

Past Independent Study Examples

Environmental Systems Analysis & Monitoring at CU Skywatch

Goals: Student will learn about scientific instrumentation by assisting Scott Kittelman at CU Skywatch in relocating several instruments and creating a method to convert their analog signal to digital on-site to reduce noise in the data.

End Product: A term paper documenting the re-siting of the instruments and the improved data output

Nonlinear Cloud Feedbacks in CESM1 and CESM2

Goals: Student will study nonlinearities in cloud feedbacks in CESM1 during CO₂ doubling and halving experiments by looking at changes in cloud fraction, cloud optical depth, and tropical circulation. Student will use the same analysis in CESM2 and contrast the inter-model results.

End Product: A term paper with poster suitable for conference presentation

Characteristics of Nocturnal Deep Moist Convection

Goals: Student will assess the environmental factors and mesoscale triggering mechanisms that initiate nocturnal deep moist convection using observations collected during a recent field project and numerical data assimilation techniques. This will include work with data from sounding systems, mobile radar, and stationary radar. The student will gain experience in assimilating the gathered data into high-resolution weather models.

End Product: A term paper with oral presentation to peers

Seeded and Natural Orographic Wintertime Clouds – the Idaho Experiment (SNOWIE)

Goals: Student will gain insight for field campaign planning and operations, learn about state-of-the-art research instruments, and understand how these instruments are used to address research goals. The student will participate in the field campaign by assisting with the daily operations, taking measurements (e.g., soundings, radar), and summarizing the campaign results.

End Product: A term paper with oral presentation to research group
