

1  
00:00:07,209 --> 00:00:11,679  
when looking at the night sky a number

2  
00:00:09,880 --> 00:00:14,500  
of familiar patterns and constellations

3  
00:00:11,679 --> 00:00:16,359  
are easy to recognize in the northern

4  
00:00:14,500 --> 00:00:19,329  
hemisphere one can see the pattern of

5  
00:00:16,359 --> 00:00:21,400  
the Big Dipper in the southern

6  
00:00:19,329 --> 00:00:24,309  
hemisphere one can see the constellation

7  
00:00:21,399 --> 00:00:26,109  
of the Southern Cross these star groups

8  
00:00:24,309 --> 00:00:30,788  
are found near the North and South

9  
00:00:26,109 --> 00:00:33,189  
celestial poles Orion is perhaps the

10  
00:00:30,789 --> 00:00:34,750  
most familiar constellation because it

11  
00:00:33,189 --> 00:00:37,839  
is located near the celestial equator

12  
00:00:34,750 --> 00:00:42,549  
and is visible from almost all parts of

13  
00:00:37,840 --> 00:00:45,160  
the globe in some parts of the sky one

14  
00:00:42,549 --> 00:00:48,789  
can see a band of dense stars mixed with

15  
00:00:45,159 --> 00:00:51,640  
dark clouds this band is the Milky Way

16  
00:00:48,789 --> 00:00:53,738  
now the Milky Way is faint so you have

17  
00:00:51,640 --> 00:00:57,730  
to get far from city lights in order to

18  
00:00:53,738 --> 00:01:00,218  
see it clearly if we map the entire

19  
00:00:57,729 --> 00:01:02,828  
night sky we can see that the Milky Way

20  
00:01:00,219 --> 00:01:06,909  
stretches across the entire celestial

21  
00:01:02,829 --> 00:01:10,509  
sphere this map is based on the

22  
00:01:06,909 --> 00:01:12,640  
coordinate system of Earth switching to

23  
00:01:10,509 --> 00:01:14,469  
coordinates based on the Milky Way we

24  
00:01:12,640 --> 00:01:17,609  
can see that it becomes a straight band

25  
00:01:14,469 --> 00:01:20,969  
across the sky

26  
00:01:17,609 --> 00:01:25,019  
the Milky Way resembles an edge-on view

27  
00:01:20,969 --> 00:01:28,250  
of a spiral galaxy in fact the Milky Way

28  
00:01:25,019 --> 00:01:31,039  
is a spiral galaxy

29

00:01:28,250 --> 00:01:35,719  
spiral galaxies can have complex shapes

30  
00:01:31,040 --> 00:01:38,330  
when seen face on however we live inside

31  
00:01:35,719 --> 00:01:41,870  
the disk of the Milky Way and can only

32  
00:01:38,329 --> 00:01:44,000  
view it edge on to analyze the structure

33  
00:01:41,870 --> 00:01:46,070  
of the Milky Way astronomers use

34  
00:01:44,000 --> 00:01:49,730  
different wavelengths of light to

35  
00:01:46,069 --> 00:01:51,889  
examine its different components the

36  
00:01:49,730 --> 00:01:54,590  
stars in the Milky Way can be observed

37  
00:01:51,890 --> 00:01:58,870  
in infrared light this highlights the

38  
00:01:54,590 --> 00:01:58,870  
disc and central bulge of our galaxy

39  
00:02:00,209 --> 00:02:07,229  
the dense dust clouds can be viewed in

40  
00:02:03,390 --> 00:02:09,780  
microwaves in general these dense dark

41  
00:02:07,230 --> 00:02:15,420  
clouds are found in the mid plane of our

42  
00:02:09,780 --> 00:02:17,729  
disk the hot gas in the galaxy can be

43  
00:02:15,419 --> 00:02:21,119

viewed using a specific filter invisible

44

00:02:17,729 --> 00:02:24,359

light in general this hot gas has been

45

00:02:21,120 --> 00:02:26,610

heated by the birth of new stars by

46

00:02:24,360 --> 00:02:28,680

examining and mapping the structure of

47

00:02:26,610 --> 00:02:30,750

these components astronomers have

48

00:02:28,680 --> 00:02:35,550

learned that the Milky Way is a barred

49

00:02:30,750 --> 00:02:37,620

spiral galaxy this artwork uses those

50

00:02:35,550 --> 00:02:41,040

science results to show the approximate

51

00:02:37,620 --> 00:02:45,500

shape of our Milky Way the Sun is

52

00:02:41,039 --> 00:02:49,049

located about halfway out in the disk

53

00:02:45,500 --> 00:02:52,259

our Milky Way galaxy contains about 100

54

00:02:49,050 --> 00:02:55,290

billion stars along with huge clouds of

55

00:02:52,259 --> 00:02:59,039

gas and dust when you look at the night

56

00:02:55,289 --> 00:03:02,719

sky remember every star that you see is

57

00:02:59,039 --> 00:03:02,719

part of the Milky Way galaxy

58

00:03:08,789 --> 00:03:10,848

you