Protocol of the intercomparison at INTA, El Arenosillo, Spain on September 12 to 16, 2005 with the travelling reference spectroradiometer QASUME[†] from PMOD/WRC

Report prepared by Gregor Hülsen

Operators: Julian Gröbner

The purpose of the visit was the comparison of spectral global solar irradiance measurements between the 9 spectroradiometers participating in the 1nd Regional Brewer Calibration Center – Europe (RBCC-E) Campaign (see Figure 1 and Table 1) and the travel reference spectroradiometer QASUME. The measurement site is located at El Arenosillo; Latitude 37.10 N, Longitude 6.73 W and altitude 50 m.a.s.l.
The horizon of the measurement site is free down to at least 85° solar zenith angle (SZA).

QASUME arrived at INTA in the morning of September 12, 2005. The spectroradiometer was installed in line to the Brewer spectrophotometers with the entrance optic of QASUME between 2 and 20 m away from the other instruments. The measurement campaign lasted five days, from noon of September 12 to the afternoon of September 16; the core UV comparison days were September 15 to 16.

QASUME was calibrated several times during the campaign period using a portable calibration system. Four lamps (T68522, T68523, T68524 and T61252) were used to obtain an absolute spectral irradiance calibration traceable to the primary reference held at PMOD/WRC, which is traceable to PTB. The daily mean responsivity of the instrument based on these calibrations varied by less than ±1 % during the intercomparison period.
The wavelength shifts relative to an extraterrestrial spectrum as retrieved from the SHICRivm analysis were between ±50 pm in the spectral range 290 to 400 nm.

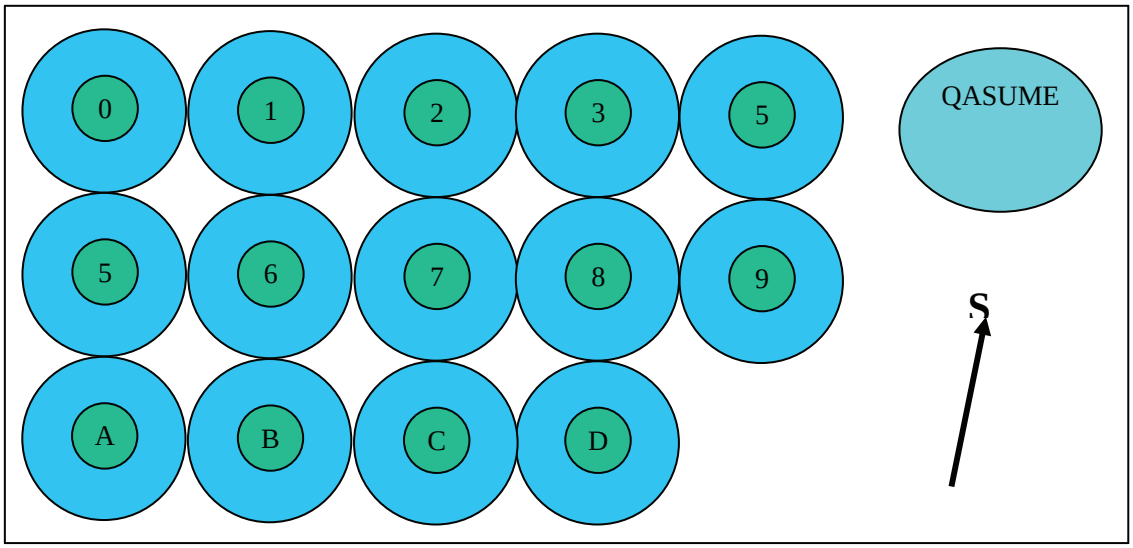
The measurement protocol was to measure one solar irradiance spectrum every 30 minutes from 290 to 400 nm, every 0.25 nm, and 1.5 seconds between each wavelength increment.
The weather was mostly clear sky with cirrus could.

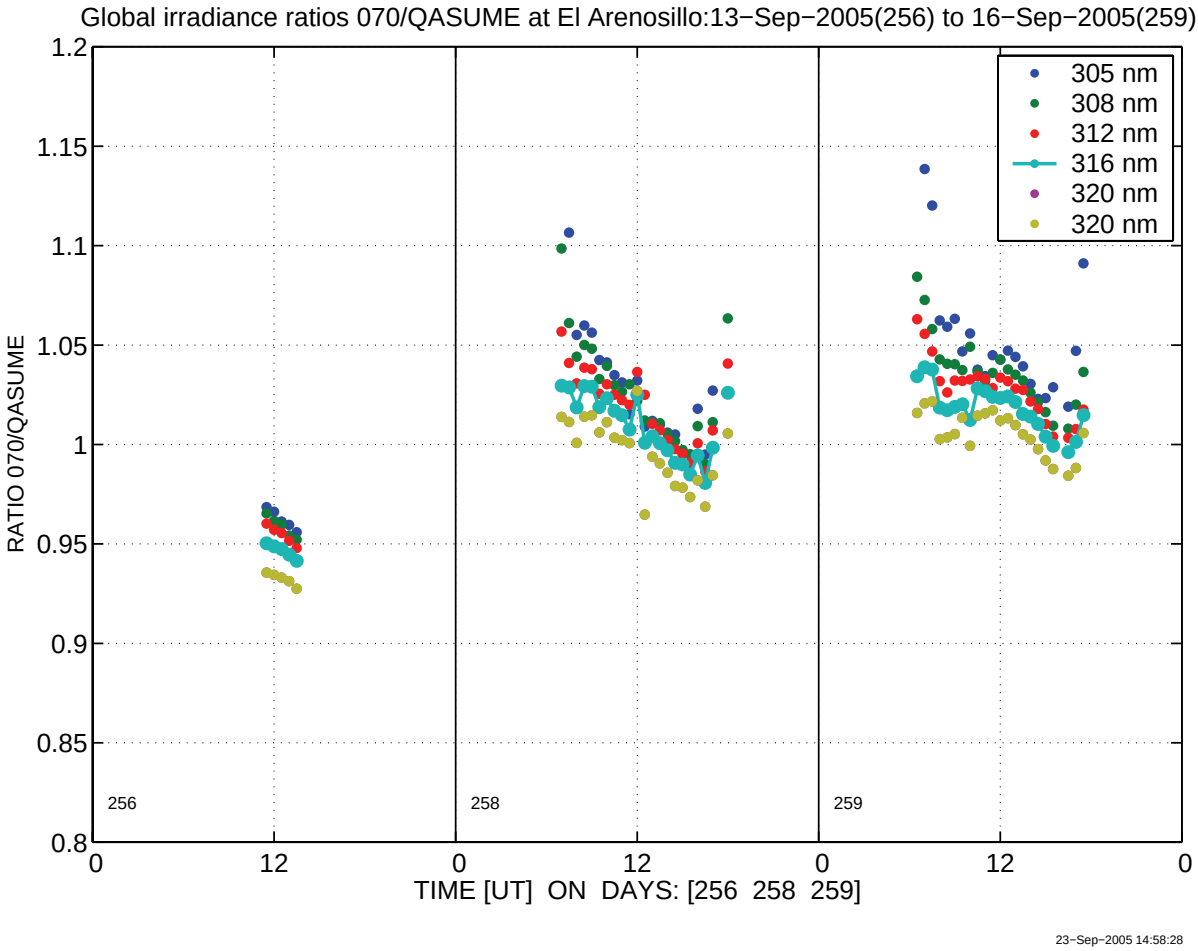
[†] The QASUME spectroradiometer B5503 is made available by the Physical and Chemical Exposure Unit of the Joint Research Centre of the European Commission, Ispra, Italy through a collaboration agreement with PMOD/WRC.

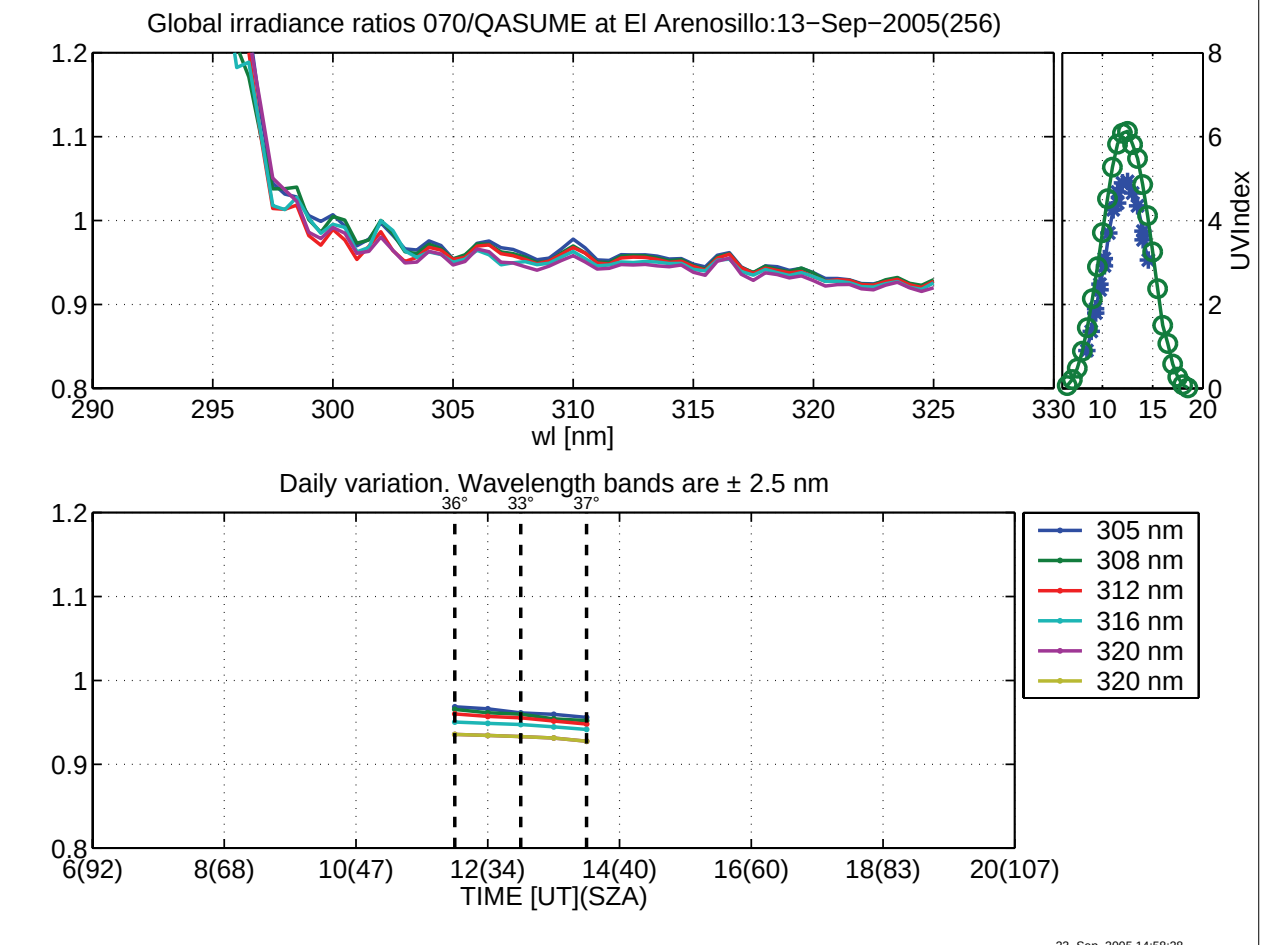
Tabel 1: Participating Brewer spectrophotometers

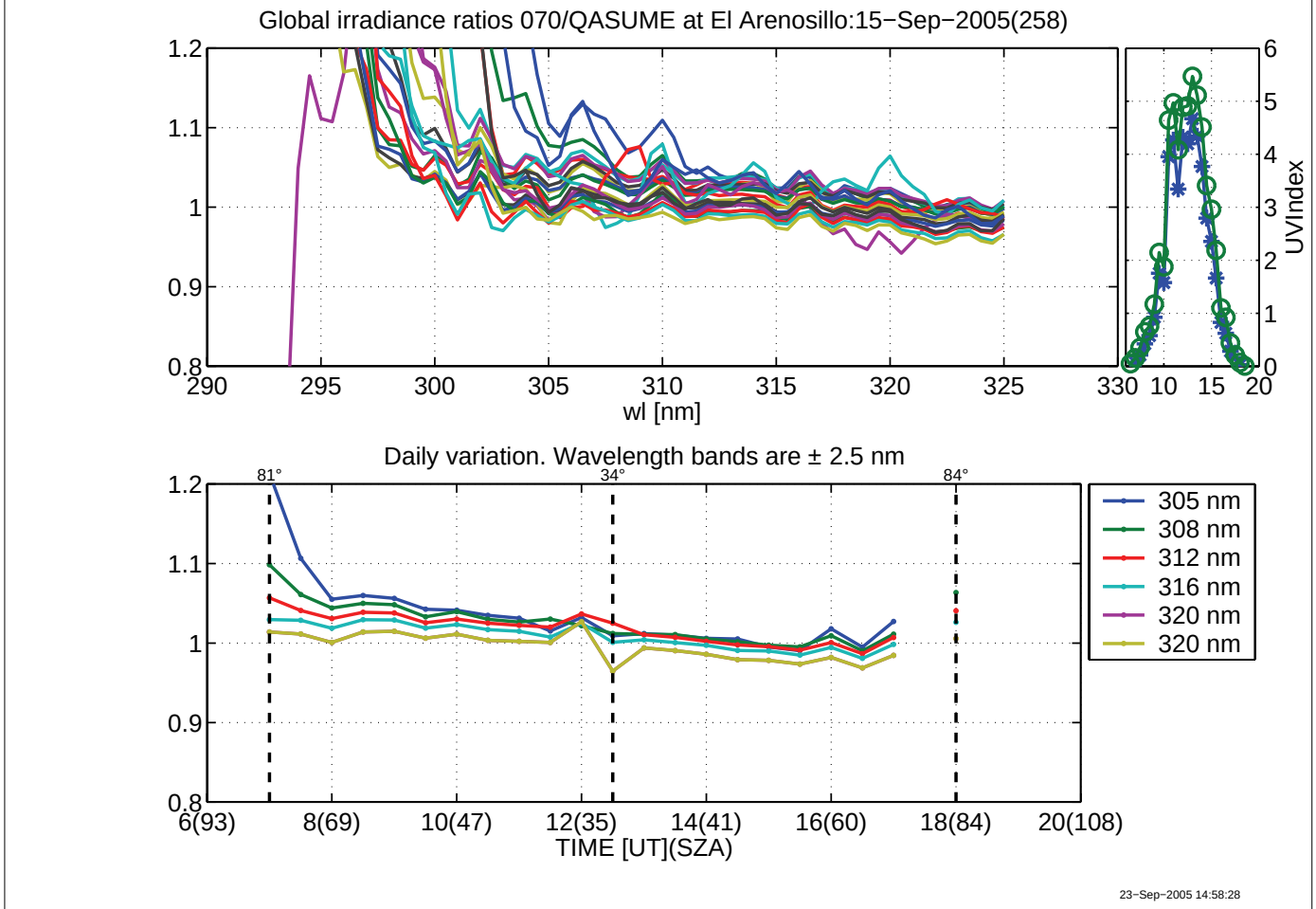
Institution	Name	Brewer	Country	Terrace	E
IOS	**Ken Lamb**	**#017**	**Canada**	**1**	**1**
	Volodya Savastiouk		Canada		2
INM MADRID	**Santiago Enriquez**	**#070**	**Spain**	**8**	**3**
	Isabel Gómez		Spain		4
	Cesar Zancajo		Spain		5
	Jose Montero		Spain		6
INM MURCIA	**Manuel Bañon**	**#117**	**Spain**	**9**	**7**
	Antonio Gines				**8**
INTA HUELVA	J. M. Vilaplana	**#150**	**Spain**	**0**	**9**
INM CORUÑA	Francisco García	**#151**	**Spain**	**7**	**10**
	Julian Cortes				**11**
INM ZARAGOZA	Jose Luis Jimenez	**#166**	**Spain**	**6(E)**	**12**
INM IZAÑA	Alberto Redondas	**#185**	**Spain**	**5(E)**	**13**
	Carlos Torres		Spain		14
	Carmen Guirado		Spain		15
SMP LISBOA	Ana Gomes	**#047**	**Portugal**	**A**	**16**
SMN CASABL.	Zaidouni Taoufik	**#165**	**Morroco**	**4**	**17**
	Mustapha Zaidi		Morroco		18
AES	**Tom McElroy**	**#145**	**Canada**	**B**	**19**
UMH	John Rimmer	**#172**	**U.K.**	**2**	**20**
		#075	**U.K.**	**3**	**21**
FMI	**Tapani Koskela**	**#107**	**Finland**	**C**	**22**
	Anu Heikkilä		Finland		23
	Kimmo Rikkonen		Finland		24
WRC	**Julian Grobner**	**QASUME**	**CH**	**Q**	**25**
HKO	Martin Stainek		Chekia		26
AFC	Jorge Camacho		Spain		27
AFC	Jose M.Fernandez		Spain		28
INM	Antonio Labajo				
INTA	Manuel Gil				
INM	Emilio Cuevas				
INM	Benito de la Morena				
	Karel Vanizek				
	Len Barry				

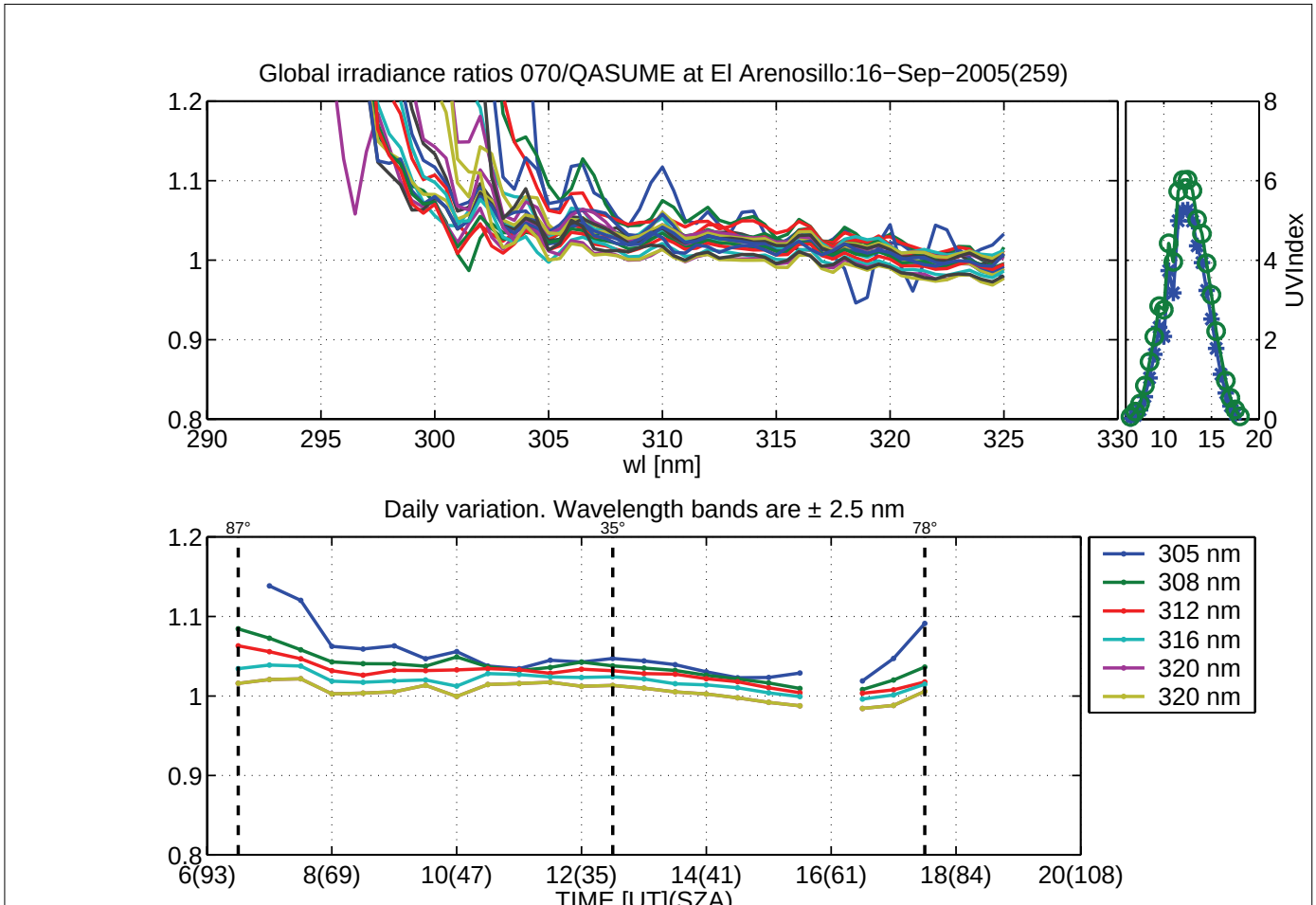
Figure 1: Setup of the Brewers at the roof of INTA

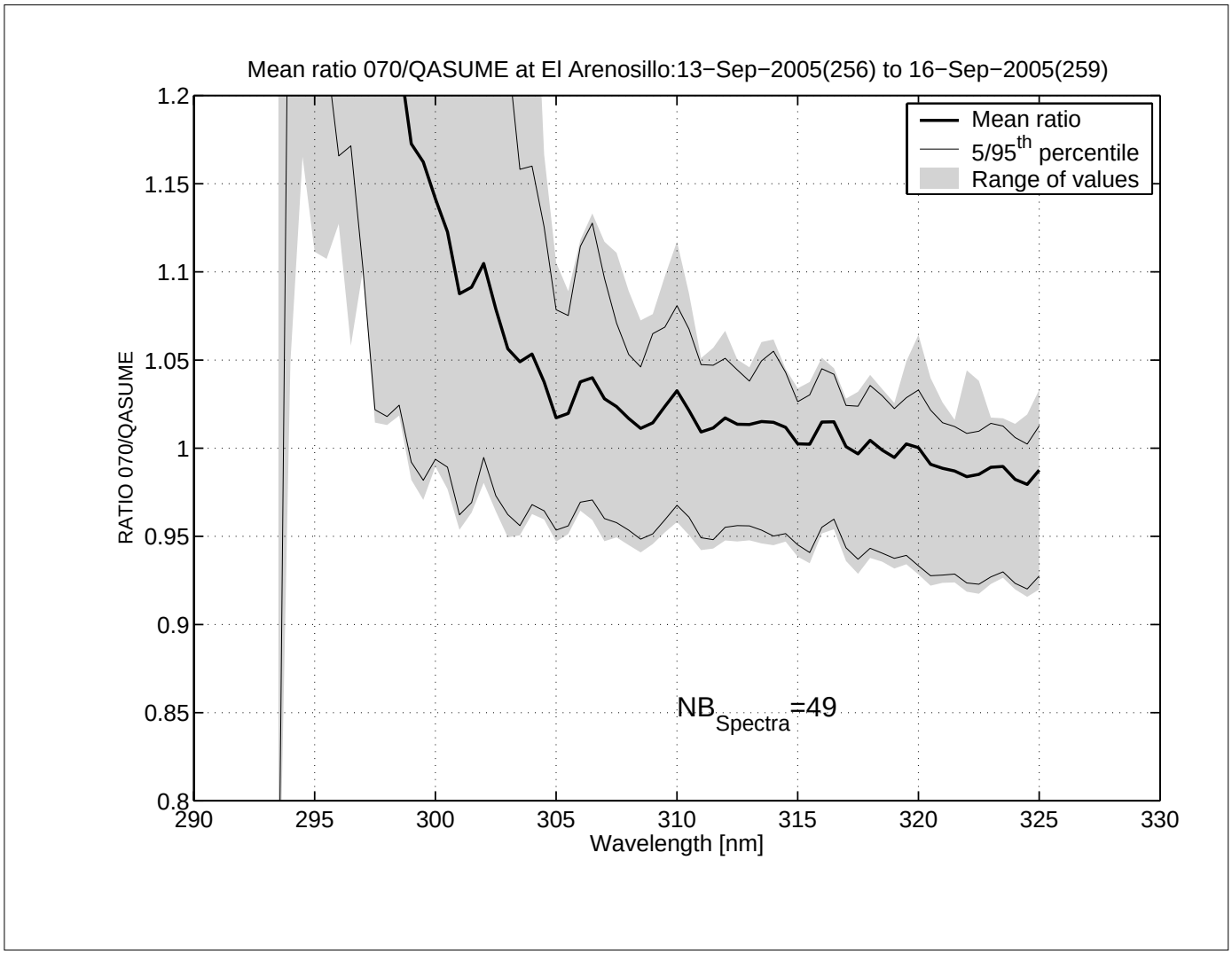


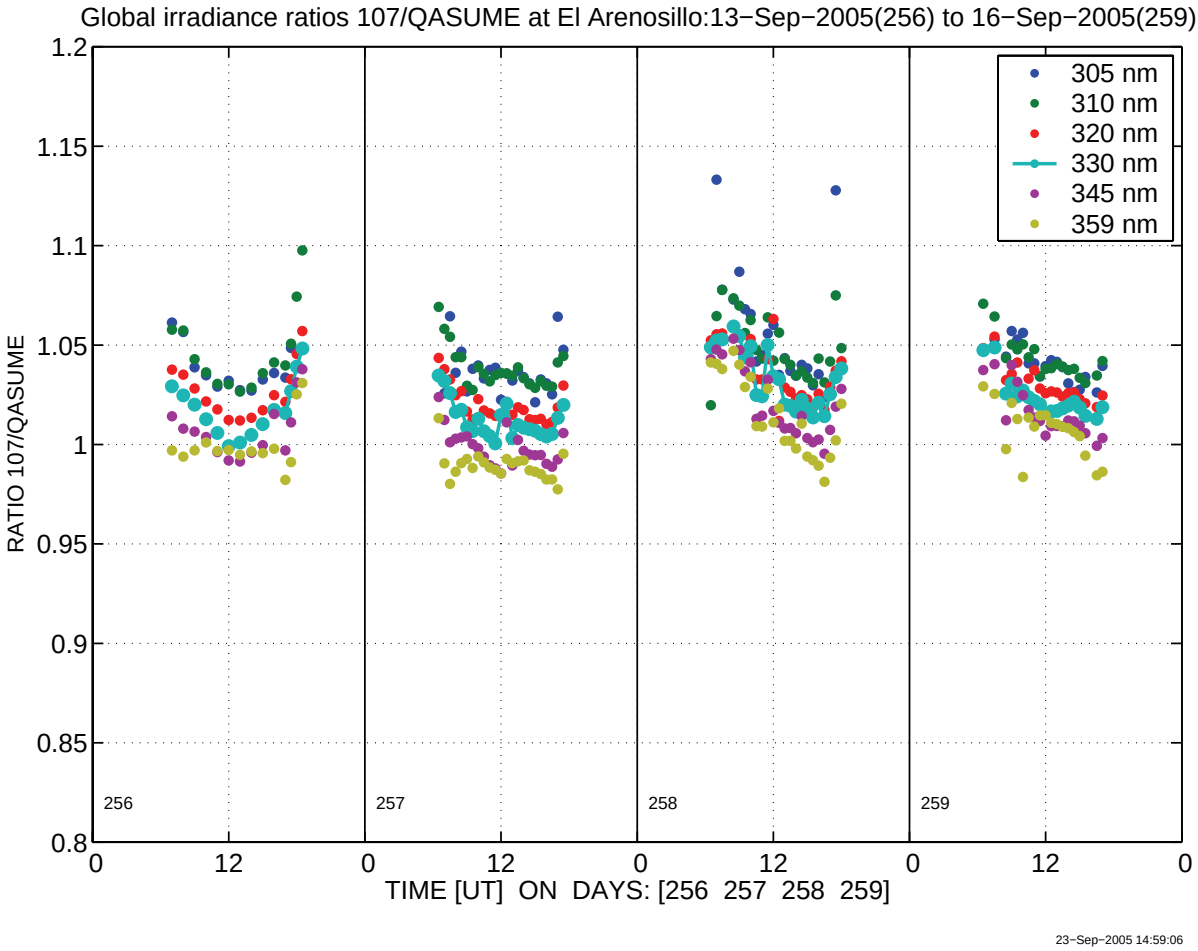

Global irradiance ratios 070/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 070/QASUME
TIME [UT] ON DAYS: [256 258 259]
305 nm
308 nm
312 nm
316 nm
320 nm
320 nm
256
258
259
23−Sep−2005 14:58:28

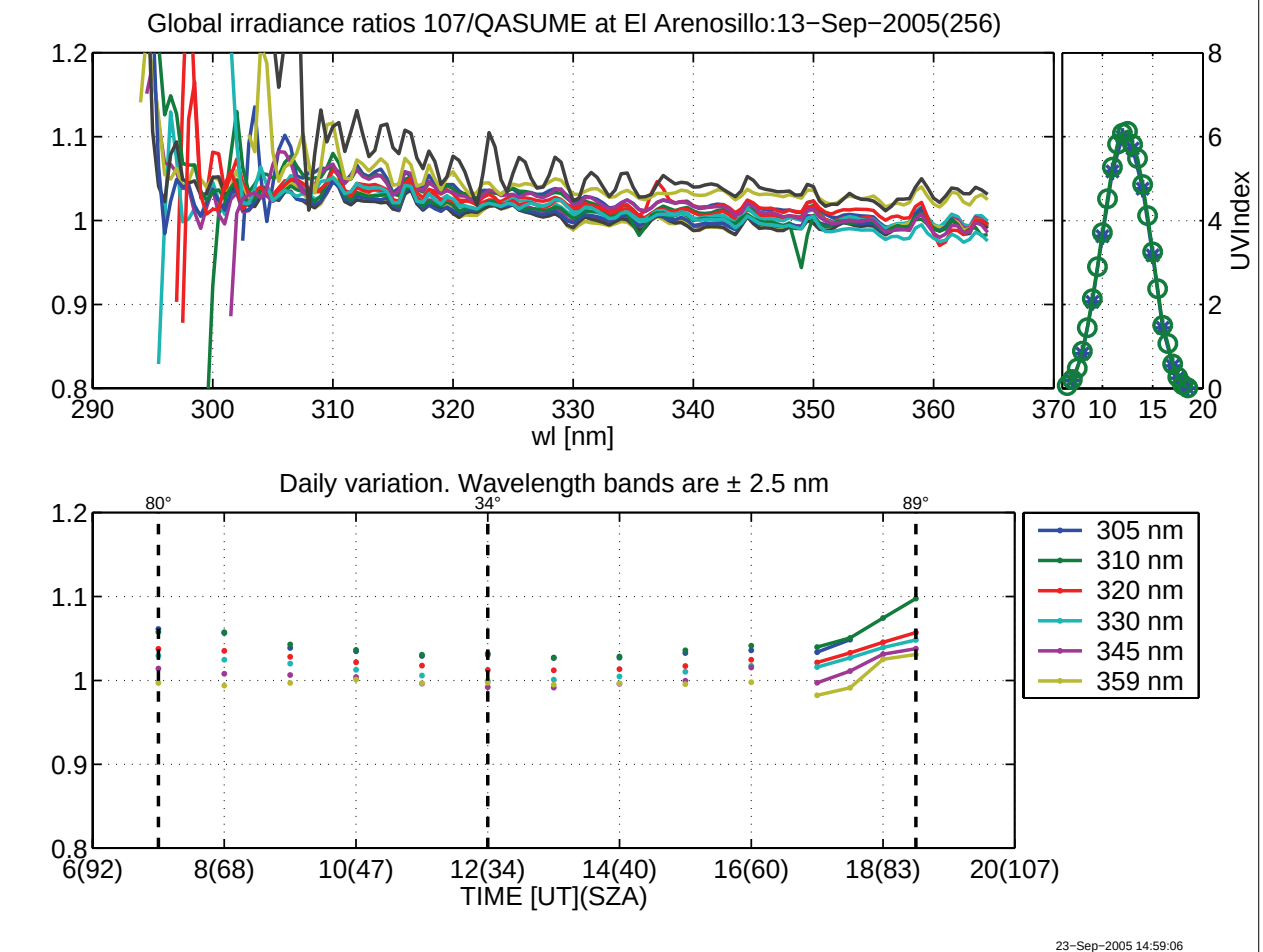

Global irradiance ratios 070/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
36°
33°
37°
TIME [UT](SZA)
305 nm
308 nm
312 nm
316 nm
320 nm
320 nm
23−Sep−2005 14:58:28


Global irradiance ratios 070/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
81°
34°
84°
305 nm
308 nm
312 nm
316 nm
320 nm
320 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(60)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 14:58:28


Global irradiance ratios 070/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
87°
35°
78°
305 nm
308 nm
312 nm
316 nm
320 nm
320 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 14:58:28


Mean ratio 070/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 070/QASUME
Wavelength [nm]
NBSpectra=49
1.2
1.15
1.1
1.05
1
0.95
0.9
0.85
0.8
290
295
300
305
310
315
320
325
330


Global irradiance ratios 107/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 107/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
359 nm
256
257
258
259
23−Sep−2005 14:59:06


Global irradiance ratios 107/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
80°
34°
89°
TIME [UT](SZA)
6(92)
8(68)
10(47)
12(34)
14(40)
16(60)
18(83)
20(107)
305 nm
310 nm
320 nm
330 nm
345 nm
359 nm
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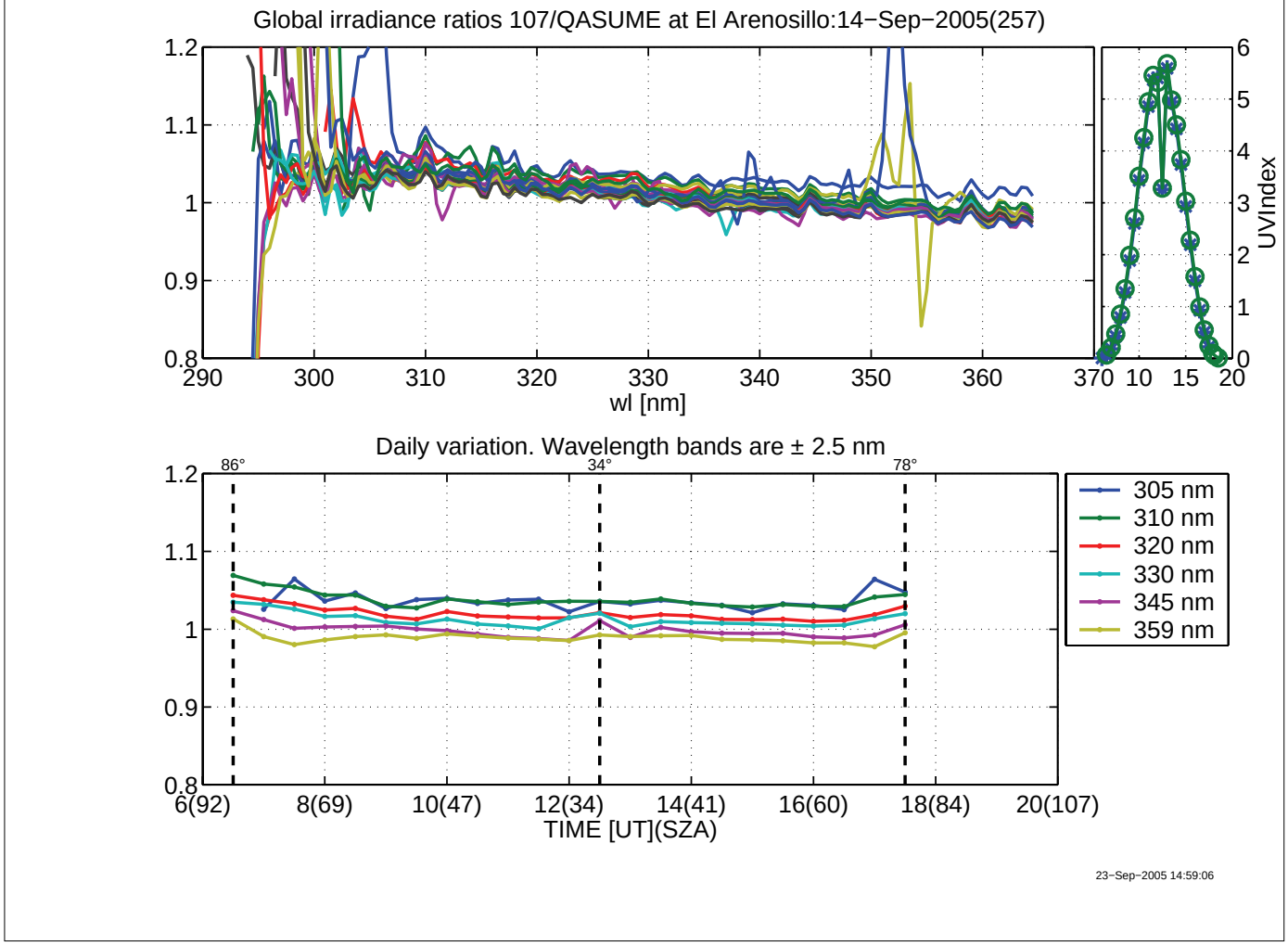
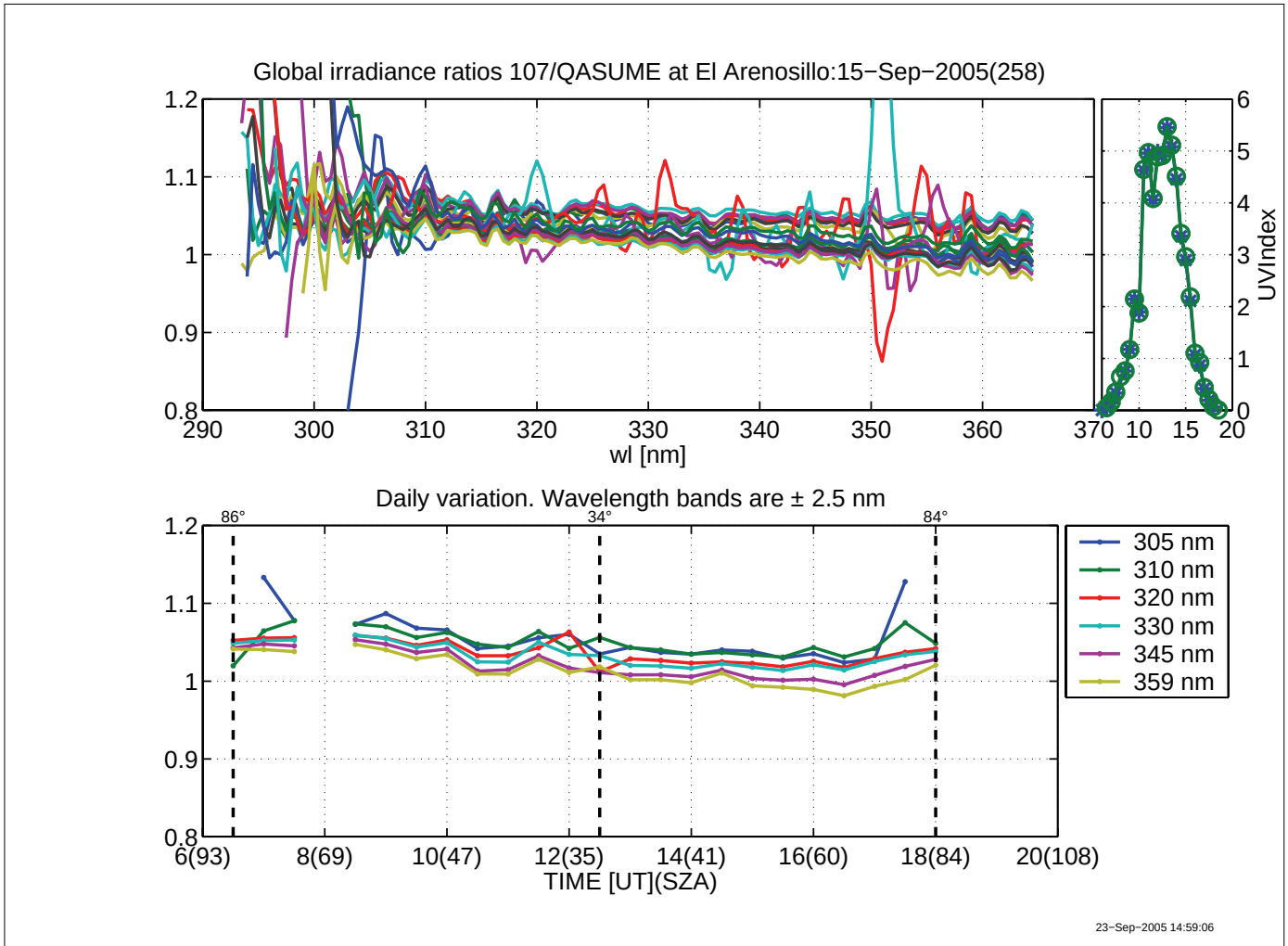
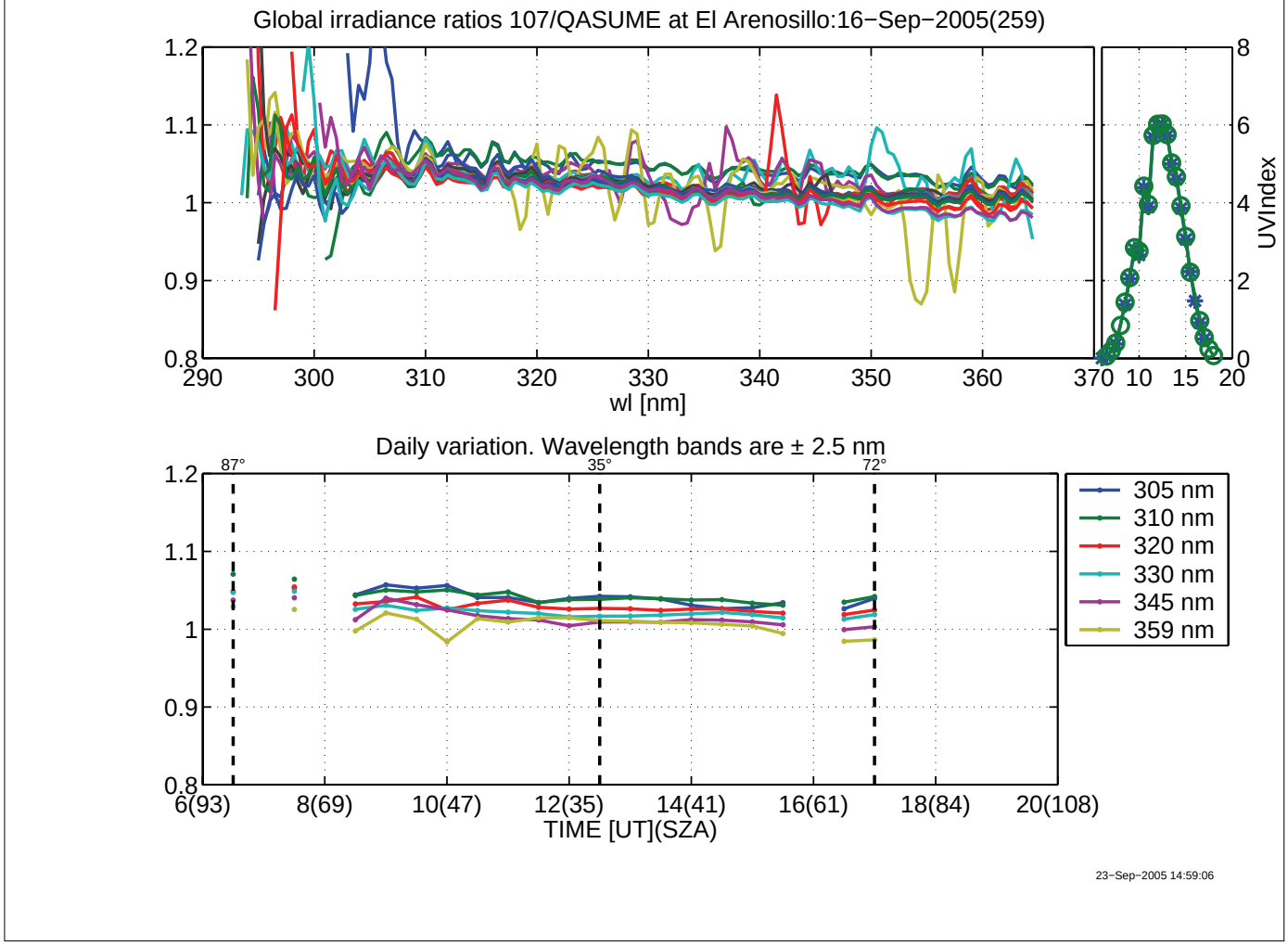
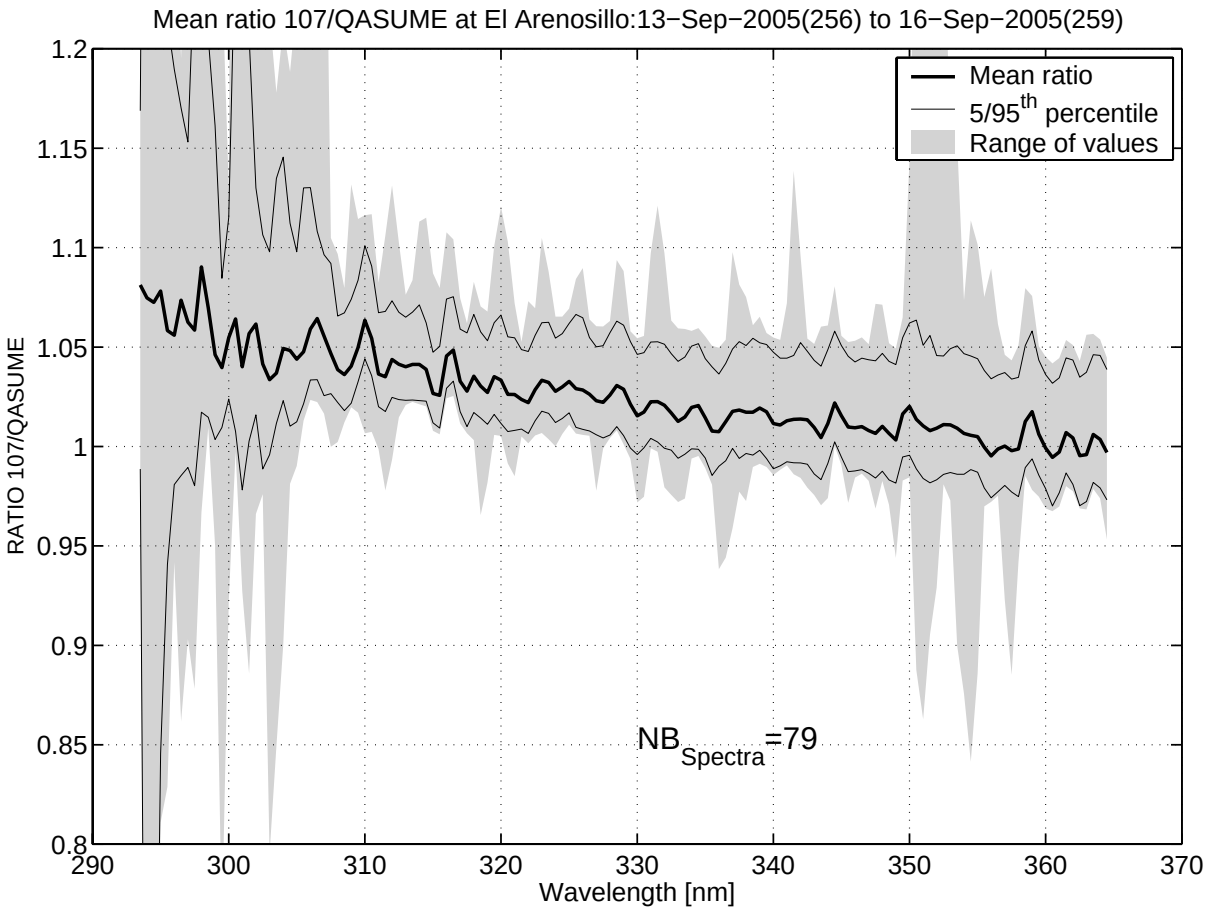
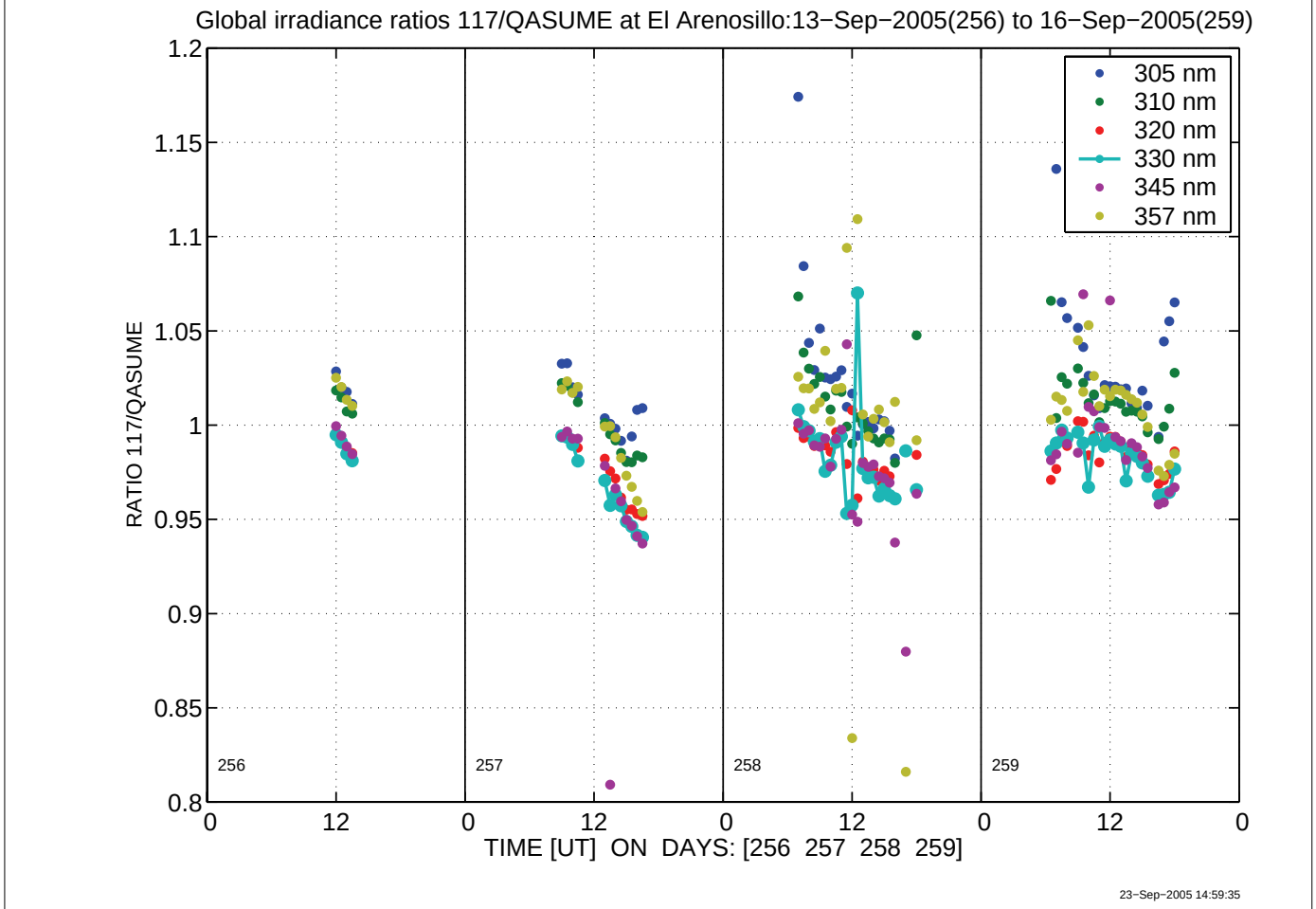
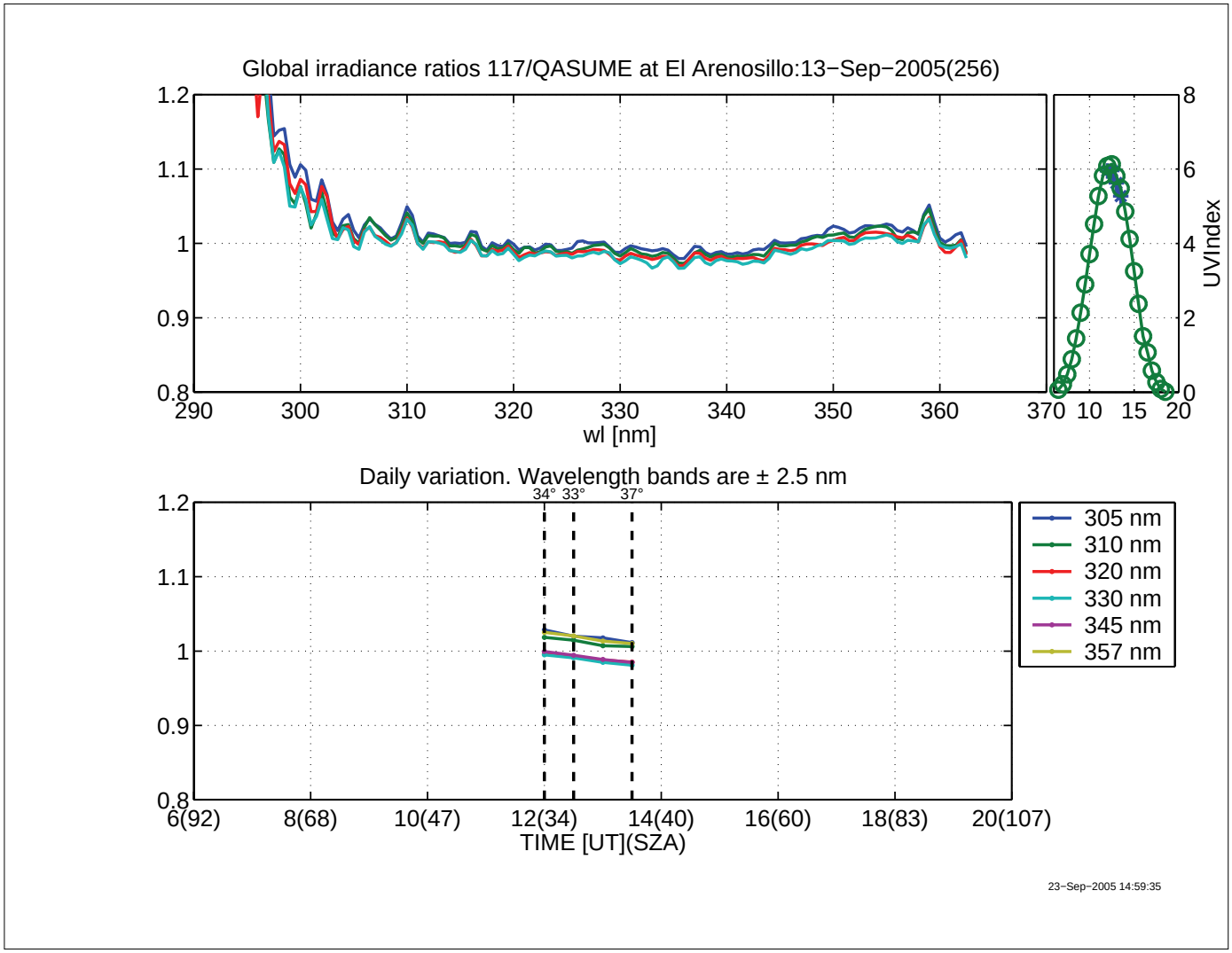

Global irradiance ratios 107/QASUME at El Arenosillo:14−Sep−2005(257)
1.2
1.1
1
0.9
0.8
290
300
310
320
330
340
350
360
370
wl [nm]
6
5
4
3
2
1
0
10
15
20
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
86°
34°
78°
305 nm
310 nm
320 nm
330 nm
345 nm
359 nm
6(92)
8(69)
10(47)
12(34)
14(41)
16(60)
18(84)
20(107)
TIME [UT](SZA)
23−Sep−2005 14:59:06

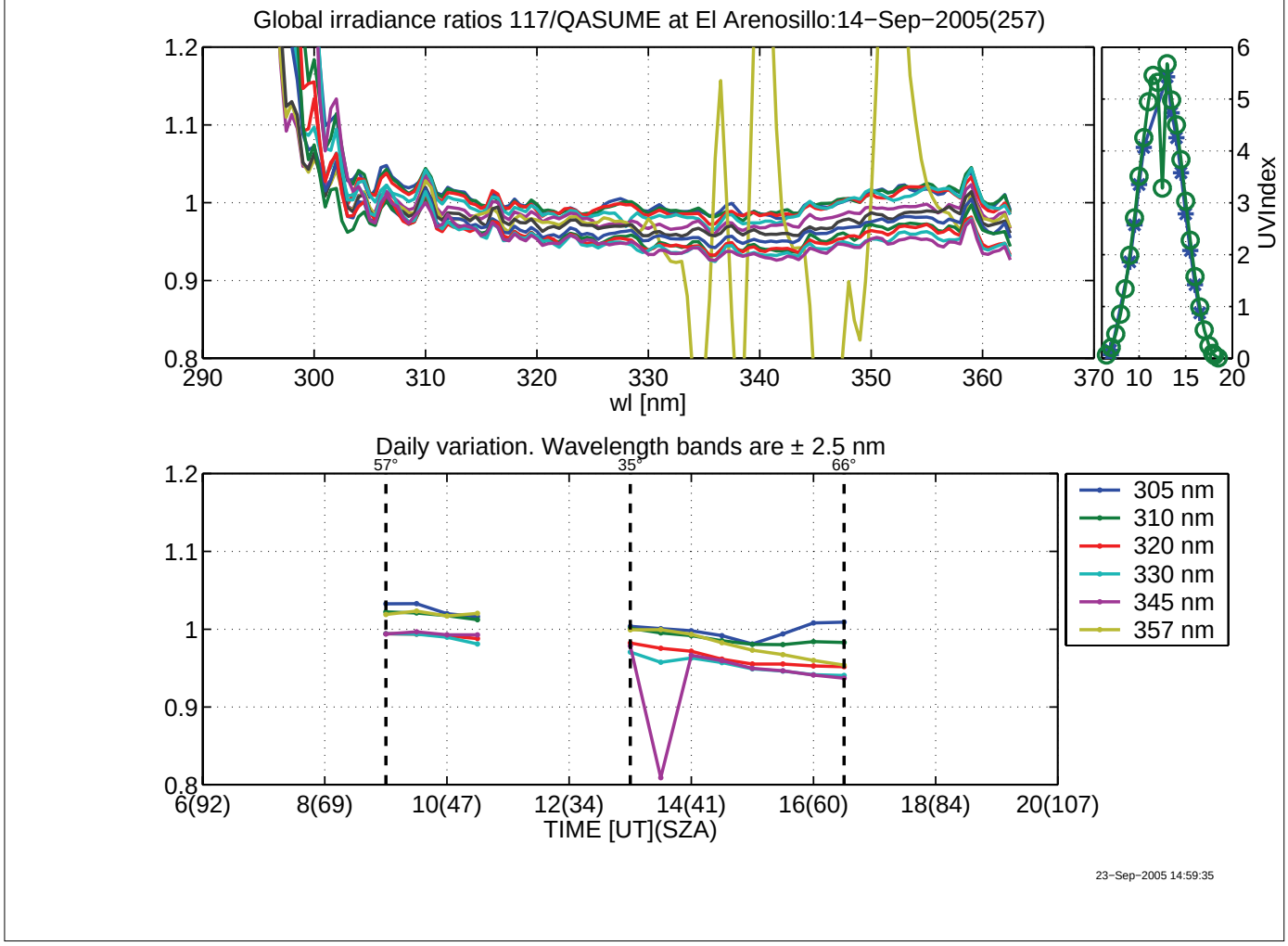

Global irradiance ratios 107/QASUME at El Arenosillo:15−Sep−2005(258)
1.2
1.1
1
0.9
0.8
290
300
310
320
330
340
350
360
370
wl [nm]
6
5
4
3
2
1
0
10
15
20
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
86°
34°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
359 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(60)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 14:59:06

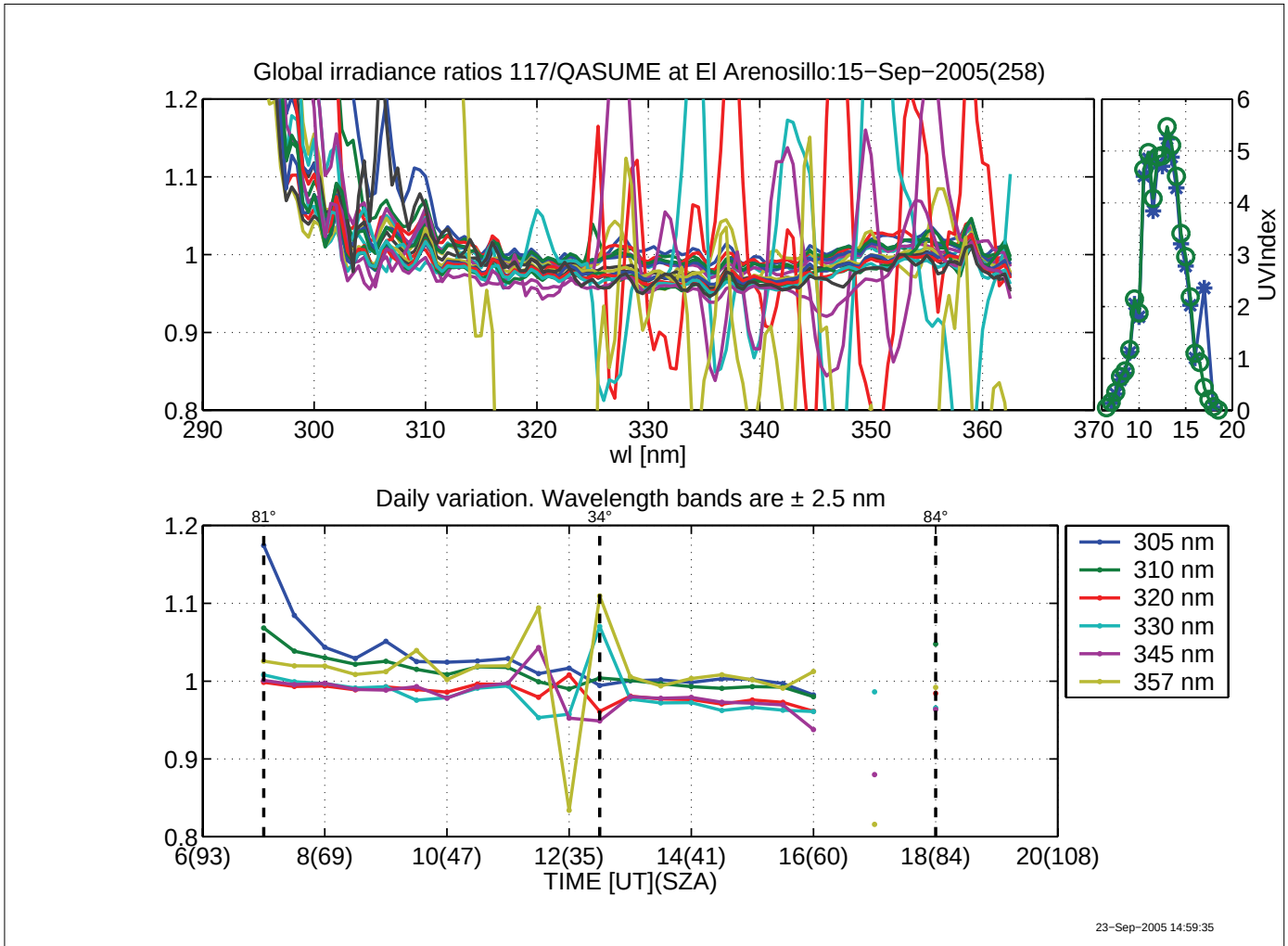

Global irradiance ratios 107/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
87°
35°
72°
305 nm
310 nm
320 nm
330 nm
345 nm
359 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 14:59:06

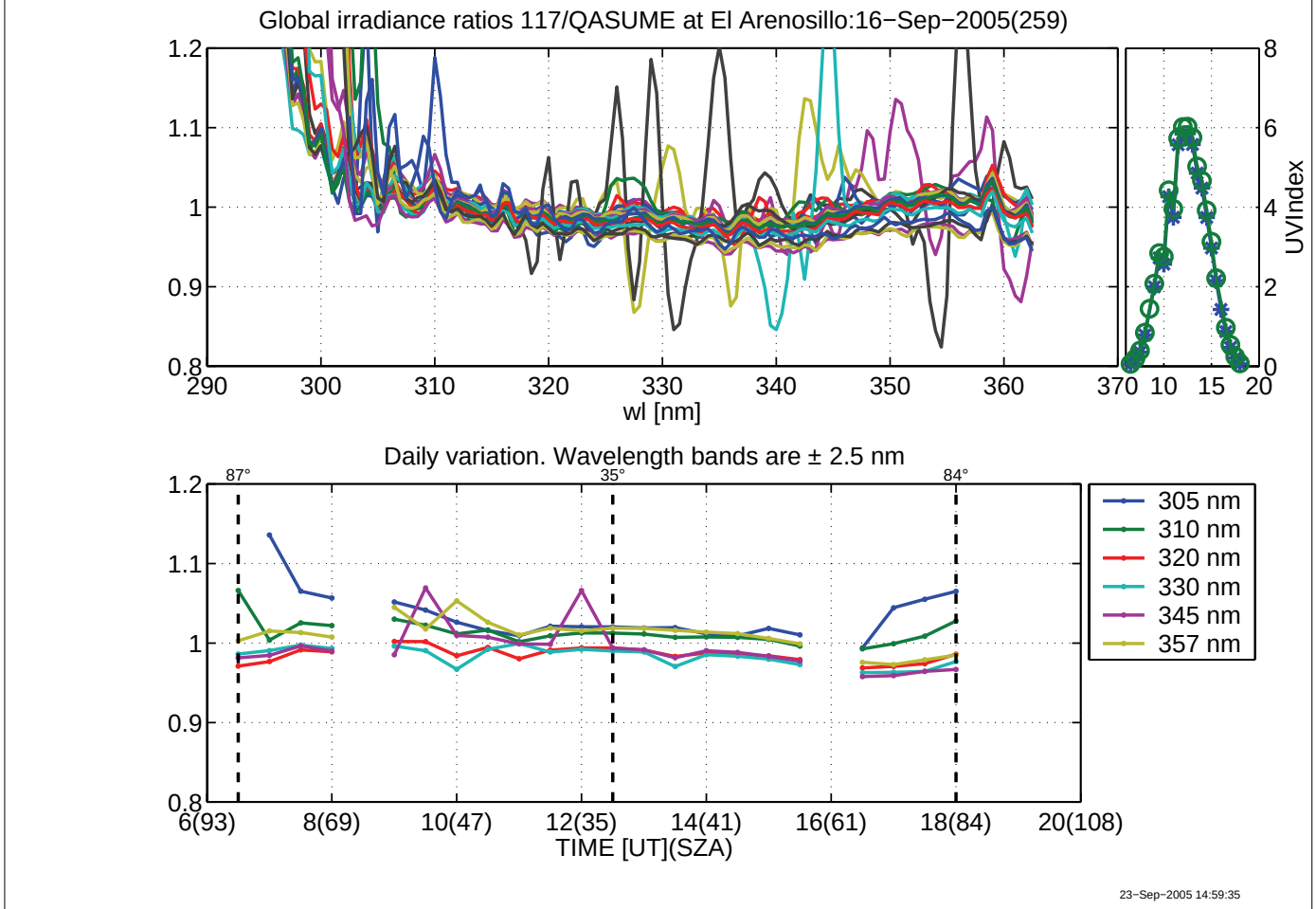

Mean ratio 107/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 107/QASUME
NBSpectra=79
Wavelength [nm]

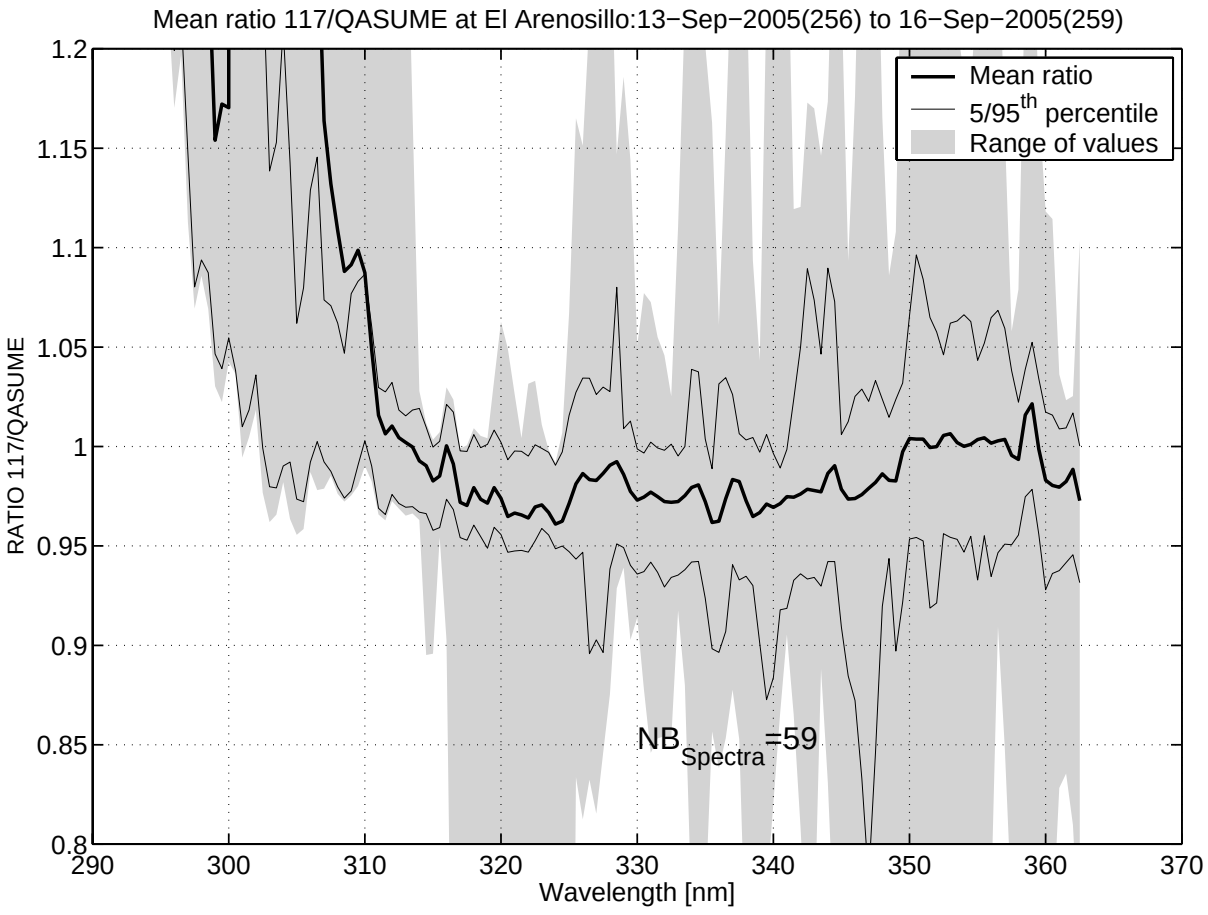

Global irradiance ratios 117/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 117/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
256
257
258
259
23−Sep−2005 14:59:35

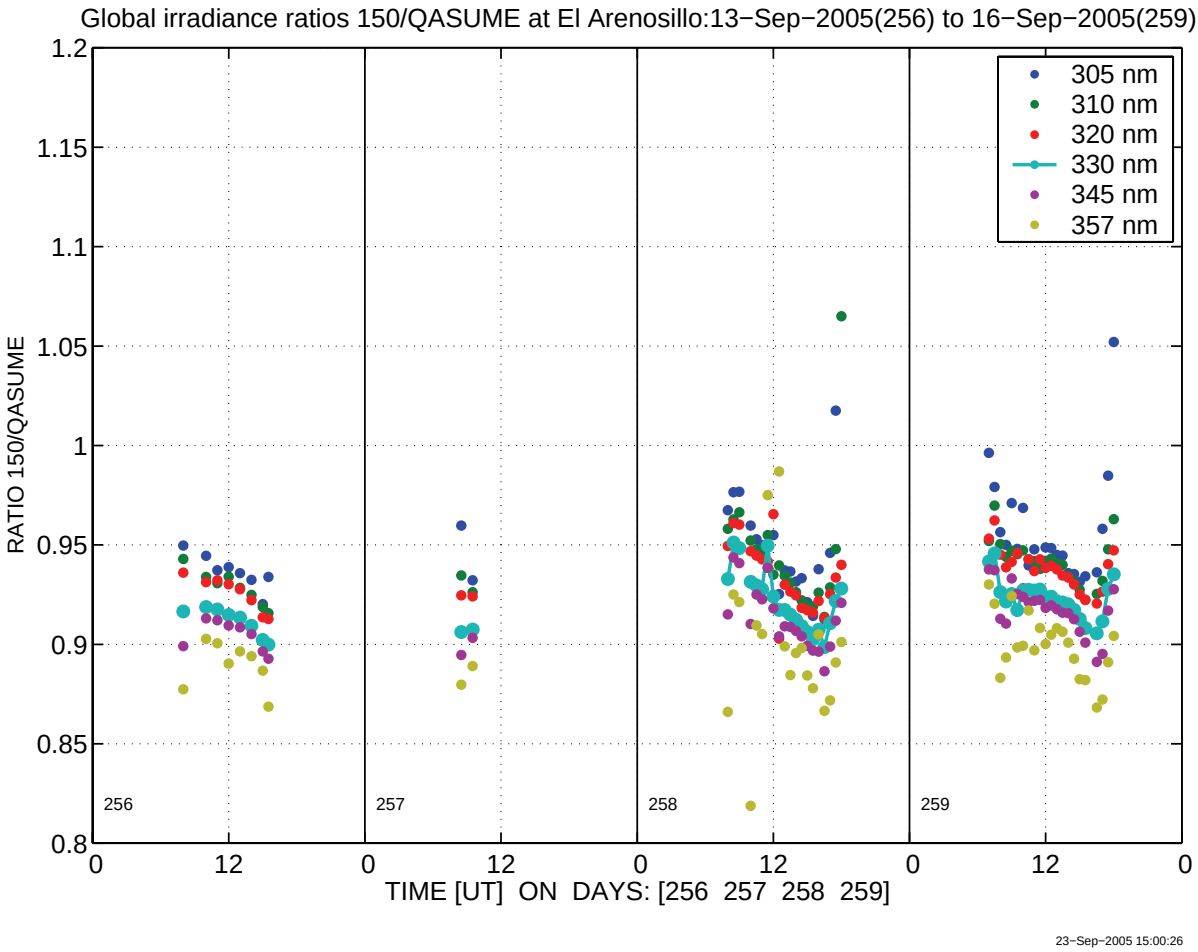

Global irradiance ratios 117/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
34° 33° 37°
TIME [UT](SZA)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 14:59:35

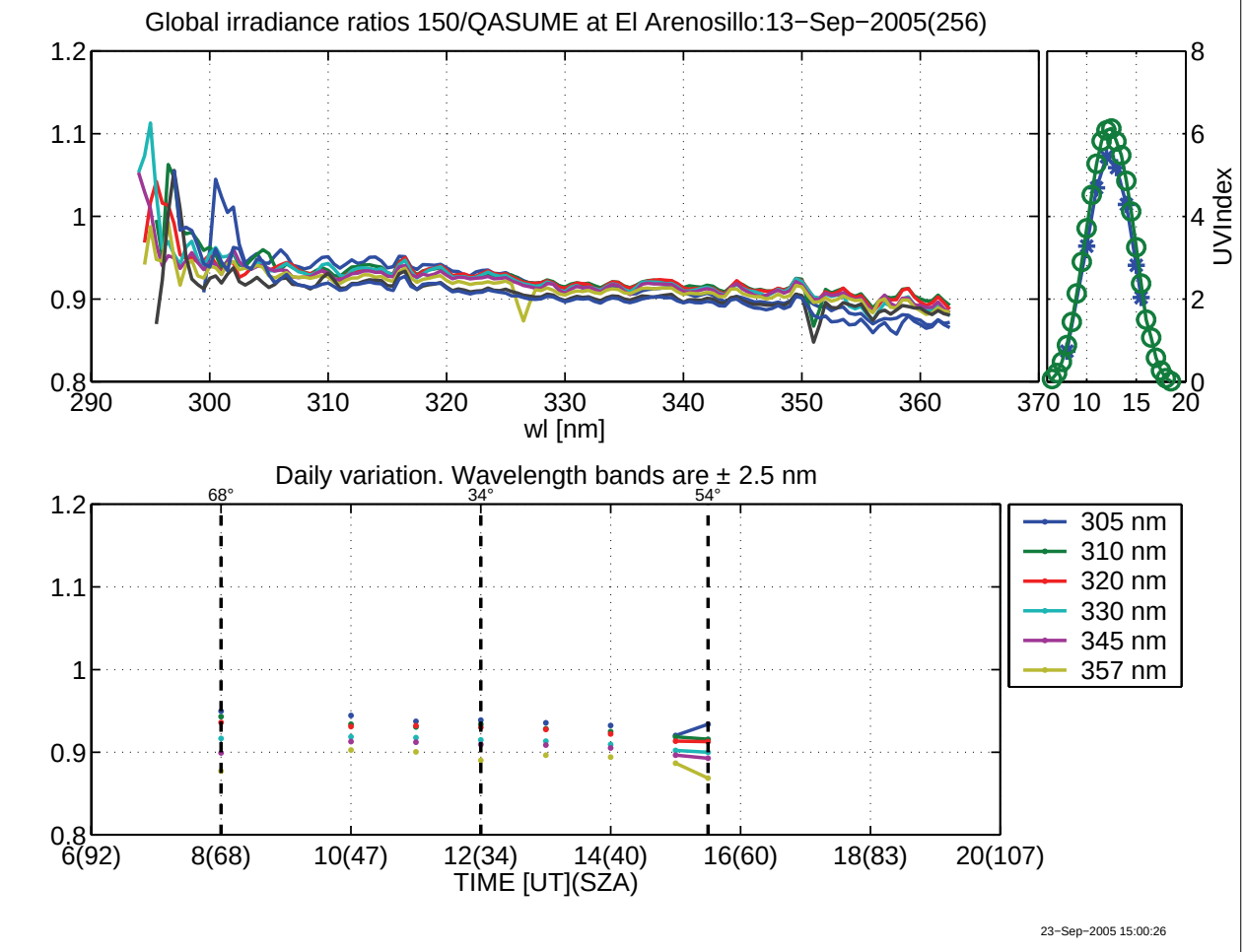

Global irradiance ratios 117/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
57°
35°
66°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(92)
8(69)
10(47)
12(34)
14(41)
16(60)
18(84)
20(107)
TIME [UT](SZA)
23−Sep−2005 14:59:35

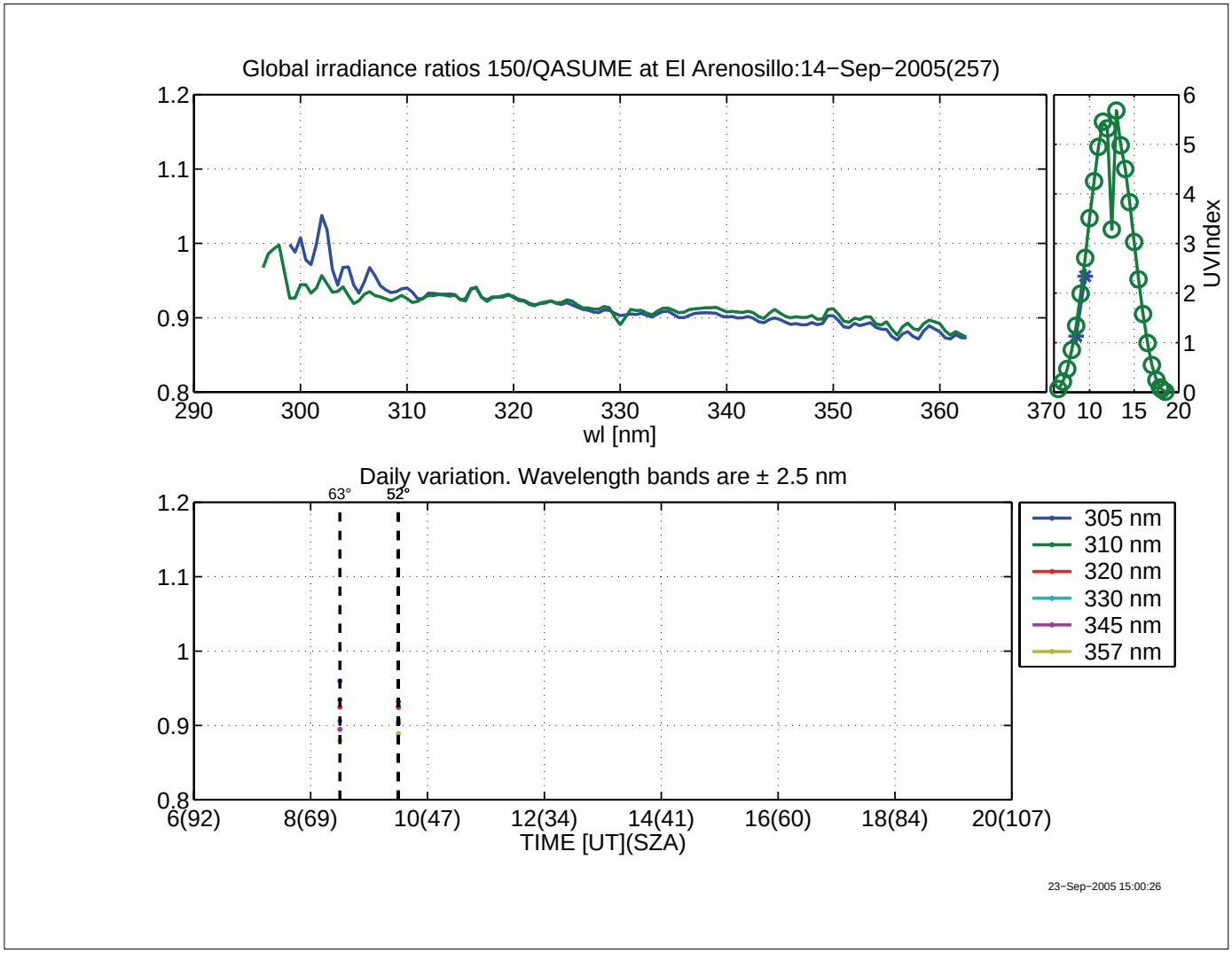

Global irradiance ratios 117/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
81°
34°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(60)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 14:59:35

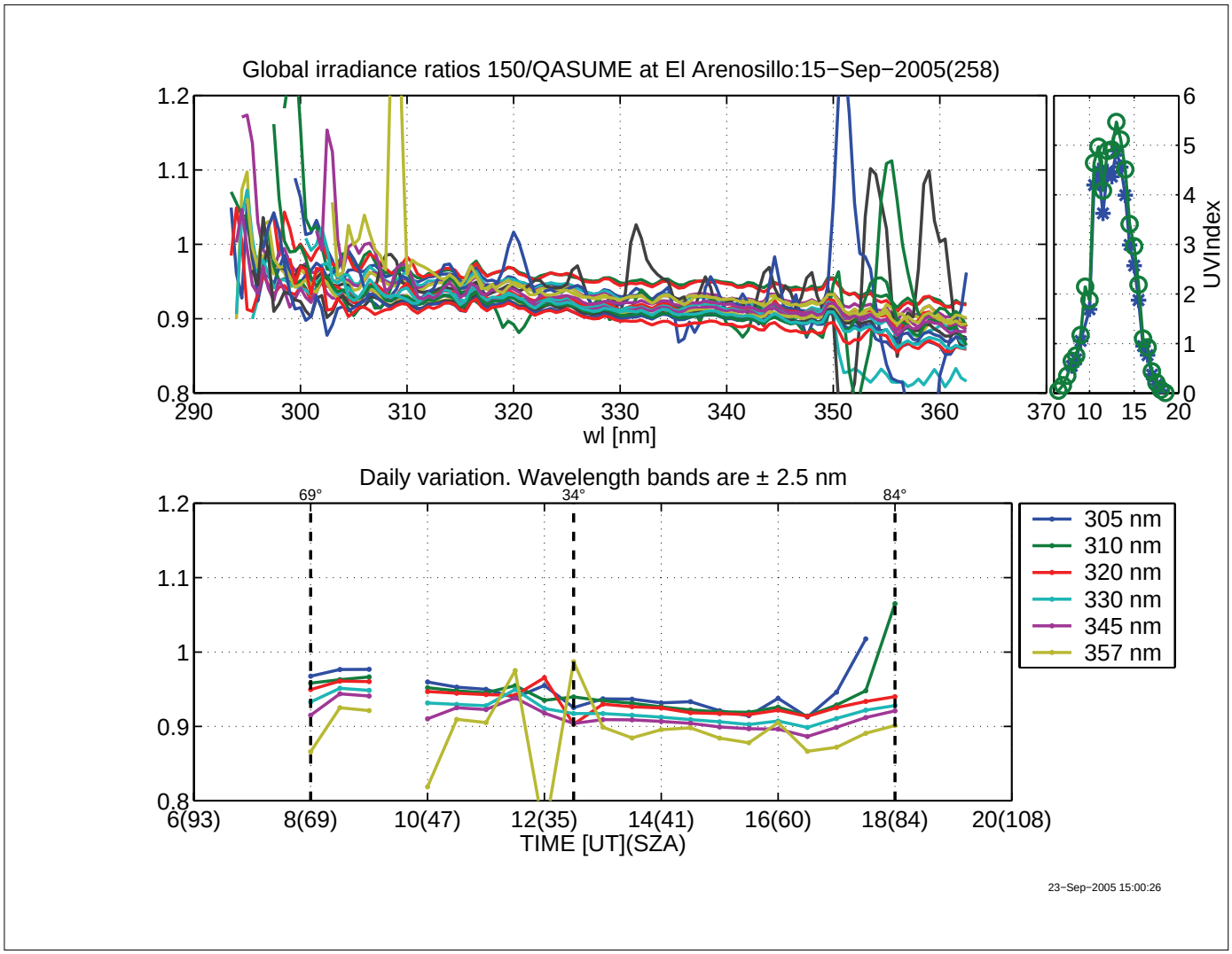

Global irradiance ratios 117/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
87°
35°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 14:59:35

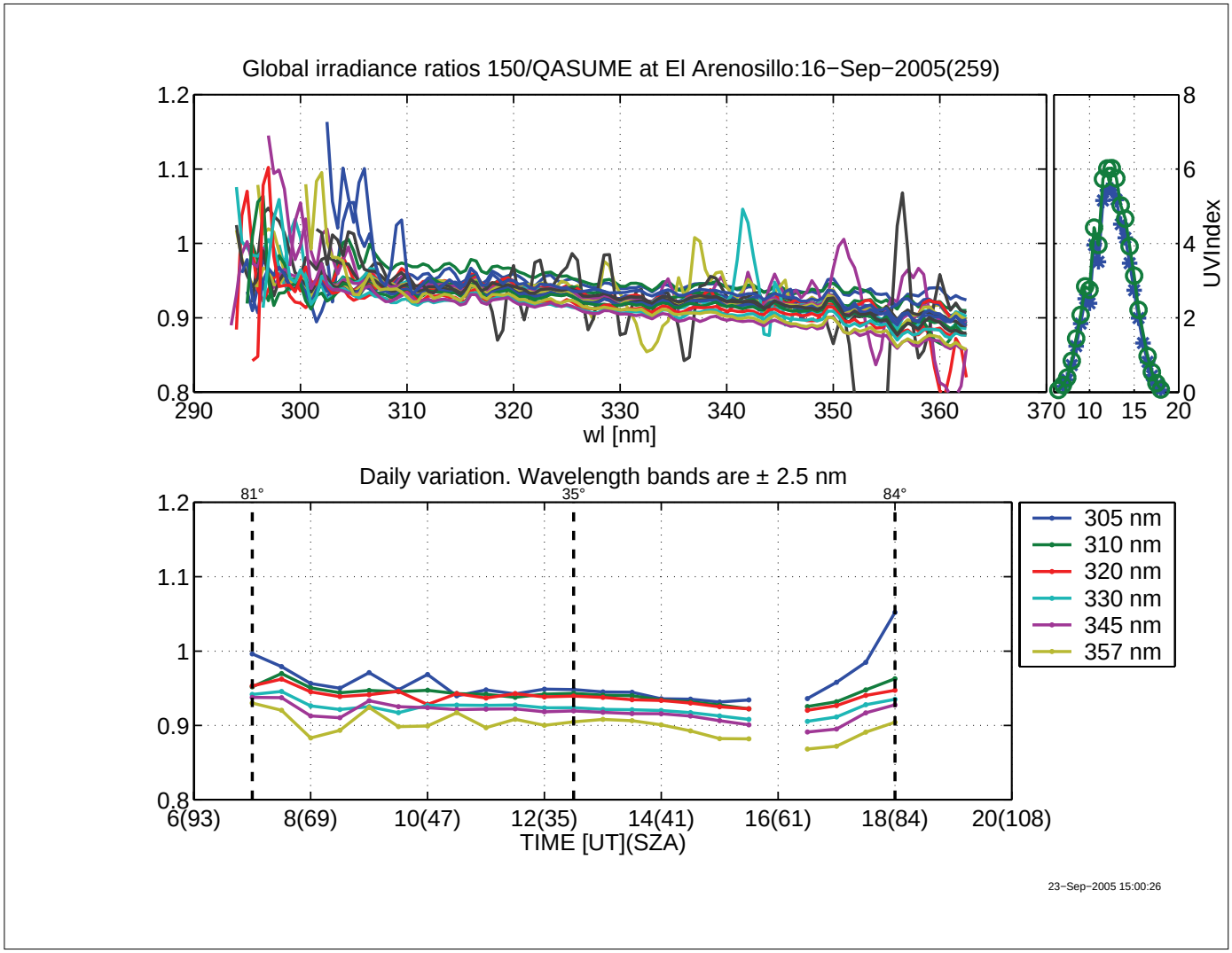

Mean ratio 117/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 117/QASUME
NBSpectra=59
Wavelength [nm]

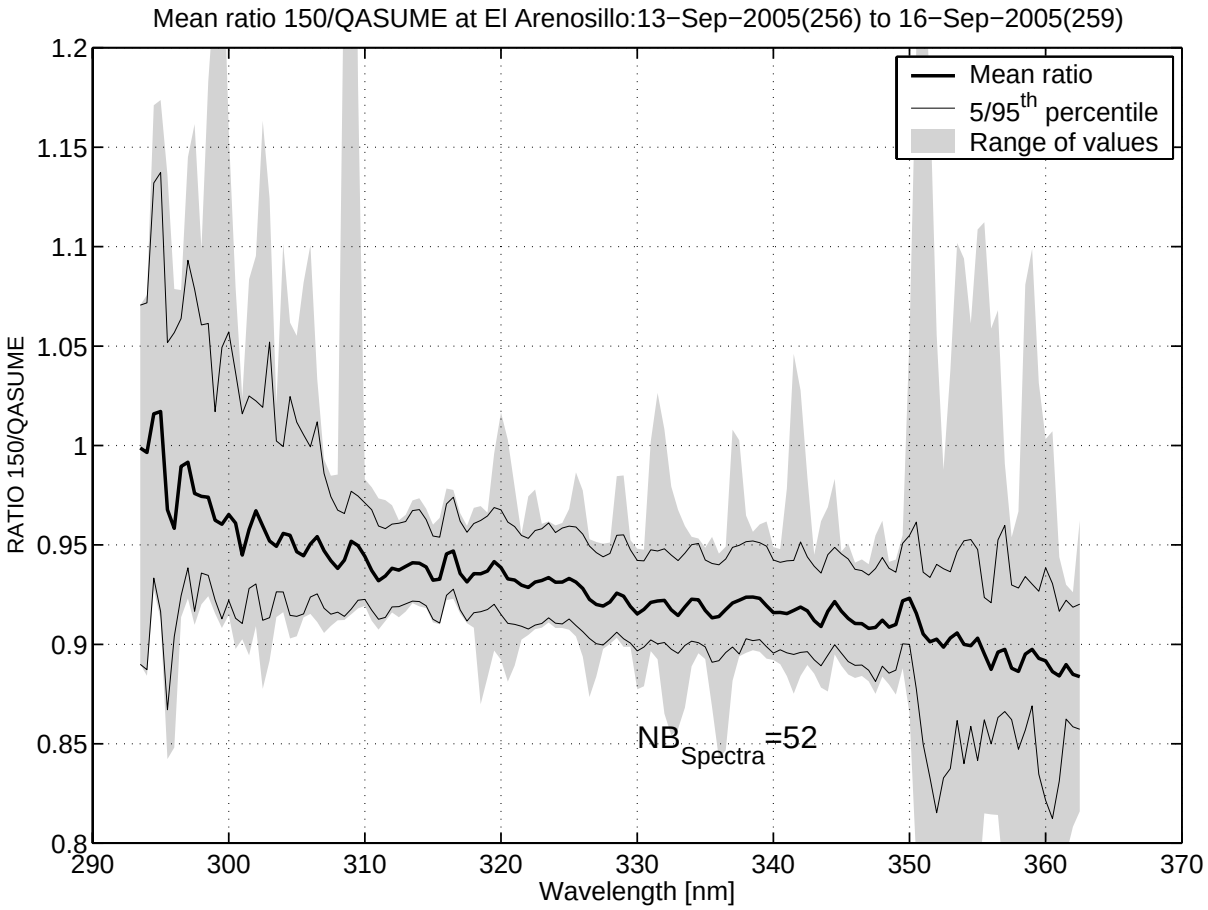

Global irradiance ratios 150/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 150/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
256
257
258
259
23−Sep−2005 15:00:26

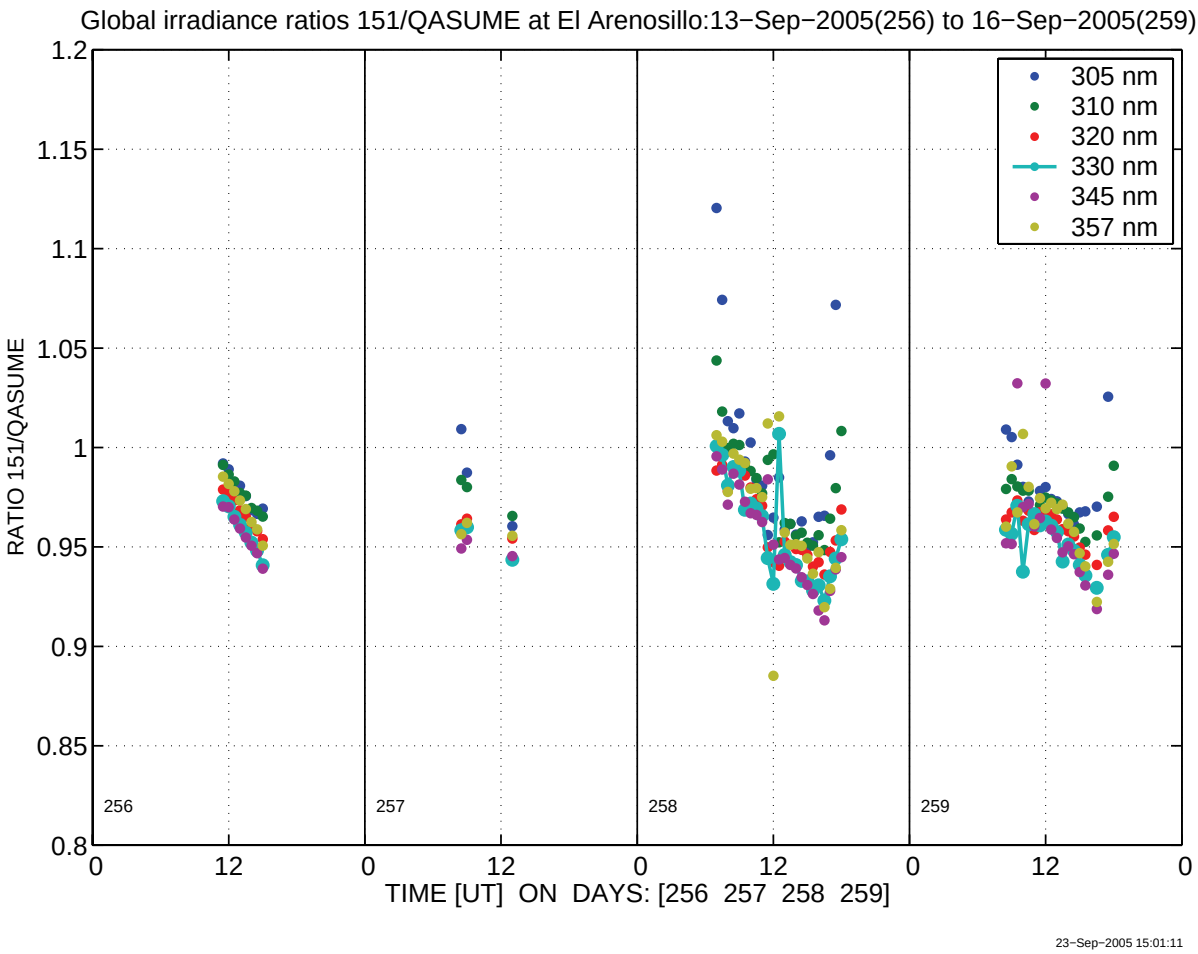

Global irradiance ratios 150/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
68°
34°
54°
TIME [UT](SZA)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:00:26

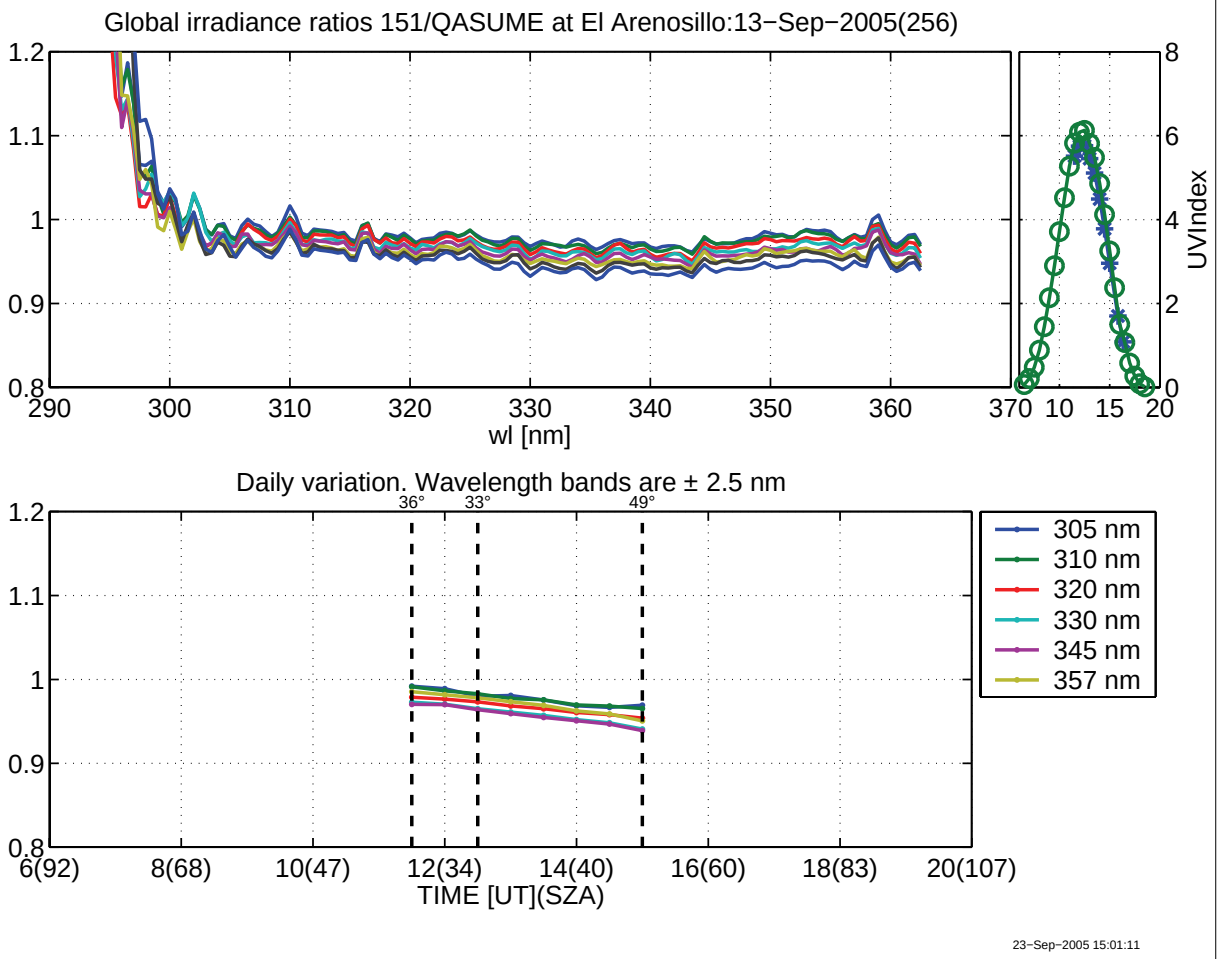

Global irradiance ratios 150/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
63°
52°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(92) 8(69) 10(47) 12(34) 14(41) 16(60) 18(84) 20(107)
TIME [UT](SZA)
23−Sep−2005 15:00:26

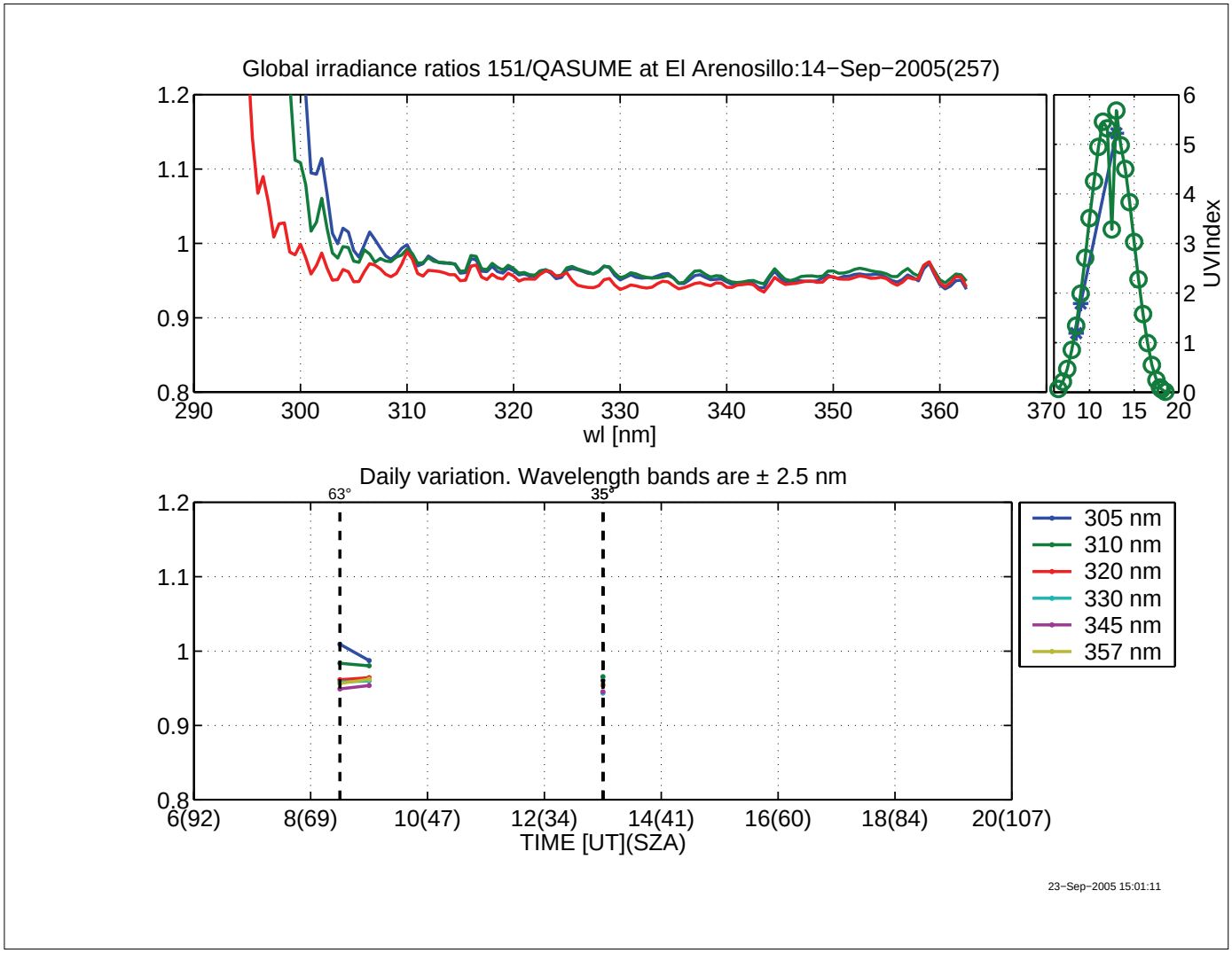

Global irradiance ratios 150/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
69°
34°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93) 8(69) 10(47) 12(35) 14(41) 16(60) 18(84) 20(108)
TIME [UT](SZA)
23−Sep−2005 15:00:26

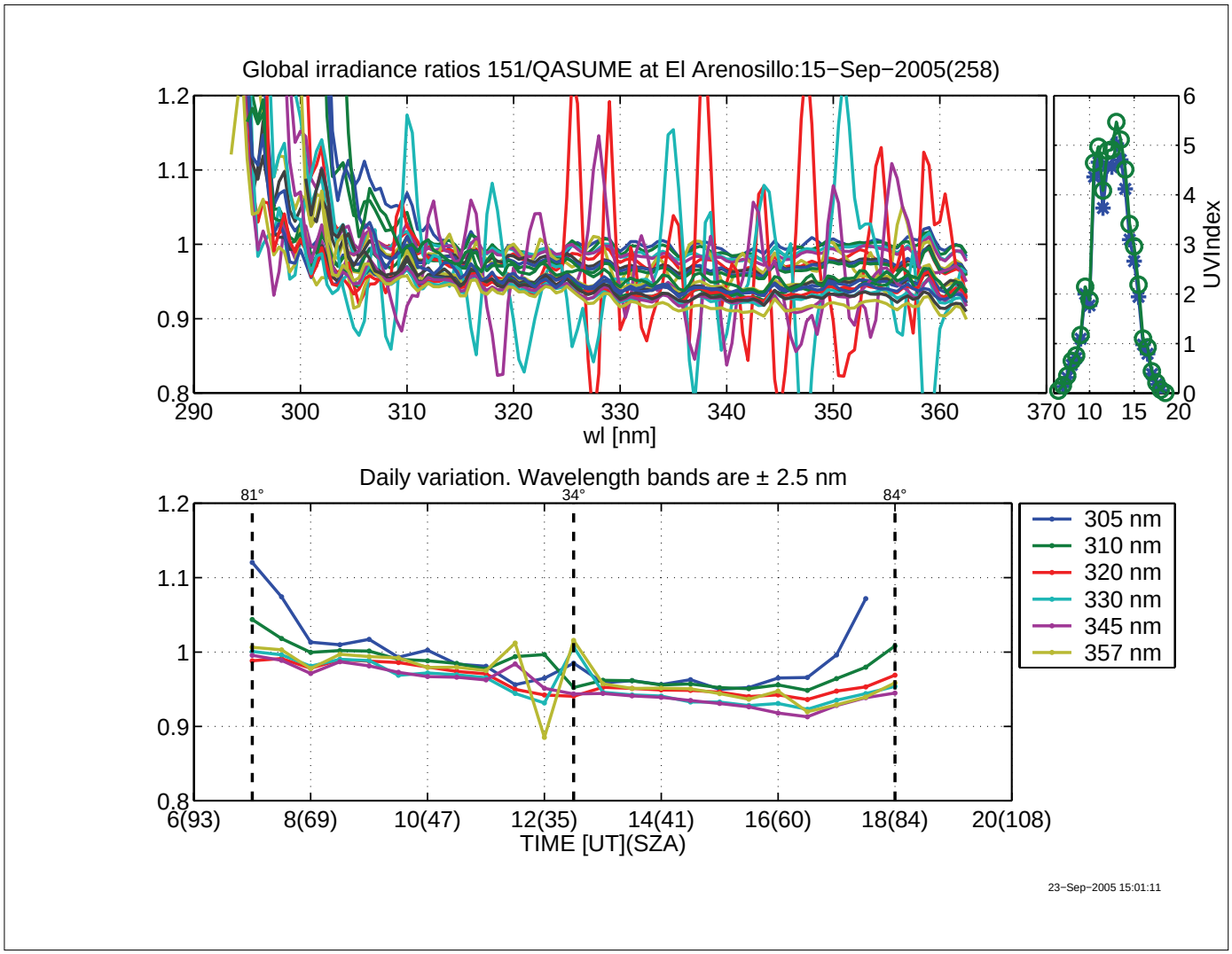

Global irradiance ratios 150/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
81°
35°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 15:00:26

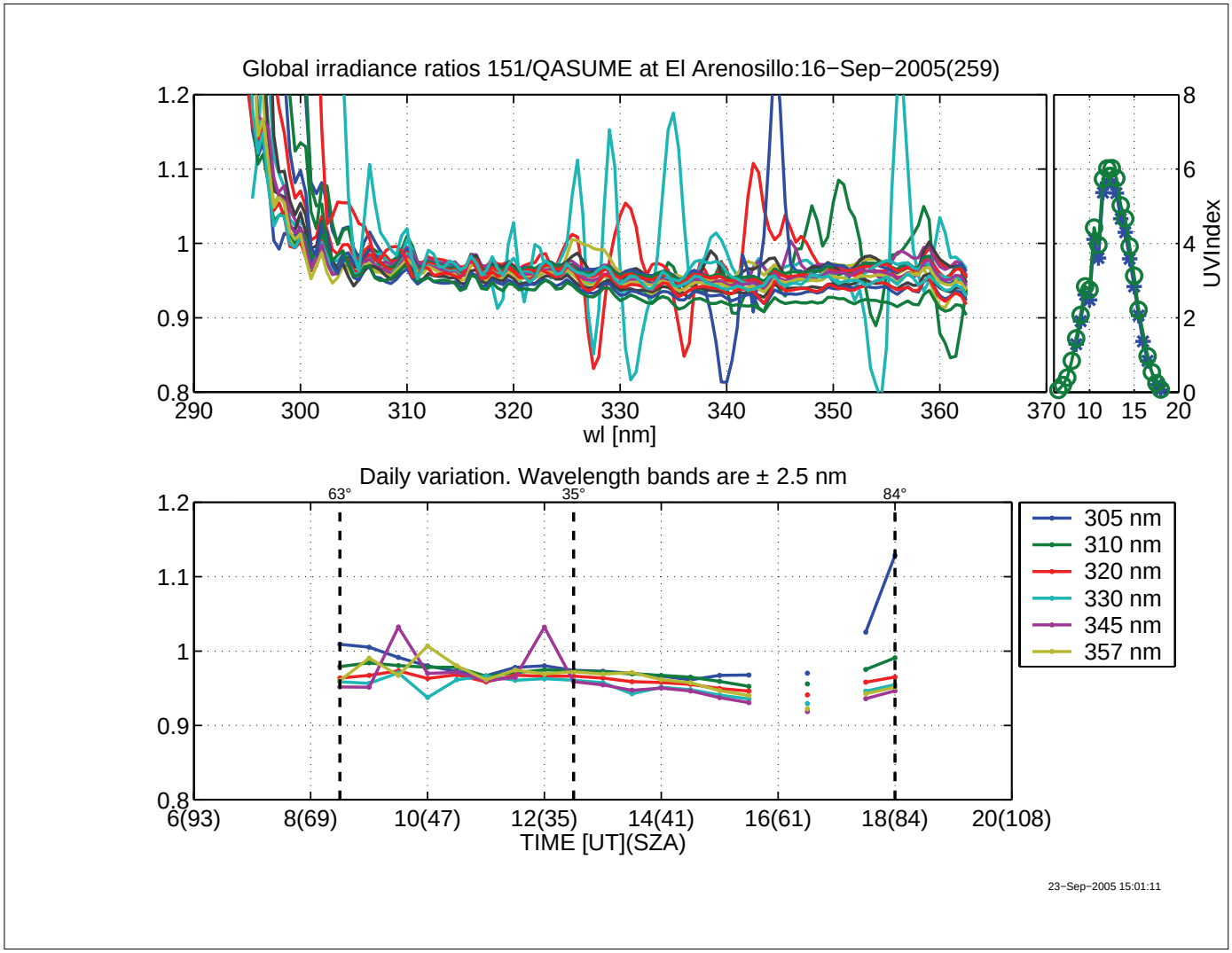

Mean ratio 150/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 150/QASUME
NBSpectra=52
Wavelength [nm]

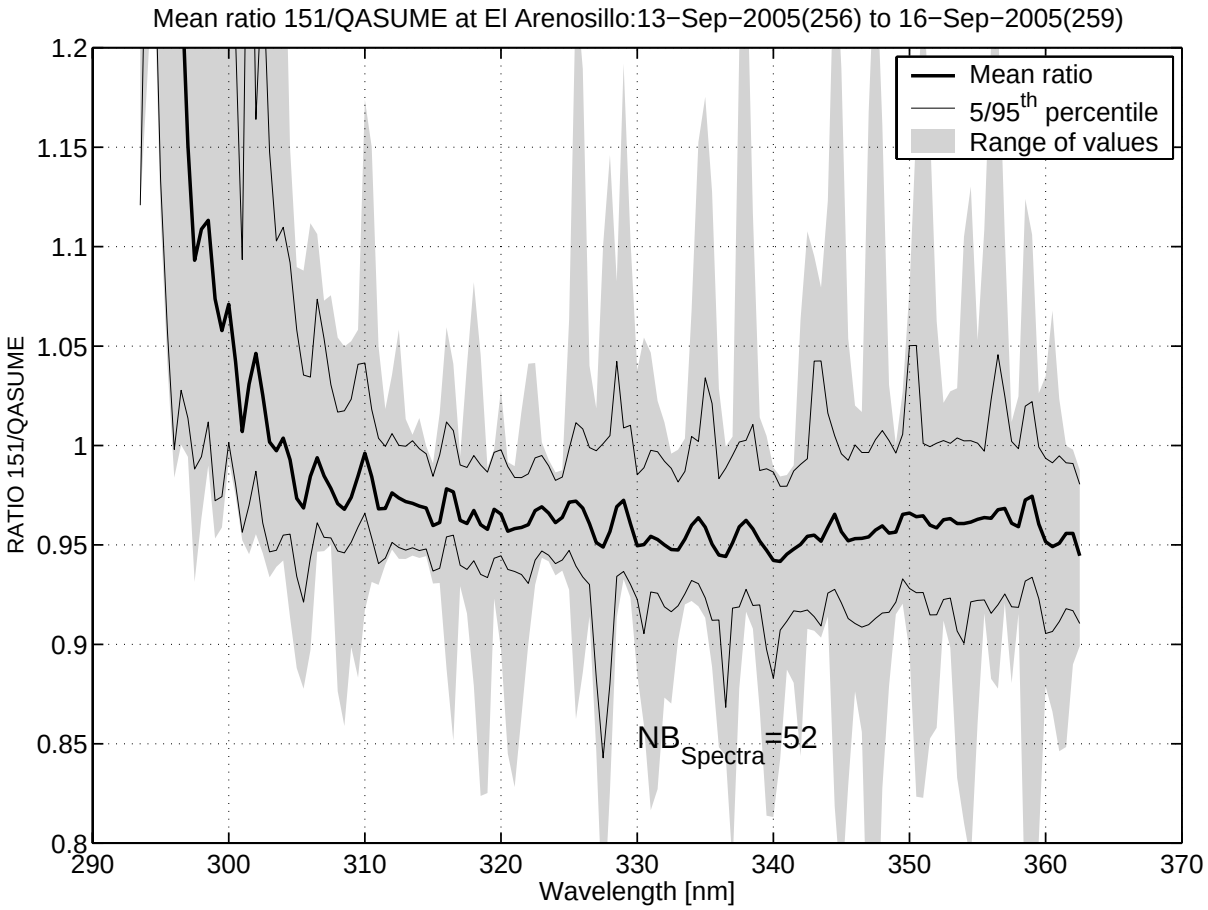

Global irradiance ratios 151/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 151/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
256
257
258
259
23−Sep−2005 15:01:11

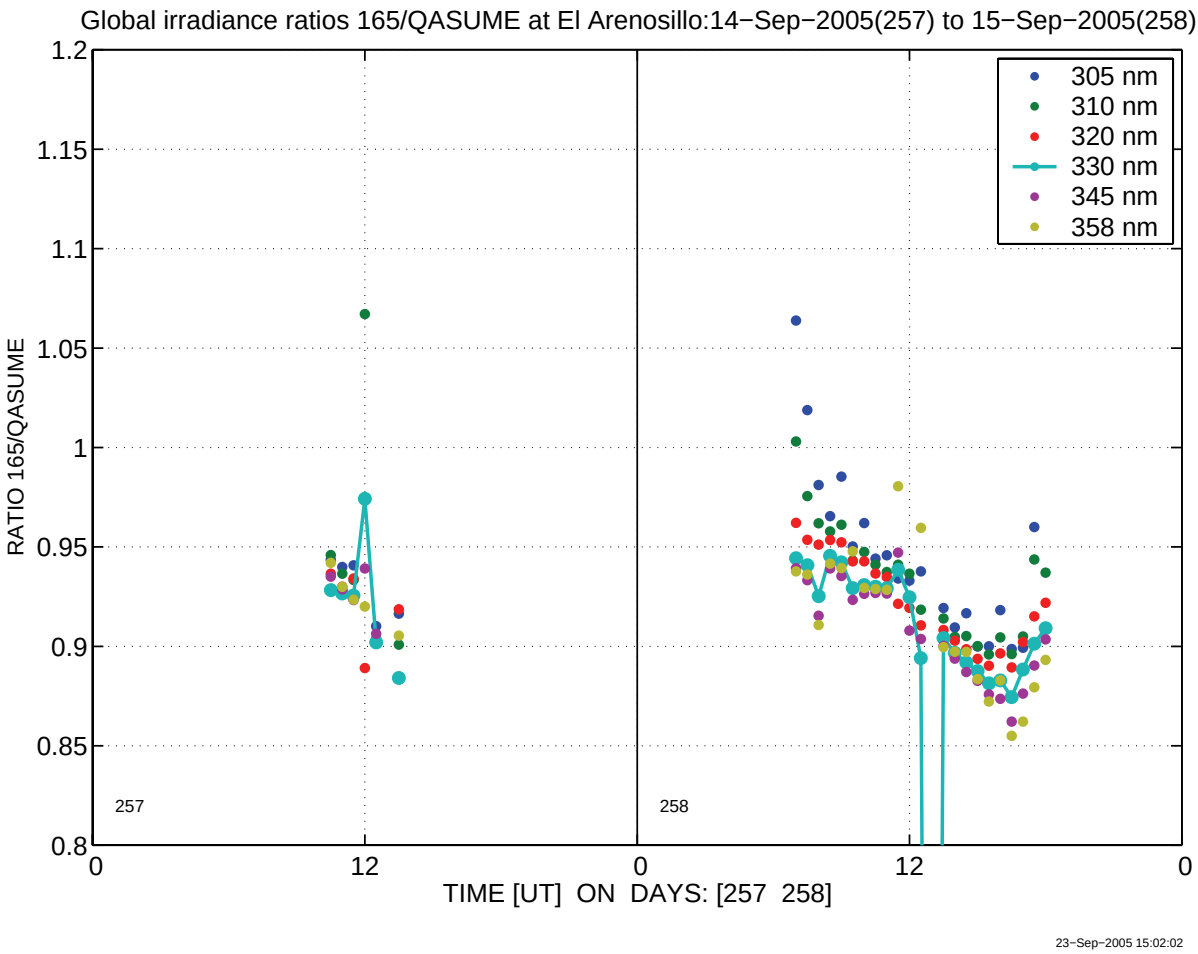

Global irradiance ratios 151/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
36°
33°
49°
TIME [UT](SZA)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:01:11

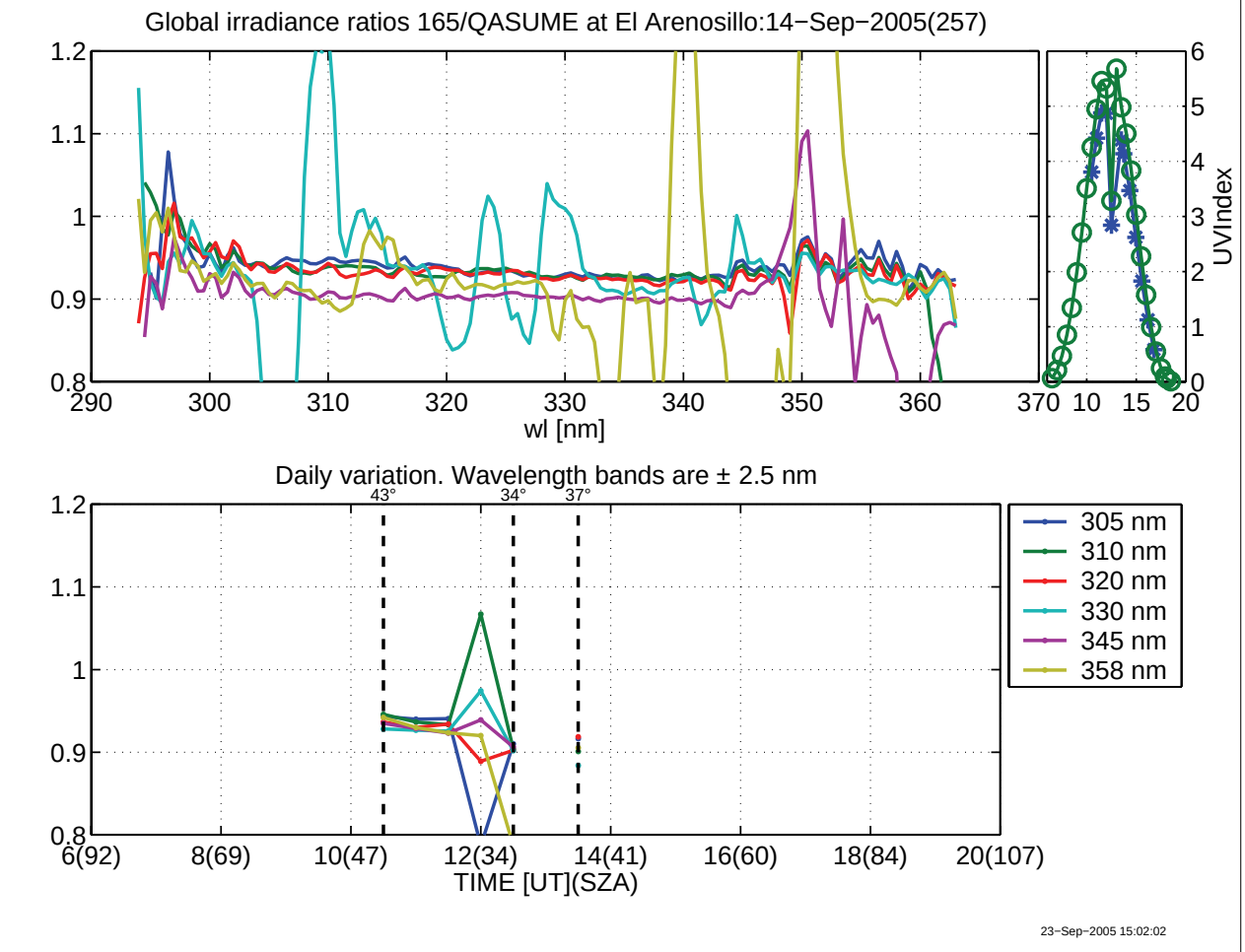

Global irradiance ratios 151/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
63°
35°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(92) 8(69) 10(47) 12(34) 14(41) 16(60) 18(84) 20(107)
TIME [UT](SZA)
23−Sep−2005 15:01:11

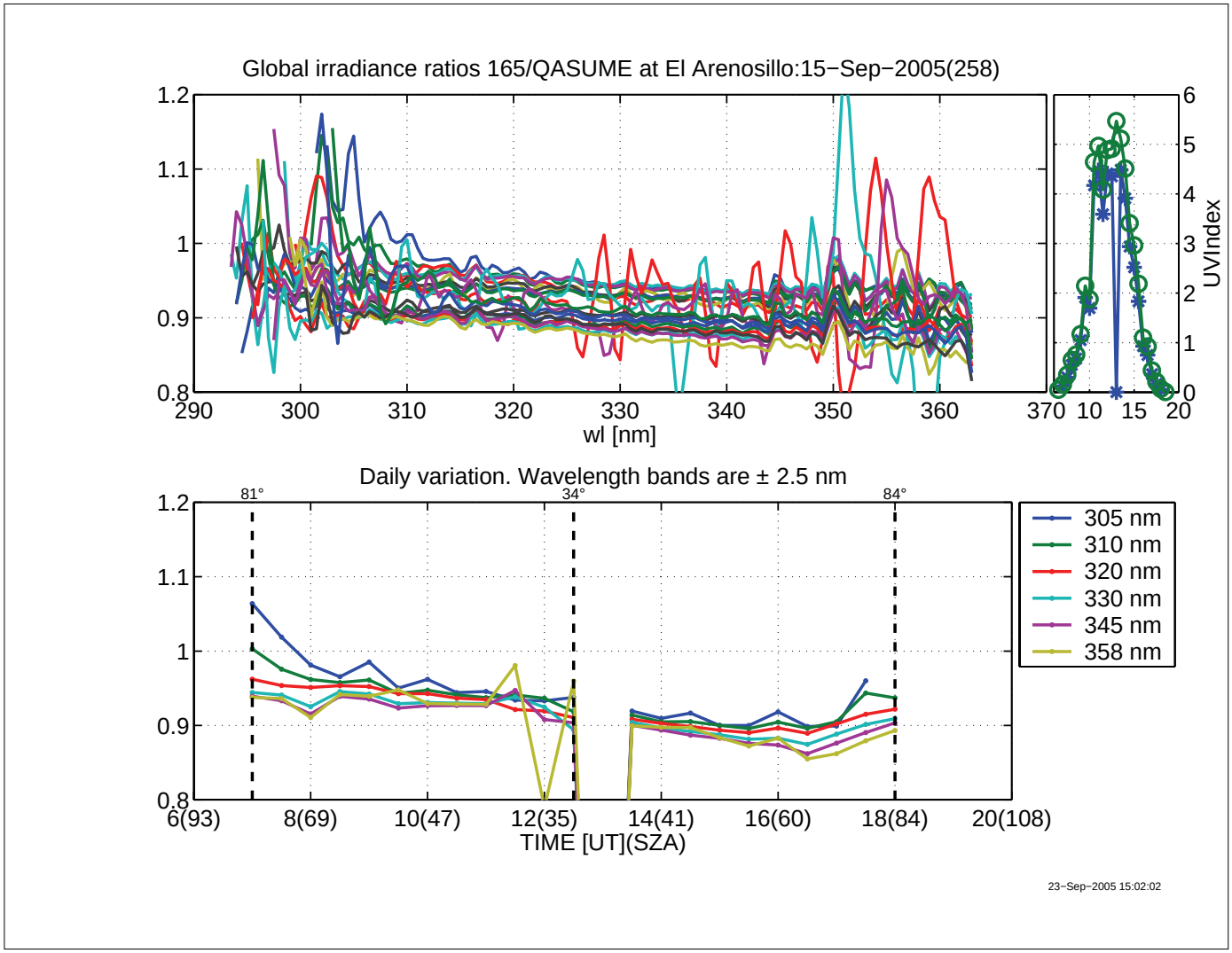

Global irradiance ratios 151/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
81°
34°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93) 8(69) 10(47) 12(35) 14(41) 16(60) 18(84) 20(108)
TIME [UT](SZA)
23−Sep−2005 15:01:11

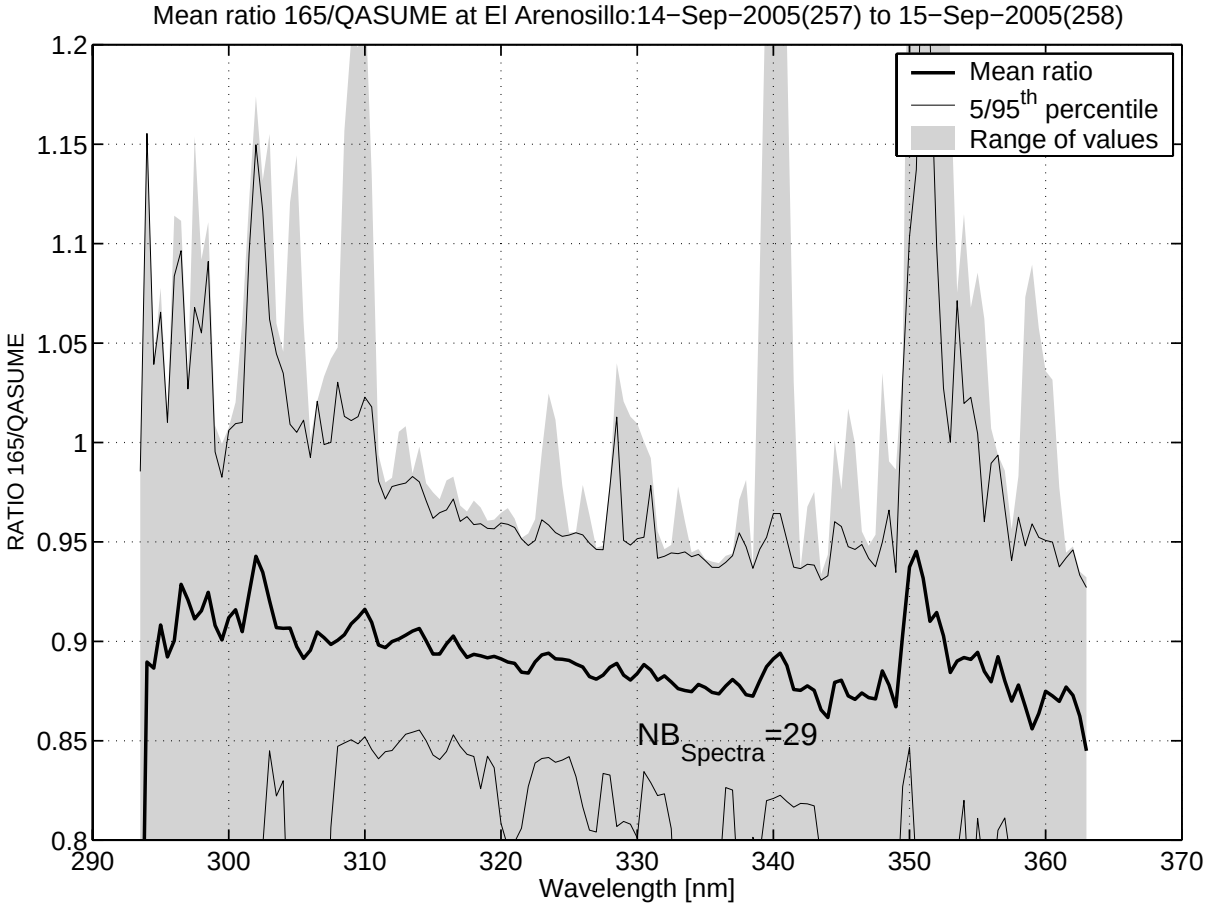

Global irradiance ratios 151/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
63°
35°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
TIME [UT](SZA)
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
23−Sep−2005 15:01:11

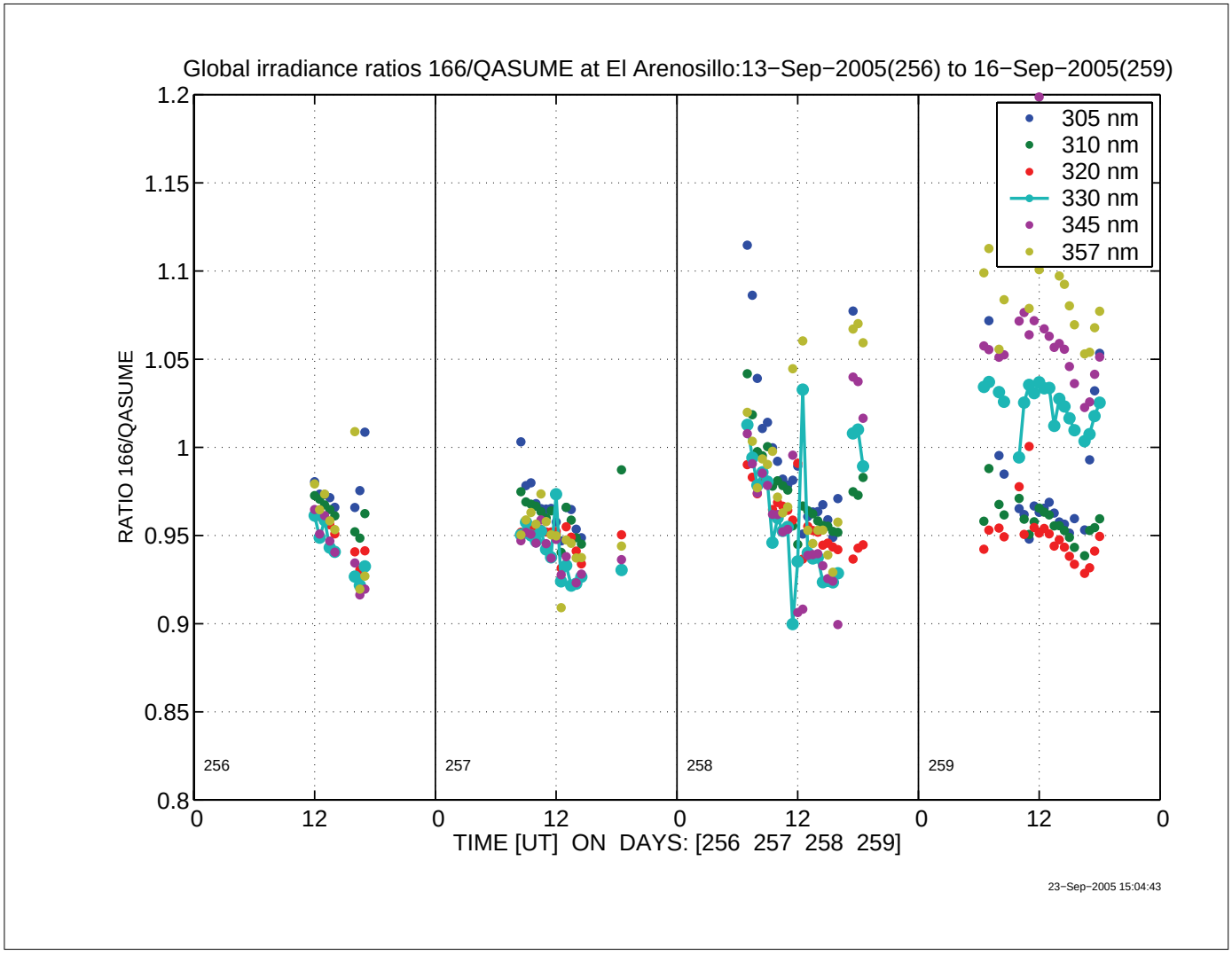

Mean ratio 151/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 151/QASUME
NBSpectra=52
Wavelength [nm]

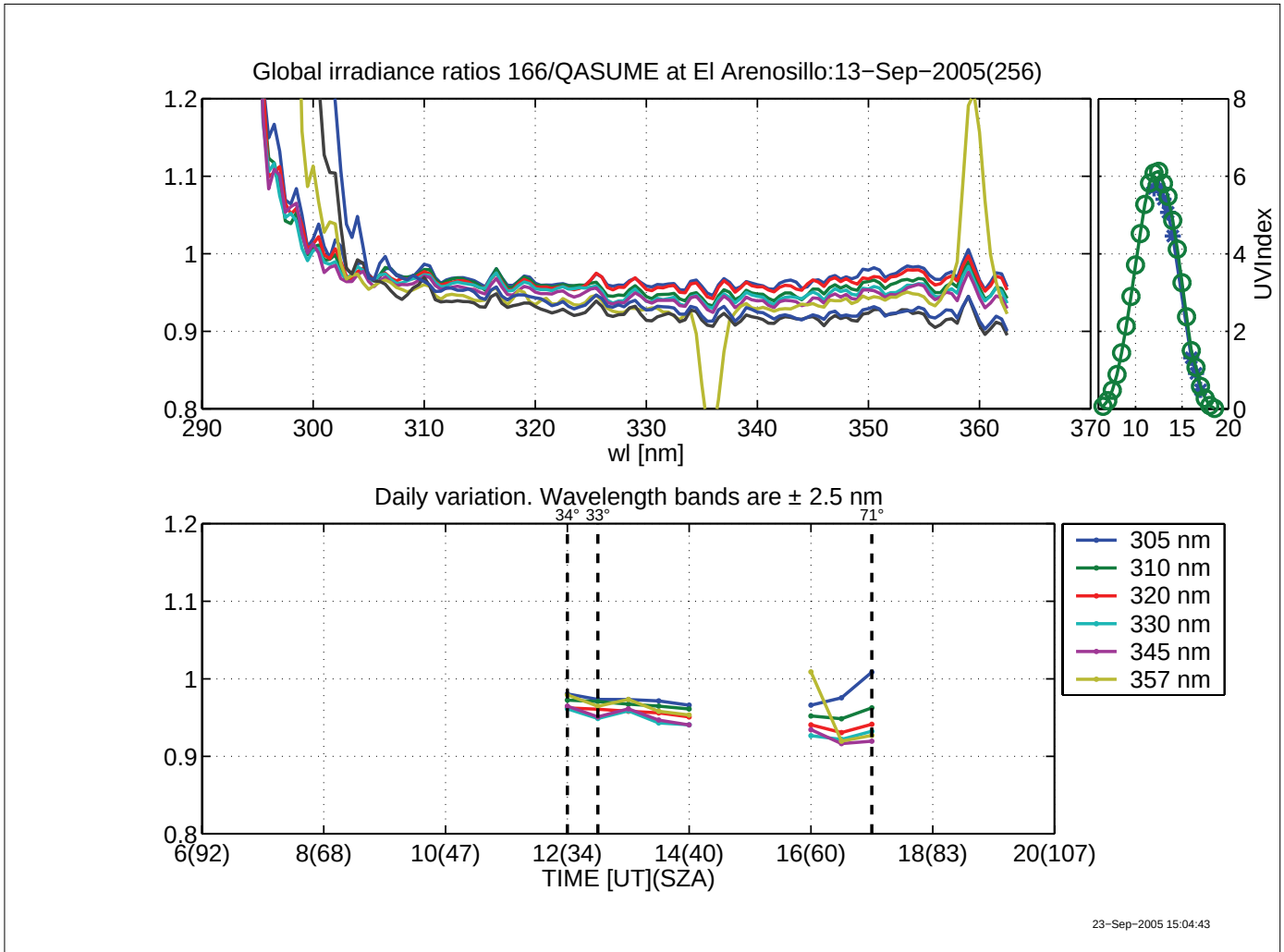

Global irradiance ratios 165/QASUME at El Arenosillo:14−Sep−2005(257) to 15−Sep−2005(258)
RATIO 165/QASUME
TIME [UT] ON DAYS: [257 258]
305 nm
310 nm
320 nm
330 nm
345 nm
358 nm
257
258
23−Sep−2005 15:02:02

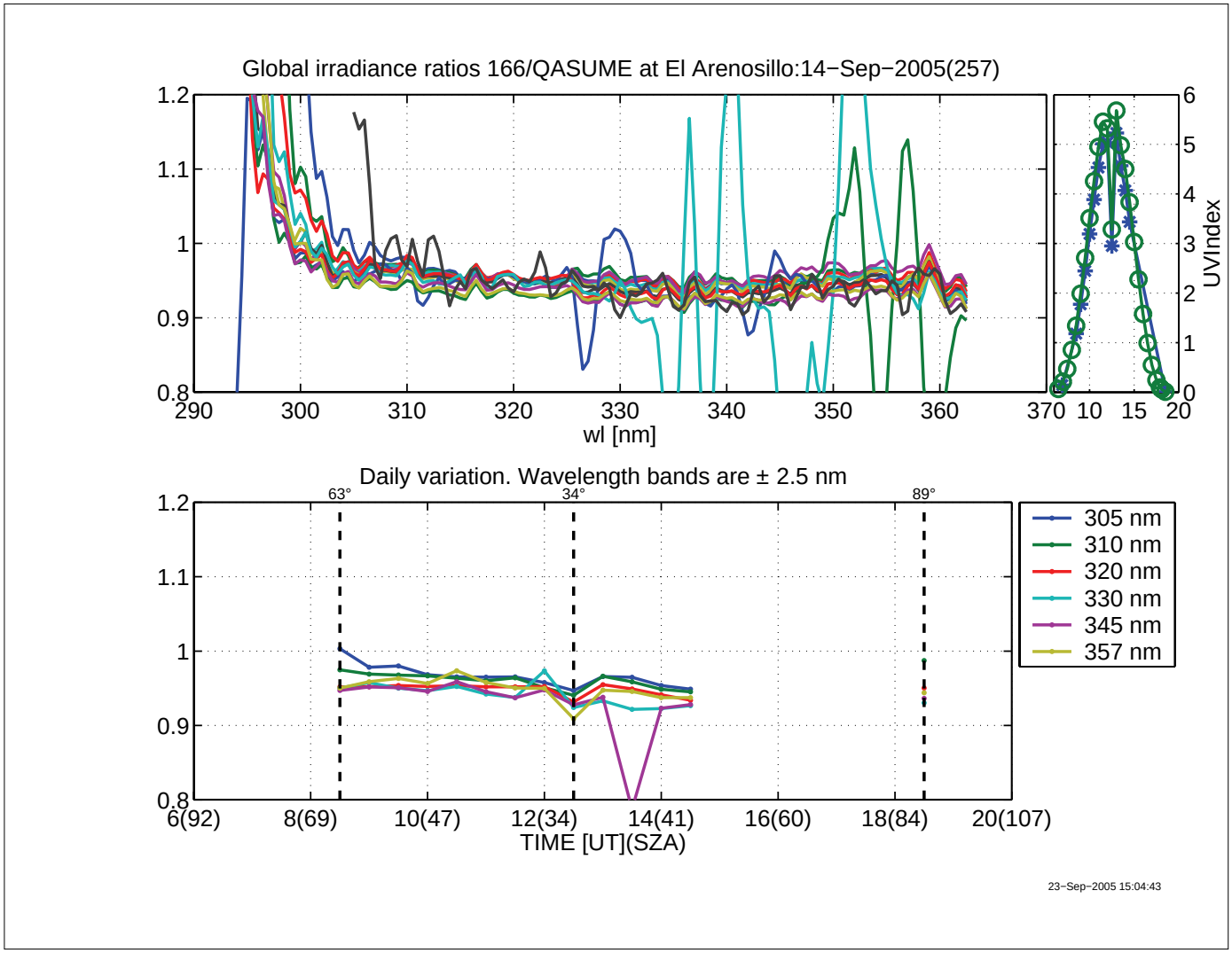

Global irradiance ratios 165/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
43°
34°
37°
TIME [UT](SZA)
305 nm
310 nm
320 nm
330 nm
345 nm
358 nm
23−Sep−2005 15:02:02

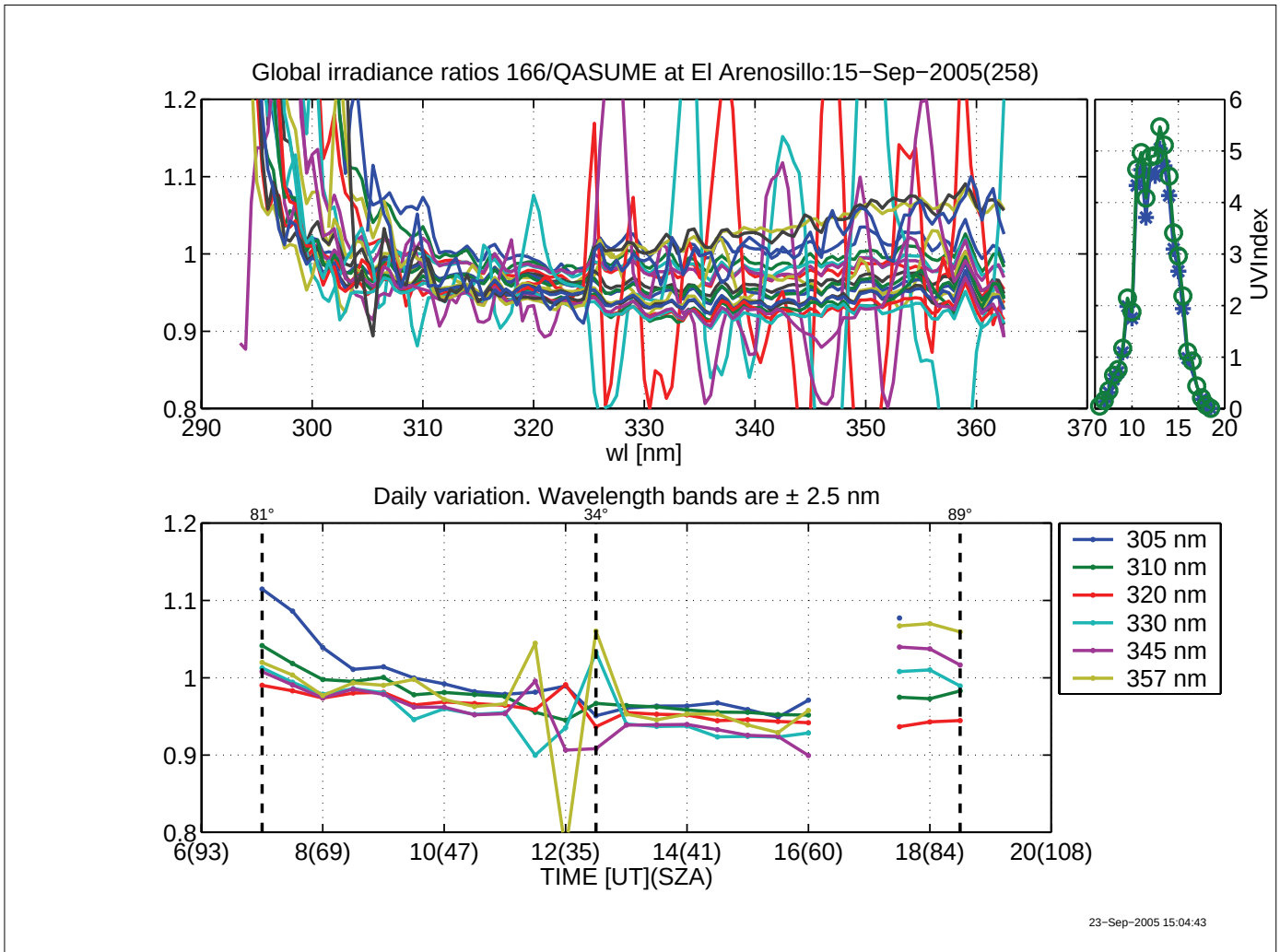

Global irradiance ratios 165/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
81°
34°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
358 nm
TIME [UT](SZA)
6(93)
8(69)
10(47)
12(35)
14(41)
16(60)
18(84)
20(108)
23−Sep−2005 15:02:02

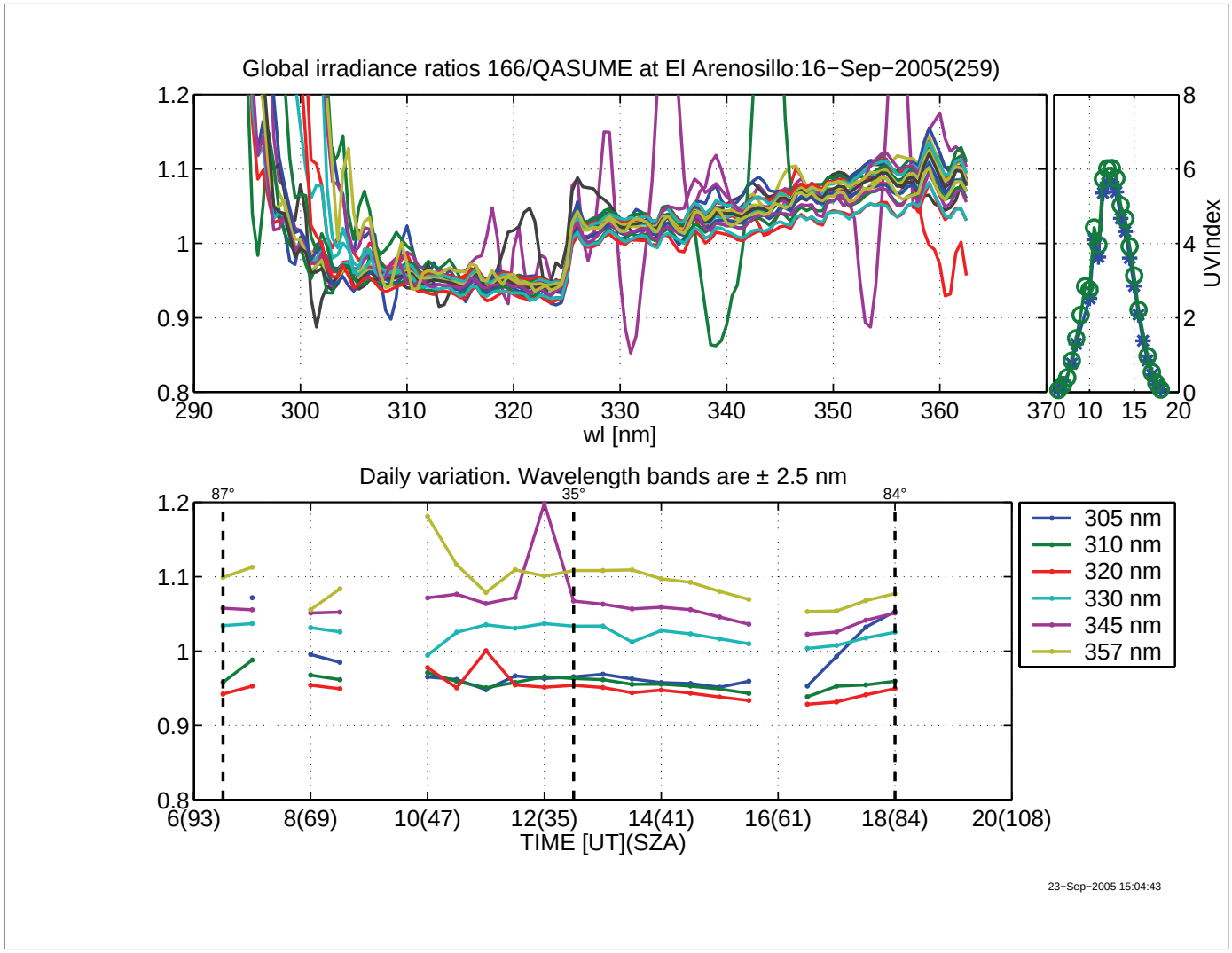

Mean ratio 165/QASUME at El Arenosillo:14−Sep−2005(257) to 15−Sep−2005(258)
Mean ratio
5/95th percentile
Range of values
RATIO 165/QASUME
NBSpectra=29
Wavelength [nm]

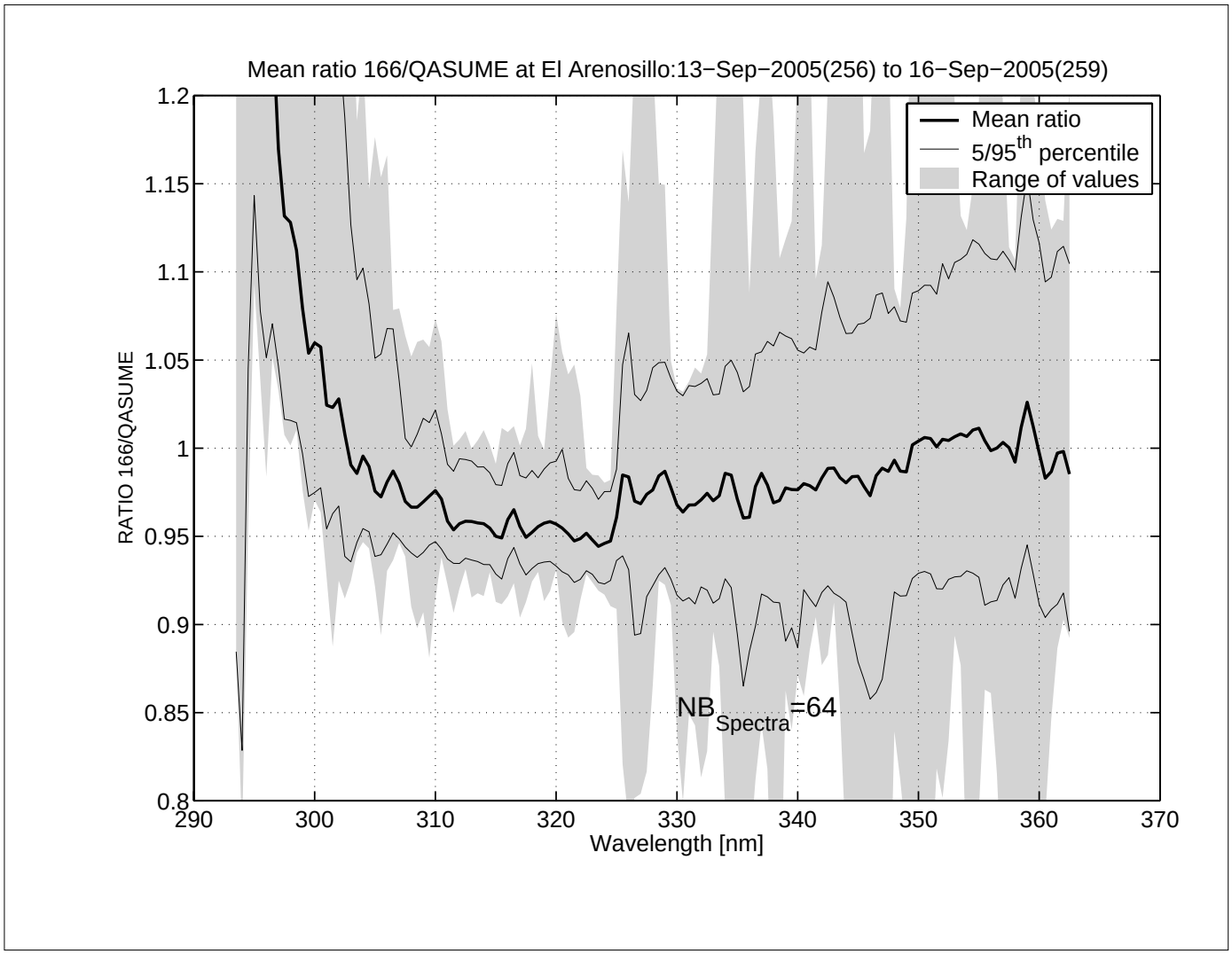

Global irradiance ratios 166/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 166/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
256
257
258
259
23−Sep−2005 15:04:43

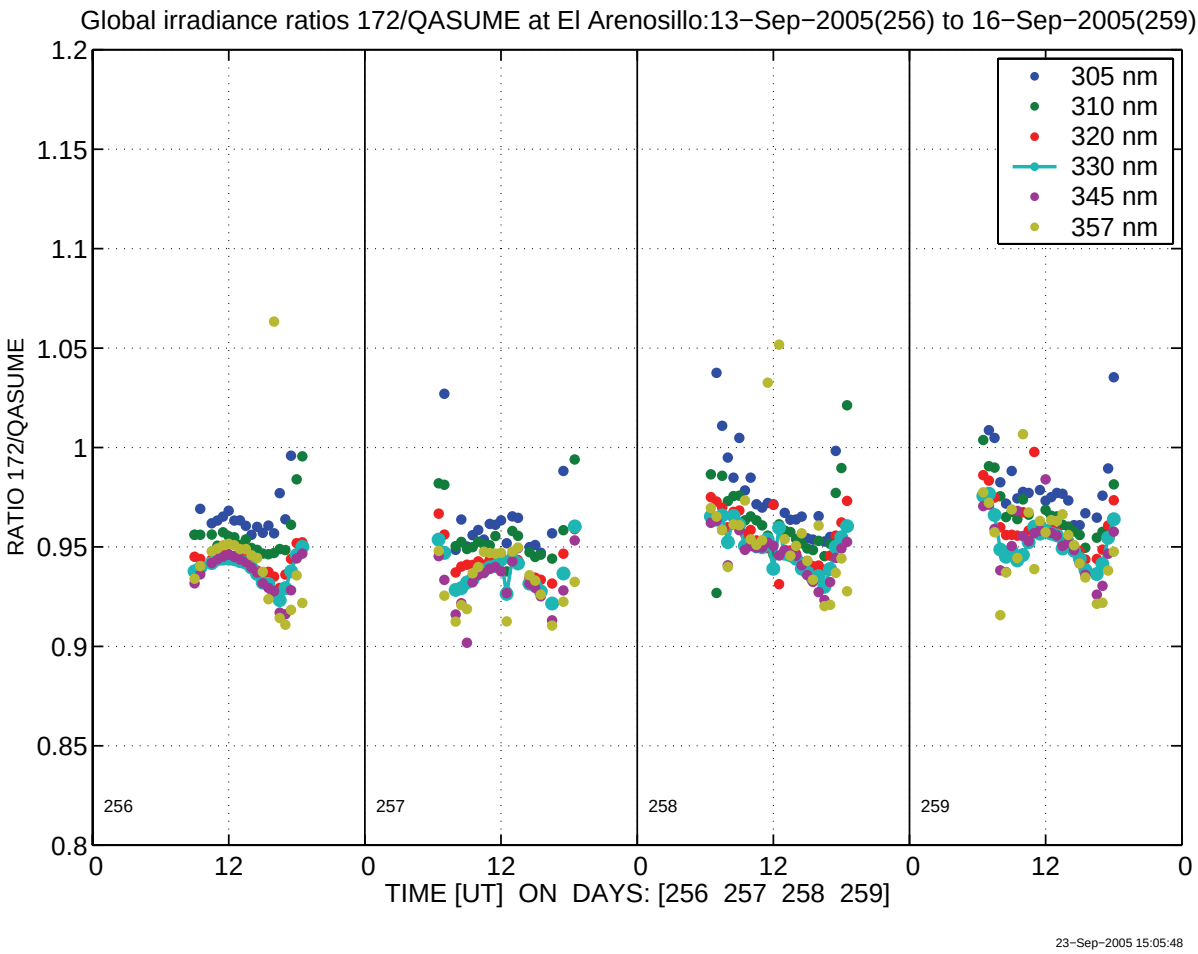

Global irradiance ratios 166/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
34° 33°
71°
TIME [UT](SZA)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:04:43

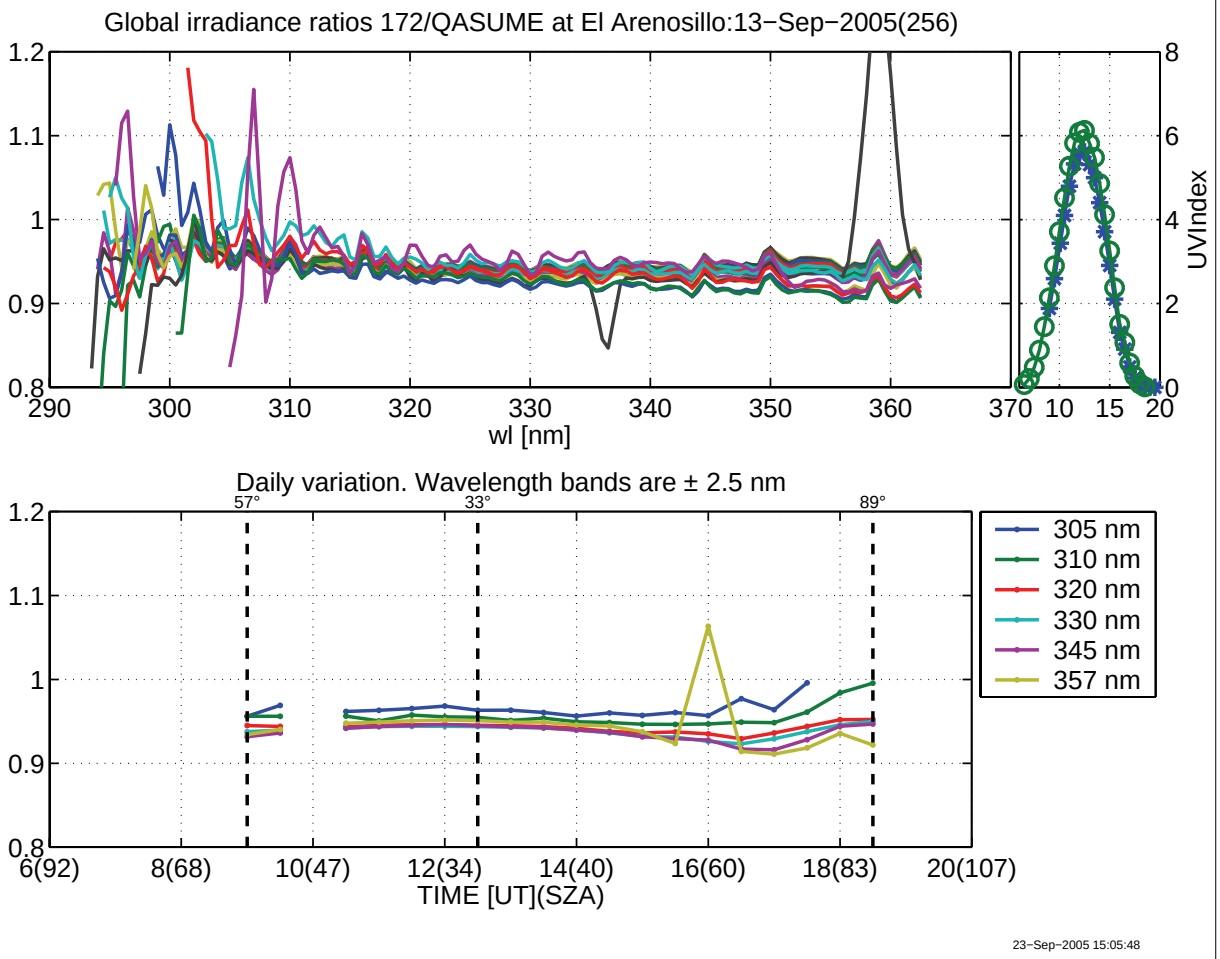

Global irradiance ratios 166/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
63°
34°
89°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(92) 8(69) 10(47) 12(34) 14(41) 16(60) 18(84) 20(107)
TIME [UT](SZA)
23−Sep−2005 15:04:43

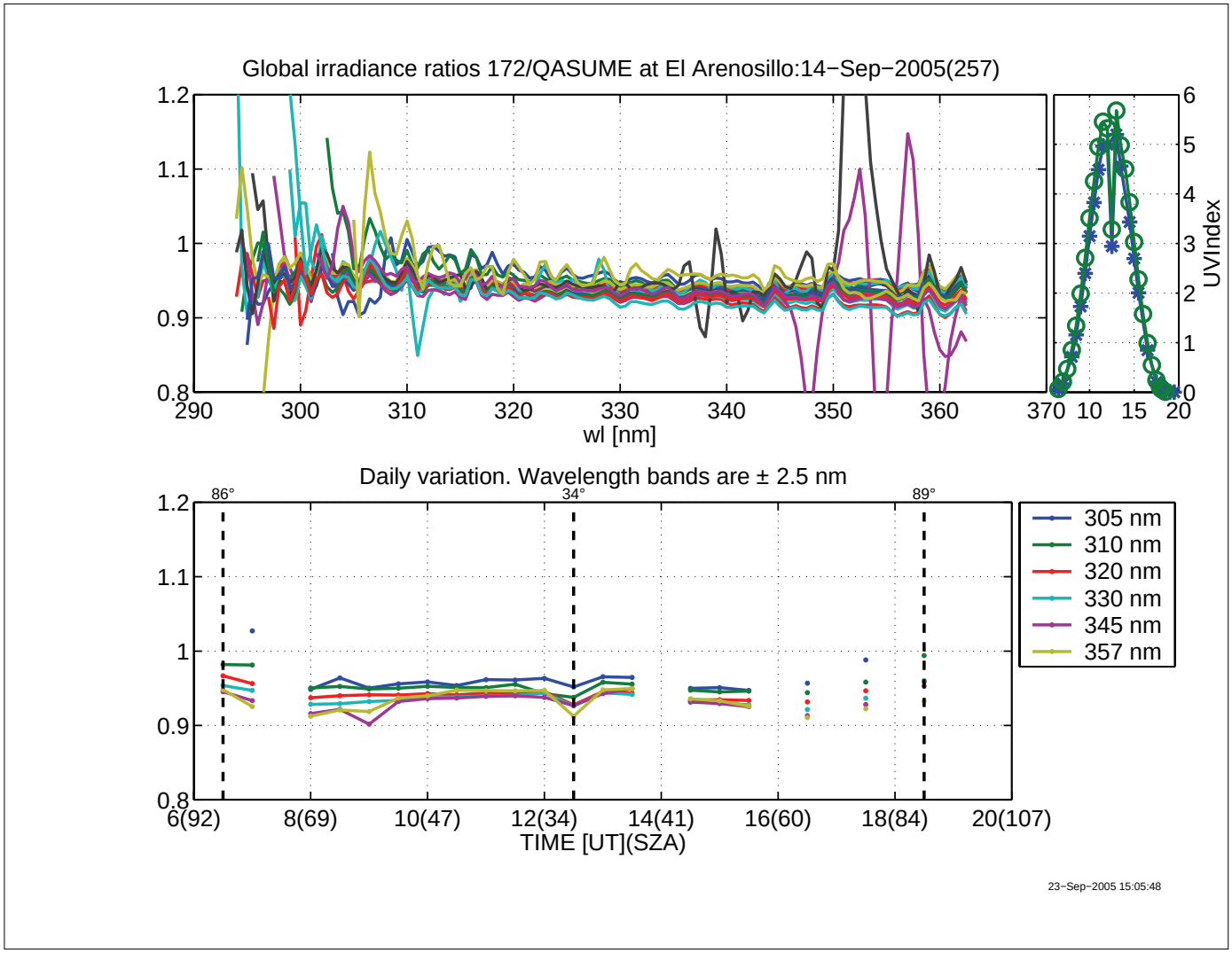

Global irradiance ratios 166/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
81°
34°
89°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93) 8(69) 10(47) 12(35) 14(41) 16(60) 18(84) 20(108)
TIME [UT](SZA)
23−Sep−2005 15:04:43

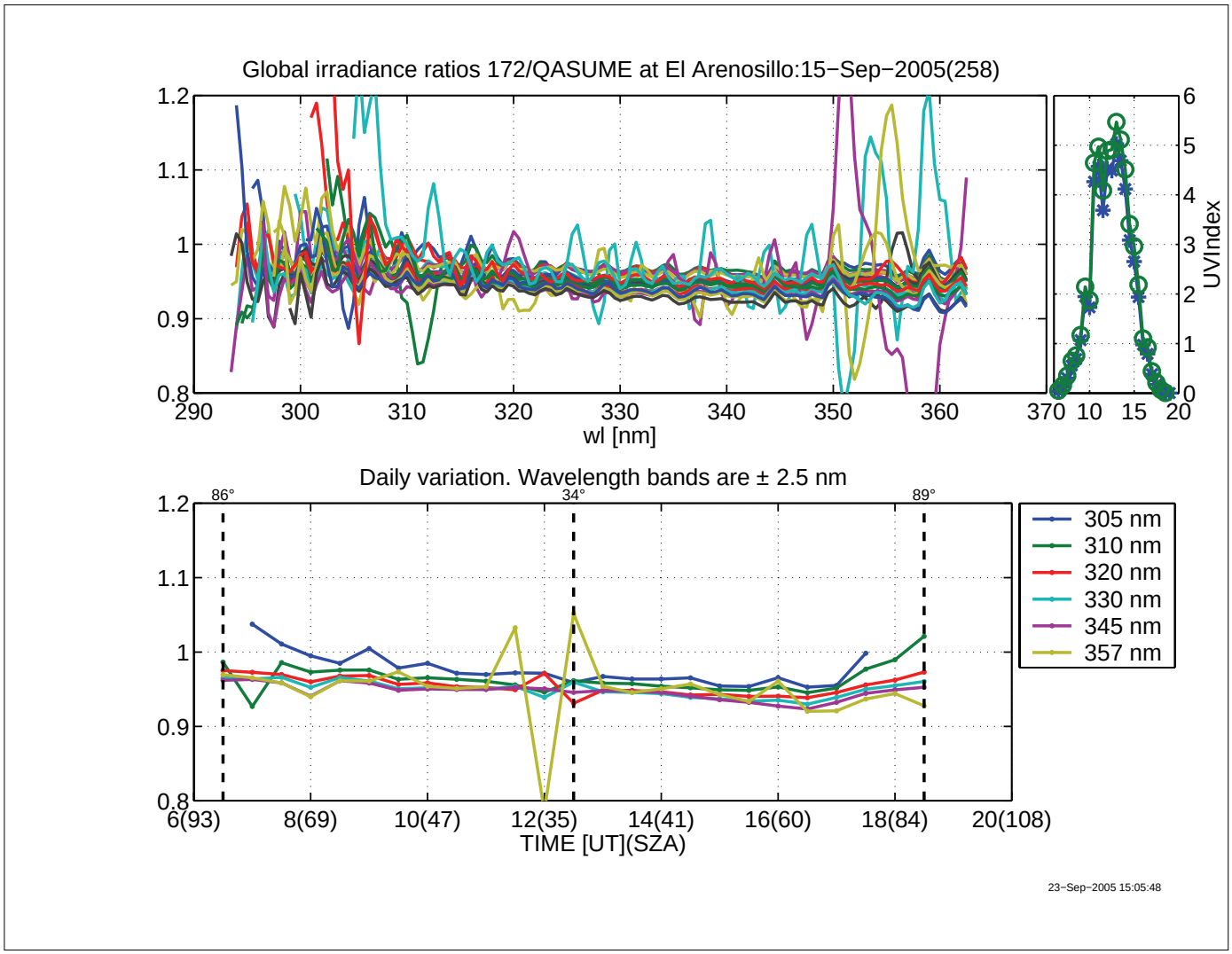

Global irradiance ratios 166/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
87°
35°
84°
TIME [UT](SZA)
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:04:43

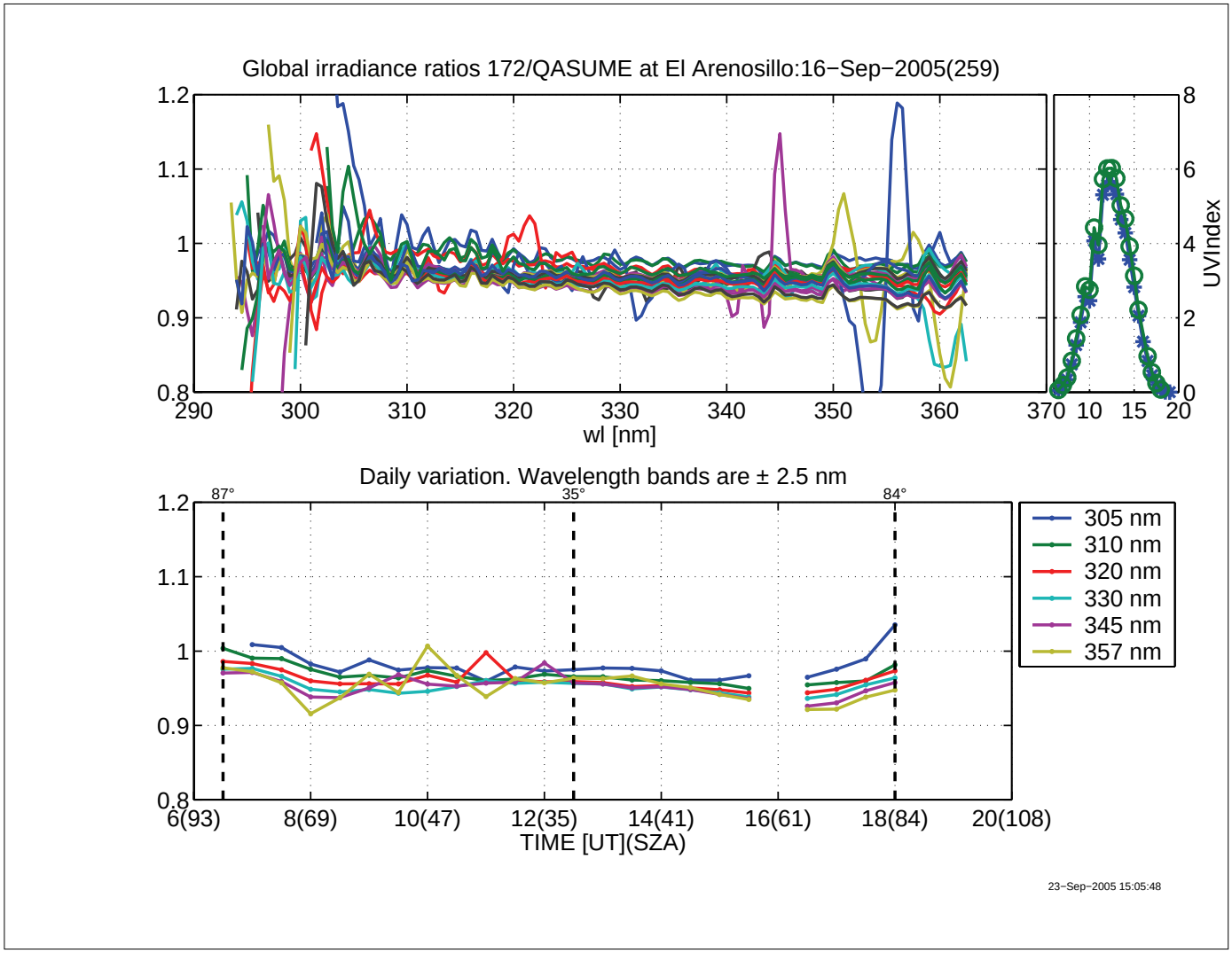

Mean ratio 166/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 166/QASUME
NBSpectra=64
Wavelength [nm]

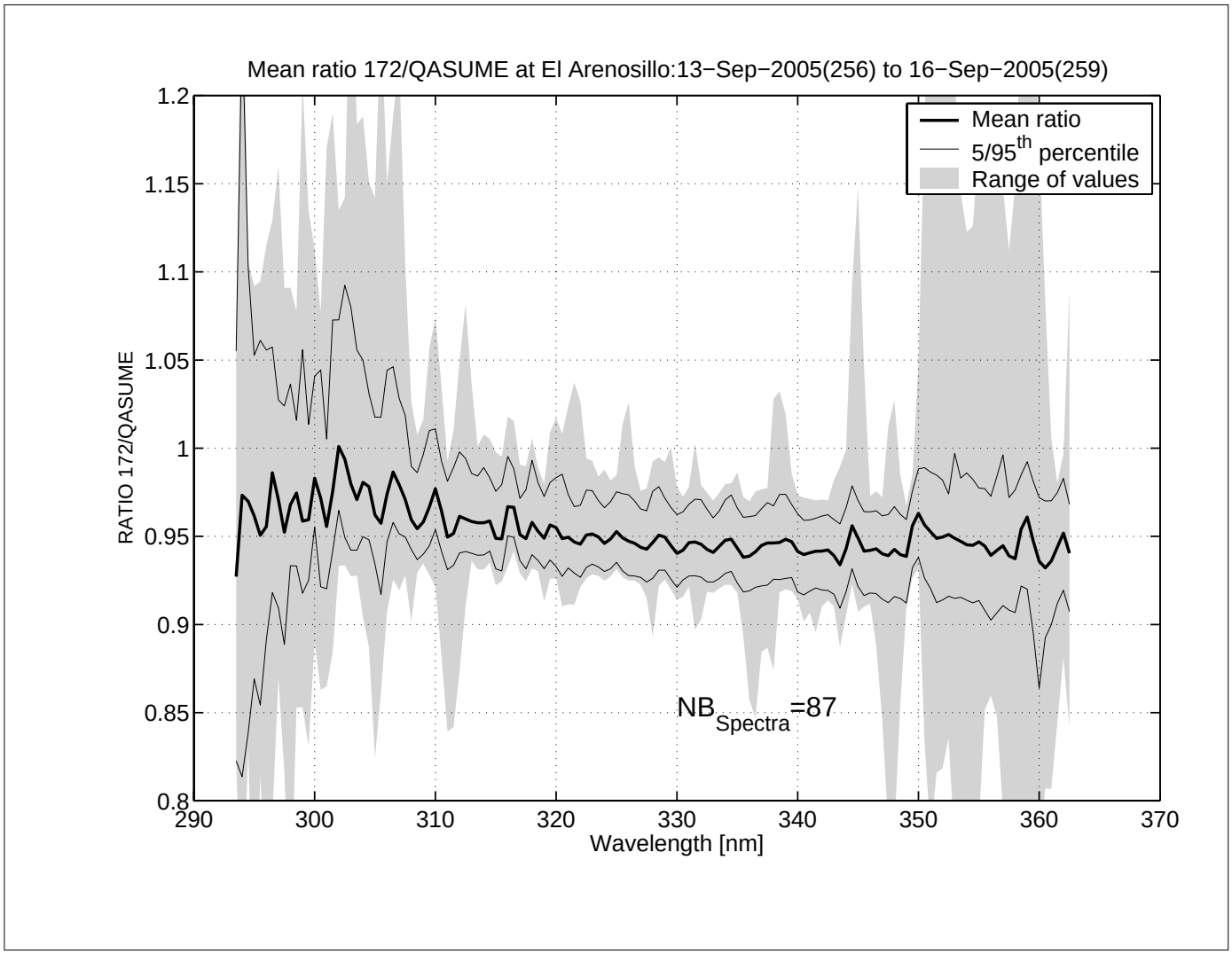

Global irradiance ratios 172/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 172/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
256
257
258
259
23−Sep−2005 15:05:48

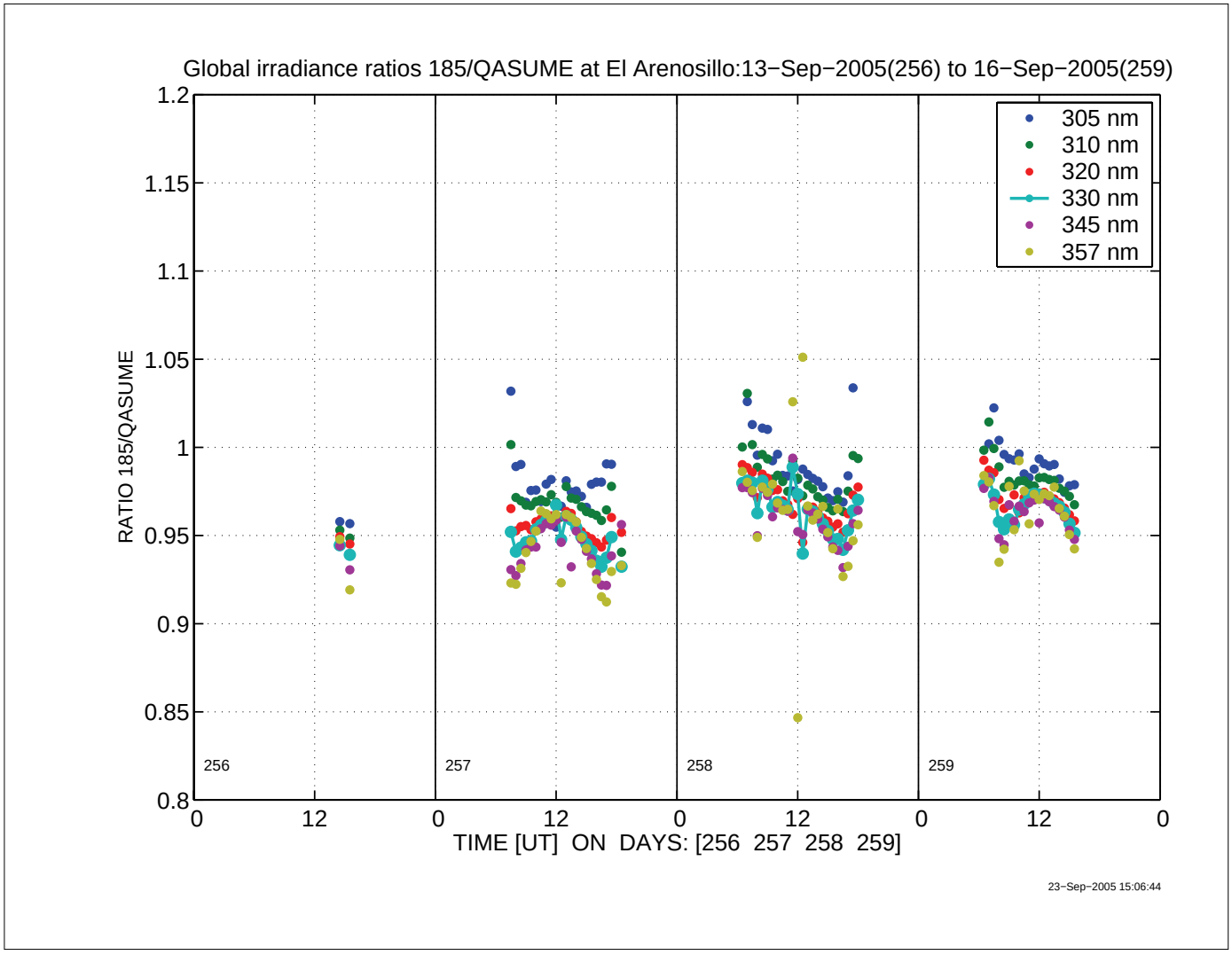

Global irradiance ratios 172/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
57°
33°
89°
TIME [UT](SZA)
6(92)
8(68)
10(47)
12(34)
14(40)
16(60)
18(83)
20(107)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:05:48

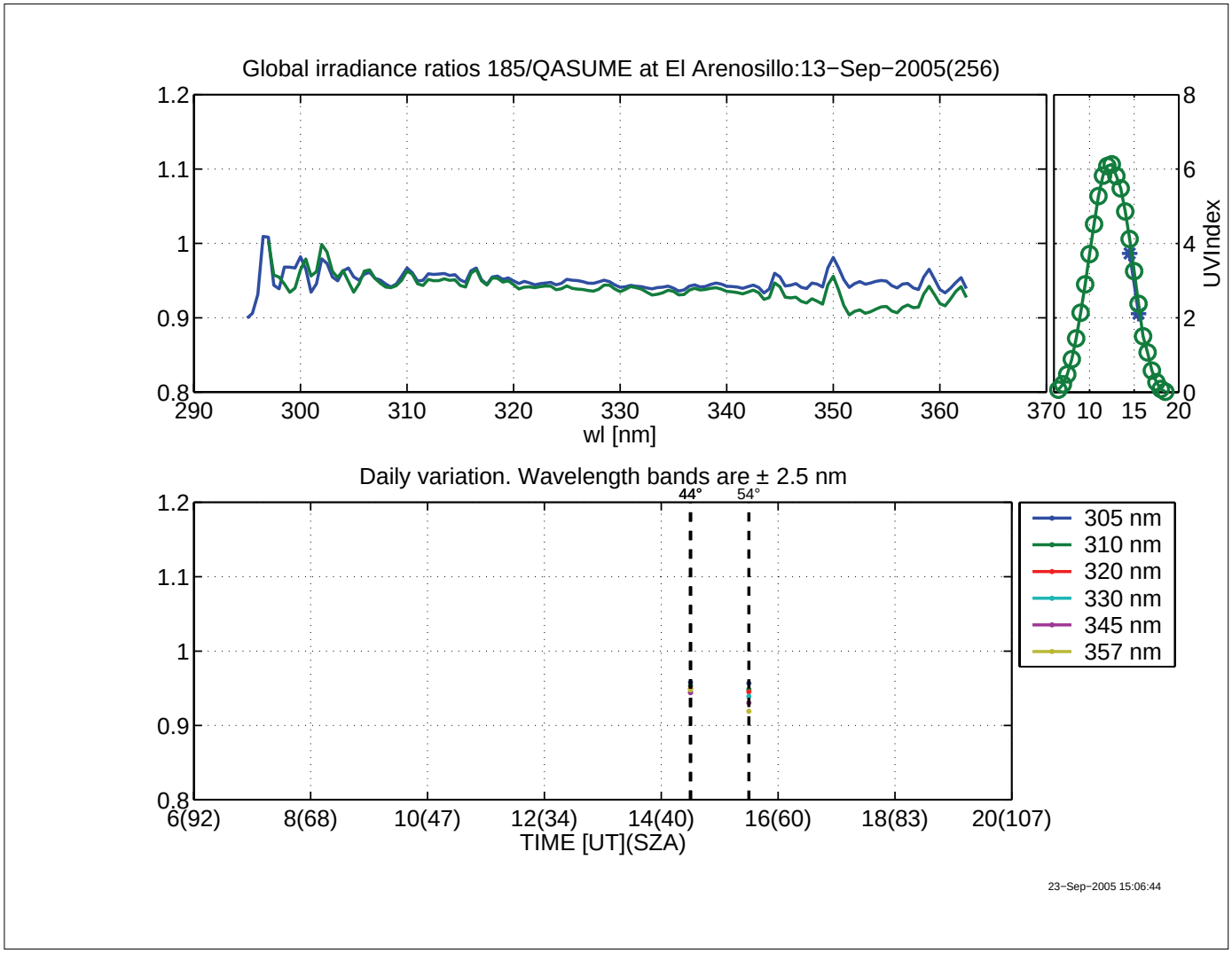

Global irradiance ratios 172/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
86°
34°
89°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(92)
8(69)
10(47)
12(34)
14(41)
16(60)
18(84)
20(107)
TIME [UT](SZA)
23−Sep−2005 15:05:48

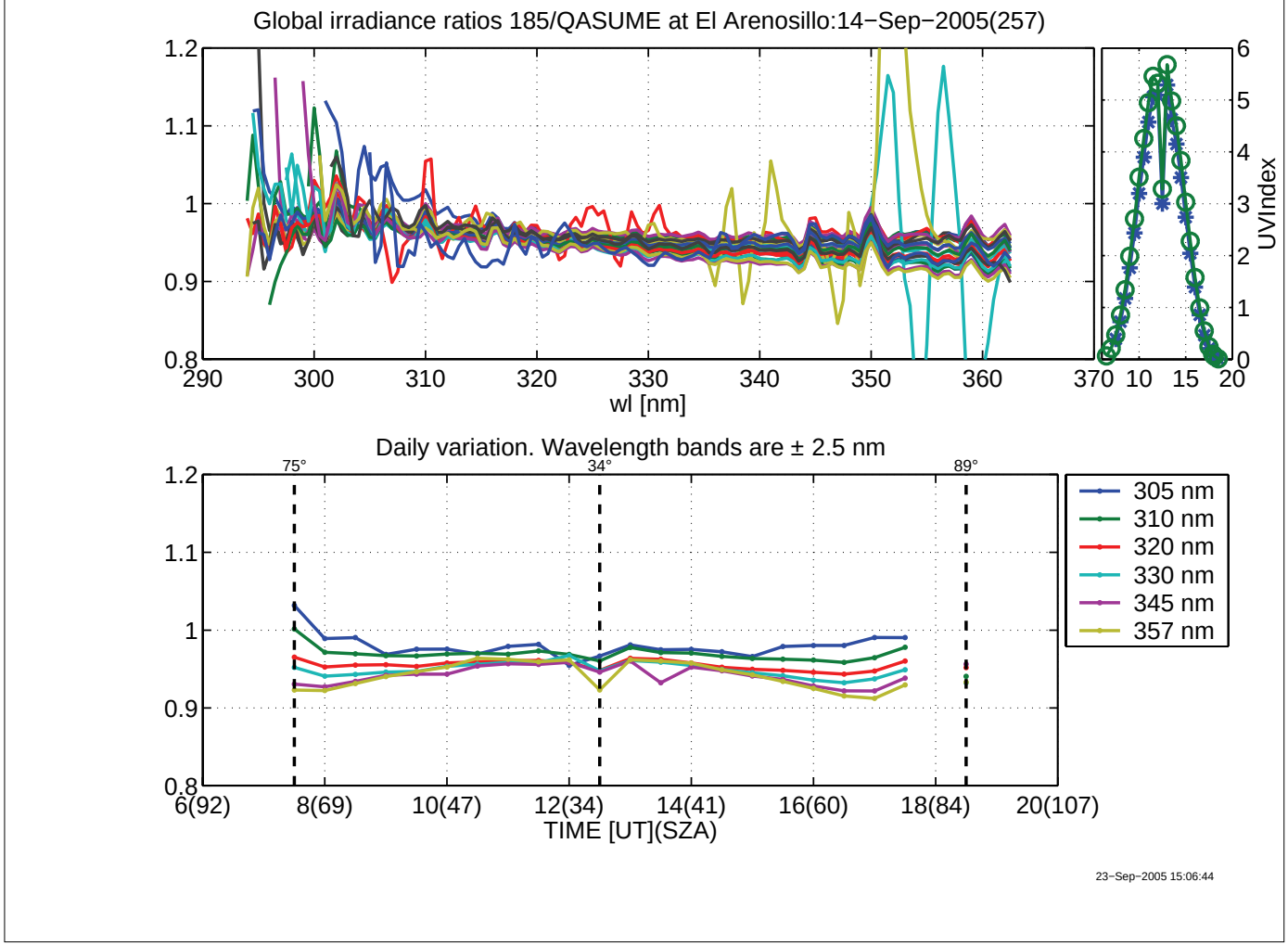

Global irradiance ratios 172/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
86°
34°
89°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(60)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 15:05:48

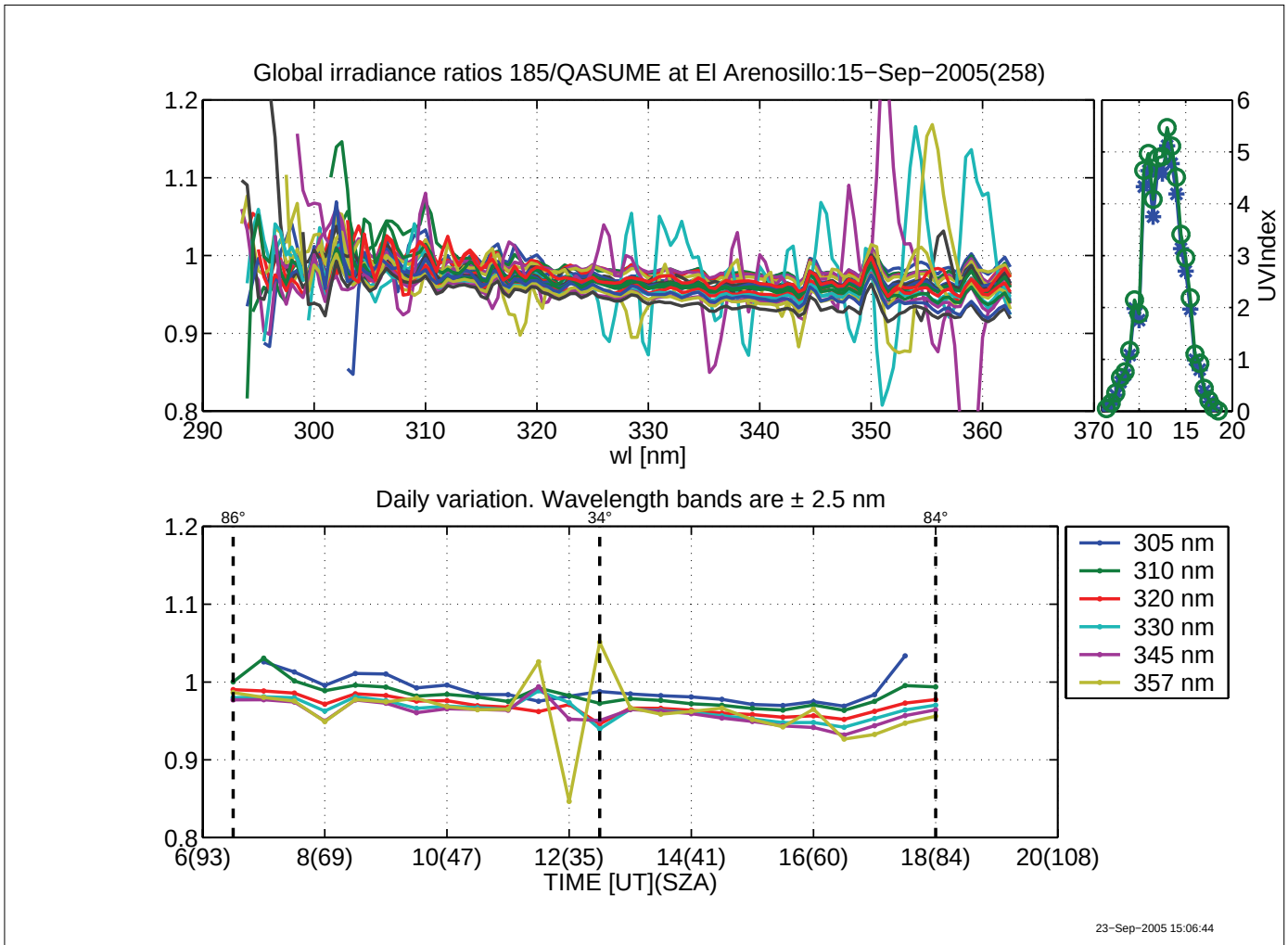

Global irradiance ratios 172/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
87°
35°
84°
TIME [UT](SZA)
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:05:48

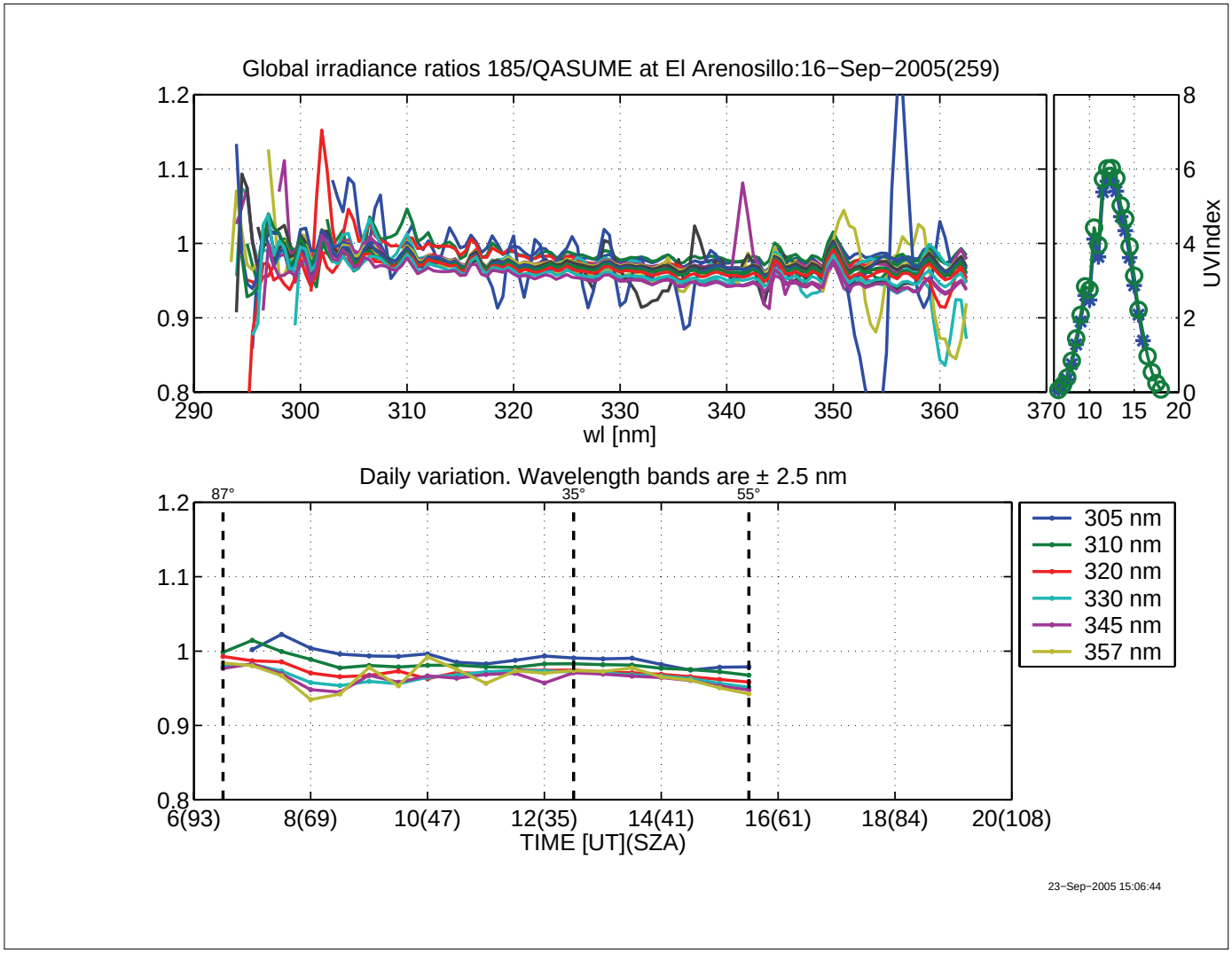

Mean ratio 172/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 172/QASUME
NBSpectra=87
Wavelength [nm]

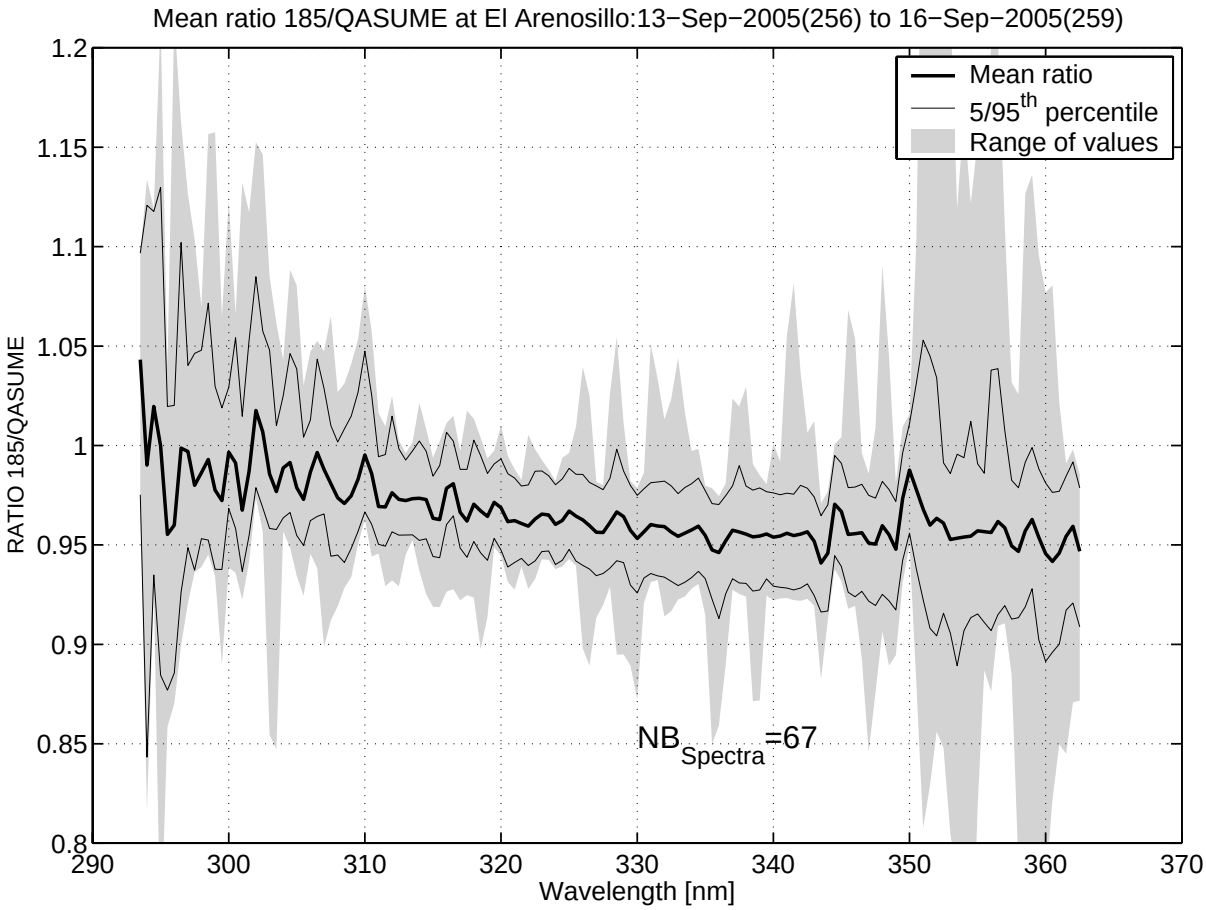

Global irradiance ratios 185/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
RATIO 185/QASUME
TIME [UT] ON DAYS: [256 257 258 259]
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
256
257
258
259
23−Sep−2005 15:06:44


Global irradiance ratios 185/QASUME at El Arenosillo:13−Sep−2005(256)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
44°
54°
TIME [UT](SZA)
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
23−Sep−2005 15:06:44


Global irradiance ratios 185/QASUME at El Arenosillo:14−Sep−2005(257)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
75°
34°
89°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(92)
8(69)
10(47)
12(34)
14(41)
16(60)
18(84)
20(107)
TIME [UT](SZA)
23−Sep−2005 15:06:44


Global irradiance ratios 185/QASUME at El Arenosillo:15−Sep−2005(258)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
86°
34°
84°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
6(93)
8(69)
10(47)
12(35)
14(41)
16(60)
18(84)
20(108)
TIME [UT](SZA)
23−Sep−2005 15:06:44


Global irradiance ratios 185/QASUME at El Arenosillo:16−Sep−2005(259)
wl [nm]
UVIndex
Daily variation. Wavelength bands are ± 2.5 nm
87°
35°
55°
305 nm
310 nm
320 nm
330 nm
345 nm
357 nm
TIME [UT](SZA)
6(93)
8(69)
10(47)
12(35)
14(41)
16(61)
18(84)
20(108)
23−Sep−2005 15:06:44


Mean ratio 185/QASUME at El Arenosillo:13−Sep−2005(256) to 16−Sep−2005(259)
Mean ratio
5/95th percentile
Range of values
RATIO 185/QASUME
NBSpectra=67
Wavelength [nm]