

A 3D visualization of Mars showing its gravity field. The planet is depicted as a sphere with a color-coded map overlaid. The colors range from blue (low gravity) to red (high gravity). The northern hemisphere is predominantly blue and green, indicating lower gravity, while the southern hemisphere is mostly yellow and red, indicating higher gravity. Several impact craters are visible, some with white highlights. The background is a dark blue space with a bright sun on the right and faint grid lines.

MARS GRAVITY MAP

1
00:00:04,849 --> 00:00:02,600
a fleet of robotic spacecraft is

2
00:00:06,470 --> 00:00:04,859
exploring the red planet and scientists

3
00:00:09,230 --> 00:00:06,480
are finding new ways to mine an

4
00:00:11,720 --> 00:00:09,240
ever-growing mountain of data satellites

5
00:00:13,249 --> 00:00:11,730
always orbit a planet center of mass but

6
00:00:15,440 --> 00:00:13,259
they can be pulled slightly off course

7
00:00:17,840 --> 00:00:15,450
by the gravity of massive features like

8
00:00:20,750 --> 00:00:17,850
Olympus Mons the solar system's tallest

9
00:00:22,609 --> 00:00:20,760
peak now a team of scientists at NASA's

10
00:00:24,710 --> 00:00:22,619
Goddard Space Flight Center has used

11
00:00:26,900 --> 00:00:24,720
small fluctuations in the orbital data

12
00:00:29,630 --> 00:00:26,910
of three spacecraft to map the gravity

13
00:00:32,060 --> 00:00:29,640

field of Mars in this new map low

14

00:00:34,280 --> 00:00:32,070

gravity canyons like Valles Marineris in

15

00:00:36,440 --> 00:00:34,290

blue stand out from the high gravity

16

00:00:39,500 --> 00:00:36,450

reds and whites of the Tharsis mountains

17

00:00:41,690 --> 00:00:39,510

by comparing gravity with topography the

18

00:00:43,700 --> 00:00:41,700

scientists made an improved estimate for

19

00:00:45,560 --> 00:00:43,710

the crustal thickness of mars shedding

20

00:00:47,840 --> 00:00:45,570

light on its geologic history and

21

00:00:50,270 --> 00:00:47,850

confirming earlier indications that the

22

00:00:52,220 --> 00:00:50,280

planet has a molten outer core the

23

00:00:54,200 --> 00:00:52,230

orbital data also revealed seasonal

24

00:00:56,510 --> 00:00:54,210

variations in the mass of the polar caps

25

00:00:58,700 --> 00:00:56,520

showing that up to four trillion tons of

26

00:01:00,950 --> 00:00:58,710

carbon dioxide cycle annually between

27

00:01:03,080 --> 00:01:00,960

the poles the new gravity map should

28

00:01:04,789 --> 00:01:03,090

prove useful to future missions as well

29

00:01:06,890 --> 00:01:04,799

by allowing spacecraft to enter orbit

30

00:01:08,929 --> 00:01:06,900

more precisely thus ensuring that the