

## GUEST EDITORIAL: MY FORMATIVE YEARS WITH THE RASC

BY SARA SEAGER

I first learned about astronomy as a small child. One of my first memories is looking through a telescope at the Moon. I was completely stunned by what I saw. The Moon—huge and filled with craters—was a world in and of itself. I was with my father, at a star party hosted by the RASC. Later, when I was 10 years old and on my first camping trip, I remember awakening late one night, stepping outside the tent, and looking up. Stars—millions of them it seemed—filled the entire sky and took my breath away.

As a teenager in the late 1980s, I joined the RASC Toronto Centre and determinedly attended the bimonthly Friday night meetings held in what was then the Planetarium building. Much of the information went over my head, but I can still clearly remember the excitement of the group whenever a visiting professor presented on a novel topic. An RASC member offered a one-semester evening class on astronomy, and we were able to use the planetarium to learn about the night sky. The RASC events were a highlight of my high school and undergraduate years.

While majoring in math and physics at the University of Toronto, I was thrilled to intern for two summers at the David Dunlap Observatory (DDO). I carried out an observing program of variable stars (including Polaris, the North Star), using the 61-cm (24") and 48-cm (19") telescopes atop the DDO's administration building for simultaneous photometry of the target and comparison stars. RASC members were always out in force with their personal telescopes to share observational astronomy with the public following the summer Saturday night lectures. It was a privilege to be part of the DDO during what turned out to be its last phase as a research institution.

In the mid-1990s, I left Toronto for graduate school at Harvard, and lost touch with the RASC. While I was at Harvard, the first reports of exoplanets orbiting Sun-like stars began appearing. Many astronomers wanted to attribute the discoveries not to planets, but to some type of odd stellar variability, because the apparent new planets were so unlike those in the Solar System. Nonetheless, for my Ph.D., I computer-coded applied physics models of exoplanet atmospheres, making predictions for observers. At the time, many people thought it would be impossible to observe exoplanet atmospheres and my claims would never be substantiated. But exoplanets kept turning up, observing techniques kept improving—and my work has not only been validated but now forms the foundation of exoplanet atmosphere and interior characterization.

By now astronomers have found, statistically speaking, that every star in the Milky Way Galaxy should have at least one planet and that small planets are very common. Thousands of exoplanets or planet candidates show that a planet can occur with every size, mass, and orbit imaginable, within the laws of physics and chemistry. My focus has turned to the search for Earth-like planets via space-based “direct imaging” to block out the starlight and see the planet directly. This is a hard problem, because an earth is 10 billion times fainter than a sun. People have been developing technology for specialized space telescopes for decades, but now the goal to find and characterize a planet that might host life is finally coming within reach.

In 2013, the RASC awarded me the lifetime status of Honorary Member. That became official at the 2013 RASC General Assembly in Thunder Bay, Ontario, at which I gave the keynote talk. I was surprised and moved to be treated as both a celebrity and an extended family member. I stay connected to RASC members across the country via social media. Among the people I met was the RASC Toronto Centre President, Charles Darrow. An instant friendship blossomed into the “romance of the millennium” and we will be married in 2015.

The RASC played a definitive role in my early years by first making astronomy accessible to a child, and then providing a forum for learning and discovery—in my case, helping to foster a lifelong pursuit.

*Sara Seager is one of the newest Honorary Members of the RASC. She is a Professor of Planetary Science and Physics at the Massachusetts Institute of Technology. Her many honours and achievements are listed at [seagerexoplanets.mit.edu/index.htm](http://seagerexoplanets.mit.edu/index.htm)*