Planetary Wonderings
April Focus: Earth
by Mary-Frances Bartels, NASA Solar System Ambassador

When I was a child each April brought Arbor Day. It was a day to plant a trees and learn about their care. Arbor Day began in 1874. Though its date is different in each state, national Arbor Day is April 28 this year.

The first Earth Day was held in 1970. To me it seemed like a "super" Arbor Day. Earth Day is an event that promotes environmental awareness and is more activist-oriented than Arbor Day. This year Earth Day is April 22. Both holidays celebrate our home planet and its life.

(Educational resources for Arbor Day may be found at www.arborday.org/arborday/classroom.cfm. Some educational resources for Earth Day are at www.theteachersguide.com/earthdaylessonplans.htm .)

So, what do Arbor and Earth Days have to do with astronomy? Often when we think of astronomy, or specifically planetary exploration, we think about "things" "out there" and far away. Some people might be surprised to learn that there are, and have been since its inception in 1958, NASA missions to Earth! Here is only a small sampling.

TOPEX/Poseidon was launched in 1992 and originally was to furnish a three-year global view of Earth's oceans providing improved understanding of ocean currents and forecasting of global climate. It was retired in January of this year.

Jason-1, launched in December 2001, continues the mission of TOPEX/Poseidon. Its objectives are to provide a 5-year view of global ocean surface topography, increase understanding of ocean circulation and seasonal changes, improve forecasting of climate events like El Niño, measure global sea-level change, improve ocean tide models, and provide estimates of significant wave height and wind speeds over the ocean.

GRACE (Gravity Recovery and Climate Experiment), twin satellites launched in March 2002, are making detailed measurements of Earth's gravity field which will lead to discoveries about gravity and Earth's natural systems.

OSTM (Ocean Surface Topography Mission) has a proposed launch date in 2008 and will be a follow-on to Jason-1. It will take oceanographic studies of sea surface height into an operational mode for continued climate forecasting research and science and industrial applications.

(Information about the above missions may be found online at sealevel.jpl.nasa.gov/mission/mission.html .)

Space Technology 5 launched on March 22 and is actually three "microsats." During its 90-day mission ST5 will map the intensity and direction of magnetic fields within Earth's inner magnetosphere. Studying this region may help us understand the space weather that effects communication, navigation, and power systems.

Lastly is the Earth Observing System — a fleet polar-orbiting and low-inclination satellites for long-term global observations of the land surface, biosphere, solid Earth, atmosphere, and oceans.

Questions and comments about this column are welcome. See me or e-mail me at stargazer @ keeplookingup.net. Next month's topic will be Space Day. Stay tuned and KEEP LOOKING UP!