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Ben Foster <foster@ucar.edu>

TIEGCM Fortran Compiler

4 messages

Sean Elvidge <s.elvidge@bham.ac.uk> Tue, Oct 28, 2014 at 9:44 AM
To: foster@ucar.edu, stans@ucar.edu

Hi,

I apologize if this email is to the wrong people, but I couldn't find a "better" contact.

For the past couple of years (during my PhD) I have been doing work in ionospheric/thermospheric modelling which has included the use of TIE-GCM (which I was first introduced to during the CISM Space Weather Summer School in 2012).

I just wanted to email you with regards to a small problem I've found when compiling the TIE-GCM source code on a new machine. I have just got a new PC and was setting up TIE-GCM when I found out that Intel's Fortran compiler (ifort) is no longer free! I have been using ifort to compile TIE-GCM for a while now, I believe it is what is recommended. However, with it not being free, I thought I would use a different approach (I also assume this will be true for many other people - hence why I am sending this email, to try and assist people in the future!).

I chose to use gfortran, but this caused a couple of issues, both in the flags which are called (by default) and the use of the system commands in util.F and dispose.F. Which has meant that a small number of modifications are required in in order to successfully compile TIE-GCM.

I wondered if you had any place where I could put this info, like a forum or something? Of course people could fix these problems as they go, but modifications to source code (removing the calls to "isystem" in util.F and dispose.F) can be daunting, and might put people off. If it is beneficial I have produced a guide on how to install TIE-GCM on a "clean" install of Ubuntu, using gfortran?

I just wanted to email to see if you had any place for me to put this information to help others.

Many thanks for all the hard work that is continually put into TIE-GCM and the fact that you make the source code available for academic use!

Best regards,
Sean.

--
Dr. Sean Elvidge, PhD, AMIMA

Research Fellow,
Webmaster, Federation of Astronomical Societies (FAS).

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Ben Foster <foster@ucar.edu> Tue, Oct 28, 2014 at 9:58 AM
To: Sean Elvidge <s.elvidge@bham.ac.uk>
Cc: "Stanley C. Solomon" <stans@ucar.edu>

Sean,

Yes, I have been meaning to work on building the models with gfortran. We have built on Ubuntu in the past, and I think someone found a free version of intel somewhere, but gfortran is ubiquitous, and should be supported. It sounds like you have had success with gfortran, so I would like to see how you have done it, then we can add a compiler specific Makefile for gfortran in the next release of the model.

We do have a moderated tgcm email group called tgcmgroup@ucar.edu
Go here to subscribe w/ an email address and password:

http://mailman.ucar.edu/mailman/listinfo/tgcmgroup

This is not a heavily used list, but please go ahead and post there.
Also please send me info about modifications to the code, version of gfortran used, etc. Thanks very much for your work on this, and sharing it with our users.

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

Sean Elvidge <s.elvidge@bham.ac.uk> Tue, Oct 28, 2014 at 10:39 AM
To: Ben Foster <foster@ucar.edu>
Cc: "Stanley C. Solomon" <stans@ucar.edu>

Thanks for your very quick reply.

This is the process I have used to compile on Ubuntu with gfortran (with my make file, and modification to the src code attached):

The following has been tested for Ubuntu 14.04, gfortran 4.8.2 and TIE-GCM 1.95.

First install the prerequisite packages:

sudo apt-get update

sudo apt-get install libnetcdf* libopenmpi* gfotran curl libcurl3-dev csh

Make a symbolic link for make:

sudo ln -s /usr/bin/make /usr/bin/gmake

Follow installation instructions as per the TIE-GCM documentation (i.e. setting up the data folder)

Gfortran does not allow calls to system commands if set via an interface, or integer program (like ifort does). In TIE-GCM the subroutine "isystem" fails. This can be fixed by [updated files are attached to email]:

- Delete the subroutine "isystem" in the file "util.F

- Change all references from "isystem" to "system" in "util.F"

- Also remove all calls to "isystem" within the file.

- Change all reference from "isystem" to "system" in "dispose.F"

- Again remove calls to "isystem" throughout the file.

Modify your make file (assuming you install the prerequisites in their “default” location) [attached as “Make.intel_ubuntu64”]:

```
F90      = gfortran
MPIF90   = mpif90
MPIRUN   = mpirun
FFLAGS   = -fdefault-real-8 -fno-range-check
DBGFLAGS = -debug #full -traceback
#
# Makefile will use OPTIM = -g if set debug=TRUE in job script.
OPTIM    = -O3
LIBS     = -lcurl
HOST     = $(shell hostname)
#
```

Library and Include file paths:

#

LIB_NETCDF = /usr/lib -lnetcdff -lnetcdf

INC_NETCDF = /usr/include

You can then run make and use TIE-GCM.

Many thanks,

Sean.

On 28 October 2014 15:58, Ben Foster <foster@ucar.edu> wrote:

> Sean,
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> Yes, I have been meaning to work on building the models with gfortran. We have built on Ubuntu in the past, and I think someone found a free version of intel somewhere, but gfortran is ubiquitous, and should be supported. It sounds like you have had success with gfortran, so I would like to see how you have done it, then we can add a compiler specific Makefile for gfortran in the next release of the model.
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> Go here to subscribe w/ an email address and password:
>
> http://mailman.ucar.edu/mailman/listinfo/tgcmgroup
>
> This is not a heavily used list, but please go ahead and post there.
> Also please send me info about modifications to the code, version of gfortran used, etc. Thanks very much for your work on this, and sharing it with our users.
>
> --Ben
>
> On Tue, Oct 28, 2014 at 9:44 AM, Sean Elvidge <s.elvidge@bham.ac.uk<mailto:s.elvidge@bham.ac.uk>> wrote:
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3 attachments

dispose.F
7K

util.F
63K

Make.intel_ubuntu64
1K

Ben Foster <foster@ucar.edu> Tue, Oct 28, 2014 at 3:44 PM
To: Joseph McInerney <joemci@ucar.edu>

[Quoted text hidden]

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