
NASA
NASA'S REVOLUTIONARY
GAMMA-RAY BURST

1
00:00:07,309 --> 00:00:03,710
an unusual Outburst about 1 billion

2
00:00:08,690 --> 00:00:07,319
light years away right here has rocked

3
00:00:12,890 --> 00:00:08,700
scientists understanding of the

4
00:00:18,470 --> 00:00:14,870
some of these are the source of heavy

5
00:00:21,470 --> 00:00:18,480
elements in the cosmos like gold

6
00:00:23,990 --> 00:00:21,480
for decades scientists have divided

7
00:00:29,029 --> 00:00:24,000
these explosions called gamma-ray bursts

8
00:00:31,790 --> 00:00:29,039
into two groups long and short grbs

9
00:00:33,830 --> 00:00:31,800
long bursts produce a flare of gamma

10
00:00:38,150 --> 00:00:33,840
rays the highest energy form of light

11
00:00:40,069 --> 00:00:38,160
that lasts two or more seconds

12
00:00:41,930 --> 00:00:40,079
they're thought to be caused by the

13
00:00:44,150 --> 00:00:41,940

black holes forming at the center of

14
00:00:49,130 --> 00:00:44,160
massive collapsing stars and are

15
00:00:53,630 --> 00:00:51,529
short bursts on the other hand last less

16
00:00:55,970 --> 00:00:53,640
than two seconds and are likely caused

17
00:00:58,369 --> 00:00:55,980
by neutron star mergers and are followed

18
00:01:04,009 --> 00:00:58,379
by flares of visible and infrared light

19
00:01:08,410 --> 00:01:05,750
but a recent event has scientists

20
00:01:12,469 --> 00:01:08,420
rethinking these categories

21
00:01:15,890 --> 00:01:12,479
on December 11 2021 NASA's Swift and

22
00:01:18,890 --> 00:01:15,900
Fermi telescopes observed a 50-second

23
00:01:21,530 --> 00:01:18,900
long gamma-ray burst followed by the

24
00:01:25,910 --> 00:01:21,540
clear signs of a kill Anova

25
00:01:27,649 --> 00:01:25,920
it's called grb 211211a

26
00:01:30,050 --> 00:01:27,659
it was later studied by the Hubble Space

27
00:01:31,789 --> 00:01:30,060
Telescope along with a number of other

28
00:01:34,550 --> 00:01:31,799
observatories

29
00:01:36,950 --> 00:01:34,560
scientists don't yet know how a burst

30
00:01:41,630 --> 00:01:36,960
caused by a neutron star merger produced

31
00:01:48,410 --> 00:01:44,569
maybe instead of two neutron stars one

32
00:01:53,030 --> 00:01:50,749
kill anovae are a known source of heavy

33
00:01:55,730 --> 00:01:53,040
elements like iodine which was essential

34
00:01:57,530 --> 00:01:55,740
for the development of life on Earth

35
00:02:01,249 --> 00:01:57,540
but scientists thought that they were

36
00:02:02,649 --> 00:02:01,259
only associated with short bursts

37
00:02:06,230 --> 00:02:02,659
grb

38
00:02:09,050 --> 00:02:06,240

211211a shows for the first time that

39
00:02:11,630 --> 00:02:09,060
kilanova can accompany both long and

40
00:02:14,809 --> 00:02:11,640
short bursts

41
00:02:17,390 --> 00:02:14,819
after 50 years of studying these events