

Namibia 2011 SDA Expedition

Hakos
Guestfarm
July 24 - August 8



IMO Shower Calendar 2011 : Southern delta-Aquariids

δ -Aquariids (SDA)

Active: July 12 – August 23; Maximum: July 30 ($\lambda_{\odot} = 127^{\circ}$); ZHR = 16;

Radiant: $\alpha = 339^{\circ}$, $\delta = -16^{\circ}$; Radiant drift: see [Table 6](#);

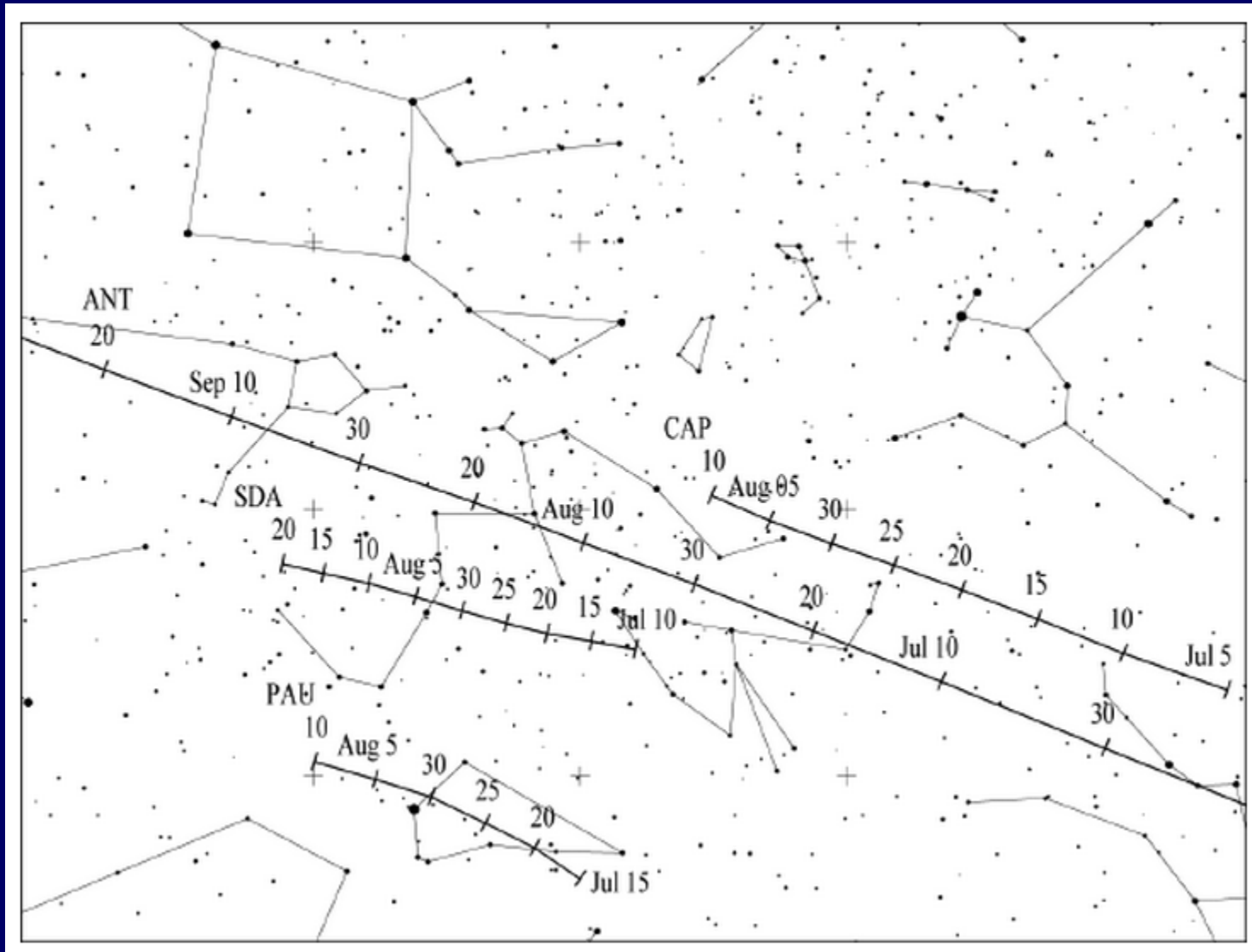
$V_{\infty} = 41$ km/s; $r = 3.2$;

TFC: $\alpha = 255^{\circ}$ to 0° , $\delta = 0^{\circ}$ to $+15^{\circ}$, choose pairs separated by about 30° in α ($\beta < 40^{\circ}$ N).

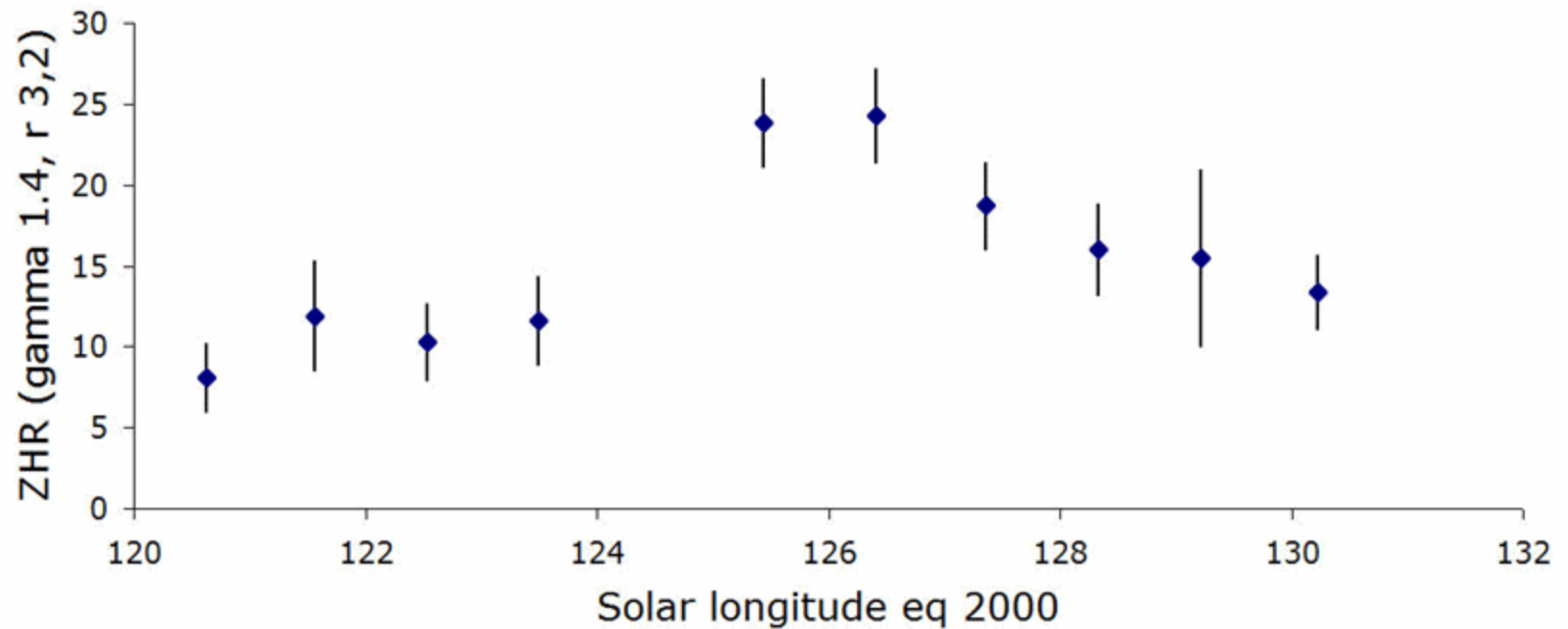
Like the PAU and ANT, SDA meteors are often faint, thus are suitable targets for telescopic observing, although enough brighter members exist to make visual and imaging observations worth the effort too, primarily from more southerly sites. Radio work can pick up the SDA as well, and indeed the shower has sometimes given a surprisingly strong radio signature. Careful visual plotting is advised, to help with accurate shower association. The SDA/PAU/ANT/CAP radiants are well above the horizon for much of the night, and the SDA enjoys identical dark-sky conditions in the second half of the nights near its maximum to the PAU. Its peak may not be quite so sharp as the single date here might imply, with perhaps similar ZHRs from July 28–30. Its rates have been suspected of some variability at times too, though not in the more recent investigations.

Notes: “broad” maximum ; sometimes “strong” radio activity

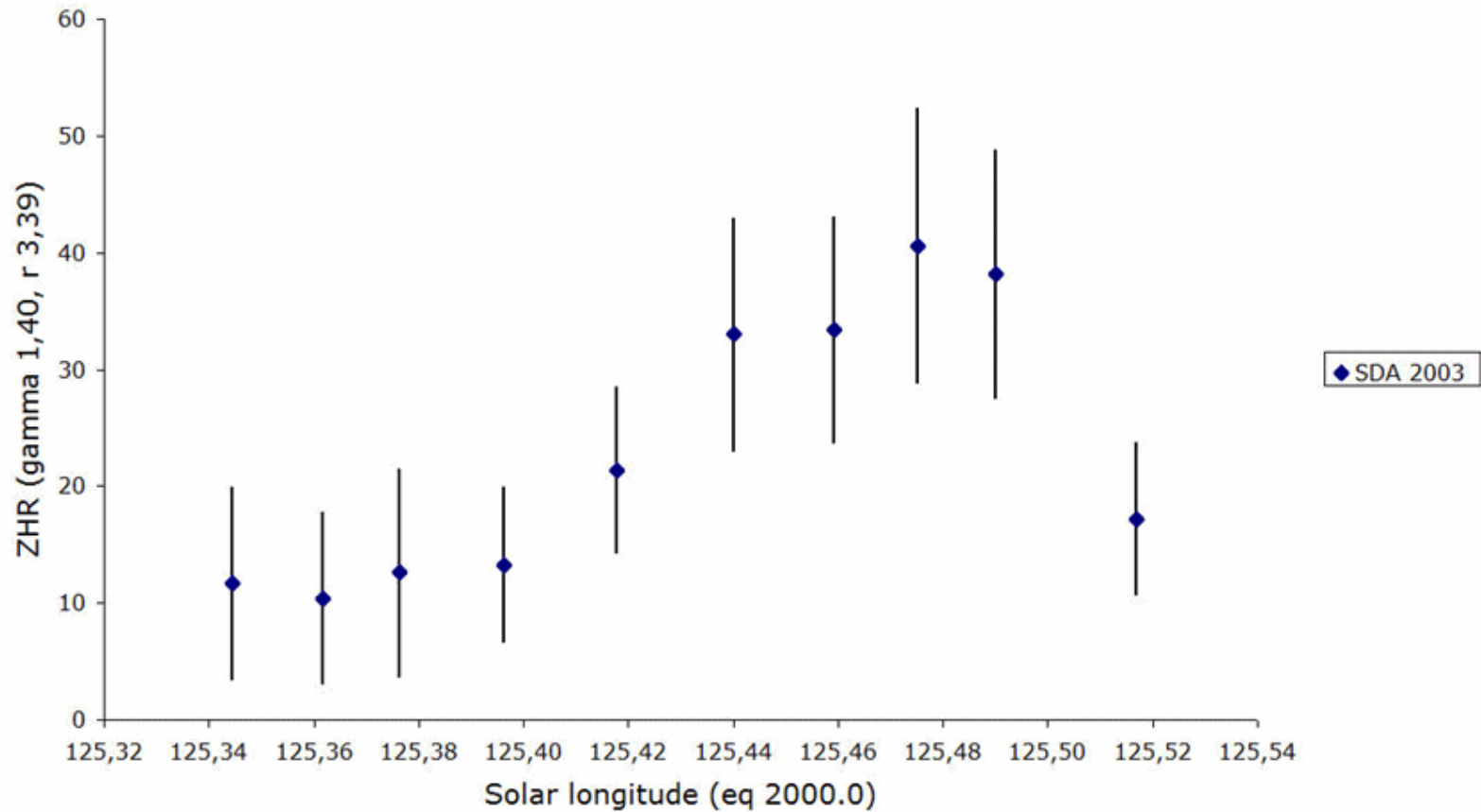
IMO Shower Calendar 2011 : Radiant drift of SDA



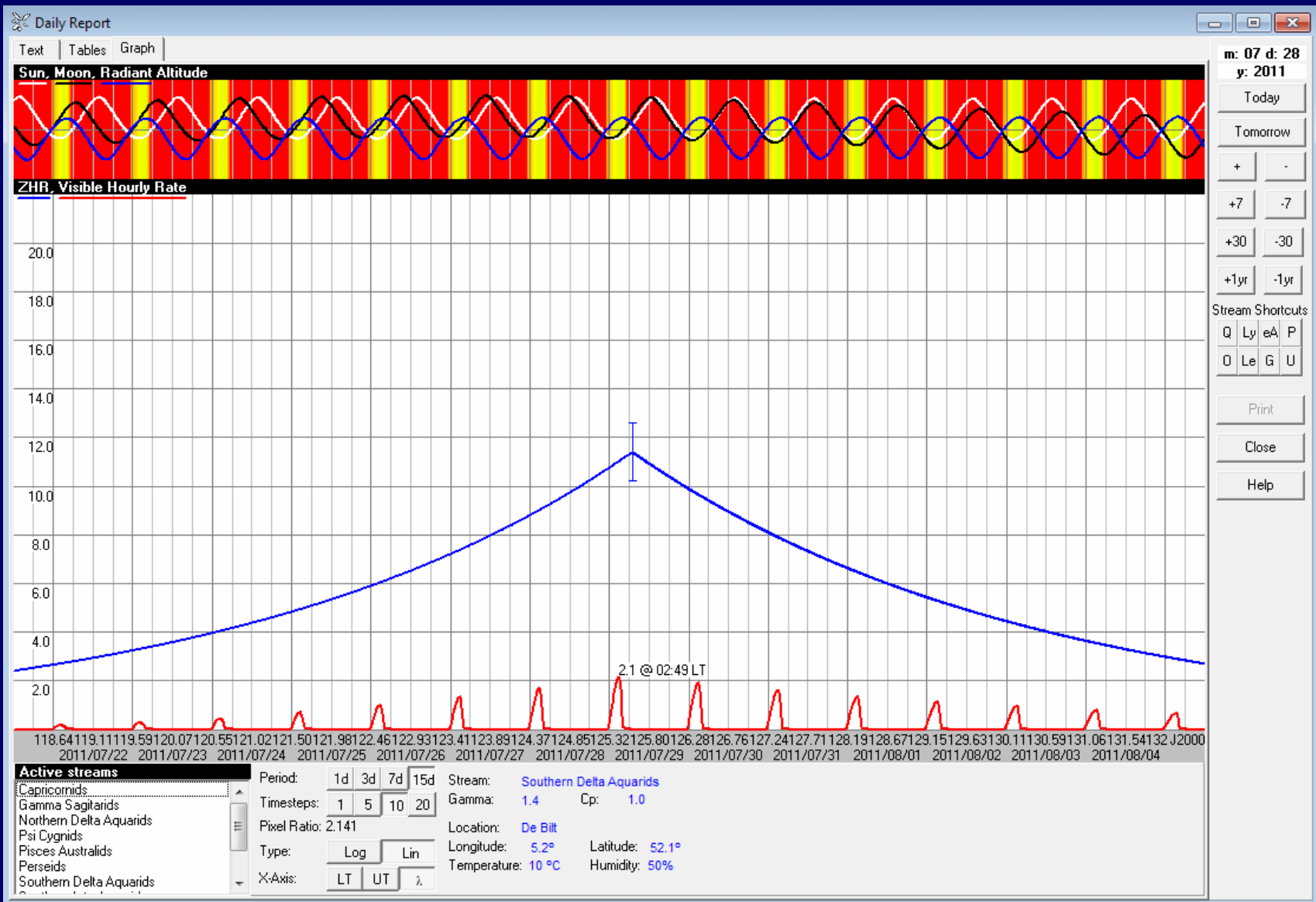
Southern Delta Aquarids 2003
Obs : Koen Miskotte
Location : Ferma, Crete/Greece (26 e, 34,5 n)



ZHR SDA 28/29-7-2003
~0,5 hour periods
Obs: Koen Miskotte
Loc: Ferma, Crete, Greece (26 e, 35 n)



Note: "outburst" peak or "regular" maximum?



Note: location Netherlands ("Meteoracle" software by Daniel van Os)

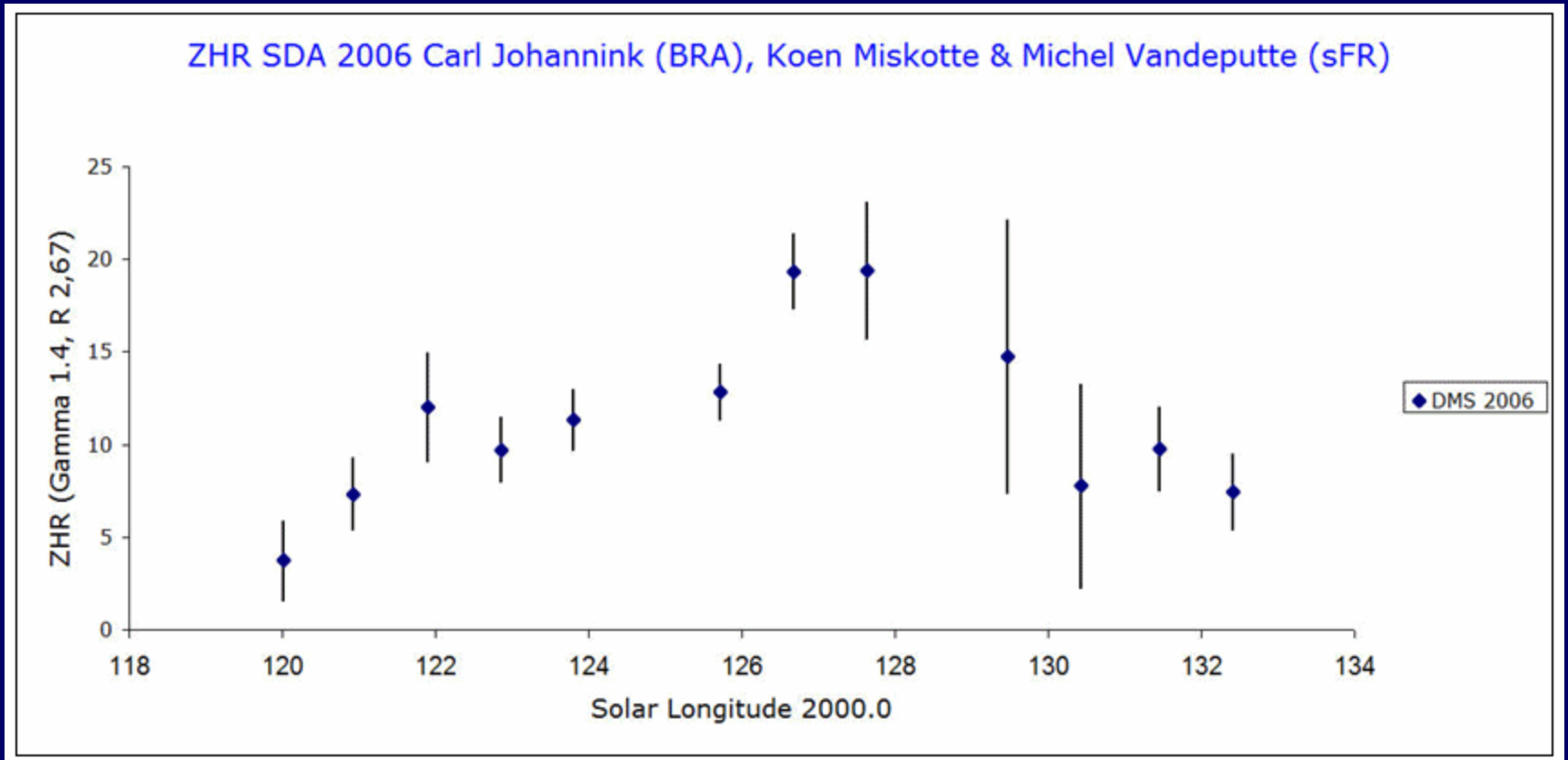


SDA-2006 : Taiba, Brazil: $3^{\circ}30' S$; $38^{\circ}53' W$; Height: 5 meter

From left to right are:

Carl Johannink, Rita Verhoef, Casper ter Kuile and Jaap Van 't Leven

SDA-2006 from Taiba, Brazil & Provence, southern France (DMS)





SDA-2006 : Milky-way at Taiba near Fortaleza, eastern coastal area of Brazil

SDA-2008

Roque de los Muchachos,

La Palma

28°45' N ; 17°53' W

Height: 2300 meter

From left to right are:

Peter van Leuteren

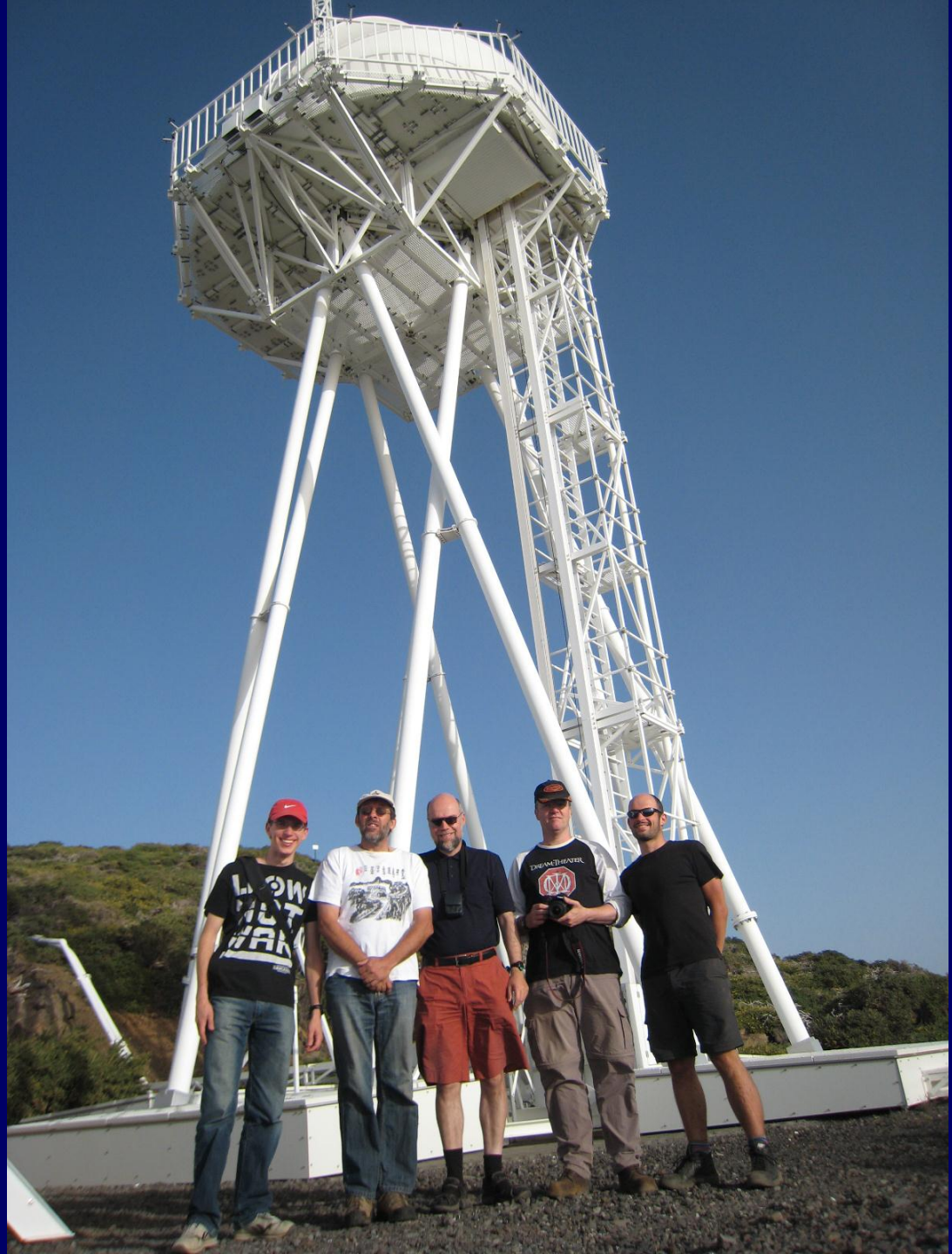
Klaas Jobse

Carl Johannink

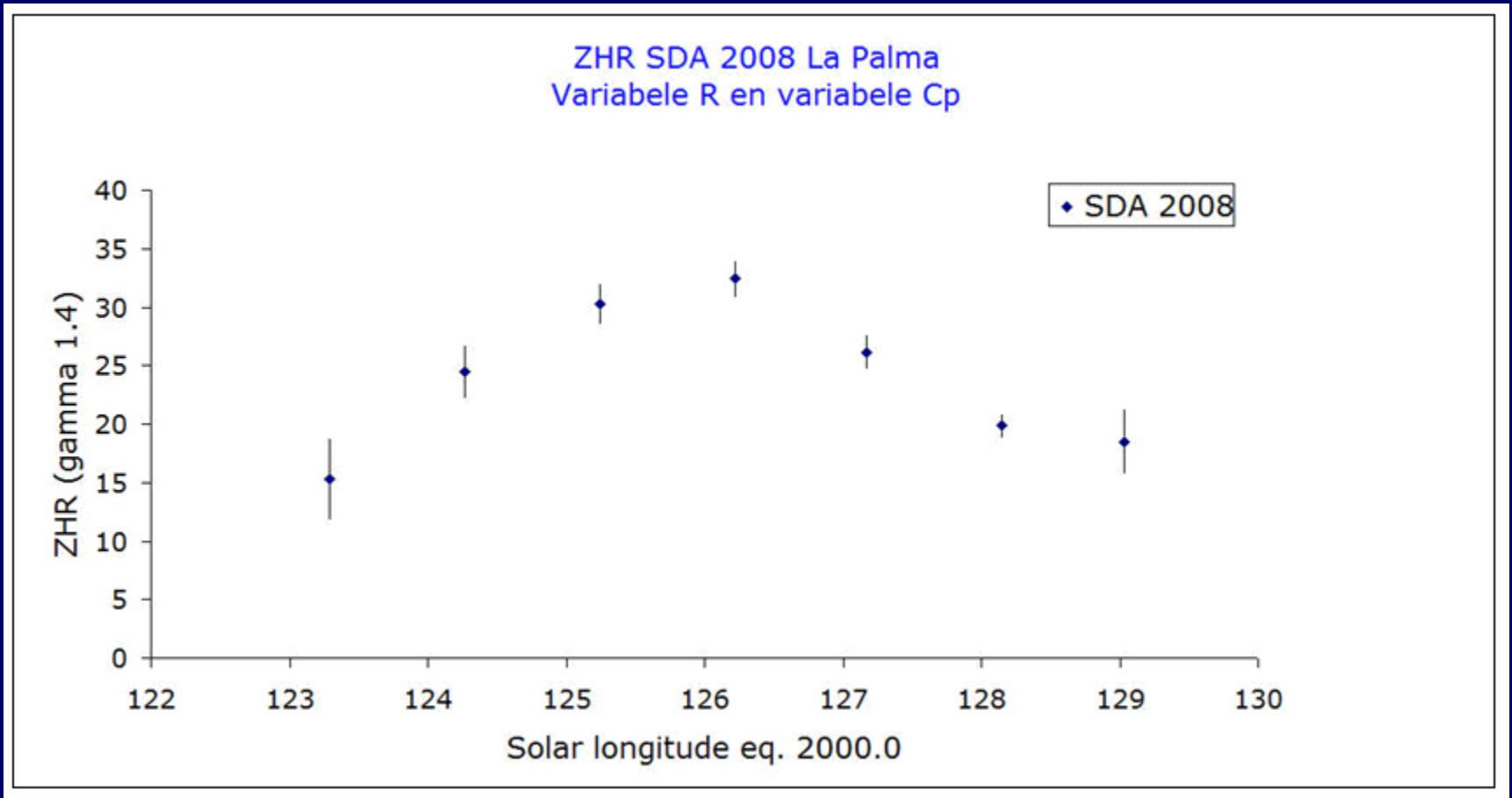
Koen Miskotte

Michel Vandeputte

In front of the
Dutch Open Telescope



DMS observations of SDA-2008 at La Palma



DMS observations of SDA-2008 at La Palma

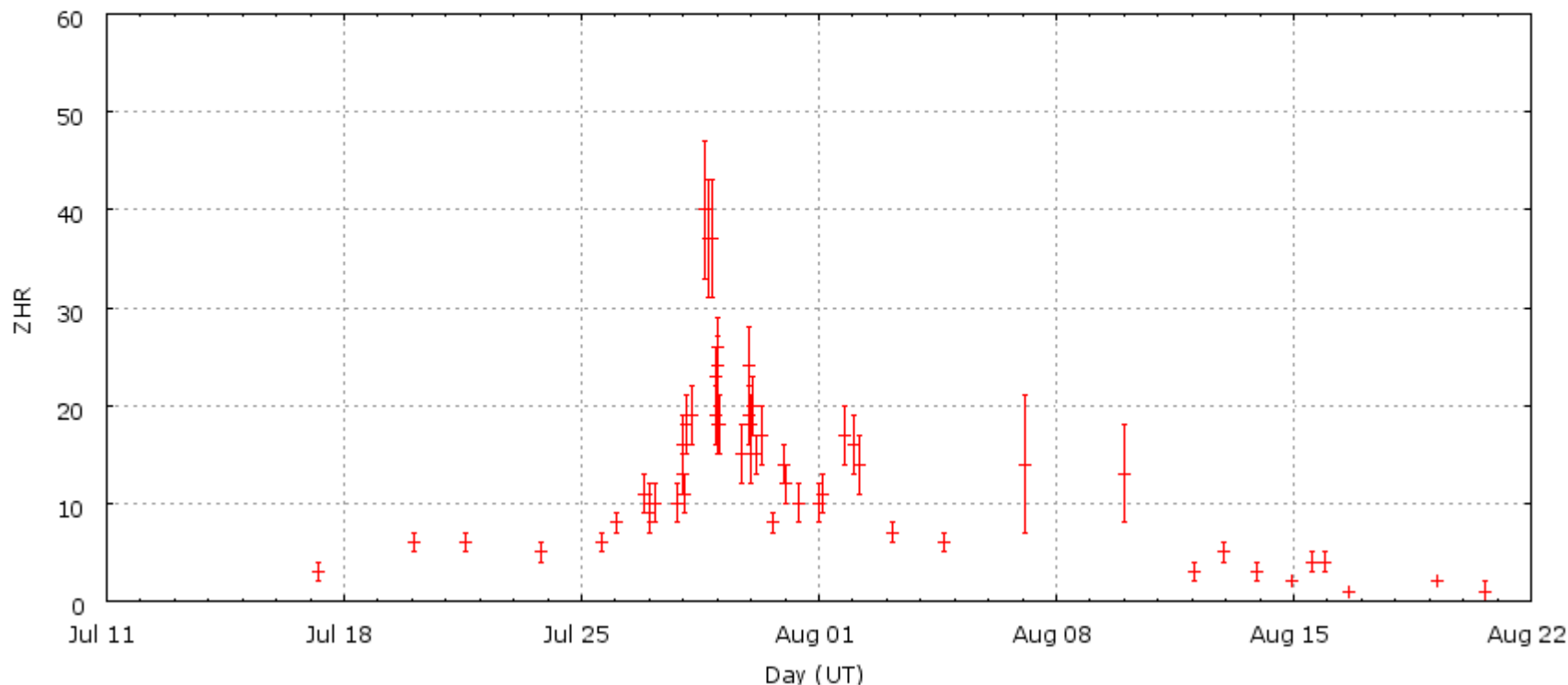


Domes and DMS observers at Roque de los Muchachos in twilight

IMO observations sd-Aquariids 2009

Activity profile

$ZHR_{\max} = 40$ based on 1621 sdaquariids in 1054 data intervals, assuming fixed population index $r = 3.0$ and zenith correction $1/\sin(h_R)$.

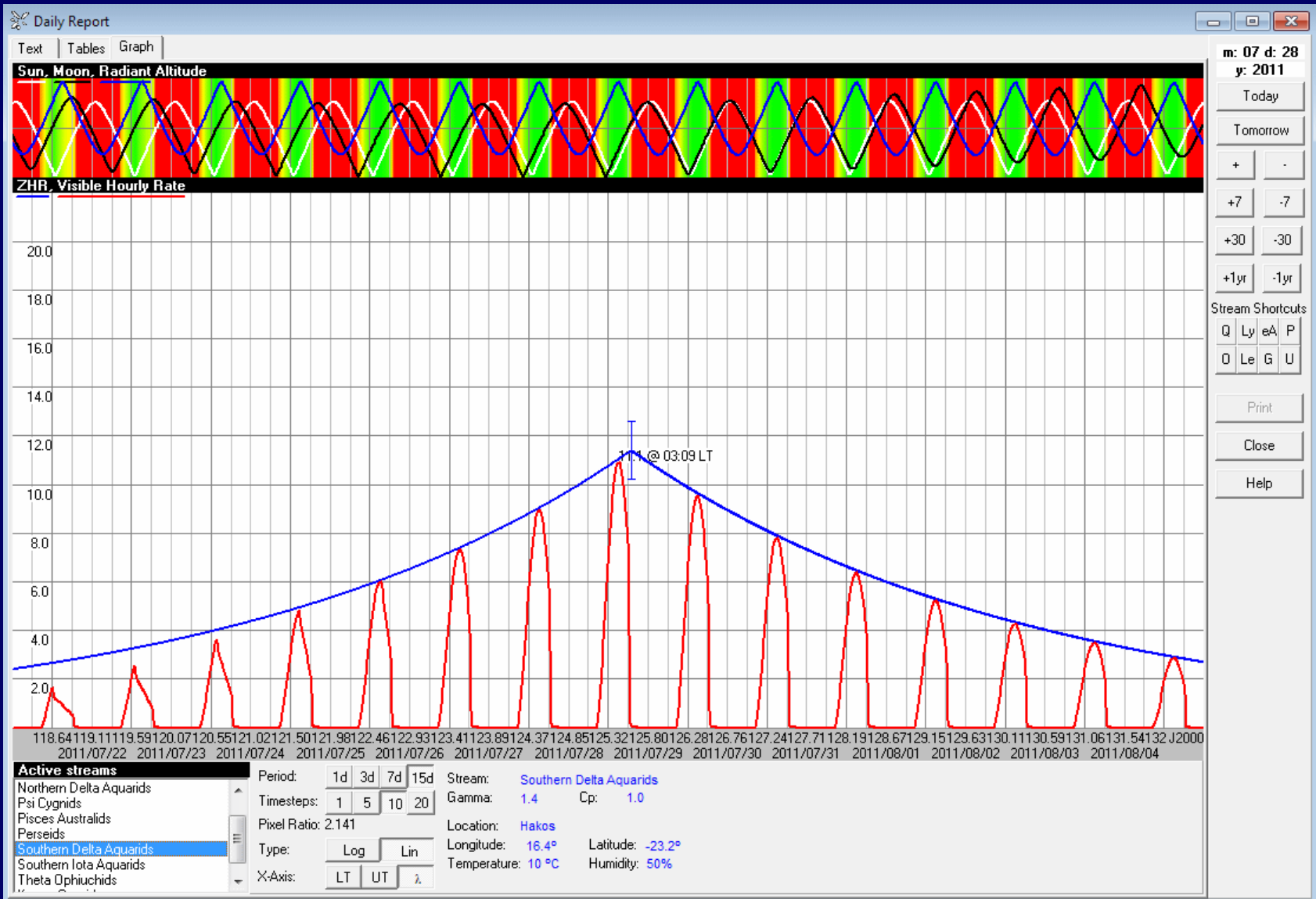


Note: nearly all locations have (very) low Radiant elevation

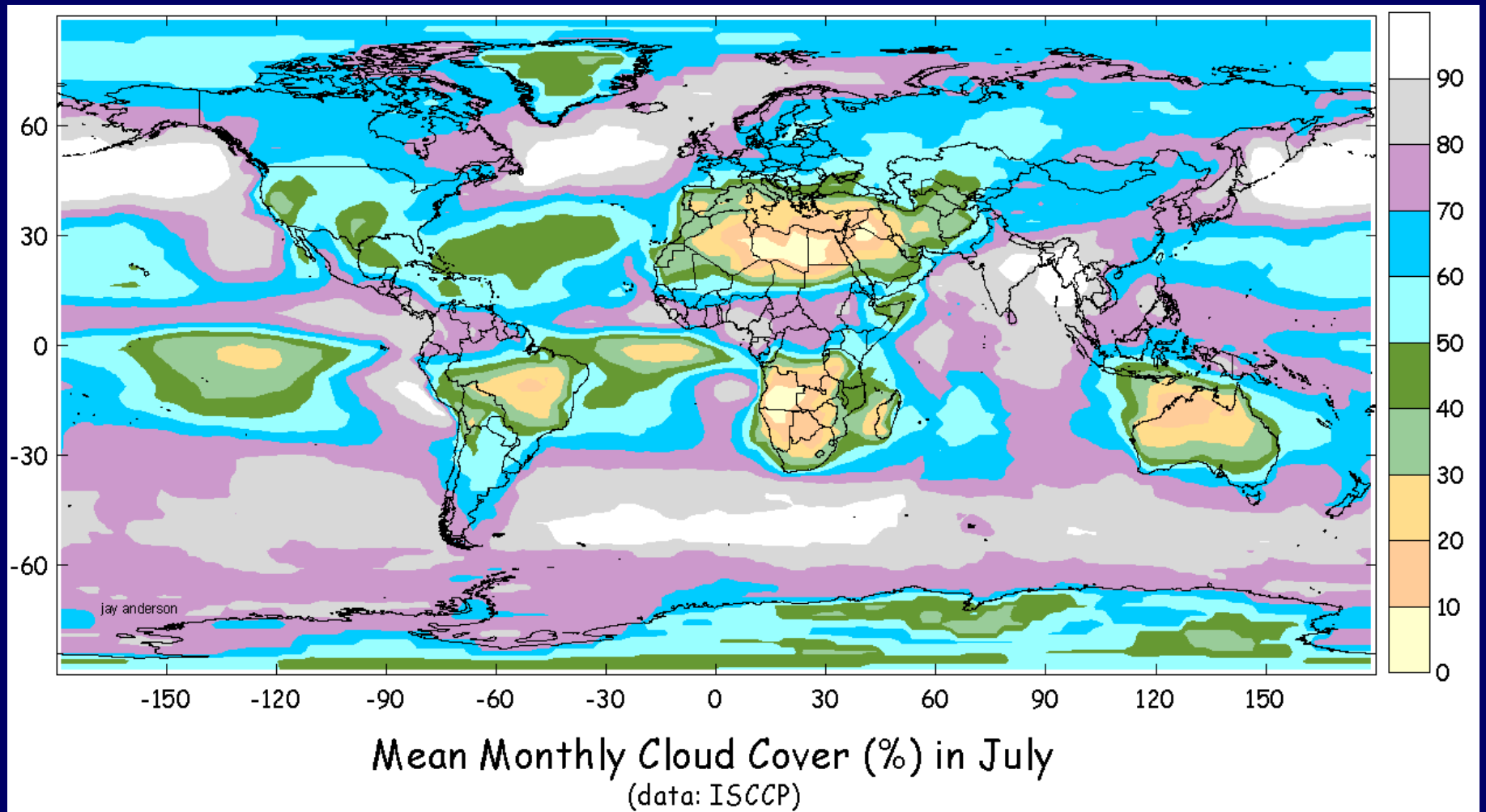
Locations of IMO observers for SDA-2009



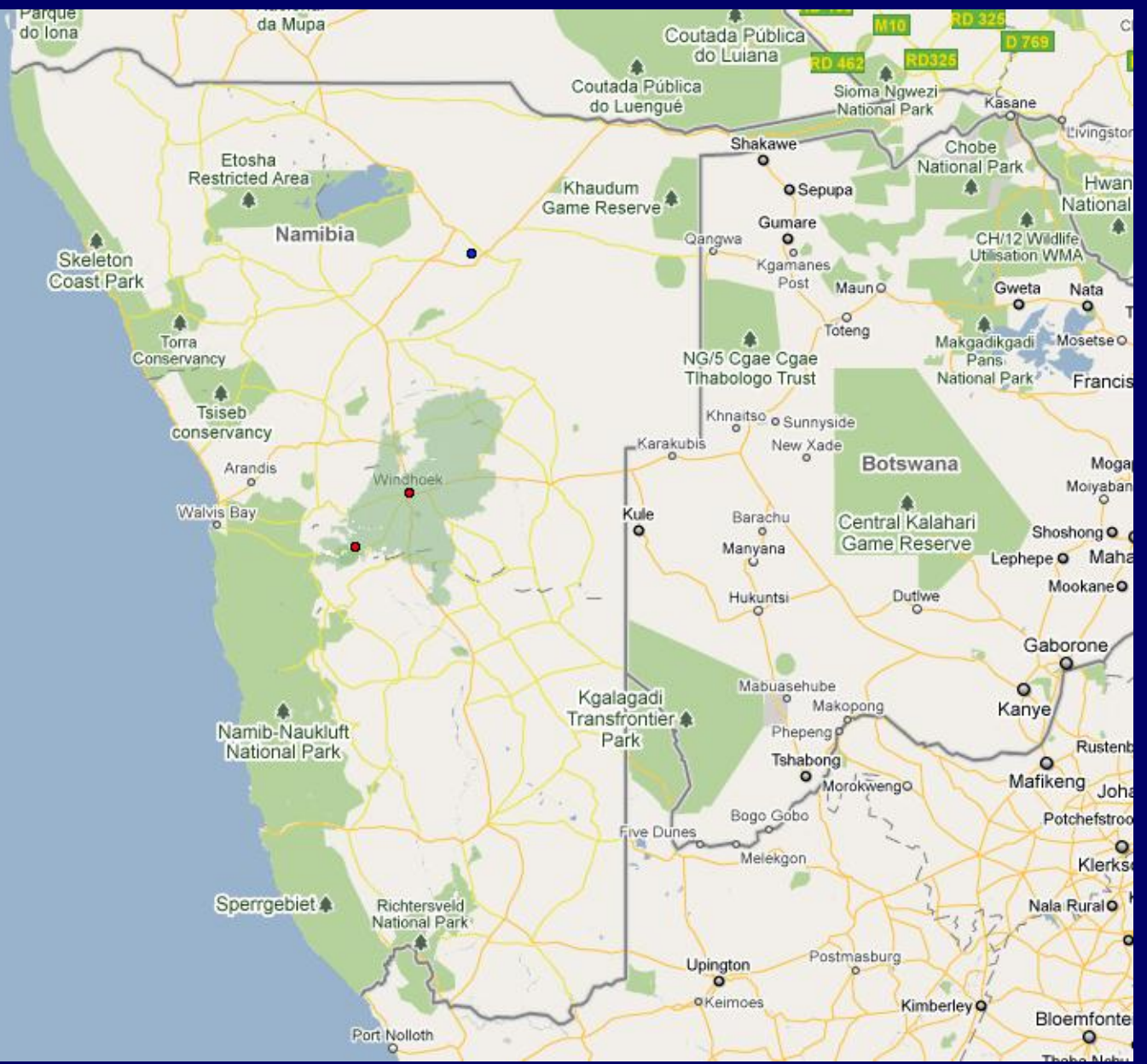
Note: almost all observers of IMO are in the northern hemisphere...



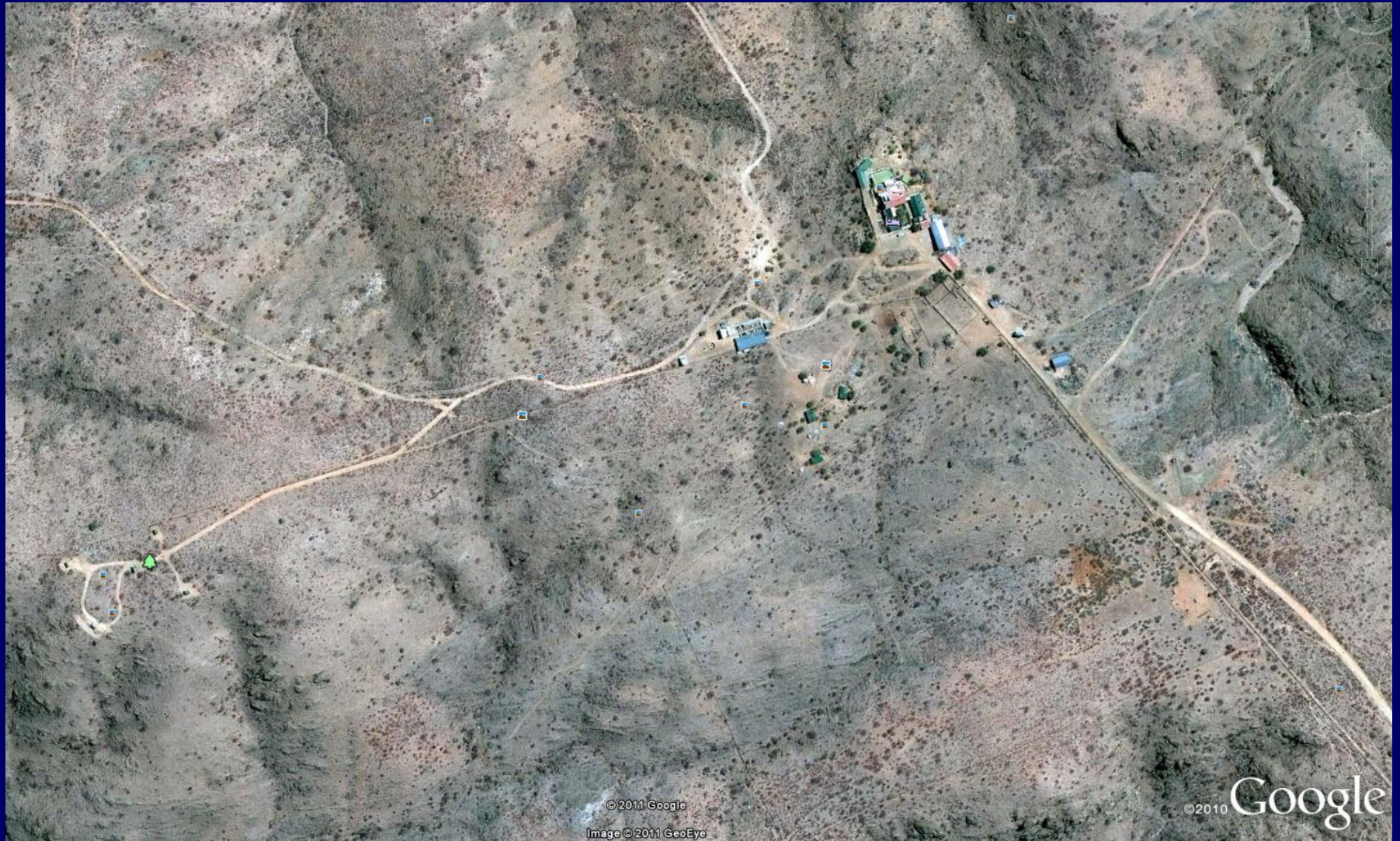
Notes: finding a suitable location for SDA > go south!
 Location Hakos, Namibia ("Meteoracle" software by Daniel van Os)



Note: Hakos – Namibia: clear skies ; very dry RH 10% ; temperatures 0° – 10° ; windy
No artificial light at all, only starlight and the Milky-way



Hakos Guestfarm: a perfect location for observing the southern night sky



Hakos Guestfarm: nice dinerroom with fantastic views on the mountains



Hakos Guestfarm: specifically equipped for astronomical observations



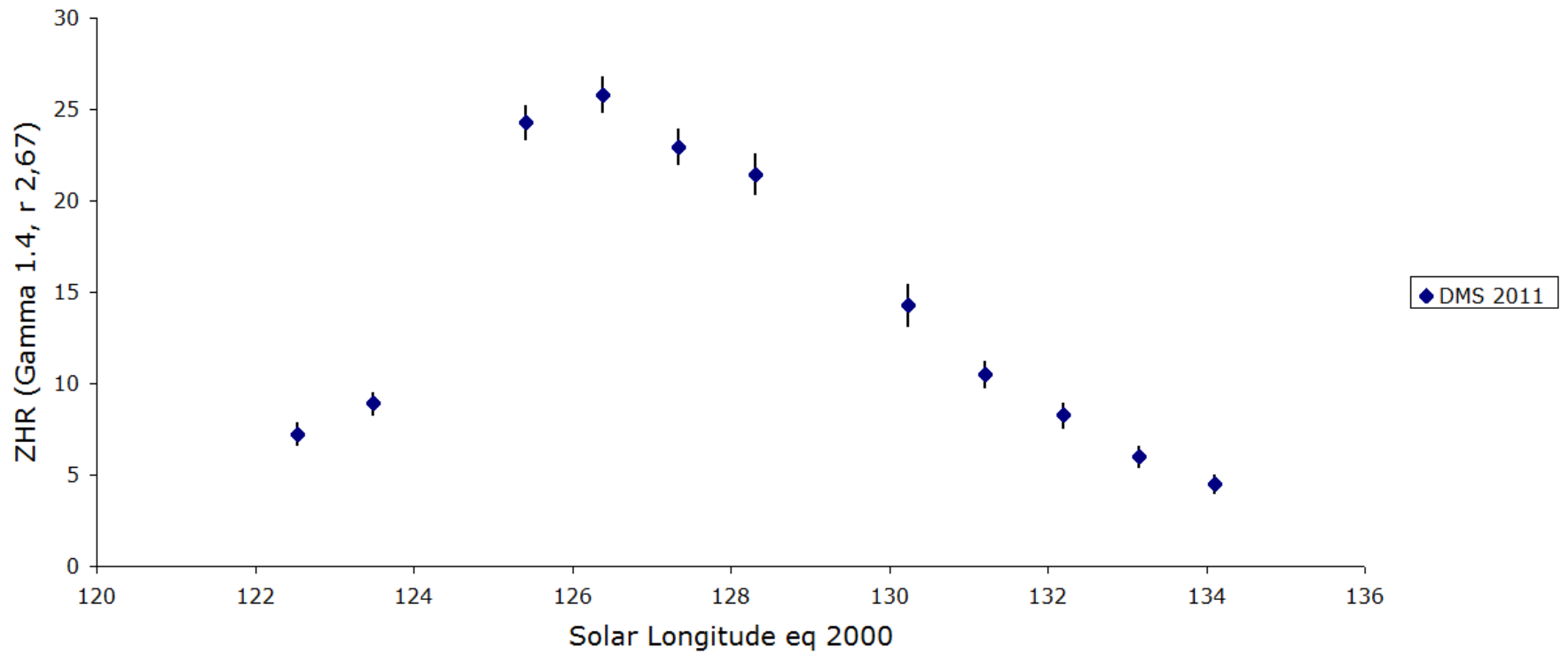


SDA , 24 july – 8 august 2011, Hakos Guestfarm, Namibia
Latitude: 23°14'11" S, Longitude: 16°21'51" E, Height: 1818 meter
From left to right are:
Peter van Leuteren, Inneke Vanderkerken, Michel Vandeputte,
Carl Johannink, Casper ter Kuile, Klaas Jobse, Koen Miskotte

DMS-observations of Southern delta-Aquariids (SDA)

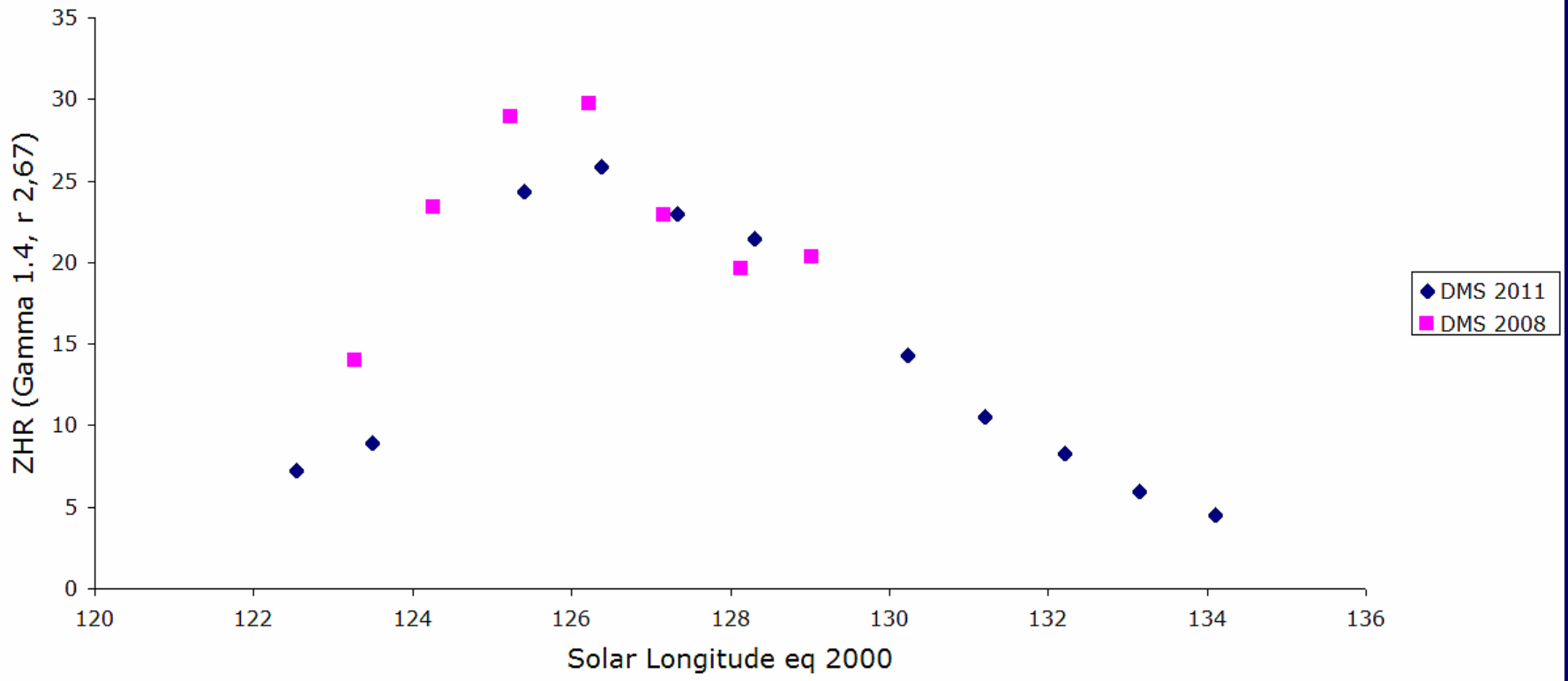
Year	2001	2003	2006	2008	2011	Total
Location(s)	Chios, Greece & Toscana, Italy	Crete, Greece	southern France & Brazil	La Palma, Spain	Hakos, Namibia	
Obs. (IMO code)	MISKO, JOHCA	MISKO	MISKO, VANMC, JOHCA	JOBKL, JOHCA, LEUPE, MISKO, VANMC	JOHCA, LEUPE, MISKO, VANMC	
Period	22-7 / 31-7	22-7 / 03-08	20-7 / 05-08	25-7 / 01-08	25-7 / 07-08	
Nights	8	11	16	7	11	
Eff. Obs. time	49,06	45,18	75,55	133,93	180,34	463,76
SDA	288	362	419	1889	3476	6395
CAP	66	79	82	553	793	1557
PAU	3	11	3	7	183	207
ANT/NDA/NIA	1	85	75	150	317	628
PER	160	224	312	496	145	1310
KCG	8	17	0	55	16	96
SPO	553	594	1337	2808	3783	8901
Total meteors	1079	1372	2228	5958	8713	19094
Max. hourly count	15-20	20 (36)	11 (Fr), 19 (Bra)	40+	45+	
Remarks		Sharp peak 28/29-7!!		Broad maximum	Broad maximum	

ZHR SDA 2011 Namibia

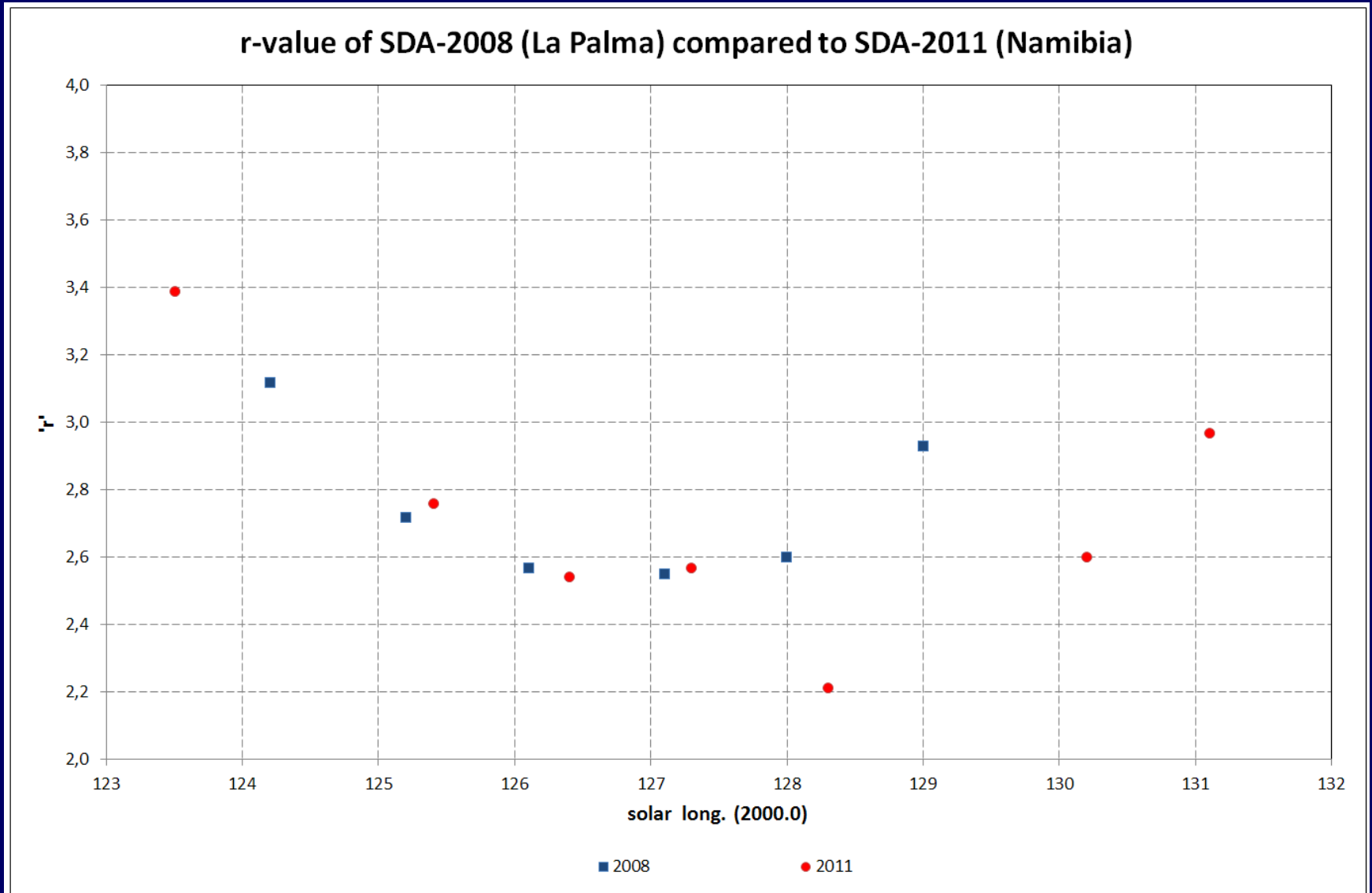


Comparing ZHR values of SDA in 2008 and 2011

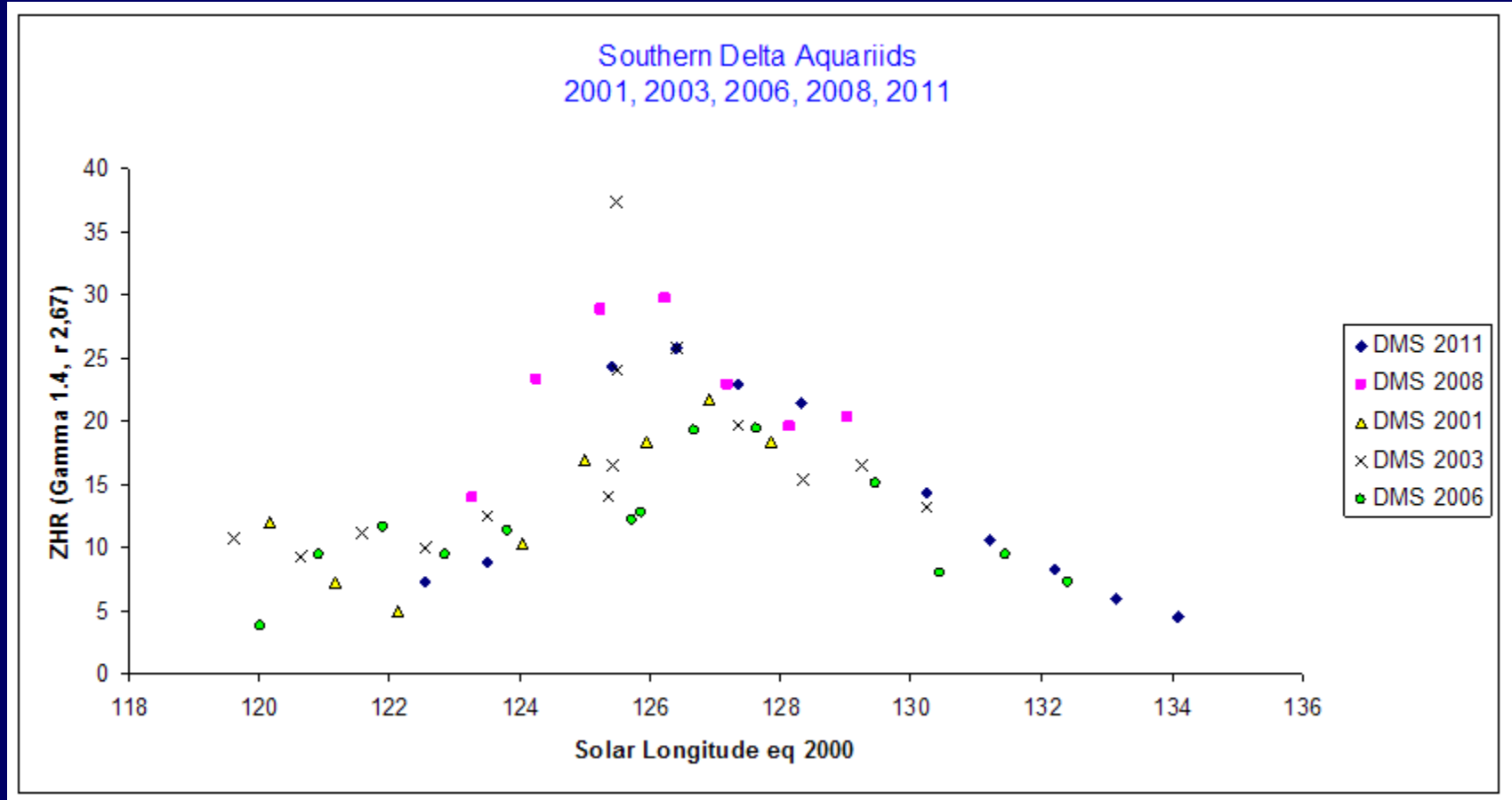
ZHR SDA 2008 La Palma
ZHR SDA 2011 Namibia



Comparing r-value of SDA in 2008 and 2011



Comparing ZHR values of SDA in 2001, 2003, 2006, 2008 and 2011



What do we learn from observations of the SDA's in recent years?

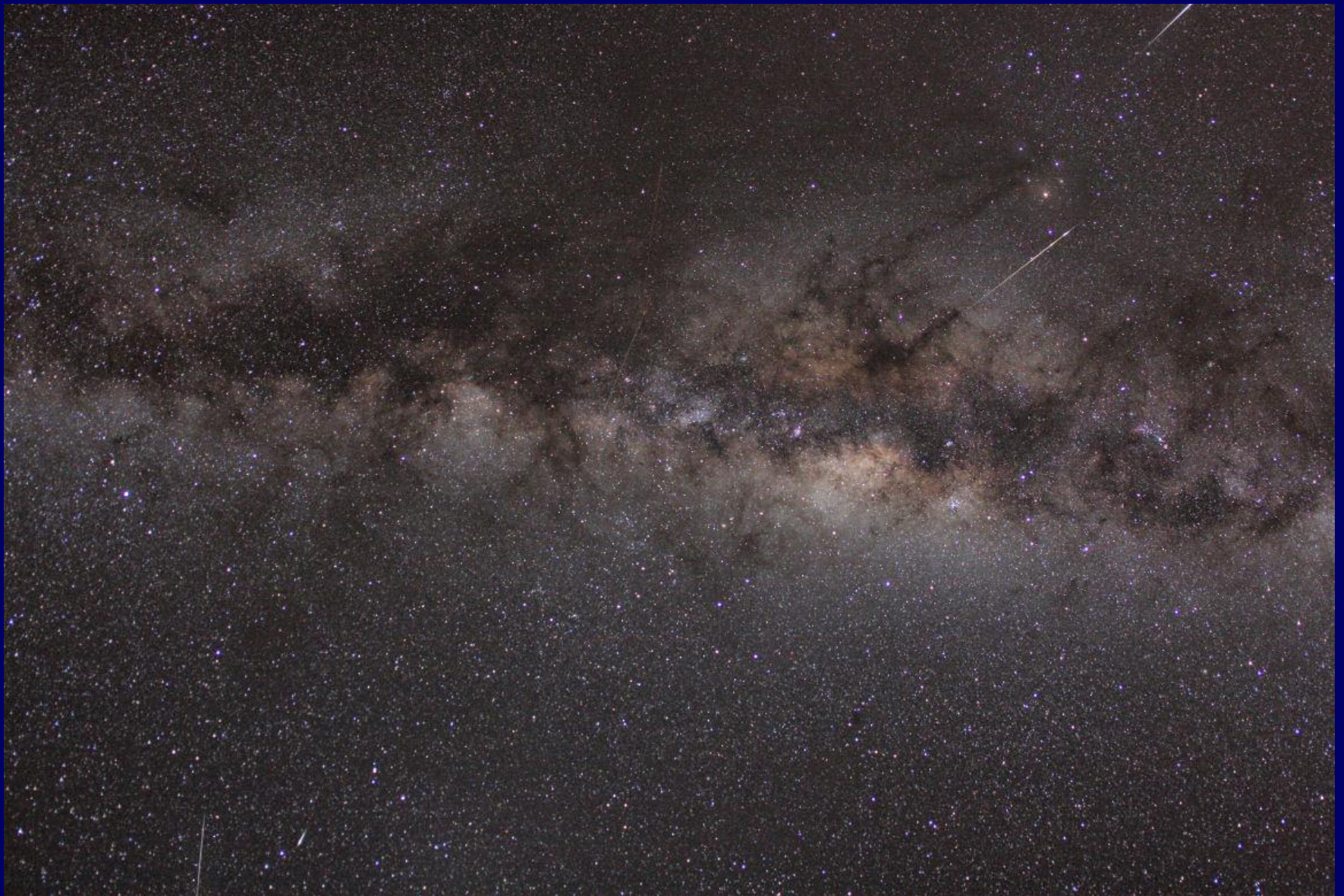
- Maximum above ZHR = 25 (comparable to Orionids)
- Broad maximum, number of bright meteors from 27/28 onwards, see “r”-value also
- More observations before 27 July are welcomed: is sharp increase in activity as observed in 2008 & 2011 realistic?
- More observations from southerly locations are needed to prove the SDA are variable or stable



Note: Photo of a -7 Capricornid on 26 July 2011 by Peter van Leuteren



Note: Photo of a double Capricornid on 30 July 2011 by Carl Johannink



Note: Composite of 3 Cap's, 3 SDA's and 1 Pau
on 28/29 and 29/30 July 2011 by Koen Miskotte



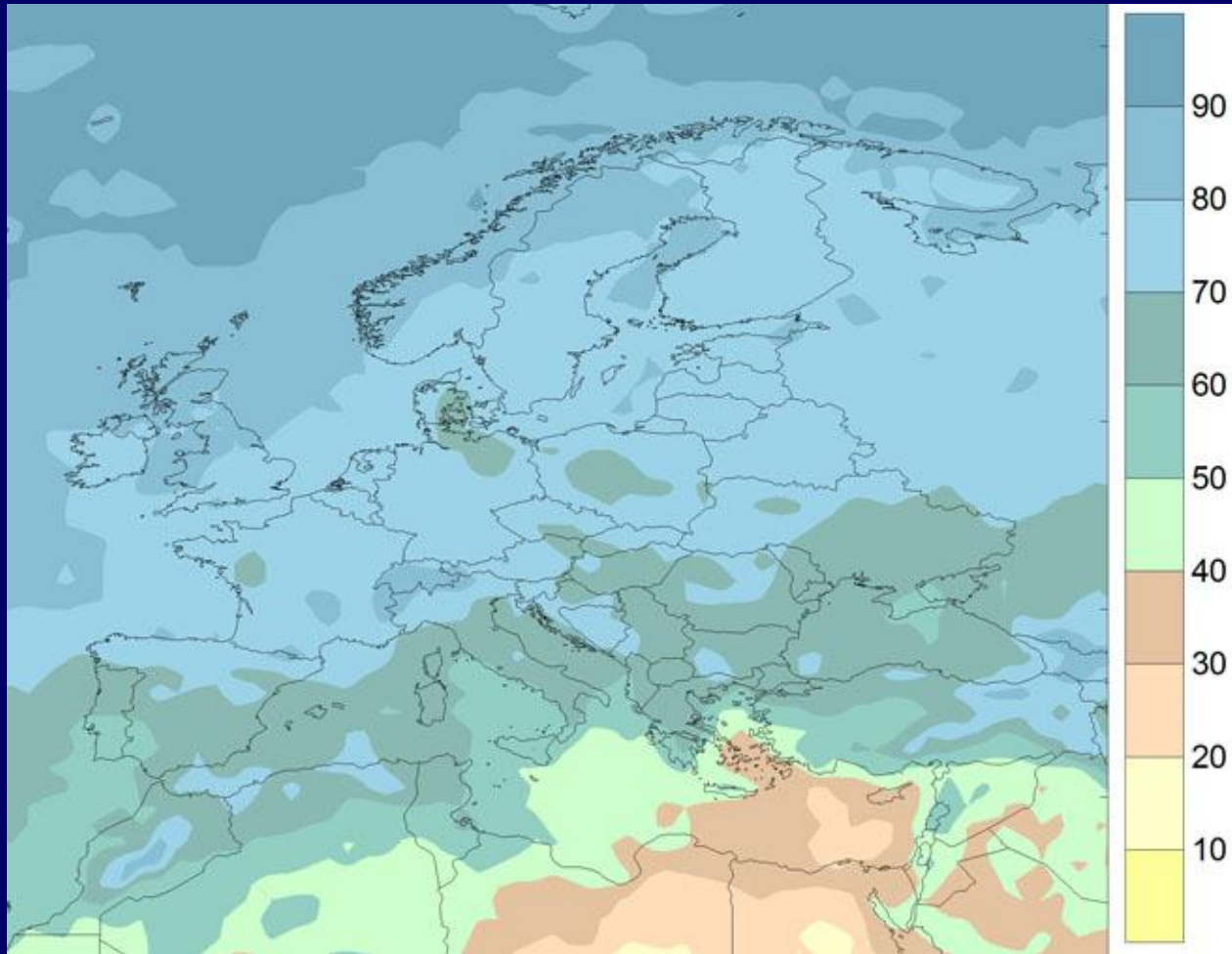
Note: the Large Magellan Cloud on 5 august 2011 by Casper ter Kuile

Draconids 2011: radiantheight over Europe on 8 october at 20 UTC



Full moon between 25° and 45° in SSE. Map prepared by Peter Bus (Netherlands)

Draconids 2011: cloudcover over Europe in October [%]



Weather statistics for Europe (J. Anderson, University of Manitoba)

Draconids 2011: remind going above the inversion layer



Geminids 2004, Kahler Asten, Germany

This SDA-2011 presentation made possible with help of:

- Carl Johannink
- Koen Miskotte
- Michel Vandeputte
- Peter van Leuteren

Much more information on these websites:

- www.astrorocker.nl
- www.blikomhoog.nl
- www.wondersofnature.nl