

Pass 8 Data Public Release

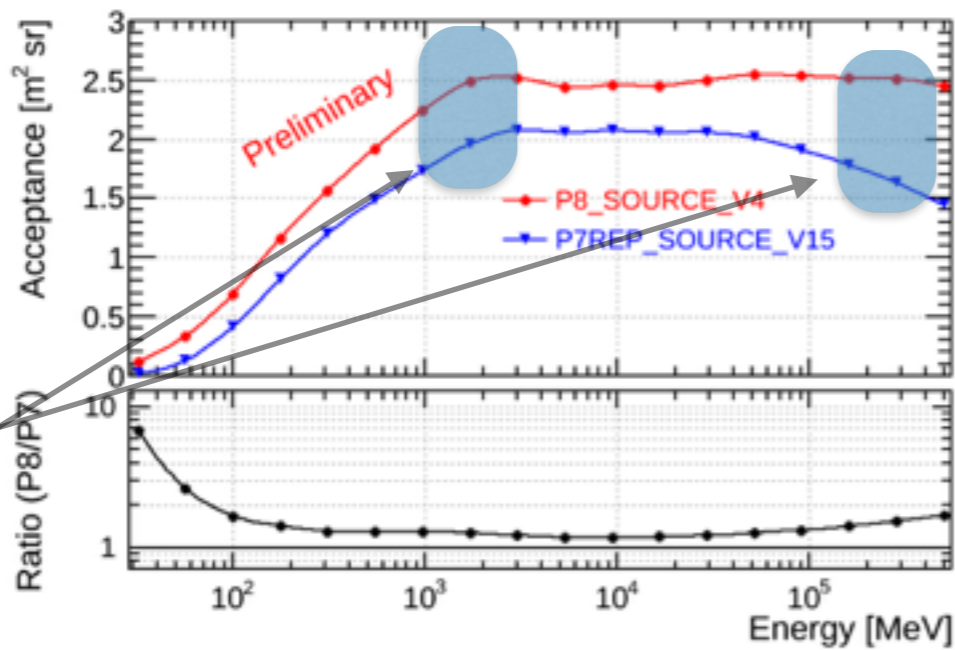
Jeremy S. Perkins LAT and the FSSC

Outline

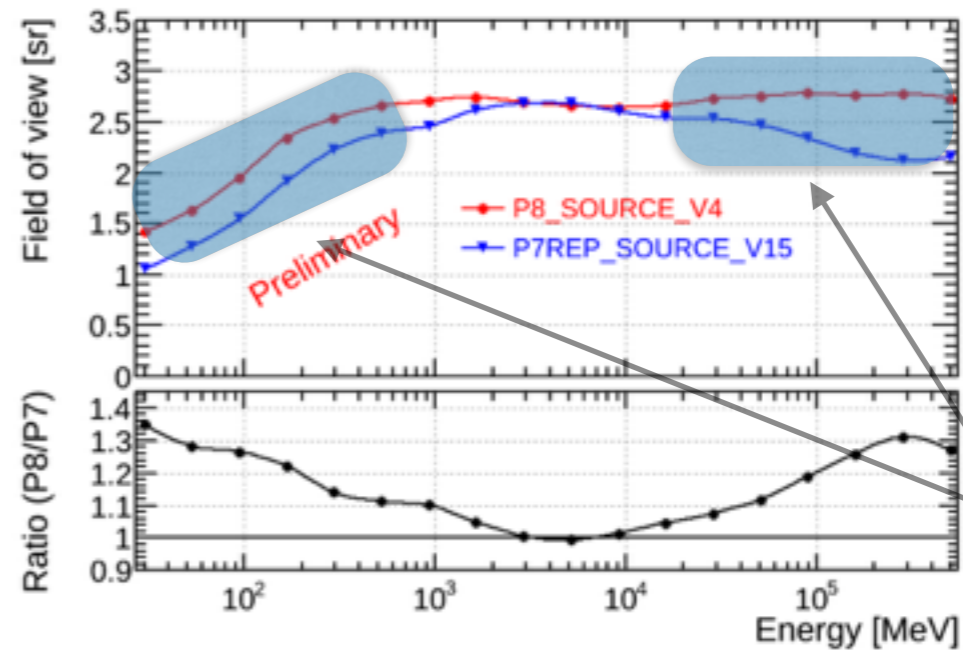
- Pass 8 Performance Status
- L1 Processing Switch
- Science Tools Related Updates
- Pass 8 Package and Analysis Recommendations
- Timeline

Pass 8 Performance

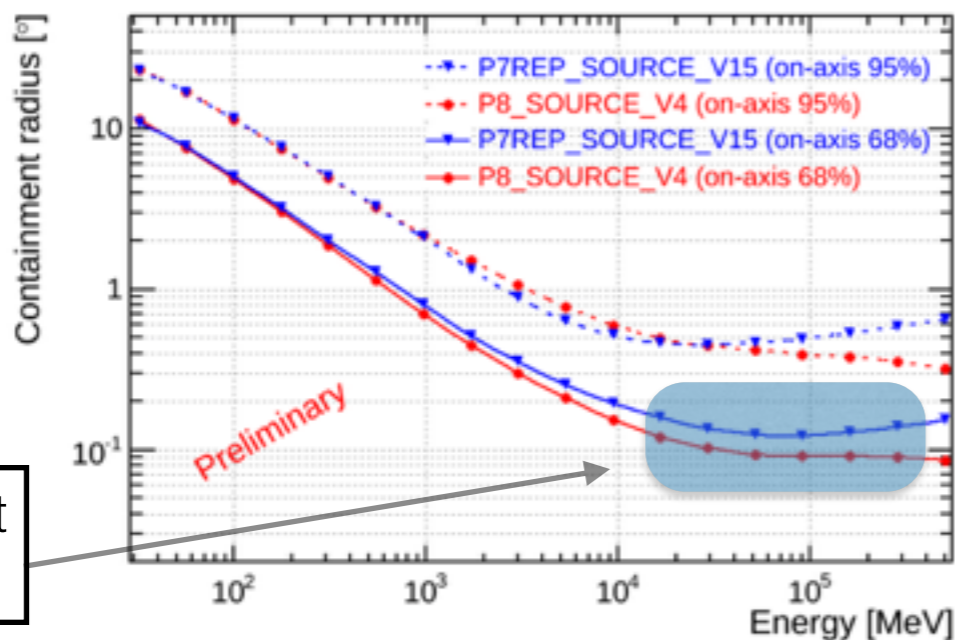
- Significant improvements over Pass 7
- No significant changes over what was reported at the *Fermi* Symposium



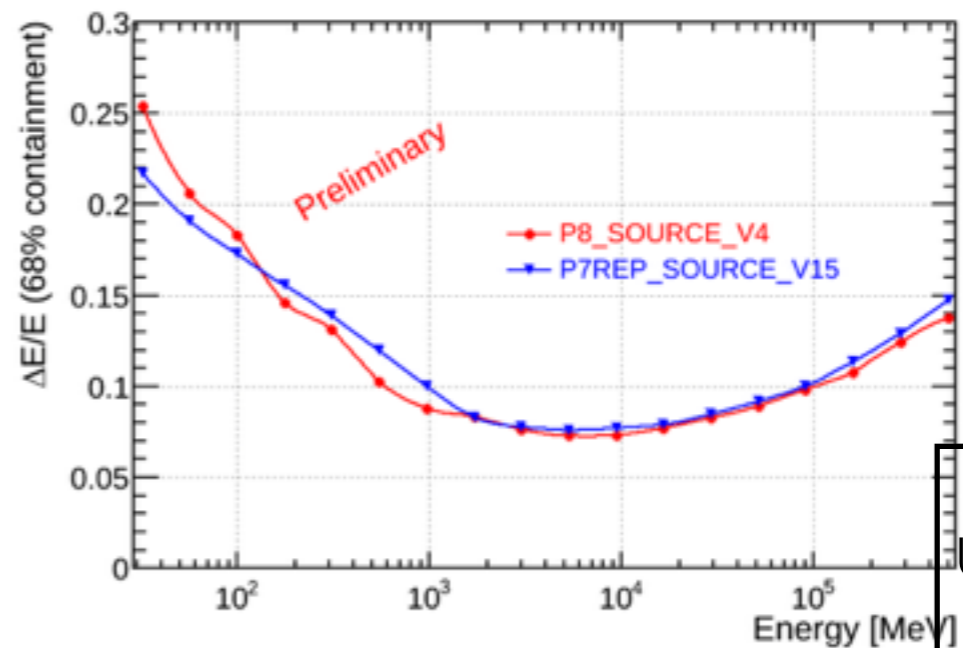
25 - 40% increase in acceptance



Larger Field of View



Improvement in the PSF



Better Understanding of the Systematics

L1 Processing Switch

Current Situation

Level 1 (L1) Processing with P7Rep
&
Reprocessing with Pass 8

L1 Switch

L1 Processing switches from P7 Rep to Pass 8
This is a major event (which we've done before)

P7 Rep data will no longer be available (to the LAT team or at the FSSC)

We have to ensure that we are still able to perform our science monitoring tasks (i.e. GRB detection/Solar Flare detection/AGN flares/Galactic Transients). We need to make sure that we are not blind to the High Energy Sky.

L1 Processing is more comprehensive than simple reprocessing with Pass 8

L1 includes Data Quality Monitoring (DQM)

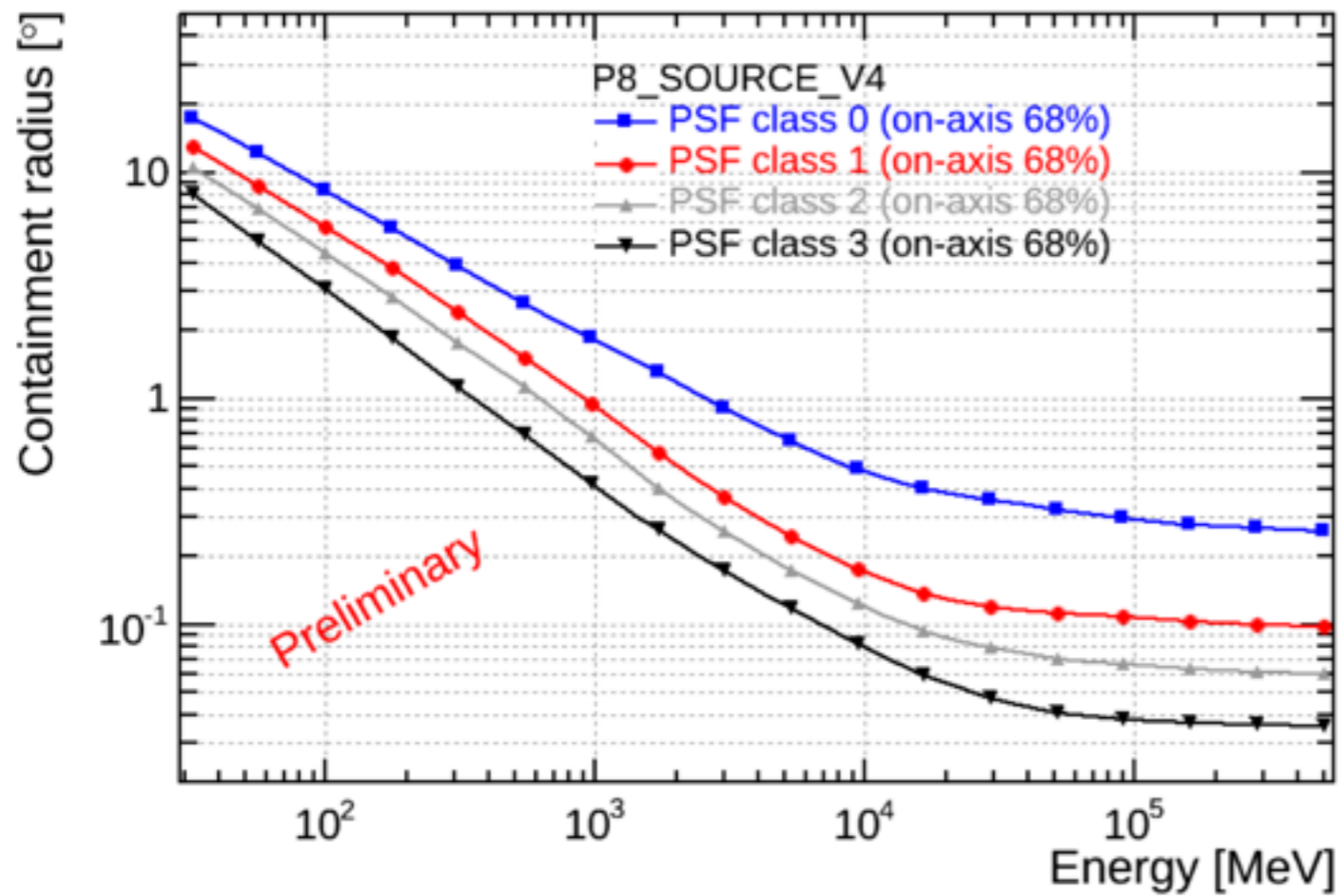
We monitor many variables to ensure the LAT is operating effectively. Many of these were changed with Pass 8 and this monitoring is nominally based on their expected values which depend on orbit position and event selection

Additionally, we are dealing with infrastructure modifications

Includes switching from rhel5-32bits to rhel6-64bits which requires consistency verification

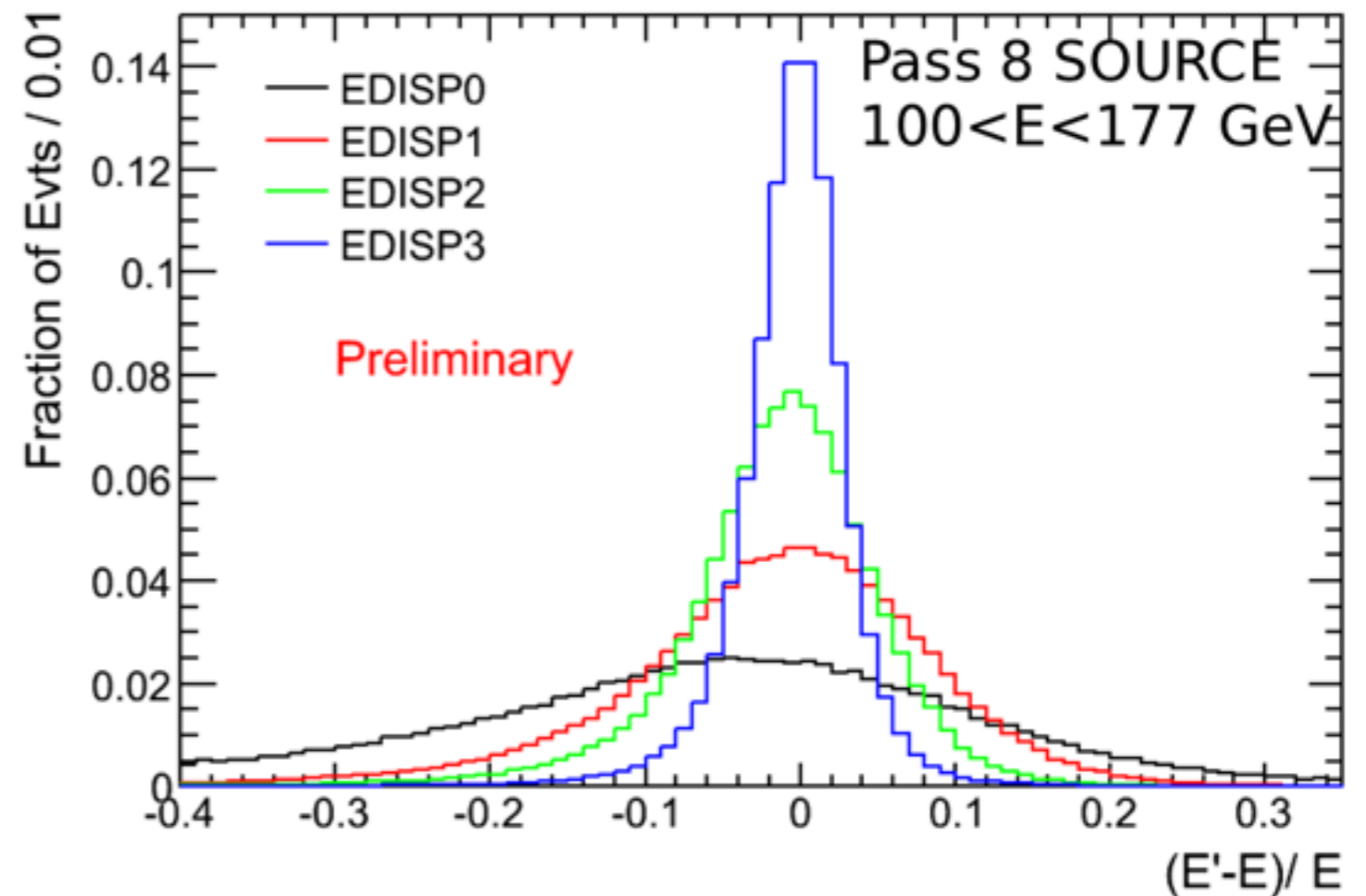
New: Event Types

- Recall: in P7 Rep the event classes (TRANSIENT, SOURCE, ... are partitioned into conversion types (FRONT/BACK).
- In P8, we have generalized this into what we are calling 'event types':
 - FRONT/BACK
 - PSF0/1/2/3: direction accuracy partitions
 - EDIPS0/1/2/3: energy resolution partitions
- FRONT/BACK are still there; users can continue to do a P7 type analysis
 - But, using the four PSF types yields a ~10% sensitivity improvement (you are inputting more information into the likelihood); we are developing tools and methods to provide an easy way to perform a joint analysis.



Can use these separately or in a joint likelihood.

Split into event types by equal acceptance.



Science Tools Updates

- Event Types introduction has increased the analysis phase space
 - You can choose to use only 1, 2 or 3 event types
 - You cannot mix different families of event types
- Consistently using the correct IRFs throughout the analysis chain is challenging and important
- In order to minimize error the STs have been modified to ensure the correct IRFs are used
 - During the selection step (gtselect) the selection keywords are recorded in the FITS file. This record is used further down the analysis chain to determine if the correct IRFs are being used.
 - This works seamlessly with CALDB.
 - This functionality is currently being tested at SLAC and the FSSC

Pass 8 Package

Serving Size 424 Million Events

Event Classes

Transient

Standard

Solar Flare Transient

Less X-ray pile-up in ACD

SOURCE,CLEAN,ULTRACLEAN

Interstellar Emission Model

Scaled P7Rep with Energy Dispersion

Isotropic Templates

All Event Types/Classes

Earth Limb Template

Systematics

Initial Conservative Recommendations

Energy Threshold

Earth Limb Handling

zenith angle cut,...

Updated Recommendations

~ 6 months after release

Our understanding of Pass 8 continues to evolve

Documentation

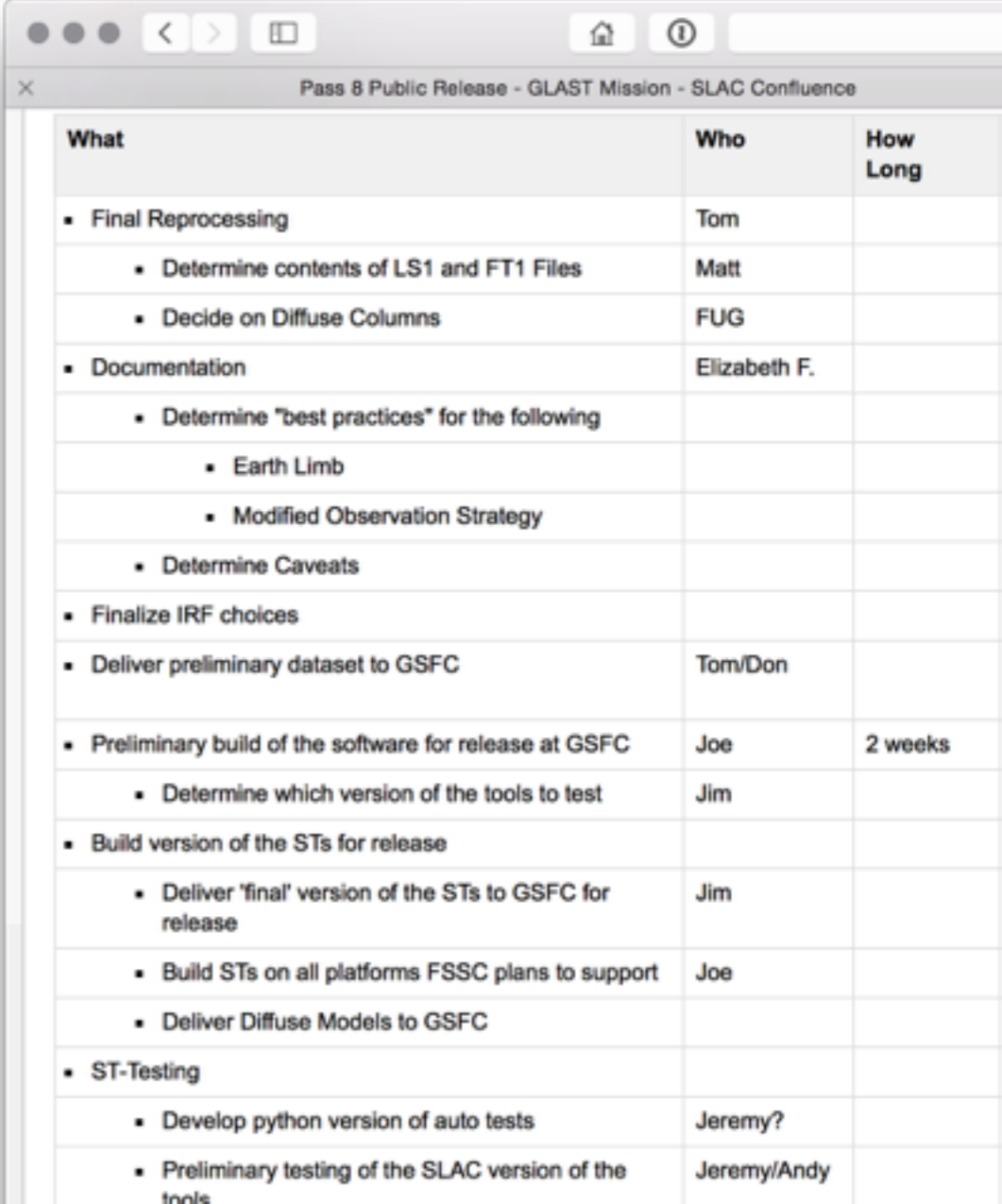
Threads, Guides, Details

Analysis Scripts

~ 6 months after release

Timeline

- We have made tremendous progress since the *Fermi* Symposium getting all of the pieces ready
- Our recommendations will be finalized during the next LAT collaboration meeting March 16 - 20.
- We estimate a release date of March 31st



Pass 8 Public Release - GLAST Mission - SLAC Confluence

What	Who	How Long
• Final Reprocessing	Tom	
• Determine contents of LS1 and FT1 Files	Matt	
• Decide on Diffuse Columns	FUG	
• Documentation	Elizabeth F.	
• Determine "best practices" for the following		
• Earth Limb		
• Modified Observation Strategy		
• Determine Caveats		
• Finalize IRF choices		
• Deliver preliminary dataset to GSFC	Tom/Don	
• Preliminary build of the software for release at GSFC	Joe	2 weeks
• Determine which version of the tools to test	Jim	
• Build version of the STs for release		
• Deliver 'final' version of the STs to GSFC for release	Jim	
• Build STs on all platforms FSSC plans to support	Joe	
• Deliver Diffuse Models to GSFC		
• ST-Testing		
• Develop python version of auto tests	Jeremy?	
• Preliminary testing of the SLAC version of the tools	Jeremy/Andy	