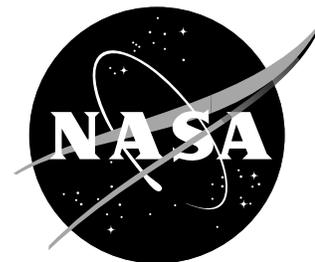


# NewsRelease



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## **NASA LANGLEY SABER INSTRUMENT TO LAUNCH FRIDAY** **Satellite instrument is pioneer for last atmospheric frontier**

After 7:07 a.m., Friday, Dec. 7, one of the least explored areas of our atmosphere will be less of a mystery.

At that time a new NASA Langley Research Center satellite instrument called SABER (Sounding of the Atmosphere using Broadband Emission Radiometry) will launch with other research equipment aboard a Delta II rocket from Vandenberg Air Force Base, Calif. SABER will make unique scans of the Earth's atmospheric limb known as the MLTI region -- Mesosphere and Lower Thermosphere/Ionosphere.

Unlike the Troposphere -- the area closest to the Earth -- very little is known about this thin, outer layer between 10 and 110 miles in altitude. It is the first shield from the Sun's ultraviolet radiation and contains important gases such as ozone, water vapor and carbon dioxide. For the first time, these gases -- that may have a significant effect on the warming and cooling of the Earth's surface -- will be measured by SABER.

"This area of the atmosphere has sometimes been called the 'ignoro-sphere'," said Dr. James Russell, SABER principal investigator and co-director for the Center of Atmospheric Sciences at Hampton University. "It has been ignored and not measured. The atmosphere is a closed system and what you do in one region affects another. You need collective measurements of all the areas to make solid, scientific conclusions.

According to Russell, the MLTI may be the last frontier in atmospheric studies because it is so difficult to measure.

"Satellites don't dip down low enough to be immersed in it," Russell added. "Rockets go infrequently through the region, and balloons and aircraft don't go high enough. So this is the first time we'll be able to study this rarified region to determine its connection with the sun and the changes in the atmosphere on the Earth's surface."

Built by Utah State University Space Dynamics Laboratory and managed by NASA Langley, SABER is one of four instruments on the TIMED (Thermosphere, Ionosphere, Mesosphere, Energetics and Dynamics) spacecraft. Scheduled for a two-year mission, the TIMED instrument's combined data collection will examine both natural and manmade effects on the upper atmosphere.

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NASA Langley senior research scientist and SABER associate principal investigator Marty Mlynczak believes this mission is important for NASA and Langley. “One of the things that NASA does is exploration. We have never looked at the Mesosphere and lower Thermosphere in this much detail so the potential for scientific discovery and understanding is enormous.

“And Langley brings a lot to this mission. We managed the development of the instrument and, with the team, developing radiative transfer codes that are unique in the world. There is a tremendous amount of work here just to incorporate the specific physics of the upper atmosphere. When we make measurements of ozone, water vapor and temperature, it will be done at a very high accuracy so we don’t end up with a poor measurement from a great instrument but a great instrument with great measurements.”

SABER’s atmospheric scanning will also mark a series of “firsts” for the scientific community. Its infrared sounding technique for the MLTI has never been used before in the focused way SABER will do it. It will mark the first comprehensive global measurement of the incoming and outgoing radiant energy over a broad altitude range; it will help in the understanding of climate change, and SAGE III will produce a global portrait of how the upper atmosphere changes over time.

SABER on TIMED is an element of NASA's new Solar Terrestrial Probes Program. It is also part of a low-cost plan to provide more frequent access to space for study of the sun-Earth system.

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