

R011-16

C会場 : 11/25 PM1 (13:15-15:15)

14:35~14:50

## デジタル画像記録方式ソーダボトル磁力計を用いた観測及びデータ処理教育

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## Education of Observation and Data Processing with a Digital Image-Recording Soda Bottle Magnetometer

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The soda bottle magnetometer, which is a handmade torsion-type magnetic variometer, has been used for education of the space weather in middle-to-high latitude region. However, this teaching material is rarely used in magnetically low latitude regions such as Japan because manual reading of the light spot reflected from the mirror attached to the sensor magnet cannot resolve small magnetic field fluctuations. To use the soda bottle magnetometer for a class at Kyoto University, I combined it with a data recording system that a webcam takes images of the position of the light spot on a regular basis, named "Image-Recording Soda Bottle Magnetometer". The data was recorded by taking 96 images at 4 images/s for 24 seconds every 5 minutes. The center positions of the light spot were accurately determined by a Python program. The resolution of the magnetic declination is less than  $\sim 0.08$  arcmin (or  $\sim 0.7$  nT) which is about ten times better than the manual reading. The new-type soda bottle magnetometer successfully detected Sq variations and substorm magnetic bays at Kyoto (GMLat  $\sim 25$  degrees) with amplitude of  $< 5$  nT. Since the data is acquired as digital format, students can analyze the data acquired by themselves on their computers. The cost of the observation system is inexpensive (less than 10,000 yen except PC). The digital image-recording soda bottle magnetometer has potential for use in Japanese geoscience education, not only in universities but also in high schools.