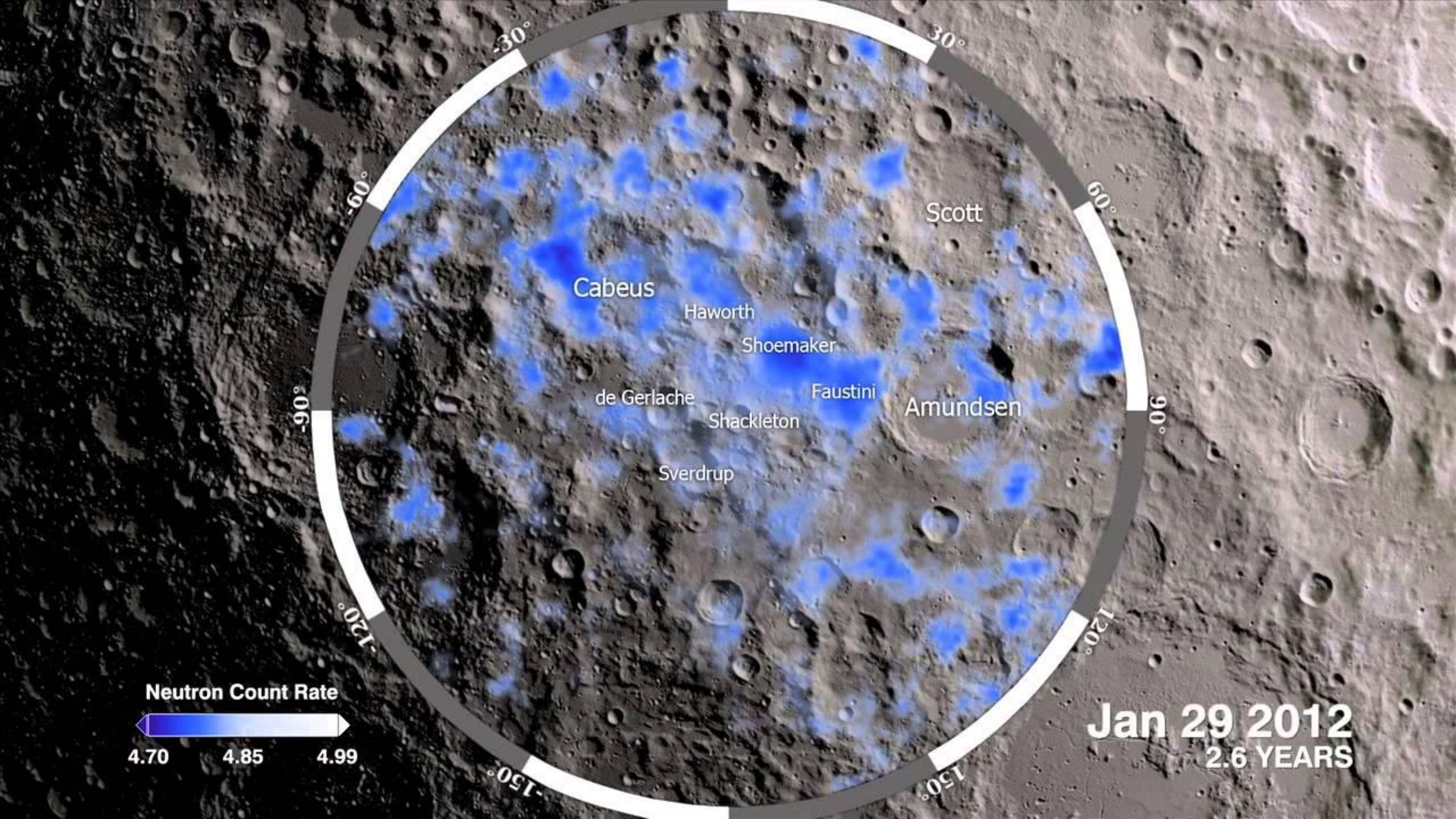
-30°
30°
-60°
60°
-90°
90°
-120°
120°
-150°
150°
Scott
Cabeus
Haworth
Shoemaker
Faustini
de Gerlache
Amundsen
Shackleton
Sverdrup
Neutron Count Rate
4.70
4.85
4.99
Jan 29 2012
2.6 YEARS

1
00:00:00,010 --> 00:00:08,070
[white noise]

2
00:00:08,090 --> 00:00:09,350
[music]

3
00:00:09,370 --> 00:00:13,580
Since the 1960's, scientists have suspected that frozen water could survive

4
00:00:13,600 --> 00:00:16,900
in permanently shadowed craters at the Moon's poles.

5
00:00:16,920 --> 00:00:20,930
Both hydrogen and oxygen could be trapped within the lunar soil.

6
00:00:20,950 --> 00:00:25,230
So to find water on the Moon, scientists are looking for indications of hydrogen

7
00:00:25,250 --> 00:00:29,180
using the Lunar Reconnaissance Orbiter's LEND neutron detector.

8
00:00:29,200 --> 00:00:32,380
By observing the interaction of neutrons with the lunar soil,

9
00:00:32,400 --> 00:00:36,080
scientists can interpret how much hydrogen is likely to be present.

10
00:00:36,100 --> 00:00:42,060
In order to make a detailed interpretation, however, LEND needs to observe a large number of neutrons.

11
00:00:42,080 --> 00:00:48,150
Because LRO is constantly moving, LEND is never over one place long enough to count many neutrons.

12
00:00:48,170 --> 00:00:55,460
So, to make a detailed interpretation of neutron flux, scientists add together many measurements from many o

13
00:00:55,480 --> 00:01:02,580

With each orbit LEND's dataset gets larger and its picture of neutron flux continually improves over time.

14
00:01:02,600 --> 00:01:06,780
The dark blue regions in this visualization are places on the south pole of the Moon

15
00:01:06,800 --> 00:01:10,860
with a suppressed flux of neutrons because of their interaction of hydrogen.

16
00:01:10,880 --> 00:01:16,380
These areas strongly suggest the presence of water frozen within the soil.

17
00:01:16,400 --> 00:01:20,570
While previous lunar missions have observed indications of hydrogen at the Moon's south pole,

18
00:01:20,590 --> 00:01:27,180
the LEND measurements for the first time pinpoint where hydrogen, and thus water, is likely to exist.

19
00:01:27,200 --> 00:01:33,500
By combining years of LEND data, scientists see accumulating evidence that there is water on the Moon.

20
00:01:33,520 --> 00:01:38,250
And as LRO continues to return data, our picture of the Moon and its water