


Venus



Earth's twin?


Astronomy 20 1

Venus

Venus from Earth

- ☞ Brightest planet
- ☞ Morning or evening "star"
- ☞ Maya: Kukulcan
- ☞ Greeks: Aphrodite
- ☞ Romans: Venus

Venus
 Root: *Vener-* Italian: *Venere*
 Day: *Veneris dies* → *viernes, venerdì*
 Adjective: *Venerian* or "*Venusian*"?
 Related: *Venice, venom, win, wish*




Astronomy 20 2

Venus

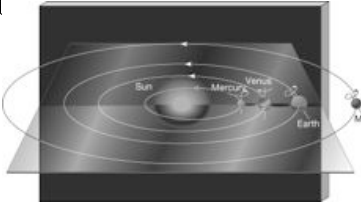
Venus in the Solar System

- ☞ Slightly smaller than Earth
- ☞ Surface gravity: 0.9 *g*
- ☞ Next planet inward toward Sun
- ☞ Moonless



Astronomy 20 3

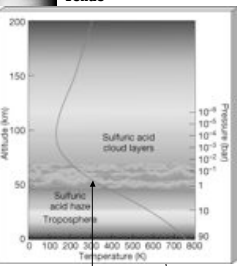
Venus Orbit and Rotation



- ☞ Orbital period: 8 months = "Venerian year"
- ☞ Rotation period: 8 months
- ☞ Rotation direction: *retrograde*
- ☞ Length of day = "Venerian day" = ?

Astronomy 20 7

Venus Atmosphere



- ☞ Mostly CO₂
- ☞ Ocean-like air pressure (90 bars)
- ☞ *Massive Greenhouse Effect*
- ☞ *Temperature 730 K!*

Sulfuric acid clouds
Not the cause of high temperature!

Astronomy 20 8

Venus Comparison of atmospheres

	Venus	Earth
CO ₂	87 bars	0.0003 bar*
N ₂	3 bars	0.78 bar
O ₂	–	0.21 bar
H ₂ O	–	300 bars

* plus 70 bars in rocks!

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Venus

Runaway Greenhouse Effect

What happened to Venus's water?

Greenhouse Effect

Water vapor

Rising temperature

Increased evaporation

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Venus

Practice Question

Q. If Venus's clouds disappeared, the temperature would:

- 1) Go up.
- 2) Go down.
- 3) Stay the same.

Astronomy 20

Venus

Internal Structure

Iron core

Rock mantle

No magnetic field

slow rotation


Astronomy 20

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Venus

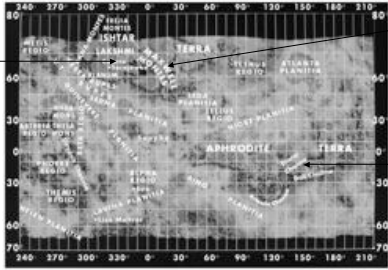
Surface Geology

- ↳ Mostly low rolling plains
- ↳ No plate tectonics
- ↳ Extensive volcanism
- ↳ Sprinkling of impact craters
crater age: 500 million years
- *everywhere!*
- ↳ *Catastrophic volcanism!*



Astronomy 20 13

Venus



Ishtar


Maxwell Mtn.

Aphrodite

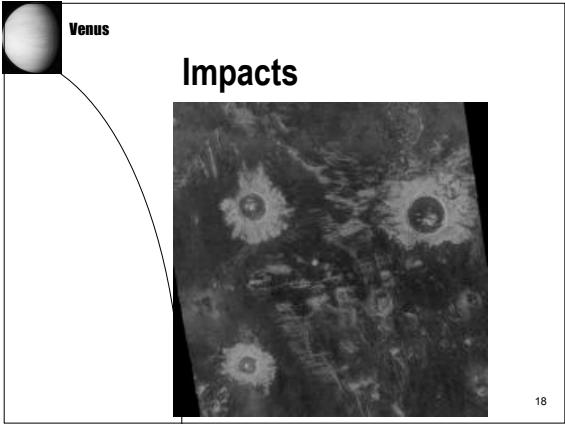
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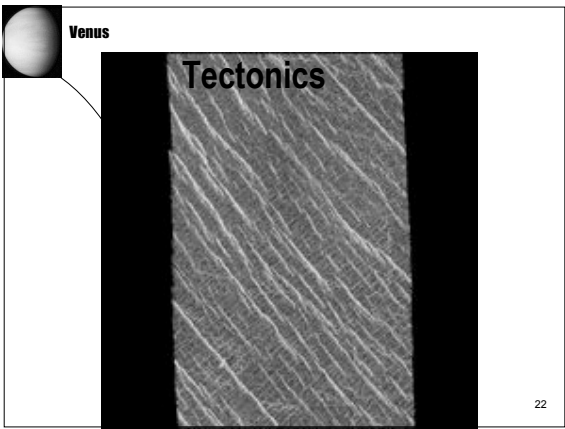
Venus

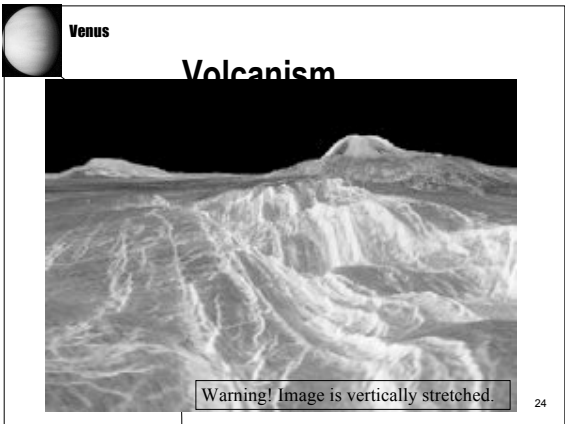
Surface



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Venus

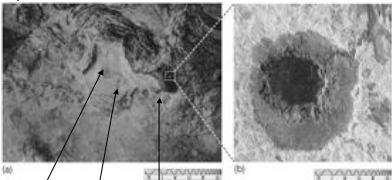
Wind



Astronomy 20 31

Venus

Ishtar



Lakshmi Plain
Sacajawea
Maxwell Mtn.
Cleopatra

Astronomy 20 33
