AVIRIS INVESTIGATOR'S GUIDE

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1. INTRODUCTION

The purpose of the AVIRIS Investigator's Guide is to provide Investigators with a uniform, structured approach to conducting AVIRIS experiments and interacting with the AVIRIS project. It is not a guide for designing experiments; rather, it is simply a guide for planning these experiments and carrying them out.

The motivation for writing this guide stems from an ever-increasing demand for experiments with the AVIRIS instrument. The guide will introduce new investigators to the fundamentals of AVIRIS activities in the domains of science, engineering, and operations. It will also serve as a useful reference for "old-timers," as it will contain background information on the instrument, data processing facility, and the ER-2 aircraft. As a reference, it will also serve as a written description of the roles and responsibilities of investigators in their interaction with the AVIRIS project.

2. APPROACH

The growing necessity for simultaneous ground truth measurements, combined with the random nature of operations dictated by weather conditions, creates a serious challenge for an investigative team to carry out an experiment with limited resources. For this reason a major portion of the Investigator's Guide will be devoted to the planning and logistics of field measurements that must be coordinated with the ER-2 aircraft.

This aspect of AVIRIS operations - the coordination of field measurements with the aircraft - has been a source of friction between investigators, the AVIRIS project, and the High Altitude Missions group. This situation can be improved only by educating people on the realities of aircraft operations and establishing sound, secure agreements that address the needs of each party involved.

The remainder of the guide will be devoted to technical descriptions of the instrument and aircraft, background information on operations and weather prediction, and tips on filling out paperwork associated with flight requests and retrieval of AVIRIS data.

3. CONTENT

The guide will be divided into five sections:

1) Background information - descriptions of those aspects of the instrument, the aircraft, and operations that are most pertinent to investigators. This information will give some idea of the complexity of aircraft operations and hopefully provide insight into the reasons why events unfold as they do during and after a deployment.

2) Requesting acquisition of AVIRIS data - guidelines on properly filling out a flight request form for AVIRS/ER-2 experiments.

3) Preparing for data acquisition - how to plan for successful field operations that will maximize scientific objectives at minimum cost. This information will culminate the techniques of the most successful investigators and point out common errors that result in failure or compromised objectives.

4) Data acquistion - what to expect during a deployment, daily procedures, communications protocols for investigators, role of AVIRIS experiment coordinator during deployment.

5) Requesting AVIRIS data - how to request a retrieval of AVIRIS data from the archive after receiving quick-look data products.

5) Appendices - detailed information on characteristics and performance of the AVIRIS instrument and the ER-2 aircraft. Fundamentals of visible and near-infrared remote sensing through the atmosphere. Calibration of the AVIRIS instrument. Recommendations for ground truth measurements and instrumentation.

4. GENERAL

The Investigator's Guide will be available for distribution prior to the Airborne Geoscience Workshop and may differ slightly from the format indicated in this summary. It will be distributed as a loose-leaf booklet booklet in which sections may be augmented or updated over time.