

**SAGE mission to Venus**  
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SAGE, the Venus Surface and Atmosphere Geochemical Explorer, is proposed to launch to Venus in December 2016, and land on the flanks of a Venus volcano in May 2017, where it survives the hellish Venus environment for 3 hours or more. The SAGE lander will photograph the surface during descent and after landing, excavate the surface and irradiate it with lasers and neutrons to measure the composition and surface texture. The minerals that make up Venus upper crust are still unknown. This new information will allow the scientific team to compare Venus to other terrestrial planets (including the Earth), and planets circling other stars. This will clarify the history of Venus surface, atmosphere and climate. We plan to model the history of Venus and predict its future, comparing Venus to Earth and to extra-solar planets. Partners are the Jet Propulsion Laboratory which provides the SAGE project management, Lockheed Martin of Denver which builds the carrier spacecraft, and the NASA Ames, Goddard and Langley Research centers. Scientific instruments are contributed by Russia's Institute for Space Research (IKI) with contributions from the Swiss University of Bern, and the French National Center for Space Research (CNES). The lander's robotic arm is contributed by the Canadian Space Agency.