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The Hitomi X-Ray Observatory, Part 2

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When it was launched on 17 February 2016, the Hitomi X-ray Observatory carried four kinds of new-generation x-ray instruments—the Soft X-ray Spectrometer (SXS), the Soft X-ray Imager (SXI), the Hard X-ray Imager (HXI), and the Soft Gamma-ray Detector (SGD). All four instruments were turned on and were in the process of activation at the time of loss of contact on 26 March 2016. In the time it was operational, Hitomi was able to provide researchers with a trove of ground-breaking scientific results. Initial results demonstrated that the instruments were meeting or exceeding requirements and that Hitomi was on its way to pioneering a new era of broad-band and high-resolution x-ray spectroscopy.

The results published here summarize the in-flight instrument performance, calibration, and data processing accomplishments of the observatory. Of the papers accepted for publication in this special section, 17 were presented in Part 1 in the January-March 2018 issue of JATIS. Ten more papers are presented here as Part 2 in the April-June 2018 issue.

These papers cover the detailed in-flight performance of the four state-of the-art instruments on-board the Hitomi X-Ray Observatory. These instruments were extremely diverse in their design and principles of operation, ranging from low-temperature x-ray calorimeters for high-resolution spectroscopy, CCDs for wide field imaging, high fill-factor grazing incidence x-ray optics, including multilayer x-ray optics and silicon strip and CdTe strip detectors for high-energy imaging, and a Si/CdTe Compton cameras for extending the bandpass out to 600 keV. All of these instruments operated as expected and for sufficient time to validate their operating principles and carry out first light scientific investigations, published elsewhere. Collectively, these instruments, all co-aligned and operated simultaneously, provided a tool for astronomers with unprecedented resolution and broadband sensitivity for investigating high-energy processes throughout the universe. These papers serve as part of the Hitomi legacy and will guide the next generation of instruments planned for future missions.