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The Extreme Universe Space Observatory on a Super Pressure Balloon (EUSO-SPB) Missions

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The Extreme Universe Space Observatory on a Super Pressure Balloon (EUSO-SPB), launched from Wanaka NZ, completed a 12 day flight above the Pacific Ocean in May of 2017. The mission goals were to observe high energy extensive air showers with a fluorescence detector looking down on the atmosphere, search for other transient signatures, and characterize the UV emission from Earth. Although the payload was lost, most of the data was downloaded. Preparation for a follow up mission, EUSO-SPB2, is in progress. EUSO-SPB2 will fly three telescopes. One will measure fluorescence light from air showers above 1 EeV. The other two will look for Cherenkov light from air showers at the PeV scale from near the earth's limb as a precursor to a search for cosmogenic tau neutrinos. EUSO-SPB2 will test methods and techniques that will be used in the dual satellite POEMMA (Probe of Extreme Multi-Messenger Astrophysics) space mission that is currently under a NASA sponsored conceptual design study.

Primary author: Prof. WIENCKE, Lawrence (Colorado School of Mines)

Presenter: Prof. WIENCKE, Lawrence (Colorado School of Mines)

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