Computing Fluxes by Using TOGA COARE for MAGIC

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LINKS

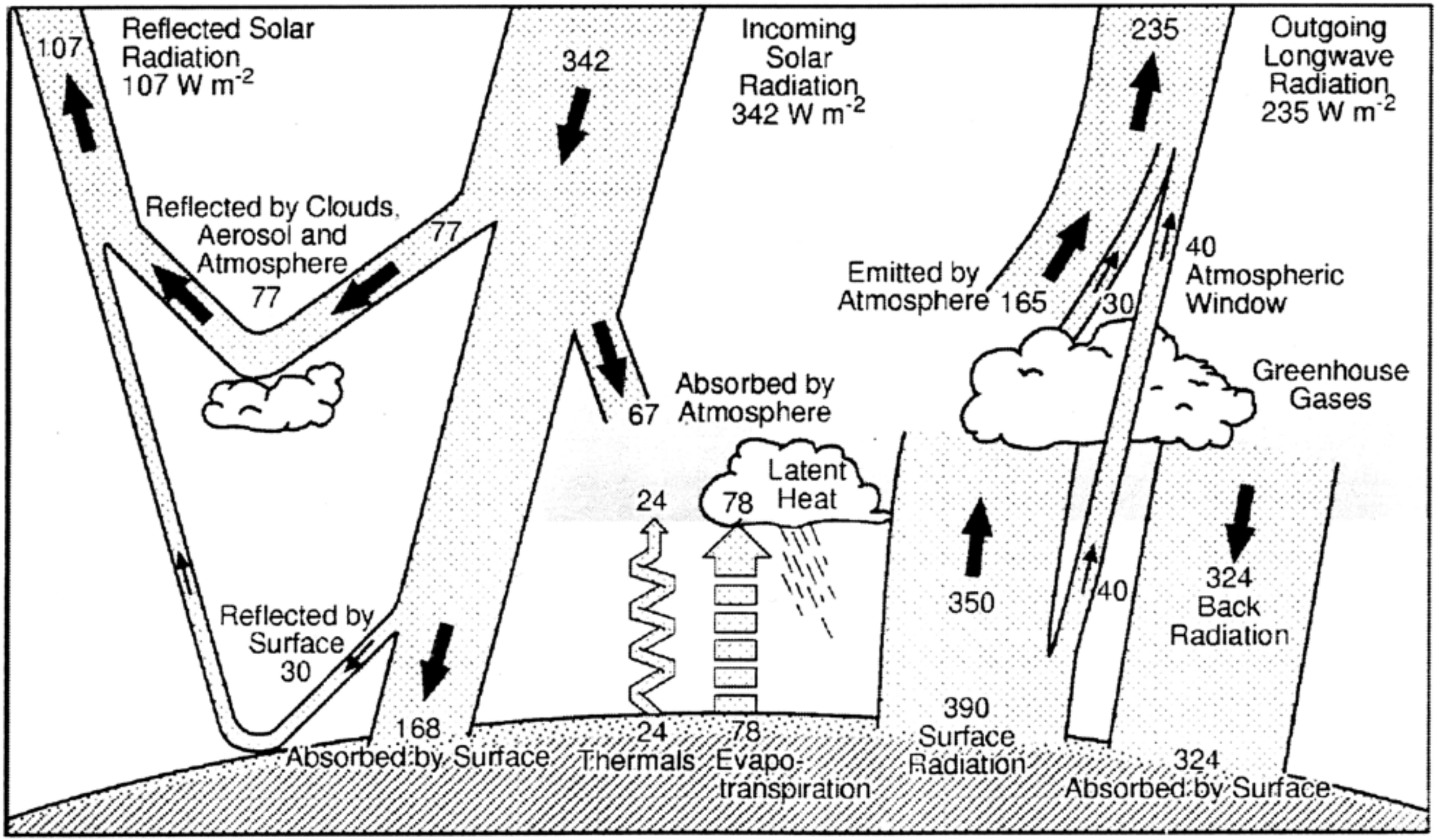
http://www.rmrco.com/cruise/magic/data

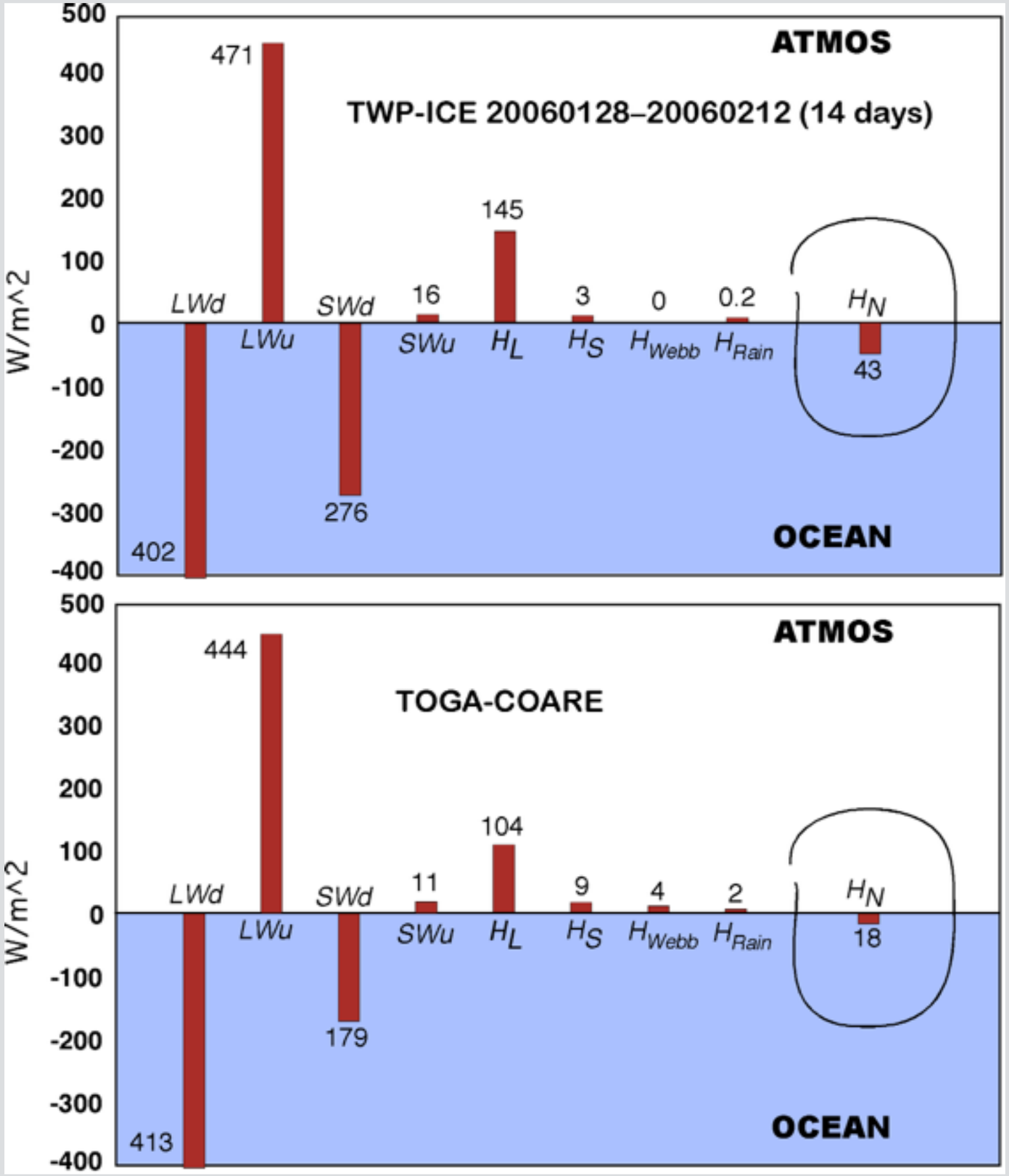
- Magic_LegSummary.html
- MagicLegTimes.txt
- 140505_magic_1stworkshop_measurements
- OnDataProcessing

http://www.rmrco.com/docs/m1212_MagicMet.pdf

http://www.rmrco.com/docs/m1309_asr_fluxes.pdf

http://www.rmrco.com/cruise/magic/data/OnDataProcessing


107
Reflected Solar
Radiation
107 W m-2
342
Incoming
Solar
Radiation
342 W m-2
235
Outgoing
Longwave
Radiation
235 W m-2
Reflected by Clouds,
Aerosol and
Atmosphere
77
77
Emitted by
Atmosphere
165
30
40
Atmospheric
Window
Greenhouse
Gases
67
Absorbed by
Atmosphere
Latent
Heat
24
78
350
40
324
Back
Radiation
Reflected by
Surface
30
168
Absorbed by Surface
24
Thermals
78
Evapo-
transpiration
390
Surface
Radiation
324
Absorbed by Surface


ATMOS
TWP-ICE 20060128–20060212 (14 days)
OCEAN
W/m^2
500
400
300
200
100
0
-100
-200
-300
-400
LWd
LWu
SWd
SWu
H_L
H_S
H_{Webb}
H_{Rain}
H_N
471
402
276
16
145
3
0
0.2
43
ATMOS
TOGA-COARE
OCEAN
444
413
179
11
104
9
4
2
18

THE BULK METHOD – COARE-3 ALGORITHM

MEASUREMENT SET

S	true wind speed
T_a	air temperature
T_s	sea (bulk) temp
q_w (RH)	absolute humidity
P	s.l. pressure
LW_d	Longwave down
SW_d	Shortwave down
R	rain rate
T_skin	Skin temperature

ESTIMATED FLUXES

R_N	Net irradiance
H_L	Latent heat flux
H_S	Sensible heat flux
H_W	Webb correction
H_R	Rain Heat Flux

INTERMEDIATE VARIABLES

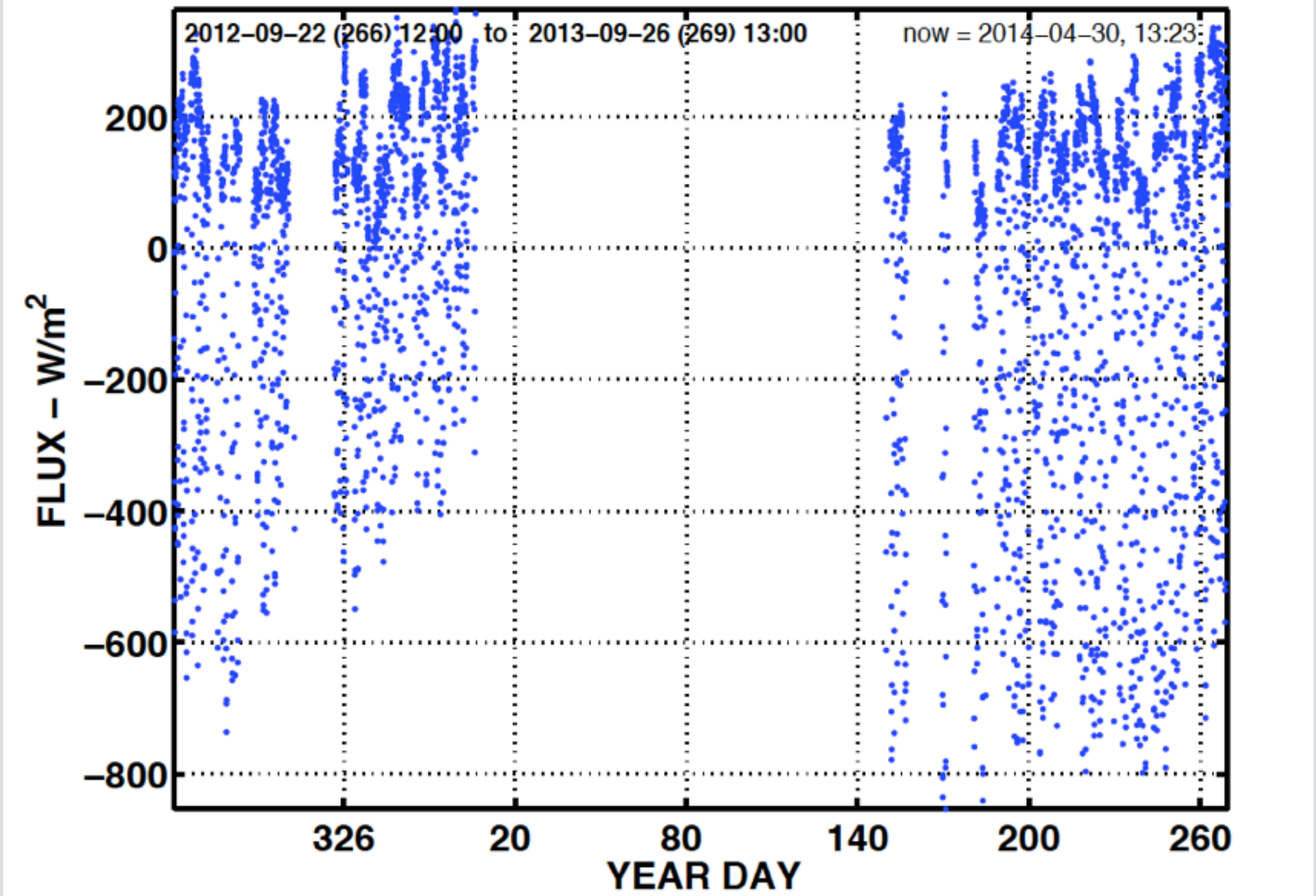
SW_u	Albedo
LW_u	Emitted irradiance

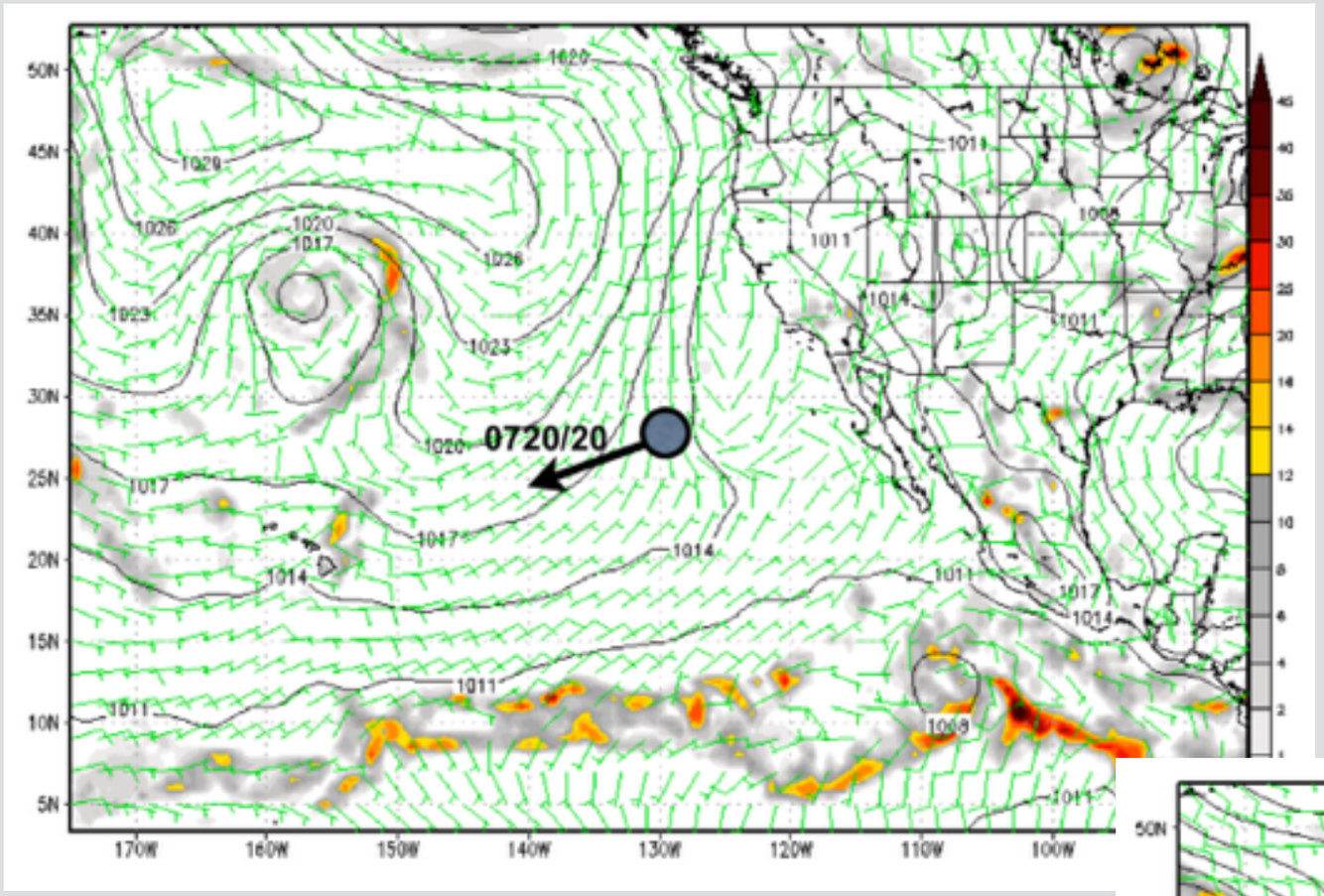
H_N
NET FLUX

Pawlowicz et al., 2001, EOS, 82 (1) January, 2.

Note: We need gap-free time series.

http://coaps.fsu.edu/COARE/flux_algor/flux.html


2012–09–22 (266) 12:00 to 2013–09–26 (269) 13:00
now = 2014–04–30, 13:23
200
0
–200
–400
–600
–800
FLUX – W/m2
326
20
80
140
200
260
YEAR DAY

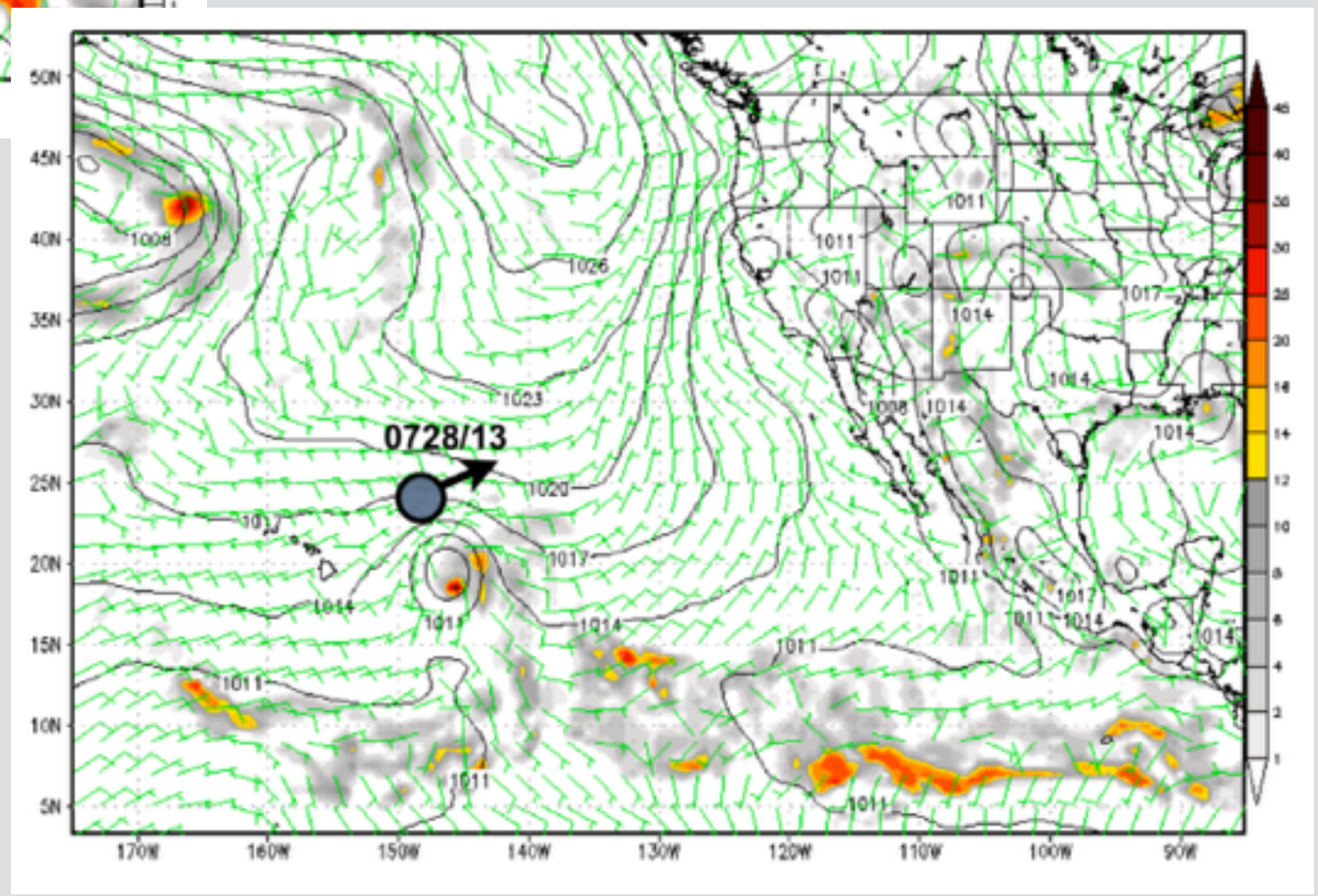


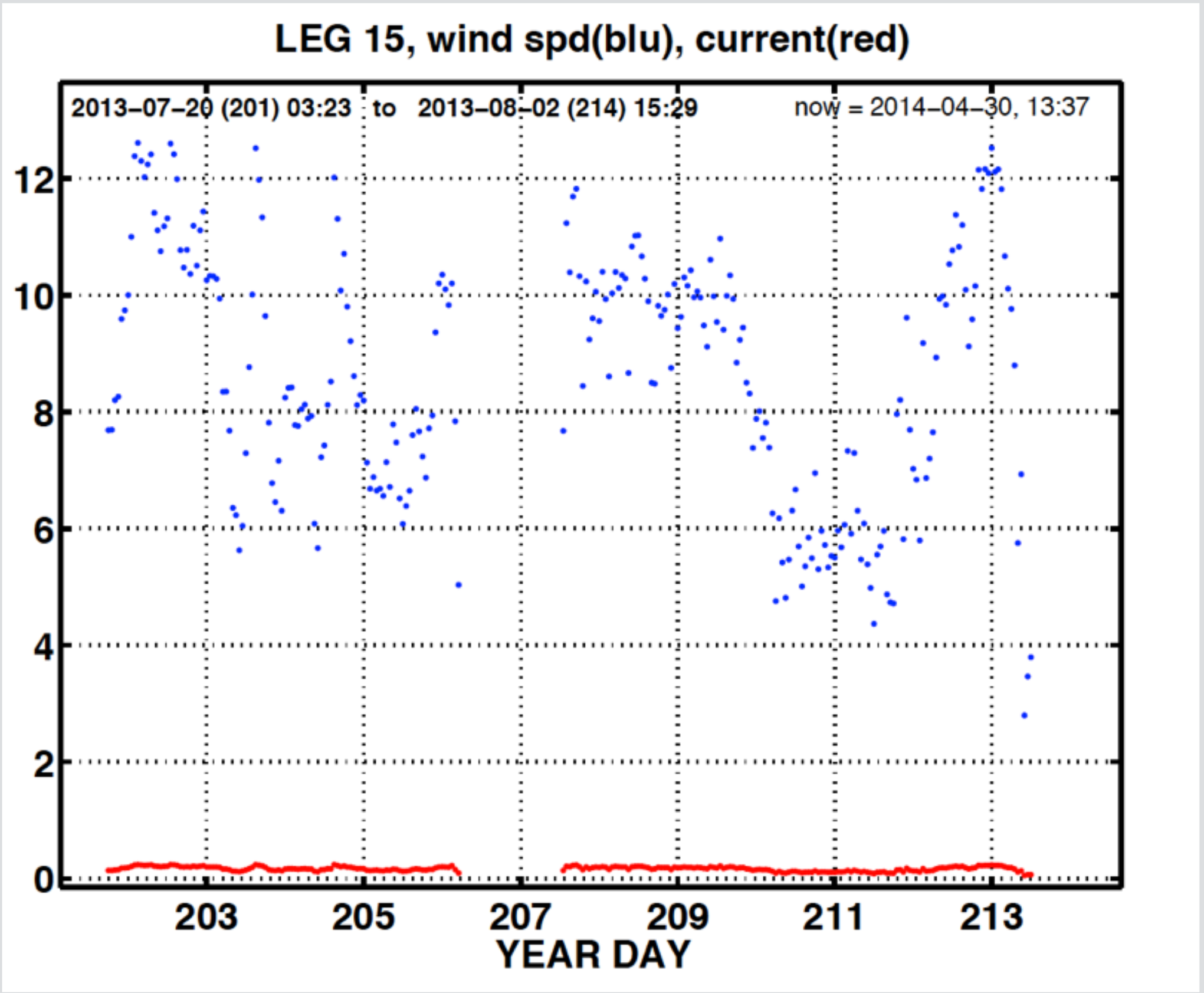
LEG 15A

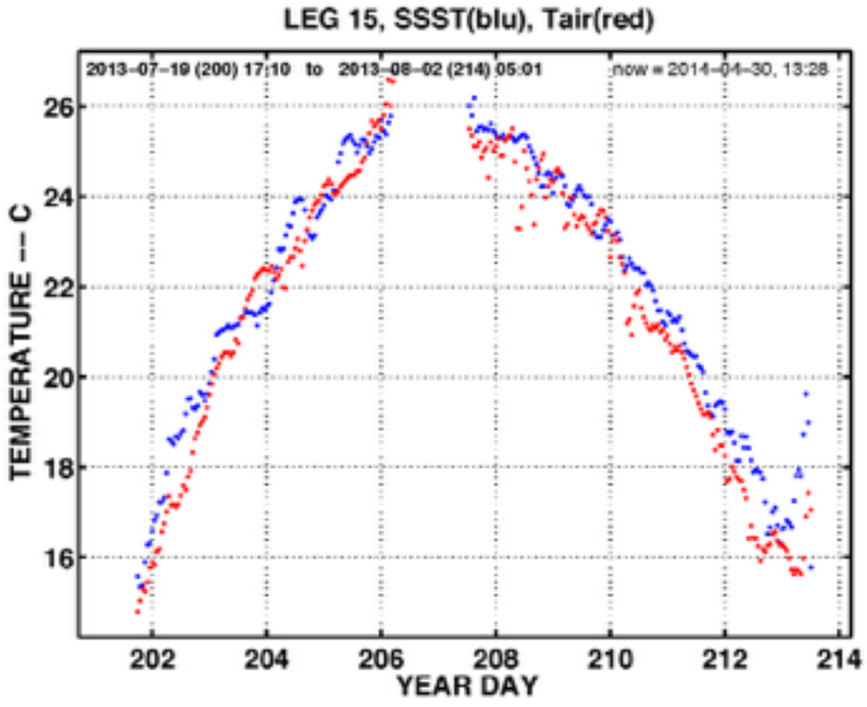
1. Mixed coastal winds.
2. Strong NE-E trades.

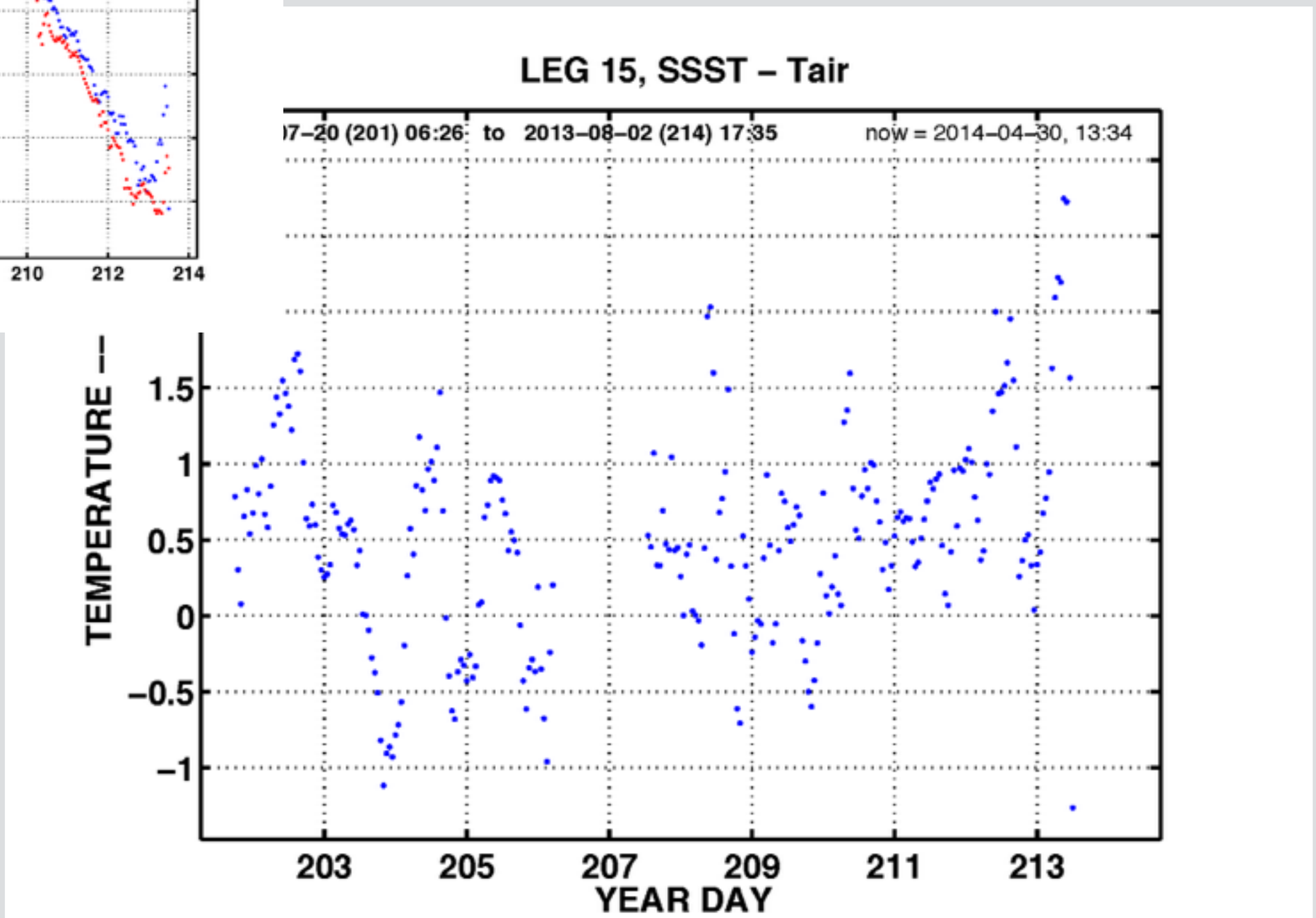
LEG 15B

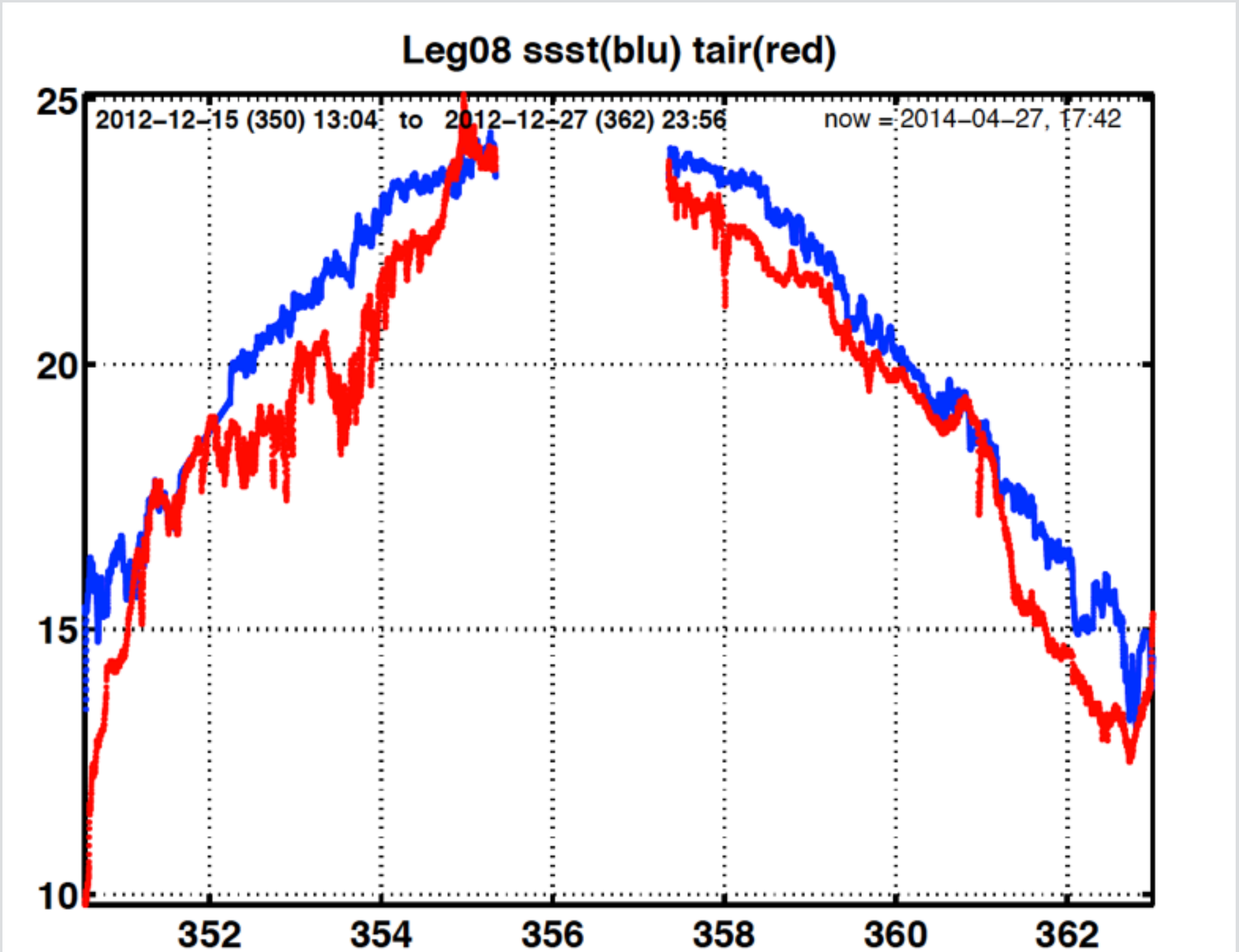
1. Strong NE to N along coast.



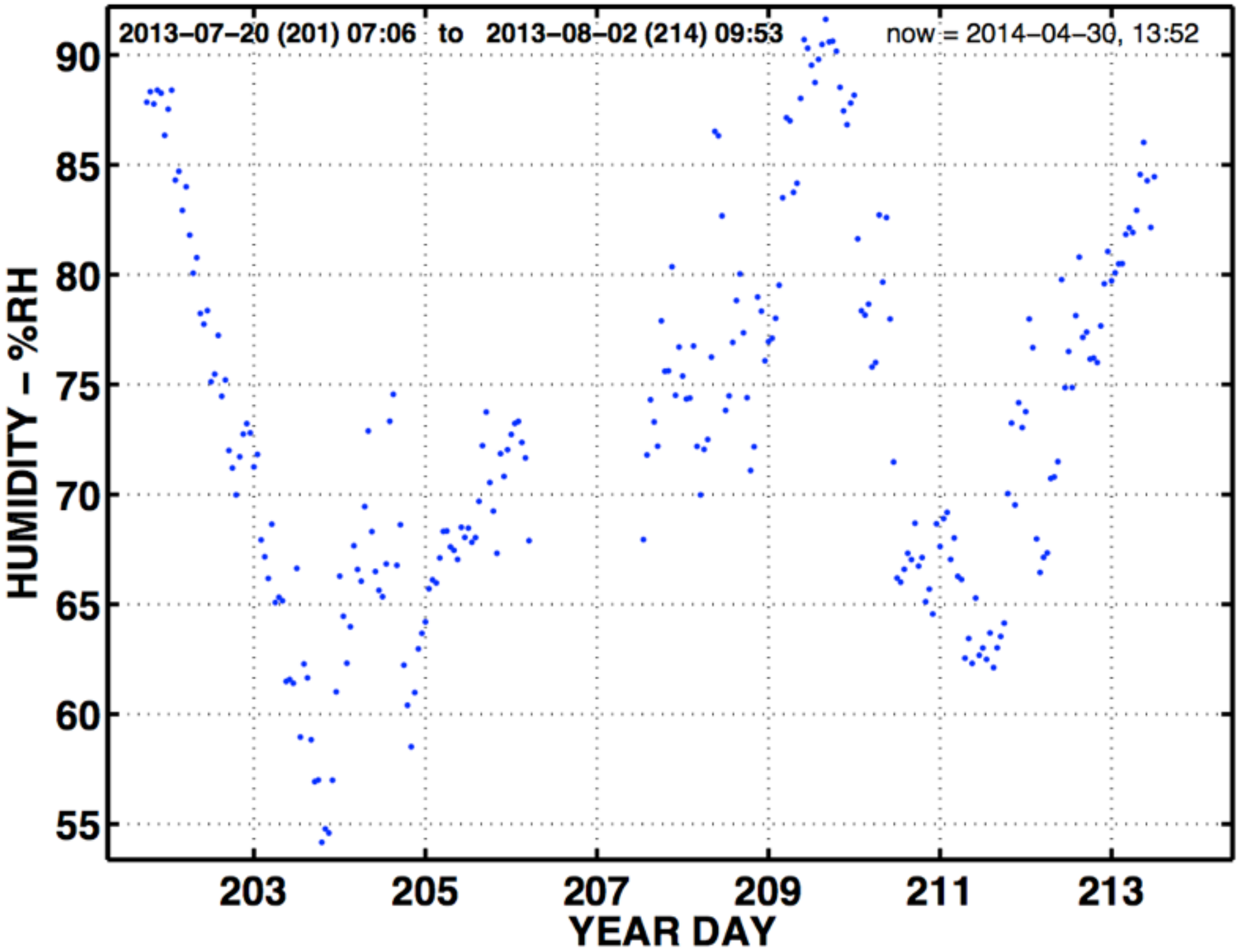

LEG 15, wind spd(blu), current(red)
2013–07–20 (201) 03:23 to 2013–08–02 (214) 15:29
now = 2014–04–30, 13:37
12
10
8
6
4
2
0
203
205
207
209
211
213
YEAR DAY

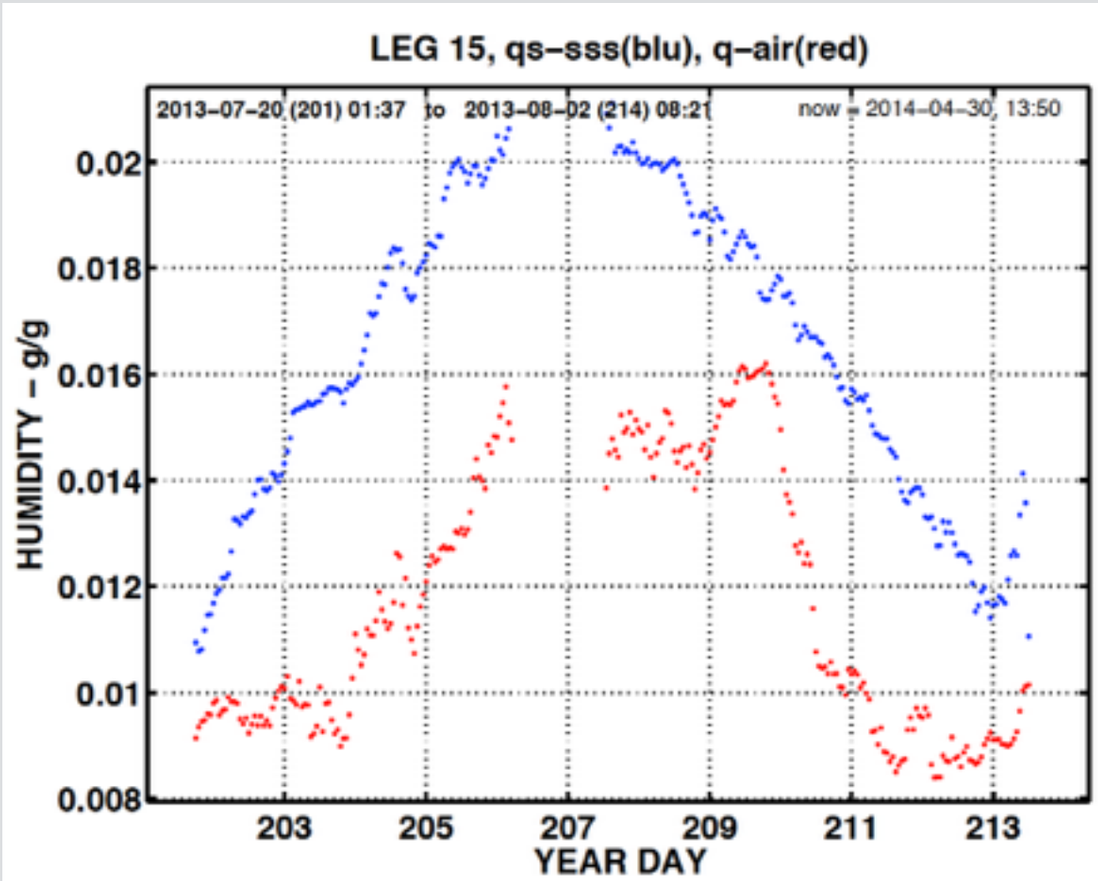

LEG 15, SSST(blu), Tair(red)
2013–07–19 (200) 17:10 to 2013–08–02 (214) 05:01
now = 2014–04–30, 13:28
TEMPERATURE — C
YEAR DAY

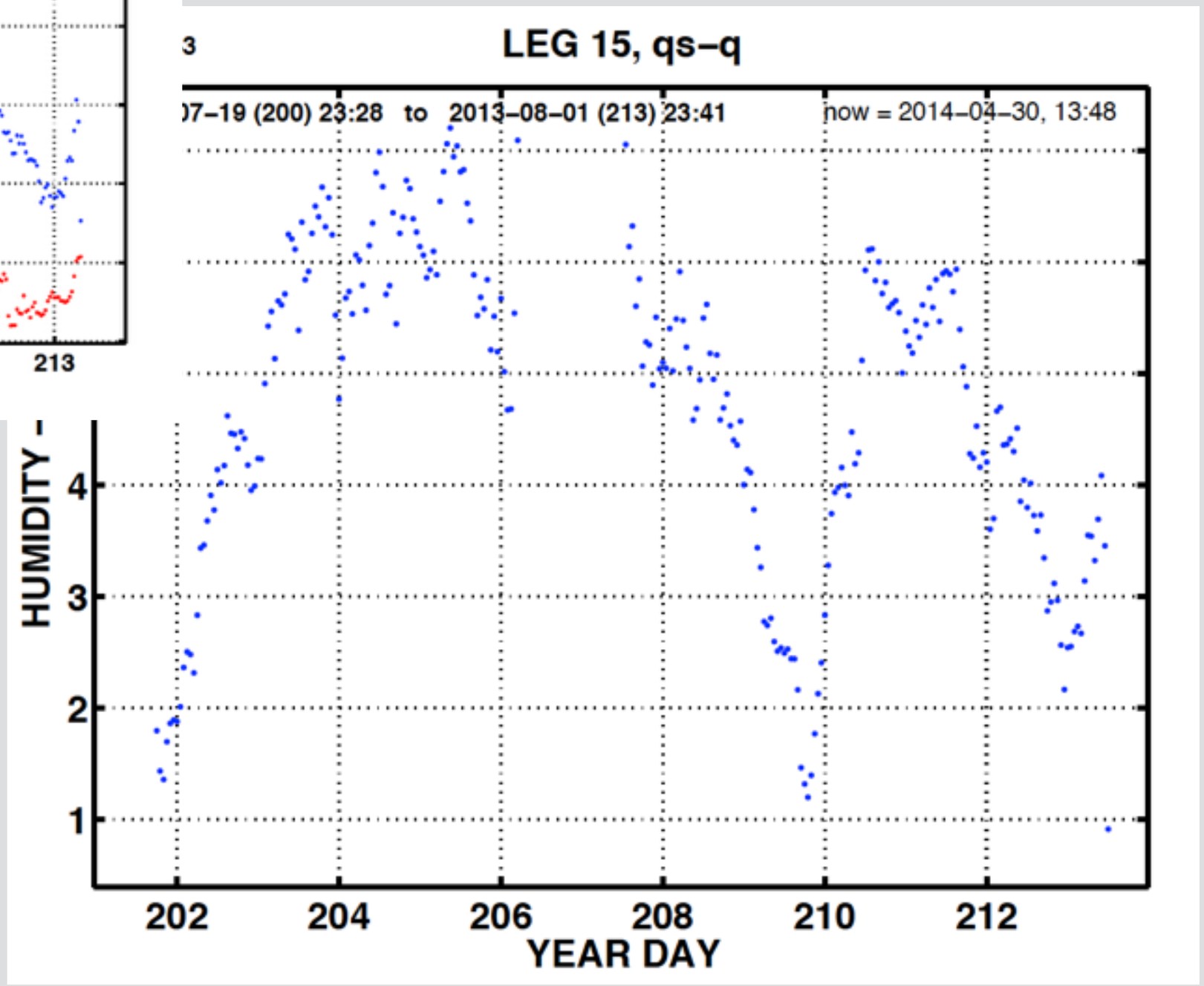

LEG 15, SSST – Tair
07–20 (201) 06:26 to 2013–08–02 (214) 17:35
now = 2014–04–30, 13:34
TEMPERATURE —
YEAR DAY

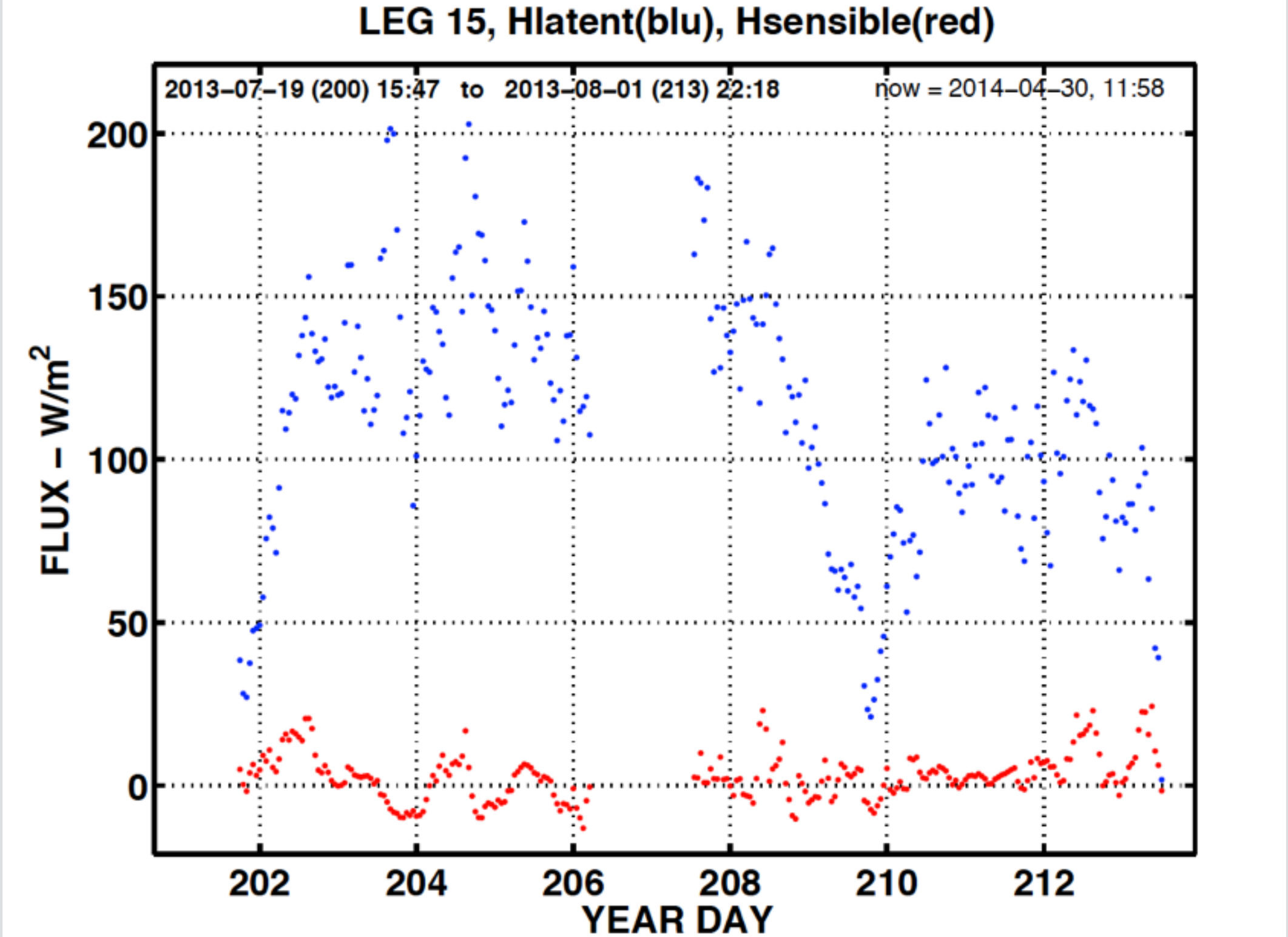

Leg08 ssst(blu) tair(red)
2012–12–15 (350) 13:04 to 2012–12–27 (362) 23:56
now = 2014–04–27, 17:42
25
20
15
10
352
354
356
358
360
362

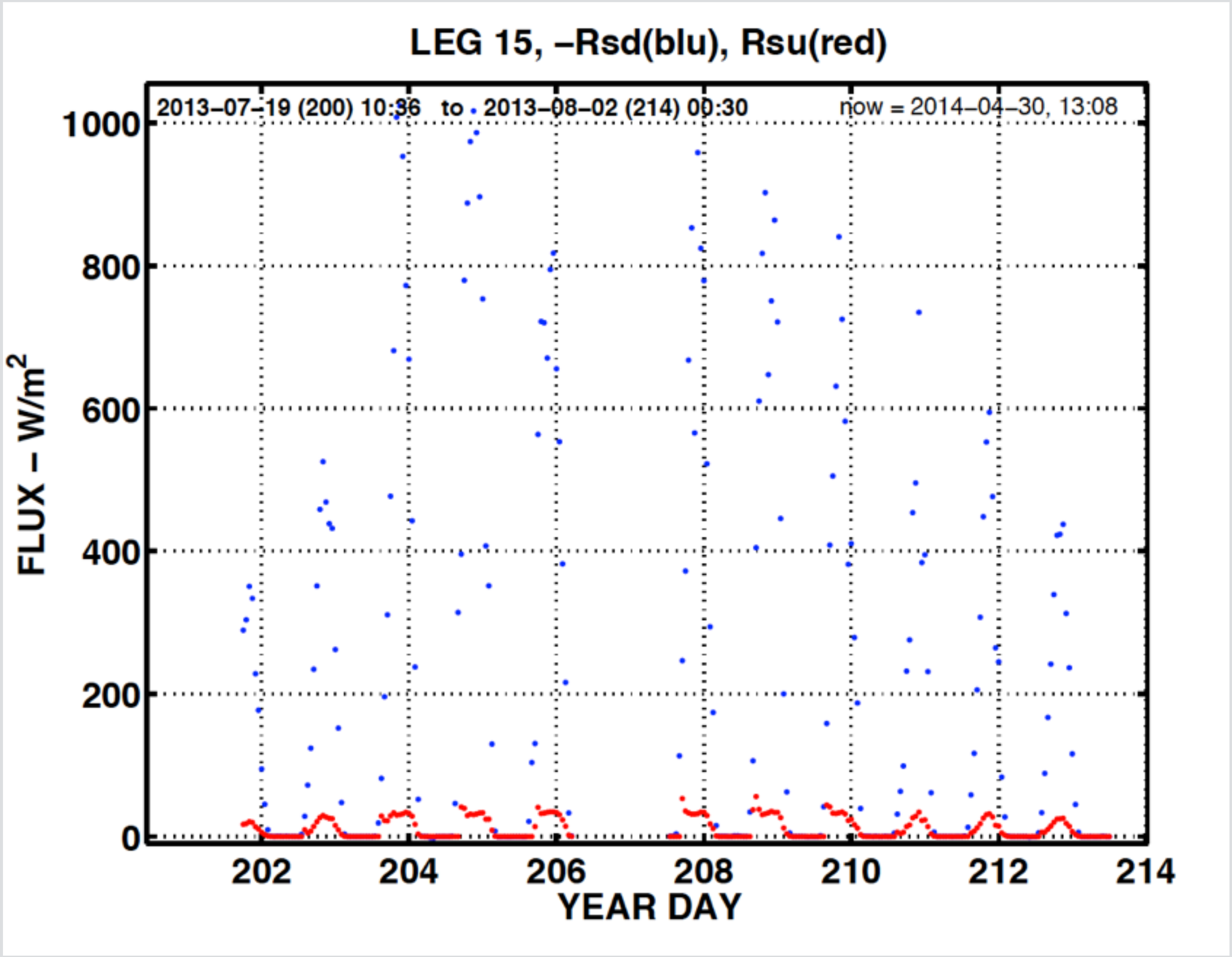
LEG 15, RH

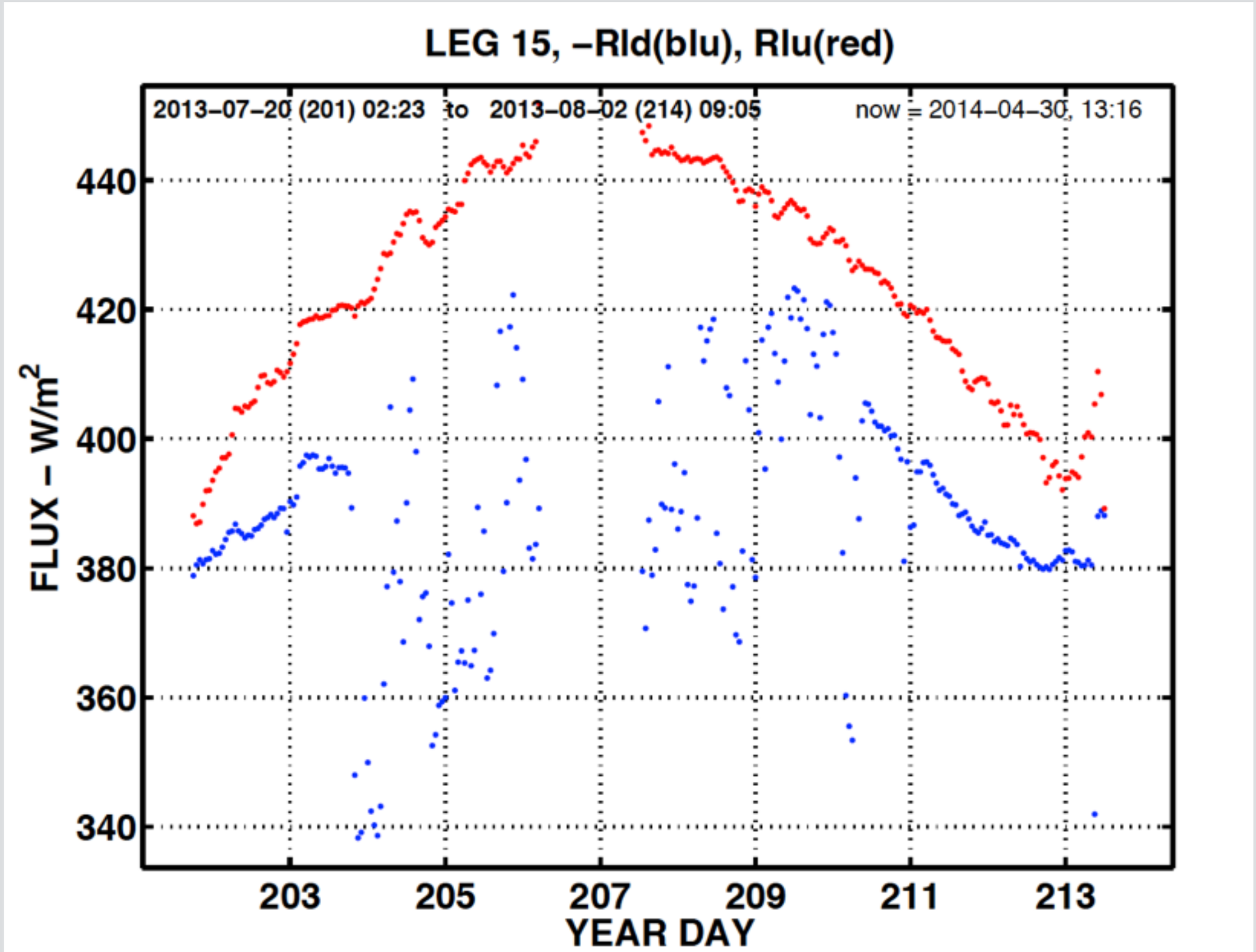

2013–07–20 (201) 07:06 to 2013–08–02 (214) 09:53
now = 2014–04–30, 13:52
HUMIDITY – %RH
90
85
80
75
70
65
60
55
203
205
207
209
211
213
YEAR DAY


LEG 15, qs–sss(blu), q–air(red)
2013–07–20 (201) 01:37 to 2013–08–02 (214) 08:21
now = 2014–04–30, 13:50
HUMIDITY – g/g
0.02
0.018
0.016
0.014
0.012
0.01
0.008
203
205
207
209
211
213
YEAR DAY


LEG 15, qs–q
3
07–19 (200) 23:28 to 2013–08–01 (213) 23:41
now = 2014–04–30, 13:48
HUMIDITY –
4
3
2
1
202
204
206
208
210
212
YEAR DAY


LEG 15, Hlatent(blu), Hsensible(red)
2013–07–19 (200) 15:47 to 2013–08–01 (213) 22:18
now = 2014–04–30, 11:58
200
150
100
50
0
FLUX – W/m2
202
204
206
208
210
212
YEAR DAY


LEG 15, –Rsd(blu), Rsu(red)
2013–07–19 (200) 10:36 to 2013–08–02 (214) 00:30
now = 2014–04–30, 13:08
FLUX – W/m2
1000
800
600
400
200
0
202
204
206
208
210
212
214
YEAR DAY


LEG 15, –Rld(blu), Rlu(red)
2013–07–20 (201) 02:23 to 2013–08–02 (214) 09:05
now = 2014–04–30, 13:16
FLUX – W/m2
440
420
400
380
360
340
203
205
207
209
211
213
YEAR DAY