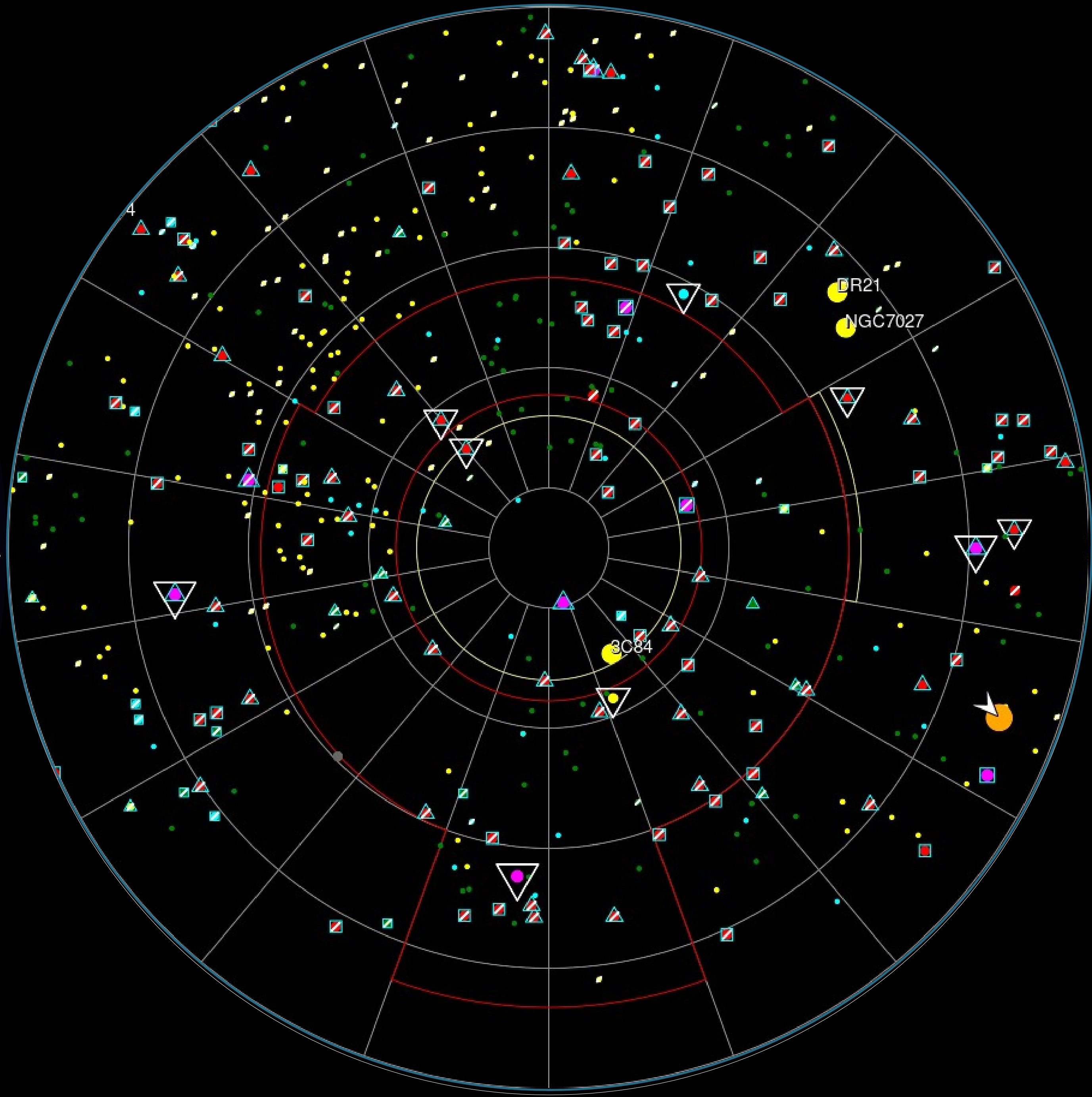
Metsähovin Radio-Observatorio

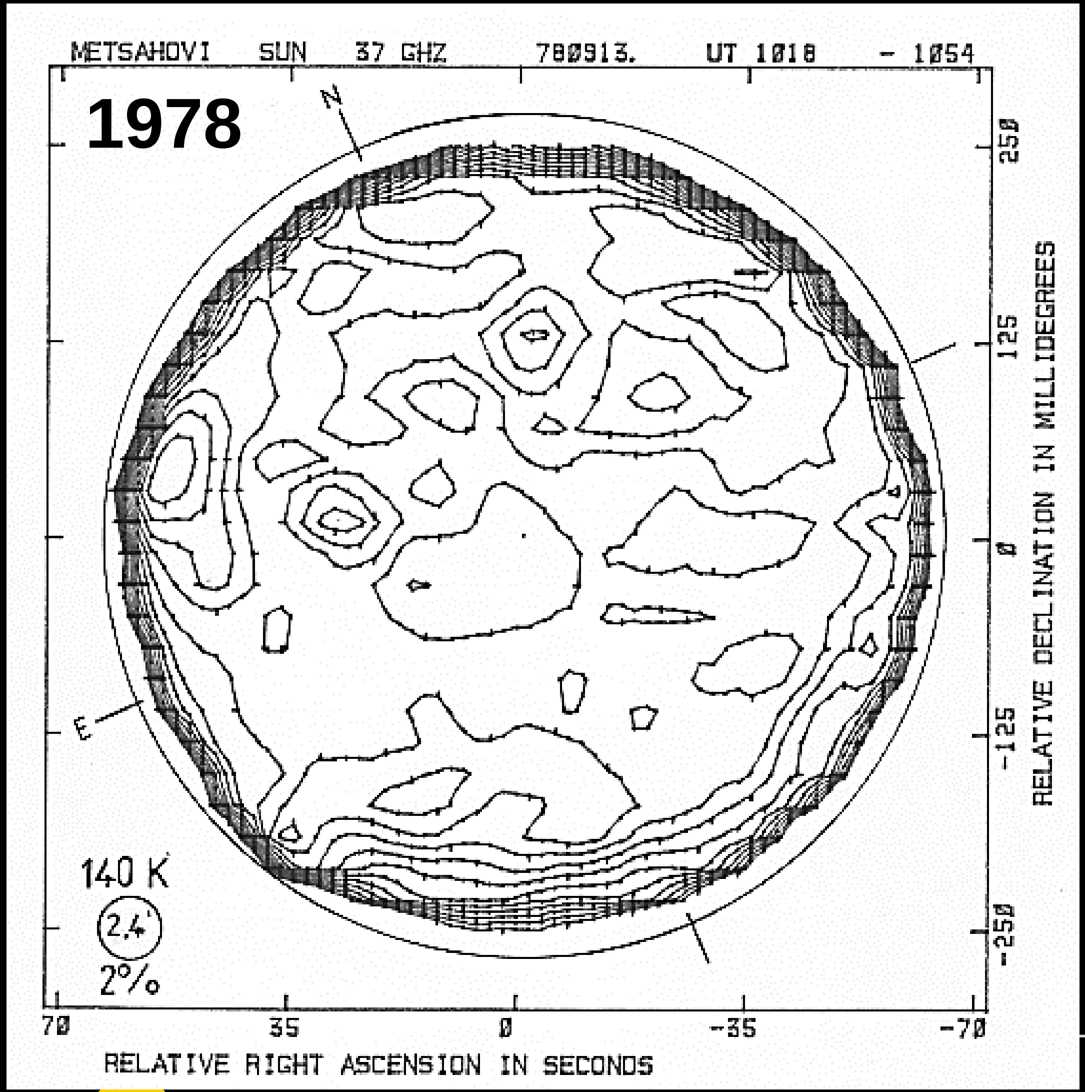
RATS VUSHF 27.5.22 Petri Kirves OH2KHX

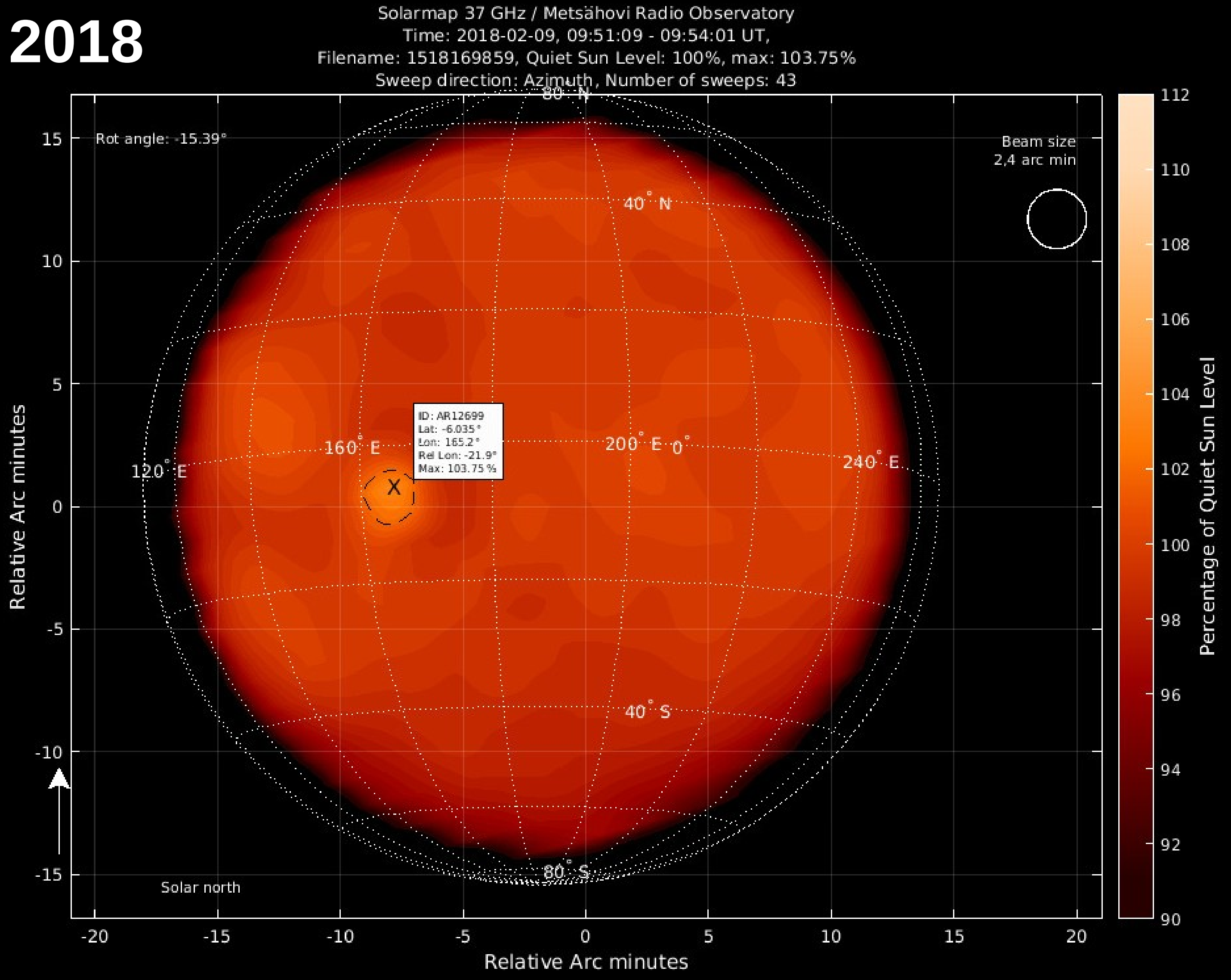

Metsähovin
tutkimuskohteet


P
POHJAN KRUUNU
KARHUNVARTIJA
LYYRA
ERENIKEN HIUKSET
AJOKOIRAT
KETTU
LOHIKÄÄRME
JOUTSEN
Otava
ISO KARHU
PIENI KARHU
KEFEUS
LEIJONA
PIENI LEIJONA
KIRAHVI
SISILISKO
KASSIOPEIA
PEGASUS
ILVES
ANDROMEDA
L
KRAPU
AJOMIES
PERSEUS
KOLMIO
KAKSOSET
KALAT
Kuu
OINAS
PIENI KOIRA
HÄRKÄ
ORION
YKSISARVINEN
VALASKALA
ISO KOIRA
JÄNIS
E

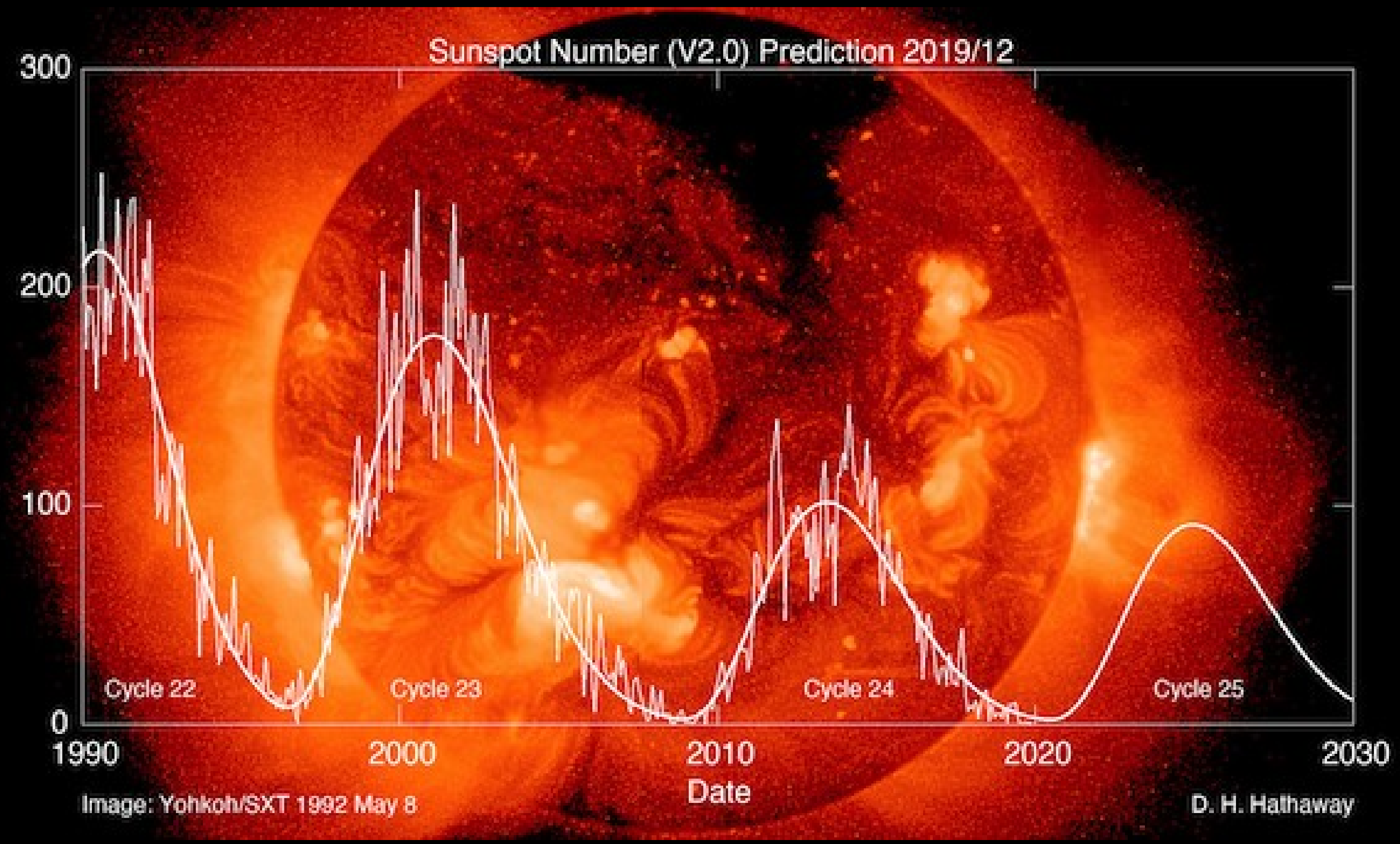

4
DR21
NGC7027
3C84

40 vuotta aurinkokarttoja



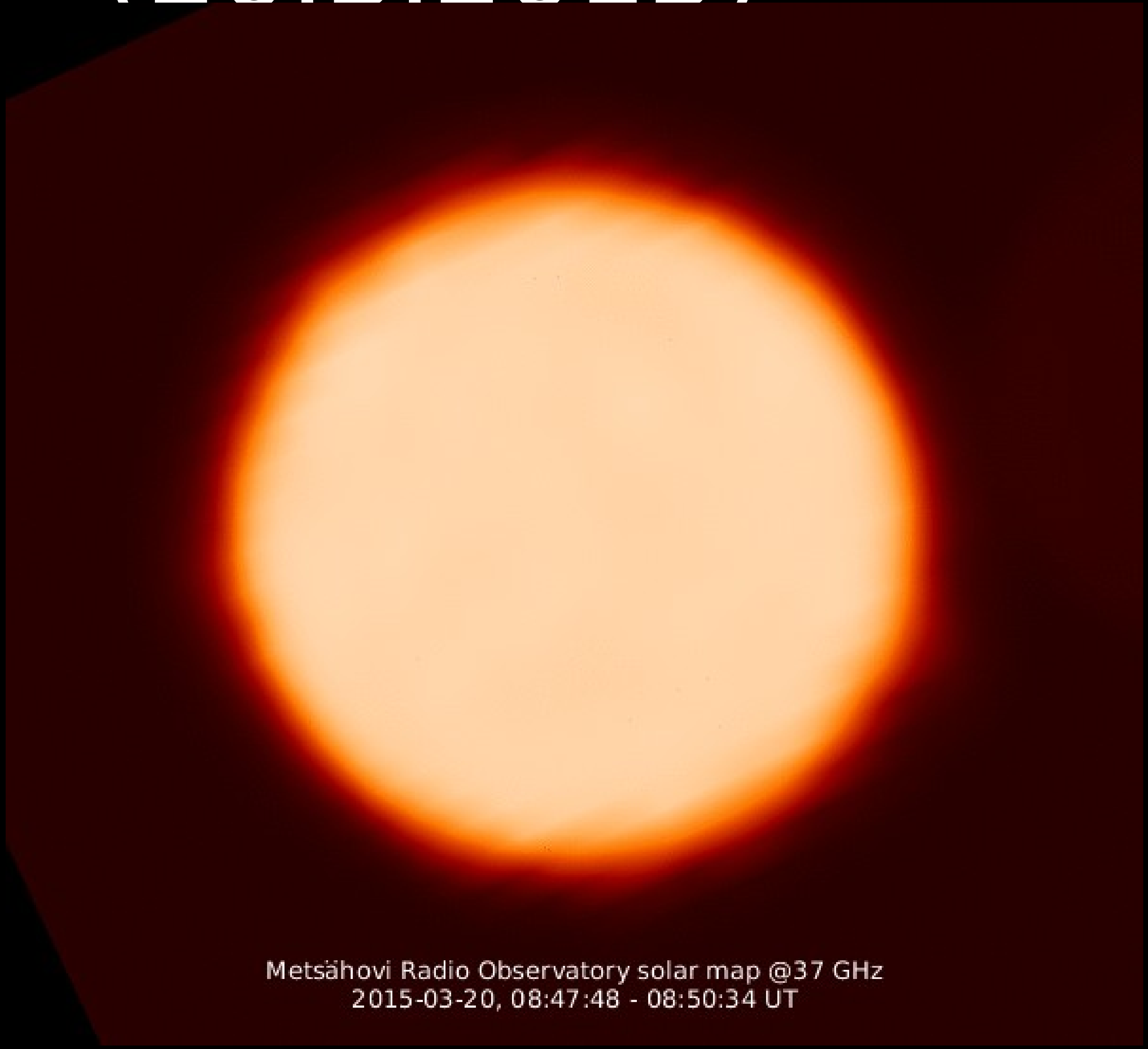


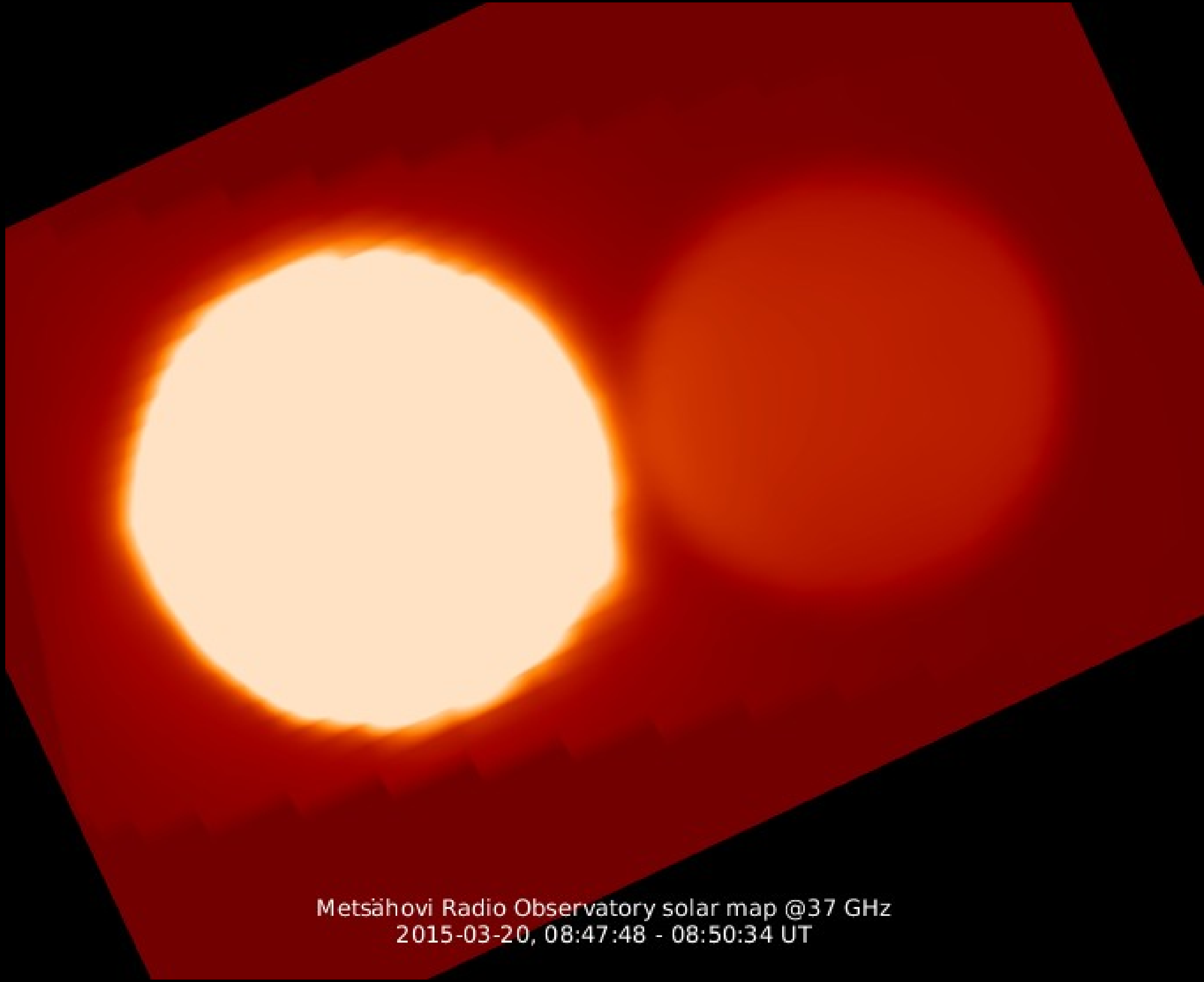
11-vuoden sykli



A selection of 5 years solar activity data
2014-2019, Metsähovi Radio Observatory

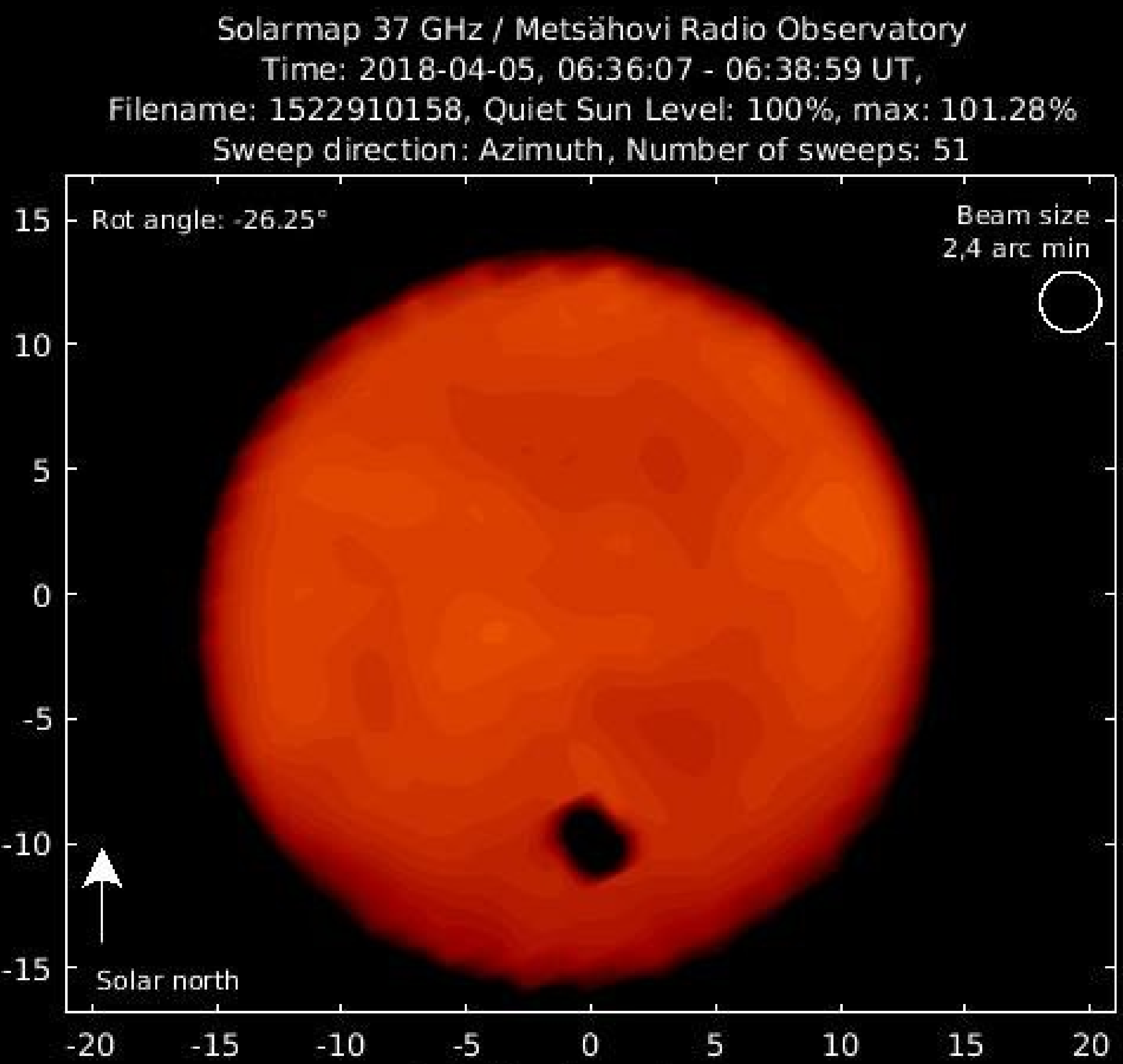
Esimerkki: Auringopimennys (20.3.2015)

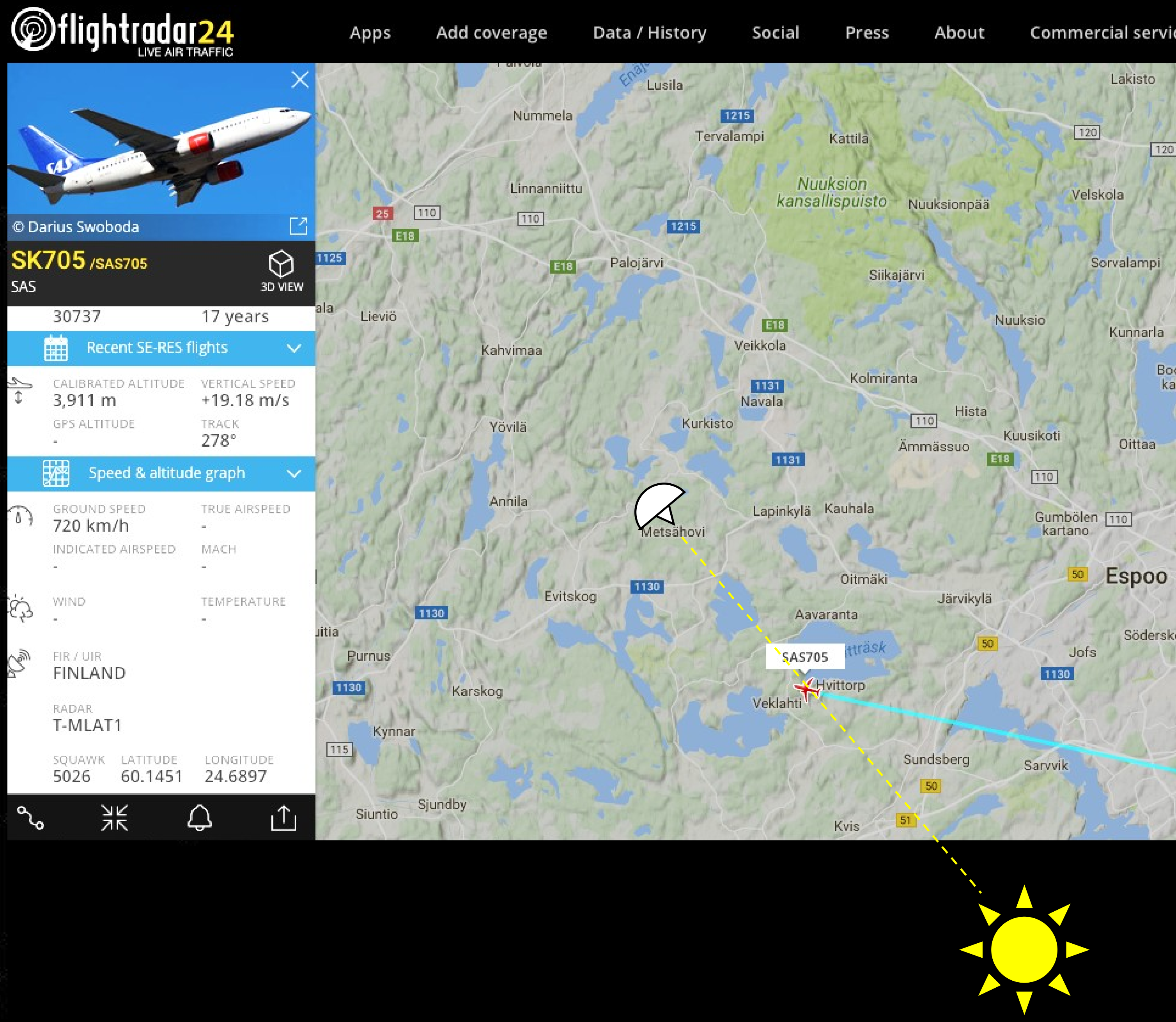


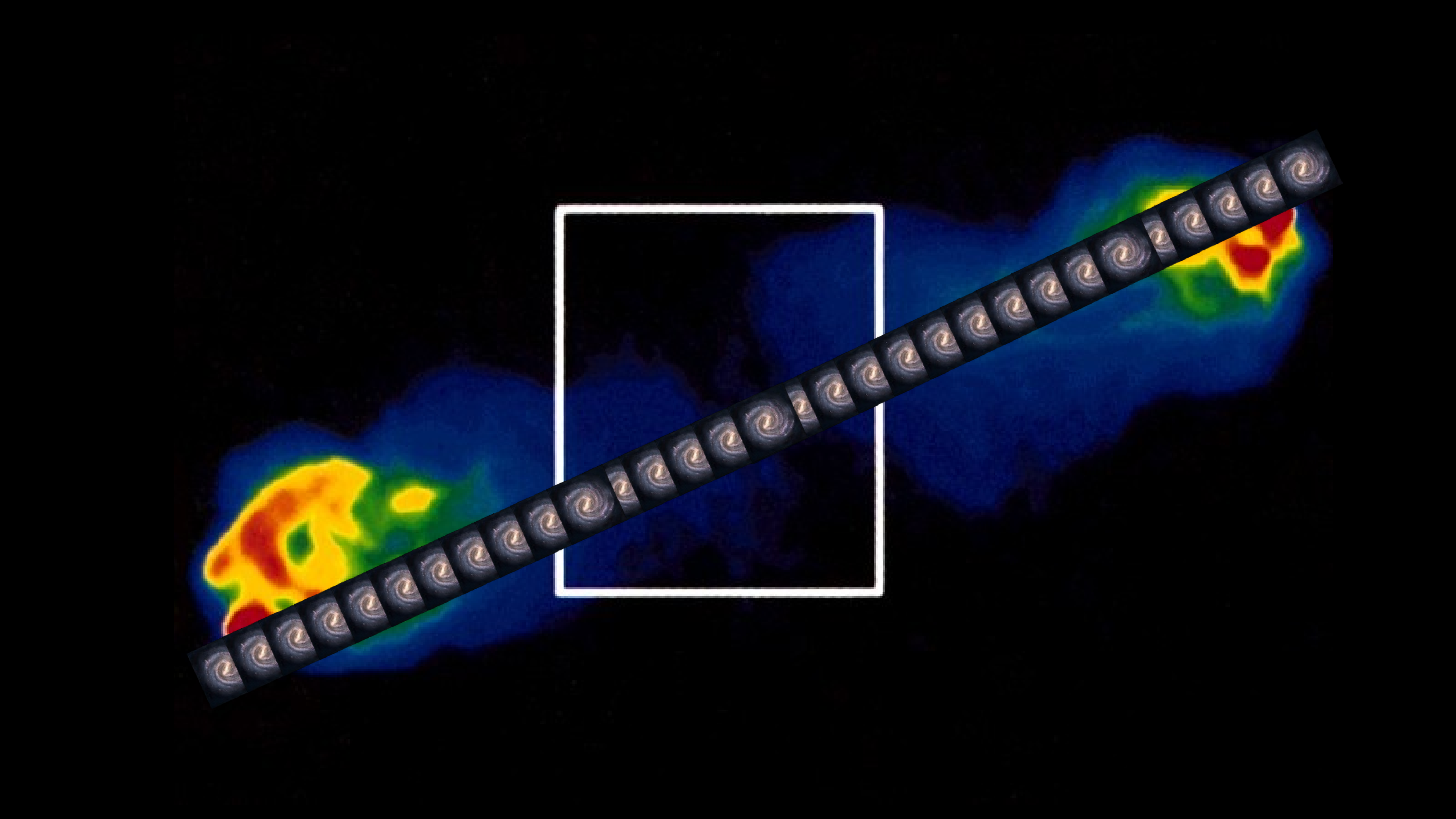


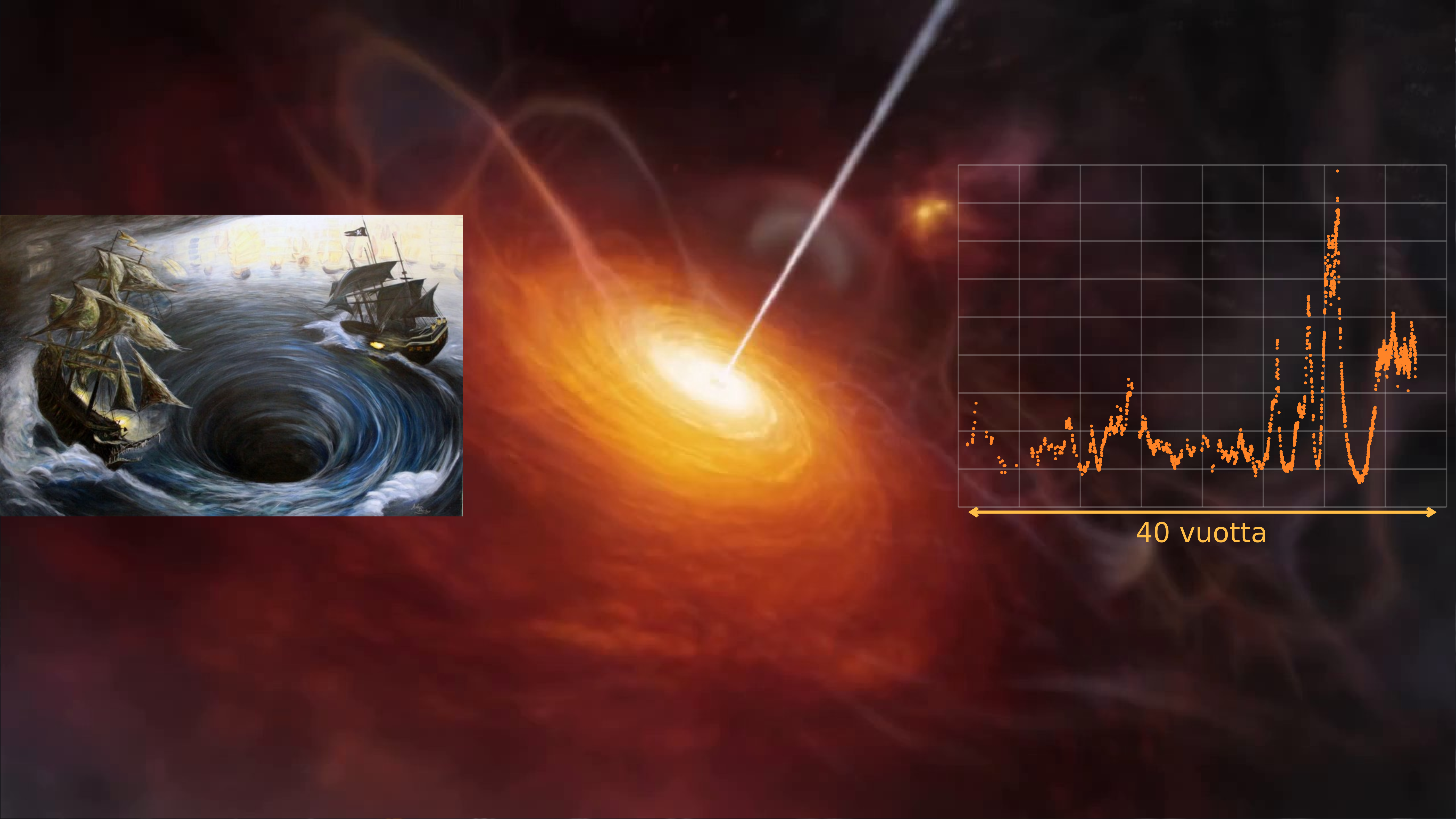
http://www.metsahovi.fi/sun/eclipse_2015/

”Partial solar eclipse” (5.4.2018)

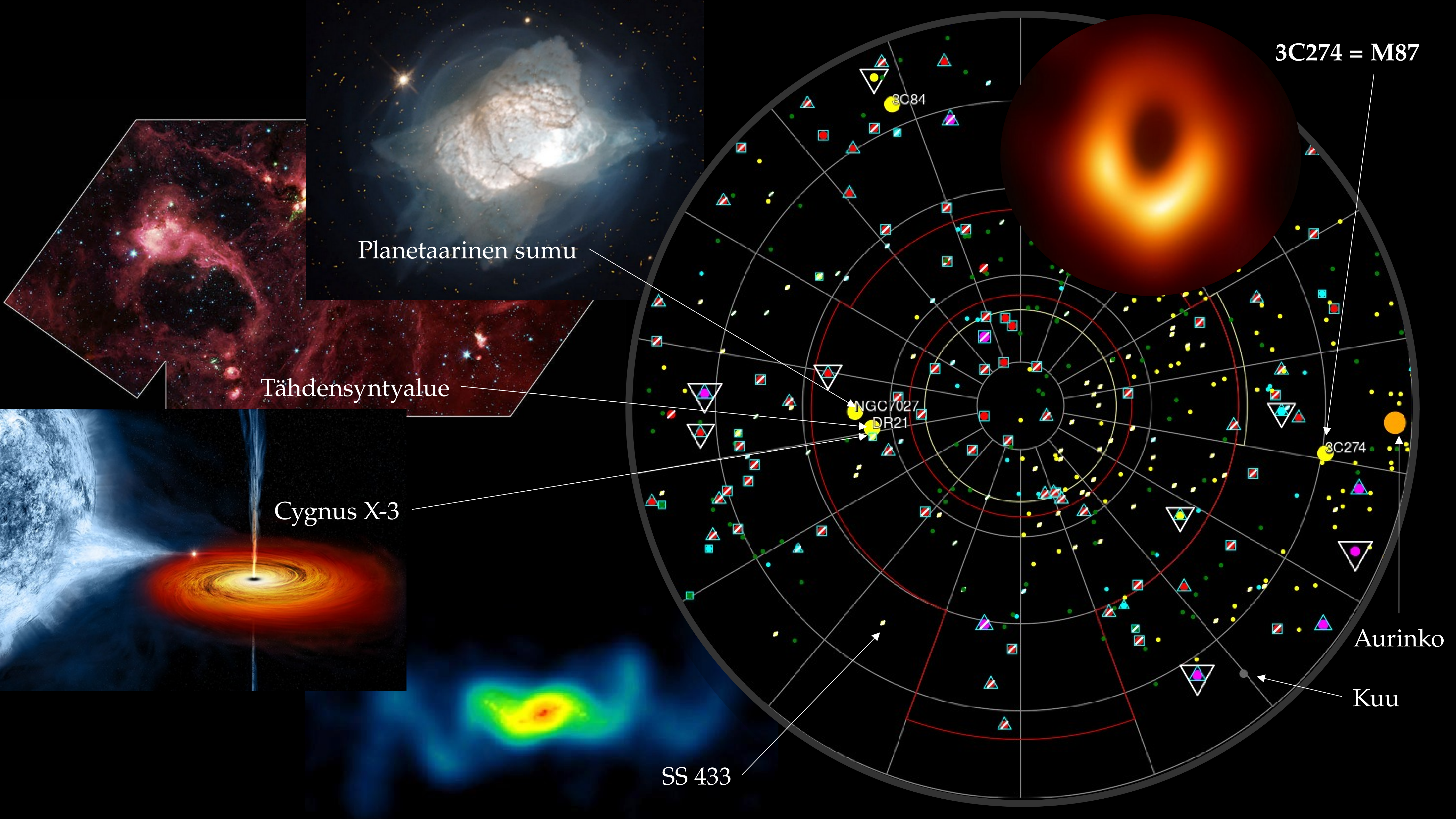




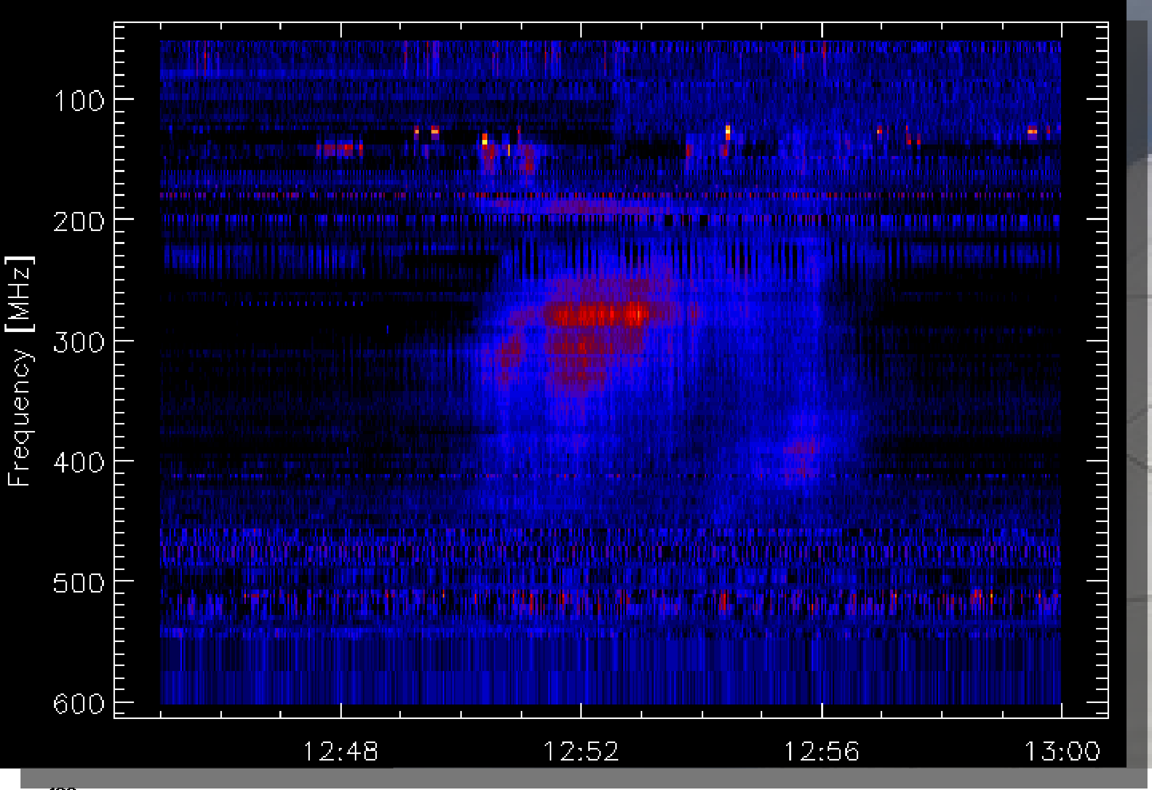


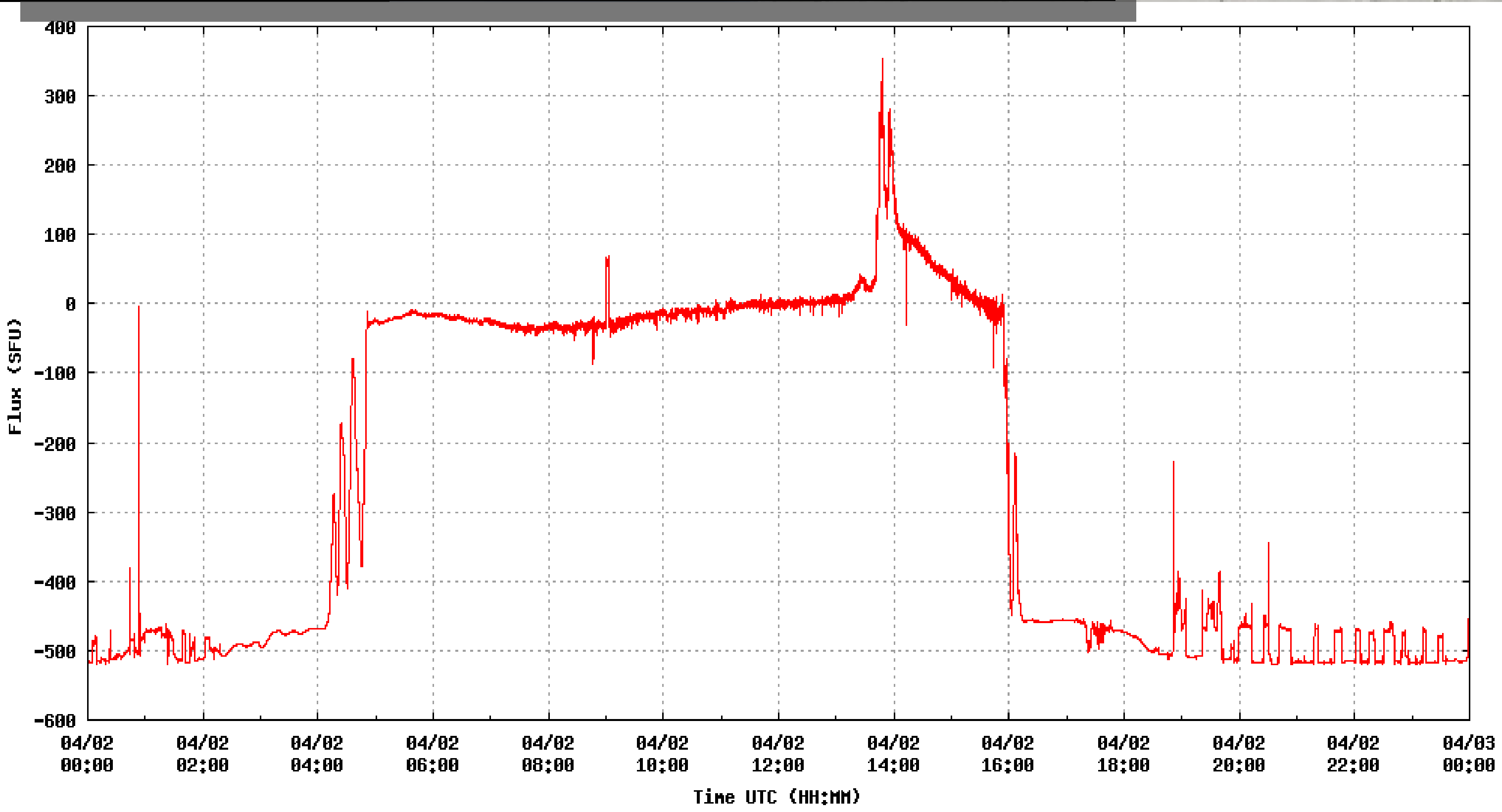

40 vuotta

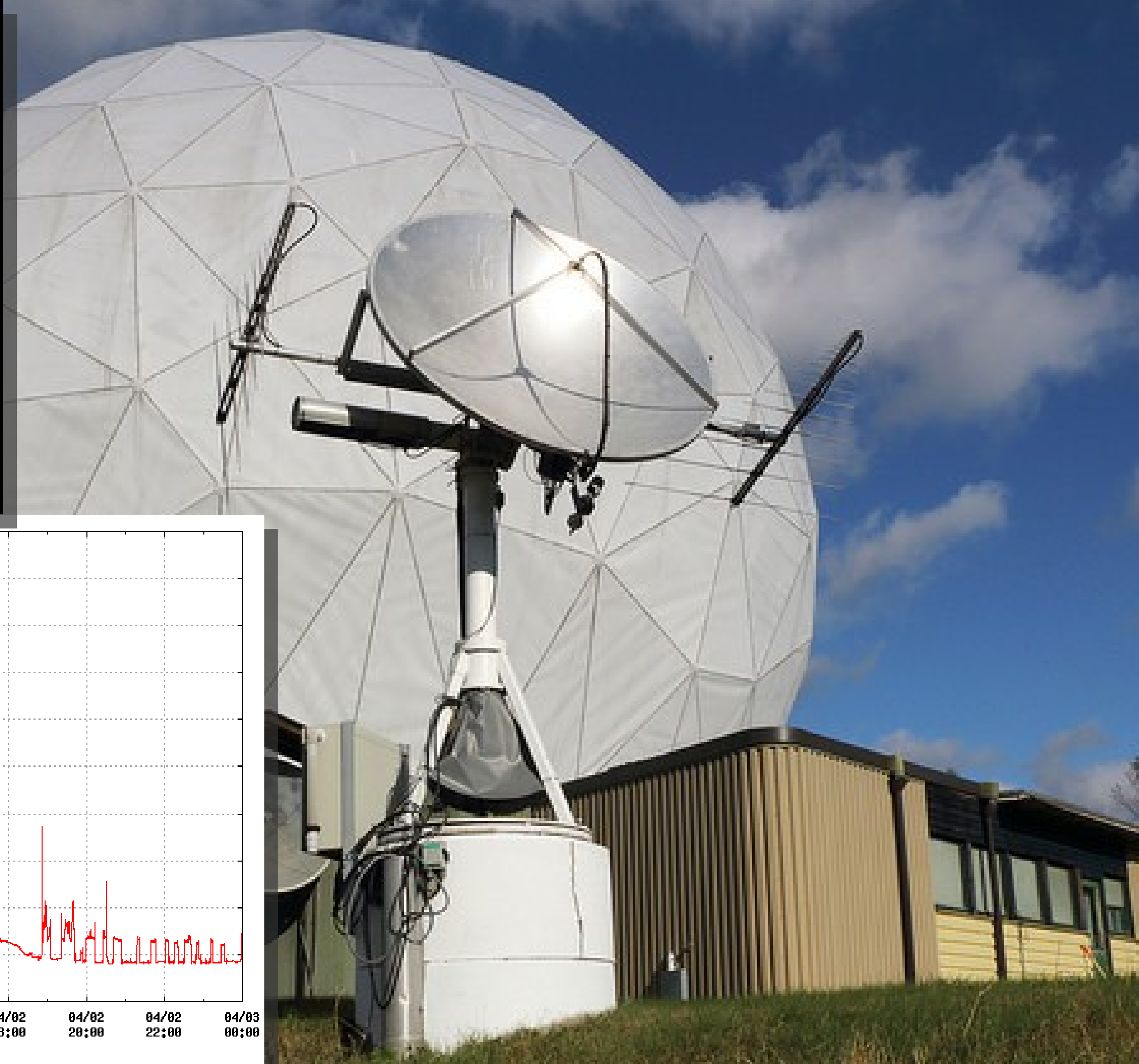

Metsähovi
Onsala
JIVE
WSRT
Torun
Svetloe
Jodrell Bank
Wettzell
Zelenchukskaya
Badary
Cambridge
Effelsberg
Medicina
Yebes
Sardinia
Noto
Urumqi
Sheshan
Arecibo
Hartebeesthoek


3C274 = M87
3C84
Planetaarinen sumu
NGC7027
DR21
Tähdensyntyalue
Cygnus X-3
3C274
Aurinko
Kuu
SS 433

Metsähovin laitteet



Frequency [MHz]
100
200
300
400
500
600
12:48
12:52
12:56
13:00


Flux (SFU)
400
300
200
100
0
-100
-200
-300
-400
-500
-600
04/02 00:00
04/02 02:00
04/02 04:00
04/02 06:00
04/02 08:00
04/02 10:00
04/02 12:00
04/02 14:00
04/02 16:00
04/02 18:00
04/02 20:00
04/02 22:00
04/03 00:00
Time UTC (HH:MM)



Metsähovi (Kirkkonummi) ja KAIRA (Kilpisjärvi)

	Time	Classification	KAIRA (MHz)	Callisto (MHz)	SFU at 11.2 GHz	% QSL at 37 GHz
1	2014 Apr 2, 13:47:44	M6.5	40–80	200–600	350	no obs.
2	2014 Apr 18, 12:53:59	M7.3	40-80	200–450	650	111.34
3	2014 Jun 10, 11:39:53	X2.2	140–190	100–400	1100	147.86
4	2014 Jun 10, 12:44:50	X1.5	140–190	non-det.	2000	156.42
5	2014 Aug 1, 14.47:22	M2.0	180–230	200–400	350	120.39
6	2014 Oct 22, 12:02:12	C3.2	35–80	non-det.	150	121.93
7	2014 Oct 23, 09:47:43	M1.1	40–60	non-det.	500	120.79

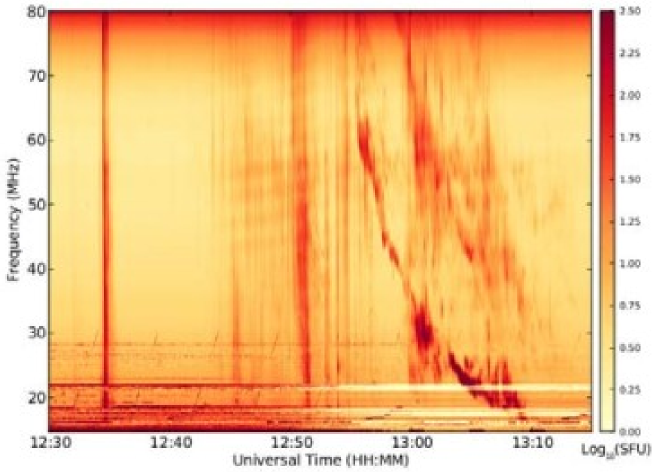


Fig. 1 KAIRA dynamic radio spectrum measured on 2014 April 18. The horizontal lines below 30 MHz are from RFI. The general band of emission across the top of the plot (> 75 MHz) is due to increasing system noise near the band edge.

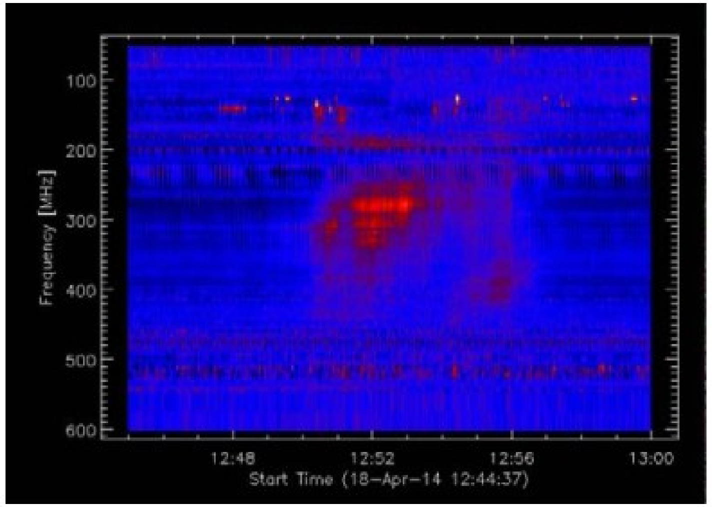


Fig. 2 Callisto dynamic radio spectrum measured on 2014 April 18. Red color indicates stronger intensity.

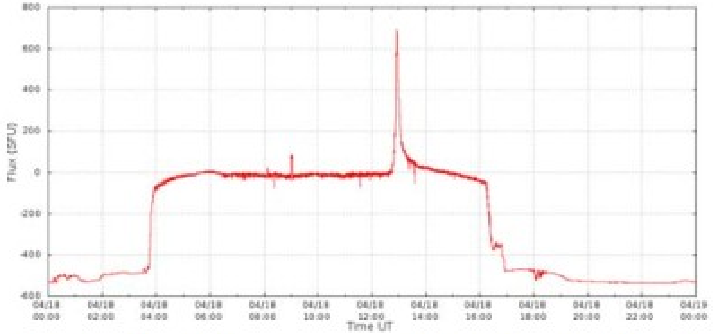


Fig. 3 Solar radio burst measured at 11.2 GHz on 2014 April 18. The smaller spike is a daily calibration.

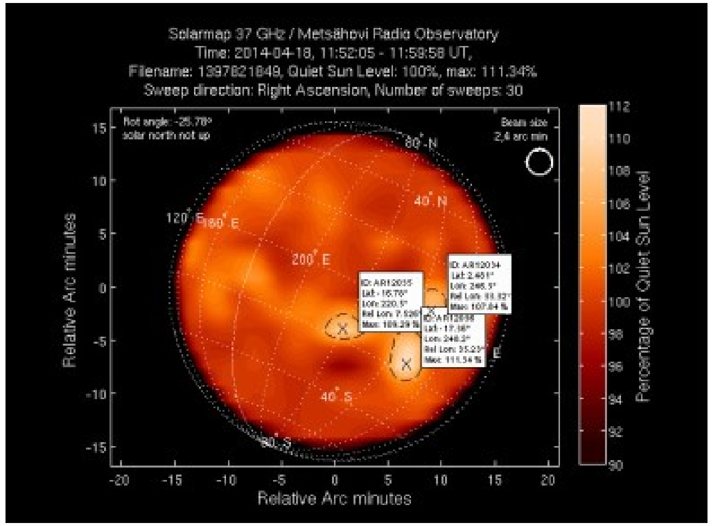


Fig. 4 Solar radio map measured at 37 GHz on 2014 April 18.

tions (Claßen & Aurass 2002), but do not follow Eq. (1) as the power-law-index differs from 1.77. Measured maximum peak flux value is about 300 SFU in Fig. 1.

J. Kallunki, M. Uunila & D. McKay-Bukowski 2015, AN 336, 566;
Multi-frequency solar observations at Metsahovi Radio Observatory and KAIRA

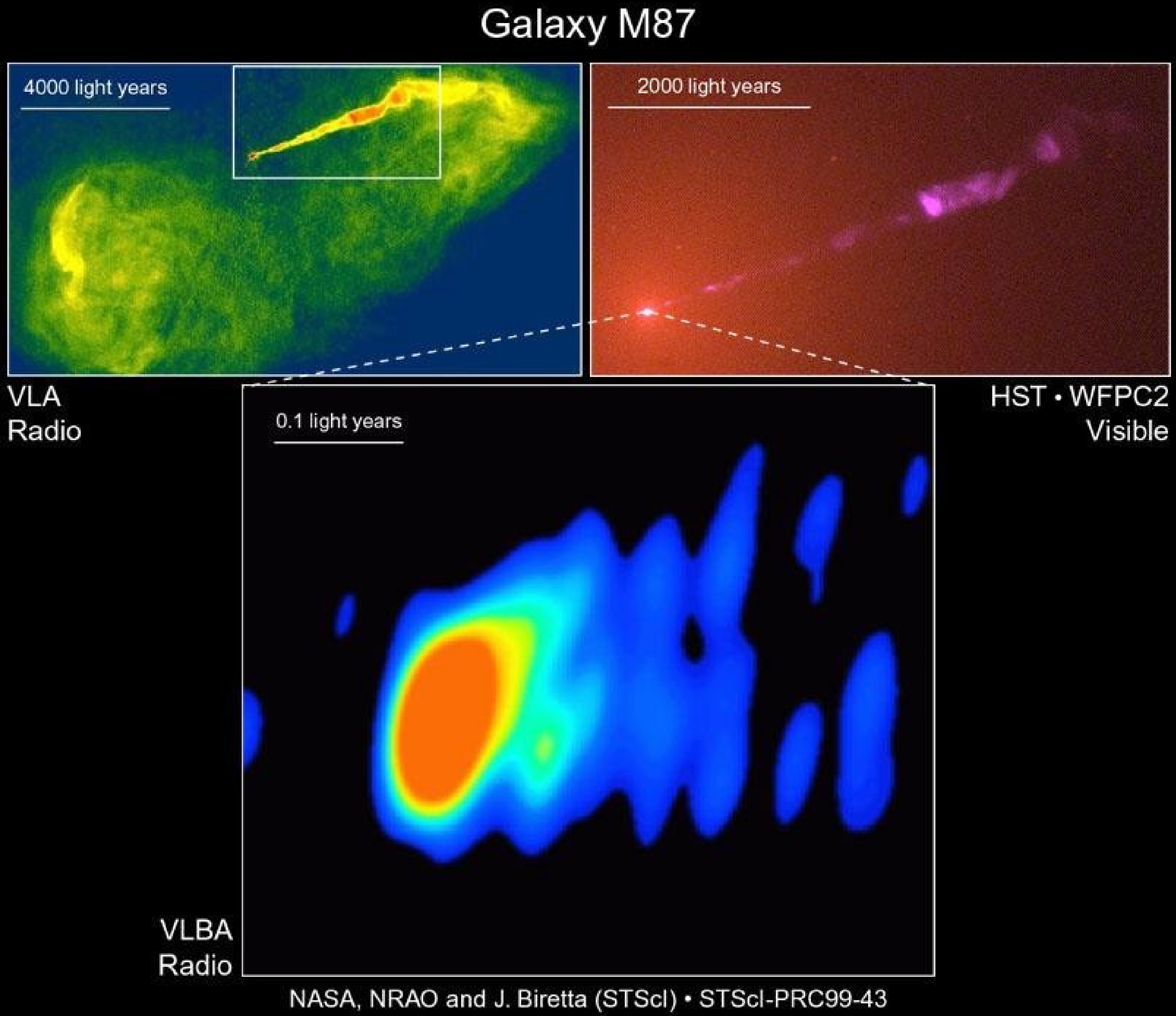
Pitkäkantainterferometria (VLBI)

Virtuaalinen teleskooppi,
yhtä suuri kuin suurin etäisyys.

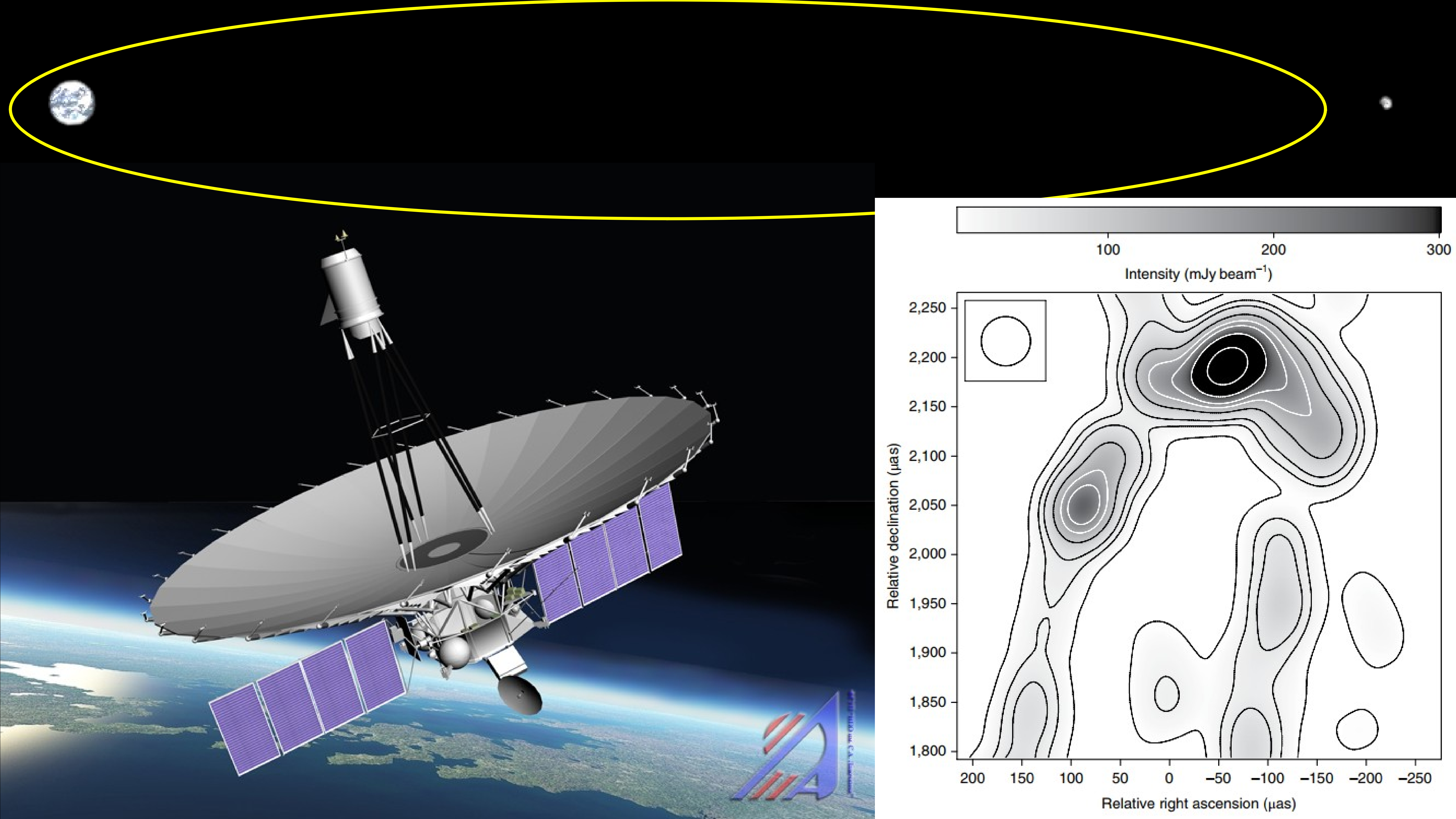
Teleskooppeja ympäri maailmaa

=> Kulmaresoluutio

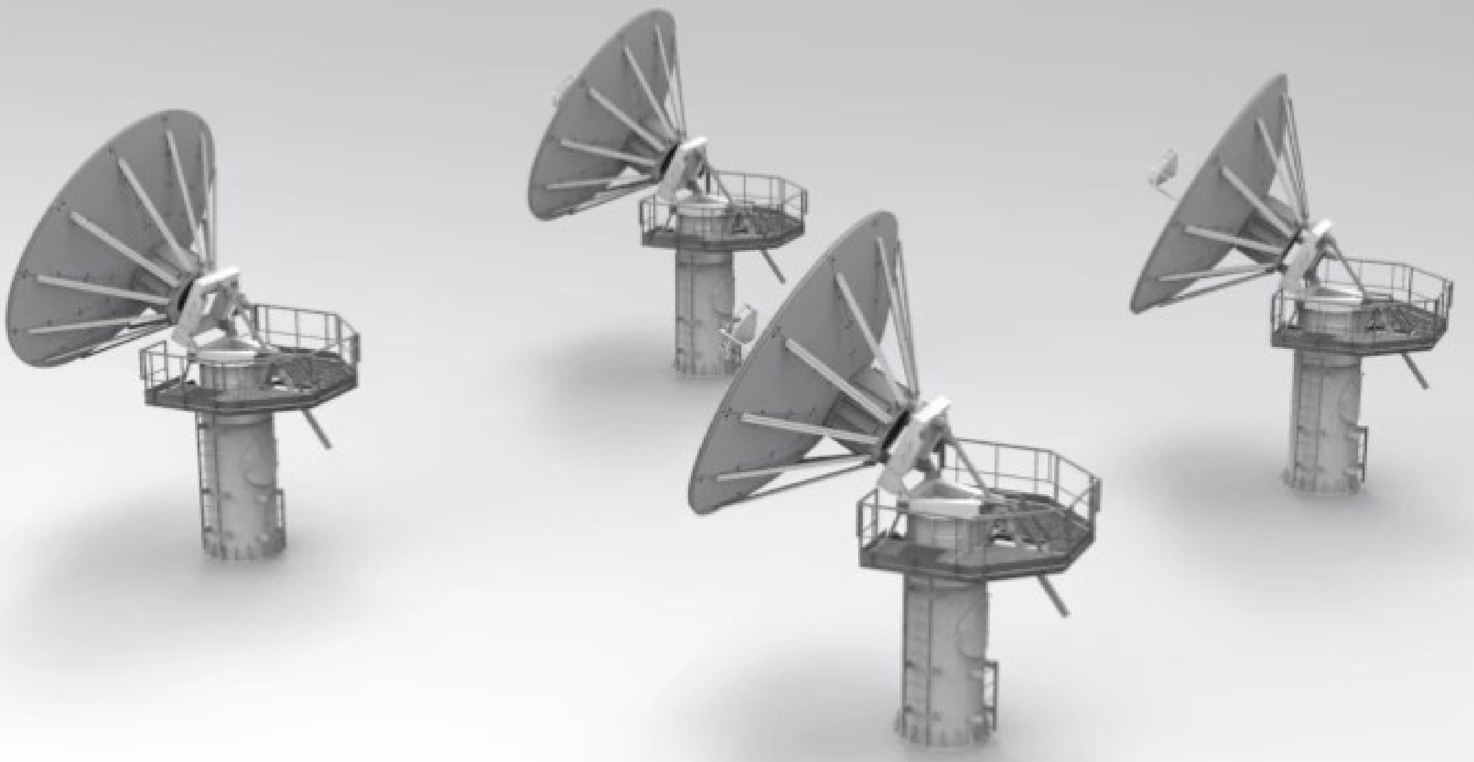
esim	0.0002“	VLBA
(vrt.	0.05”	Hubble)



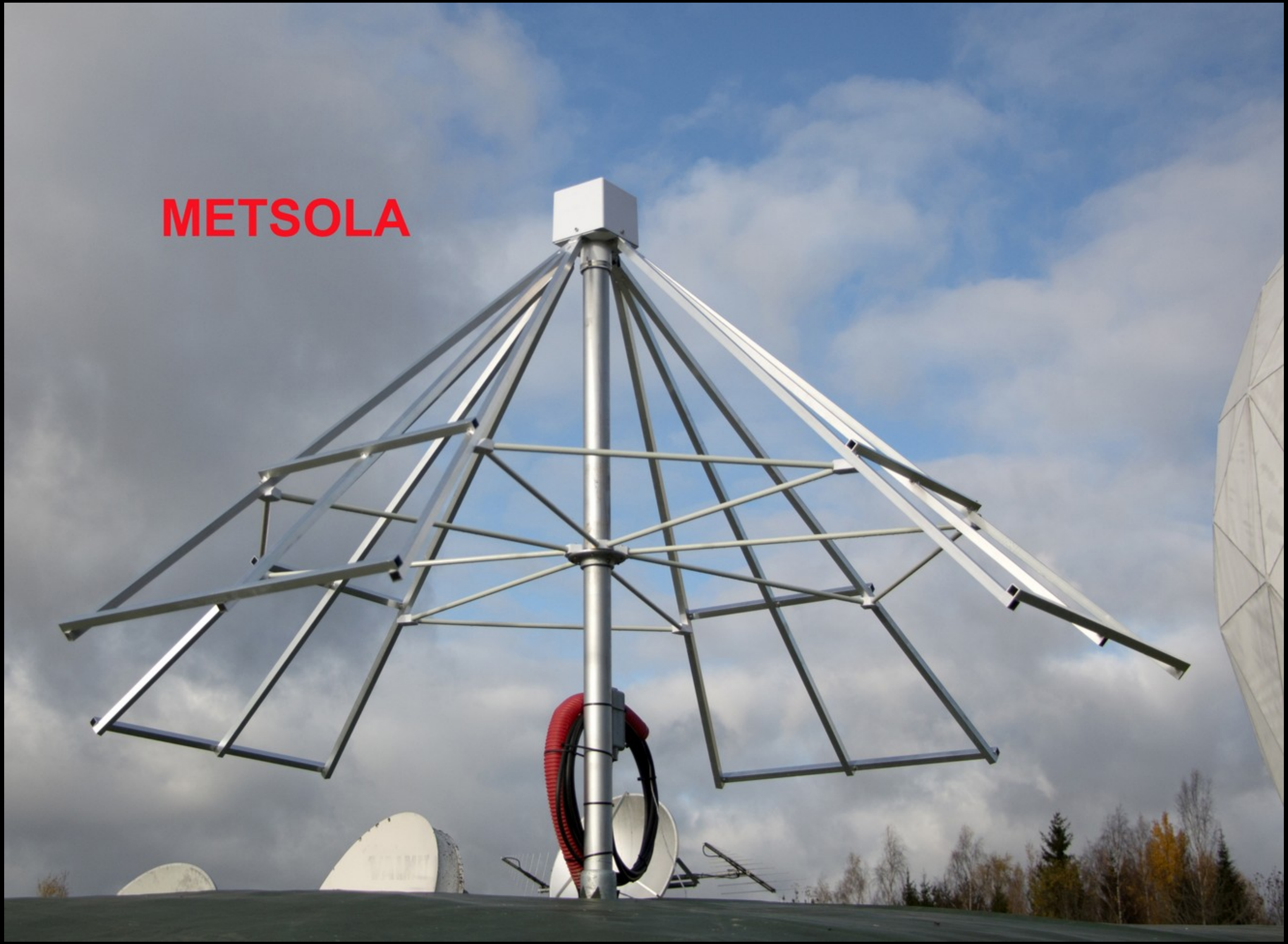

ACTIVE HYDROGEN MASER CH1-75A
ACTIVE HYDROGEN MASER CH1-75A


100
200
300
Intensity (mJy beam⁻¹)
2,250
2,200
2,150
2,100
2,050
2,000
1,950
1,900
1,850
1,800
Relative declination (μas)
200
150
100
50
0
−50
−100
−150
−200
−250
Relative right ascension (μas)

"Metsähovi Compact Array" - interferometri



Metsola low frequency antenna



Water vapour radiometer development