

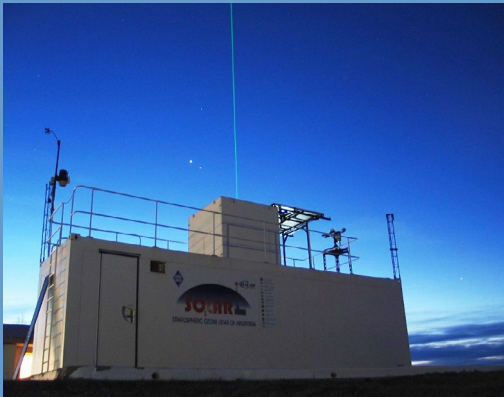


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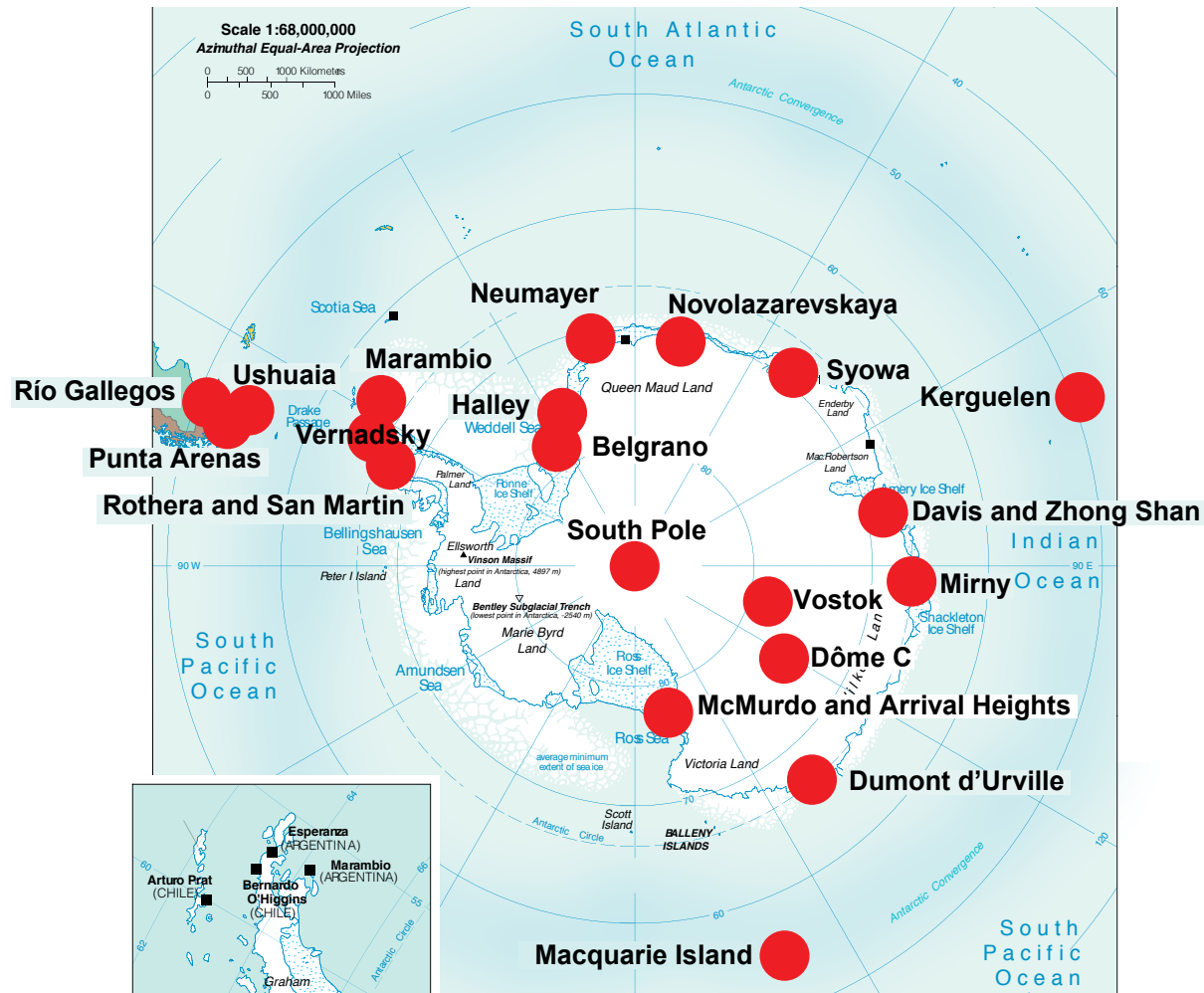
Ozone Layer Monitoring in Antarctica

Geir O. Braathen

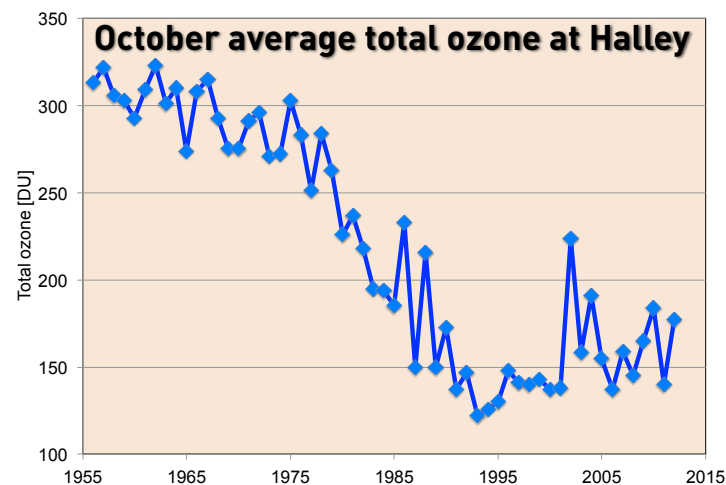
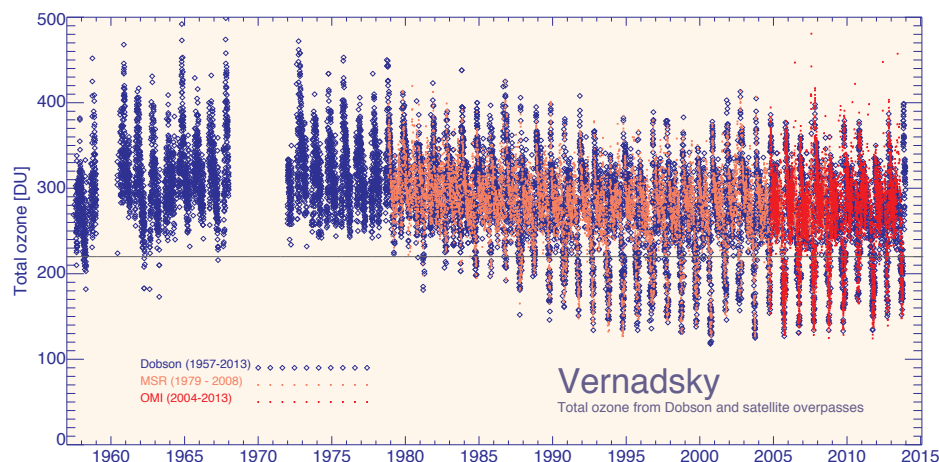
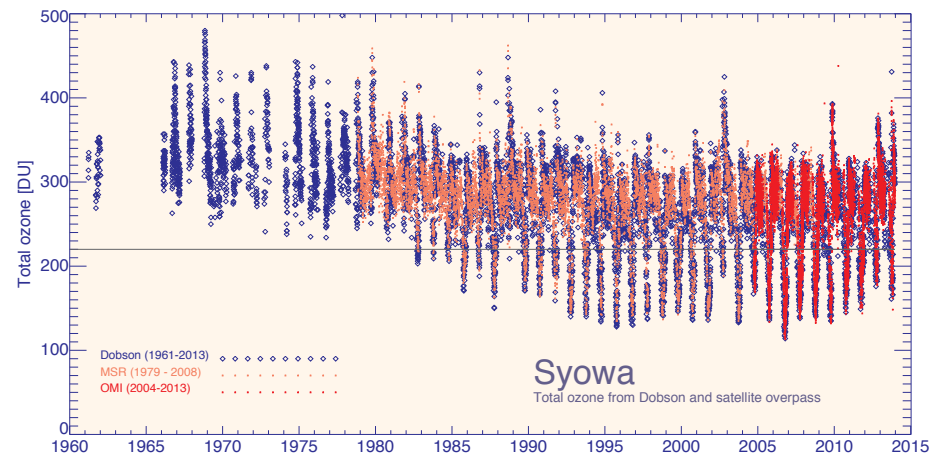
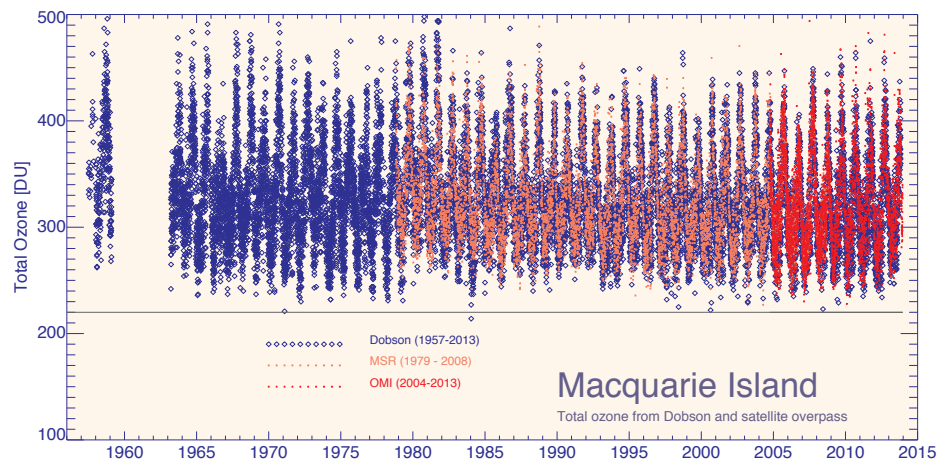
Atmospheric Environment Research Division, Research Department, WMO



Antarctic stations submitting data in near-real time



Several stations have long time series

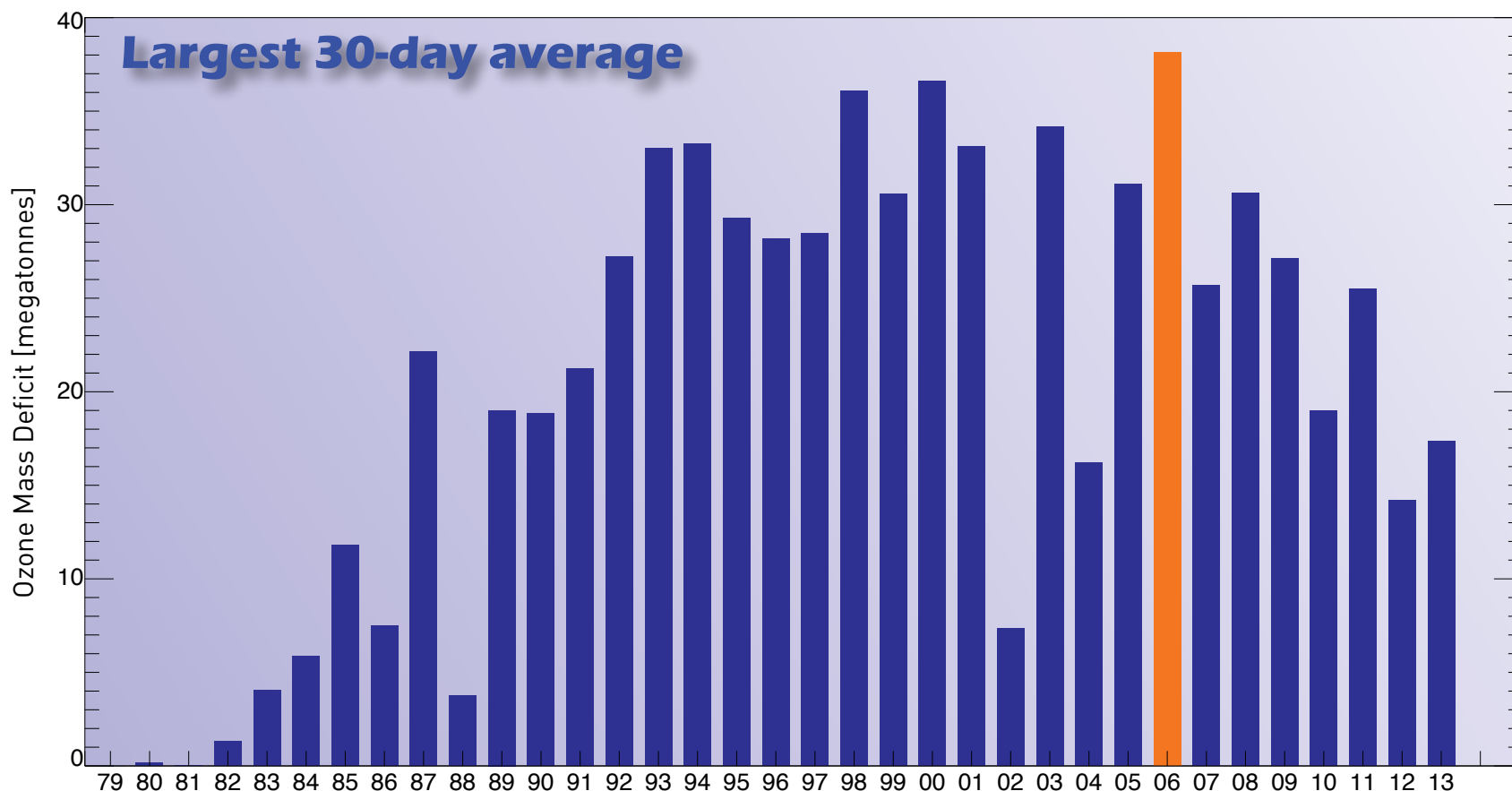


Overview of instrument types

Station name	Dobson	Brewer	Sondes	DOAS	Filter	Lidar	FTIR
Arrival Heights	✓						✓
Belgrano		✓	✓	✓			
Davis			✓				
Dôme C				✓			
Dumont d'Urville				✓			
Halley	✓			✓			
Marambio	✓	✓	✓				
Mirny					✓		
Neumayer			✓				
Novolazarevskaya					✓		
Rio Gallegos				✓		✓	
Rothera				✓			
South Pole	✓	✓	✓				
Syowa	✓		✓				
Ushuaia	✓		✓				
Vernadsky	✓						
Vostok					✓		
Zhong Shan		✓					
	7	4	7	6	3	1	1

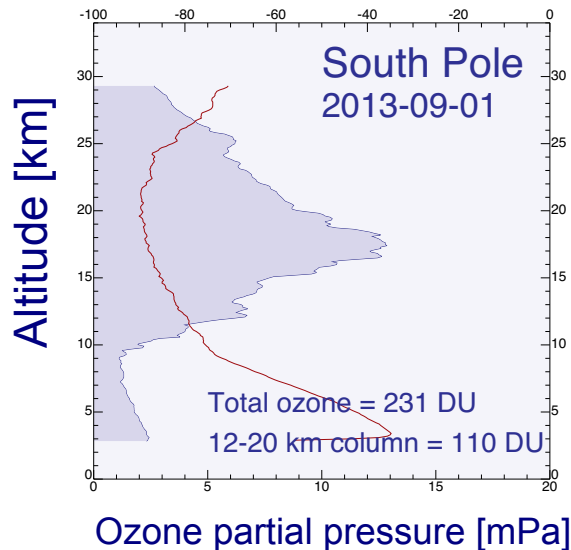
Ozone mass deficit from KNMI MSR, SCIAMACHY and GOME-2

Ozone mass deficit

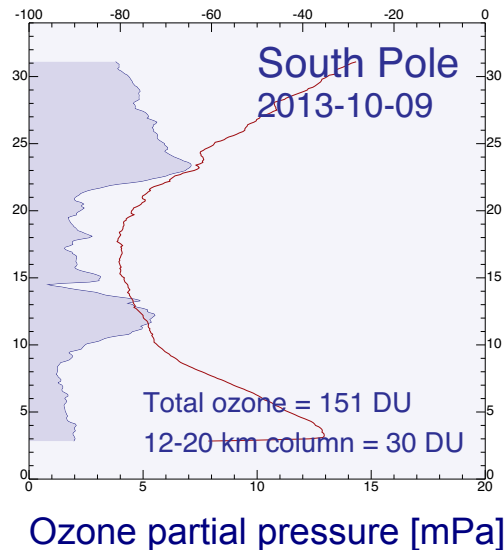


Winter and spring Antarctic ozone not only a function of chemically-induced ozone loss

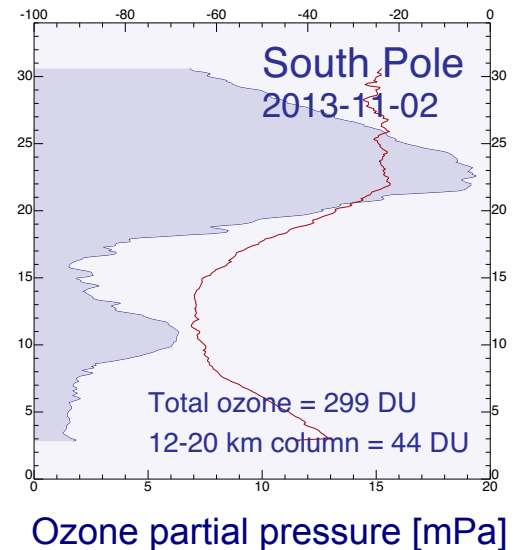
Winter profile



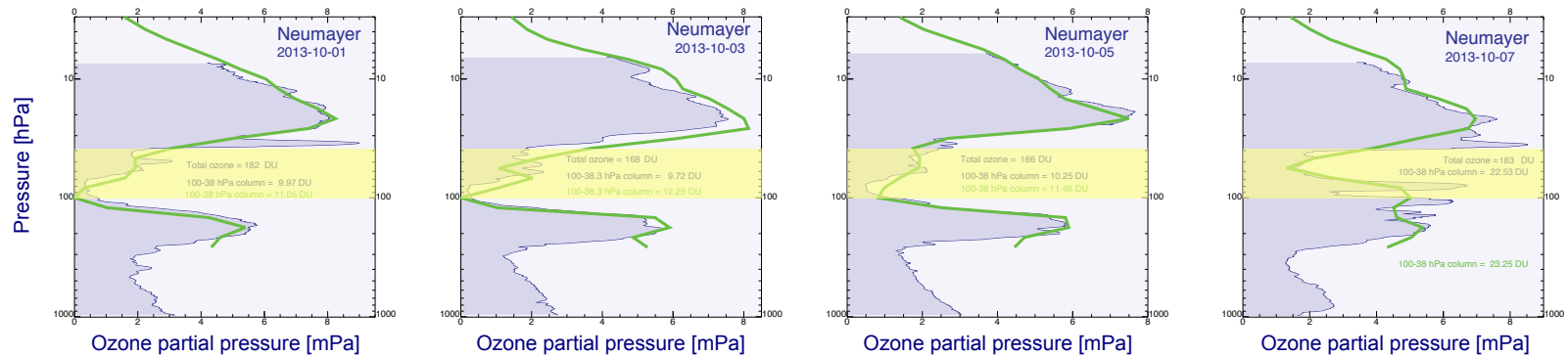
Typical O₃ hole



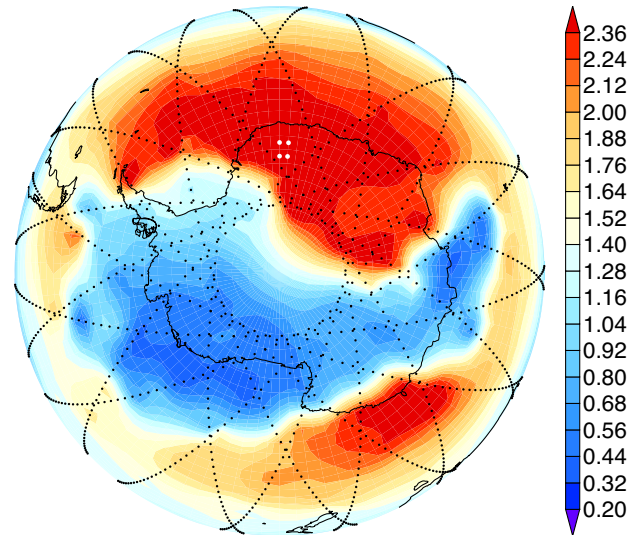
O₃ from mid-lat



AURA MLS and ozonesondes



68 hPa O₃ on 17 November 2013



O₃ vmr [ppmv]

Ozone mass deficit based on the 100 - 38.3 hPa partial ozone column

Total O₃



Ratio 2006/2012:

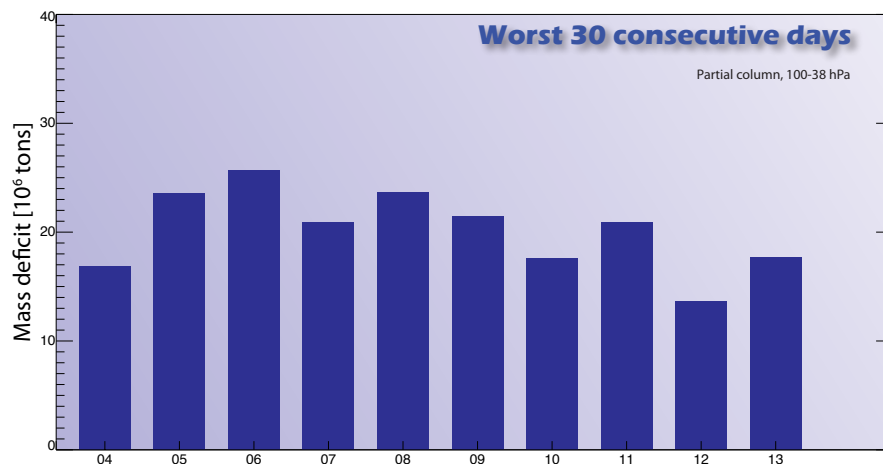
38.13/14.20 =

2.69

Mean (04-13) =

24.49 ± 7.68

100-38.3 hPa
O₃



Ratio 2006/2012:

25.66/13.63 =

1.88

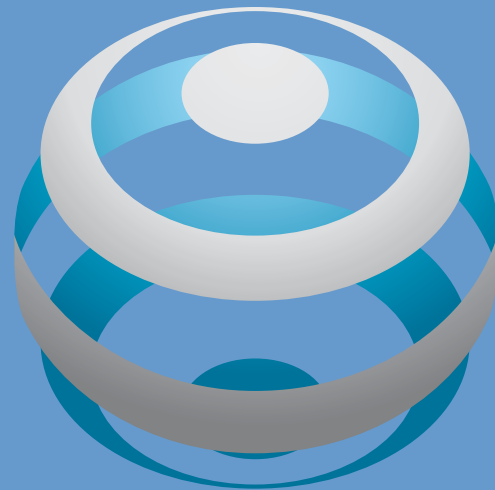
Mean (04-13) =

20.19 ± 3.70



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Thank you for your attention!



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