

## **Thirty Five Commonly Cited Misconceptions About Astronomy By College Students**

The following is a list of the 35 most commonly cited misconceptions in astronomy as presented by Dr. Neil Comins at the International Astronomical Union Meeting #162. They come from college students who have taken his intro astronomy course. They were asked to submit a list of 42 misconceptions that were corrected for them during the semester. The list of 35 most commonly cited misconceptions are presented below in topic order.

1. Seasons depend on the distance between the Earth & Sun
2. There are 12 zodiac constellations
3. The constellations are only the stars making the patterns
4. The North Star is the brightest star in the night sky
5. Stars last forever
6. All stars are same color
7. Stars really twinkle
8. All stars are isolated
9. Pulsars are pulsating stars
10. Asteroid belt is densely packed, as in Star Wars
11. Meteors, Meteorites, Meteoroids, Asteroids, and Comets are the same things
12. Shooting star is actually a star falling through the sky
13. Comet tails are always behind the comet
14. Comets are burning and giving off gas as their tails
15. All planetary orbits are circular
16. All planets have pro-grade rotation
17. All moons are spherical
18. We see all sides of the Moon
19. Ours is the only moon
20. Spring tide only occurs in the spring
21. Only the Moon causes tides/the Moon has no effect on tides
22. High tide is only between the Earth and Moon
23. Once the ozone is gone, it's gone forever
24. Mercury is hot everywhere on its surface
25. Giant planets have solid surfaces
26. Saturn is the only planet with rings
27. Saturn's rings are solid
28. Pluto is always the farthest planet from the Sun
29. The Sun primarily emits yellow light
30. The Sun is solid & shines by burning gas or from molten lava
31. The Sun always rises directly in the East
32. Black holes are empty space
33. Black holes are huge vacuum cleaners in space, sucking everything in.
34. Black holes are two-dimensional tunnels, funnels, or whirlpools
35. The only function of a telescope is to magnify

Copyright 1998 by Neil F. Comins

## **More Misconceptions Cited by Project ASTRO Participants in Previous Years**

1. Red is hot, blue is cold
2. Egg can stand up during equinox
3. Aliens have visited the Earth
4. The Earth is flat
5. The Sky is flat
6. Atmosphere is thick
7. Phases of the Moon are caused by Earth Shadow
8. Constellations and stars are in our solar system
9. There is no gravity in Space/on the Moon
10. Sun is the brightest, biggest star
11. Solar system is at the center of the Universe
12. North Star is at the zenith
13. Comets move across the sky in a few seconds
14. The Universe is 5000 year old
15. Travel faster than speed of light is possible

### **HEAVENLY ERRORS: Misconceptions about the real nature of the universe by Neil F. Comins**

<http://www.physics.umaine.edu/ncomins/>

This is the web site that accompanies my book HEAVENLY ERRORS: Misconceptions about the real nature of the universe. Misconceptions about science are deep-seated beliefs that are inconsistent with accepted scientific beliefs. In the book I explore several a variety of misconceptions in detail, as well as their origins, why we develop them, how to avoid them in the future, and how to get rid of old ones (which is the hard part).

Over the past decade, my students at the University of Maine have helped me identify over 1700 misconceptions and other common incorrect beliefs that people have. Not all incorrect beliefs are misconceptions. Many are superficial memorization of incorrect data, such as the number of moons orbiting Jupiter or the order of the planets from the Sun.

Including just the list of all these 1700 misconceptions and other common incorrect beliefs in the book would have added fifty pages to it. Explaining the correct science for all of them would have taken another five hundred pages or so, which would have made it unrealistically long. So, I have put the list on the web. Several co-workers and I are searching down sites with the correct science and putting hot links to these sites.

If, after browsing this site, you know of other misconceptions or other incorrect beliefs about the physical nature of the cosmos in general that aren't here yet, please send them to me and I will add them. Send these and any other comments you have to me at [GALAXY@MAINE.EDU](mailto:GALAXY@MAINE.EDU).

Neil F. Comins