

Federal Department of Home Affairs FDHA Federal Office of Meteorology and Climatology MeteoSwiss

# Flagging Total Ozone Data

## How to get a proper data set out of the multi-instrumental Arosa total ozone measurements ?



## Goal

Total ozone data series should be free from outliers for further data quality control

## Problem

Much more Dobson total ozone measurements with the automatization of the instruments, e.g.:

2006: D062+D101: **2000** measurements, about 10% flagged 2014: D062 **11'300** ms (Jan-Jun), about 8% flagged

# What could be the most efficient methode to flag big amounts of data ?



## In the years 2001ff flagging has been performed on a day-to-day basis including all instruments (Brewer, Dobsons):





## List of flagged measurements used by other programs to insert flags into data files:

		0	8		•	• (	f	¥ 4																
		A	B	C	DI	3	F	G	H	I	J	K	L	М	N	0	Р	Q						
1	s	inale	ozo	one	value	со	rrection	s Bre	wer/D	)obso	n 🗖													
-			204	40			LITO					Sort D	aylist		Fla	ag Mor	nth	Get Cloud Obs Dobson Remarks						
2	Já	anuary	y 201	13			UIC				_				Flog	Elec	Flog							
3	_	dd m	nm	jdn I	Instr i	nf <b>h</b>	h:mm:ss	time	temp	my	y Ozon	sd/sun	SO2	sd	A	C	D	Remarks						
4		1	1	1	40	0	10:22:11	10.37	8	3.012	2 318.4	1.4	-3.0	2.0	1			Sc, Ac, Ci clouds						
5		1	1	1	156	0	12:20:01	12.33	9	2.96	5 <b>347.2</b>	2.5	-0.9	0.9	1			Sc, Ac, As, Ci clouds	<b>I</b> —					
6	_	1	1	1	62 1	1	09:43:29	9.72	21	3.392	2 284.4	33.0						Sc, Ac, Ci clouds		Versi	on: 29.10	.2013 12:	08:59.0	all3d
2		1	1	1	62 1	1 3	09:46:47	9.78	21	3.35	307.3	33.0			1	1		Sc, Ac, Cl clouds AutoDob error: w/ C too low	21	90.3	0.0.4.4	4.1.250	1.249	1.247
9		1	1	1	62 1	1	09:48:55	9.82	21	3.325	5 307.9	33.0			1	, <u> </u>	1	Sc. Ac. Ci clouds	27	93.1	0.0.00	0.1.246	1.245	1.244
10	)	1	1	1	62 1	1	09:51:02	9.85	21	3.300	302.2	33.0			1	<b>`</b>	1	Sc, Ac, Ci clouds	.34	93.3	.0.0.0.0	0.1.243	1.241	1.240
11		1	1	1	62 1	1	10:12:45	10.21	21	3.091	1 304.8	33.0			1		1	Sc, <del>Ac,</del> Ci clouds	40	93.2	.0.0.0.0	0.1.239	1.238	1.237
206	1	23	6	174	101 2	3	11:51:12	11.85	28	1.094	4 307.7	38.0				4		Measurement error. w.C. too high/low (her)	47	92.9	.0.0.0.0	0.1.236	1.235	1.234
206	2	23	6	174	101 2	3	11:52:30	11.88	28	1.095	5 <b>326.3</b>	38.0					4	Measurement error: wI D too high/low (her)	54	92.7	• 0 • 0 • 0 • 0 • 0	0.1.232	1.231	1.230
206	3	23	6	1/4	101 2	1	11:52:42	11.88	28	1.095	5 329.2	38.0					4	Measurement error: wI D too high/low (her)	01	92.4	• 0 • 0 • 0 • 0 • 0	0.1.229	1.228	1.227
206	4	26	6	177	40	0	08:12:01	8.20	8	1.405	5 343.6	2.0	-0.7	0.5	1			Sc, St clouds, fog	46	91 1	0.0 0.0	4 1.221	1.220	1.219
206	5	26	6	177	40 72	0	06-52-49	9.18	11	1.225	5 JZ1.4	0.6	3.0	0.6	1			Sc, St clouds, tog	53	91.2	0 • • 4 • 0	0.01.218	1.217	1.217
200	7	26	6	177	72	ŏ	07:37:24	7.62	7	1.565	5 346.1	1.6	1.2	0.8				Sc. St clouds, log	00	90.4	0.0.4.4	4.1.216	1.215	1.214
206	8	26	6	177	72	0	08:23:43	8.40	7	1.359	343.2	2.5	1.7	0.4	1			Sc, St clouds, fog	06	91.3	0.0 4.4	1.213	1.212	1.211
206	9	26	6	177	72	0	12:21:48	12.36	12	1.113	3 347.5	2.1	2.7	0.5	1			Sc clouds	13	91.2	• 0 • 0 • 0 • 0	0.1.210	1.210	1.209
207	0	26	6	177	72	0	13:40:08	13.67	12	1.233	3 <b>358.6</b>	1.9	-0.4	0.2	1			Sc clouds	20	91.1	• 0 • 0 • 0 • 0	0.1.208	1.207	1.206
207	2	26	6	177	156	0	16:09:46	8 27	14	1 380	/ 346.4 3 357 2	2.1	-3.4	0.3	1			Sc, Ac clouds	26	90.5	• 0 • 0 • 0 • 0	0.1.206	1.205	1.204
207	2	20	-		150	-	00.10.04	0.21		1.500	551.2	2.1	-0.4	0.1					32	91.0	• 0 • 0 • 0 • 0	0.1.203	1.203	1.202
								17	062	2 · N ·	2013	0501	33	23	102:	118 · ·	48.1	0.0 102159 28.6 0.0 10	2239	90.7	• 0 • 0 • 0 • 0	0.1.201	1.200	1.200
								18	062	2 · N ·	2013	0501	73	23	102:	325 · ·	47.8		2446	90.6	0.0.04	0.1.199	1.198	1.198
								19	062	2 · N ·	2013	0501	33	23	102	531 · ·	48.0	0.0.102611.28.4.0.0.10	2652	90.6	• 0 • 0 • 0 • 0 • 0	0.1.197	1.196	1.196
								20	062	2 · N ·	2013	0501	73	23	102	738 · ·	47.7	0.0.102818.27.5.0.0.10	2858	89.4	0.0.4.4	4.1.195	1.194	1.194
								21	062	2 · N ·	2013	0501	73	23	102	943 · ·	47.4	0.0 103024 28.6 0.0 10	3105	90.8	• 0 • 0 • 0 • 0	4 1.193	1.193	1.192
								22	062	2 · N ·	2013	0501	73	23	103:	151 · ·	48.5	0.0.103231.29.1.0.0.10	3311	91.3	0.0.4.4	4 1.191	1.191	1.190
								23	062	2 · N ·	2013	0501	73	24	103	357 · ·	48.8	0.0.103437.29.3.0.0.10	3518	91.0	0.0.4.4	4.1.190	1.189	1.189
								24	062	2 · N ·	2013	0501	73	24	103	604 · ·	47.8	0.0 103645 27.8 0.0 10	3725	89.2	0.0.04	0.1.188	1.188	1.187



## Old method: FlagSgozon

- day-by-day flagging
- all instruments: 3 Brewers, 2 resp. 3 Dobsons (AD, CD wavelengths)
- meteorological parameters included (GlobRad, SunDur, Rain)
- flagging subjective (by personal decision)

### New method: ScanSingoz

- each instrument separate
- Dobsons: single wavelengths C, D, A; combined wI AD, CD
- flagging objective

## $\rightarrow$ What is the best method ?



### What is an «Outlier» ?

- a value that differs more or less from an entity
- most statistical definitions base on normal distribution of a dataset
- daily time series of total ozone measurements show very different shapes:



 $\rightarrow$  daily mean as reference for the entity will cause problems



Method (resp. program code) should work for datasets with few as well as with many data points (measurements), i.e. method should be applicable to days with only a few total ozone measurements, either due to bad weather conditions or due to instrument failure, or other reasons

## $\rightarrow$ Reference should be flexible:

- daily mean
- linear regression
- polynome of higher order
- stability of consecutive measurements





#### Daily Mean of Measurements



Polynome of 2<sup>nd</sup> Order



#### Linear Regression to Measurements



#### Polynome of 4<sup>th</sup> Order





#### Daily Mean of Measurements



Polynome of 2<sup>nd</sup> Order



#### Linear Regression to Measurements



#### Polynome of 4<sup>th</sup> Order





#### **Daily Mean of Measurements**







#### Linear Regression to Measurements





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#### **Daily Mean of Measurements**



#### Polynome of 2<sup>nd</sup> Order



#### Linear Regression to Measurements



#### Polynome of 4<sup>th</sup> Order

## Features of ScanSingoz (VBA):

### Reference could be either:

- daily mean calculated
- daily mean of homogenized dataset
- linear regression
- polynome of higher order (on days with only a few measurements, order is reduced)

Consecutive measurements stability check may be combined with one of the above

Processing is iterative: worst outlier will be eliminated first, then daily mean and fitting curve are recalculated etc.



## Features of ScanSingoz (2):

Limits for relative differences of a point to the reference can be set for each wavelength or combination of it separately:

Run 'Sca table 'Diii wl='all', tl	nSingoz'to wl'flag the hen a sequ	o find outlie m and and ence of C-/	rs (RelDiff> list them to A-D-AD is p	RelDiffLimi b 'ScanSgo performed.	t) in z'; if	
	St	andard Rel	Diff Limits [	%1		
С	D	A	AD	CD	Brewer	
3.20	5.00	2.50	2.70	3.50	2.50	RelDiff Dayoz Limit [%]
1.60	4.00	1.00	1.50	4.50	1.50	RelDiff polyN Reg Limit [%]
4.00	5.00	2.50	2.50	4.50	2.50	RelDiff Homoz Limit [%]
1.60	4.00	1.00	1.50	4.50	1.20	RelDiff Ozone consecut, Limit [%]

Statistics is calculated after the flagging (number and percentage of flagged measurements for each wavelength)



## Results

										-		
1	B 072 Tota	l Ozone	e 2014	1	RelDiff L	imits [%]:	2.50	1.50	1.00	1.00		121
2	Measur	ements:	6638		Version:	06.03.2013	13:05:00 Cal1	13a	Make D	ay Plot		131
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDif	400.0	
4	01.01.2014 0	9:27:02	001	1	335.7	337.0	-0.38	336.1	-0.11		390.0	
5	01.01.2014 0	9:32:44	001	2	336.3	337.0	-0.20	336.2	0.02			
6	01.01.2014 0	9:36:10	001	3	336.9	337.0	-0.03	336.3	0.18		380.0	<b>/</b>
4584	10.05.2014 1	4:10:27	130	35	341.4	343.4	-0.58	340.8	0.19		370.0	
4585	11.05.2014 0	07:21:40	131	1	349.4	375.9	-7.05	348.8	0.16			
4586	11.05.2014 0	07:37:17	131	2	349.4	373.3	-6.39	349.1	0.09		360.0	
4587	11.05.2014 0	07:42:57	131	3	348.9	373.3	-6.53	349.5	-0.18			
4588	11.05.2014 0	7:49:50	131	4	350.1	373.3	-6.20	349.7	0.10		350.0	
4589	11.05.2014 0	07:53:16	131	5	349.8	373.3	-6.29	349.7	0.02		340.0	
4590	11.05.2014 0	7:56:42	131	6	349.6	373.3	-6.34	349.7	-0.02		040.0	
4591	11.05.2014 1	3:32:15	131	7	383.2	373.3	2.66	383.3	-0.02		330.0	
4592	11.05.2014 1	3:56:32	131	8	380.5	376.3	1.12	386.8	-1.64		07:00	08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00
4593	11.05.2014 1	4:10:45	131	9	387.4	375.9	3.05	392.7	-1.35		1.420	Z Z.J 4 4 4 14.10
4594	11.05.2014 1	4:14:17	131	10	391.4	374.9	4.40	395.4	-1.01	r	1 442	3 24 5 4 14.14
4595	11.05.2014 1	4:30:17	131	11	401.3	373.3	7.51	400.3	0.26			121
4596	11.05.2014 1	4:33:43	131	12	400.9	373.3	7.41	400.6	0.07			131
4597	11.05.2014 1	4:37:15	131	13	399.5	373.3	7.03	400.9	-0.35		400.0	
4598	11.05.2014 1	15:01:01	131	14	399.9	373.3	7.14	399.7	0.05		400.0	
4599	11.05.2014 1	15:04:27	131	15	397.1	377.8	5.11	399.8	-0.68		390.0	
4600	12.05.2014 0	06:30:48	132	1	370.6	368.5	0.56	370.6	0.00			
4601	12.05.2014 0	08:24:29	132	2	368.5	368.5	-0.01	368.0	0.14		380.0	
4602	12.05.2014 0	08:27:55	132	3	367.9	368.5	-0.18	368.0	-0.02		370.0	
4603	12.05.2014 0	08:31:22	132	4	367.3	368.5	-0.34	367.9	-0.17		570.0	
4604	12.05.2014 0	08:34:48	132	5	368.4	368.5	-0.04	367.9	0.13		360.0	
4605	12.05.2014 0	08:38:15	132	6	368.6	368.5	0.01	367.9	0.19			
4606	12.05.2014 0	08:41:41	132	7	368.4	368.5	-0.04	367.9	0.14		350.0	
4607	12.05.2014 0	08:45:08	132	8	365.8	368.5	-0.75	367.9	-0.57			
4608	12.05.2014 0	09:03:55	132	9	369.8	368.5	0.34	367.9	0.52		340.0	
4609	12.05.2014 0	9:07:21	132	10	367.3	368.5	-0.34	367.9	-0.16		220.0	
4610	12.05.2014 0	9:10:48	132	11	366.9	368.5	-0.45	367.9	-0.27		350.0	
4611	12.05.2014 1	0:18:39	132	12	369.2	368.5	0.18	368.6	0.17		07:00	08.00 09.00 10:00 11:00 12:00 13:00 14:00 15:00



## Results

1	B 072 Tota	l Ozone	2014		RelDiff L	_imits [%]:	2.50	1.50	1.00	1.00			104		
2	Measure	ements:	6638		Version:	06.03.2013	13:05:00 Cal13	а	Make D	ay Plot			164	**	
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff			*		•
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0 -			·	
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44						
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46				*		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0			+	
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02					
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39						
6040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0				
6041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39						
6042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01						
6043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0				
6044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06						
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02						
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 +-		I		
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:00	0 06:00 07:00 08:00 09:0	0 10:00 11:00 12:	:00 13:00 14:00	15:00 16:00
6048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208	4 2.3		09:16	
6049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22						
6049 6050	13.06.2014 0 13.06.2014 0	19:26:45 19:30:23	164 164	29 30	312.1 328.7	330.2 330.9	-5.48 -0.68	329.3 330.9	-5.22 -0.66				164		
6049 6050 6051	13.06.2014 0 13.06.2014 0 13.06.2014 0	9:26:45 9:30:23 9:58:02	164 164 164	29 30 31	312.1 328.7 334.8	330.2 330.9 331.1	-5.48 -0.68 1.13	329.3 330.9 331.7	-5.22 -0.66 0.92	-1.21	_		164	++	
6049 6050 6051 6052	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34	164 164 164 164	29 30 31 32	312.1 328.7 334.8 330.8	330.2 330.9 331.1 330.9	-5.48 -0.68 1.13 -0.04	329.3 330.9 331.7 331.4	-5.22 -0.66 0.92 -0.17	-1.21			164	++ *	•
6049 6050 6051 6052 6053	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06	164 164 164 164 164	29 30 31 32 33	312.1 328.7 334.8 330.8 333.6	330.2 330.9 331.1 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80	329.3 330.9 331.7 331.4 331.4	-5.22 -0.66 0.92 -0.17 0.66	-1.21	222.0	*	164 \$	*	
6049 6050 6051 6052 6053 6054	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06	164 164 164 164 164 164	29 30 31 32 33 34	312.1 328.7 334.8 330.8 333.6 328.1	330.2 330.9 331.1 330.9 330.9 331.0	-5.48 -0.68 1.13 -0.04 0.80 -0.88	329.3 330.9 331.7 331.4 331.4 332.2	-5.22 -0.66 0.92 -0.17 0.66 -1.24	-1.21	332.0	* *	164	**	*
6049 6050 6051 6052 6053 6054 6055	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10	164 164 164 164 164 164 164	29 30 31 32 33 34 35	312.1 328.7 334.8 330.8 333.6 328.1 330.7	330.2 330.9 331.1 330.9 330.9 331.0 331.0 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07	329.3 330.9 331.7 331.4 331.4 332.2 333.5	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83	-1.21	332.0	*****	164	**	
6049 6050 6051 6052 6053 6054 6055 6056	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17	164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9	330.2 330.9 331.1 330.9 330.9 331.0 331.0 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50	329.3 330.9 331.7 331.4 331.4 332.2 333.5 333.8	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64	-1.21	332.0	****************	164	**	
6049 6050 6051 6052 6053 6054 6055 6056 6057	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:24:09	164 164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36 37	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6	330.2 330.9 331.1 330.9 330.9 331.0 331.0 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41	329.3 330.9 331.7 331.4 332.2 333.5 333.8 333.8 333.9	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50	-1.21	332.0	400 40 40 40	164		
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:24:09 3:52:40	164 164 164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36 37 38	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6	330.2 330.9 331.1 330.9 330.9 331.0 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30	329.3 330.9 331.7 331.4 331.4 332.2 333.5 333.8 333.9 333.4	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03	-1.21	332.0	And the second s	164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:24:09 3:52:40 3:59:38	164 164 164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36 37 38 39	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5	330.2 330.9 331.1 330.9 330.9 331.0 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.7	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49	329.3 330.9 331.7 331.4 332.2 333.5 333.8 333.9 333.4 332.5	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02	-1.21	332.0	***********	164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:59:38 4:03:05	164 164 164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36 37 38 39 40	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71	329.3 330.9 331.7 331.4 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.07	-1.21	332.0 327.0 322.0	* *****	164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060 6061	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:24:09 3:52:40 3:52:40 3:59:38 4:03:05 4:18:24	164   164	29 30 31 32 33 34 35 36 37 38 39 40 41	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.7 330.6 330.6 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01	329.3 330.9 331.7 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 333.9	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.02 -3.07 -0.89	-1.21	332.0 327.0 322.0		164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060 6061 6062	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:24:09 3:52:40 3:52:40 3:59:38 4:03:05 4:18:24 4:21:50	164 164 164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36 37 38 39 40 41 42	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.7 330.6 330.7 330.6 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68	329.3 330.9 331.7 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 332.5 331.8 332.5 331.8 333.9 333.8	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.02 -3.07 -0.89 -0.19	-1.21	332.0 327.0 322.0		164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060 6061 6062 6063	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:52:40 3:52:40 3:52:38 4:03:05 4:18:24 4:21:50 4:25:17	164   164	29 30 31 32 33 34 35 36 37 38 39 40 41 42 43	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2 333.2 334.2	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.7 330.6 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68 0.98	329.3 330.9 331.7 331.4 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 331.9 333.8 333.9 333.8 333.9 333.8 333.8 333.8	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.02 -3.07 -0.89 -0.19 0.12	-1.21	332.0 327.0 322.0 317.0		164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060 6061 6062 6063 6064	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:52:40 3:59:38 4:03:05 4:18:24 4:21:50 4:25:17 4:28:43	164 164 164 164 164 164 164 164 164 164	29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2 334.2 334.2 333.2	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.7 330.6 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68 0.98 0.68	329.3 330.9 331.7 331.4 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 333.9 333.8 333.8 333.8 333.8 333.8 333.8 333.8 333.8	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.07 -0.89 -0.19 0.12 -0.16	-1.21	332.0 327.0 322.0 317.0		164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6060 6061 6062 6063 6064 6065	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:59:38 4:03:05 4:18:24 4:28:33 4:22:17 4:28:43 4:32:10	164   164	29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2 334.2 333.2 334.2 333.2	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68 0.98 0.68 0.95	329.3 330.9 331.7 331.4 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 333.9 333.8 333.9 333.8 333.9 333.8 333.9 333.8 333.7 333.7	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.07 -0.89 -0.19 0.12 -0.16 0.13	-1.21	332.0 327.0 322.0 317.0		164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6056 6057 6058 6060 6061 6062 6063 6064 6065 6066	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:52:40 3:52:40 3:52:40 3:52:38 4:03:05 4:18:24 4:22:57 4:28:43 4:22:16 4:22:17 4:28:43	164   164	29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46	312.1 328.7 334.8 330.8 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2 334.2 333.2 334.1 334.5	330.2 330.9 331.1 330.9 331.0 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68 0.98 0.68 0.95 1.08	329.3 330.9 331.7 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 333.9 333.8 333.8 333.8 333.8 333.8 333.8 333.8 333.8 333.8 333.8 333.8 333.7 333.7 333.7	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.07 -0.89 -0.19 0.12 -0.16 0.13 0.27	-1.21	332.0 327.0 322.0 317.0 312.0		164	*	
6049 6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060 6061 6062 6063 6064 6065 6066 6067	13.06.2014 0 13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:26:45 9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:52:40 3:52:40 3:52:40 3:52:40 4:25:17 4:28:43 4:22:17 4:28:43 4:32:10 4:32:36 4:39:02	164   164	29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47	312.1 328.7 334.8 330.8 333.6 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2 334.2 334.2 334.1 334.5 333.8	330.2 330.9 331.1 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.7 330.6 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9 330.9	-5.48 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68 0.98 0.98 0.95 1.08 0.86	329.3 330.9 331.7 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 333.9 333.4 333.9 333.8 333.8 333.8 333.8 333.8 333.7 333.7 333.6 333.5	-5.22 -0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.07 -0.89 -0.19 0.12 -0.16 0.13 0.27 0.08	-1.21	332.0 327.0 322.0 317.0 312.0 05:00	· · · · · · · · · · · · · · · · · · ·	164	00 13:00 14:00	15:00 16:00



## Results

1	B 072 Tota	l Ozone	2014	4	RelDiff_Lir	mits [%]:	2.50	1.50	1.00	1.00	164
2	Measure	ements:	6638		Version: 0	6.03.2013	13:05:00 Cal13a	1	Make D	ay Plot	164
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff	
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44		
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02	
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39		
6040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0
6041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39		
6042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01		
6043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0
6044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06		
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02		
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 + + + + + + + + + + + + + + + + + + +
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
6048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208 4 2.3 09:16
6049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22		
6050	13.06.2014 0	9:30:23	164	30	328.7	330.9	-0.68	330.9	-0.66		164
6051	13.06.2014 0	9:58:02	164	31	334.8	331.1	1.13	331.7	0.92	-1.21	•••
6052	13.06.2014 1	0:01:34	164	32	330.8	330.9	-0.04	331.4	-0.17		
6053	13.06.2014 1	0:05:06	164	33	333.6	330.9	0.80	331.4	0.66		222.0
6054	13.06.2014 1	1:08:06	164	34	328.1	331.0	-0.88	332.2	-1.24		552.0
6055	13.06.2014 1	2:06:10	164	35	330.7	330.9	-0.07	333.5	-0.83		
6056	13.06.2014 1	2:28:17	164	36	335.9	330.9	1.50	333.8	0.64		817.0
6057	13.06.2014 1	2:44:09	164	37	335.6	330.9	1.41	333.9	0.50		\$27.0
6058	13.06.2014 1	3:52:40	164	38	326.6	330.9	-1.30	333.4	-2.03		
6059	13.06.2014 1	3:59:38	164	39	322.5	330.7	-2.49	332.5	-3.02		812.0
6060	13.06.2014 1	4:03:05	164	40	321.6	330.6	-2.71	331.8	-3.07		522.0
6061	13.06.2014 1	4:18:24	164	41	330.9	330.9	-0.01	333.9	-0.89		
6062	13.06.2014 1	4:21:50	164	42	333.2	330.9	0.68	333.8	-0.19		317.0
6063	13.06.2014 1	4:25:17	164	43	334.2	330.9	0.98	333.8	0.12		517.0
6064	13.06.2014 1	4:28:43	164	44	333.2	330.9	0.68	333.7	-0.16		
6065	13.06.2014 1	4:32:10	164	45	334.1	330.9	0.95	333.7	0.13		312.0
6066	13.06.2014 1	4:35:36	164	46	334.5	330.9	1.08	333.6	0.27		
6067	13.06.2014 1	4:39:02	164	47	333.8	330.9	0.86	333.5	0.08		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
6068	13.06.2014 1	4:42:29	164	48	334.2	330.9	0.98	333.5	0.22		1.447 3 2.0 14:42



## Results

1	B 072 Tota	l Ozone	e 2014	1	RelDiff Li	mits [%]:	2.50	1.50	1.00	1.00	164
2	Measure	ements:	6638		Version: 0	6.03.2013 1	3:05:00 Cal13	a	Make D	ay Plot	164
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff	
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44		
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02	
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39		
6040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0
6041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39		
6042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01		
6043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0
6044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06		
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02		
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 + + + + + + + + + + + + + + + + + + +
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
6048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208 4 2.3 09:16
6049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22		
6050	13.06.2014 0	9:30:23	164	30	328.7	330.9	-0.68	330.9	-0.66		164
6051	13.06.2014 0	9:58:02	164	31	334.8	331.1	1.13	331.7	0.92	-1.21	•••
6052	13.06.2014 1	0:01:34	164	32	330.8	330.9	-0.04	331.4	-0.17		
6053	13.06.2014 1	0:05:06	164	33	333.6	330.9	0.80	331.4	0.66		222.0
6054	13.06.2014 1	1:08:06	164	34	328.1	331.0	-0.88	332.2	-1.24		332.0
6055	13.06.2014 1	2:06:10	164	35	330.7	330.9	-0.07	333.5	-0.83		
6056	13.06.2014 1	2:28:17	164	36	335.9	330.9	1.50	333.8	0.64		327.0
6057	13.06.2014 1	2:44:09	164	37	335.6	330.9	1.41	333.9	0.50		\$27.0
6058	13.06.2014 1	3:52:40	164	38	326.6	330.9	-1.30	333.4	-2.03		
6059	13.06.2014 1	3:59:38	164	39	322.5	330.7	-2.49	332.5	-3.02		322.0
6060	13.06.2014 1	4:03:05	164	40	321.6	330.6	-2.71	331.8	-3.07		522.0
6061	13.06.2014 1	4:18:24	164	41	330.9	330.9	-0.01	333.9	-0.89		
6062	13.06.2014 1	4:21:50	164	42	333.2	330.9	0.68	333.8	-0.19		317.0
6063	13.06.2014 1	4:25:17	164	43	334.2	330.9	0.98	333.8	0.12		
6064	13.06.2014 1	4:28:43	164	44	333.2	330.9	0.68	333.7	-0.16		
6065	13.06.2014 1	4:32:10	164	45	334.1	330.9	0.95	333.7	0.13		312.0
6066	13.06.2014 1	4:35:36	164	46	334.5	330.9	1.08	333.6	0.27		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
6067	13.06.2014 1	4:39:02	164	47	333.8	330.9	0.86	333.5	0.08		05.00 00.00 07.00 05.00 10.00 11.00 12.00 15.00 15.00 10.00
6068	13.06.2014 1	4:42:29	164	48	334.2	330.9	0.98	333.5	0.22		1.447 3 2.0 14:42



## Results

1	B 072 Tota	l Ozone	e 2014	4	RelDiff Li	mits [%]:	2.50	1.50	1.00	1.00	104
2	Measure	ements:	6638		Version: 0	6.03.2013 1	3:05:00 Cal13	а	Make D	ay Plot	164
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff	
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44		
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02	
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39		
6040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0
6041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39		
6042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01		
6043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0
6044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06		
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02		
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 +
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
6048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208 4 2.3 09:16
6049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22		
6050	13.06.2014 0	9:30:23	164	30	328.7	330.9	-0.68	330.9	-0.66		164
6051	13.06.2014 0	9:58:02	164	31	334.8	331.1	1.13	331.7	0.92	-1.21	**
6052	13.06.2014 1	0:01:34	164	32	330.8	330.9	-0.04	331.4	-0.17		
6053	13.06.2014 1	0:05:06	164	33	333.6	330.9	0.80	331.4	0.66		222.0
6054	13.06.2014 1	1:08:06	164	34	328.1	331.0	-0.88	332.2	-1.24		332.0
6055	13.06.2014 1	2:06:10	164	35	330.7	330.9	-0.07	333.5	-0.83		The second secon
6056	13.06.2014 1	2:28:17	164	36	335.9	330.9	1.50	333.8	0.64		327.0
6057	13.06.2014 1	2:44:09	164	37	335.6	330.9	1.41	333.9	0.50		327.0
6058	13.06.2014 1	3:52:40	164	38	326.6	330.9	-1.30	333.4	-2.03		
6059	13.06.2014 1	3:59:38	164	39	322.5	330.7	-2.49	332.5	-3.02		322.0
6060	13.06.2014 1	4:03:05	164	40	321.6	330.6	-2.71	331.8	-3.07		522.0
6061	13.06.2014 1	4:18:24	164	41	330.9	330.9	-0.01	333.9	-0.89		
6062	13.06.2014 1	4:21:50	164	42	333.2	330.9	0.68	333.8	-0.19		317.0
6063	13.06.2014 1	4:25:17	164	43	334.2	330.9	0.98	333.8	0.12		511.0
6064	13.06.2014 1	4:28:43	164	44	333.2	330.9	0.68	333.7	-0.16		
6065	13.06.2014 1	4:32:10	164	45	334.1	330.9	0.95	333.7	0.13		312.0
6066	13.06.2014 1	4:35:36	164	46	334.5	330.9	1.08	333.6	0.27		
6067	13.06.2014 1	4:39:02	164	47	333.8	330.9	0.86	333.5	0.08		05.00 00.00 07.00 08.00 05.00 10.00 11.00 12.00 13.00 14.00 15.00 10.00
6068	13.06.2014 1	4:42:29	164	48	334.2	330.9	0.98	333.5	0.22		1.447 3 2.0 14:42



## Results

1	B 072 Tota	l Ozone	e 2014	4	RelDiff_Li	mits [%]:	2.50	1.50	1.00	1.00	164
2	Measure	ements:	6638		Version: 0	6.03.2013 1	3:05:00 Cal13	Ba	Make D	ay Plot	104
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff	
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44		
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02	
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39		
6040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0
6041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39		
6042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01		
6043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0
6044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06		
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02		
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 + + + + + + + + + + + + + + + + + + +
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
6048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208 4 2.3 09:16
6049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22		
6050	13.06.2014 0	9:30:23	164	30	328.7	330.9	-0.68	330.9	-0.66		164
6051	13.06.2014 0	9:58:02	164	31	334.8	331.1	1.13	331.7	0.92	-1.21	
6052	13.06.2014 1	0:01:34	164	32	330.8	330.9	-0.04	331.4	-0.17		
6053	13.06.2014 1	0:05:06	164	33	333.6	330.9	0.80	331.4	0.66		332.0
6054	13.06.2014 1	1:08:06	164	34	328.1	331.0	-0.88	332.2	-1.24		332.0
6055	13.06.2014 1	2:06:10	164	35	330.7	330.9	-0.07	333.5	-0.83		
6056	13.06.2014 1	2:28:17	164	36	335.9	330.9	1.50	333.8	0.64		327.0
6057	13.06.2014 1	2:44:09	164	37	335.6	330.9	1.41	333.9	0.50		327.0
6058	13.06.2014 1	3:52:40	164	38	326.6	330.9	-1.30	333.4	-2.03		
6059	13.06.2014 1	3:59:38	164	39	322.5	330.7	-2.49	332.5	-3.02		322.0
6060	13.06.2014 1	4:03:05	164	40	321.6	330.6	-2.71	331.8	-3.07		522.0
6061	13.06.2014 1	4:18:24	164	41	330.9	330.9	-0.01	333.9	-0.89		
6062	13.06.2014 1	4:21:50	164	42	333.2	330.9	0.68	333.8	-0.19		317.0
6063	13.06.2014 1	4:25:17	164	43	334.2	330.9	0.98	333.8	0.12		
6064	13.06.2014 1	4:28:43	164	44	333.2	330.9	0.68	333.7	-0.16		
6065	13.06.2014 1	4:32:10	164	45	334.1	330.9	0.95	333.7	0.13		312.0
6066	13.06.2014 1	4:35:36	164	46	334.5	330.9	1.08	333.6	0.27		
		1 00 00	404	47	222.0	220.0	0.00	222 5	0.00		03.00 00.00 07.00 08.00 09.00 10.00 11.00 12.00 13.00 14.00 15:00 10:00
6067	13.06.2014 1	4:39:02	164	41	333.0	550.9	0.00	333.5	0.08		



## Results

1	B 072 Tota	l Ozone	e 2014	1	RelDiff_Lin	nits [%]:	2.50	1.50	1.00	1.00	164
2	Measure	ements:	6638		Version: 06	5.03.2013 1	3:05:00 Cal13a		Make D	ay Plot	164
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff	
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44		
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02	
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39		
5040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0
5041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39		
5042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01		
5043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0
5044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06		
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02		
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 + + + + + + + + + + + + + + + + + + +
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
5048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208 4 2.3 09:16
5049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22		
6050	13.06.2014 0	9:30:23	164	30	328.7	330.9	-0.68	330.9	-0.66		164
6051	13.06.2014 0	9:58:02	164	31	334.8	331.1	1.13	331.7	0.92	-1.21	
6052	13.06.2014 1	0:01:34	164	32	330.8	330.9	-0.04	331.4	-0.17		
6053	13.06.2014 1	0:05:06	164	33	333.6	330.9	0.80	331.4	0.66		222.0
6054	13.06.2014 1	1:08:06	164	34	328.1	331.0	-0.88	332.2	-1.24		332.0
6055	13.06.2014 1	2:06:10	164	35	330.7	330.9	-0.07	333.5	-0.83		
6056	13.06.2014 1	2:28:17	164	36	335.9	330.9	1.50	333.8	0.64		217.0
6057	13.06.2014 1	2:44:09	164	37	335.6	330.9	1.41	333.9	0.50		527.0
6058	13.06.2014 1	3:52:40	164	38	326.6	330.9	-1.30	333.4	-2.03		
6059	13.06.2014 1	3:59:38	164	39	322.5	330.7	-2.49	332.5	-3.02		322.0
5060	13.06.2014 1	4:03:05	164	40	321.6	330.6	-2.71	331.8	-3.07		522.0
5061	13.06.2014 1	4:18:24	164	41	330.9	330.9	-0.01	333.9	-0.89		
5062	13.06.2014 1	4:21:50	164	42	333.2	330.9	0.68	333.8	-0.19		817.0
5063	13.06.2014 1	4:25:17	164	43	334.2	330.9	0.98	333.8	0.12		517.0
5064	13.06.2014 1	4:28:43	164	44	333.2	330.9	0.68	333.7	-0.16		
6065	13.06.2014 1	4:32:10	164	45	334.1	330.9	0.95	333.7	0.13		312.0
6066	13.06.2014 1	4:35:36	164	46	334.5	330.9	1.08	333.6	0.27		
6067	13.06.2014 1	4:39:02	164	47	333.8	330.9	0.86	333.5	0.08		05.00 06:00 07:00 08:00 09:00 10:00 11:00 12:00 13:00 14:00 15:00 16:00
						220.0	0.00	222.5	0.00		



## Results

1	B 072 Tota	l Ozone	2014	1	RelDiff_Lir	mits [%]:	2.50	1.50	1.00	1.00			104		
2	Measure	ements:	6638		Version: 0	5.03.2013 1	3:05:00 Cal13	а	Make D	ay Plot	-		164	•	
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff	onsecRDiff			*	1	+
6034	13.06.2014 0	7:16:02	164	14	329.4	330.9	-0.47	329.6	-0.08		332.0 +			· · · · · · · · · · · · · · · · · · ·	
6035	13.06.2014 0	7:19:28	164	15	331.1	330.9	0.05	329.7	0.44						
6036	13.06.2014 0	7:25:10	164	16	331.2	330.9	0.08	329.7	0.46		1		• •		
6037	13.06.2014 0	7:28:36	164	17	329.6	330.9	-0.41	329.7	-0.03		327.0 +			•	
6038	13.06.2014 0	7:32:02	164	18	333.0	331.1	0.58	329.9	0.93	1.02					
6039	13.06.2014 0	7:35:29	164	19	331.0	330.9	0.02	329.7	0.39						
6040	13.06.2014 0	7:38:55	164	20	330.8	330.9	-0.04	329.7	0.32		322.0 +				
6041	13.06.2014 0	8:07:37	164	21	331.2	330.9	0.08	329.9	0.39						
6042	13.06.2014 0	8:11:04	164	22	330.0	330.9	-0.28	330.0	0.01						
6043	13.06.2014 0	8:14:30	164	23	329.9	330.9	-0.31	330.0	-0.03		317.0 +				
6044	13.06.2014 0	8:17:57	164	24	329.8	330.9	-0.34	330.0	-0.06		1				
6045	13.06.2014 0	8:21:23	164	25	330.1	330.9	-0.25	330.0	0.02						
6046	13.06.2014 0	8:31:42	164	26	329.4	330.9	-0.47	330.1	-0.22		312.0 +	· · · · · · · · · · · · · · · · · · ·	• • • • •	1 1	1 1
6047	13.06.2014 0	8:44:06	164	27	328.3	330.9	-0.80	330.3	-0.60		05:0	00 06:00 07:00 08:00 09:00	0 10:00 11:00 12:	00 13:00 14:00 1	15:00 16:00
6048	13.06.2014 0	9:16:15	164	28	331.2	330.9	0.08	330.7	0.16		1.208	4 2.3		09:16	
6049	13.06.2014 0	9:26:45	164	29	312.1	330.2	-5.48	329.3	-5.22						
							0.40	020.0			1				
6050	13.06.2014 0	9:30:23	164	30	328.7	330.9	-0.68	330.9	-0.66				164		
6050 6051	13.06.2014 0 13.06.2014 0	9:30:23 9:58:02	164 164	30 31	328.7 334.8	330.9 331.1	-0.68	330.9 331.7	-0.66 0.92	-1.21			164	**	
6050 6051 6052	13.06.2014 0 13.06.2014 0 13.06.2014 1	9:30:23 9:58:02 0:01:34	164 164 164	30 31 32	328.7 334.8 330.8	330.9 331.1 330.9	-0.68 1.13 -0.04	330.9 331.7 331.4	-0.66 0.92 -0.17	-1.21			164	**	•
6050 6051 6052 6053	13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1	9:30:23 9:58:02 0:01:34 0:05:06	164 164 164 164	30 31 32 33	328.7 334.8 330.8 333.6	330.9 331.1 330.9 330.9	-0.68 1.13 -0.04 0.80	330.9 331.7 331.4 331.4	-0.66 0.92 -0.17 0.66	-1.21	aa [		164	**	
6050 6051 6052 6053 6054	13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:30:23 9:58:02 0:01:34 0:05:06 1:08:06	164 164 164 164 164	30 31 32 33 34	328.7 334.8 330.8 333.6 328.1	330.9 331.1 330.9 330.9 330.9 331.0	-0.68 1.13 -0.04 0.80 -0.88	330.9 331.7 331.4 331.4 332.2	-0.66 0.92 -0.17 0.66 -1.24	-1.21	332.0 -		164		*
6050 6051 6052 6053 6054 6055	13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10	164 164 164 164 164 164	30 31 32 33 34 35	328.7 334.8 330.8 333.6 328.1 330.7	330.9 331.1 330.9 330.9 331.0 331.0 330.9	-0.68 1.13 -0.04 0.80 -0.88 -0.07	330.9 331.7 331.4 331.4 332.2 333.5	-0.66 0.92 -0.17 0.66 -1.24 -0.83	-1.21	332.0 -	44 44 44 44 44 44 44 44 44 44 44 44 44	164		
6050 6051 6052 6053 6054 6055 6056	13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17	164 164 164 164 164 164 164	30 31 32 33 34 35 36	328.7 334.8 330.8 333.6 328.1 330.7 335.9	330.9 331.1 330.9 330.9 331.0 331.0 330.9 330.9	-0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50	330.9 331.7 331.4 331.4 332.2 333.5 333.8	-0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64	-1.21	332.0	4414 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	164		
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6050 6051 6052 6053 6054 6055 6056 6057 6058 6059 6060 6061 6062	13.06.2014 0 13.06.2014 0 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1 13.06.2014 1	9:30:23 9:58:02 0:01:34 0:05:06 1:08:06 2:06:10 2:28:17 2:44:09 3:52:40 3:52:40 3:59:38 4:03:05 4:18:24 4:21:50	164 164 164 164 164 164 164 164 164 164	30 31 32 33 34 35 36 37 38 39 40 41 42	328.7 334.8 330.8 328.1 330.7 335.9 335.6 326.6 322.5 321.6 330.9 333.2	330.9 331.1 330.9 331.0 330.9 330.9 330.9 330.9 330.9 330.9 330.7 330.6 330.9 330.9 330.9	-0.68 -0.68 1.13 -0.04 0.80 -0.88 -0.07 1.50 1.41 -1.30 -2.49 -2.71 -0.01 0.68	330.9 331.7 331.4 332.2 333.5 333.8 333.9 333.4 332.5 331.8 332.5 331.8 333.9 333.8 333.9 333.8	-0.66 0.92 -0.17 0.66 -1.24 -0.83 0.64 0.50 -2.03 -3.02 -3.02 -3.07 -0.89 -0.19	-1.21	332.0 - 327.0 - 322.0 -		164		
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## Results

Federal Department of Home Affairs FDHA Federal Office of Meteorology and Climatology MeteoSwiss

$\mathbf{\Lambda}$	esui	lS								280
										340.0
1	D 101 AD T	otal Oz	zone 2	013	RelDiff	Limits [%]:	2.70	1.50	1.50 1.50	330.0
2	Measurer	ments:	4420		Version:	30.07.2013	11:02:28 Cal13	a	Make Day Plot	320.0
3	Date	Time	JDN	n	Ozone	Dayoz	OzRDiff	PolyOz	Poly4RDiff ConsecRDiff	
4	01 01 2013 09	39.28	001	1	311.6	326.6	-4 59	312 7	-0.34	
5	01.01.2013 09	:40:53	001	2	314.1	326.6	-3.83	312.7	0.43	290.0
6	01.01.2013 10	:04:59	001	3	314.7	326.6	-3.64	314.7	0.00	280.0
										270.0
1062	07.10.2013 08	:12:19	280	1	263.8	262.9	0.35	265.8	-0.76	
1063	07.10.2013 08	:13:48	280	2	264.3	262.9	0.54	263.9	0.17	260.0
1064	07.10.2013 08	:14:50	280	3	264.2	262.9	0.50	262.5	0.63	250.0
1065	07.10.2013 11	27:16	280	4	201.5	262.9	-0.52	260.7	0.01	240.0
1067	07.10.2013 11	.20.21	200	0	200.7	202.9	-1.59	200.0	-0.01	
1007	07.10.2013 11	.29.20	200	7	240.0	203.0	-5.30	201.0	-3.39	1 694 26 22 12.00 11.00 112.00 13.00
1060	07.10.2013 12	02.47	200	2	203.7	202.3	0.05	203.3	0.13	1.004 30 22 12.02
1070	07 10 2013 12	04.05	280	q	265.4	262.9	0.05	263.3	0.79	1.688 36 22 12:04
1071	07 10 2013 12		280	10	264.4	262.9	0.50	262.4	0.77	4 777 - 20 - 00
1072	07 10 2013 12	38.58	280	11	262.6	262.9	-0.11	262.3	0.11	200
1073	07 10 2013 12	40.11	280	12	261.8	262.9	-0.41	262.3	-0.18	280
1074	07.10.2013 12	:41:12	280	13	259.6	262.9	-1.25	262.2	-1.00	300.0
1075	07.10.2013 13	:06:06	280	14	261.2	262.9	-0.64	261.8	-0.22	290.0
1076	07.10.2013 13	:07:05	280	15	298.0	265.9	12.08	274.1	8.71	280.0
1077	07.10.2013 13	:08:16	280	16	280.4	264.0	6.22	267.9	4.66	280.0
1078	07.10.2013 13	:35:45	280	17	278.2	263.9	5.42	271.3	2.54	270.0
1079	07.10.2013 13	:36:59	280	18	266.1	262.9	1.23	265.7	0.15	260.0
1080	07.10.2013 13	:38:07	280	19	244.9	264.8	-7.50	263.4	-7.01	250.0
1081	08.10.2013 07	:31:05	281	1	266.8	267.9	-0.40	267.6	-0.31	250.0
1082	08.10.2013 07	:32:17	281	2	268.2	267.9	0.12	267.5	0.25	240.0
1083	08.10.2013 07	:33:17	281	3	267.7	267.9	-0.06	267.4	0.10	230.0
1084	08.10.2013 08	:05:25	281	4	265.3	267.9	-0.96	266.4	-0.41	220.0
1085	08.10.2013 08	:06:34	281	5	266.1	267.9	-0.66	266.4	-0.12	220.0
1086	08.10.2013 08	:07:39	281	6	267.7	267.9	-0.06	266.5	0.47	210.0
1087	08.10.2013 08	:40:17	281	7	268.0	267.9	0.05	268.4	-0.15	200.0
1088	08.10.2013 08	:41:33	281	8	269.6	267.9	0.65	268.5	0.41	
1089	08.10.2013 08	:42:39	281	9	268.3	267.9	0.16	268.6	-0.11	00.00 07.00 10.00 11.00 12.00 15.00
1090	08 10 2013 09	03-12	281	10	270 2	267.9	0 87	269.6	0.23	1 963 39 22 09:03



## Results

	.6201	しこ	)										[				246				
1	D 062 AD Total C	zone	2013	RelDiff I	imits [%]	2 70	1.50	1 50 1 50		01 01 2013	31 12 2013			-			240	)			
2	Management	40007		V	0.07.0042.4	1.00.05 0-141	-	Make Day Plot	Delete	44075	44020		_	305.0 -					•		
2	Dete Time	12037		Version.	Devee	0-DD:#	Daluo-		DayPlots	41275	41039	ED	AD.						*		
3	Date Time	JDN	n	Ozone	Dayoz	OZRDIIT	PolyOz	Poly4RDIff ConsecRDIff	Airmass	Sun	Temp	FP .	AD	300.0 +							•
4	01.01.2013 09:43:29	001	1	284.4	326.2	-12.80	298.0	-4.55	3.392	33	21	2	2						- <b>X</b> - "		•
6	01.01.2013 09:48:54	001	2	307.5	328.4	-6.42	300.3	-0.31	3 325	73	21		-	295.0 -	•						
0240	03.09.2013.10:40:04	246	85	289.1	289.1	0.00	289.1	-0.01	1 309	33	25		_							•	
0240	03 09 2013 10:42:22	240	86	288.5	289.1	-0.21	203.1	-0.01	1.303	33	25		-	290.0 -	-		and the second second				*
0242	03.09.2013 10:44:41	246	87	288.9	289.1	-0.07	289.1	-0.07	1.305	33	25								• •••	JF 7 91	
0243	03.09.2013 10:51:14	246	88	287.8	289.1	-0.45	289.1	-0.44	1.300	33	25			285.0	• • • • •						
0244	03.09.2013 10:53:34	246	89	288.2	289.1	-0.31	289.1	-0.30	1.299	33	25			2003.0		•					
0245	03.09.2013 10:55:52	246	90	290.5	289.1	0.48	289.1	0.50	1.298	33	25								•		•
0246	03.09.2013 10:58:11	246	91	290.1	289.1	0.35	289.0	0.36	1.296	33	25			280.0 +					•		
0247	03.09.2013 11:00:29	246	92	288.8	289.1	-0.10	289.0	-0.08	1.296	33	25										
0248	03.09.2013 11:02:47	246	93	280.2	289.5	-3.22	289.9	-3.33	1.294	33	25	5	4	275.0 +					•		
0249	03.09.2013 11:09.41	246	94	305.0	209.7	2.01	290.5	0.04	1.293	33	25	1	4	06:	30 07:30	08:30	09:30	10:30	11:30	12:30	
0251	03.09.2013 11:14:15	246	96	297.2	289.3	2 74	288.5	3.02	1 292	33	25	12	4	4 9 1	_						
0252	03.09.2013 11:16:33	246	97	298.3	289.3	3.11	288.9	3.24	1.291	33	25	10	4	4 9							
0253	03.09.2013 11:18:51	246	98	298.9	289.4	3.29	289.2	3.35	1.291	33	25	9	4	4 9							
0254	03.09.2013 11:21:10	246	99	302.7	289.7	4.48	290.5	4.21	1.291	33	26	3	4	4 9							
0255	03.09.2013 11:23:28	246	100	299.4	289.6	3.38	290.1	3.22	1.291	33	26	6	4	4 9							
0256	03.09.2013 11:30:28	246	101	275.7	289.6	-4.80	290.0	-4.94	1.292	33	26	2	4	4							
0257	03.09.2013 11:32:47	246	102	288.4	289.1	-0.24	288.9	-0.19	1.293	33	26										
0250	03.09.2013 11:35:05	246	103	200.0	289.1	-0.10	200.9	-0.05	1.293	33	26										
0259	03.09.2013 11.37.23	240	104	209.5	203.1	0.14	200.9	0.20	1.234	33	20		-								
0261	03 09 2013 11:42:01	246	106	288.0	289.1	-0.38	288.9	-0.32	1 296	33	26						244	-			
0262	03.09.2013 11:44:18	246	107	281.1	289.2	-2.81	287.9	-2.35	1.298	33	26	13	4				246	)			
0263	03.09.2013 11:51:10	246	108	299.0	289.4	3.30	289.3	3.35	1.302	33	26	8	4	Г							
0264	03.09.2013 11:53:28	246	109	299.2	289.5	3.34	289.7	3.29	1.303	33	26	7	4	305.0 -							
0265	03.09.2013 12:00:55	246	110	287.7	289.1	-0.49	288.9	-0.43	1.309	33	26										
0266	03.09.2013 12:03:14	246	111	287.8	289.1	-0.45	288.9	-0.39	1.312	33	26			300.0 -							
0267	03.09.2013 12:05:33	246	112	200.3	289.1	-0.28	288.9	-0.22	1.313	33	26		_								
0260	03.09.2013 12.07.52	240	114	200.9	209.1	-0.07	209.0	-0.02	1.310	33	20			205.0							
0203	03 09 2013 12:10:11	246	115	288.2	289.1	-0.10	289.0	-0.00	1.313	33	26			295.0							
0271	03.09.2013 12:14:45	246	116	289.2	289.1	0.03	289.0	0.08	1.323	33	26										
0272	03.09.2013 12:17:05	246	117	290.6	289.1	0.52	289.0	0.56	1.326	33	26			290.0 -						<u></u>	
0273	03.09 2 13 2-19:24	246	118	29.	20/	0.45	299.0	utliar	1.329	33	26						· · · · • • • •				*
0274	03.07.20.3 2:2:1	2-6	119	28).	28/10	-0.31	289.0		1.339	33	26			285.0 -	•						
0275	03.09.2019 1228:50	240	120	209.0	269.	0.04	205.1		1.343	33	26		_								
0276	03.09.2013 12:31:08	246	121	289.3	289.1	0.07	289.1	0.08	1.346	33	26			280.0							
0277	03.09.2013 12.3326	240	122	209.5	209.1	0.14	209.1	0.14	000.1 335 1	33	20			200.0							
0279	03 (1) 2011 12 38 13		122	<b>H</b> 29 8	289.1	0.00	205.1	0.92	1.359	33	26										
0280	03.09.2013 12:40:22	246	125	288.7	289.1	-0.14	289.1	-0.16	1.363	33	26			275.0 +	1	1	1	1	1	1	
0281	03.09.2013 12:42:40	246	126	288.3	289.1	-0.28	289.2	-0.30	1.367	33	26			06:3	30 07:30	08:30	09:30	10:30	11:30	12:30	



## Conclusions

- Variability of reference curves allows to use the tool for different datasets
- About 66% of the outliers are detected
- Dobsons: Outliers are detected on the level of single wavelengths (C, D, A) rather than wavelength pairs (AD, CD)
- Problem: No information is made of the others instruments measurements

→ Detection method should be applicable on a group of instruments



# Applying detection method on a group of instruments: open questions

- Use of one instrument as a reference, shifting the others ?
- Use all instruments as **one** dataset ?
- Use other instruments just as an auxiliary information ?

# How can autoflag method linked with a database ?



Federal Department of Home Affairs FDHA Federal Office of Meteorology and Climatology MeteoSwiss



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