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Editorial

This special issue is the result of efforts that began back in 1989 when the scientific community began organizing for the flyby reconnaissance of Pluto. At the community's request, NASA conducted the first study of such a mission in 1990. More studies took place across the whole of the 1990s, culminating in a flyby mission competition in 2001 that was won by the New Horizons team for a single spacecraft PI-led mission to Pluto.

New Horizons was designed, built and tested during 2002-2005, and launched in 2006. It flew past Jupiter in 2007 for a gravity assist, and then embarked on an 8 year crossing of the giant planets region, intercepting the Pluto system in July 2015. The flyby of Pluto by New Horizons studied all 6 known bodies in the system: Pluto Charon, Styx, Nix, Kerberos, and Hydra. When the mission was planned in the early 2000s, only Pluto and Charon were known. As the small moons were discovered, they were folded into the observational plans. The flyby also searched for rings and more satellites, but found neither.

The range and volume of data that New Horizons returned was unprecedented for a first flyby mission, dwarfing what could be done at the closer planets by missions built long ago in the 1960s and 1970s. Among the many datasets returned were detailed, high-resolution surface maps, surface composition maps, photometry, atmospheric imaging, and radio and solar occultations. Additionally, our in-situ instruments returned plasma interaction results, escape rate measurements, escape composition measurements, and much more. It took 16 months to send all of the flyby data back, completed in October 2016. In 2017 as this special issue appears the New Horizons team is in the process of archiving all of this data in the Planetary Data System.

Here we present 25 contributed papers on all aspects of the mission results— spanning topics that range from surface composition to colors to geology to interiors to atmospheres to small satellites. This is the first extensive collection of flyby results in a special issue. Readers and editors alike all thank the contributing authors and referees for their hard work on this valuable volume of early results.

We have learned that the small worlds of the Kuiper Belt and their satellite systems can be as complex as much larger worlds. This special issue reveals many of those complexities, and is a start, rather than a conclusion for planetary science expanding new frontiers by advancing our understanding of the Pluto system, and by inference, other dwarf planets in the Kuiper Belt.

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