



1
00:00:04,770 --> 00:00:10,019
our solar observatory in space, pointing
an array of telescopes into an

2
00:00:10,019 --> 00:00:14,560
environment free of weather conditions and the screening effects of the atmosphere.

3
00:00:14,560 --> 00:00:15,060
Telescopes able to observe several solar features concurrently, such as Sun spots

4
00:00:20,920 --> 00:00:26,880
appearing as relatively cool dark areas
on the Sun's disc. their magnetic intensity

5
00:00:26,880 --> 00:00:32,099
is are 10,000 times greater than that of
the earth and often associated with

6
00:00:32,099 --> 00:00:37,860
energetic activity the most remarkable
fact about sunspot is if you remember an

7
00:00:37,860 --> 00:00:44,940
area are not constant but vary at an
11-year cycle solar flares short-lived

8
00:00:44,940 --> 00:00:49,320
with vigorous burst of light accompanied
by intense radiation in the x-ray

9
00:00:49,320 --> 00:00:54,720
ultraviolet and radio parts of the
spectrum a large flare releases the

10
00:00:54,720 --> 00:01:00,119
amount of energy a city of three million
with used in fifty million year. Flares

11
00:01:00,119 --> 00:01:07,710

usually appear on the white areas
bordering sunspots for a more rarefied

12

00:01:07,710 --> 00:01:13,590

gases in the Sun's corona or outer
atmosphere. solar black spots

13

00:01:13,590 --> 00:01:18,010

seen an x-ray photos scattered all over
the face of the Sun.

14

00:01:18,010 --> 00:01:23,840

prominences - masses of cool, illumius gas
and danced on the corona or shut up out

15

00:01:23,840 --> 00:01:30,350

of the Solar surface has a long magnetic lines
go over print wait for turning outward

16

00:01:30,350 --> 00:01:34,700

enormous amount of material hundreds of
thousands of tons of weight of the Sun's

17

00:01:34,700 --> 00:01:39,890

outer atmosphere at speeds of up to two
million kilometers per hour, reshaping

18

00:01:39,890 --> 00:01:45,860

magnetic field and structural features in large
parts of the coronas. Thus from Skylab the light of the is dim.

19

00:01:45,860 --> 00:01:50,649

itself Skylab scientists created the
equivalent of thousands of brief

20

00:01:50,649 --> 00:01:56,509

Earth observations or a solar eclipse to study
the Sun's corona. Before, it was assumed

21

00:01:56,509 --> 00:02:01,670

this outer atmosphere was fairly stable
that changes occur only slowly over long

22

00:02:01,670 --> 00:02:06,920

periods of time but Skylab revealed a much more dynamic corona with many

23

00:02:06,920 --> 00:02:11,980

more changes occurring at faster rates
than was thought possible. Including this huge bubble

24

00:02:11,980 --> 00:02:16,880

righted by a magnetic field extending
into the outer atmosphere rapidly

25

00:02:16,880 --> 00:02:23,870

growing almost the size of Sun
itself. another telescope scanned selected

26

00:02:23,870 --> 00:02:28,459

portions of the Sun recording extreme
ultraviolet light from several layers of

27

00:02:28,459 --> 00:02:33,260

atmosphere these layers lying above the
visible surface of the Sun the

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00:02:33,260 --> 00:02:36,350

chromosphere
the chromosphere Corona transition zone

29

00:02:36,350 --> 00:02:40,300

and the corona
were scanned simultaneously

30

00:02:40,300 --> 00:02:45,160

and a display here using various
computer generated color. In this sequence of

31

00:02:45,160 --> 00:02:50,970

ultraviolet photographs, a third is shot

out of the chromosphere and into the corona

32

00:02:50,970 --> 00:02:56,350

by means image timed sequences, the flow of energy upward into the corona can

33

00:02:56,350 --> 00:03:01,450

be measured and balanced against the downward flow allowing for the first time an

34

00:03:01,450 --> 00:03:07,810

accurate assessment of a dynamics of the solar atmosphere. For the first time, Skylab

35

00:03:07,810 --> 00:03:12,160

astronauts were able to take the detailed data of a whole Sun and the ultraviolet

36

00:03:12,160 --> 00:03:17,470

region of the spectrum. this picture shows the areas of the sun's atmosphere which are

37

00:03:17,470 --> 00:03:22,960

between 50,000 and 100,000 degrees Kelvin at the time of an eruption that lifted

38

00:03:22,960 --> 00:03:27,730

this twisted sheet of flame off its surface. The eruption is one of the

39

00:03:27,730 --> 00:03:32,410

largest ever recorded and it grown to 40 times the size of the earth when the

40

00:03:32,410 --> 00:03:38,290

photograph was taken. the x-ray telescopes were designed to study the evolution of a hot

41

00:03:38,290 --> 00:03:44,550

atmosphere of the Sun. Here is an example of a rapid change in pressure

42

00:03:51,000 --> 00:03:55,830

this picture was taken at the time when
the major reconfiguration took place. at

43

00:03:55,830 --> 00:04:01,200

this time the brightest area with the
biggest emitter electric in temperature

44

00:04:01,200 --> 00:04:09,150

was in excess of four million degrees and perhaps
10 million degrees or more. Skylab studies

45

00:04:09,150 --> 00:04:14,190

of corona holes, dark areas on the area on the Sun show that they may be the source of the

46

00:04:14,190 --> 00:04:19,380

solar wind which extends beyond the planet
Jupiter coronal holes may also have

47

00:04:19,380 --> 00:04:24,660

strong magnetic boundaries as the Sun
rotates, these huge magnetic specters

48

00:04:24,660 --> 00:04:29,370

sleep on earth disturbing the upper
atmosphere there are indications that

49

00:04:29,370 --> 00:04:34,130

these disturbances correlate with the
formation of low pressure weather centers

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00:04:34,130 --> 00:04:39,510

Additional astronomy has shown us that the Sun is far more active even violent

51

00:04:39,510 --> 00:04:44,400

than we thought. In the next few years
Skylab solar astronomy will tell us even

52

00:04:44,400 --> 00:04:49,680

more about the Sun, but also about our

planet Earth a cool island within the

53

00:04:49,680 --> 00:04:55,350

outermost layer of the Sun, Skylab solar study show our space ship Earth in its orbit

54

00:04:55,350 --> 00:05:00,000

around the center of the Sun interacting
with a solar wind creating a weight