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Jupiter's Galilean Satellites

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Jupiter's Galilean satellites Io, Europa, Ganymede and Callisto encompass some of the most bizarre environments known in the solar system, spanning that of Io, the most volcanically active and perhaps the most inhospitable body known, to Europa, currently the focus of a search for life in the solar system because of its subsurface ocean. One of the premier areas of scientific return in solar system research in the past 10 years, due in large part to the Galileo mission and observations by the Hubble Space Telescope, has been a remarkable increase in our knowledge about these satellites. Discoveries have been made of tenuous molecular oxygen atmospheres on Europa and Ganymede, a magnetic field and accompanying auroral emissions at the poles of Ganymede, and of ozone and sulfur dioxide embedded in the surfaces of Europa, Ganymede and Callisto. Io's unusual sulfur dioxide atmosphere, including its volcanic plumes and strong electrodynamic interaction with magnetospheric plasma, has finally been quantitatively characterized. This talk will present highlights from the recent discoveries and advances in our understanding of these fascinating objects.