

15 Years Way to High Quality Solar Eclipse Photography

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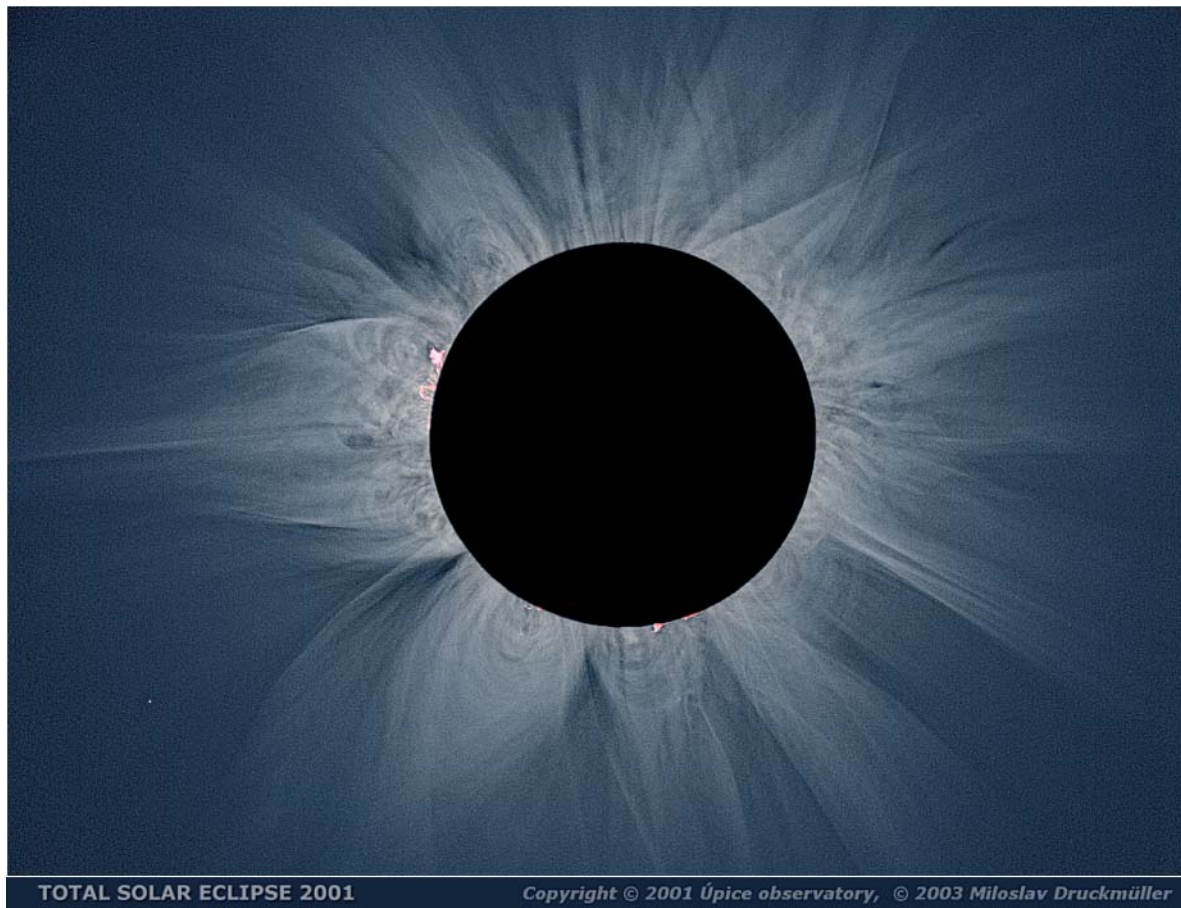
Observatory Upice, Czech Republic

Miloslav Druckmuller

Brno University of Technology, Czech Republic

Vojtech Rusin

Astronomical Institute of Slovak Academy of Sciences, Tatranska Lomnica, Slovakia



The material contained in this paper represents only part of all materials obtained by expeditions of Observatory Upice (1990 – Chukotka, Russia, 1994 – Brazil, 1995 – India, 1997, – Siberia, Russia, 1998 – Venezuela, 1999 – Hungary and France, 2001 – Angola, 2002 – South Africa, all organized by Eva Markova), Astronomical Institute of Slovak Academy of Sciences (1990 – Chukotka, Russia, 1991 – Mexico, 1994 – Chile, 1995 – India, 1997 - Mongolia, 1998 – Venezuela, 1999 – Turkey, 2001 – Zambia, 2002 – South Africa, all organized by Vojtech Rusin) and Miloslav Druckmuller (1999 – Hungary).

More detailed information and other pictures are available on web pages:

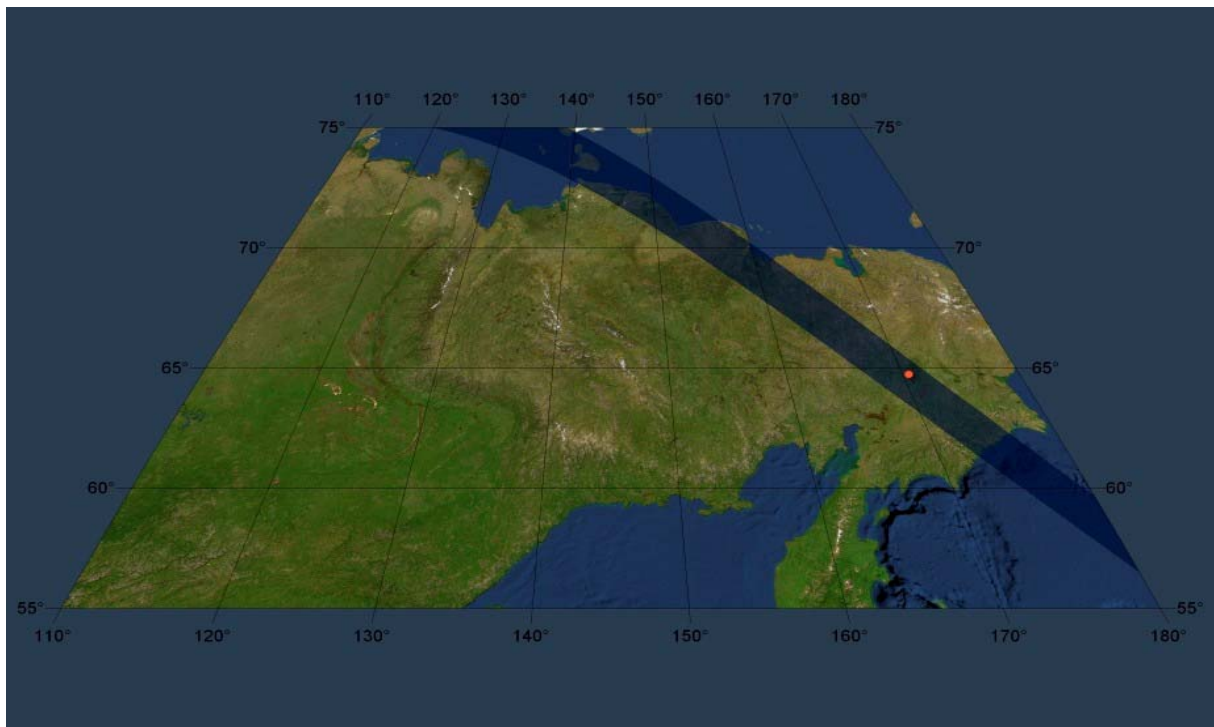
<http://www.zam.fme.vutbr.cz/~druck/Index.htm>

and

<http://www.obsupice.cz>

Total Solar Eclipse 1990

Upice Observatory Chukotka Expedition



22. 07. 1990

Second contact 03:03:06 UT, third contact 03:04:50 UT, Eclipse duration 104 s

Russia, Chukotka, Markovo village near Anadyr river, E 170° 30' , N 64° 43'

Merz 160 mm stopped down to 90 mm, focal length 1785 mm, Fortepan 400, 1/125 s - 2 s

Composition (noise optimized) of seven inner corona images and one outer corona image enhanced by means of adaptive kernel convolution. Image processing by Miloslav Druckmüller

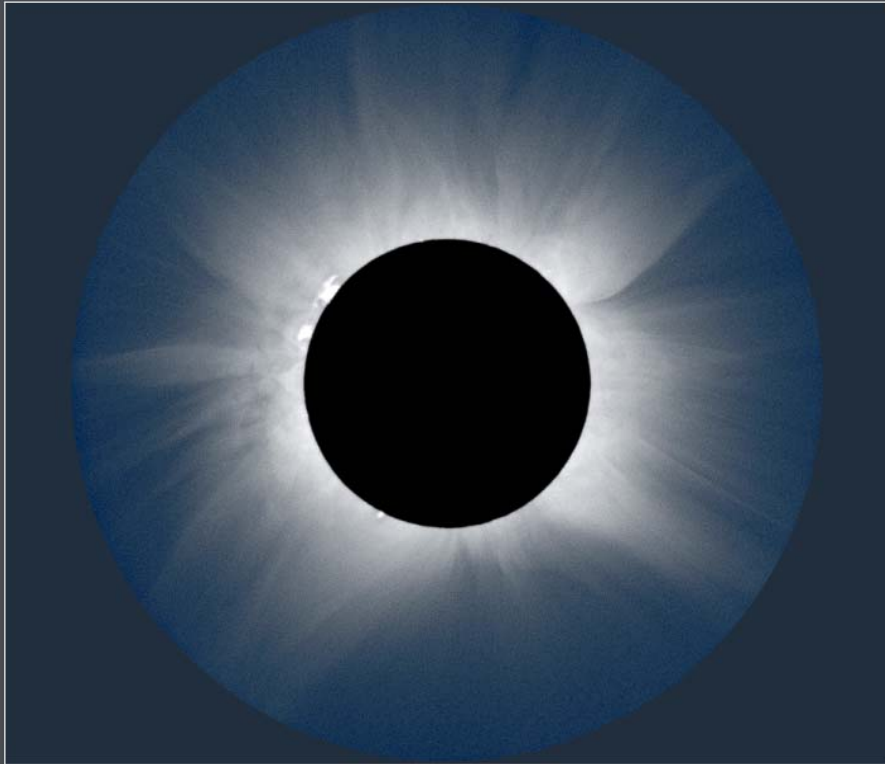
Nikon LS 8000 (4000dpi resolution, 16 bit/pixel)

Sofo ACC 6.0 Scientific Image Analyzer with Match II Module (final processing) Corona 3.0 Analyzer (coronal structure enhancement). PhaseCorr 2.0 Analyzer (rotation estimation - registration of images)

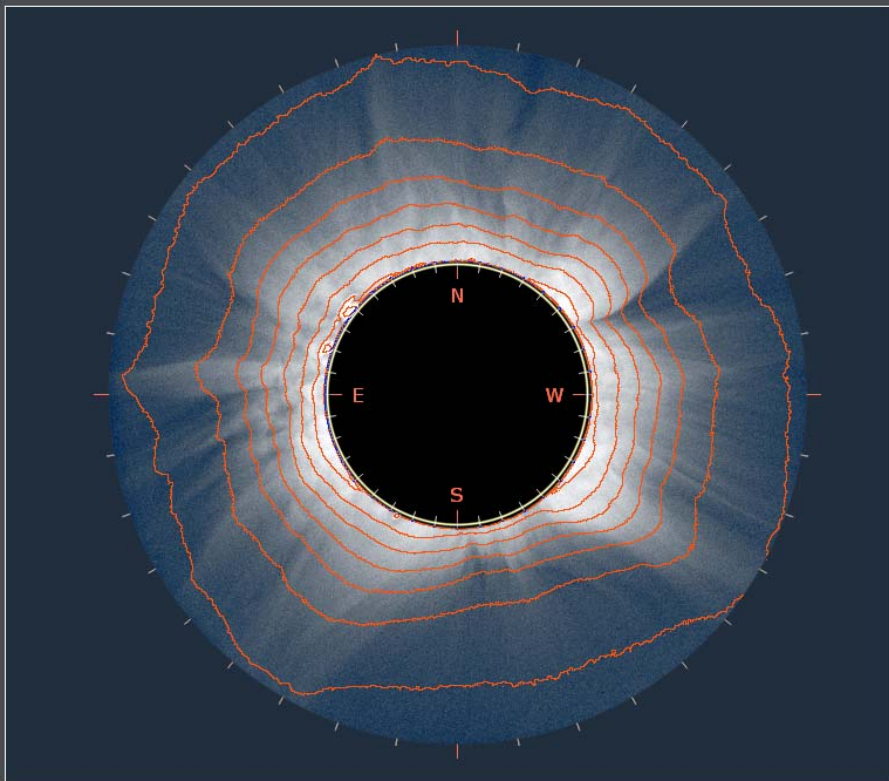
The original images are B&W, the color is added by image processing

This image has the standard orientation i.e. North on the top end East on the left

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Total Solar Eclipse 1990 © 1990 Úpice Observatory © 2004 M. Druckmüller

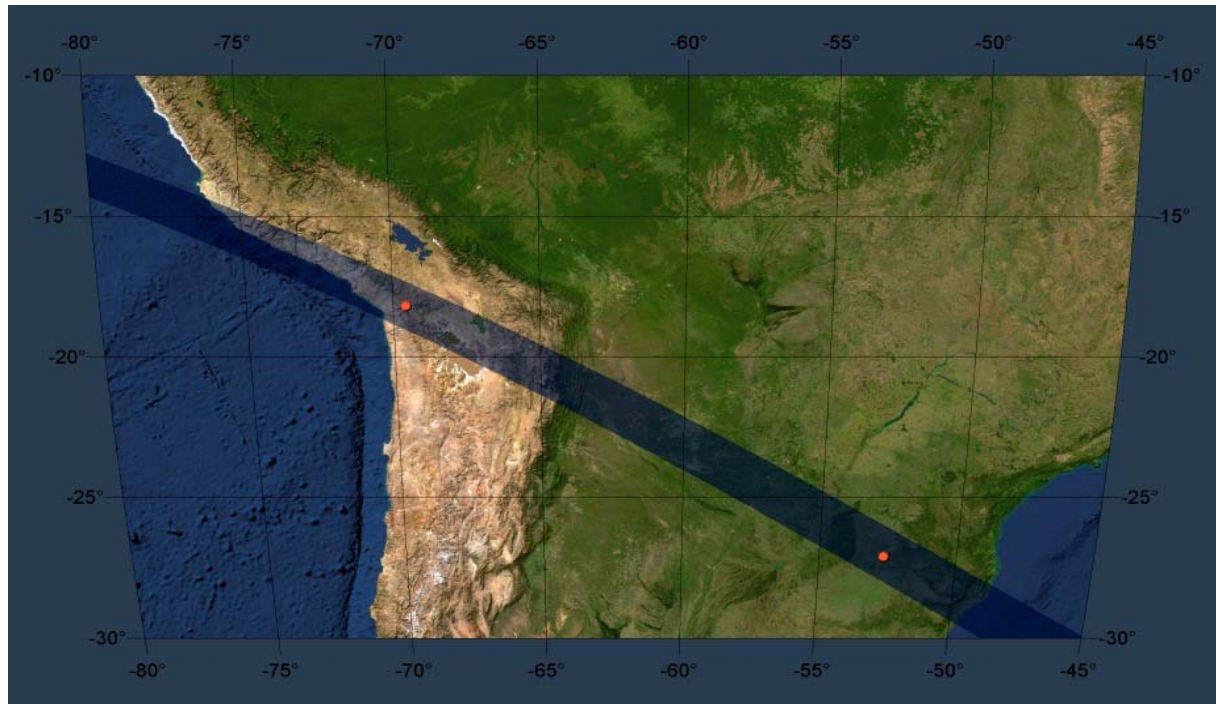


Total Solar Eclipse 1990 © 1990 Úpice Observatory © 2004 Miloslav Druckmüller

Total Solar Eclipse 1994

Chile and Brazil

Expeditions organized by Vojtech Rušin and Úpice



3. 11. 1994

Brazil: 2nd contact 12:50:58 UT, 3rd contact 12:54:50 UT, Brazil near Chapecó, 52° 39' 37" W, 27° 05' 39" S, Alt. 725m

Clear sky (Sun 55° above the horizon)

Mertz 100/1875mm, Kodak TRI-X Pan, 60x60mm B&W film, Nikon Super Coolscan 8000 ED

Chile: 2nd contact 12:18:17 UT, 3rd contact 12:21:19 UT, Chile, Putre, 69° 33' 33" W, 18° 11' 22" S, Alt. 3479m

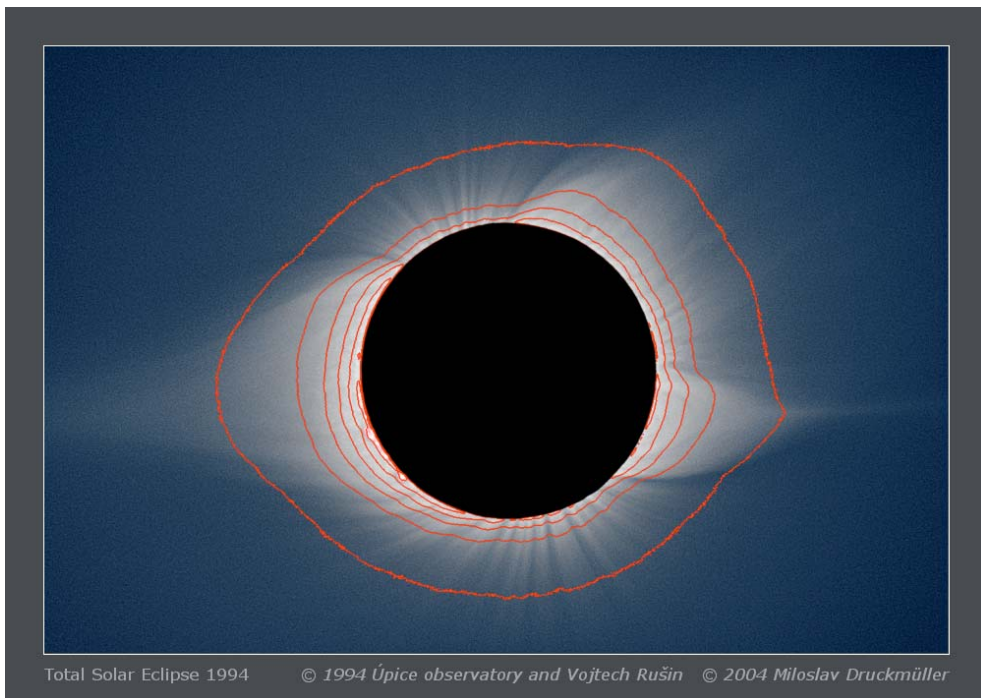
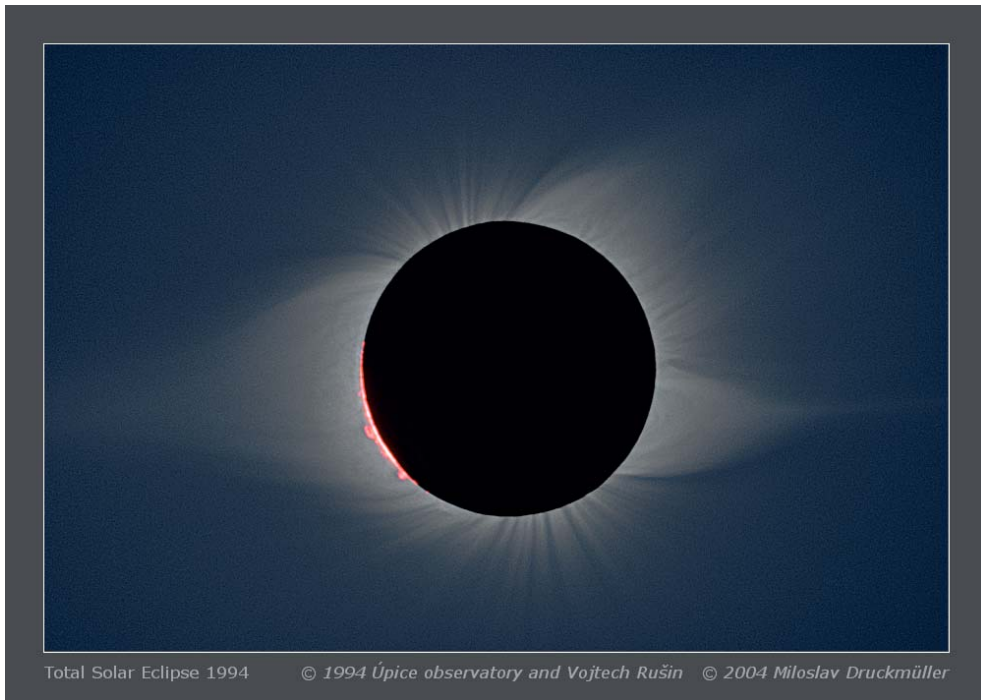
High cirrus clouds (Sun 32° above the horizon)

Maksutov - Cassegrain MTO 1050/1100mm, Kodak Ektachrome Elite 100 (EB), 24x36mm slide film, Nikon Super Coolscan 4000 ED

Images from both Brasil and Chile were used for creation of this image. Images were aligned by means of phase correlation technique and then processed using Corona 3.0 software by means of adaptive kernel convolution. Final processing was done in ACC 6.0.

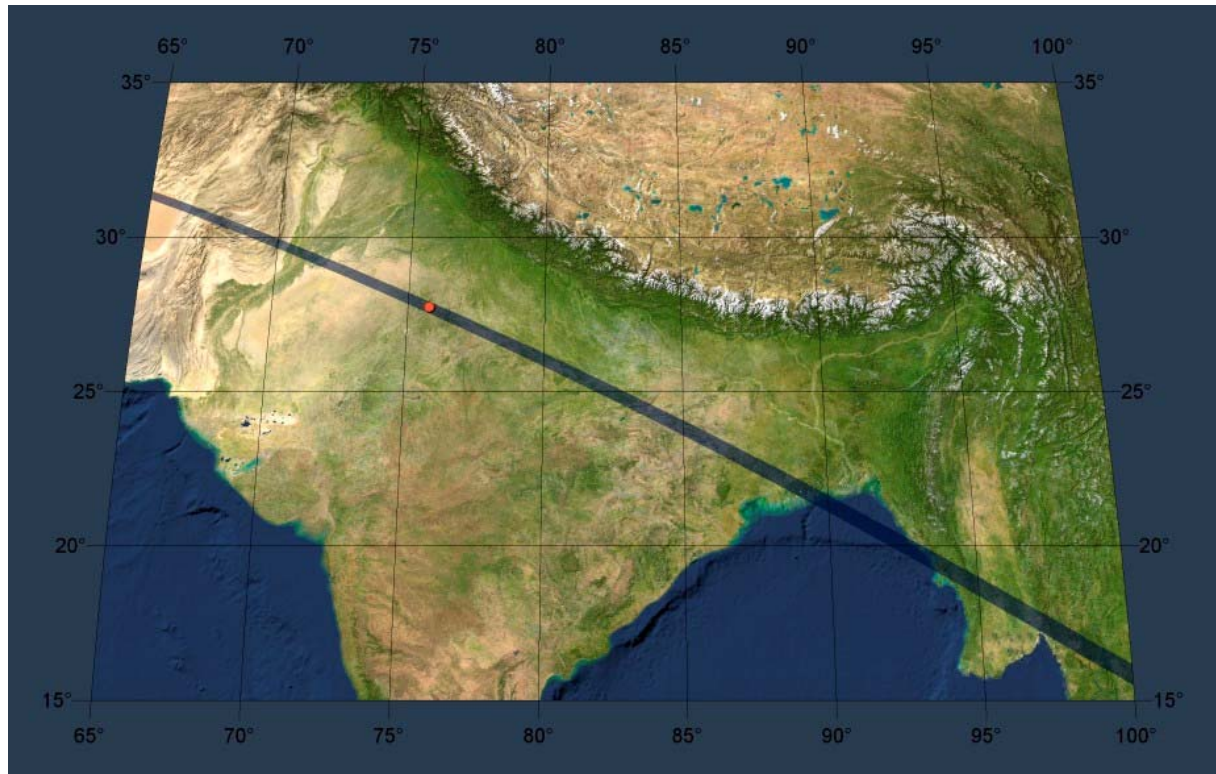
Image processing by Miloslav Druckmüller

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Total Solar Eclipse 1995

India, Expedition organized by Vojtech Rušin



24. 10. 1995

Second contact: 03:02:43 UT, third contact 03:03:33 UT, Total eclipse duration 50s

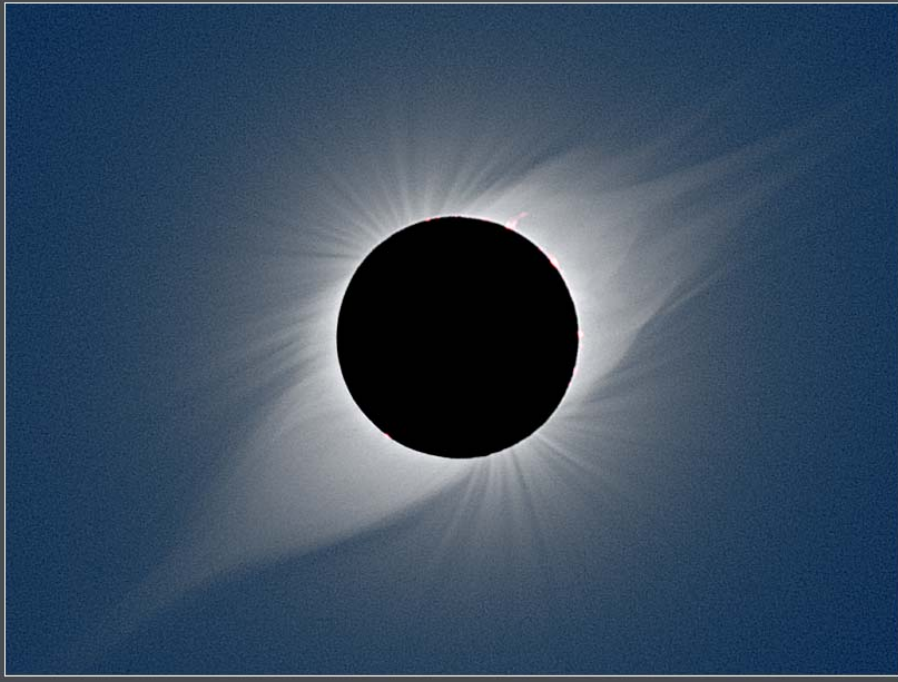
India (Rajasthan), Nim Ka Thana, N 27° 44', E 75° 48'

8/500mm lens, Kodak Ektachrome 100 Plus (5005 EPP), 24×36mm, 1/30, 1/15, 1/8, 1/4, 1/2, 1, 2, 4 s, Nikon Super Coolscan 4000 ED (16x multisample, 4000 dpi)

Composition of 8 images. Images were aligned by means of phase correlation technique and then processed using Corona 3.0 software by means of adaptive kernel convolution. Final processing done in ACC 6.0. Image processing by Miloslav Druckmüller

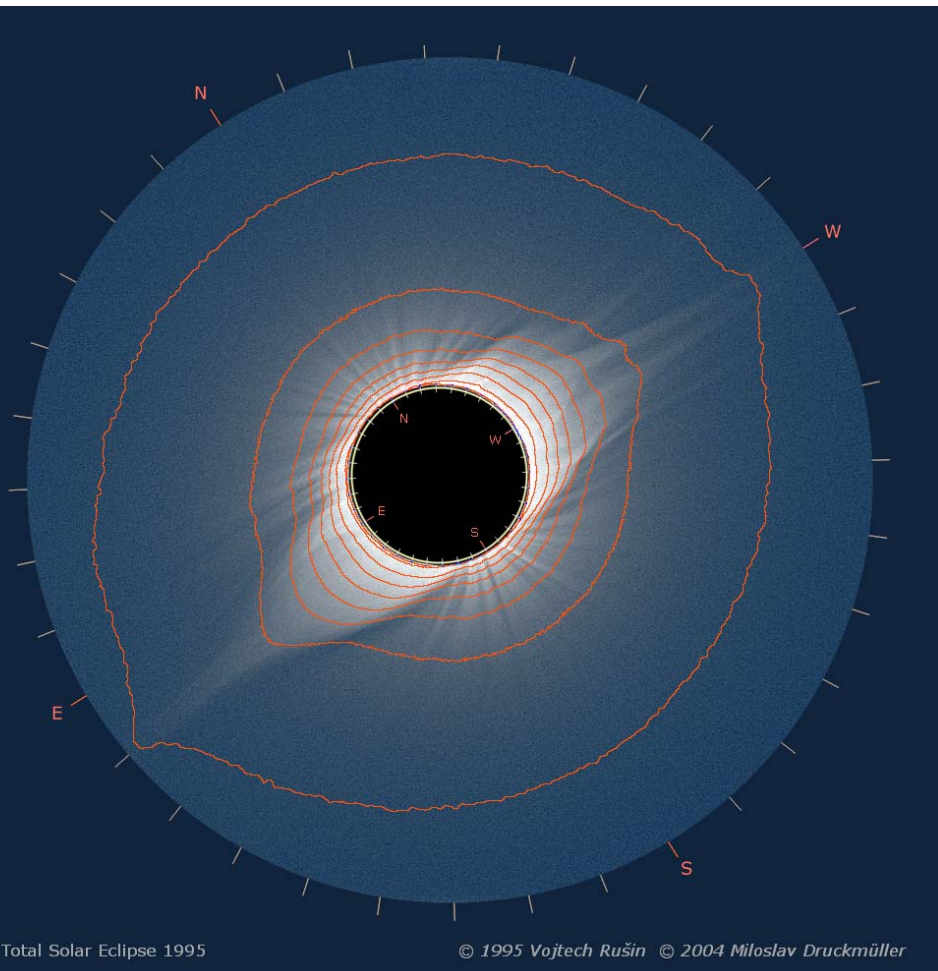
The image must be rotated 32° clockwise to achieve the standard orientation
i.e. North top, East left

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Total Solar Eclipse 1995

© 1995 Vojtech Rušin © 2004 Miloslav Druckmüller

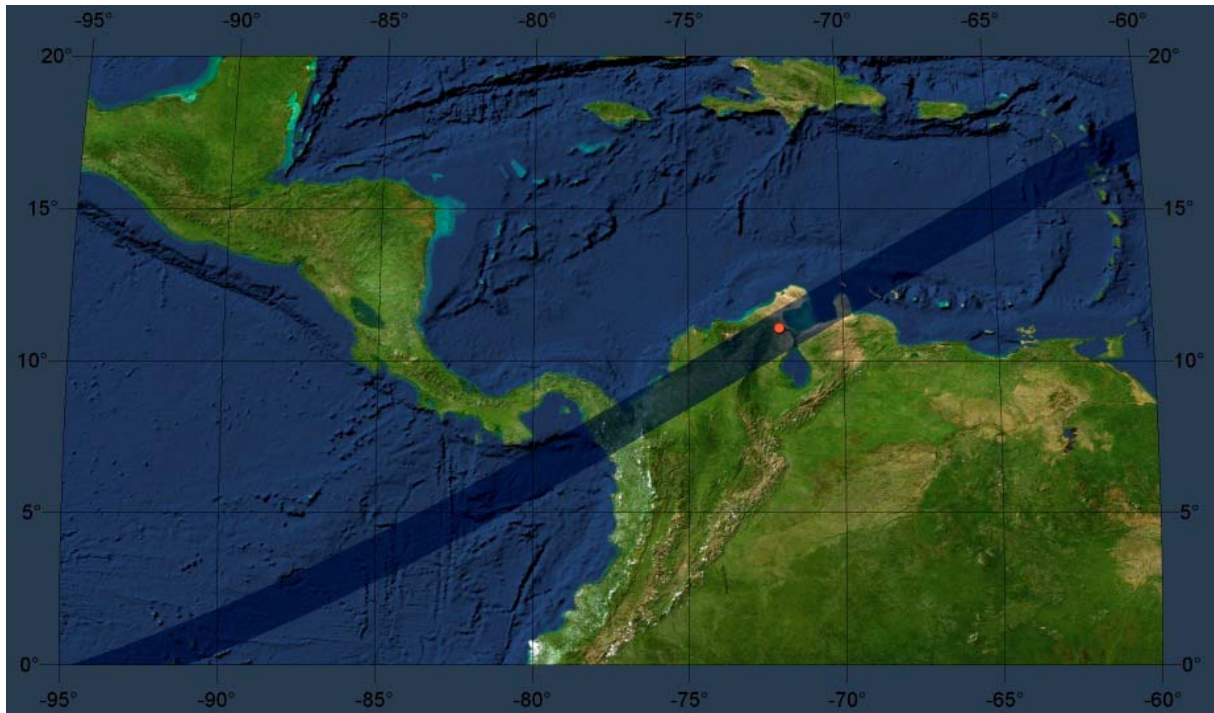


Total Solar Eclipse 1995

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Total Solar Eclipse 1998

Venezuela Expedition organized by Úpice observatory and Vojtech Rušin



26. 2. 1998

2nd contact 18:04:55 UT, 3rd contact 18:08:45 UT

Venezuela, Don Bosco Mission near Maracaibo, 11° 03' 52" N, 72° 03' 05" W
Clear sky - the weather was nearly hopeless but the sky cleared just before eclipse.

Altitude of the Sun was 65° above the horizon.

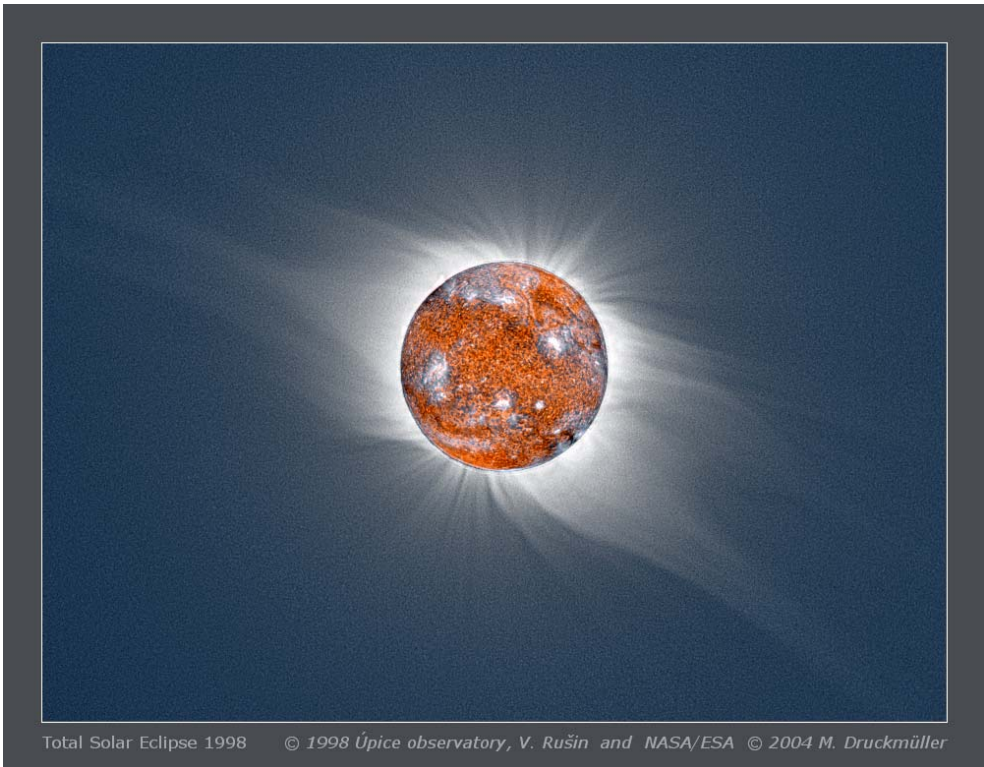
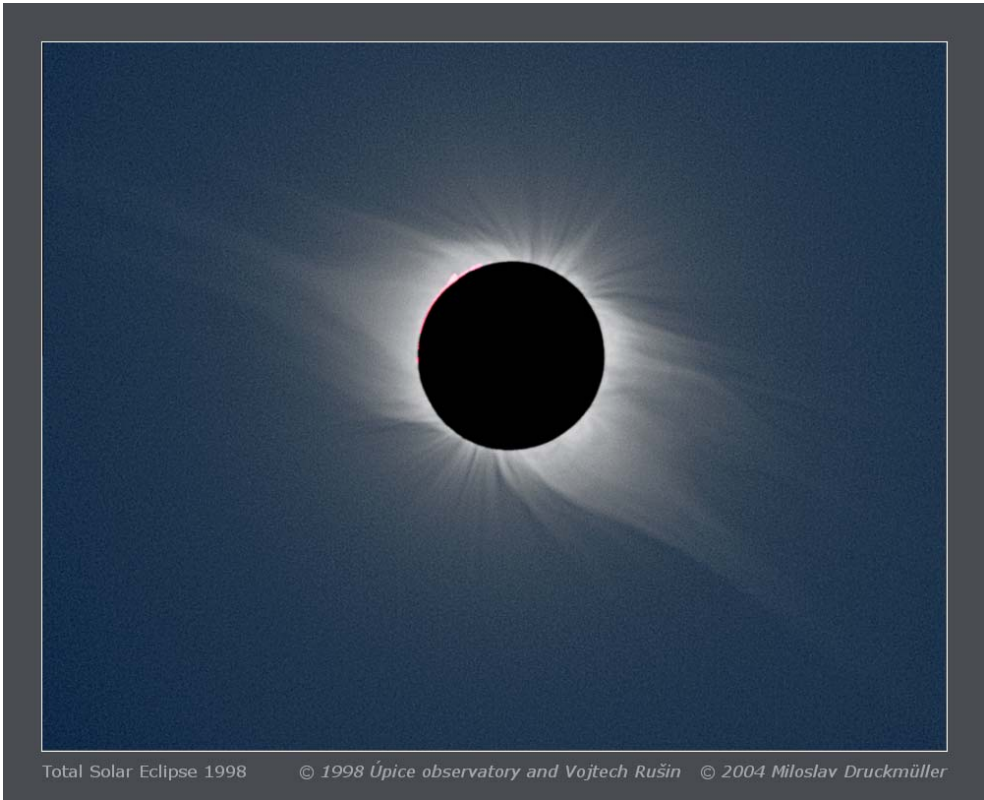
Rubinnar 5.6/500mm, Fujicolor Superia 200, 24x36mm, Nikon Super Coolscan 4000 ED (16x multisample, 4000 dpi)

Composition of 15 images. Images were aligned by means of phase correlation technique (PhaseCorr 3.0) and then processed using Corona 3.0 software by means of adaptive kernel convolution. Final processing done in ACC 6.0. Image processing by Miloslav Druckmüller

The image must be rotated 20.3° anticlockwise to achieve the standard orientation
i.e. North top, East left

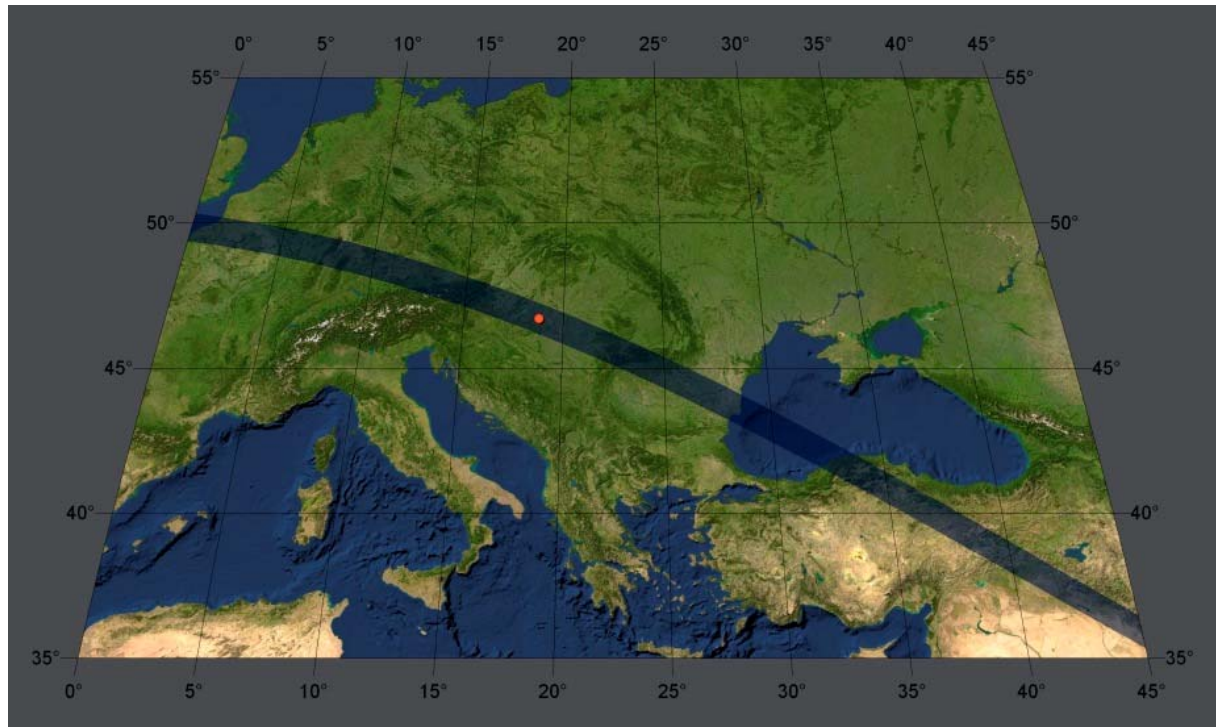
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The next one figure is combined with SOHO EIT picture (SOHO is a project of international cooperation between ESA and NASA): the part of corona hidden by the Moon was created a pseudocolor image from a pair of SOHO EIT images. The hot corona is displayed on the 19.5 nm image and it was colored by using the blue-white color near to the appearance of the solar corona during the eclipse on the blue sky. The lower and colder gas layer displayed on the 30.4 nm image was colored using the orange hue. We obtained the image in which the transparent holes in corona are orange. The dense parts of hot corona are of the blue-white color, which corresponds the appearance in visible light.



Total Solar Eclipse 1999

Hungary, Németkér Expedition organized by Miloslav Druckmüller



11. 08. 1999

second contact 10:50:37 UT, third contact 10:53:00 UT, total eclipse duration 2 min 23 s

Hungary, 2 km SSE from Németkér village, N 46° 41' 36", E 18° 47' 14"

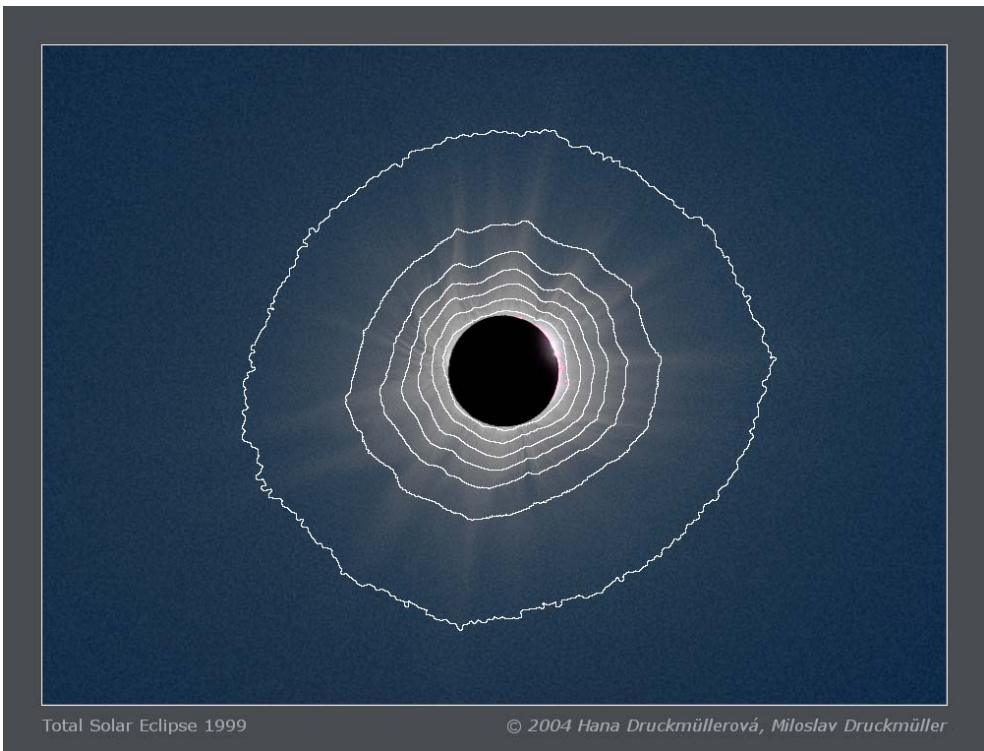
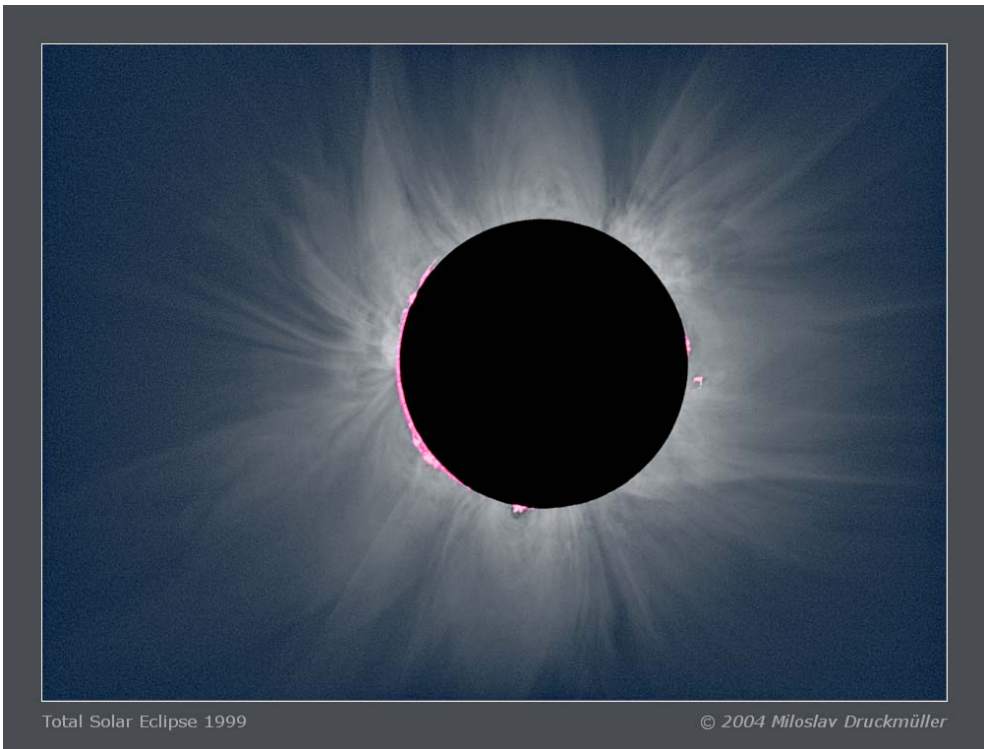
Excellent, clear sky. (Solar altitude 59° above horizon)

Maksutov - Cassegrain MTO 1000a and Sonnar 2.8/200mm, Fujicolor Superia 800 (for MTO), Agfacolor HDC 400 Plus (for Sonnar), Nikon Super Coolscan 4000 ED (4000 dpi resolution, RGB, 3 × 16 bit/pixel, 16x multisample)

Composition of images processed by means of Corona 3.0 and ACC software, image processing by Miloslav Druckmüller

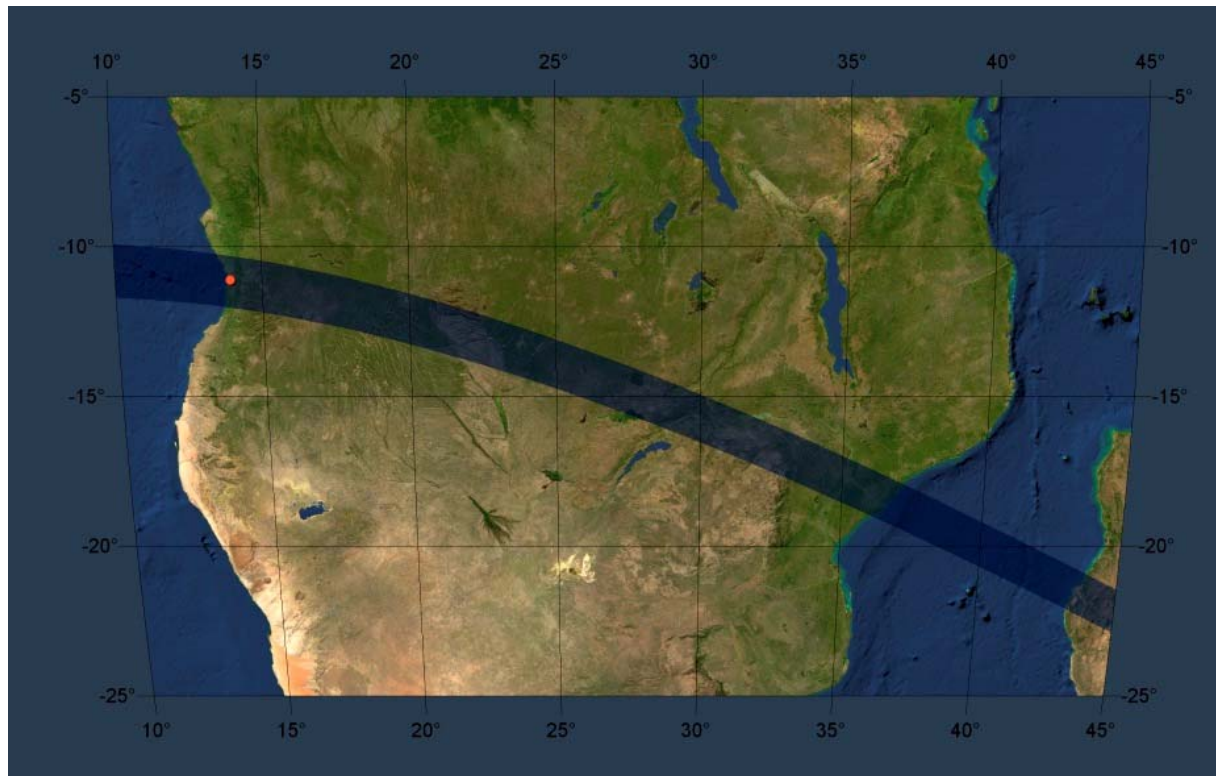
The image must be rotated 16.7° (11.8° respectively) clockwise to achieve the standard orientation i.e. North top, East left

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Total Solar Eclipse 2001

Angola, Úpice Observatory Expedition



21. 06. 2001

Second contact 12:36:34 UT, third contact 12:41:10 UT, total eclipse duration 4 min 36 s

Angola, near Sumbe (Ngunza), S 11° 07' 29", E 13° 55' 51", Alt. 168 m, excellent clear sky

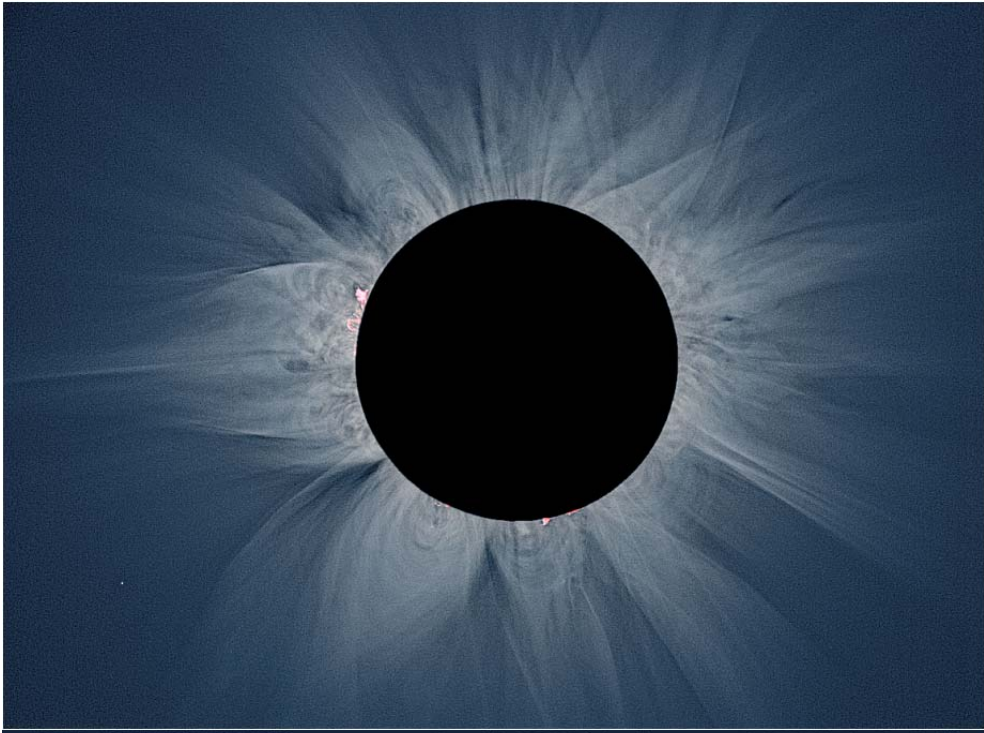
Mertz - II, 1875/100 mm (VOD Turnov), siderostat off-axis configuration, PENTAX 67 II, 6 × 7.5 cm format, Kodak Ektachrome 100 S Professional, Nikon LS 8000 (4000dpi resolution, RGB, 3 × 16 bit/pixel)

Sum of 8 images enhanced by means of adaptive kernel convolution.

Image processing by Miloslav Druckmüller

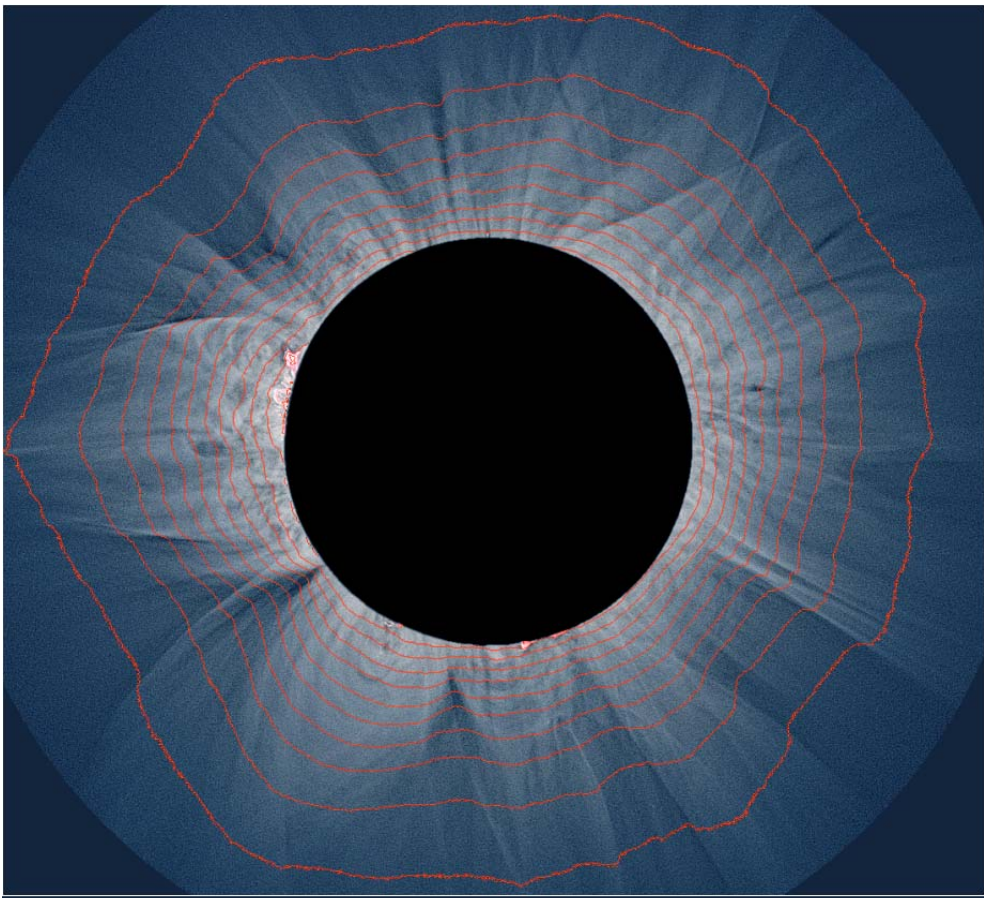
Image must be rotated -9.47° (clockwise) to achieve the standard orientation (N top, E left)

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TOTAL SOLAR ECLIPSE 2001

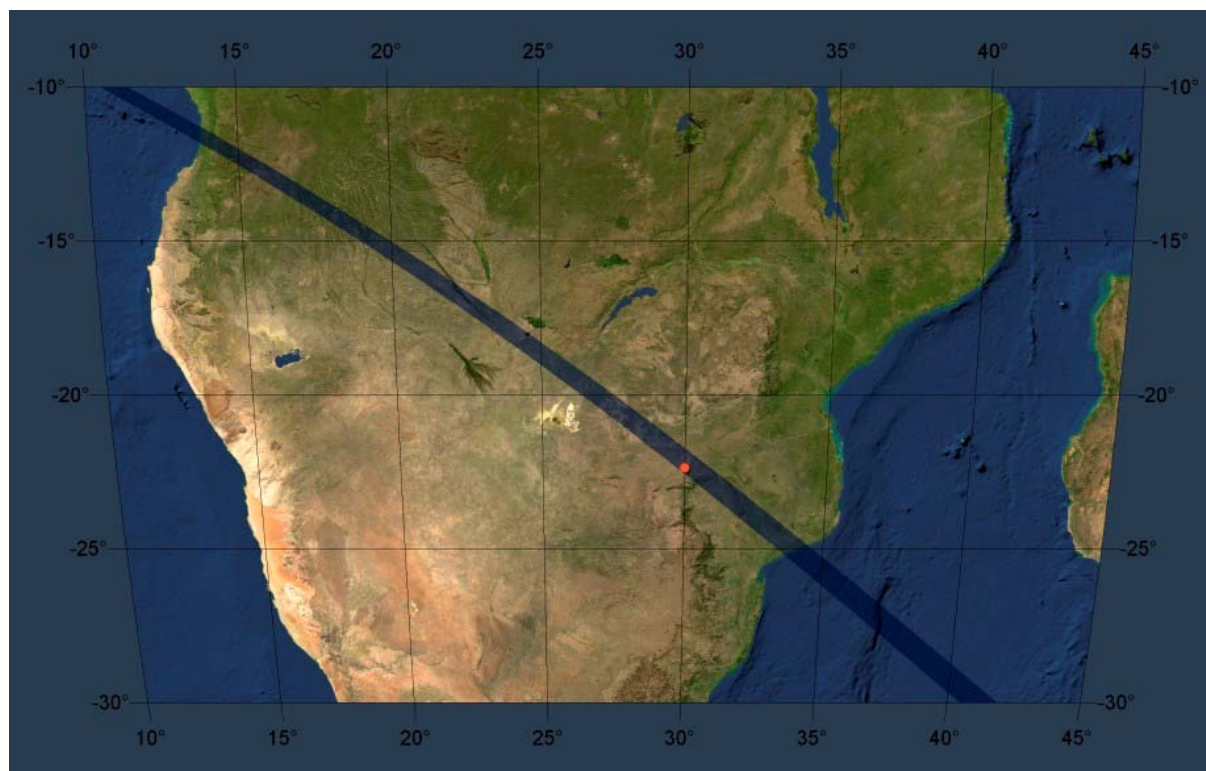
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Total Solar Eclipse 2002

South Africa, Expedition organized by Vojtech Rušin



04. 12. 2002

Second contact: 06:18:26 UT, third contact 06:19:34 UT, eclipse duration 1 min 8 s

South Africa, Messina, High School Eric Louw, 30° 00' E, 22° 23' S, altitude approx. 1500 m

Zeiss 10/1000 mm, Fujicolor Reala 100, Nikon Super Coolscan 4000 ED
(4000dpi, 16x multisample)

16 different images were used for image creation. Images were aligned by means of phase correlation technique and then processed using Corona 3.0 software. Final processing was done by ACC 6.0 image analyzer. Image processing by Miloslav Druckmüller

Image must be rotated 6.4° clockwise to achieve the standard orientation (N top, E left)

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