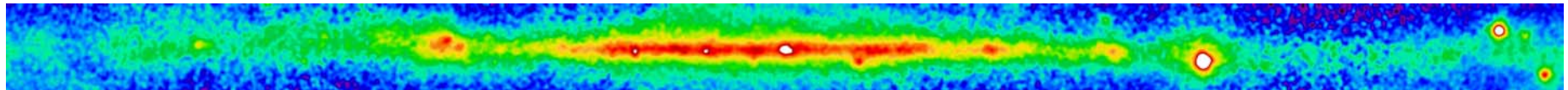


Wrap-up: Science Tools



EGRET >300 MeV

What we got done at the meeting

What needs to get done

Getting to DC1

Who is doing what?

**Seth Digel
HEPL/Stanford Univ.
18 July 2003**



What got done at the meeting

- **Talks**
 - You heard them, too
- **Working sessions-type topics**
 - **Observation simulation**
 - Simulated data sets, variable (periodic) sources, handling multiple classes of events; Claudia Cecchi will be coordinator of obs. sim. science tools with Jim Chiang
 - **Graphics – AIDA & Pplot**
 - Round table forum. We've talked ourselves out of AIDA (too much overhead just for plotting) and raw Pplot, may be talking ourselves into ROOT
 - **HOOPS – how-to**
 - How went?
 - **Data layer – core developer-level discussion: what it can do for you**
 - Binned event class (data type) implemented; need one or two more for GOODI to be useful for the DC1 science tools
 - **D1 & D2 details – like how to communicate with them**
 - How went? Beowulf at SLAC has been rediscovered with Julie McEnery's help



What got done (2)

– Source detection

- Variable/moving sources, tradeoffs in response functions, computation time; N-dim Bayesian blocks, ICA, wavelet, other alternative methods for source detection?

– Interstellar emission model

– D3

- Parameterization of response functions, interface work

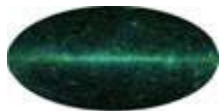
– Data products

- ICD between IOC and SSC; L0.5 data



What needs to get done

- **[Out of our hands] Derivation of LAT response functions**
 - Parameterizing them, studying them for likelihood analysis, will be in our hands
 - Biggest concern in terms of the end-to-end goal of DC1
 - For DC1 goals (at least as far as science tools go), we could get by with GLAST25 response functions and our high-level simulators
- **D1& D2**
 - For D1, need to converge on contents. Sensible suggestion: include the variables that are input to the classification trees [although then would have to include ‘flattening’ information]
 - For development, keeping up on the LAT side is the issue
- **Likelihood tool**
 - Source model definition, commanding, user documentation
 - Wilks’ theorem?



What needs to get done (2)

- **Observation simulation**
 - obsSim & Light Simulator cross check
 - Basically close to where we want to be for DC1; livetime \leftrightarrow real time; read D2 output
- **Map generation**
 - Can DS9 do what we want? Maybe with exposure calculation utility
- **L1 pipeline**
 - Waiting for OPUS code; in the meantime can work on the scripts that we'll feed opus
 - We'll want to provide input regarding the 'Monte Carlo Truth' sky
- **Core**
 - Graphics – what tools need it for DC1?
 - HOOPS and GOODI – really should be in there; don't foresee that this will be a problem



Penultimate slide

- **What do we need from DC1?**
 - **Technical aspects**
 - **Also to get software in a state where non-developer users can use it**
 - **install it, understand it, run it**
- **For collaboration meeting in September, need to introduce the DC1-era science tools**
- **WBS says that we will have a month of testing our tools in advance of release (pipeline → D1 & D2 → likelihood analysis (with exposure calc.) → (pseudo)science**
- **‘Release’ means more than a tag**

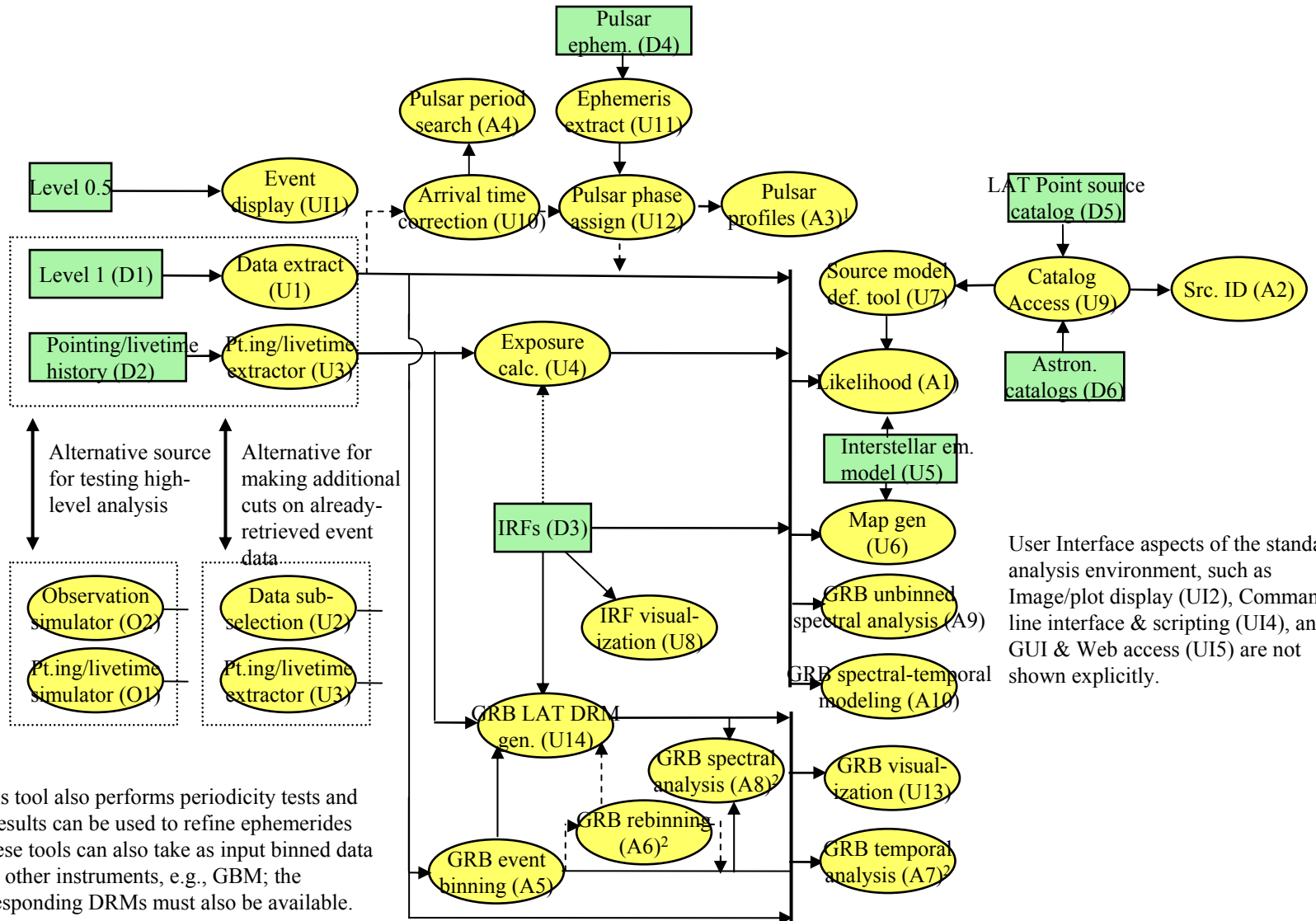


Who is doing what?

- **Core – Science Tools Core**
 - **Development environment, release manager**
 - **HOOPS (OO PIL)**
 - **GOODI – data representation, i/o**
 - **Plplot/AIDA**
- **D1 database and supporting utilities – DB & related utils**
- **D2 pointing/livetime/mode history – DB & related utils**
- **D3 response functions, form and interface – Davis & ?**
- **O1 orbit and attitude simulation – Obs. sim**
- **O2 & interim simulated data set – Obs. sim**
- **A1 & supporting tools**
 - **Functional prototype likelihood analysis – Chiang, Source detection**
 - **Source model definition - ?**
 - **Exposure calculation? – Chiang, Source detection**
 - **Response function visualization - ?**
- **Map generation – counts, exposure, intensity, model - ?**

Ready
Signs of progress
Signs of life
Moribund

Components of the Standard Analysis Environment



¹ This tool also performs periodicity tests and the results can be used to refine ephemerides
² These tools can also take as input binned data from other instruments, e.g., GBM; the corresponding DRMs must also be available.

User Interface aspects of the standard analysis environment, such as Image/plot display (UI2), Command line interface & scripting (UI4), and GUI & Web access (UI5) are not shown explicitly.