

# Perspectives on Proposal Writing

**Suggestions from a Physical  
Oceanography Program Manager**

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Washington, DC**

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# Qualification to give you advice

- 20+ years managing research program in physical oceanography at NASA HQ.
- Standing stock of 200 projects requires ~50 new selections/year.
- Review ~200 proposals/year to select ~50.
- My advice on proposal writing is based on experience **READING** and **REVIEWING** proposals **NOT WRITING** them – so this advice could be worth what you paid for it (nothing!)

# Keys to Proposal Success

- Telling a good story
- Appealing to two audiences
  - Peer Review (people just like you!)
  - Funding Agency (govt, foundation, etc.)
- Scientific clarity
  - Hypothesis
  - Data and methods
  - Analysis
  - Results
  - Managing the project

# Five essential story ingredients

(or choose your favorite story-telling guidance!)

- **Orientation** - The beginning of a story must grab the reader's attention, orient her to the setting, mood and tone of the story, and introduce her to a protagonist she will care about, even worry about, and emotionally invest time and attention into.
- **Crisis** - This crisis that tips your character's world upside down must, of course, be one that your protagonist cannot immediately solve. It's an unavoidable, irrevocable challenge that sets the movement of the story into motion.
- **Escalation** - First, stop thinking of plot in terms of what happens in your story. Rather, think of it as payoff for the promises you've made early in the story. Plot is the journey toward transformation.
- **Discovery** - In one of the paradoxes of storytelling, the reader wants to predict how the story will end (or how it will get to the end), but he wants to be wrong. So, the resolution of the story will be most satisfying when it ends in a way that is both inevitable and unexpected.
- **Change** - Marks the resolution of the crisis and the culmination of the story.

# Excellent proposal =good story

- **Orientation** - what problem are you trying to solve? Your scientific hypothesis must be an exciting challenge and a puzzle worthy of investment.
- **Crisis** – what problems confront the PI? The challenges in addressing the hypothesis set your plot in motion and animate your proposal.
- **Escalation** – your story must lead to a pay-off. You must articulate how your work leads to transformation in our science.
- **Discovery** – often it is clear from the outset what the result will be and science is the path to proving the obvious. However, a superior proposal will educate the reader on the unexpected or non-obvious results that arise from the work.
- **Change** – how have we resolved (or intend to resolve) the crisis (above) and what is the pay-off for pursuing these years of work?

# PI or Hypothesis as Protagonist?

- It may be useful to think of yourself as the protagonist in your proposal story. Facing internal (scientific/logical) and external (real world) challenges to solution (transformation) that set in motion a plot (your work) that leads to discovery and change and ultimately a pay-off for science and society.
- Alternatively, it may be helpful to build a story around the scientific hypothesis as protagonist and yourself as a character. Just try to build a story that grabs the reader!

# Common elements in peer review

- **Scientific merit** – Many more proposals have merit than we have money, so grabbing reviewers with a good story can and does make a difference.
- **Relevance** – Pay attention to the agency or foundation to which you submit the proposal! With many proposals of high merit, relevance to the agency/program may be and often is the differentiating factor.
- **Cost** – Make sure the costs are realistic and justified for the work proposed. Its never good if peer reviewers start asking questions about elements of your budget!

# Project management

- A clear plan for managing the research project is often absent from a proposal with a great idea.
- So don't forget that the PI is viewed not only as a scientist but as a project manager.
- Peer reviewers should sense that you are BOTH a good scientist and good project manager!

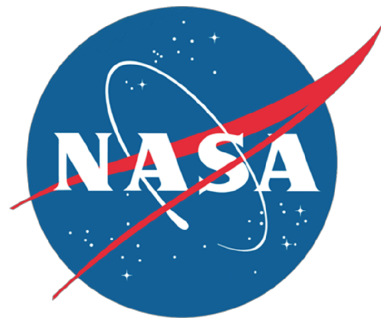
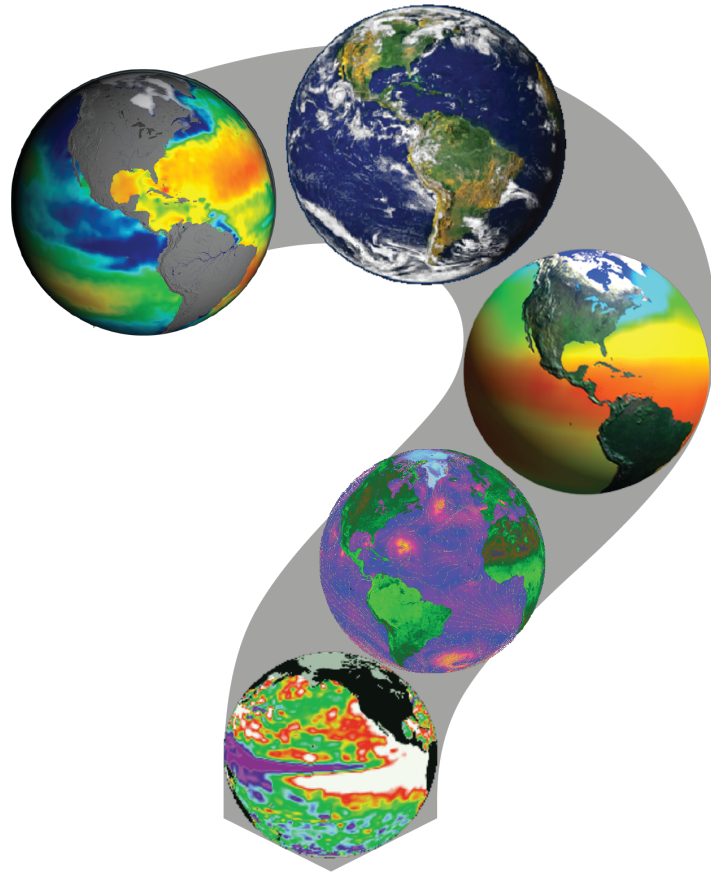


# Things to avoid

- Don't be a professor. Neither your peers nor the agency want a lecture to begin your proposal.
- Don't write a technical paper. You need to sell an idea, appealing to your peers.
- Don't include figures (or any filler) that fail to contribute to your story.
- Don't violate any page, font, and format guidance. Your peers really hate that!!

# Summary

- Despite your having a great idea for some scientific analysis, there are many more of these ideas than funds available.
- You **MUST** attract extra positive peer review by telling a good story and articulating clear project management practices.
- Have your proposal reviewed by a friend before submission to make sure your **STORY** is clear and compelling. This alone will increase your chances of success!



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# NASA Research Opportunities in Space and Earth Science (ROSES)

- Physical Oceanography R&A (27 June 2019)
- Salinity (29 Aug 2019)
- Sea Level Change (31 Oct 2019)
- (NOI due 30 days ahead for all these)

**ROSES is issued annually around Valentine's Day (14 Feb)**



Rose of Galaxies from Hubble

<http://solicitation.nasaprs.com/>

# NASA Physical Oceanography Program

- 1) Support missions on orbit:** Jason-2 & Jason-3 (Altimetry), QuikSCAT(Winds), SMAP (Sea Surface Salinity), MODIS and VIIRS (SST), OMG (EVS-2/sub-orbital)
- 2) Support missions in development:** Surface Water and Ocean Topography (SWOT) LRD-4/2021, Jason-CS/Sentinel-6A&B (Altimetry) 2020/2025
- 3) Support Science Teams:** Altimetry (OSTST), SST (GHRSSST&US team), SSS (OSST), Winds (OVWST), Sea Level Change (N-SLCT), SWOT (SWOT ST), Atlantic Meridional Overturning Circulation (AMOC)
- 4) Support Climate Focus Area/Ocean Observing:** US CLIVAR, USGCRP, GOOS, GCOS, GODAE OceanView, NOAA COSC, IOOC, CEOS, ....
- 5) Process Studies related to NASA missions:** Salinity Processes in the Upper Ocean (SPURS-1, 2011-2015) (SPURS-2 2015-2019), TPOS-2020, IIOE-2, SWOT Ocean Cal/Val