

Climate Science MS and Climate Dynamics PhD Thesis/Dissertation Proposal Defense Guidelines

1. Purpose

The thesis/dissertation proposal defense ensures that the proposed research is **scholarly, original, methodologically sound, and feasible**, and that the student is prepared to undertake the proposed research.

2. Eligibility

Students must:

- Have an approved thesis/dissertation committee
- Submit a complete written proposal to the committee at least two weeks before the oral proposal defense date
- For a Climate Dynamics PhD dissertation proposal, students are expected to submit a paper to a peer-reviewed journal before submitting and defending a dissertation proposal - <https://catalog.gmu.edu/colleges-schools/science/atmospheric-oceanic-earth-sciences/climate-dynamics-phd/#requirements>

3. Written Proposal Requirements

The written proposal typically includes:

- Title and Abstract
- Introduction and Problem Statement
- Literature Review
- Research Questions or Hypotheses
- Methodology outlining Data and Analysis Plan
- Preliminary Results
- Expected Contributions
- Timeline and Work Plan
- References

**Note that according to GMU's formatting instructions (<https://udts.gmu.edu/resources/>) the final thesis/dissertation document can be either "traditional (chapter-based)" or "Manuscript-style". If the student plans to use the manuscript style they may want to structure their proposal document similarly with the sections described above organized by paper i.e. Introduction, Methods, Preliminary Results organized by paper.*

The length of the written proposal should be 15 pages excluding references.

4. Proposal Defense Format

- **Length:** 90 minutes

- **Defense Structure:**
 - Student presentation (30 to 40 minutes)
 - Committee questioning (30 to 40 minutes)
 - Closed committee deliberation (10 to 20 minutes)
- The defense may be held in person or virtually

5. Student Responsibilities

The student is expected to:

- Clearly articulate the knowledge gap, research goals, significance, and approach
 - Proposal should identify a clear gap in climate science knowledge
 - Proposed contribution should advance knowledge beyond incremental replication e.g. generate new process understanding, a novel diagnostic framework, improved parameterization, or a dataset that enables new understanding
 - Central questions should be physically sound and appropriately scoped
 - Research questions, stated hypotheses, objectives, and claimed scientific contribution should be internally consistent
 - Pertinent scientific literature pertaining to the research question should be described and cited
 - The proposed methodology should be technically sound and state-of-the-art
 - Proposed work and timeline should be feasible, and the computing or observational infrastructure required to do the research should be available e.g. access to high performance computing.
 - Proposal presentation should be scholarly and clearly written
- Demonstrate familiarity with relevant literature
- Justify methodological choices and demonstrate mastery of relevant methods
- Present a realistic timeline and work plan
- Respond professionally to committee questions and feedback
- Complete required revisions within the committee-specified timeline

6. Committee Responsibilities

The thesis committee shall:

- Review the proposal prior to the defense (all committee members)
- Evaluate the proposal's scholarly merit, rigor, and feasibility according to the criteria specified under Student Responsibilities (all committee members)
- Prepare constructive written feedback on the proposal document (all committee members)
- Meet privately after the oral presentation and questioning to determine the defense outcome and required revisions (all committee members)
- Clearly communicate both orally and in writing:
 - The defense result (committee chair)
 - Required revisions (if any) (committee chair)
 - Deadlines for revisions (committee chair)

7. Defense Conduct

Student

- Arrive prepared to answer questions on:
 - Theoretical framework
 - Methodological rigor and limitations
 - Feasibility and scope
- Respond professionally and thoughtfully.
- Acknowledge weaknesses and be open to feedback.

Committee

- Allow the student to present without interruption (with the exception of brief clarifying questions)
- Ask constructive, focused questions
- Distinguish between:
 - Required revisions
 - Optional suggestions
- Maintain a professional and respectful tone.

8. Defense Outcomes

Possible outcomes include:

- **Pass:** Proposal approved (minor or no revisions)
- **Conditional Pass:** Substantive revisions to the proposal document required, but no re-defense necessary
- **Fail:** Proposal requires reconceptualization and re-defense

The committee chair will communicate the outcome and revision requirements to the student in writing. If revisions are required, a timeline for completing the revision should be given. **Please Note: For PhD dissertation proposals, advancement paperwork cannot be submitted until the revisions to the written proposal document have been complete and approved.**

9. Post-Defense Requirements

- The student must complete all required revisions by the specified deadline
- Final approval is granted once revisions are deemed satisfactory
- A signed thesis/dissertation proposal form will be submitted to the program and the College of Science Graduate Student Affairs Office together with a copy of the committee-approved written proposal, as well as other forms if a PhD dissertation proposal and advancing to candidacy (see program website for further details and [required forms](#)).

Acknowledgement

These guidelines were generated from prompts to GMU's SyllaBright tool within PatriotAI on March 24th 2026 and adapted by the Climate Dynamics faculty. Some initial examples of

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