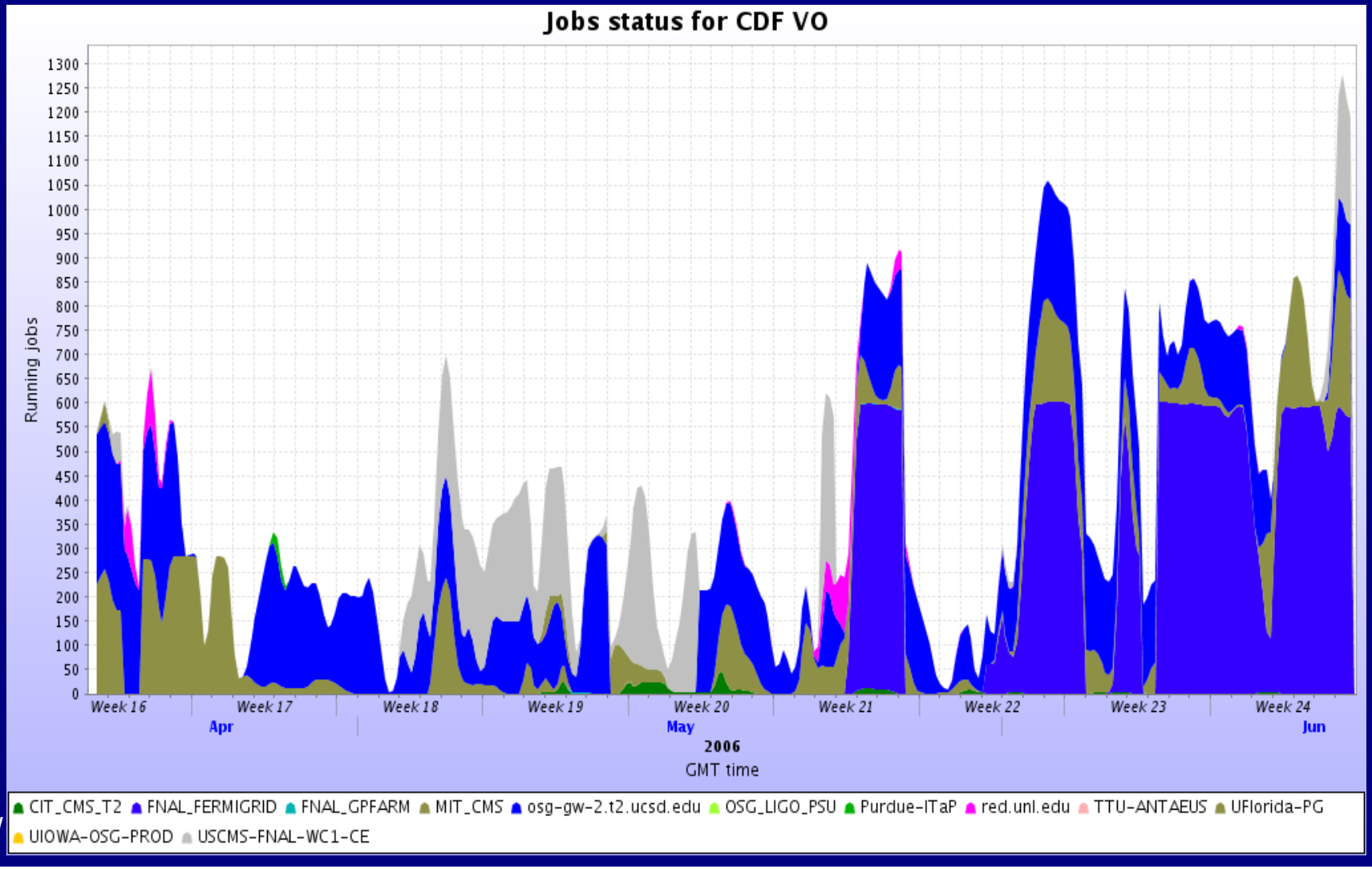
Non-LHC VOs on OSG

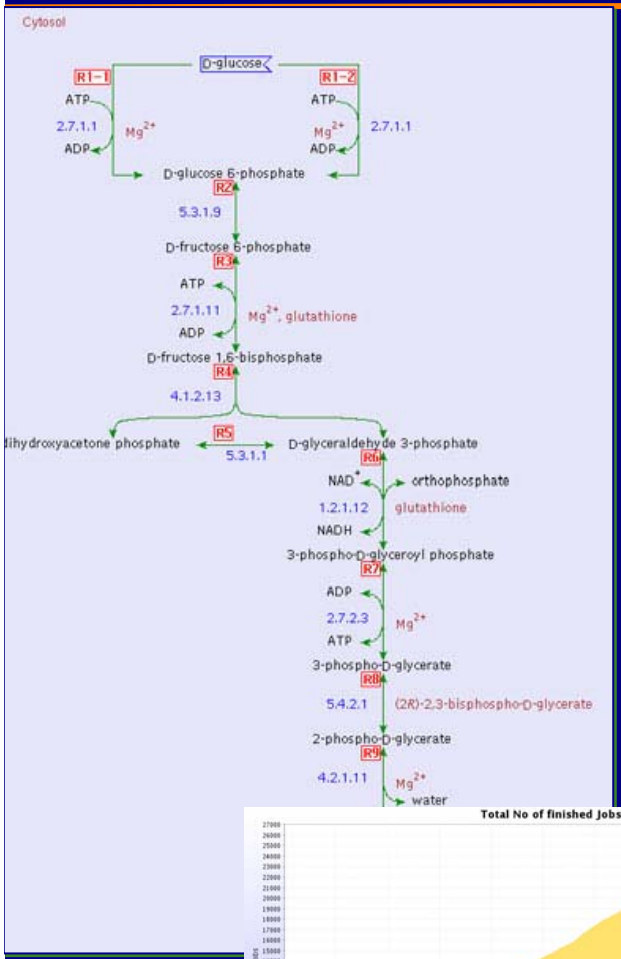
- LIGO will bring new analyses to OSG in 3-6 months. Need local SEs at each site.
- D0 making use of a few sites. Once the generic Resource Selection is deployed in the summer will use more cycles.
- CDF making steady use of OSG for Monte Carlo using Glide-in/Pilot jobs - site configuration inconsistencies and people to get things to work!

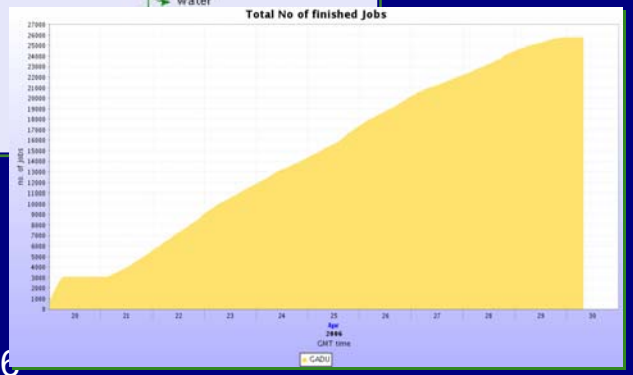
Non-LHC VOs on OSG

- CDF used 12 sites within last 2 months

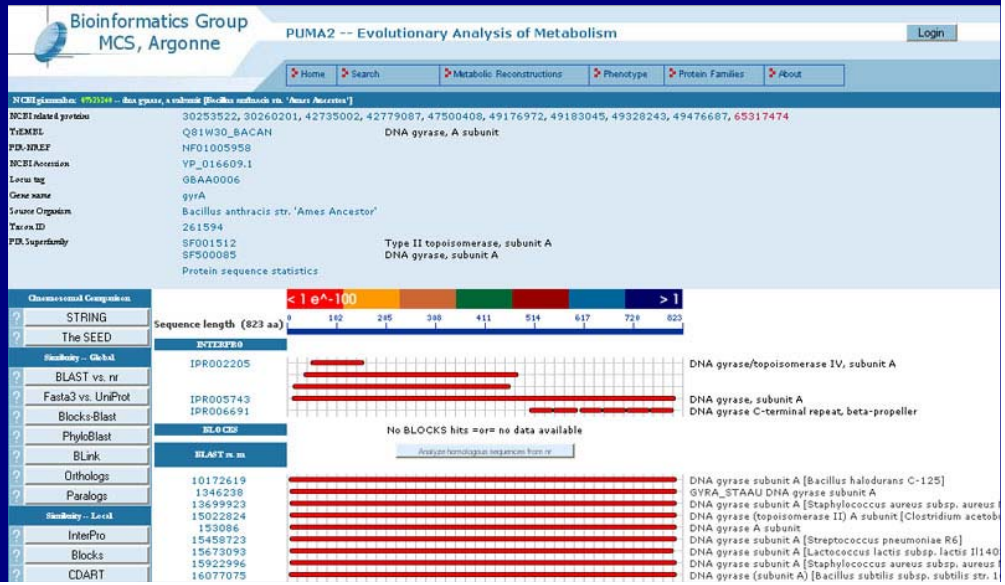


Applications with Cyclic Loads





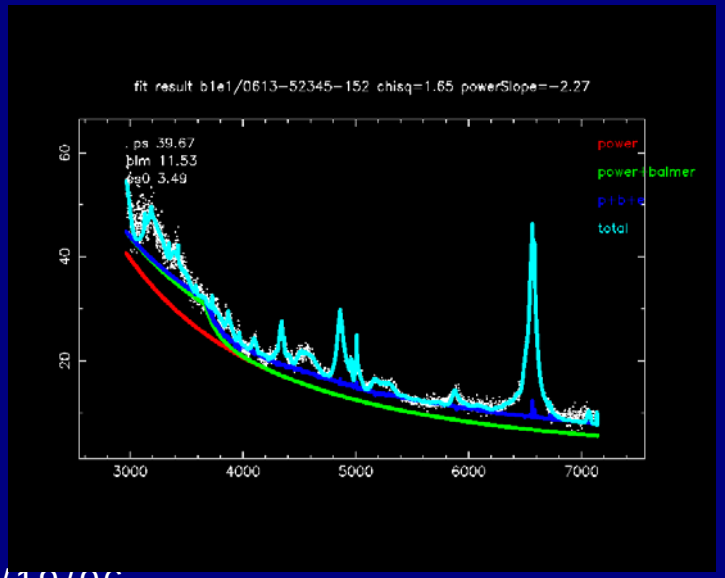
- Genome Analysis & Database Update (GADU).
- 1000 CPUs for one week every 1-2 months



Astrophysics

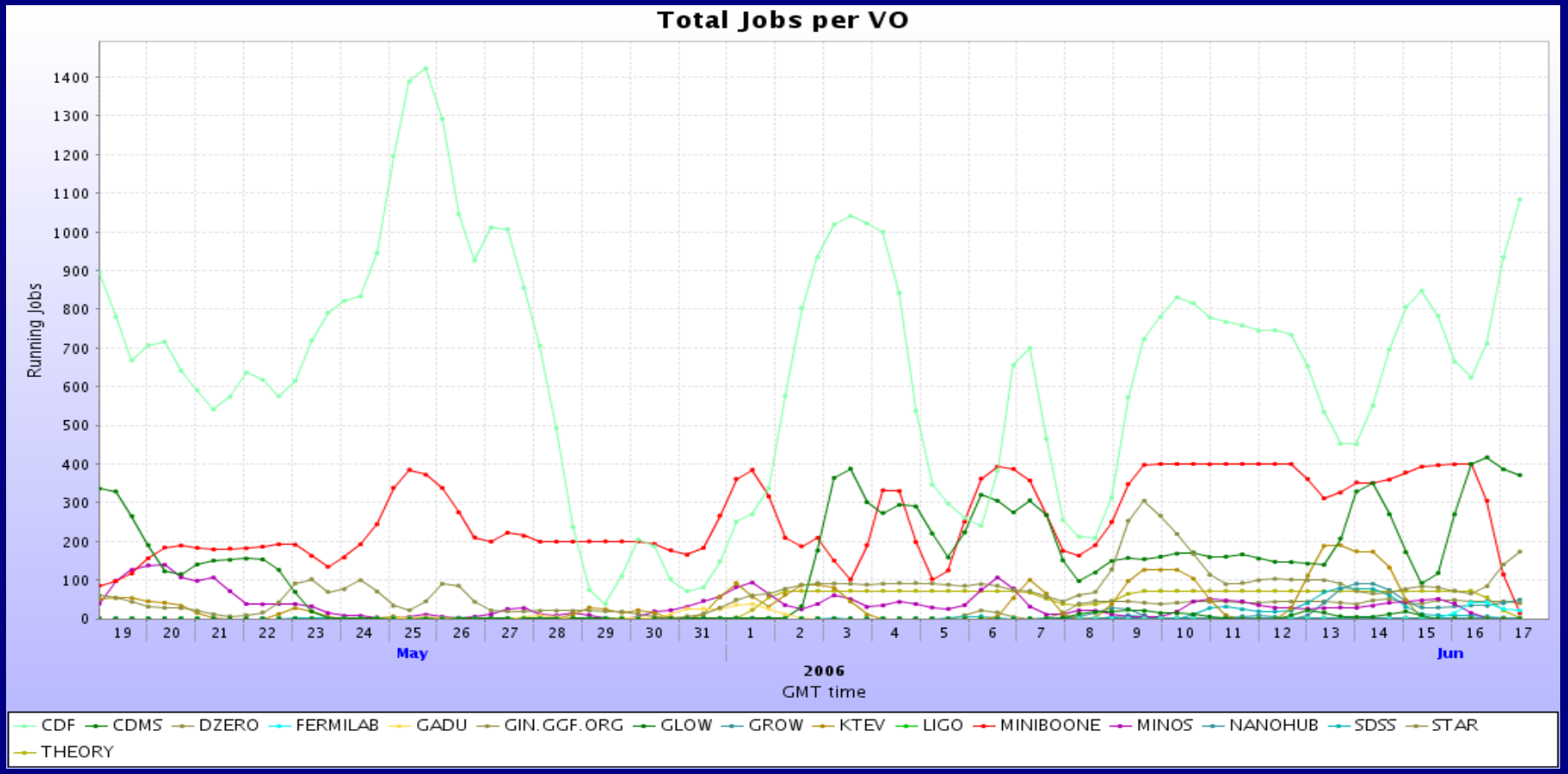
- Data Intensive Image Merging (Coadd)
- Simulations for Dark Energy Survey towards fall Data Challenge 1.
- Quasar fitting algorithm exploration.

Need >200G data areas on local sites.



Non-LHC VO Use..

16 non-LHC VOs using few to more than 1000 CPUs at a time



CS Explorations

Open Science Grid

- Investigation of "Football-Pool problem" at new scales "*determine how many lottery tickets one would have to buy to guarantee that no more than one prediction is incorrect. only fairly weak bounds are known on this value. Solutions have application in data compression, coding theory and statistical design.* "

Application — Code Design

- $W(v, \alpha)$: Set of all "words" of length v from alphabet $\{0, 1, \ldots \alpha - 1\}$.
- $|W(\alpha, v)| = \alpha^v$
- We will abbreviate $W(v, \alpha) = W$
- A code is a subset $C \subseteq W$
- Hamming distance: $a \in W, b \in W$, $\text{dist}(a, b) = |\{i \mid a_i \neq b_i\}|$

Code Applications

Error Correcting Code

- Find $C \subset W$ such that $a \in C, b \in C \Rightarrow \text{dist}(a, b) \geq 2d + 1$
- Maximize $|C|$
- Application: Words in C submit over a "noisy" channel on which at most d letters are changed can be "self-corrected."

Covering Code

- Find a code $C \subset W$ such that every word $w \in W$ is at most a distance d away from at least one word in C
- $(\text{dist}(w, C) \leq d \; \forall w \in W)$
- Minimize $|C|$
- Application: Something far more practical

Some other applications arriving:

- Nanotechnology and Geopraphic Information Systems coming to the table.