

Origins of the Christmas Star are a scientific mystery

19 December 2016, by Ayleen Barbel Fattal



Credit: Farmersalmanac

December is a month of celebration throughout the world and across cultures and religions.

Perhaps one of the most widely observed religious holidays in December is Christmas. Bright stars top many Christmas trees symbolizing the Star of Bethlehem, more commonly called the Christmas Star. It is mentioned in the Bible as the star which led the three wise men to the small town of Bethlehem where Jesus was born.

But was the Christmas Star really a star or some other astronomical occurrence?

Florida International University astronomy Professor [Caroline Simpson](#) provides scientific insight into what may explain the Christmas Star phenomenon.

- **Likely a stationary object.** For an object in the sky to be useful for navigation over a period of days or weeks, it needs to be relatively stationary in the sky from night to

night—disregarding the apparent motion of the sky from east to west due to the Earth's Rotation. This rules out transient objects like meteors, or what most recognize as shooting [stars](#), which last for mere seconds.

- **Not a comet.** Although a comet could appear motionless over days, comets were well known at the time and usually well documented by various cultures. More importantly, comets were generally regarded as harbingers of ill omen during the time of Jesus. It's safe to say any wise man would not have followed a comet. More likely, they would have gone the other way.
- **A nova or supernova?** A nova suddenly brightens for a few days then slowly returns to its original state. A supernova is an explosion of a massive star that is visible for weeks. Both could have been possible, but these also tended to be well-documented and the only one noted at the time was in the wrong direction of the sky for the wise men to follow.
- **A planetary conjunction.** The most likely explanation is a planetary conjunction—when one or more planets appear very close together in the sky. If it involved Mars, Jupiter and Saturn, it would be visible for a few days or longer if it involved only Saturn and Jupiter as they move more slowly through the sky. There were some conjunctions during the right time period and in the right direction in the sky.

Simpson cautions these are all just likely scenarios. There is no indisputable scientific proof or evidence for a definite conclusion. Until such discovery occurs, the Christmas Star will continue to be a mystery that only faith can explain.

Simpson studies how galaxies and the universe evolve over time. She is the recipient of the 2016 [Richard H. Emmons Award](#) for excellence in college astronomy teaching and one of the first

physics professors at FIU to transform a basic introductory astronomy course for non-science majors into an active learning class.

Provided by Florida International University

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