

The evolution of the Earth's orbit and its gravitational relationship with the Moon make changes to the Earth's climate, length of year, and length of day. The solar system is part of a galaxy of other stars, with the nearest star being only 4.21 light-years away. The Sun itself is going through a ten-billion-year-long period of evolution and will end as a planetary nebula

some five billion years in the future. Finally, our Milky Way galaxy is wheeling toward a meeting with another galaxy in the very, very distant future. Your challenge now that you know and understand these things is to explain them to your fellow citizens and help them understand the risks and benefits of life on this planet, in this solar system, and in this galaxy.

## Inquiring Further

### 1. Evolution of the Milky Way galaxy

The Milky Way galaxy formed some 10 billion years ago, when the universe itself was only a fraction of its current age. Research the formation of our galaxy and find out how its ongoing evolution influenced the formation of our solar system.

### 2. Starburst knots in other galaxies

Other galaxies show signs of star birth and star death. You read about a starbirth region called NGC 603 in the **Digging Deeper**

reading section of this activity. Astronomers have found evidence of colliding galaxies elsewhere in the universe. In nearly every case, such collisions have spurred the formation of new stars. In the very distant future the Milky Way will collide with another galaxy, and it's likely that starburst knots will be formed. Look for examples of starbirth nurseries and starburst knots in other galaxies and write a short report on your findings. How do you think such a collision would affect Earth (assuming that anyone is around to experience it)?