SOFIA Archive Transition from DCS to IRSA

William T. Reach

SOFIA Users Group #10
Nov 2016

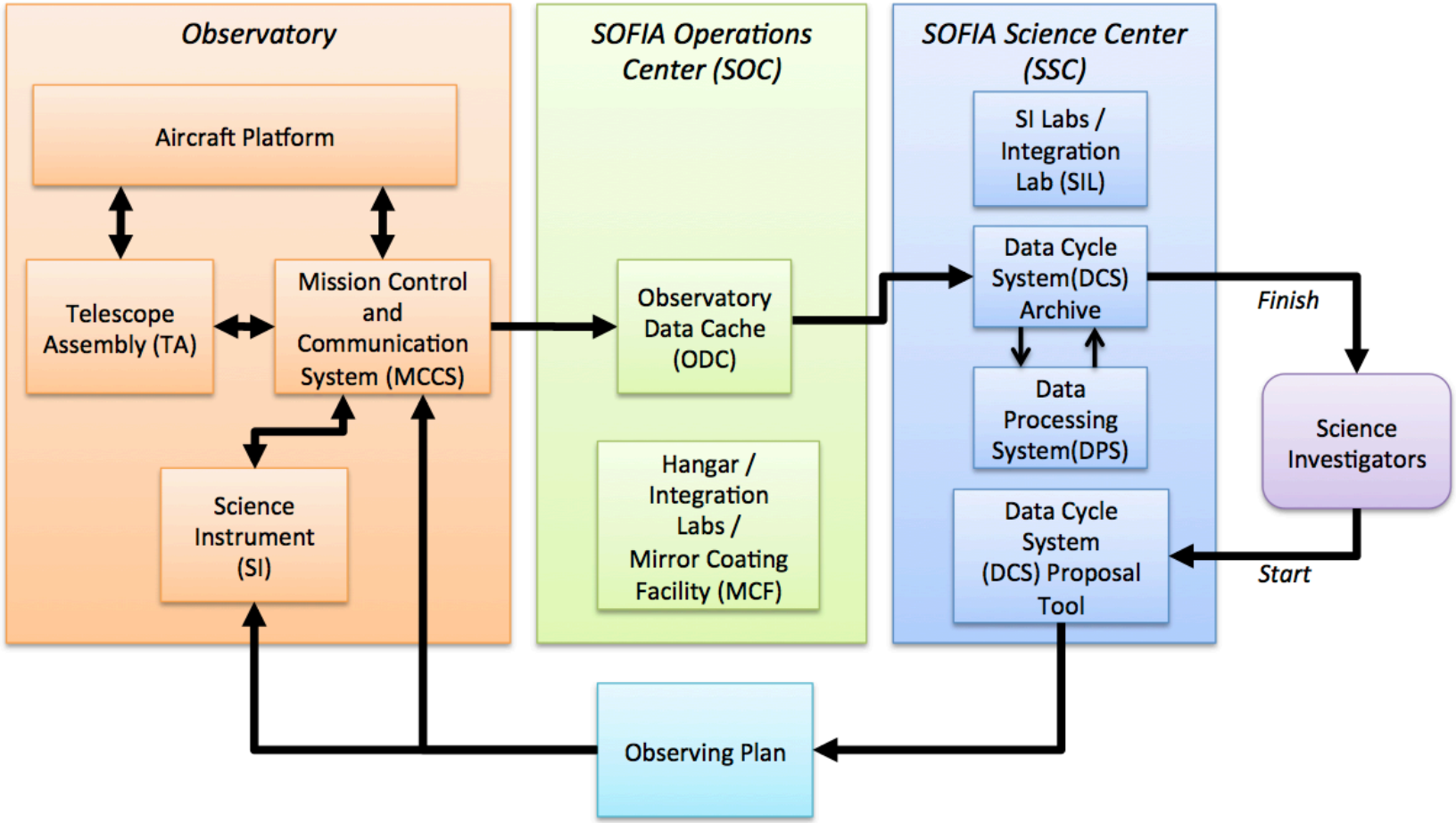
Guidance received 5/18/16

- SOFIA Science Mission Operations (SMO) to transfer science data archive (outward facing) to IRSA
- Includes raw and processed science instrument (SI) data
  - Other engineering data if needed for science
- Includes proprietary ("exclusive use") data, i.e. data accessible to guest investigators for 1 year
- Includes old science data (even Early Science)
- Includes all needed documentation

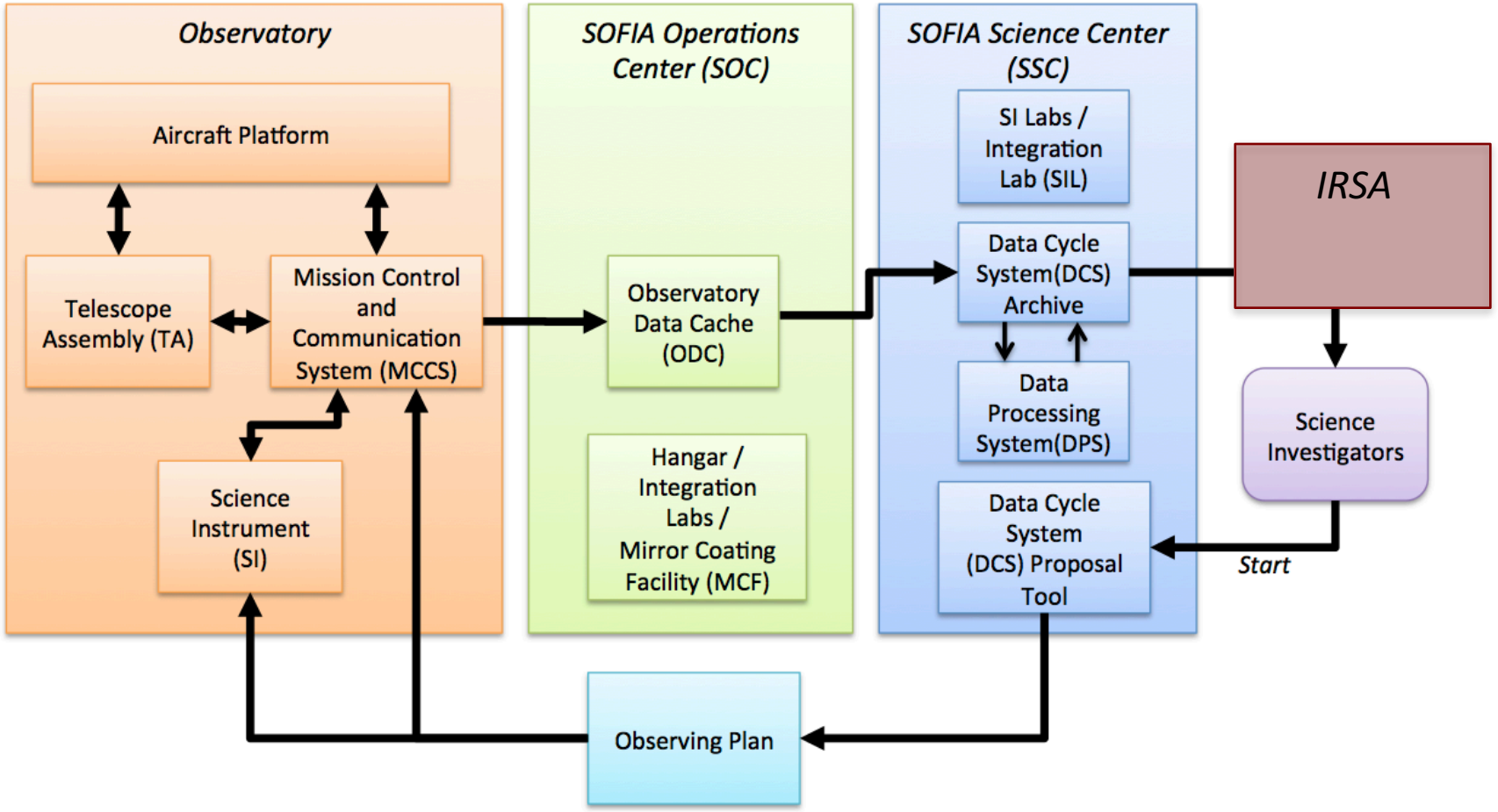
Deliverable Details

- Transition Plan to be developed by 11/1/16
- USRA is to provide the transition plan
  - even if the work is not completed by the end of our contract (end of Feb 2017)
  - even if IRSA is not funded through USRA
- SMO allowed to work with IRSA to make credible transition plan, but it is not a Statement of Work until it comes from NASA
- Specific contents:
  - definition of the data delivery process,
  - Required interface control documents
  - Definition of IRSA requirements for successful transition and continued SOFIA operations
  - Description of assumptions/rationale for requirements
  - Definition of required deliverables
  - Roles/responsibilities of IRSA and SMO for reporting, metrics, user support

Data Cycle: Current ConOps



Data Cycle: New



Data -> Archive Path

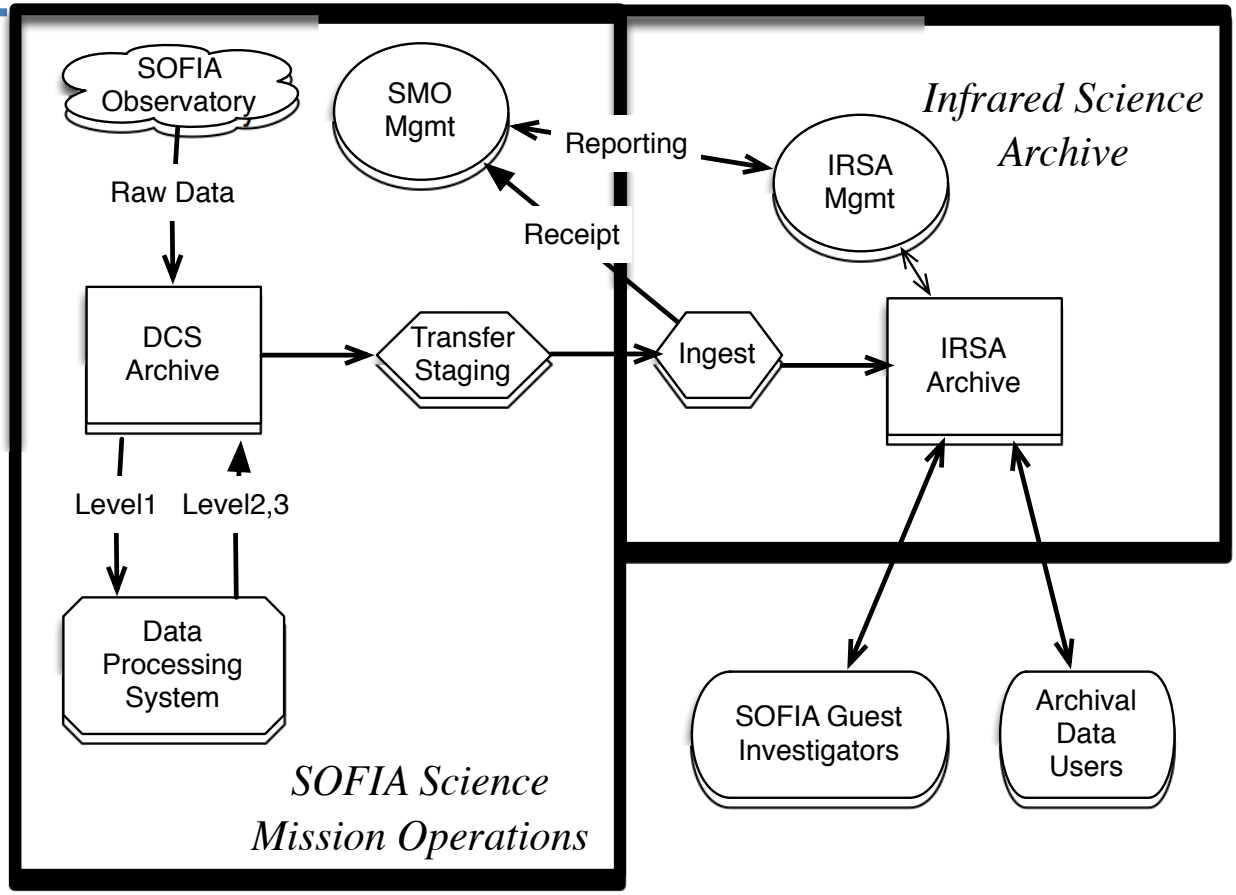


Figure 2. Data transfer schematic diagram. The delivery cycle from SOFIA to IRSA is initiated by new observations from the Observatory or by generation of revised products by the Data Processing System.

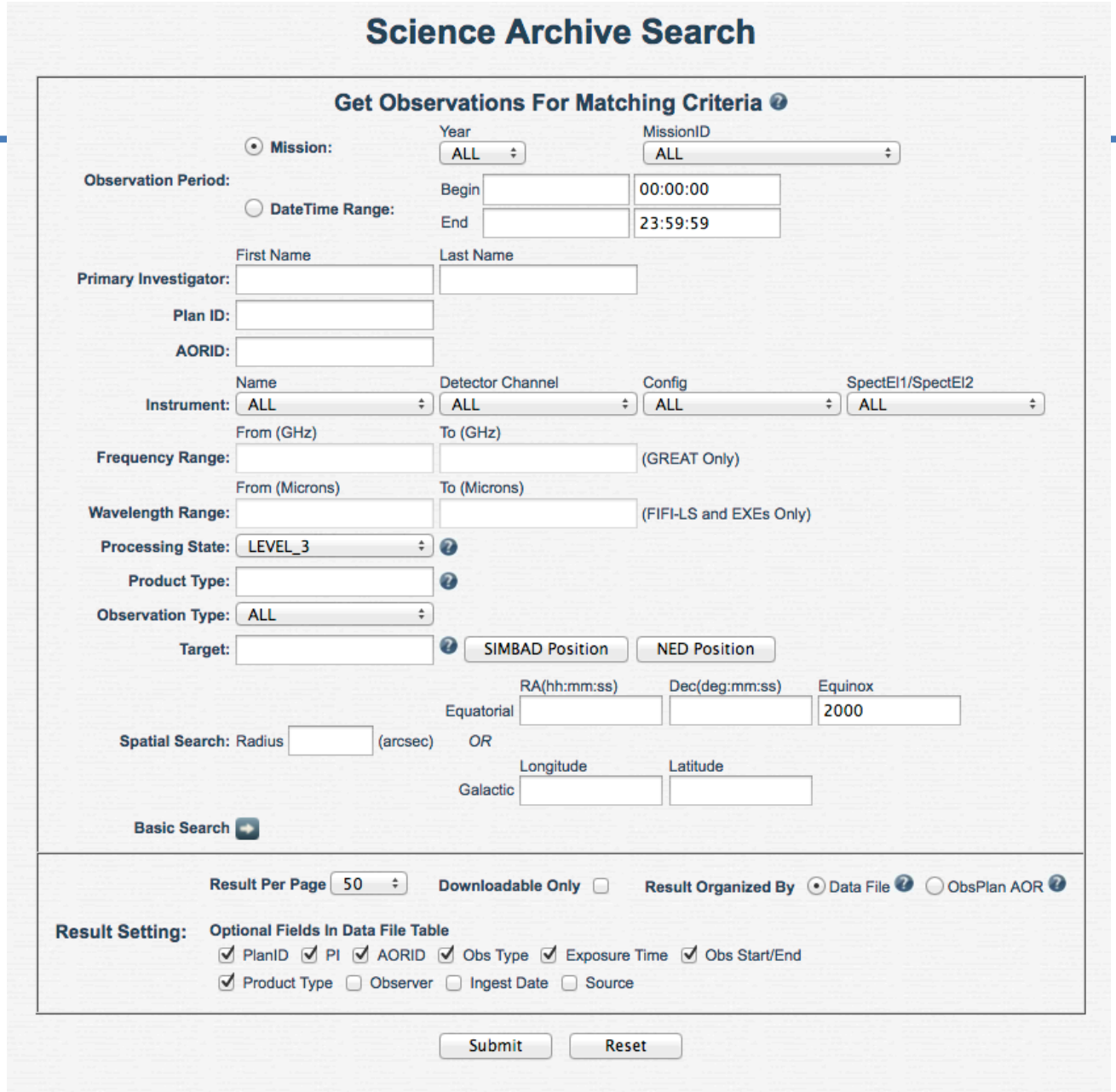
Data processing

- Data processing and transfer remain SMO tasks through archive and SMO contract transitions
- All SI: Level 1 (raw) FITS data in DCS archive within a day
- Facility instruments: FORCAST, FLITECAM, FIFI-LS, HAWC+
  - Processed to Level 2 (artifact-free) by pipeline and ingested into DCS archive
  - Calibrated to Level 3 (physical units, telluric correction) and ingested into DCS archive within 15 working days
- Principal Investigator instruments:
  - GREAT provides calibrated data within 45 days
  - EXES similar but uses pipeline at SMO
- No processed data for HIPO

Archive interface

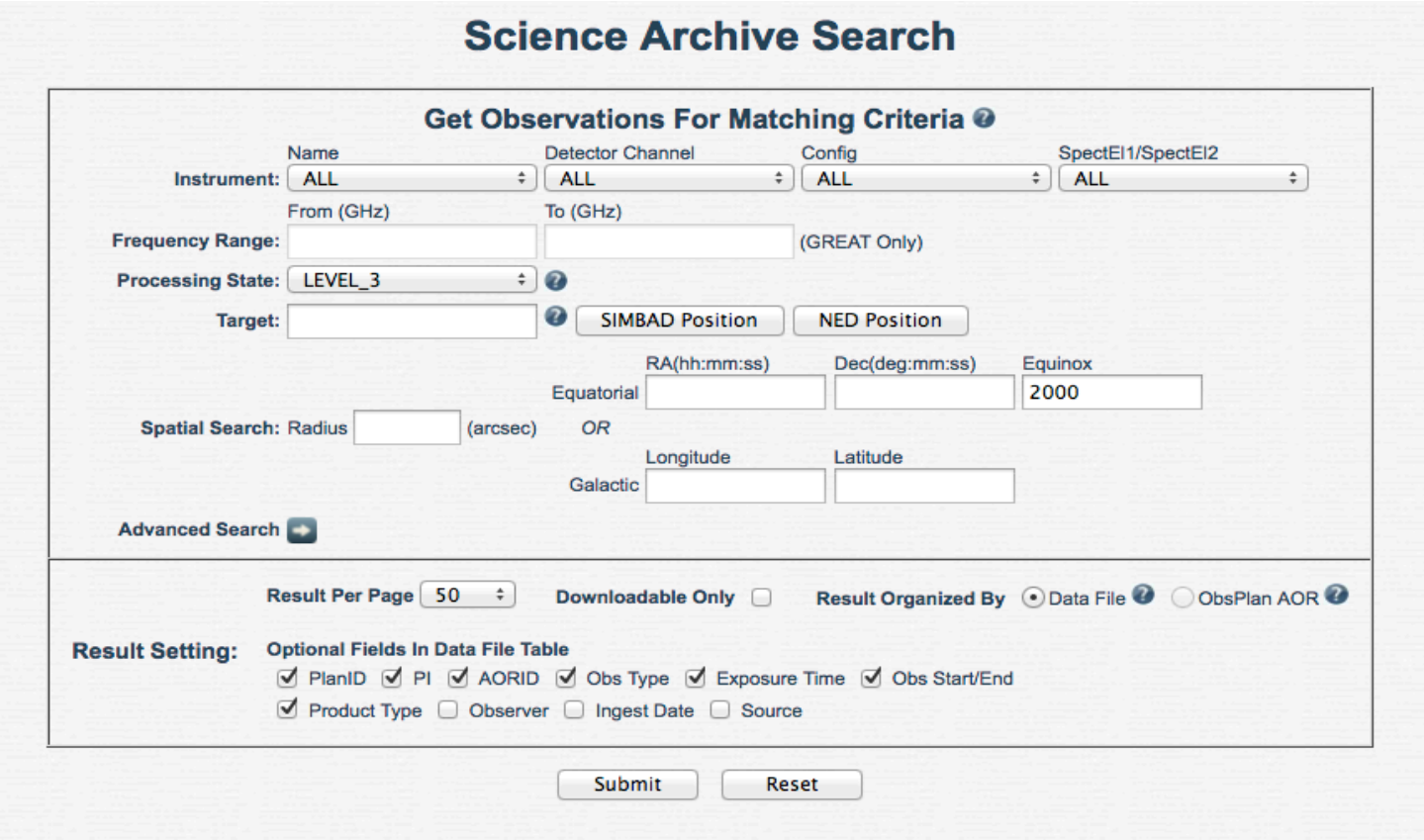
- The SMO DCS archive interface would no longer be used by astronomers
  - We may retain the DCS interface for internal work
  - Advantage is integration of data products with proposals, observing requests, and flight plans
- The IRSA archive interface would be used by guest investigators and archival investigators
  - Exclusive use periods enforced

DCS Archive: Advanced interface



DCS Archive: Advanced interface

- The basic interface was provided in response to SUG and other user feedback that the DCS archive interface had too many options and returned too many files



Science Archive Search

Get Observations For Matching Criteria

Mission: Year: ALL; MissionID: ALL

Observation Period: DateTime Range: Begin 00:00:00; End 23:59:59

Primary Investigator: First Name; Last Name: Armus

Plan ID:

AORID:

Instrument: Name: ALL; Detector Channel: ALL; Config: ALL; SpectEl1/SpectEl2: ALL

Frequency Range: From (GHz); To (GHz); (GREAT Only)

Processing State: LEVEL_3

Product Type:

Observation Type: ALL

Target: SIMBAD Position; NED Position

Spatial Search: Radius (arcsec) OR

Equatorial: RA(hh:mm:ss); Dec(deg:mm:ss); Equinox: 2000

Galactic: Longitude; Latitude

Basic Search

Result Per Page: 50; Downloadable Only; Result Organized By: Data File; ObsPlan AOR

Result Setting: Optional Fields In Data File Table

PlanID, PI, AORID, Obs Type, Exposure Time, Obs Start/End, Product Type, Observer, Ingest Date, Source

Submit; Reset

Page 1 of 1 (1 - 2 of 2) Results Organized By ObsPlan AOR

Get Selected AORs Associated Data In Current Page; Get All AORs Associated Data In All Pages; There is a ***30GB*** download limit.

AORID	PlanID	LastName	FirstName	Instrument	InstConfig	InstMode	SpectEl1	SpectEl2	Slit	Target	NaifID	RAJ2000 Longitude (Galactic) (Ecliptic)	DecJ2000 Latitude (Galactic) (Ecliptic)	Exposure (Min)
81_0059_1	81_0059	Armus	Lee	FORCAST	TPCD		11.3 microns	37.1 microns		NGC 2146	NA	06:18:37.9 135.654(G) 91.635(E)	+78:21:22.68 24.896(G) 54.943(E)	90
81_0059_2	81_0059	Armus	Lee	FORCAST	TPCD		19.7 microns	37.1 microns		NGC 2146	NA	06:18:37.9 135.654(G) 91.635(E)	+78:21:22.68 24.896(G) 54.943(E)	60

Page 1 of 1 (1 - 2 of 2)

Science Archive Search

Get Observations For Matching Criteria

Mission: Year: ALL; MissionID: ALL

Observation Period: DateTime Range: Begin 00:00:00; End 23:59:59

Primary Investigator: First Name; Last Name: Armus

Plan ID:

AORID:

Instrument: Name: ALL; Detector Channel: ALL; Config: ALL; SpectEl1/SpectEl2: ALL

Frequency Range: From (GHz); To (GHz) (GREAT Only)

Processing State: LEVEL_3

Product Type: COA

Observation Type: ALL

Target: SIMBAD Position | NED Position

Spatial Search: Radius (arcsec) OR Equatorial RA(hh:mm:ss) Dec(deg:mm:ss) Equinox: 2000; Galactic Longitude Latitude

Basic Search

Result Per Page: 50 **Downloadable Only** **Result Organized By:** Data File / ObsPlan AOR

Result Setting: Optional Fields In Data File Table

PlanID, PI, AORID, Obs Type, Exposure Time, Obs Start/End, Product Type, Observer, Ingest Date, Source

Submit | Reset

Page 1 of 1 (1 - 8 of 8) Results Organized By Data File

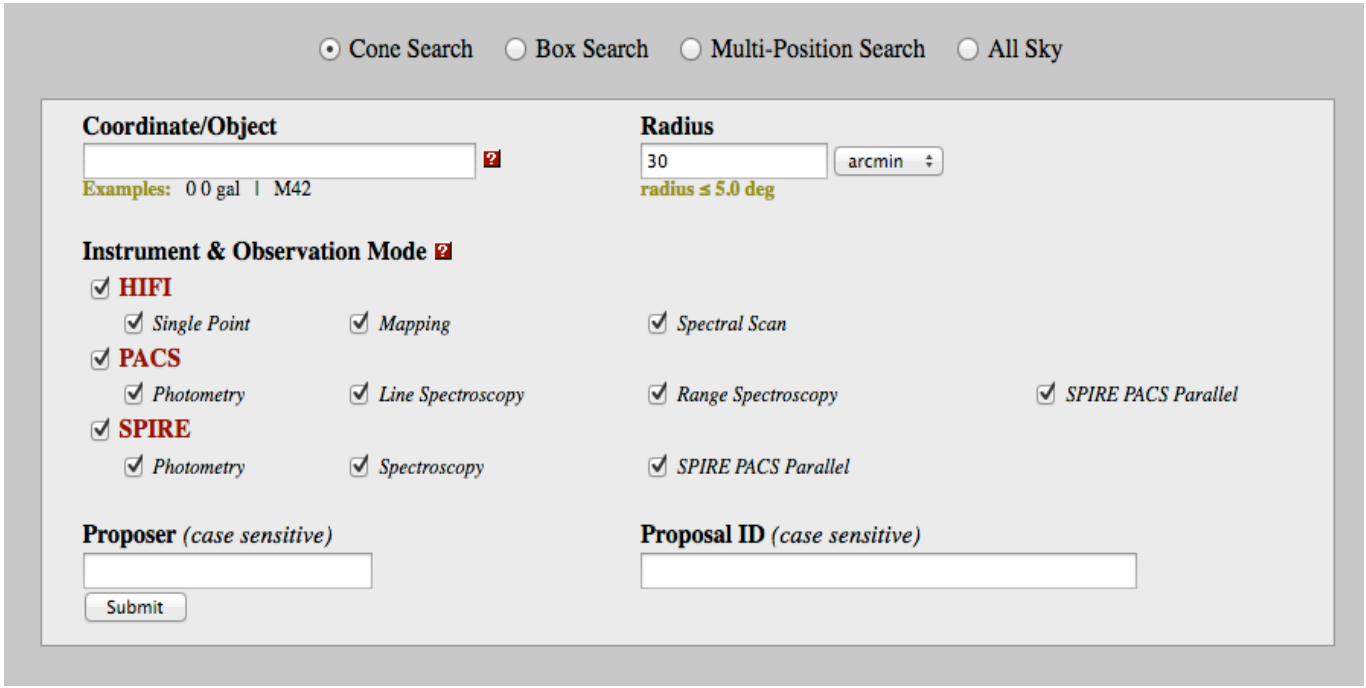
Get Selected Data In Current Page | Get Downloadable Data In All Pages There is a ***30GB*** download limit.

ObservationID	MissionID	PlanID	PI	AORID	Instrument	Detector Channel	Config	Frequency (GHz)	SpectEl1	SpectEl2	Slit	Target	ObsType	Processing	Pipeline Version [PID]	DataQual	ProductType	RAJ2000 Longitude (Galactic) (Ecliptic)	DecJ2000 Latitude (Galactic) (Ecliptic)	Exposure (Sec)	ObsStart (UTC)	ObsEnd (UTC)	Release (UTC)
P_2011-06-02_FO_F062B0038	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_1	FORCAST		IMAGING_DUAL2		FOR_F113	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:45.66 135.648(G) 91.646(E)	+78:21:49.8 24.904(G) 54.951(E)	30.081	2011-06-02 05:38:53.437	2011-06-02 05:39:23.734	2014-03-21 22:28:26.0
P_2011-06-02_FO_F062R0038	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_1	FORCAST		IMAGING_DUAL2		FOR_F113	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:45.66 135.648(G) 91.646(E)	+78:21:49.8 24.904(G) 54.951(E)	30.081	2011-06-02 05:38:53.437	2011-06-02 05:39:23.734	2014-03-21 22:40:11.0
P_2011-06-02_FO_F062R0033	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_2	FORCAST		IMAGING_DUAL2		FOR_F197	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:42.31 135.646(G) 91.641(E)	+78:21:52.99 24.902(G) 54.952(E)	20.3047	2011-06-02 05:26:23.62	2011-06-02 05:26:43.625	2014-03-21 22:43:18.0
P_2011-06-02_FO_F062B0028	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_1	FORCAST		IMAGING_DUAL2		FOR_F113	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:42.23 135.647(G) 91.641(E)	+78:21:51.02 24.902(G) 54.952(E)	30.081	2011-06-02 05:19:09.812	2011-06-02 05:19:40.0	2014-03-21 22:37:20.0
P_2011-06-02_FO_F062R0028	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_1	FORCAST		IMAGING_DUAL2		FOR_F113	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:42.23 135.647(G) 91.641(E)	+78:21:51.02 24.902(G) 54.952(E)	30.081	2011-06-02 05:19:09.812	2011-06-02 05:19:40.0	2014-03-21 22:44:47.0
P_2011-06-02_FO_F062R0023	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_2	FORCAST		IMAGING_DUAL2		FOR_F197	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:44.49 135.647(G) 91.644(E)	+78:21:51.38 24.904(G) 54.952(E)	20.0173	2011-06-02 05:13:08.578	2011-06-02 05:13:28.703	2014-03-21 22:29:40.0
P_2011-06-02_FO_F062R0019	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_1	FORCAST		IMAGING_DUAL2		FOR_F113	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:46.54 135.648(G) 91.647(E)	+78:21:49.92 24.905(G) 54.951(E)	30.8281	2011-06-02 05:04:45.109	2011-06-02 05:05:16.62	2014-03-21 22:29:08.0
P_2011-06-02_FO_F062B0019	2011-06-02_FO_F062	81_0059	Armus, Lee	81_0059_1	FORCAST		IMAGING_DUAL2		FOR_F113	FOR_F371		NGC 2146	object	LEVEL_3	Forcast_Drip_1.0		DRIP-COADDED	06:18:46.54 135.648(G) 91.647(E)	+78:21:49.92 24.905(G) 54.951(E)	30.8281	2011-06-02 05:04:45.109	2011-06-02 05:05:16.62	2014-03-21 22:38:32.0

Page 1 of 1 (1 - 8 of 8)

IRSA Herschel Interface

- Example of possible interface for SOFIA products



Capabilities

PARAMETER	DCS Basic	DCS Advanced	IRSA Phase1	IRSA Phase 2
Spatial search	X	X	X	X
Science Instrument	X	X	X	X
Wavelength range		X		X
Data processing level	X	X		
Data product type		X		
Instrument configuration	X	X		x
Observer name, ProgID		X	X	x
Date of observation		X		X
Mission		X		
Proposal		X		X
AOR		X		
Enhanced IRSA services				X