

Canary Islands Double Station Meteor Project: First Light



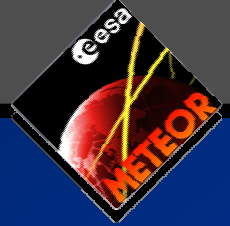
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(2) Astronomical Institute, Utrecht University, The Netherlands.

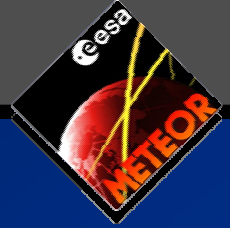
(3) The Netherlands Foundation for Research in Astronomy



- Intentions of CIDStaMP
- Personnel and equipment
- Location Details
- First Test Campaign – May 2007
- Permanent installation – “To Do List”
- First Results



- Continuous double station observations
 - High altitude sites – OGS @ 2380 m , DOT @ 2329 m
 - > 300 clear nights per year
 - Excellent skies
 - Infrastructure and technical support on site already!!!
- Scientific goals, e.g.:
 - Study the orbital distribution and chemical composition of meteoroids over the complete year
 - Provide continuous data for orbit determination
 - Search for high altitude meteors
 - Monitor fireball activity



The Money!



The Brains!



The ...?



ICC5 on Tenerife

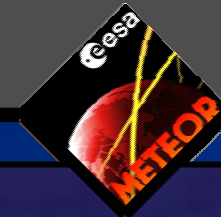
- Image-intensified video cameras :
- Fujinon 25 mm f/0.85 lens
 - FOV of 22 deg x 28 deg
- Lens heater - from Kendrick, operated on 12 V
- Image intensifier - 2nd Generation MCP intensifiers with fiber input window from DEP, model no. XX1700DB. Operated on 3 V.
- Sony XC-77CE Video camera, 2/3" CCD (directly coupled via fiber taper to output of intensifier), 756 (H) x 581 (V) pixels, 50 dB (12 bit) dynamical resolution, operating on 12 V.





LCC3 on La Palma

- Objective lens - e.g. 50 mm f/2.0 Zeiss lens.
 - FOV ~ 34 deg
- Lens heater - from Kendrick, operated on 12 V
- Image intensifier - 2nd Generation MCP intensifiers with Quartz input window from DEP. Operating on 3 V.
- Single board video camera - from Conrad electronics, operating on 12 V. They record the output window of the intensifier.



Station 1 – OGS, Tenerife

Latitude: 28 18' 4"

Longitude: -16 30' 43"

Pointing: Azimuth: 312.9

Elevation: 53.1

Station 2 – DOT, La Palma

Latitude : 28 45' 35"

Longitude: -17 52' 51"

Pointing: Azimuth: 90.0

Elevation: 51.8

Aiming Point

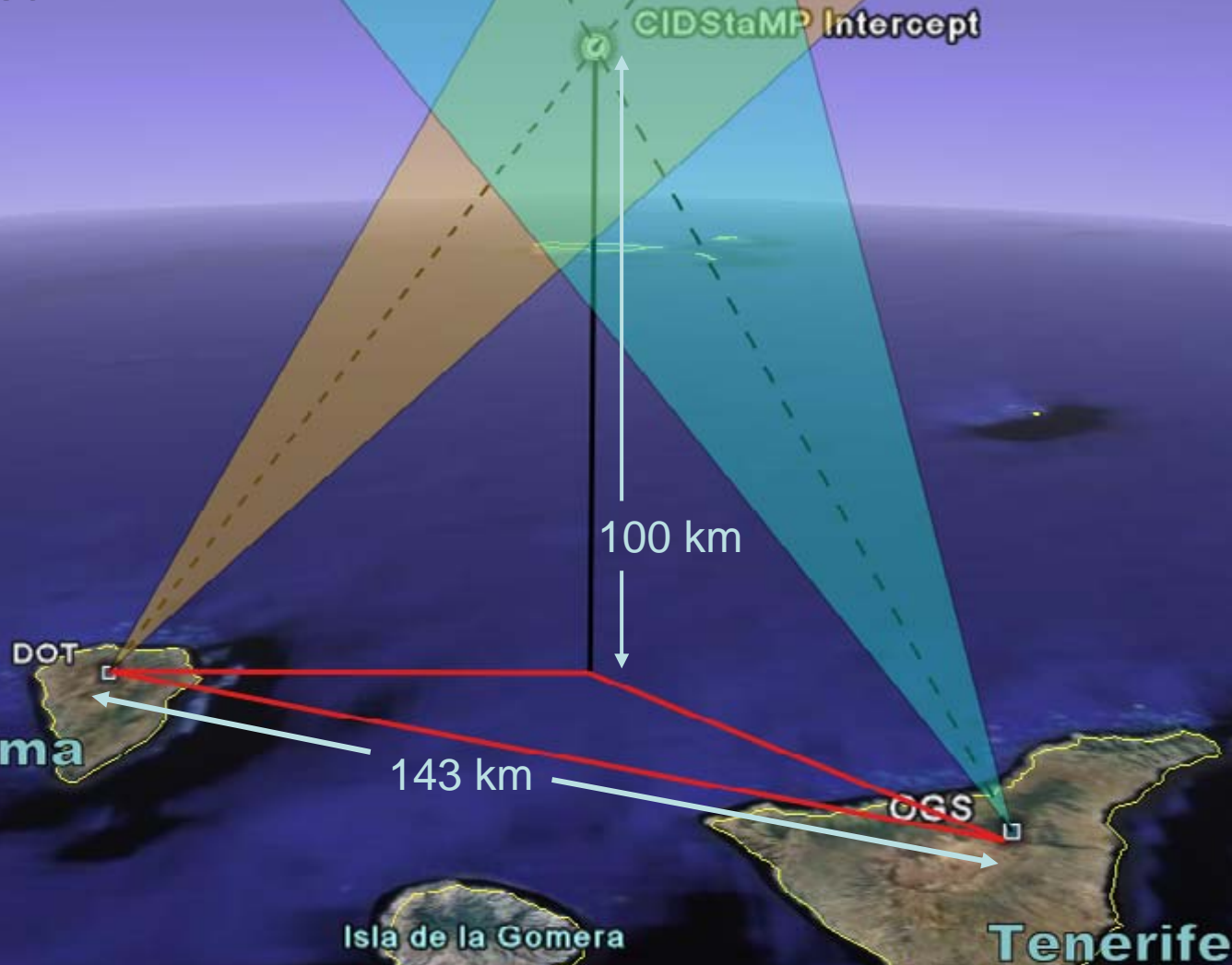
Height: 100 km

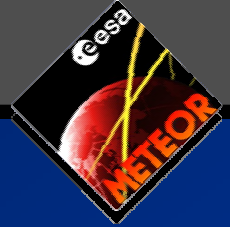
Latitude: 28 45' 35"

Longitude: -17 4' 31"



C.I.D.Sta.M.P.

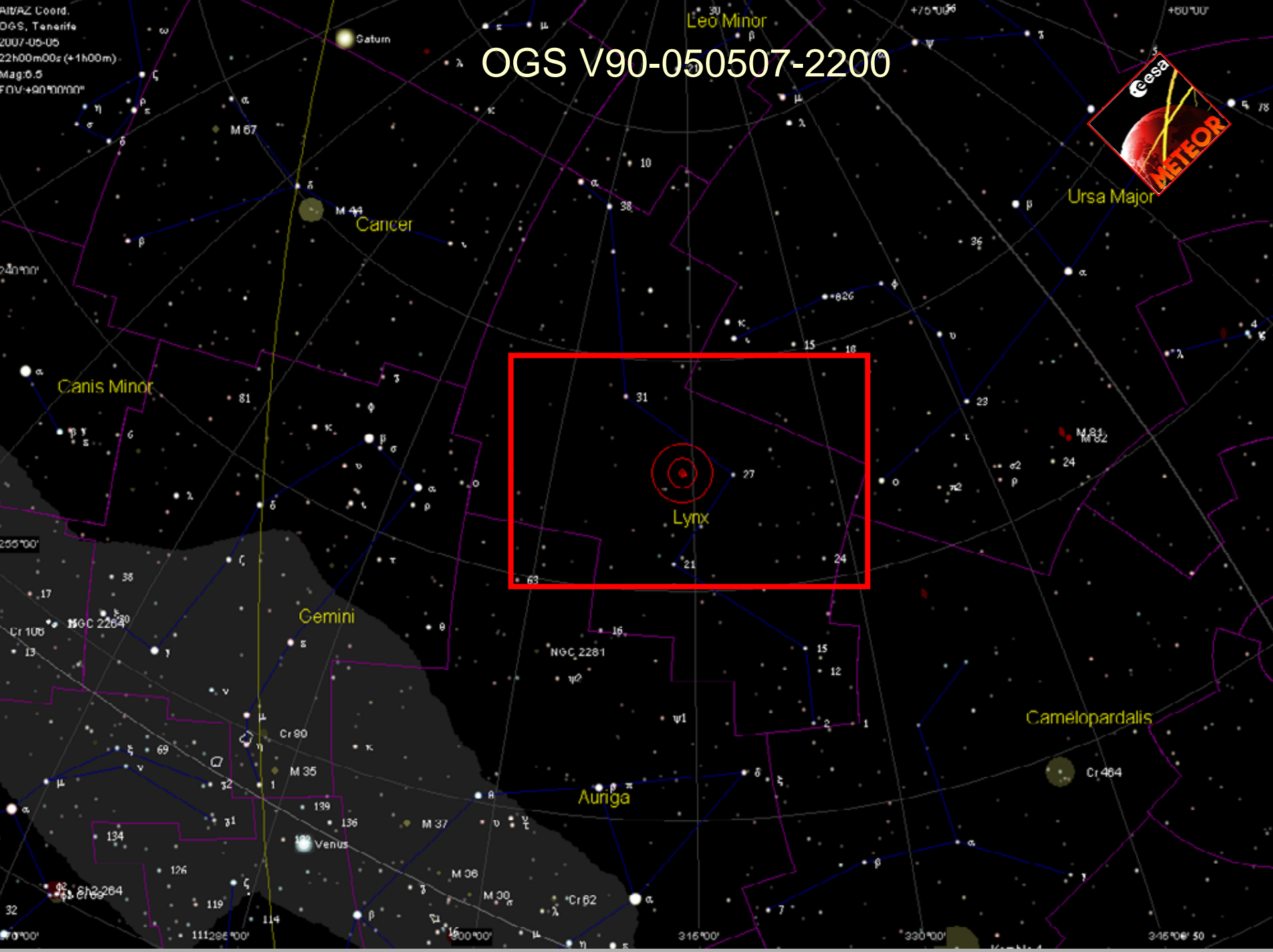




Cross your fingers...

Altaz Coord.
OGS, Tenerife
2007-05-05
22h00m00s (+1h00m)
Mag:0.5
FOV: +90°00'00"

OGS V90-050507-2200



Saturn

Leo Minor

Ursa Major

Canis Minor

Canicer

Lynx

Gemini

Auriga

Camelopardalis

Venus

Alt/AZ Coord. 00°00'
DOT, La Palma
2007-05-05
22h00m00s (+1h00m)
Mag: 6.5_n
FOV: +90°00'00"

DOT V90-060507-2200

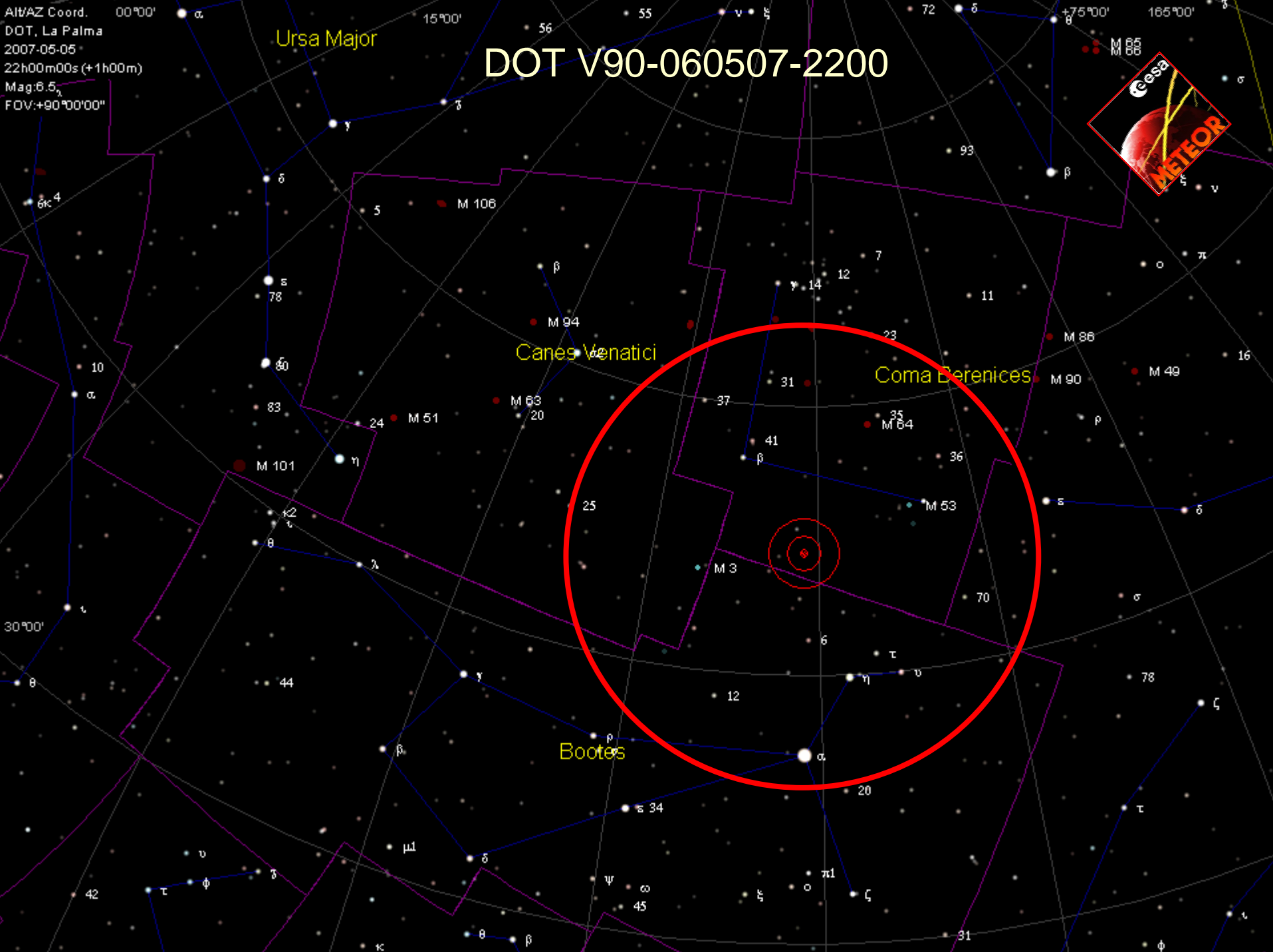
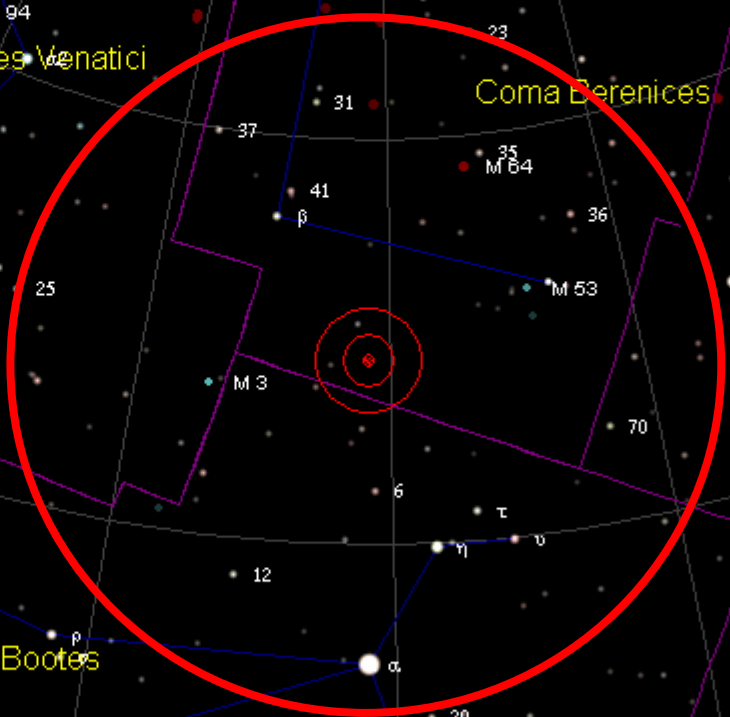


Ursa Major

Canes Venatici

Coma Berenices

Bootes



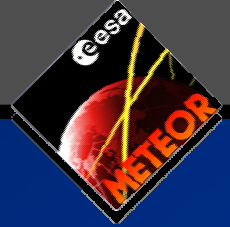


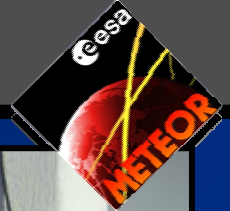
- 5th – 10th May 2007

UT + 1 hr Lat: 28° 18' 04" N Long: 016° 30' 41" W **May 2007**

Mon	Tue	Wed	Thu	Fri	Sat	Sun
	5° 14 ♈-- ♎35° A 22:06 07:26 20:41	7° Full ♈-- ♎35° A 22:07 07:25 20:41	8° 16 ♈-- ♎35° A 22:07 07:24 20:42	8° 17 ♈-- ♎35° A 22:08 07:24 20:42	9° 18 ♈-- ♎35° A 22:09 07:23 20:43	9° 19 ♈-- ♎36° A 22:10 07:22 20:44
9° 20 ♈-- ♎36° A 22:11 07:21 20:44	8° 21 ♉1° ♎36° A 22:12 07:21 20:45	8° 22 ♉2° ♎36° A 22:12 07:20 20:45	7° 23 ♉3° ♎36° A 22:13 07:19 20:46	6° 24 ♉4° ♎36° A 22:14 07:19 20:47	9° 25 ♉5° ♎36° A 22:15 07:18 20:47	9° 26 ♉6° ♎36° A 22:16 07:17 20:48
5° 27 ♉7° ♎36° A 22:17 07:17 20:48	6° 28 ♉8° ♎36° A 22:17 07:16 20:49	7° New ♉9° ♎36° A 22:18 07:16 20:50	8° 1 ♉10° ♎36° A 22:19 07:15 20:50	8° 2 ♉11° ♎36° A 22:20 07:14 20:51	9° 3 ♉11° ♎36° A 22:21 07:14 20:51	9° 4 ♉12° ♎36° A 22:22 07:13 20:52

- Waning Moon... not ideal.

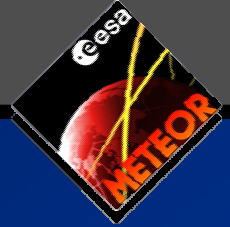




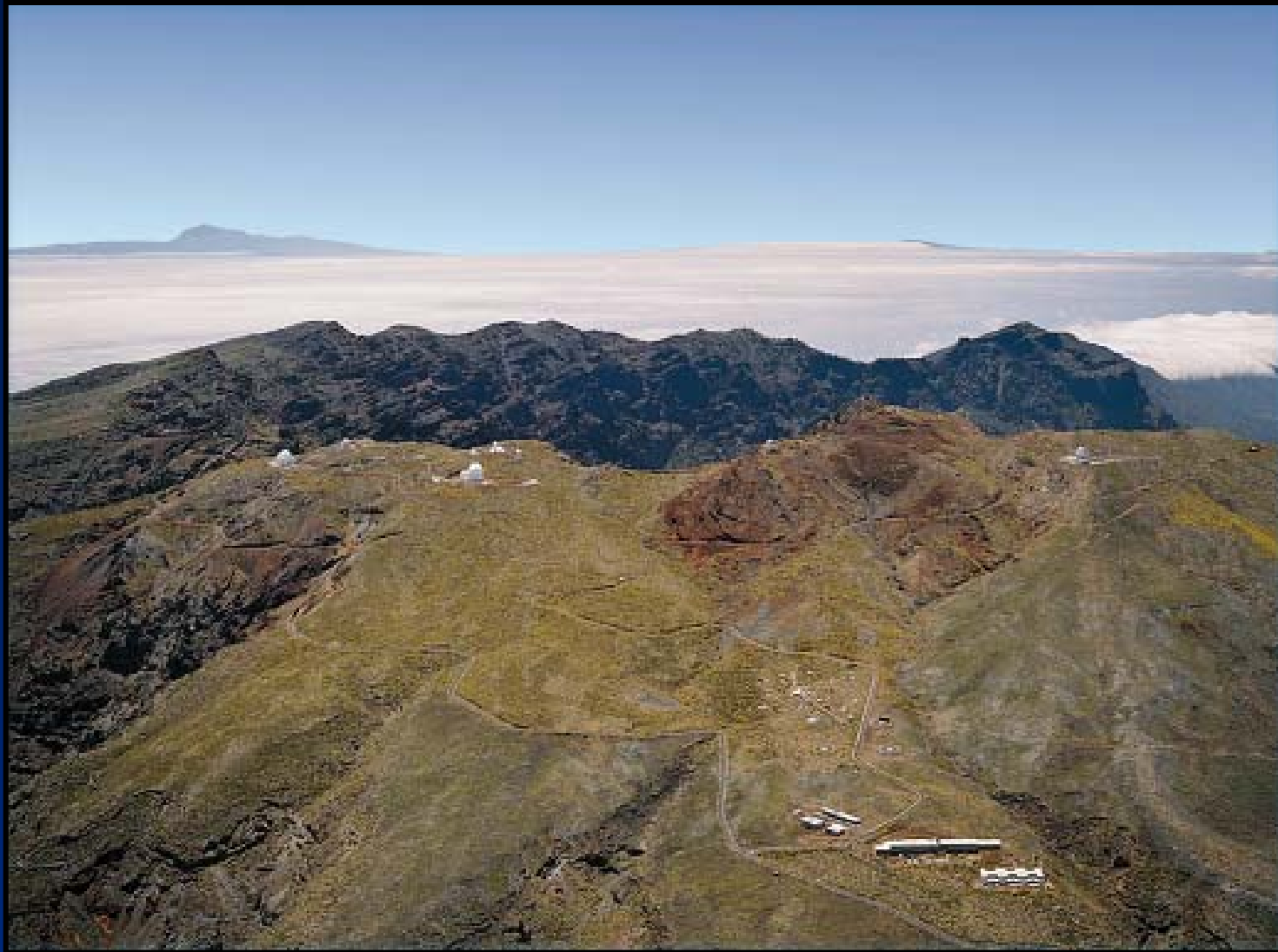
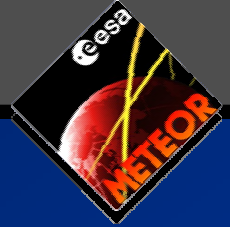


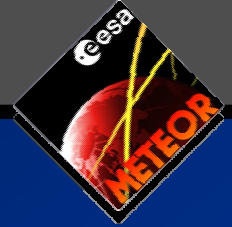
West facing

North facing

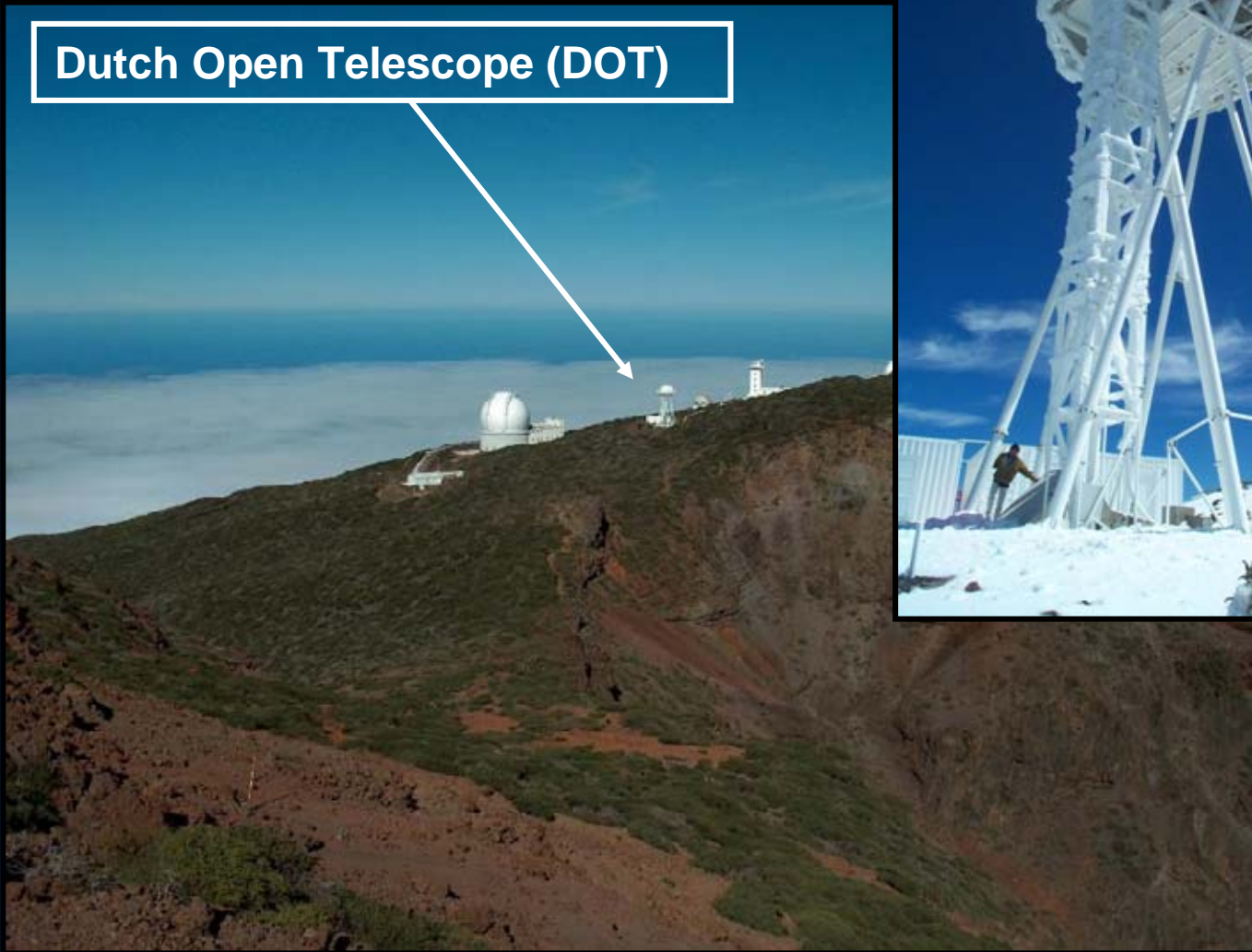


Problems with a wall mounting...

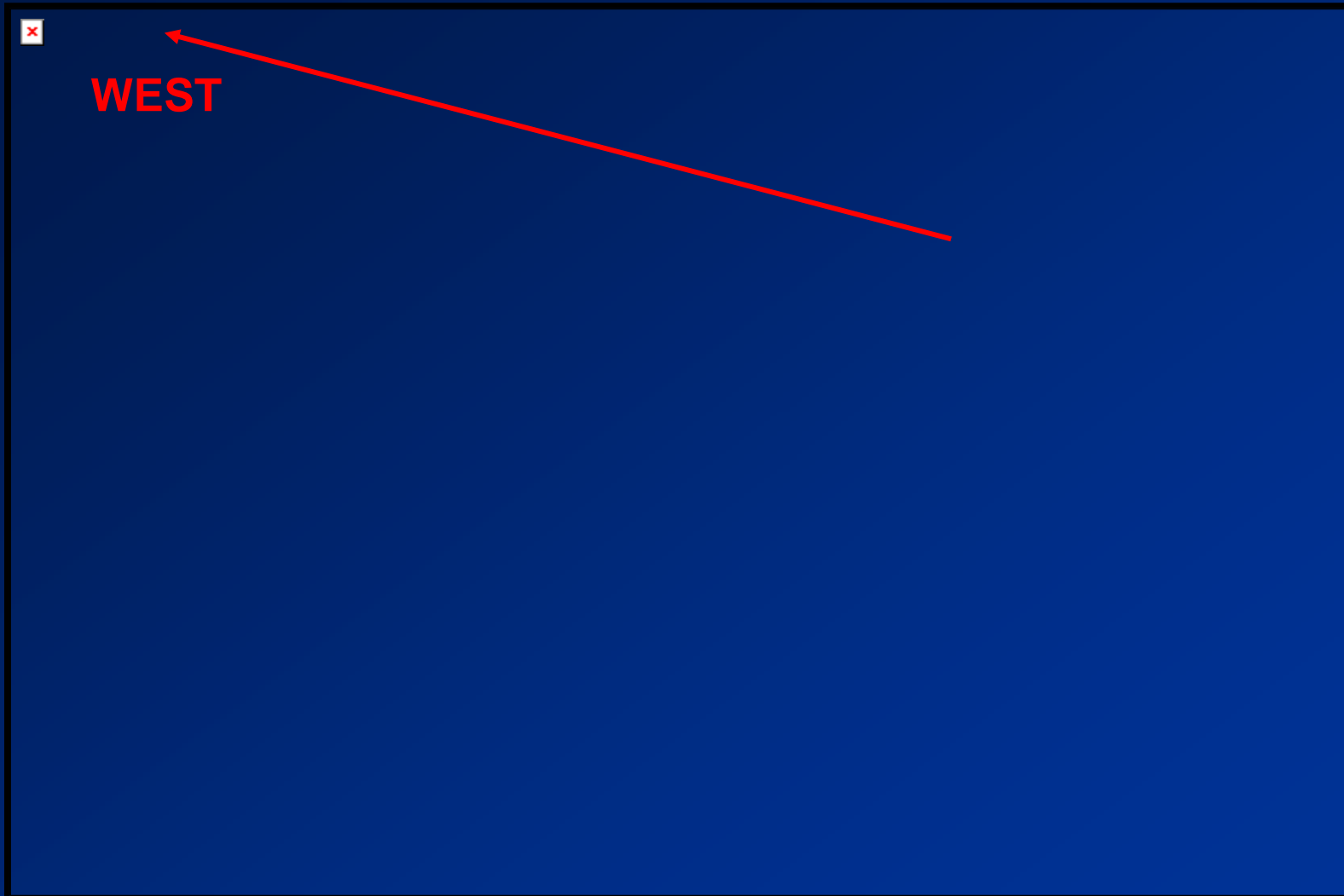


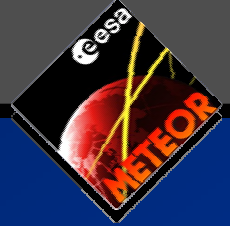


Dutch Open Telescope (DOT)



Roques de los
Muchachos,
La Palma

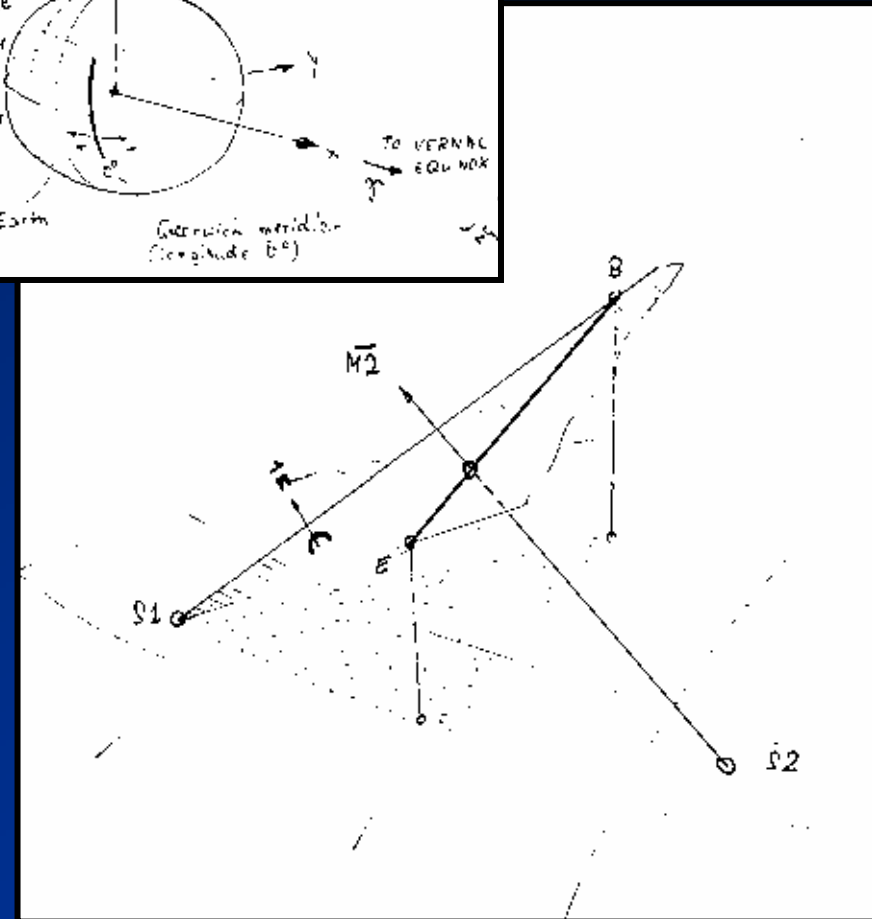
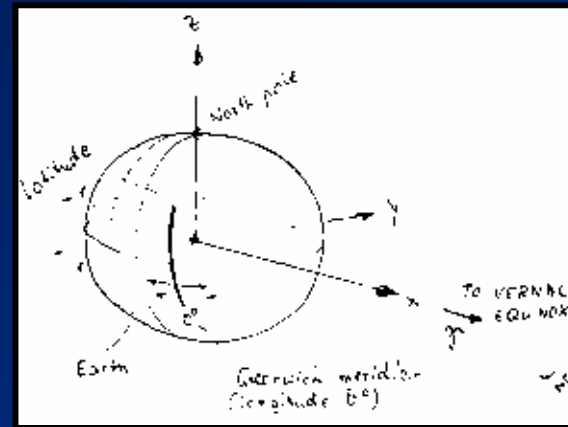


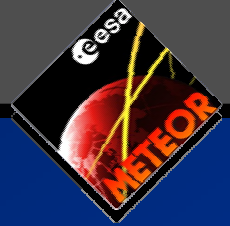


- Video signal -> Matrox Meteor II frame grabber card -> MetRec running on PC (Molau and Nitschke, 1996) with DOS
 - Detect meteors automatically, storing
 - a total image of a detection
 - an animation
 - a file containing the event position and brightness for each frame the event was detected

- At the end of the night, use PostProc to
 - delete false detections (clouds, airplanes)

- Store data on common FTP server
 - Analyse using MOTS (Koschny and Diaz, 2002b)
 - Find parallel meteor events observations, compute height profiles and orbits.





Processing 'X:\metrec_data\ICC5\20070509\' & 'X:\metrec_data\DOT\20070509\'

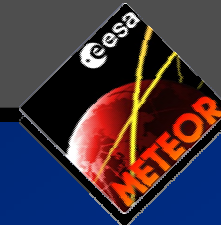
Meteor '000845'-'000845' Data found! Processing... Ok!
Meteor '015110'-'015110' Data found! Processing... Ok!
Meteor '022351'-'022352' Data found! Processing... Ok!
Meteor '025137'-'025137' Data found! Processing... Ok!
Meteor '035505'-'035505' Data found! Processing... Ok!

} 5 Double Events

Processing 'X:\metrec_data\ICC5\20070510\' & 'X:\metrec_data\DOT\20070510\'

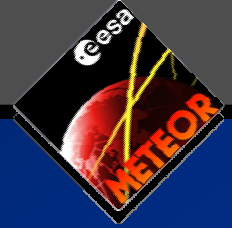
Meteor '212755'-'212755' Data found! Processing... Ok!
Meteor '221841'-'221841' Data found! Processing... Ok!
Meteor '224830'-'224830' Data found! Processing... Ok!
Meteor '233413'-'233413' Data found! Processing... Ok!
Meteor '011304'-'011303' Data found! Processing... Ok!
Meteor '013010'-'013011' Data found! Processing... Ok!
Meteor '014040'-'014041' Data found! Processing... Ok!
Meteor '031245'-'031247' Data found! Processing... Ok!
Meteor '032423'-'032424' Data found! Processing... Ok!
Meteor '035752'-'035754' Data found! Processing... Ok!
Meteor '040027'-'040029' Data found! Processing... Ok!
Meteor '040805'-'040807' Data found! Processing... Ok!

} 12 Double Events



AppearanceDate: 2007/05/09

	Time	Pos. (begin)		Pos. (End)		Max. Mag.	Max Obs Mag.	Velocity (Km/s)		Height (meters)		±pos	Radiant (Hours, Dec:°)	
		x	y	x	y			v	±v	Begin	End		alpha	delta
1	00:08:45	0.650	0.392	0.876	0.609	1.4	1.7	42.783	3.523	99664.6	90634.3	14.8	18.799	36.317
2	00:08:45	0.652	0.662	0.661	0.787	0.7	1.0	41.509	0.937	96397.5	89239.7	8.2	18.766	36.549
1	01:51:10	0.483	0.916	0.449	0.975	4.0	4.4	25.099	1.967	88345.1	85315.3	13.6	15.145	-6.819
2	01:51:10	0.461	0.390	0.463	0.334	2.1	2.3	24.338	0.208	89424.0	86284.0	12.4	15.169	-5.734
1	02:23:51	0.323	0.471	0.448	0.635	1.2	1.5	34.913	2.962	104673.7	88828.5	34.9	17.908	53.388
2	02:23:52	0.604	0.371	0.669	0.380	1.4	1.7	30.435	1.066	93345.0	84624.1	12.1	17.823	53.691
1	02:51:37	0.450	0.792	0.539	0.979	2.0	2.6	58.721	2.678	100871.6	95541.1	127.2	21.180	9.401
2	02:51:37	0.266	0.469	0.174	0.517	1.2	1.3	44.089	1.074	94695.7	90084.9	58.6	21.260	8.018
1	03:55:05	0.576	0.014	0.562	0.128	1.5	1.5	64.392	12.273	98202.7	91774.6	12.2	18.585	10.539
2	03:55:05	0.796	0.626	0.832	0.543	1.1	1.8	58.641	1.663	107560.1	94604.3	31.3	18.606	10.677



AppearanceDate: 2007/05/10

	Time	Pos. (begin)		Pos. (End)		Max. Mag.	Max Obs Mag.	Velocity (Km/s)		Height (meters)		±pos	Radiant (Hours, Dec:°)	
		x	y	x	y			v	±v	Begin	End		alpha	delta
1	21:27:55	0.279	0.163	0.282	0.250	3.5	3.6	21.469	1.006	93341.0	91502.3	16.6	14.496	-11.235
2	21:27:55	0.253	0.368	0.258	0.428	3.2	3.9	23.264	1.592	94910.2	88820.3	31.2	14.480	-9.749
1	22:18:41	0.787	0.693	0.679	0.742	3.7	3.8	13.702	1.156	86807.9	82477.5	11.7	9.699	-13.483
2	22:18:41	0.486	0.211	0.375	0.317	3.1	3.3	13.569	1.202	87326.0	80856.5	26.6	9.779	-12.593
1	23:34:13	0.838	0.800	0.845	0.847	3.4	3.4	16.462	3.202	79692.7	75524.7	30.3	12.337	34.341
2	23:34:13	0.442	0.187	0.358	0.162	3.4	3.5	14.682	1.534	80449.2	72009.4	106.9	12.964	32.470
1	01:30:10	0.298	0.713	0.237	0.857	3.4	3.9	29.614	1.167	98718.3	92295.2	14.5	15.792	-10.875
2	01:30:11	0.479	0.676	0.423	0.792	2.7	3.2	29.649	1.502	99246.1	90241.0	20.4	15.812	-9.889
1	01:40:40	0.847	0.439	0.858	0.563	3.4	3.8	42.832	1.739	100857.6	94928.0	15.4	17.158	10.618
2	01:40:41	0.581	0.150	0.544	0.169	3.1	3.4	43.125	1.746	102785.8	90231.4	41.0	17.180	10.729
1	03:24:23	0.680	0.154	0.569	0.215	3.1	3.2	26.469	2.373	97662.1	92301.0	14.0	15.532	-12.846
2	03:24:24	0.402	0.156	0.335	0.222	3.7	4.3	26.366	0.470	98194.8	92662.3	22.4	15.584	-12.389



- Demonstrated the possibility of obtaining scientifically useful double station data in the Canaries
- Identified locations at the facilities where the systems can be permanently installed
- Procured on-site long-term technical assistance
- Drawn up a "To Do" list for the design and construction of weather-hardened enclosures for each site.
- Started the ball rolling...



Des Questions?