NCAR
UCAR

Ben Foster <foster@ucar.edu>

RE: tgcm [1119] tiegcm/trunk (helium)

6 messages

Drob, Douglas <douglas.drob@nrl.navy.mil> Wed, Jan 21, 2015 at 4:27 PM
To: "foster@ucar.edu" <foster@ucar.edu>

Ben,

The timing for this update is good. I was just planning on looking that the [He] results with some very preliminary research data from Andy Nicholas calibration sphere's that has a mass spectrometer on it they are still trying to suss out the data but having some TIEGCM simulation results would be helpful to motive them. Interesting there data indicates differences with MSIS, but not what TIEGCM qualitatively shows (determined from an informal conversation between Andy Nicholas and Eric Sutton). I would like to provide Andy some along track [He] results from TIGECM as I did for NRLMSIS. My one problem is that I don't have any initialization files for version 2.0 of the TIEGCM. If you can provide me with a link or repository path to those files I will do all the heavy lifting to make the runs here. I would of course keep HAO and Eric Sutton in the loop on everything.

Doug

_____
From: foster@ucar.edu [foster@ucar.edu]
Sent: Wednesday, January 21, 2015 6:13 PM
To: xianjing@ucar.edu; yamazaki@ucar.edu; leijh@ucar.edu; liuh@ucar.edu; fischer@ucar.edu; drob@ucar.edu; anthony.j.mannucci@jpl.nasa.gov; vicki.hsu@colorado.edu; yongmei@ucar.edu; qwu@ucar.edu; whyonker@ucar.edu; nossal@physics.wisc.edu; haibingr@gmail.com; roble@ucar.edu; fanfansu@ucar.edu; aburns@ucar.edu; jingliu@ucar.edu
Subject: SVN: tgcm [1119] tiegcm/trunk (helium)

Revision: 1119
Author: foster
Date: 2015-01-21 16:12:41 -0700 (Wed, 21 Jan 2015)
Log Message:
---
tiegcm/trunk (helium)
- Modifications to helium calculation recommended by Eric Sutton,during
  his visit to hao this week (see also email correspondence in Nov, 2014):
- Deleted data array lpmn which contained (m^2/sin(theta)-n*(n+1))*pmn.
  The m^2/sin(theta) term is not needed. Therefore, I replaced lpmn with pmn
  (the normalized associated legendre polynomials) and added the
  latitude-independent term -n*(n+1) to the synthesis loop within laplacian.F.
  (src/coefs_sres.F and src/coef0_dres.F) (makes this commit a large change set)
- Added compiler (preprocessor) #IF statement and parameter 'truncdeg' to
  define the degree of truncation for the spectral approximation, which
  depends on grid resolution and upper boundary pressure level. Set truncdeg=4
  for default (5-deg) resolution, and truncdeg=8 for double (2.5-deg) resolution.
- Minor updates to comments in laplacian.F, comp.F, he_coefs_sres.F, and
  he_coef0_dres.F.
- The 'Fit' and 'Synthesis' sections of laplacian.F each now contain commented

loops (just after the main loops) that are helpful when debugging various
levels of truncation and testing for stability.
- Removed unneeded z argument in comp.F (and removed it from the call to comp
in dynamics.F).
- Left addfld calls for FLX_HE and FLX_ARG uncommented in comp.F (after call
to laplacian).

Modified Paths:
---
tiegcm/trunk/src/comp.F
tiegcm/trunk/src/dynamics.F
tiegcm/trunk/src/he_coef0_dres.F
tiegcm/trunk/src/he_coefs_sres.F
tiegcm/trunk/src/laplacian.F

Ben Foster <foster@ucar.edu> Wed, Jan 21, 2015 at 4:34 PM
To: "Drob, Douglas" <douglas.drob@nrl.navy.mil>

Doug, there is no "version 2.0" of tiegcm yet (I'm hoping to make that release later this year), but I could provide you with a tar file of the trunk code after this commit. Would that work for you? Also, let me know if you want to run the 2.5-deg resolution and I will point you to startup files and resolution-dependent data files (maybe this is what you meant by version 2.0??).

--Ben

[Quoted text hidden]
--
Ben Foster
National Center for Atmospheric Research (NCAR)
High Altitude Observatory (HAO)
303-497-1595

Drob, Douglas <douglas.drob@nrl.navy.mil> Thu, Jan 22, 2015 at 8:03 AM
To: Ben Foster <foster@ucar.edu>

Ben,

I guess I meant the lastest versions with Helium that is in the trunk.. Maybe Stan told me that version 2.0 will be the public release with helium.
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[Quoted text hidden]

Ben Foster <foster@ucar.edu> Thu, Jan 22, 2015 at 9:38 AM
To: "Drob, Douglas" <douglas.drob@nrl.navy.mil>

Doug,

If you can checkout with svn, then look at the trunk commit log 'svn log $SVN/tiegcm/trunk', where $SVN is the URL to the tgcm repository root (I assume you are using the proxy address). Look at the log and decide what revision you want to checkout. To get the latest revision of the trunk:

svn checkout $SVN/tiegcm/trunk tiegcm_trunk

Or, if you want to check out a specific revision, e.g., r1109 (before the recent commit):

svn checkout -r1109 $SVN/tiegcm/trunk tiegcm_r1109

Any of these revisions will work for either 5-deg or 2.5-deg resolution.
Copy the appropriate job script from the scripts directory, and set the
resolution in there.

--Ben
[Quoted text hidden]

Drob, Douglas <douglas.drob@nrl.navy.mil> Fri, Jan 23, 2015 at 2:10 PM
To: Ben Foster <foster@ucar.edu>

Ben,

Ok, my misunderstanding - I would have figured if the new Helium modifications are in there, then it would have required a new initialized file where helium is a major species.

Seems that after navigating adding ESMF to the TIEGCM builds, I can now build and run the recent updates (e.g. version [1119]) from the trunk here locally.

Thanks.

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[Quoted text hidden]

Ben Foster <foster@ucar.edu> Fri, Jan 23, 2015 at 3:19 PM
To: "Drob, Douglas" <douglas.drob@nrl.navy.mil>, "Stanley C. Solomon" <stans@ucar.edu>

Doug,

Oh great, congrats on building it locally, the ESMF lib is another complication,
but is needed for parallelizing the dynamo code. If the SOURCE history
does not have helium (and calc_helium==1), then we initialize it (and
he_nm) globally to the lower boundary value, pshelb=0.1154e-5 (7.18e-7
for timegcm). This supposedly helps it build up to a pseudo steady-state
quicker than if it were set to zero. Even so, it can take helium at least 40 days to come up from these global values. See rdsource.F and lbc.F.
Next time we do benchmarks for the next public release, helium will be
on all histories.

--Ben
[Quoted text hidden]