1
00:00:18,870 --> 00:00:17,990
yeah they occur approximately once per

2
00:00:21,750 --> 00:00:18,880
day

3
00:00:24,390 --> 00:00:21,760
brief intense powerful explosions of

4
00:00:26,470 --> 00:00:24,400
gamma-ray radiation of the likes not

5
00:00:28,950 --> 00:00:26,480
seen since the big bang

6
00:00:31,589 --> 00:00:28,960
they're called gamma-ray bursts and

7
00:00:32,790 --> 00:00:31,599
scientists are somewhat mystified as to

8
00:00:35,030 --> 00:00:32,800
their cause

9
00:00:37,830 --> 00:00:35,040
do they signal the birth of a black hole

10
00:00:40,229 --> 00:00:37,840
in a massive stellar explosion are they

11
00:00:43,670 --> 00:00:40,239
the product of two colliding neutron

12
00:00:46,310 --> 00:00:43,680
stars or is there something else that

13
00:00:48,310 --> 00:00:46,320

prompts this intriguing phenomenon with

14
00:00:50,310 --> 00:00:48,320
its launch into low earth orbit in

15
00:00:52,310 --> 00:00:50,320
november 2004

16
00:00:54,470 --> 00:00:52,320
scientists have a dedicated tool with

17
00:00:56,790 --> 00:00:54,480
which to probe the gamma-ray burst

18
00:00:59,670 --> 00:00:56,800
mystery before swift launch to give you

19
00:01:02,389 --> 00:00:59,680
an example the satellite that actually

20
00:01:05,350 --> 00:01:02,399
saw the long burst

21
00:01:07,910 --> 00:01:05,360
it took at them eight hours to to go and

22
00:01:09,990 --> 00:01:07,920
look at that at that burst swift can do

23
00:01:12,230 --> 00:01:10,000
this in you know less than a minute

24
00:01:15,030 --> 00:01:12,240
named after the bird able to quickly

25
00:01:17,749 --> 00:01:15,040
snatch insects as it flies the swift

26
00:01:19,830 --> 00:01:17,759
observatory is agile quickly pointing

27
00:01:22,149 --> 00:01:19,840
its instruments at gamma-ray bursts and

28
00:01:25,030 --> 00:01:22,159
relaying burst locations to the ground

29
00:01:28,310 --> 00:01:25,040
within seconds swift can see usually i

30
00:01:30,469 --> 00:01:28,320
mean on average 100 births per year the

31
00:01:32,390 --> 00:01:30,479
number of birds that actually exist in

32
00:01:34,149 --> 00:01:32,400
the universe that we think are actually

33
00:01:35,990 --> 00:01:34,159
happening in the universe is of course

34
00:01:38,710 --> 00:01:36,000
much higher we think we actually see

35
00:01:40,469 --> 00:01:38,720
only maybe like one in a thousand this

36
00:01:43,350 --> 00:01:40,479
quick response is achieved by a

37
00:01:46,230 --> 00:01:43,360
complement of three on-board instruments

38
00:01:49,429 --> 00:01:46,240

the largest the burst alert telescope or

39
00:01:52,069 --> 00:01:49,439
bat can view approximately a sixth of

40
00:01:54,789 --> 00:01:52,079
the entire sky at one time

41
00:01:57,510 --> 00:01:54,799
the x-ray and the ultraviolet optical

42
00:02:00,069 --> 00:01:57,520
telescopes enable high precision x-ray

43
00:02:01,270 --> 00:02:00,079
and optical positions and spectra to be

44
00:02:03,590 --> 00:02:01,280
determined

45
00:02:05,910 --> 00:02:03,600
swift burst alerts allow both

46
00:02:08,469 --> 00:02:05,920
space-based and ground-based telescopes

47
00:02:10,630 --> 00:02:08,479
around the world to observe a burst

48
00:02:11,830 --> 00:02:10,640
afterglow immediately after its

49
00:02:14,630 --> 00:02:11,840
detection

50
00:02:16,390 --> 00:02:14,640
swift doesn't just look at gamma ray

51
00:02:19,030 --> 00:02:16,400
bursts and that's all they do they study

52
00:02:21,589 --> 00:02:19,040
a very large array of science which has

53
00:02:23,430 --> 00:02:21,599
come as an added bonus really to the

54
00:02:25,589 --> 00:02:23,440
mission they've basically for example

55
00:02:27,990 --> 00:02:25,599
they detected the first x-ray

56
00:02:30,949 --> 00:02:28,000
flash coming from a star that was just

57
00:02:34,229 --> 00:02:30,959
about to explode an international effort

58
00:02:36,150 --> 00:02:34,239
swift has observed some 450 births since

59
00:02:38,630 --> 00:02:36,160
its launch and provided the most

60
00:02:41,509 --> 00:02:38,640
comprehensive study of gamma-ray burst

61
00:02:43,430 --> 00:02:41,519
afterglows to date swift is really

62
00:02:46,869 --> 00:02:43,440
providing us with

63
00:02:48,630 --> 00:02:46,879

a list of discoveries that just keep on

64
00:02:51,110 --> 00:02:48,640
growing and

65
00:02:53,750 --> 00:02:51,120
for a satellite or for a mission that

66
00:02:56,309 --> 00:02:53,760
size which had initially

67
00:02:59,750 --> 00:02:56,319
had a very focused goal which was gamma

68
00:03:02,149 --> 00:02:59,760
ray burst um this is the uh you know the

69
00:03:04,309 --> 00:03:02,159
the gift that keeps on giving for more

70
00:03:08,390 --> 00:03:04,319
information on the swift mission log on