Change Log for Rate Fitting Code

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25 August 2011

1 Notes

- Src is at ~/Work/Rates/Fit_pkg

2 Changes

2.1 *2011-08-25 Thu* (LLS)

- Fixed problems with $\text{adjust}_{\text{rates}}$.
- Added diagonal regularization for temp and water

2.2 *2011-08-15 Mon* (LLS)

- Jacobians now normalized. max(sum(abs(temp))) = max(sum(abs(water))) = max(abs(gasi)) Jacobians. See get_jac.m
- get_jac.m no longer squeezes the jacobians for the parameters being fit. This is left to retrieval.m. This way, the jacobians outputted by get_jacs.m are "full" and can be used by $\text{adjust}_{\text{rates}}$.m to remove the effects of some gas using a known rate.
- Three lambda's are now used. gas/water/temp. The original lambda is now only used if you invoke regularization only on the diagonal.
- Test directory using new covariance matrices (L1 with larger numbers for i=1:6) and a true apriori_zero = all zeros.
- In oem_{lls}.m separated mean square variance of the fitted coefficients in three separate parts: gases, water, temp. Save in driver.oem.$\text{coeff}_{\text{varxxx}}$ where xxx = gas,water,temp. This allows you to do the L-curve separately for each coefficient type.

2.3 *2011-08-08 Mon*

- Removed "cluster" stuff.
- Many many code changes, mostly to simplify.
  - Large speed-up by doing multiple pinv's only once and saving
  - Assume cov input matrix is the regularization matrix!
  - Used inv instead of pinv for the gain matrix
- Both the Jacobian file and the covariance file now must have same ordering. [gases columns (1-5) T_{surf} wv(1:97), t(1:97)]

- Removed lamba loop, user creates this loop externally if needed
- For now, put gain and ak matrices in driver output
- Fixed qrenorm to reflect that T-Jacobians were scaled by 0.01, not 0.1
- Changed $\text{find}_{\text{covderivoperators}}$ to remove qrenorm scaling on L matrices
- lambda input is now not scaled by $10^{(\text{lambda})}$
- NOTE: testing now done with a L1 matrix (unity lambda2)

2.4 *2011-08-05 08:00*

- the Cluster directory allows you to put the below job on the cluster, using run_tara

2.5 *2011-08-04 21:00*

- set_default_struct is used to set defaults
- these are then overwritten by calling driver = override_defaults(driver,ix); where "ix" is the latbin you want to run. So for example a loop to do all latbins would be

```
for ix=1:36
   clear driver;
   run_retrieval;
end
```

2.6 *2011-08-02 05:05*

- jacobian file now has the qrenormalization information

2.7 *2011-08-01 21:50*

- driver.map_jac2cov allows you to map indices from Jacobian to Covariance

2.8 *2011-08-01 14:14*

- Covariance matrix format changed; no top level structure name. `oem_lls.m` changed to reflect this, see `b0`.
- Apriori format changed; no top level structure name. `oem_lls.m` changed to reflect this, see `zset`, and `zstd`.
- Changed debugging approach, using Matlab code like:

```
if driver.debug
  addpath Debug
  debug_cov
  rmpath Debug
end
```

  These scripts are in the `Debug` directory.
- Created directory Changelog to hold this file and its various output formats.