

The History of VL Training by the Center for Environmental Remote Sensing (CEReS), Chiba University, Japan

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In light of extreme events, global warming, and new developments such as the operation of the Earth Simulator (as of 2007), the collection, analysis, and provision of satellite remote sensing data related to warming to collaborative users holds significant importance. This contributes not only to the research community but also to broader societal benefits from information. Against this backdrop, starting in fiscal year 2007, to diagnose the Earth's climate system, four research centers promoting climate and environmental research (as of 2007) collaborated: The University of Tokyo Atmosphere and Ocean Research Institute (AORI; partly formerly the Center for Climate System Research [CCSR]), Nagoya University Institute for Space-Earth Environmental Research (ISEE; partly formerly the Hydrospheric Atmospheric Research Center [HyARC]), Tohoku University Center for Atmosphere and Oceanic Studies (CAOS), and Chiba University Center for Environmental Remote Sensing (CEReS) jointly formed a Virtual Laboratory (VL). This initiative enabled the centers to share and coordinate research and education activities, leveraging each center's unique strengths and research assets.

One of the pillars of VL activities is educational initiatives. As VL, we have consistently held workshops (training courses) every year. Since the hosting rotates among four institutions, each institution hosts once every four years. This system prevents excessive burden on the hosting institution and avoids stagnation. Below are the workshops previously hosted by CEReS, Chiba University. In this presentation, we will describe past VL workshops and solicit feedback on future workshop requests.

1. 2nd VL Workshop: September 10-12, 2008. Chiba University, 37 participants. In addition to classroom instruction on "Fundamentals of Satellite Data Analysis," simple analysis of MTSAT, MODIS, and TRMM data was performed on Linux.
2. 6th VL Workshop: September 18-19, 2012. Chiba University, 37 participants. In addition to lectures on "Aerosols and Atmospheric Correction," hands-on exercises were conducted to derive aerosol parameters using SKYNET data.
3. 10th VL Workshop: September 20-21, 2016. Chiba University, 53 participants. "Understanding Japan's Earth Observation Satellites": Lectures by researchers from JAXA and related organizations on missions launched or planned by Japan. Hands-on session on Himawari-8 data analysis.
4. 14th VL Workshop: March 8-9, 2021. Online. 104 participants. "The Role of Remote Sensing in Climate Change Research." In addition to eight online on-demand lectures, hands-on exercises included Himawari-8 data analysis using Python and land surface dataset analysis using Google Earth Engine.
5. 18th VL Workshop: March 3-4, 2025. Chiba University. 72 participants. In addition to classroom lectures on "Fundamentals and Applications of Remote Sensing," workshops included: "Let's Find Various Clouds from Space! ~Introduction to Satellite Images ×Machine Learning~", "Visualization of Himawari-8/9 Satellite Data using Python", and "Investigating Earth Environmental Changes Seen from Satellites ~Google Earth Engine Edition~". Participants could choose two of the three workshops.

Keywords: Virtual Laboratory, workshop (training course), Satellite data

