

Guidelines for Preparing a PhD Dissertation Prospectus **Atmospheric Science Graduate Group** **University of California, Davis**

“To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science.”

–Albert Einstein

The word science derives from the Latin word *scientia*, meaning *knowledge*. Science, however, is much more than simply knowledge: it is the systematic quest for gaining a deeper understanding of the natural world and its phenomena. To gain that understanding, science is built on a process—the scientific method—where hypotheses are formulated and tested, and conclusions are reached and interpreted. Application of the scientific method demands technical skills, critical thinking, and effective communication (written, oral and visual).

The dissertation prospectus is a measure of a student’s ability to apply the scientific method to an important and unresolved problem in the field. Based partly on the prospectus, the student’s dissertation committee will (1) assess the student’s readiness to proceed with the dissertation research, and (2) provide constructive advice on the research project.

The purpose of this document is to provide guidance on preparing your dissertation prospectus. The most important guidance you will receive, however, is that provided by your major professor and your dissertation committee.

THE DISSERTATION PROSPECTUS

Before advancing to candidacy, all PhD students must write and defend a dissertation prospectus that explains the justification for the dissertation research. The following provides details on the formatting, organization and content of the prospectus.

Formatting

Page length: 12 pages, including tables, figures and appendices. The cover page, table of contents, references and curriculum vitae are not included in the 12-page limit.

Font size: No smaller than 12-point Times-Roman font or equivalent for the main body of the prospectus. No smaller than 10-point Times-Roman font or equivalent for figures and tables, including captions.

Line spacing: The line spacing can range from single to double.

Margins: One-inch margins.

Organization and Content

Although there is no single organizational format for the prospectus, it should contain the content described below. The following example format is similar to that commonly used when preparing proposals for federal agencies such as DOE, NASA and NSF.

Cover Page: The cover page of the prospectus includes the title of the prospectus, your name, graduate group affiliation, committee members, and date.

Table of Contents: This is the second page of your prospectus. It lists each major section (and subsection) and the page where it appears.

Introduction: The introduction should clearly state your motivation for pursuing the work and the broader relevance. Key hypotheses, core questions, and main objectives should be prominently stated. The introduction is the first opportunity to convince your committee that your proposed work is important, organized around solvable research questions, and that successful completion of your objectives will result in a substantial contribution to the field.

Present State of Knowledge: This section includes a critical review of the present state of knowledge relevant to the proposed research. The review should include a concise summary of the relevant scientific literature. Your summary should *critically* assess the literature, identifying strengths and weaknesses in prior works, making clear how your research will add to current knowledge in the field.

Methods: This section describes the methods that you will use to conduct your research, and explains why you have chosen them. You should provide sufficient detail so that an expert in the field will be able to evaluate if the methods are most appropriate for your proposed research.

Preliminary Results: Although it is common to present some preliminary results in the prospectus, it is not required. If there are preliminary results, present only those results that help motivate the proposed work. Keep in mind that the focus of the prospectus is to provide a cogent work plan that will lead to new knowledge and understanding, not to provide a lengthy review of what you have already done.

Research Tasks: Each research task should be logically organized and clearly connected to your hypotheses, questions, and objectives. For each task, you should clearly state why it is important and how it will add to the current body of knowledge in the field.

Timeline: A brief timeline, either in prose or in a table, should identify when specific research milestones will be completed. For example, if you have several research tasks, then a date could be provided that approximates when each task will be completed.

Summary and Broader Impacts: The prospectus should finish with a brief summary that reiterates the importance of the proposed work and how its successful completion will have broader impacts for the field and for society.

References: The literature cited in the body of the prospectus is listed in the reference section. The format for the citations should follow that used in standard atmospheric science journals, such as those published by the American Geophysical Union or the American Meteorological Society.

Curriculum Vitae. The curriculum vitae (CV) should provide a brief summary of your educational and work background. For example, your CV should include any prior academic degrees, work experience, awards, conference presentations, publications, etc. Example formats for writing CVs can be found online.