

University Earth System Science (UnESS)

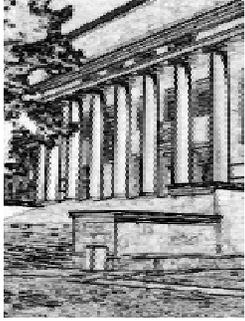
UnESS Preproposal Conference Kickoff

AO-99-OES-02

Gordon Johnston

Office of Earth Science

September 10, 1999



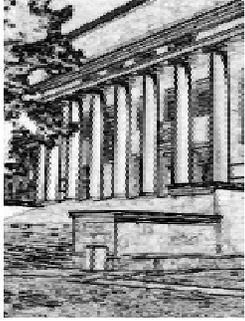
University Earth System Science (UnESS)

UnESS Goal

The goal of the UnESS Project is to foster the development of the next generation of Earth system

- scientists,
- engineers,
- managers,
- educators, and
- entrepreneurs

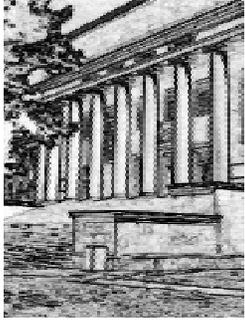
through significant and meaningful hands-on student involvement in Earth observation space missions at the university level.



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Agenda

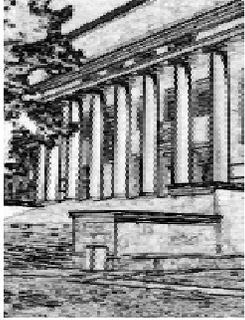
9:00 am	Plenary Kickoff	Gordon Johnston
9:30	Science Requirements	Earnest Paylor
10:00	Student Involvement Requirements	Earnest Paylor
10:30	Proposal Requirements, Evaluation Criteria and Process (incl. Office of Equal Opportunity Programs funding)	Gordon Johnston
12:00 pm	Launch Services	Darrell Foster
12:30	Lunch (and deadline to submit questions)	
2:00	Preliminary Answers to Questions Submitted at the Preproposal Conference	Paylor, Johnston, Foster, Malone, Wei
5:00	Adjourn	



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Logistics

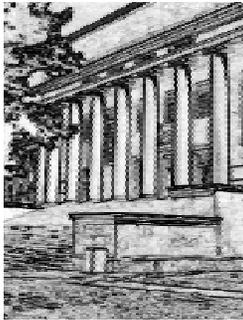
- **Restrooms/Breaks/Lunch**
- **UnESS Website- <http://uness.larc.nasa.gov/uness>**
 - **UnESS Schedule**
 - **UnESS AO text**
 - **Formats available PDF, MSWord95, MSWord97, HTML, Text, Hardcopy on request**
 - **UnESS AO Question and Answers (AO and AO concept)**
 - **All Questions and Answers will be made available through this site so check often**
 - **Please comment on AO concept**
 - **UnESS Notice of Intent**
 - **UnESS Library**
 - **Not all-inclusive**
 - **Responsibility of PI to obtain needed up-to-date documents**
 - **Concept Study Report Guidelines available here**
 - **UnESS Teaming Interest**



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NASA Participants

- **Gordon Johnston, HQ, Office of Earth Science**
- **Earnie Paylor, HQ, Office of Earth Science**
- **Ming-Ying Wei, HQ, Office of Earth Science**
- **John Malone, HQ, Office of Equal Opportunity Programs**
- **Julius Dasch, HQ, Education Division**
- **John Lintott, LaRC, Space Science Support Office**
- **Greg Frazier, GSFC, Earth System Science Pathfinders Project Office**
- **David Pierce, GSFC, University Class Projects Office**
- **Betsy Park, GSFC, ISS Research Program Office**
- **Darrell Foster, KSC, ELV Launch Services**
- **Ron Miller and Bill Watson, GSFC, Rapid Spacecraft Development Office**
- **Melissa Donnelly and Vera Marshall, JORGE Scientific**



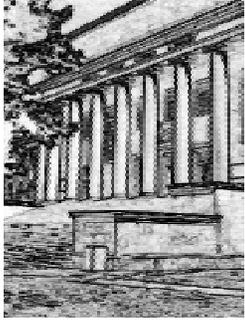
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Schedule

- AO draft release for community review **May, 1999**
- Community Review Comments Due **June 7, 1999**
- Announcement of Opportunity release **August 2, 1999**
- ➔ Preproposal Conference **September 10, 1999**
- Notice of intent due **October 20, 1999**
- Proposal submittal due by 4:30 p.m. EST **December 1, 1999**
- Non-U.S. Letter(s) of Endorsement due **January 15, 2000**
- Selections for Concept Definition Studies (target) **February, 2000**
- Award (target) **March, 2000**
- Concept Definition Studies Complete (9 months) **December 1, 2000**
- Downselect for Definition, Development and Flight **February, 2001**
- Mission Flights **2003/2004**

Dates selected to meet academic calendar

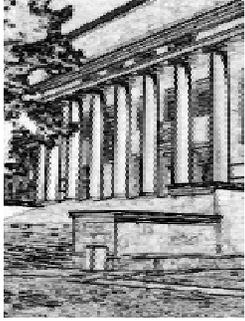
- Dec. 1 proposal due and concept studies complete dates allow for exams
- Feb. selection and downselect dates allow time for professors to make student offers of support for work to begin in summer term.
- Student support funds not available for proposal development



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Disclaimer and Question Submission

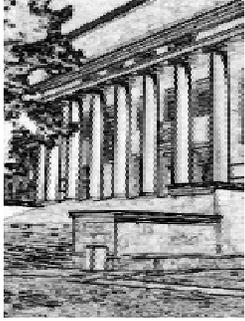
- **If we make a mistake and say something that contradicts the AO, the AO takes precedence**
 - Do not hesitate to ask if you are not clear
- **Please submit all substantial questions in writing**
 - We need to document the questions and answers on the Web
 - Please indicate which presentation and/or which section of the AO your question refers to
 - Verbally ask questions only if they are clarifications of the presentations (e.g., “I didn’t understand that last word.”)
- **We will collect all of the questions before lunch, and work on preliminary answers over the lunch break**
- **Final answers (cleared by our legal and procurement folks) will be posted on the Web**



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Science and Student Involvement Requirements

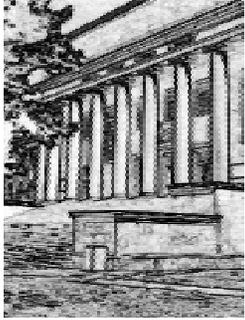
Dr. Earnest Paylor



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Proposal Requirements

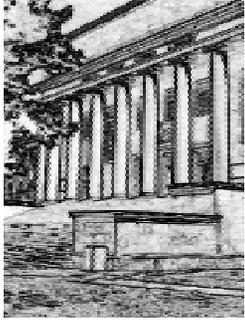
Gordon Johnston



University Earth System Science (UnESS)

AO Table of Contents

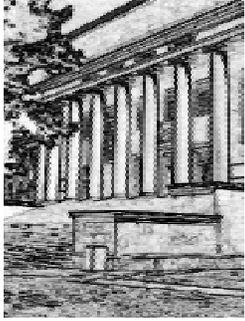
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Description of Opportunity (Section 1) and Earth System Science Program (Section 2)

- **Section 1: Executive Summary of the AO**
 - **Goals**
 - **General Provisions**
 - **Definitions**
 - **Commercial Endeavors Provision**
 - **Opportunity Period and Schedule Information**
- **No balloons, aircraft, or sounding rocket mission will be considered, although these may be included in support of the space flight mission, for example for calibration/validation**
- **Section 2.1 (and Appendix A): Covered in Dr. Paylor's presentation**



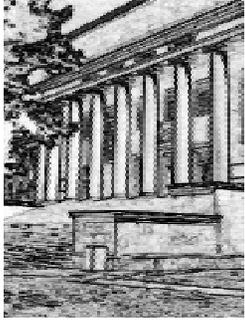
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UnESS Project Objectives (section 2.2)

- The goal of the UnESS Project is to foster the development of the next generation of Earth system
 - scientists,
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 - entrepreneurs

through significant and meaningful hands-on student involvement in Earth observation space missions at the university level.

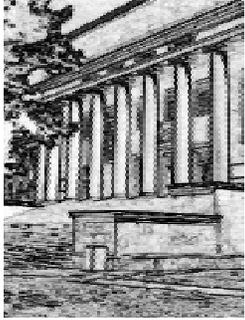
- Student defined as any individual enrolled in an accredited university educational program with the documented intention of obtaining a degree
- Equal weight to the scientific/application and student involvement aspects.



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University Earth System Science Project Requirements, Constraints, and Guidelines

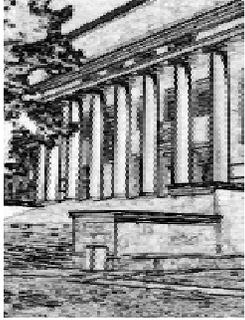
- PI led missions with limited NASA oversight.
- Investigators can be from universities, industry, nonprofit institutions, NASA Centers, Federally Funded Research and Development Centers, other Government agencies, or foreign organizations.
 - Co-Investigators must have an identified role in the proposal, play a defined and necessary role in the investigation, and covered in the funding plan.
 - Mission teams are encouraged to include minority students, and investigations are encouraged to include Historically Black Colleges and Universities (HBCU) and Other Minority Universities (OMU) as full participating team members.
 - The aerospace industry is encouraged to support participating universities by establishing mission mentorship programs based on their expertise and by providing contributions to the missions.



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University Earth System Science Project Requirements, Constraints, and Guidelines

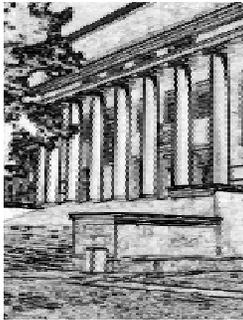
- Investigations are capped at a maximum of \$15 million in NASA Earth Science Enterprise funding.
 - Outside contributions to the mission are encouraged
- Additional funding option for HBCU/OMU participation
- Investigations should be designed and planned to emphasize mission success within cost and schedule constraints by incorporating sufficient margins, reserves, and content resiliency.



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University Earth System Science Project Requirements, Constraints, and Guidelines

- End-to-end investigations
 - begins with concept definition
 - includes spaceflight hardware development
 - ends with delivery of the data products to the scientific community
- Two mission types.
 - Complete flight mission -- the instrument is the primary payload on the spacecraft and launch vehicle
 - Partial mission -- the instrument is a secondary payload on another mission
- Must identify, describe and include the costs of instrument carriers, launch vehicles, and services



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University Earth System Science Project

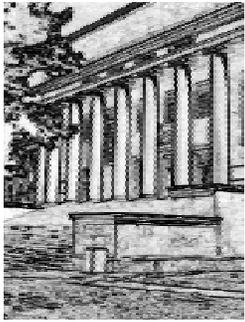
Requirements, Constraints, and Guidelines

Mission Options

Mission Type	Science	Instrument Carrier	Launch Vehicle	Launch Service Provider	Launch Service Cost
Complete Flight Mission	Instrument	Own Free-Flyer Spacecraft	Get own ELV	Commercial	If Contributed
				NASA	Not an Option
			Shared ELV	PI Gets	Must be Costed
				NASA Gets	Must be Costed
			Space Shuttle	NASA/PI	\$ 0 *
Spartan	Space Shuttle	NASA/PI	\$ 0 *		
Partial Mission	Instrument	Space Station	Space Shuttle	NASA	\$ 0 *
		Space Shuttle (Cargo Bay)	Space Shuttle	NASA	\$ 0 *
		Somebody Else's Spacecraft	Provider's Launch Vehicle	Commercial, Government, Foreign	Must be Costed

*Not all integration costs are covered. See AO Section 3.2 for details.

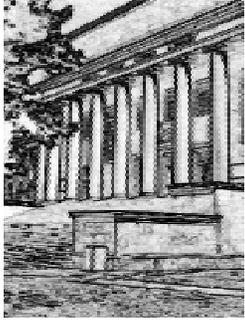
- **Space Shuttle and ISS services will be GFE, are no cost to investigation, and are not considered within the NASA funding**
 - **Modifications to existing hardware must be costed**
 - **New hardware must be costed**
 - **All safety and integration must be costed**
- **Code M funded standard Space Shuttle services are no cost to investigation and are not considered within the NASA funding cap**
- **Demonstrated reliability of launch service chosen will be evaluated**
- ***Proposal must identify the planned launch opportunity and provide documentation that the launch service provider agrees to manifest the mission.***



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University Earth System Science Project Requirements, Constraints, and Guidelines

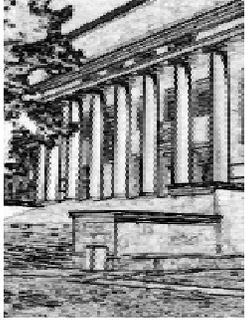
- Standard ISS integration costs are provided at no cost.
- Payload unique integration costs and safety costs must be included in the proposal.
- The Shuttle carriers for ISS payloads will be provided by the ISS program at no cost.
 - The EXPRESS Pallet launch opportunities are manifested for late 2003.
 - The first opportunity to launch payloads intended for the Window Observational Research Facility (WORF) will be in late 2001.



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University Earth System Science Project Requirements, Constraints, and Guidelines

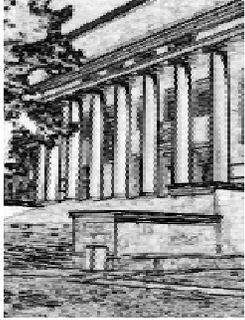
- **Participation of non-U.S. individuals and organizations as team members is welcome.**
 - **Contributions encouraged**
 - **Carriers, launch vehicles and launch services, and space operations may be contributed by international partners and must be included in Total Mission cost**
 - **Direct purchase of goods and/or services subject to the FAR provisions set forth in Appendix E**



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Proposal Preparation and Submission

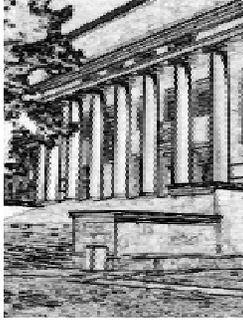
- **UnESS Project Library (on-line)**
 - Check, as we intend to update it as we get more information
- **Technical and Scientific Inquiries**
 - E-mail preferred: mdonnell@hq.nasa.gov, with subject designated as UnESS NOI-(PI Name)
- **Notice of Intent to Propose**
 - Due October 20, 1999
 - Internet form: <http://uness.larc.nasa.gov/uness>
 - E-mail: mdonnell@hq.nasa.gov, with subject designated as UnESS NOI-(PI Name)
- **General NASA guidance for proposals in general given in AO Appendix B**
- **Required proposal format and contents summarized in AO Appendix C**



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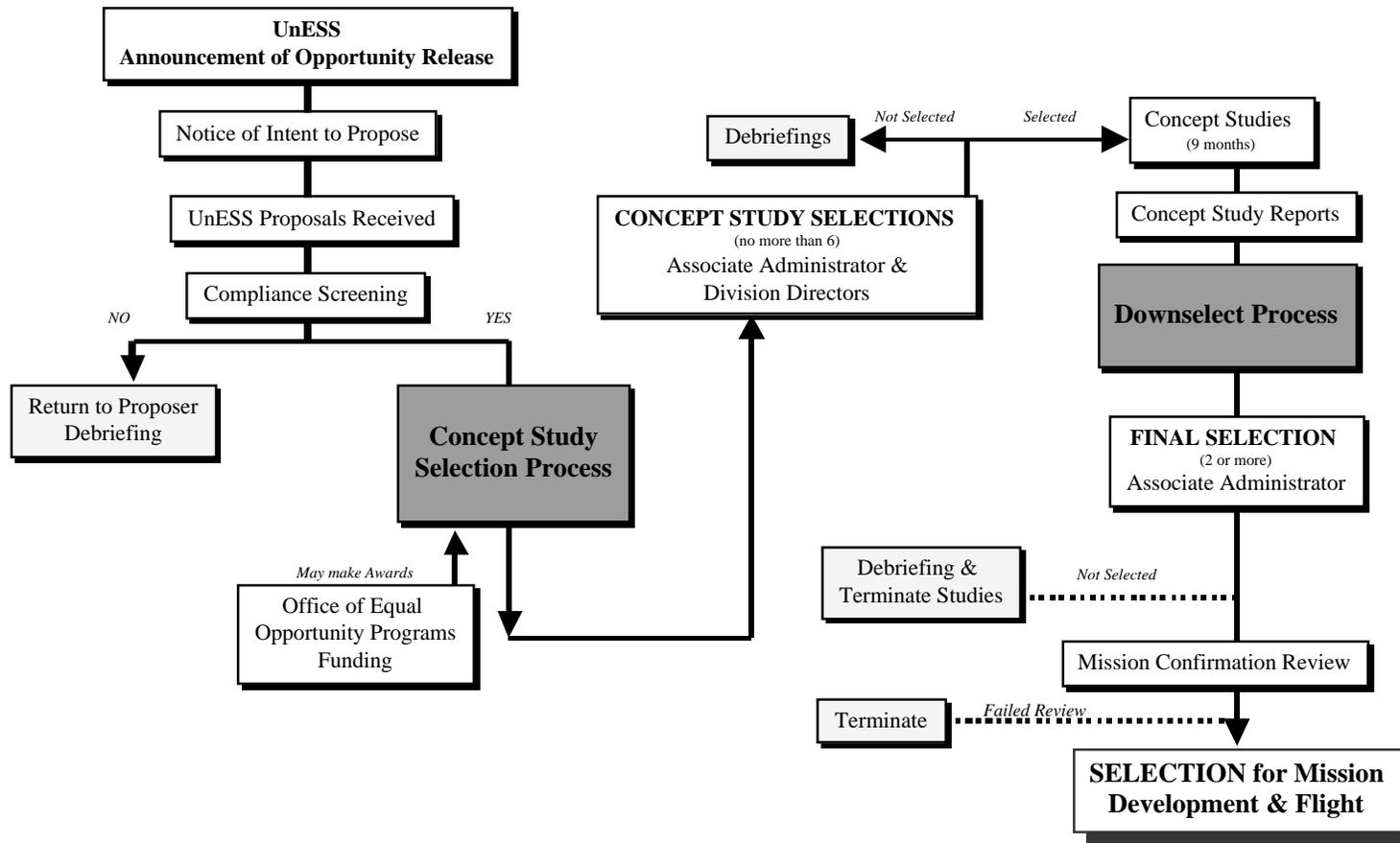
Proposal Preparation and Submission (concluded)

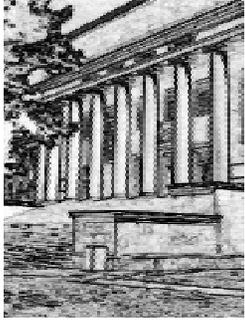
- **Submission**
 - **The original copy of all proposals shall include a letter of endorsement for all organizations offering goods and/or services on a no-exchange-of-NASA-funds**
 - **Non-U.S. organizations must also submit endorsements to Ms. DeVon Carroll at address given in AO**
 - **Include three copies of diskettes containing electronic version of proposal along with brief description of contents of diskettes**
 - **Provide 30 copies of proposal plus original signed proposal**
 - **Submit proposals to:**
 - University Earth System Science 1999 Support Office**
 - Jorge Scientific Corporation**
 - 400 Virginia Avenue SW, Suite 700**
 - Washington, DC 20024**
- **Deadline December 1, 1999 before 4:30 p.m. Eastern Standard Time**
- **NASA will notify proposers in writing that proposal has been received within two weeks of deadline.**



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Proposal Evaluation, Selection, Debriefing, and Implementation (Section 5)

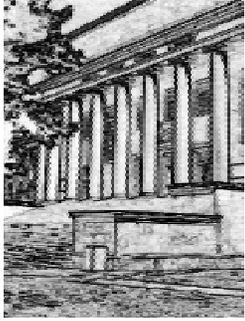




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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

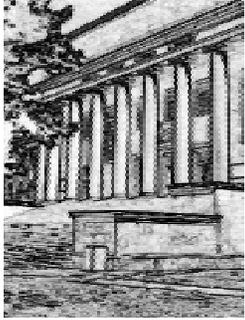
- **Concept Study Selection Process**
 - Preliminary Screening
 - Evaluate Against Criteria
 - Categorize and Report to Selection Official
 - Nominally Select Six Proposals for Nine-month Studies
 - Debriefs Upon Request
- **Separate Office of Equal Opportunity Evaluation of Selected Proposals**
- **Down select Process**
 - Concept Study Report will be used as basis for the Downselect Process
 - Preliminary Screening
 - Evaluate Against Same Criteria (greater level of detail)
 - Selected investigations will be notified by phone, followed by formal written notification
 - A Project Initiation Conference will be held as soon as possible after selection
 - Proposers not selected will be notified in writing and offered a debriefing within 30 days of the review



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

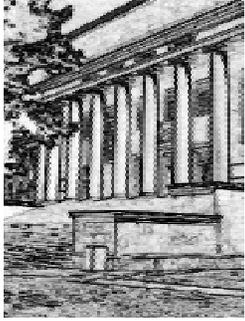
- **Evaluation criteria**
 1. **The Scientific/Applications merit**
 2. **The Degree of Student Involvement**
 3. **The Technical Implementation Plan**
 4. **The Management Plan**
 5. **The Cost and Cost Realism**
 6. **The Other Opportunity Plan**
- **Office of Equal Opportunity Programs evaluation criteria (Concept Study Only)**
 7. **The degree to which the proposal meets the requirements of increasing the capabilities of HBCUs/OMUs to participate in Earth science/applications missions**
- **Evaluations**
 - **Criteria 1, 2, 6, and 7 are measurements of quality and NASA will assign adjectival ratings (Excellent, Very Good, Good, Fair, and Poor)**
 - **Criteria 3, 4, and 5 are measures of implementation feasibility and NASA will assign risk ratings (Low Risk, Medium Risk, and High Risk)**
 - **For the Risk criteria, a factor can outweigh all others if it jeopardizes overall mission success.**



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

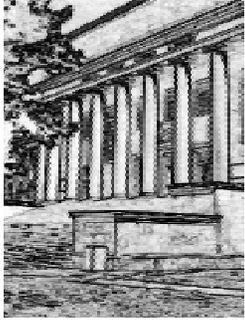
- **Approximate, Relative Weighting of Criteria:**
 - **Scientific/Applications Merit and Degree of Student Involvement**
 - equal weight.
 - **Technical Implementation, Management Plan, and Cost and Cost Realism**
 - equal weight
 - secondary importance
 - **Other Opportunity Plan**
 - lesser importance
- **After selection the Office of Equal Opportunity Programs will conduct an independent and separate evaluation of the selected proposal.**
 - **Only for proposals that request Office of Equal Opportunity Programs funding**



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

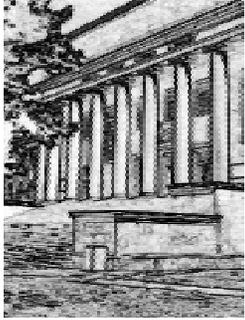
- Science/Applications Criterion.
 - The overall scientific and/or applications merit (see next page)
 - The relevance of the proposed investigation
 - The uniqueness and innovation of the proposed investigation
 - The feasibility of the proposed investigation
 - capability of measurement to achieve the objectives
 - The expertise and experience of the senior members and mentors for the science and applications team
 - The adequacy of the correlation measurements and validation activities
 - The adequacy of the data processing and distribution plan, including analysis, archiving, and dissemination of data and results.
 - Compliance with the guidelines and requirements of the AO (for initial proposal) and Concept Study (for downselect).
 - Adequacy and likelihood of success of plans to resolve outstanding science or applications issues by the completion of the Concept Study (for initial selection only) and/or the Mission Confirmation Review.



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

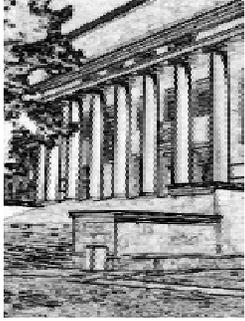
- Science/Applications Criterion: overall scientific and/or applications merit as measured by:
 - The scientific or applications objectives and justification
 - based upon the results expected from the mission as proposed,
 - or based on the potential for future results based upon the technology/technique.
 - If justification is based upon a future capability, include a plan or “roadmap” describing how the demonstration will lead to the full mission
 - including likely funding sources for the full mission (i.e., commercial, current or planned NASA programs, etc.).
 - NASA will assess the likelihood that demonstration will lead to full mission.
 - The coherence of the traceability from objectives to measurements to instrument functional requirements and the instrument/mission engineering requirements.
 - The scientific resilience of the investigation, as reflected by the assessment of proposed descope options and the sensitivity to and likelihood of reduced performance or shortened mission life.



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

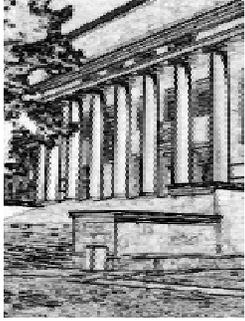
- Student Involvement criterion.
 - Extent of hands-on involvement in all phases of the mission by a diverse group of students, including those underrepresented in science and engineering fields, in certified degree programs at the undergraduate and graduate level.
 - Breadth of student involvement, such as science students, engineering students, other academic disciplines, such as business, journalism and communications, graphic/fine art, education, law, etc.
 - Plans to attract and involve under represented minority students
 - Educational and academic impact of student involvement, including any innovative features that will extend the impact beyond the immediate mission team.
 - Quality, scope, and realism of the proposed student involvement, including oversight and mentoring plans, capability and commitment of mentors
 - Compliance with the guidance and requirements of the AO (for the initial proposal) and the Concept Study Guidelines (for the downselect).
 - Adequacy and likelihood of success of plans to resolve outstanding student involvement issues by the completion of the Concept Study (for initial selection only) and/or the Mission Confirmation Review.



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

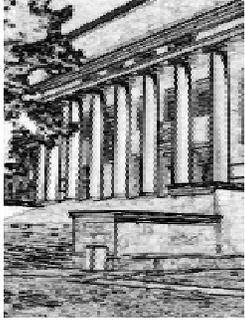
- Technical Implementation criterion.
 - Mission design
 - Spacecraft hardware and flight software
 - Instrumentation:
 - capability of the instrument to achieve the measurement
 - Instrument Interface and Payload Integration
 - Launch vehicle
 - Manufacturing, Integration, and Test
 - Ground and data systems
 - Mission Operations
 - Compliance with the guidance and requirements of the AO (for the initial proposal) and the Concept Study Guidelines (for the downselect).
 - Adequacy and likelihood of success of plans to resolve outstanding technical implementation issues by the completion of the Concept Study (for initial selection) and/or by the Mission Confirmation Review.



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

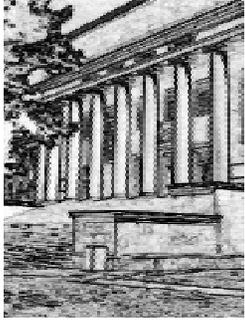
- Management criterion.
 - Management processes and plans, schedules and procurement strategy
 - Team organization and structure
 - Cost and Risk Management Plan
 - Mission Assurance and Safety
 - Facilities and Equipment
 - Compliance with the guidance and requirements of the AO (for the initial proposal) and the Concept Study Guidelines (for the downselect).
 - Adequacy and likelihood of success of plans to resolve outstanding management implementation issues by the completion of the Concept Study (for initial selection) and/or by the Mission Confirmation Review.



University Earth System Science (UnESS)

Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

- Cost and Cost Realism criterion.
 - Cost Validity
 - Cost Risk
 - Total Cost to the Earth Science Enterprise
 - Compliance with the guidance and requirements of the AO (for the initial proposal) and the Concept Study Guidelines (for the downselect).
 - Adequacy and likelihood of success of plans to resolve outstanding cost and cost realism issues by the completion of the Concept Study (for initial selection) and/or by the Mission Confirmation Review.

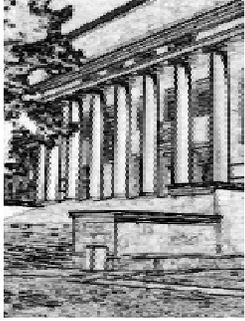


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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

- Other Opportunity criterion.
 - Educational outreach (over and above student involvement in the mission)
 - Public outreach
 - Plans for significant participation (the NASA Agency-wide goal is 8% participation) in the mission team by:
 - Historically black colleges and universities (HBCUs) and other minority universities (OMUs)
 - Small businesses small disadvantaged businesses, and women-owned small businesses
 - Commercial opportunities

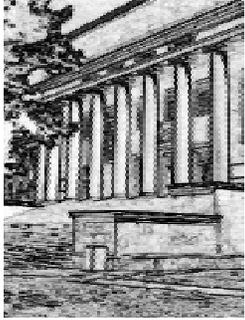
- NASA recognizes that the low cost of the investigations solicited by this AO may not allow the proposed investigation to address all of these.



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Proposal Evaluation, Selection, Debriefing, and Implementation (continued)

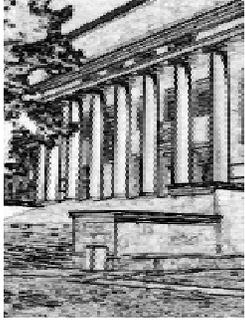
- Office of Equal Opportunity Programs Minority University Research and Education Programs Funding Evaluation Criterion.
 - The degree to which the proposed effort
 - contributes to an effective, long-duration partnership
 - that leads to an increase in the training of, involvement in, and broad understanding of Earth science/applications missions
 - by students underrepresented in Science, Mathematics, Engineering and Technology.
 - The quality, scope, and realism of the proposed effort to benefit the continued involvement of HBCUs and OMUs in earth science missions.
 - The adequacy of plans for evaluating the effectiveness and impact of the proposed activity and the capability and commitment of the proposer to carry out the proposed program.
 - The adequacy and realism of the proposed cost.



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Proposal Evaluation, Selection, Debriefing, and Implementation (concluded)

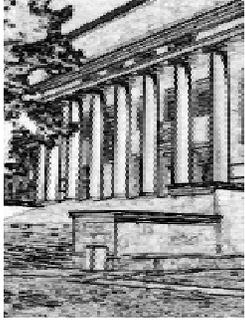
- **Debriefings**
 - Debriefings will be available at each major decision/selection point as an educational benefit to proposing teams
 - Debriefings may be by mail, telephone, video conference, or conducted in person at NASA headquarters.
 - NASA recommends all representatives from all participating proposal disciplines participate in debriefing
 - NASA has no funds to defray travel costs by unsuccessful proposal teams
- **Award Administration**
 - Different mission management approaches and organizational arrangements of selected proposals may require different award mechanisms
 - Selections may result in a contract award with options. NASA not obligated to exercise option.



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Proposal Outline and Page Count Limits

Section	Section Name	Page Limits
A	Investigation Summary	Use UnESS Forms 1 & 2
B	Cover Page	1 (not part of proposal limit)
C	Endorsements	No limit (not part of proposal limit)
D	Table of Contents	No limit (not part of proposal limit)
E	Science/Applications Investigation	25 pages total for combination of Sections E and F
F	Student Involvement Investigation Description	
G	Technical Implementation	25 pages total for combination of Sections G, H, I, and J
H	Management	
I	Cost and Cost Estimating Methodology	
J	Other Opportunities	
K	Office of Equal Opportunity Programs Minority University Research and Education Programs Funding (This additional page is allowed only for those proposals requesting funding from the Office of Equal Opportunity Programs)	1 (required to be on separate page for removal during evaluation process)
L	Appendices: (No others permitted) Resumes (one page per team member) Letters of Endorsement Certifications Statement(s) of Work (SOW) Reference List (optional) Acronyms List (optional)	No page limit, but small size encouraged

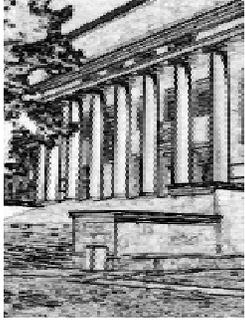


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Most Important Thing To Do

Read-----

- **Announcement of Opportunity Closely**
- **Concept Study Report Guidelines**

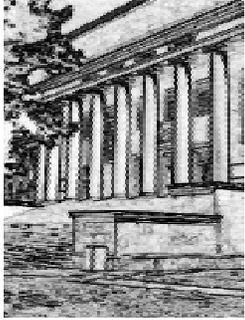


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Gordon's Informal Guide to Proposal Writing

- **Keep it simple**
- **Avoid passive voice (i.e., say who will do what)**
- **Make the information easy to find (e.g., summaries, references, tables, figures)**
- **Don't assume the obvious**
- **Be consistent**
- **If you depart from the norm, explain and justify (we use the norm to check for reasonableness and completeness)**

These are suggestions, not a guarantee of success



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Launch Services

Darrell Foster