Preparing your SOFIA proposal

Science case / SOFIA motivation

Gather support documents/tools

Evaluate feasibility

Define observations in USPOT

Build / upload justification pdf

Submit! Deadline Sept 6th, 21h PDT

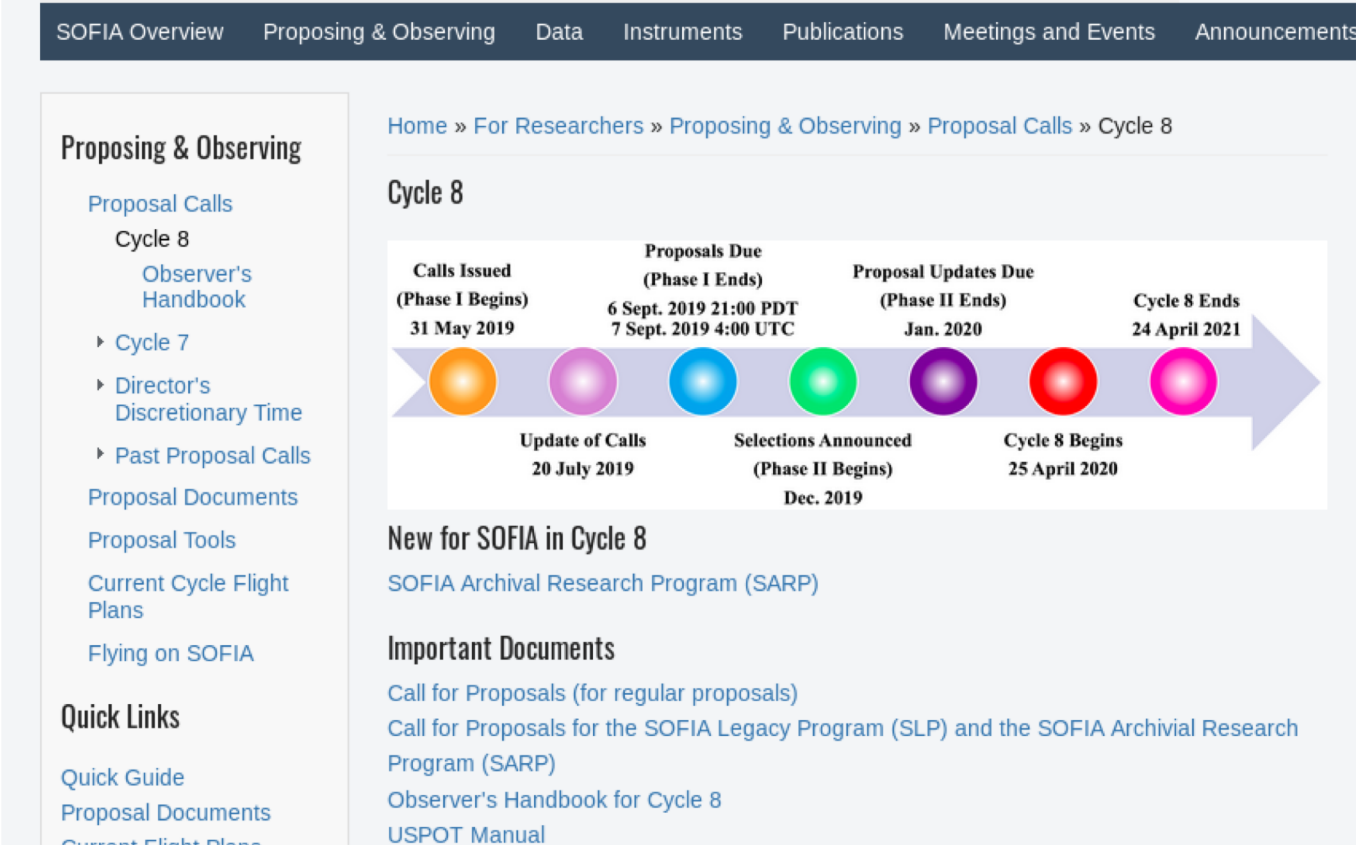
Gather relevant documentation and tools: Call for Proposal

What's offered - in short:

- All instruments
- 2 instruments deployed to NZ
- 'suitcase' deployments can be considered

New:

- improved mapping modes on FORCAST (slit-scan) and HAWC+ (OTF polarimetry)
- new filter for FIFI-LS improving sensitivity at the [OIII] 52µm line
- new HAWC+ band B (63µm) available



Gather relevant documentation and tools: Call for Proposal

3 different types of proposals

- **Regular**: up to 300h tot, includes surveys, ToO

- **Legacy:** 1-4 large proposals, up to 200h observations each, over 2 cycles. Up to 400 h total in C8. No proprietary period, team contributes enhanced products

- **Archival Research**: **new (**funding available, for US institutions only)

Gather relevant documentation and tools: Call for Proposal

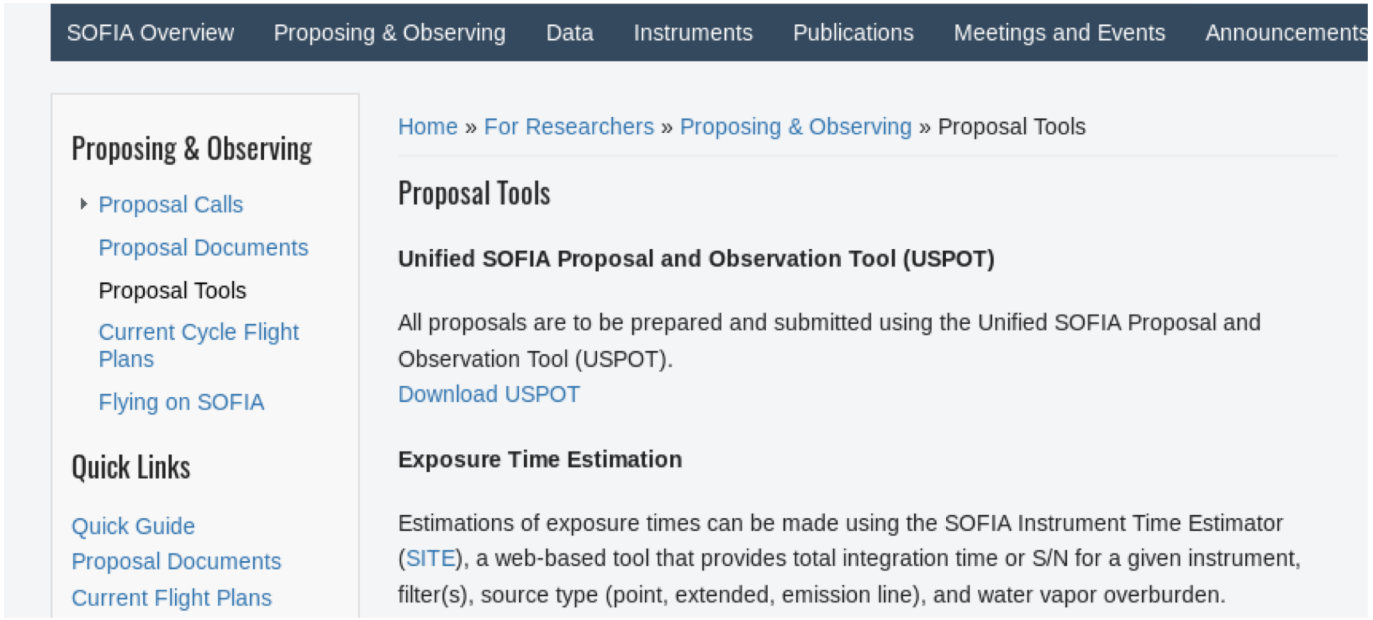
Funding opportunities (for US-institutions only)

- Up to $3M for Regular Proposals (~$10k/ h)
- Up to $2M / year for Legacy Proposals
- ~ $300k for archival research proposals

	Regular Proposals	Legacy (SLP)	Archival (SARP)
Exclusive Use Period	yes	no	n/a
Observing Period	1 cycle	2 cycles	n/a
Total Program Budget	$3M	$2M/yr	$300k
Proposals Selected	varies	1-4	10

- For proposals which are central to a PhD thesis, additional funding can be requested through the Thesis-enabling Program (up to two years of graduate student funding)
- Timing of funding depends on program priority ('rank'): must do (~25% of available time), should do (50%), do if time

Gather relevant documentation and tools



Observers' Handbook

USPOT manual

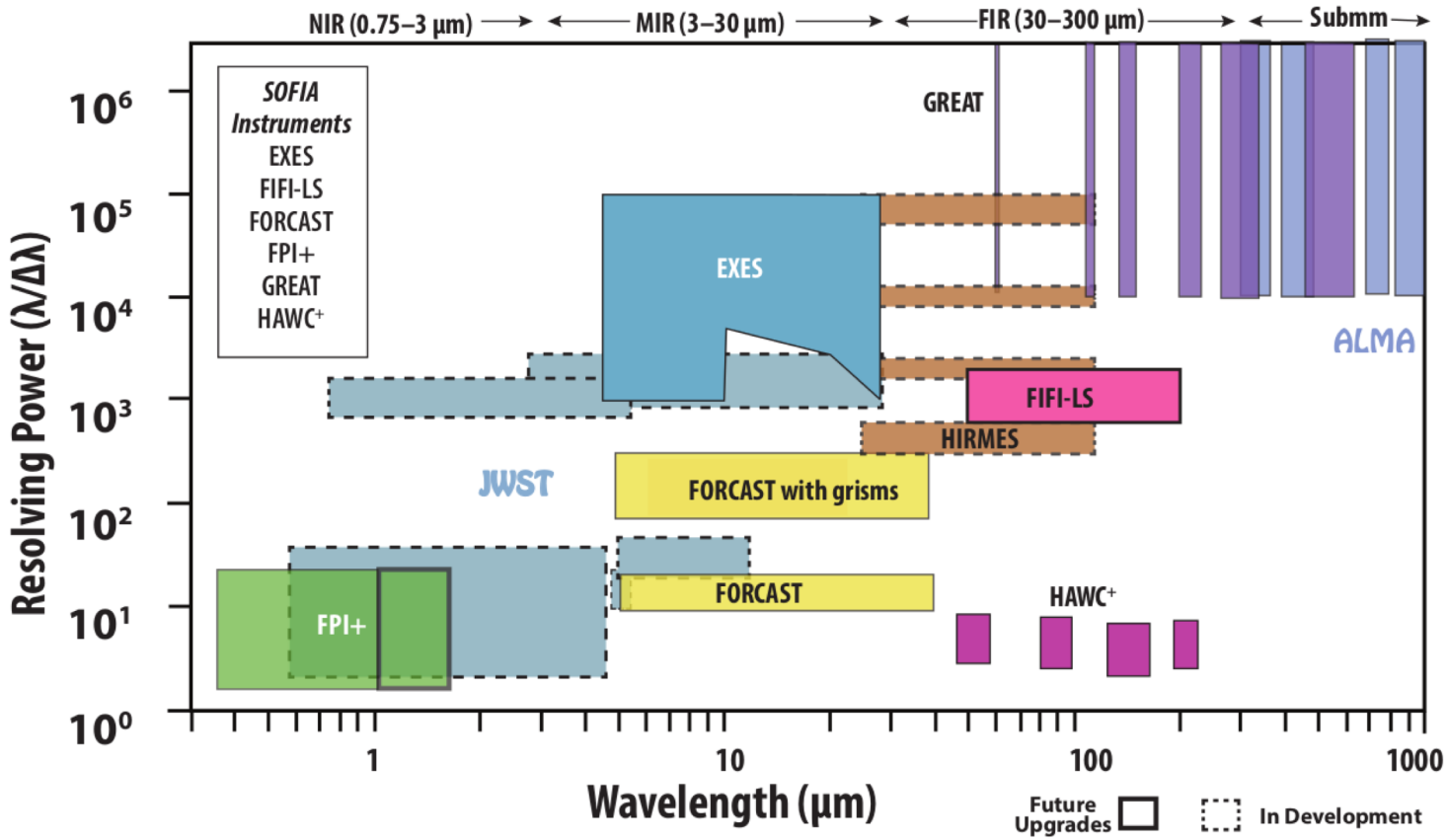
Download USPOT

Open SITE (website)

Any missing information: Help Desk

Feasability

SOFIA currently covers most of the Mid and Far-IR spectrum (5-600 µm), at a variety of spectral resolutions

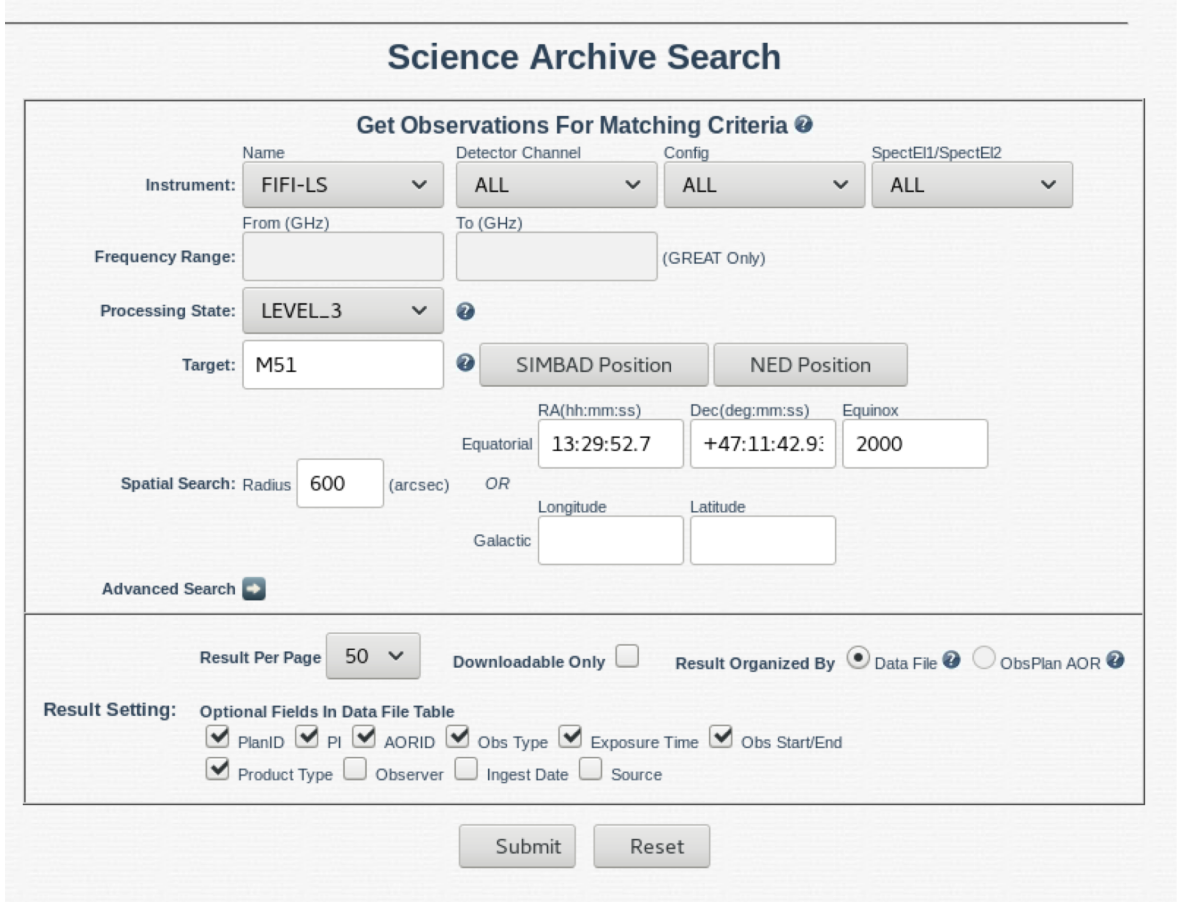


Feasability: Archival search and reserved observations catalogues

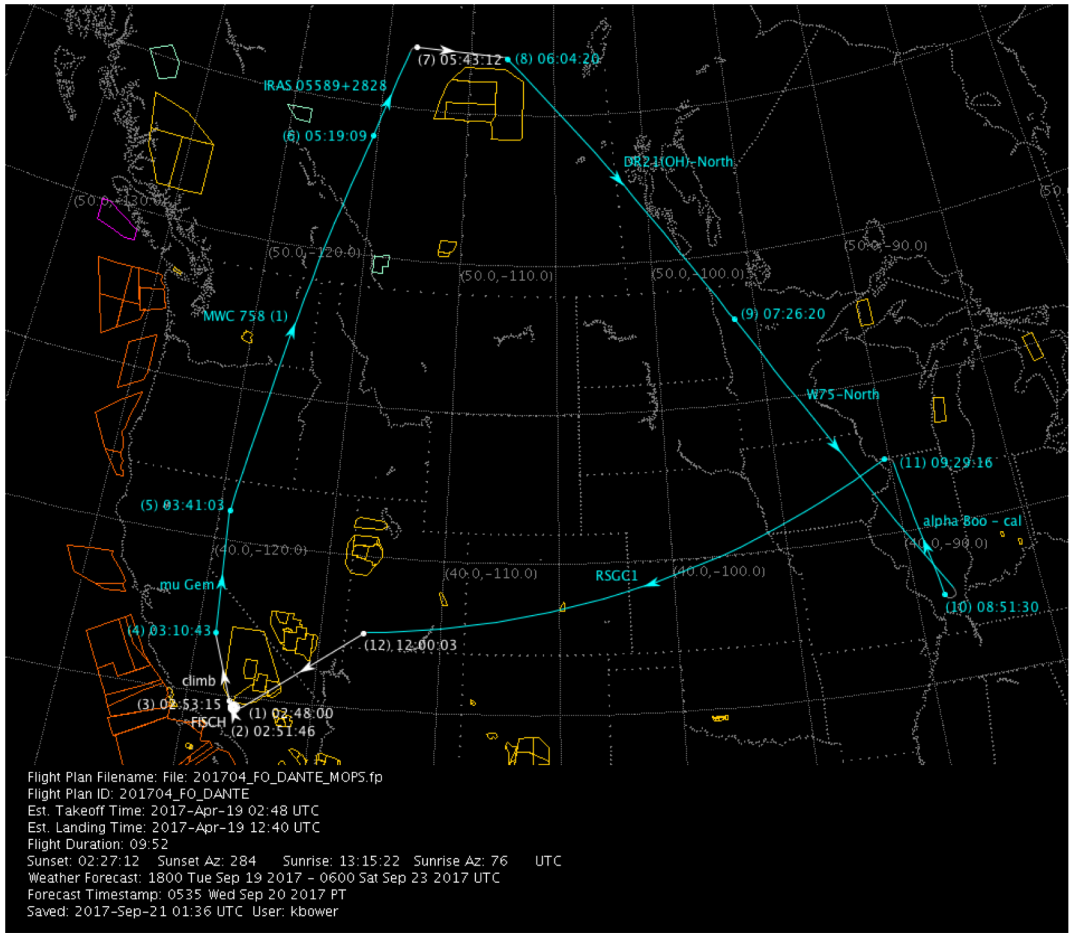
Reserved observations (GREAT and FIFI-LS): duplicates from Reserved Observations Catalog (ROC) lists not allowed, unless explicit permission from the instrument's PI (SMO should be notified prior to proposal submission)

Duplication of observations:
generally not allowed, and if proposed for must be identified and explicitly justified.
Check the SOFIA archive (registration required)

- https://dcs.arc.nasa.gov/



Timing limitations considerations

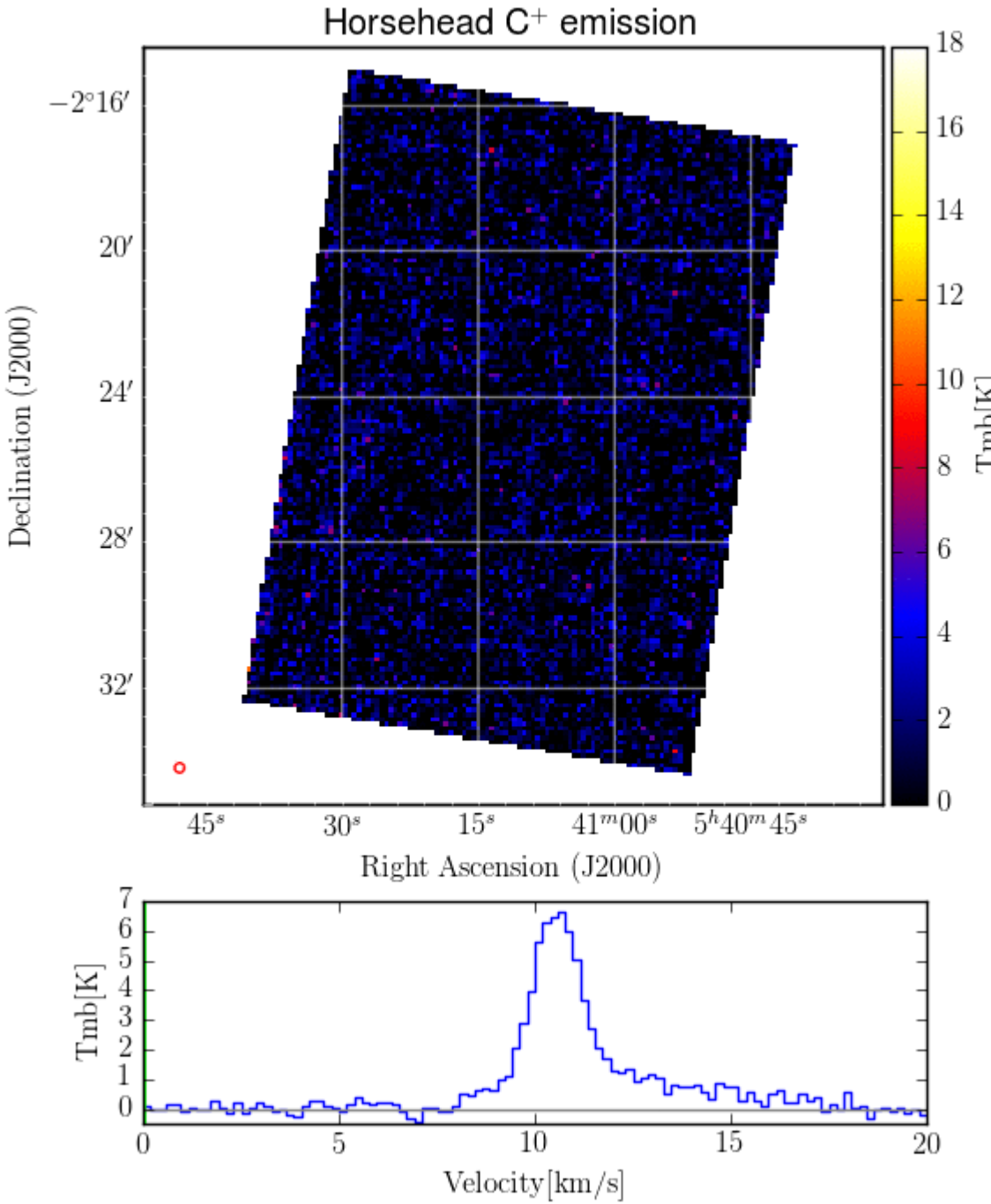


- Observing legs are limited (~ 2 hour max: hard to get long continuous observations)
- Observations with an instrument limited to 1 / 2 obs. series per cycle
- GC center observations in Northern early fall
- Observations from NZ in Northern Summer

Estimation of Signal and Signal to Noise

Expected source signal: needs to be soundly justified!
- archival data (possibly w. SED extrapolation)
- your own radiative transfer model (describe)
- classic models/ correlations: Hyperion (dust), Planetary Spectrum Calculator, Meudon PDR ...

Signal must be defined by element size / beam FWHM
or surface brightness Units (depend on instruments)
- Jy or $W.m^{-2}.\mu m^{-1}$ (flux density)
- Jy /arcsec^2 (surface brightness)
- W.m^{-2} (flux density integrated on resolution unit)
- T (brightness temperature)



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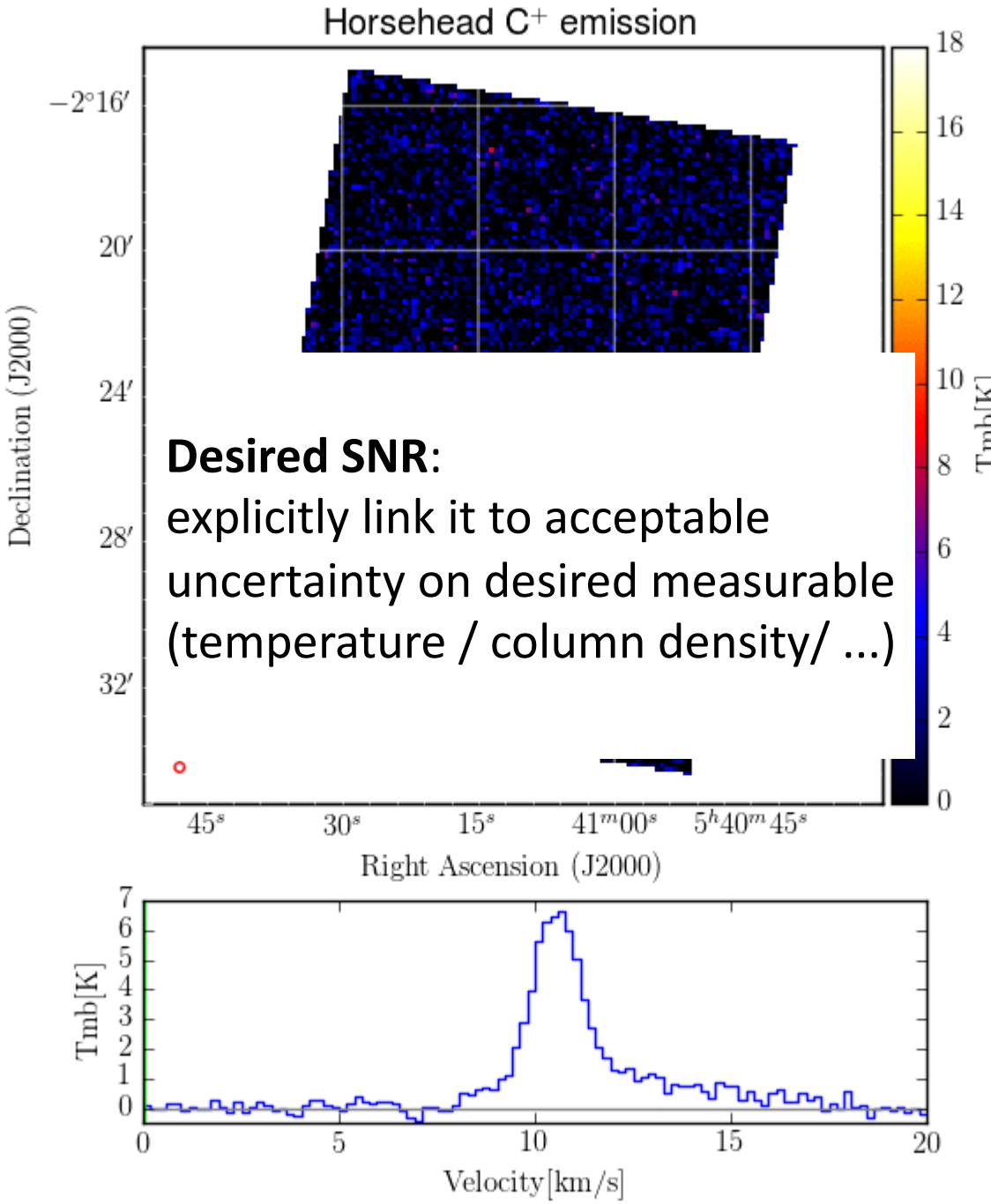
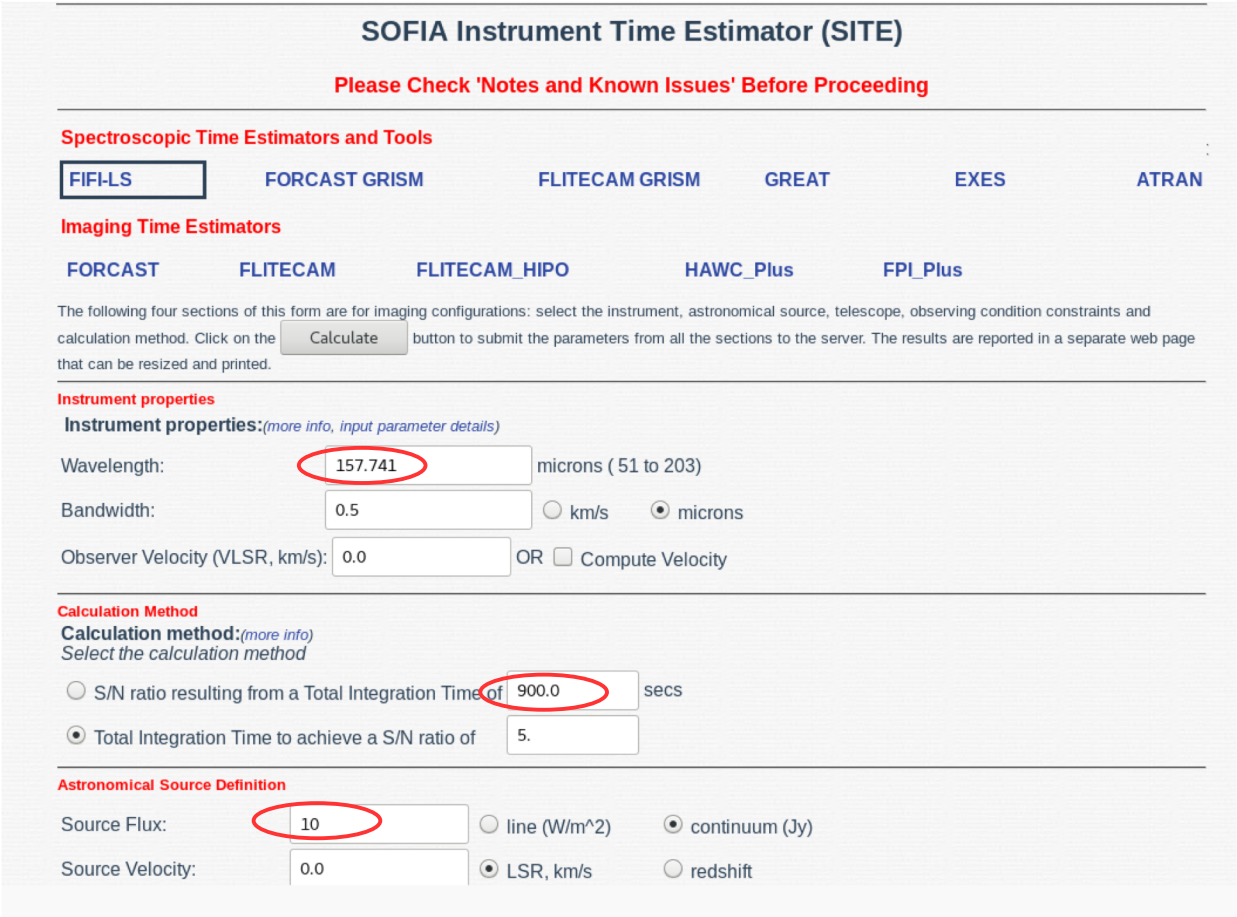


SITE: estimating corresponding observing time



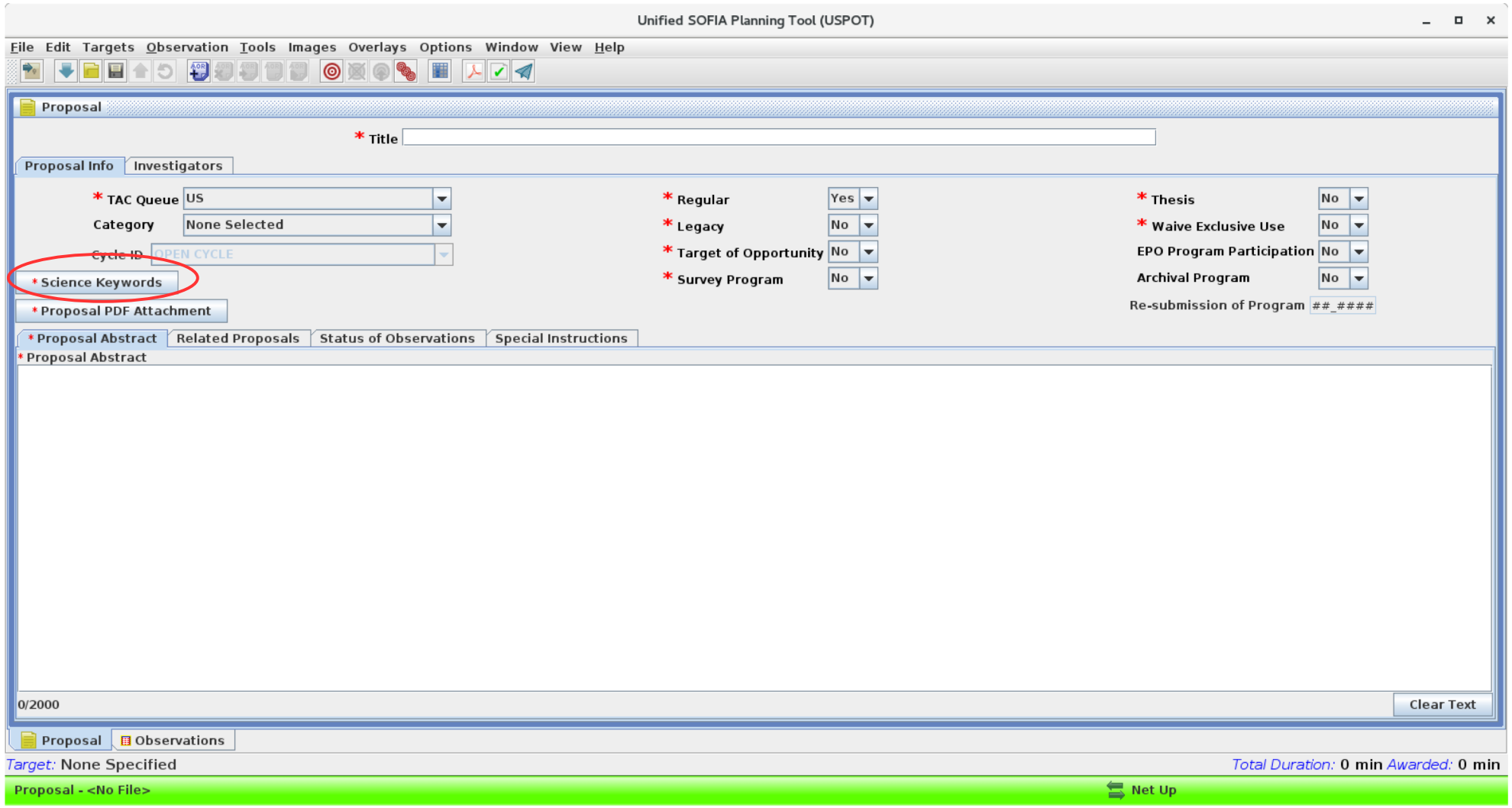
https://dcs.arc.nasa.gov/propDevelopment/SITE/index.jsp

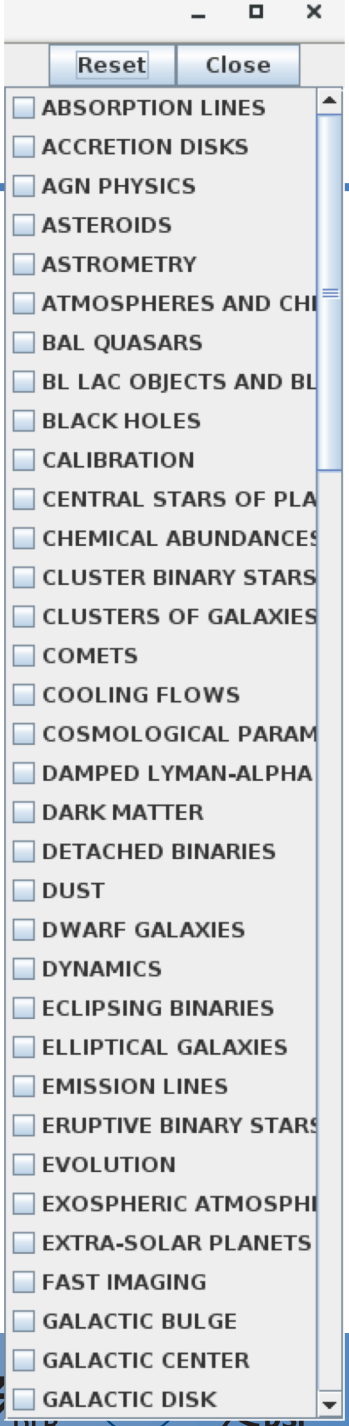
Output Parameters

V_LSR:	0.000	km/s
Velocity corrected Wavelength:	157.741	microns
Plotted wavelength range:	156.938 - 158.544	microns
Interpolated values from data table:		
Bandwidth =	0.803	microns
MDLF =	2.087e-17	W/m^2
MDCF =	0.570	Jy
Atmospheric Transmission:	0.843 (smoothed)	0.862 (unsmoothed)
Integration time (t_on):	0.107 (smoothed)	0.102 minutes (unsmoothed)

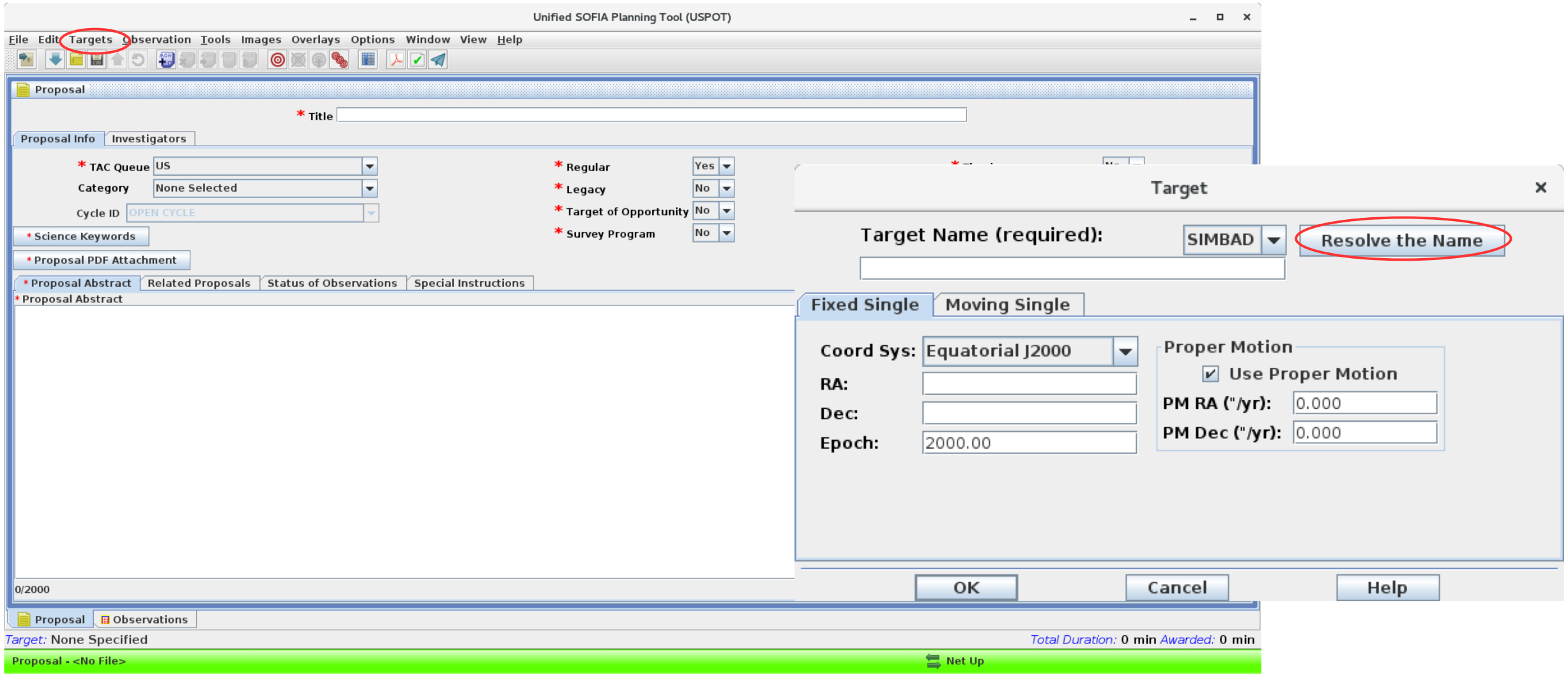
*On-source integration time **only**; overheads are calculated in USPOT.*

USPOT: cover page

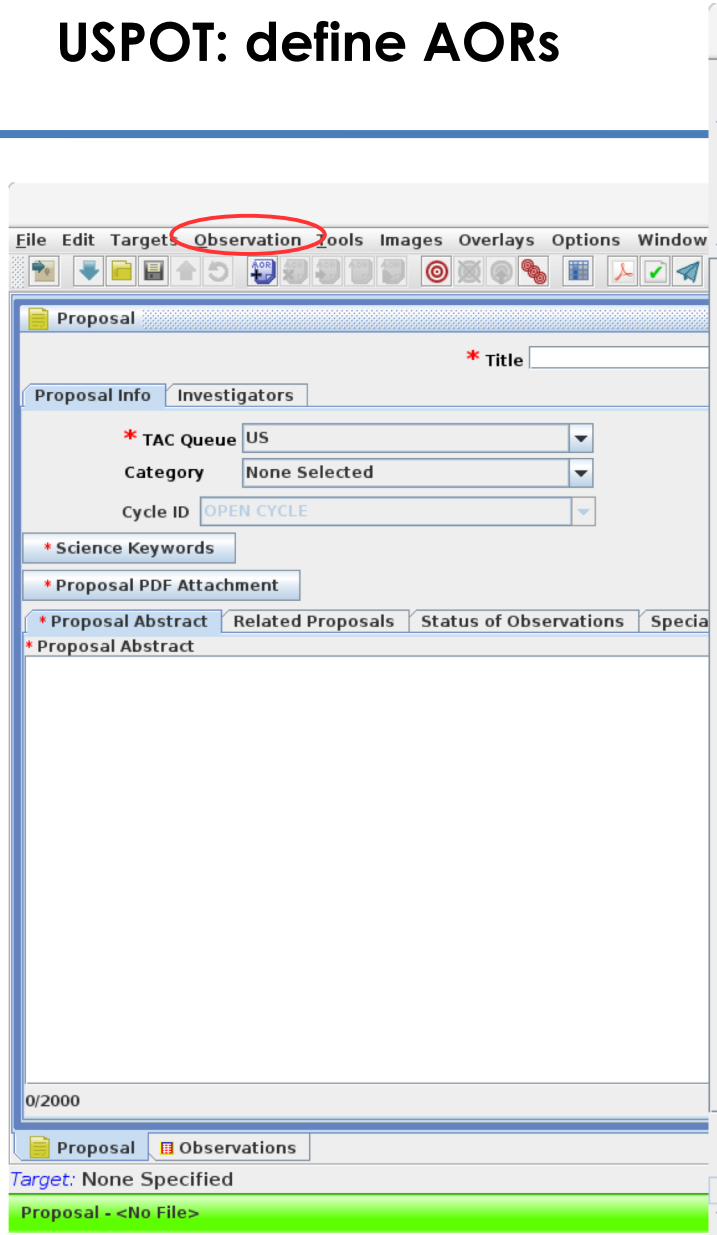


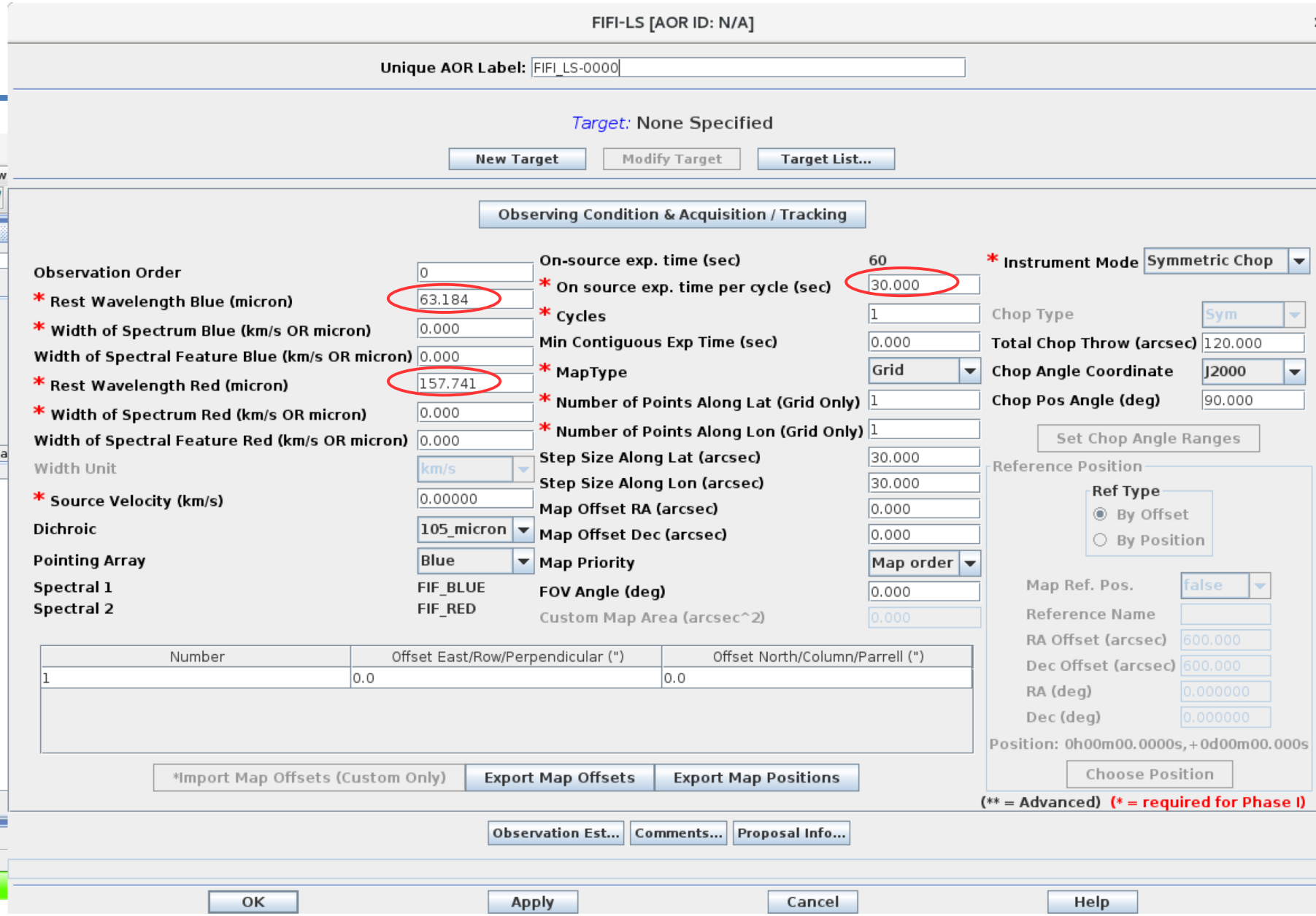


USPOT: define targets



USPOT: define AORs





USPOT: building justification pdf

- Context, aim, expected results (0.5p / 1p)
- Scientific justification (3p + references / 5 p)
- Feasibility + path to publication (3p)
  (instrument and modes, exposure time, time constraints)
- Budget (for Legacy only, 2p)
- Implementation (for Legacy only, 2p)
- Bio sketches
- Thesis enabling program (1 p)

Please note that for proposals longer than 9 (16) pages total, DCS will return a warning about a too long proposal document. If all individual section limits have been adhered to, this warning may be ignored.

USPOT: building justification pdf

Tips from Call from proposal:

- Preference given to substantial investigations that demonstrate significant scientific impact from SOFIA
- Programs using multi-wavelength data from major facilities (ALMA, HST, Spitzer, etc.) in conjunction with SOFIA are highly encouraged
- Programs that will inform future JWST observations are highly encouraged
- Criterion: degree to which the investigation uses SOFIA's Unique capabilities.
- Criterion: competence and relevant experience of the PI and any collaborators to carry the investigation to a successful conclusion.

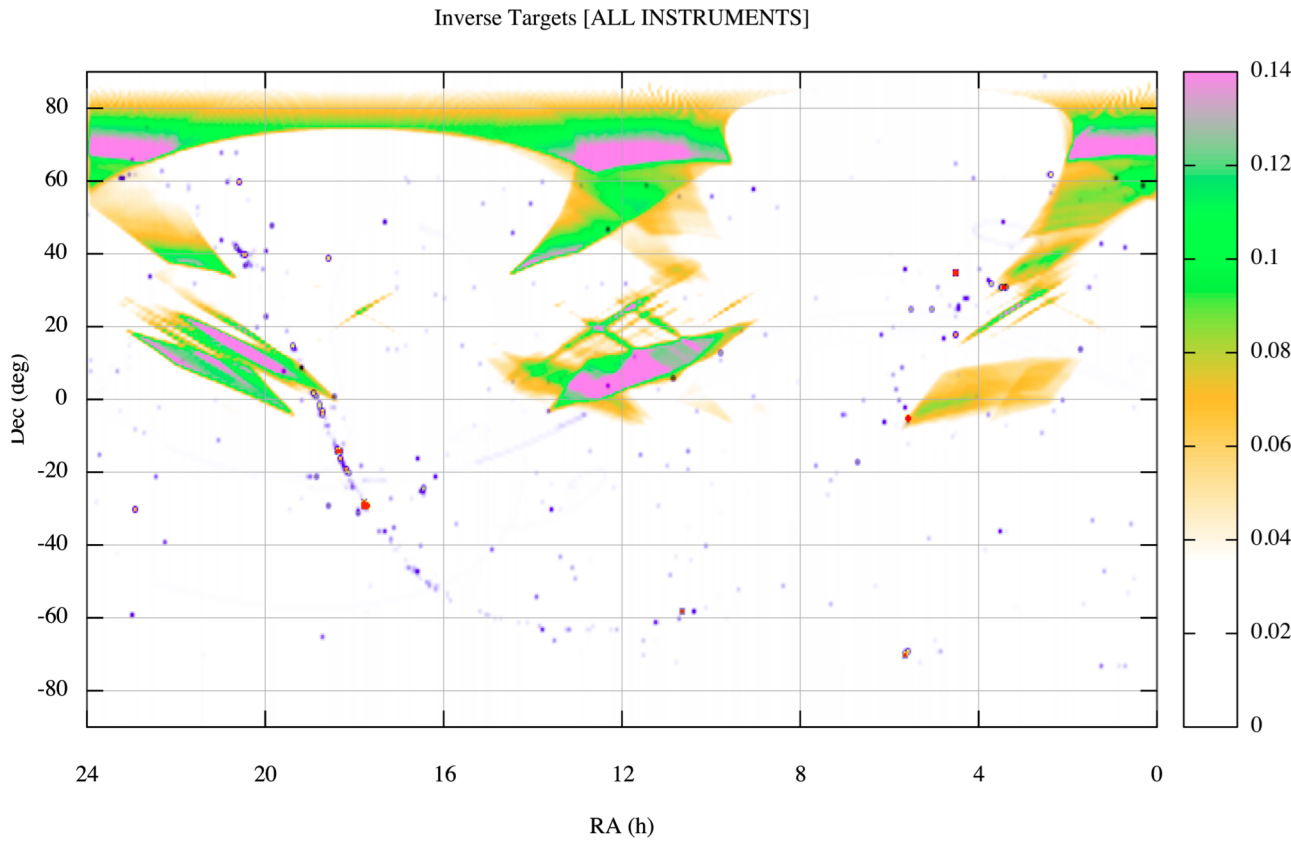
General tips:

- do not forget instrument and data justification (as opposed to i.e., TEXES, archival data, ...)

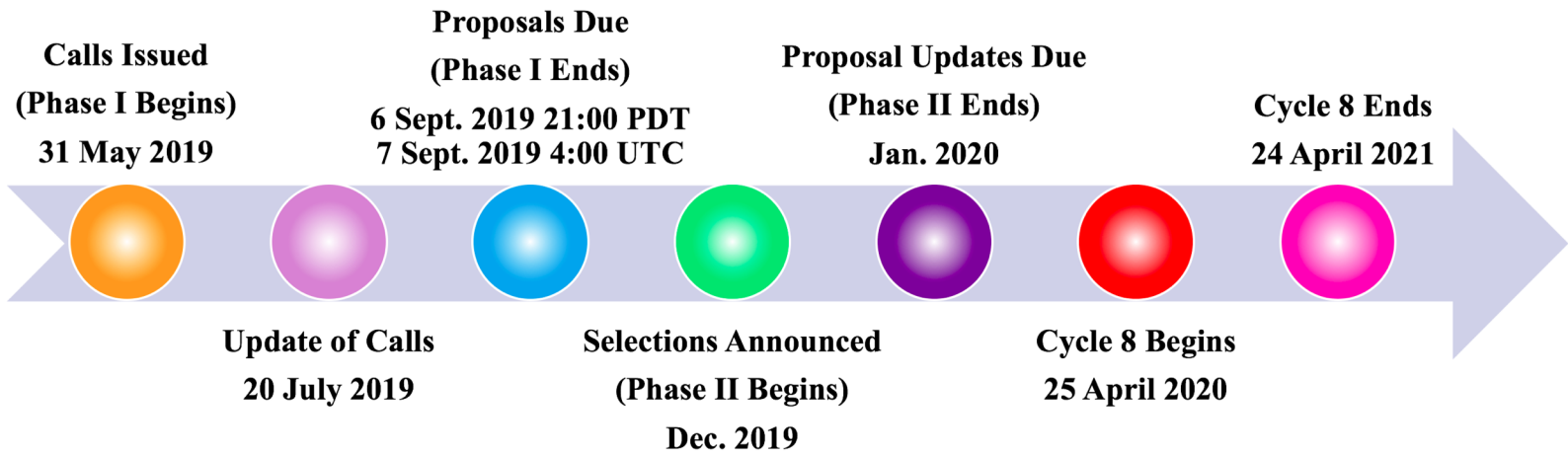
Other strategic considerations

Even though bulk of targets are concentrated in the GP and ecliptic, you can only spend 1/2 of the time flying to view those directions and the other 1/2 on the return

Whenever possible (surveys), choose targets with distribution at all parts of the sky. More chances to win! High latitudes are desirable.



Post deadline – what to expect



December 2019: results announced

Budget submission (US GOs)

Phase 2 – further definition of AORs, supported by instrument scientists

Observations: all GOs invited to their flights, receive flight summaries post-flight series

Post deadline – what to expect

Processed data delivered and staged in archive ~ 1 month after observations
- GOs notified by email

Note that the SOFIA archive is moving to **IRSA** at the end of 2019!
https://irsa.ipac.caltech.edu/Missions/sofia.html

Post-delivery: assistance available from science center / instrument scientists

Additional resources are available at the SOFIA website data section:
https://www.sofia.usra.edu/science/data - HelpDesk always open for questions:
sofia_help@sofia.usra.edu