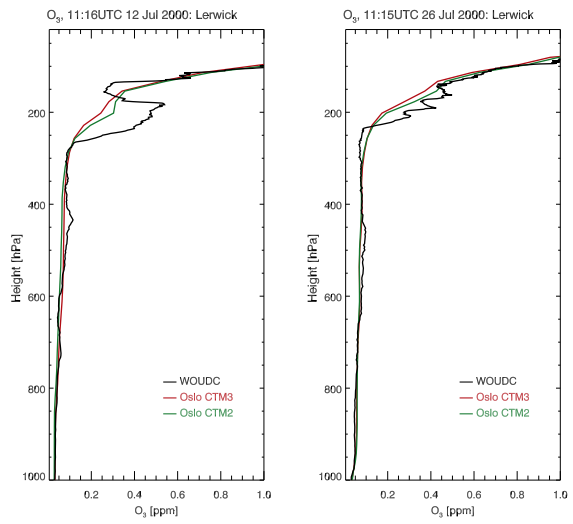




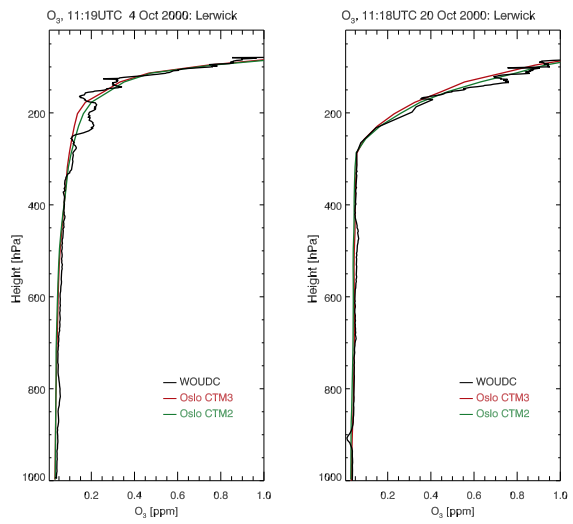
3.10 Lerwick – April 2000



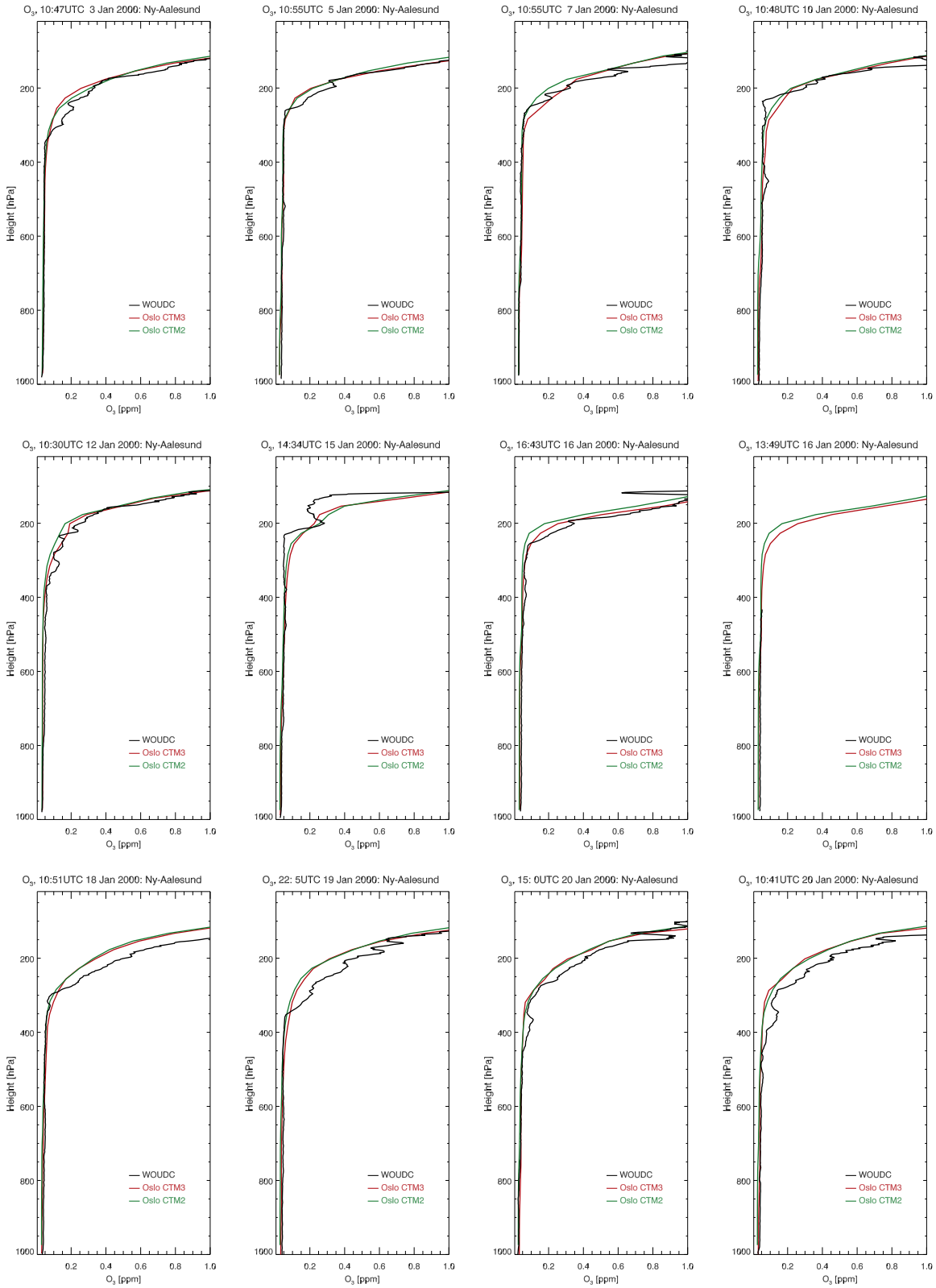
3.11 Lerwick – July 2000

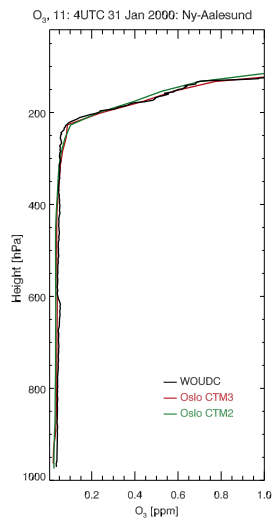
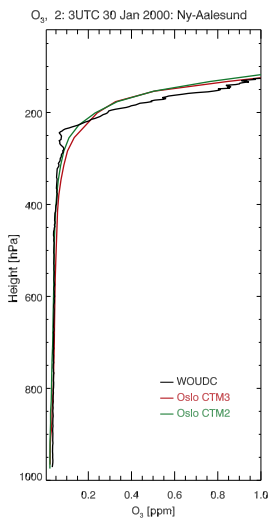
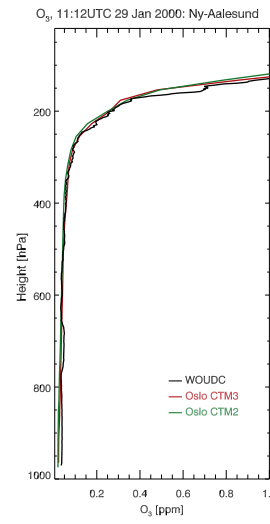
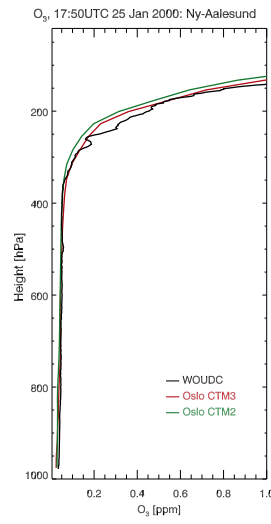
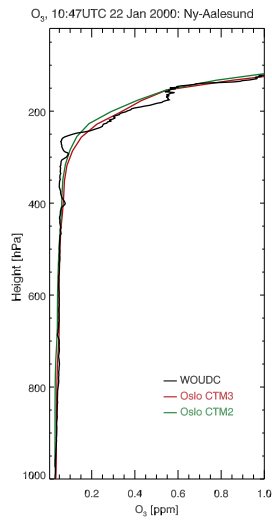
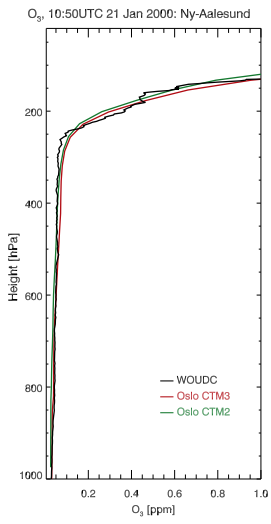


3.12 Lerwick – October 2000

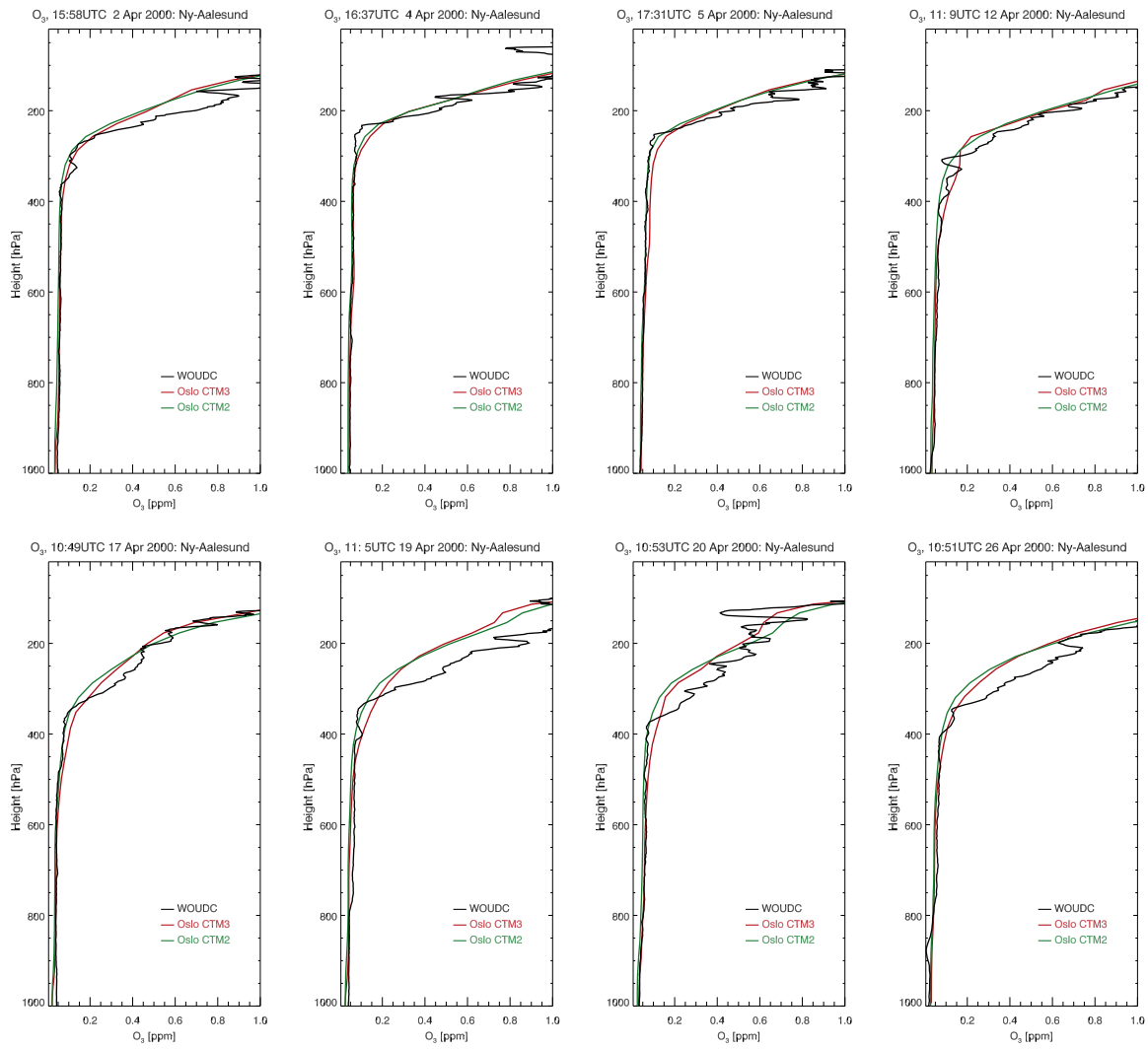


3.13 Ny-Ålesund – January 2000

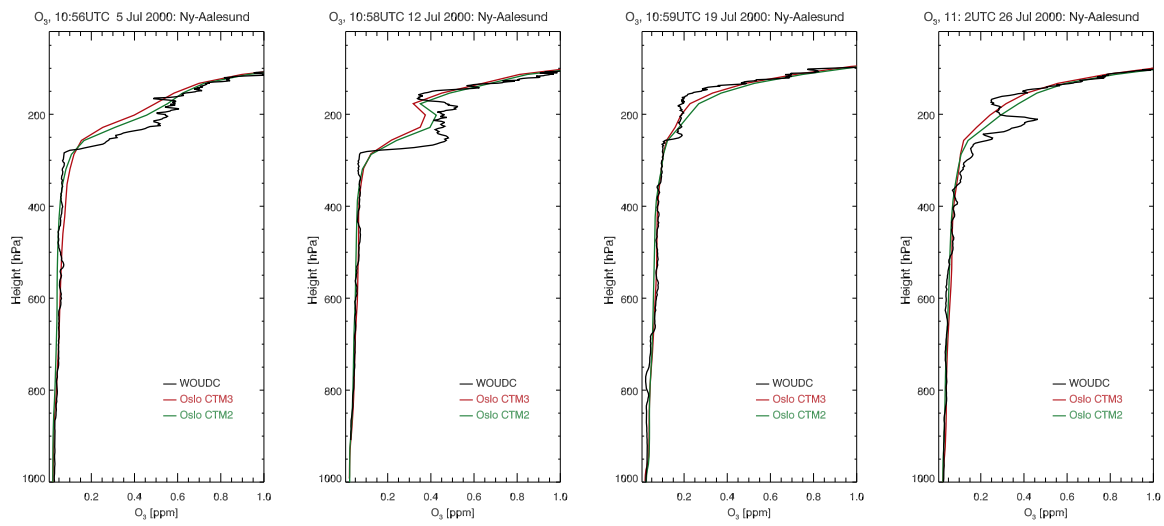




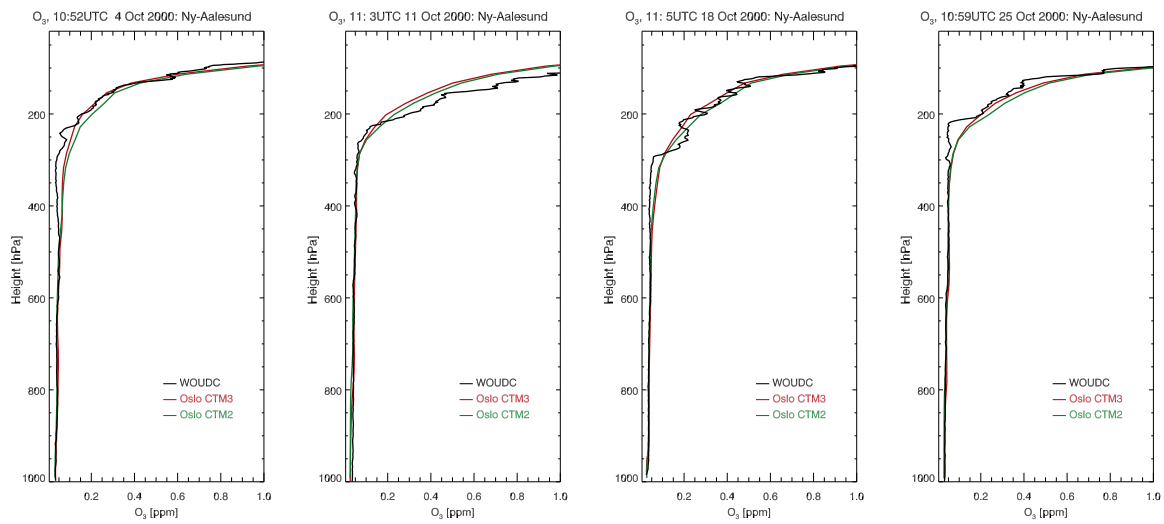
3.14 Ny-Ålesund – April 2000



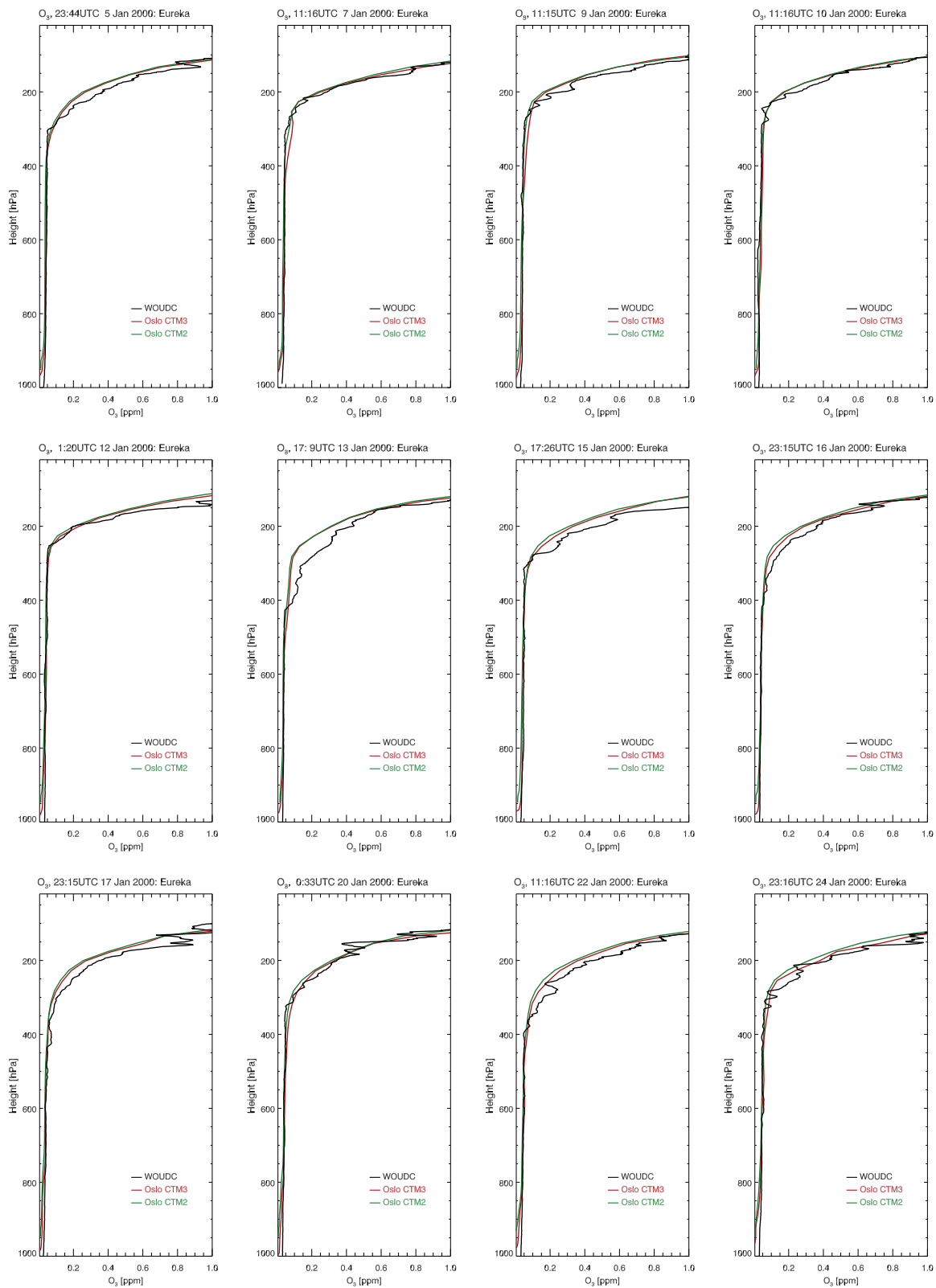
3.15 Ny-Ålesund – July 2000

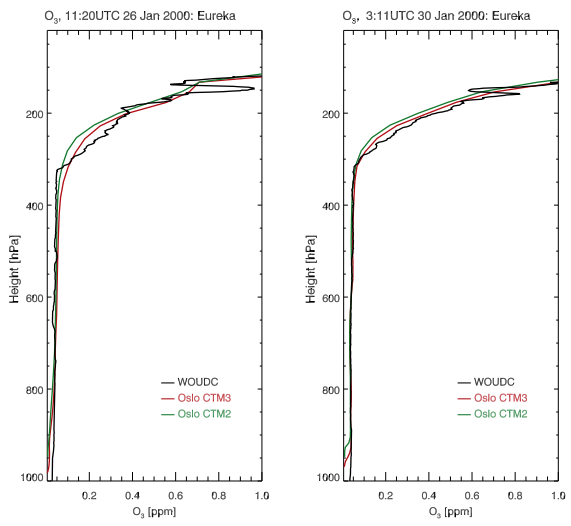


3.16 Ny-Ålesund – October 2000

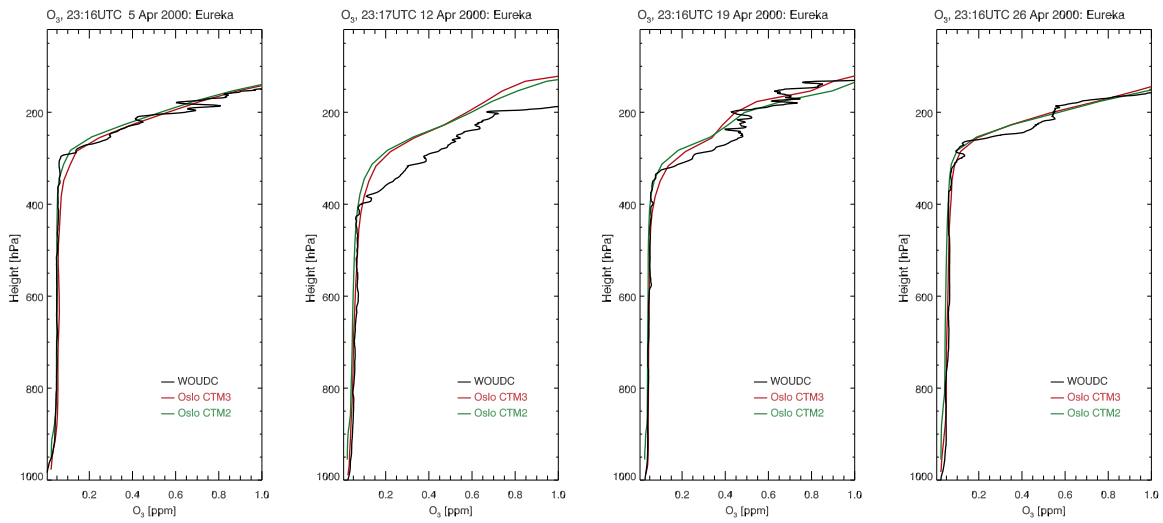


3.17 Eureka – January 2000

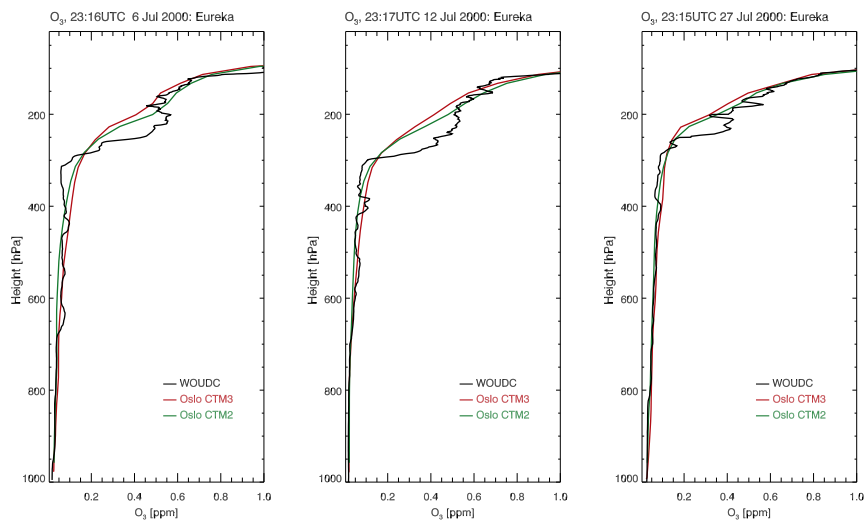




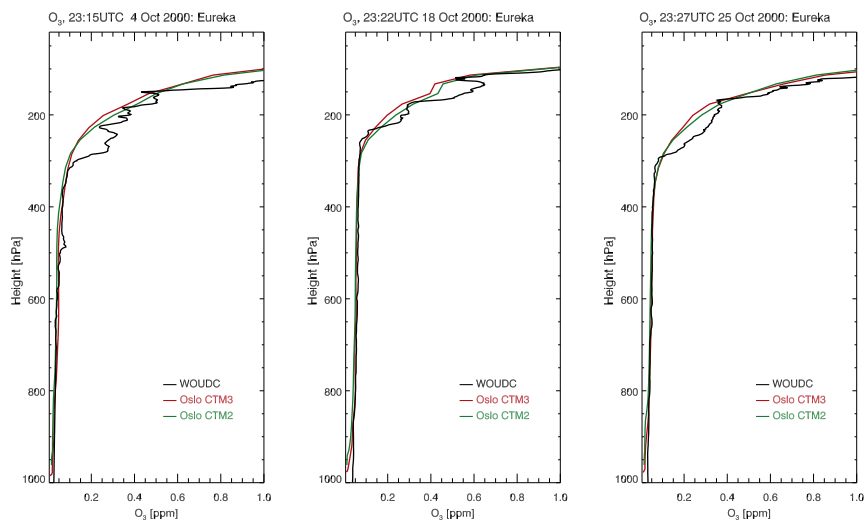
3.18 Eureka – April 2000



3.19 Eureka – July 2000

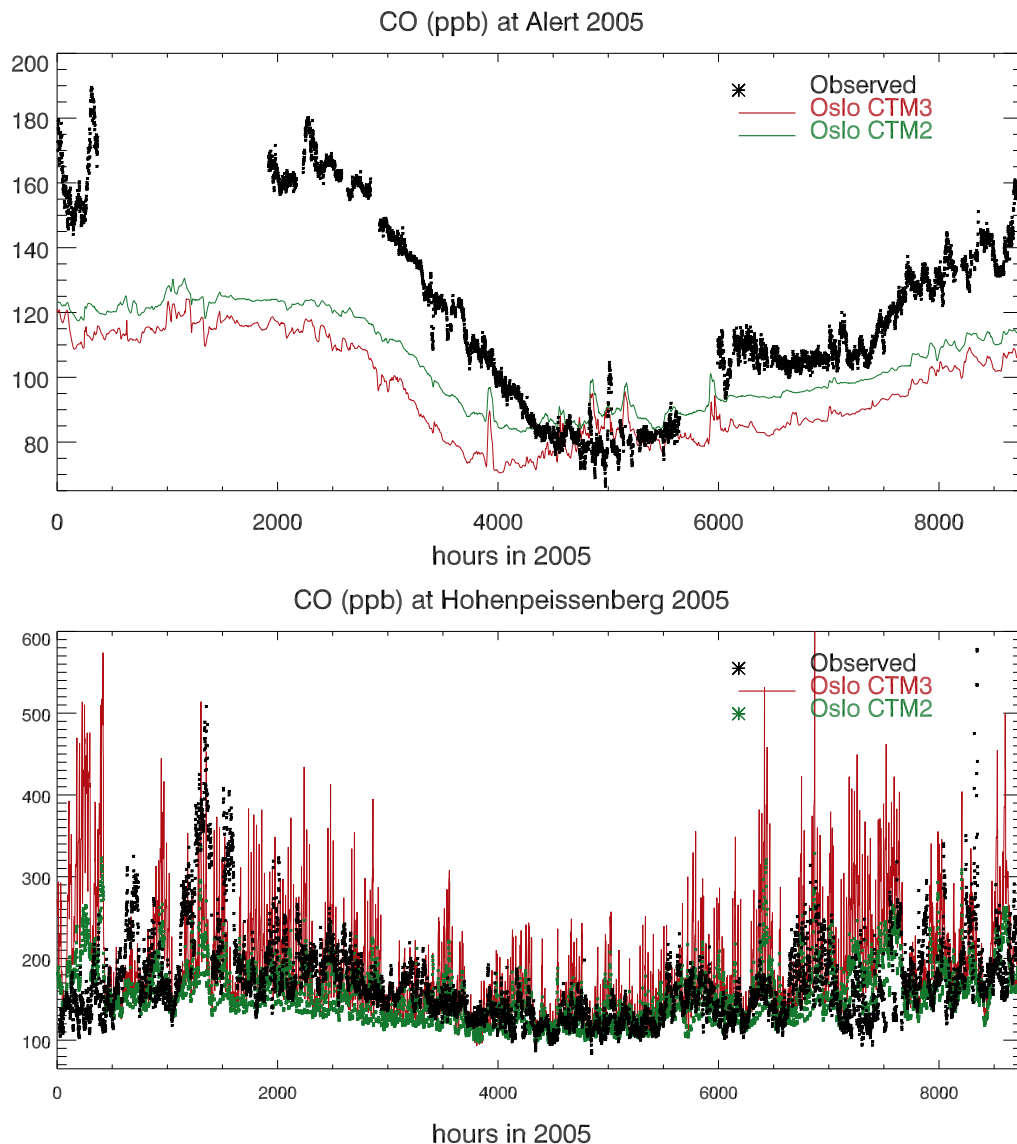


3.20 Eureka – October 2000



4 Surface observations of CO

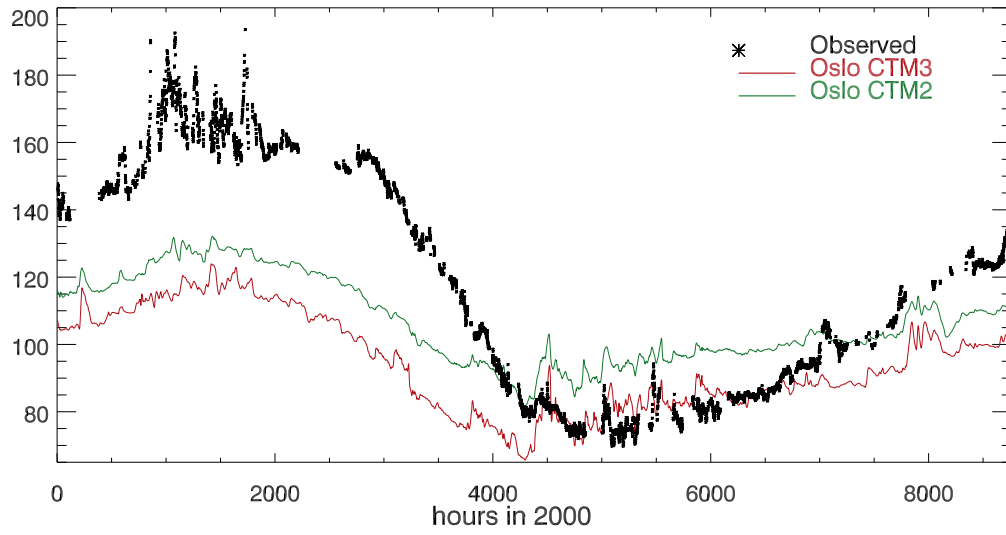
To check the model seasonal variation of CO, we compare the models against measurements at two stations; Alert and Hohenpeissenberg, shown in the figures below. The year is 2005, and it should be kept in mind that the model emissions are taken from the year 2000; it is expected that the horizontal distribution of CO emission has not changed much, although the amount emitted may have. However, a comparison with 2000 measurements gives similar conclusions (shown on the next page). The models underestimate winter-time CO at high northern latitudes, as found in earlier studies.



CO measurements from Alert Global Atmosphere Watch Observatory are delivered by Environment Canada (Doug.Worthy@ec.gc.ca), retrieved from the World Data Center for Greenhouse Gases.

CO data measured by the Hohenpeißenberg Meteorological Observatory, delivered by Deutscher Wetterdienst (Stefan.Gilge@dwd.de), were obtained from the WMO World Data Center for Greenhouse Gases in Tokyo.

CO (ppb) at Alert 2000



CO (ppb) at Hohenpeissenberg 2000

