Geophysical Research Abstracts
Vol. 17, EGU2015-4486, 2015
EGU General Assembly 2015


# Vertical Electric Field Measurements with Copper Plates by Sounding Balloon

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The vertical electric field plays an important role in driving the circulation of the global electric circuit, and crucial to the formation of the transient luminous events (TLEs). The in-situ measurement of the electric field in the upper atmosphere, especially from cloud top to the bottom of the ionosphere is very challenging but essential. Limited by the flight vehicle, the measurements of the electric field in and above cloud, especiall thundercloud, is rare up to now. A light-weight electric field meter was developed independently and sent to 30 km height by small meteorological balloons successfully. Other than the existing long-spaced, spherical probe design, an improved electric field meter has been built and tested carefully. A new circuit with ultra high input impedance and a high voltage amplifier is implemented to reduce the AC noise induced by the voltage divider. Two copper plates are used to replace the double spherical probes which is spaced by a long fiberglass boom. The in-lab calibration and tests show that this new model is superior to the existing design and very sensitive to the variation of the DC electric field. In this poster, the design and the in-lab tests will be presented, and preliminary results of the flight experiments are also discussed.