This will be about the peer review process and proposal writing – geared heavily towards NASA. But can apply skills to NSF, NIH, etc.

Always start with the guidebook for proposers

**Take home messages:**
- Start early-when not getting funded doesn’t matter (probability of winning on your first one is very low...expect rejection)
- Program officer/point of contact is the interface between the funding agency and you. Call them or email them with questions (even if win an award, be in contact with them)
- Request a debriefing on unsuccessful proposals (sometimes it will just be rereading, but sometimes this can include notes to nasa, or things about a major weakness being listed by all reviewers before they even met as a panel). Get max or Christina involved if never hear back from program officer
- Don’t annoy your reviewers

What does this pot of money look like?
ROSES- calls come out Feb 14th (lolz)... describes all programs, divisions and rules of those divisions
A.1 (earth science overview), B.1, C.1 (planetary science overview), D.1 (astrophysics): **ALWAYS read .1**, always expect that things change....

Read summary of solicitation, appendices, etc

How do I get the money?
Come up with an idea/research topic first (to make sure you’d be working on something you want to work on). Then mold your passion to the calls. Sit down with a beer or lovely tea and start to flip through ROSES. Know it, know it well. Mold it to the program you need to apply to. Think through your proposal. Think of 1980 buick skylark...need to sell it to Mercedes benz enthusiast. How do you make it sound like they want this, and you are the one person that can do it. Start writing...get as many people to critique it as possible and rip it to shreds....a guy would give grad students as much pizza as needed to get them to rip it to shreds. Have grad students and postdocs read it-at the forefront of the field often most up to date on the literature. If ask other people in the field, make sure not someone that is proposing to same program that year. If ask people before they are asked to review, it can give you a leg up. Not a conflict of interest, at most a bias. Only time is conflicted is if applying for funding on same proposal.
“Red Teams” = mini review panels...create your own red team.

At NASA, rule is, if it is not submitted BEFORE deadline...the associate director of mission directorate has to say this proposal is more important than everything else ever submitted to get them to push it through. Even Jim Green can’t save you in this moment. You be screwed. Don’t submit at 11:52pm that night because your admin person at the university needs to press the button to submit and they’ve likely gone home.

If you know something is going wrong ahead of time with AO grants person at your university, you need to submit the entire proposal to Max and it cannot change. If anything has changed after it gets submitted, it has to be thrown out.

She looks at linked vs Locked as of 12:01am. Can see what has been submitted but the grants person has not hit submit.... Can’t expect that though. Recommend submitting a week before, esp if your funding depends on this.

If have to choose between answering a question Congress demands we answer, and your research, your research will lose. Luckily the questions are broad enough to fit pretty much all planetary science in them. But program officers need to make sure it furthers NASA’s objectives.

2 audiences you need to please:
- Review panel
- Program officers
  Make it as easy as humanly possible for them to select yours.

If you don’t see your research in any calls, email the program officers to ask where it can find a home.

What you should expect when you start to write:
- You will NOT write a great piece of literature (no nobel prize in writing)
- Write a focused document with no frills
- You will NOT definitely answer the grand question plaguing the community (no nobel prize in physics)
- You will answer a focused, well-posed question of limited scope. (something you can do in 2-3 years)
- Your audience will not review your proposal in a quiet, uninterrupted setting. They will be doing it in the chaos of their life. Reviewing it on the airplane on the way to the panel while preparing for teaching and doing their own stuff. Read it easily and quickly. Pretty pictures are great.
• The audience will not be world experts on your topic. They will be colleagues from similar fields. If you study atmosphere of Venus, it could be read by atmosphere experts and Venus experts, not necessarily by Venus atmosphere experts.
• Your audience will not accept your approach without question (esp. theorist with a lot of observers in the program, or lab studies, etc, etc...)...esp. applicable for interdisciplinary programs, which is basically all of them these days. Expect a skeptical and critical audience.

Review Panel is primarily interested in the scientific merit of the proposal...
1. Why should the review panel care?
   a. Pick a compelling and appropriate topic of proper scope
2. What’s the point?
   a. Describe objectives AND end results of the work. Otherwise your story is missing something if these don’t go together well.
3. What are you doing?
   a. Describe your methodology and identify your assumptions (if you are a modeling, define the parameters you are using! Define your parameter space!)
   b. Provide a detailed workplan describing who does what and when- make a table of your workplan! Task 1: bar line with what years its being done and who, why them and not someone else.
4. What are the weaknesses? Strengths?
   a. Scientific merit, relevance, cost
   b. Anticipate questions and answer them
5. How does it all fit together?
   a. Logically link the objectives, methodology, and anticipating results to one another and to NASA’s objectives (not just in relevance statement...in that moment, talk about why the review panel and NASA should care)

Discipline Scientist is primarily interested in the programmatic merit of the proposal
1. Is the proposal appropriate for the program?
   a. Read the NRA and respond to it. Feel free to use the language in the NRA! Your panel will do this back to you anyways!
2. Does the proposal contain high quality science?
   a. Peer review rating must be Good or higher...don’t fund goods, or even very good-goods. Very goods: 1/3 get funded. Looking for excellents, or E-VG
3. Can the program afford it?
   a. Do not “supersize” the proposal. Can’t fund it if costs the whole budget of the program...then end up with 2% selection rate. At best will get a descope...can look at table at back to see $$ and anticipated number of award to get average award size that you could try to aim for... again, limited scope. This could help you scope it.
   b. Organize proposal into discrete tasks- in the event you have 1 crappy task, the review panel can choose to descope that task out and revote.
4. Does this proposal further NASA’s objectives?
a. Link to NASA objectives

5. How will the money be spent?
   a. Provide a detailed budget with proper justifications. MAKE SURE TO BE COMPLIANT! Justify it all, including travel and publications. If you put a publication in year 1, your work plan better show that you will have results at the end of year 1! If you intend to travel to 5 conference in year one, you better have a way to justify each one of those dollars. If you have international colleagues, don’t plan to travel to see them such that it doesn’t look like you are having FTEs to work on it. The review panel will wonder why you get to take so many trips and they don’t?
   b. Make sure enough FTE allocation on there to look like you are managing and leading a team if only spending 2 weeks/year on a project. Want that guidance.

6. Does the proposal contain all required information?
   a. Follow the guidebook for proposers!

If doing more than 0.1 FTE, must be a Co-I. Collaborator is not getting money and not an integral part of team. NASA can’t fund international people...so if international (institution is international...NASA funds institutions, not people) Co-I, need a letter from their institution for where their money is coming from. Chinese nationals need to declare themselves as not connected to any Chinese institutions. Things might change and Russia might end up in similar situation soon.

Make a table of things you need, check them off as you do them. You NEED to be compliant. Make sure all boxes are checked!

ECF (Early Career Fellowship): make sure to check the box!!
Get extra page on CV – evaluated on probability of you having a research program, long term game plan...highlight yourself. Show potential to run research team.... Must be PI or science PI. Highlight papers outside scope of this proposal, leadership, mentoring, lab you are starting up...but you can’t have startup funds yet...things that wouldn’t fit on the 2 page CV...use it to broaden and show involvement in the field.

Never guess. Call discipline scientist for clarifications and questions (sara@nasa.gov)....a program manager can get 1000+ emails in one day....keep that in mind if they don’t respond right away. If include cc of sara@nasa.gov in emails, can get a response easier

If doing something new or amazing and there is no already published results, have a test project/pilot in the document to show you can do this. If your manuscript is in prep or submitted, do not assume it’ll be published on time. Put it on arxiv so they can look it up, or put all the info they need in the proposal! Everything needs to be viewable at time of submission. If it is important enough the review panel needs to see it, it needs to be in the document. Also don’t assume all the reviewers will do a literature search of all the things you’ve done in the field.
Pretending like there isn’t a potential pitfall is an easy way for panel to find their first weakness for your proposal. Just call it out and show you have a plan for it.

Program officers purposely ask for “sufficiently” and “adequately”...don’t avoid weaknesses-admit them if you know they’re there. Reuse about 1/3 of panelists year to year...there’s actually an okay chance of someone reviewing it that reviewed it last year if you resubmit it as is and hope they won’t notice. They’ll know you didn’t bother to even make changes.

Proposals not in the “mainstream” may have a greater burden of proof to show compelling nature of feasibility. Also harder to get expert to review these types of proposals.

Make sure what youre proposing isn’t part of mission work or other things (ie Hubble proposal)...state this if needbe.

Usually a fairly standard format...not mandated, but it can confuse reader if it isn’t. Again, use the table from guidebook.

Cite relevant literature, even if it goes against what you are saying! Acknowledge it, show there aren’t “gangs” forming between multiple groups. Say what you’re doing and how to address this outstanding divide...

Use graphics and tables for visual impact and to make it easier to read!

If multiple tasks, explain their connections and their connections

State if you are proposing the same research to two or more programs...this often not allowed. If proposing to Cassini DAP, cant propose to SSW to do same thing...

Never accept funding for same task twice- that is fraud. If you win an award, if had something out there with the same task....need to withdraw or contact program officer to let them know part/all is already funded. Don’t assume they won’t talk to other federal agencies...still fraud if get funded by NSF and NASA to do same thing.

Salaries and overhead $$$ amounts not in budgets now...

Social Media tip: do not go posting about all your failures and saying your review panel sucks and throw a temper tantrum over facebook or email...youre probably friends with some of your review panel or people on your tenure committee, etc... don’t be a whiner!

There is a way to contest a review if you think a mistake has been made.

When you are selected, serve on a review panel...stay in touch with the discipline scientist regarding funding receipt... if its been 60 days, there was a mistake... Submit your progress report on time (or PLEASE even 30 days ahead of time!). Plan far ahead if you have a critical
deadline for receipt of funds... invite the discipline scientist to your talk/poster and publications, and from nature/science. They want to brag about what’s going on in their program. Feel free to just email papers to program officer.

Again, get progress reports in early! Money comes in and then chunk gets approved for the first programs and if your progress report already in, you'll get it in in timely fashion and if gets held up, money might disappear (govt shutdown), could be a full year. October/nov/dec progress report deadline, this is esp. important to get progress reports in early!

How your money gets to you:
ROSES released (Feb). Step 1 due (March), Step 2 due 60 days, go into review....write up selection document... then STOP. Wait for Presidents Budget Request....then Congress debates, then continuing resolution, then congress debates more and maybe shuts down government...appropriation or year-long CR (can be 13 months after President’s Request). Then NASA submits Op Plan...Congress debates more (let’s spend the money on Europa...find money elsewhere!) and this gets iterated on.... Then finally individual programs’ FY budgets set...then finally get chunk of money...but need to be careful, only a little bit towards each program since may not have info from congress yet on how the money needs to be spent. Then can get selection decisions, based on money...award paperwork complete...release $ in RAPTOR and if it is not a grant, gets sent straight to centers and feds (naval research lab, USGS, etc) and if it is a grant, then HGAO and NSSC process it (can take weeks to months)...PI receives award...then receive progress report.

HGAO starts the process (“you didn’t detail this purchase request in enough detail...we need more info”...if this happens CC your program manager, can sometimes speed it up)...headquarters government accountability office...both HGAO and NSSC are at NASA level National Shared Services Center = complete the award and send to institution (they're name/acronym may change)

Only thing in the progress we have control over are step 1, step 2 and progress report. Only thing program managers have control over are just reviews, selections, paperwork, approve progress report, etc...

Peer Review Process
Only works when people are willing to do their fair share. Thank you if you’ve participated!! Panels confidential so can’t call out and thank these people publically.

Often split into subpanels... panelists meet for 3-5 days to discuss proposals, can also use external (aka mail in) reviews....
During peer review, discipline scientist ensures all evaluations are fair, unbiased and independent... often can’t see who else is on your panel until after you submit your pre-panel review... want main discussion in that room. Want it to come from that discussion.

Dog Show Rule: proposals are not to be compared to each other by review panel.

Each proposal assigned to at least 2 (but now generally 3-4) panel members to read in detail and then at least 1-3 external reviewers to provide comments. Knowledgeable but may not be experts. All write reviews and everybody sits down together and goes through it... essence of discussion captured in panel evaluation in terms of strengths and weaknesses in evaluation factors and a grade is assigned.

Either panel votes, primary reviewer drafts penl review and then iterate on panel review drafts... OR primary reviewer drafts panel review, then panel reviews it, and THEN votes

Evaluation Criteria:
- Scientific/technical merit (including qualifications of team)
- Programmatic relevance (judged against text of the NRA)
- Realism and reasonableness of costs
  These criteria are assessed independently of one another and a low rating in any one is cause for non-selection (but intrinsic merit is most important)

Some programs this is all in 15 pages, some are now doing bubbles to input this separately. Some divisions want relevance for program (assuming its also relevant for broader picture), some want explicit relevance for program AND overarching goals of that whole division (specifically astrophysics division cares about both)

Cost reasonableness is not really “bang for buck”- they will not see salaries or overhead anymore. Will look for if the FTE (amount of time spent) is reasonable and if cost for lab equipment, travel, etc is justified. #1 strength is that costs is reasonable, realistic and well justified, #1 weakness is that not justified in detail

Majors: fatal flaw, can’t do it... minor weakness aren’t as bad but if you have like 5 minor weaknesses, they may add up essentially to a major. The major are the things that should stick out to you. No precise calculus.

Discipline scientist ensures all reviews are fair, unbiased and independent...proposals are not to be compared to each other by review panel. they integrate findings of panel with programmatic and budgetary considerations...program balance is an important factor (excellents can be declined for the sake of programmatic balance, which sucks). Budgets and time commitments are reviewed. If go to NSPIRES, can see abstracts of proposals that have been accepted before...can see if doing same research as something already funded and makeup of programmatic balance. If your excellent/VG is not chosen, can often get a message from your program officer explaining why not selected, often due to programmatic balance and ask to reapply next year.
Panel Etiquette:
When requested to be on a panel, please respond as soon as possible (even if it is to say you don’t know your schedule yet...let them know you got the email. If the answer is no, that’s fine...but they need to know if they should move on to other names). If you can’t travel, let us know you can be a virtual panelist or external reviews. Or feel free to send in other names (postdocs)...program officers know panelists they see each year... develop relationships to know who will respond positively... don’t always know newcomers...

Review requests come from NSPIRES... can still decline individual proposals even after accepting the review assignment...make sure NSPIRES emails don’t go to spam. Respond via NSPIRES. Do not email program officer without bothering with NSPIRES. Around the same time that they're dealing with all review panels and hundreds of external reviews. Let them know if you’ve been assigned too many reviews and let them know how many you can handle.

CONFIDENTIALITY: there to protect you
- can tell boss as you probably need their permission to attend. Confidentiality applies to them too
- Officemate is probably going to notice you printing things and disappearing for a week...sort of a don’t ask don’t tell...sort of obvious.
- Partner/spouse will also probably notice you being gone...its okay to tell them where you are going but if they are in the field too... if they are a PI to that program, you cannot serve on that panel. You have a financial burden there so you shouldn’t look at any proposals. If you get asked to serve on a panel you know your spouse has submitted a proposal to, give a heads up...so they know not to ask you
- Regardless, what happens at a panel stays at a panel...don’t discuss panel attendance or discussions once you leave.

If panel is nearby to a friend that’s in the field, not okay to meet up with grad school buddy or someone in the community. They really cant go to the hotel or dinner with the other panelists. They would need to sign nondisclosure agreement...
If they are not a member of the community, no worries... if they are married to someone in the community, still a problem. Do not schedule a meetup in the middle of the panel. You are busy! Need permission from program officer if scheduling a talk at an institution right after... need to make it look like you didn’t just come from a review...need that institution to not have a conflict of interest with proposals in the panel...etc. if you have to teach a class that week and no way around it, can try to set that up but group chief and them needs to know that for timing...

Can I list panel service on my resume?
“I have served on PSD ROSES review panels” is fine
“I served on Cosmo (2009), PCG (2011, and LASER (2012, group chief) = NOT A GOOD IDEA

Social Media:
Don’t talk about reviewing proposals or serving on panels…don’t even use “redacted”…you’re not fooling anyone
Location tags! Even if the post isn’t about the panel, don’t note locations….
Group photos- “here is a pic of me and four other geophysicists who live all across the country and we all just happen to be hanging out in front of the Washington monument right now for no reason whatsoever”
Even selfies or landscape photos…people can recognize where you are...

Proposal Writing Last Points:
- Opportunities are available-find them, learn them, make them yours
- Follow guidebook for proposals and read the NRA
- Your job is to make it as easy as possible for your 2 audiences to select your proposal
- Think before writing, critique before submitting
- Peer review levels the playing field- use it to your advantage
- It is never too early to start gaining proposal experience

Other programs out there for career development programs
NASA Earth and Space Science Fellowships (NESSF)
NASA Postdoctoral Program (NPP)
Early Career Fellowship (ECF)

Questions on ROSES16? Contain Christina (Christina.r.richey@nasa.gov) or Max Berstein (sara@nasa.gov)