GCAM installation on Keller-Lab Jumbo (Linux Based server hosted by Thayer)

This documentation includes the steps and lines needed to install and compile the binary GCAM source code on the Keller-lab Jumbo, this can be edited for installation on any Linux based environment. Additional information can be found at : https://jgcri.github.io/gcam-doc/gcam-build.html

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#download GCAM V6.0 form JGCRI github
cd =~/jumbo/keller-lab/models/GCAM *#working directory – make new dir if you do not already specified*
wget https://github.com/JGCRI/gcam-core/archive/refs/tags/gcam-v6.0.zip
unzip gcam-v6.0.zip

module load gnu/9.1.0

 # Build Boost - Boost includes many general purpose utilities for the C++ language and helps GCAM compile correctly across most platforms.
mkdir build
mkdir libs
cd build
wget https://boostorg.jfrog.io/artifactory/main/release/1.78.0/source/boost_1_78_0.tar.bz2
tar --bzip2 -xf ./boost_1_78_0.tar.bz2
mv boost_1_78_0 ../libs/boost-lib
cd ../libs/boost-lib
./bootstrap.sh --with-libraries=system,filesystem --prefix=~/jumbo/keller-lab/models/GCAM/libs/boost-lib/stage/lib
./b2 stage

 # Build Eigen
cd ~/jumbo/keller-lab/models/GCAM/build
wget https://gitlab.com/libeigen/eigen/-/archive/master/eigen-master.tar.gz
tar -zxf eigen-master.tar.gz
mv eigen-master ../libs/eigen

 # Build Hector - Hector *is the simple climate developed at JGCRI. It is available from the hector project's* Github repository.
cd ~/jumbo/keller-lab/models/GCAM/gcam-core-gcam-v6.0/cvs/objects/climate/source
wget https://github.com/JGCRI/hector/archive/gcam-integration.zip
unzip gcam-integration.zip
mv hector-gcam-integration/* hector/

cd ~/jumbo/keller-lab/models/GCAM

```
export CXX="g++"
export GCAM_HOME=/jumbo/keller-lab/models/GCAM
export GCAMLIB_HOME=${GCAM_HOME}/libs
export BOOST_INCLUDE=${GCAMLIB_HOME}/boost-lib/
export BOOST_LIB=${GCAMLIB_HOME}/boost-lib/stage/lib/
export JAVA_INCLUDE=/usr/lib/jvm/java-1.11.0-openjdk-amd64/include
export JAVA_LIB=/usr/lib/jvm/java-11-openjdk-amd64/lib/server/
export JARS_LIB=${GCAMLIB_HOME}/jars/*
export EIGEN_INCLUDE=${GCAMLIB_HOME}/eigen
export USE_GCAM_PARALLEL=0
```

 # Compiling GCAM Source Code
```
cd /jumbo/keller-lab/models/GCAM/gcam-core-gcam-v6.0/cvs/objects/build/linux/
make clean
make gcam -j 8
```
#Note the -j 8 simply to compile multiple sources files at a time (set as appropriate for your system configuration)

#Once complete an executable will be copied to /jumbo/keller-lab/models/GCAM/gcam-core-gcam v6.0/exe

==*#In R (in terminal)*==
```
R
install.packages("devtools")
library(tidyr)
library(BH)
library(readr)
```
#This takes a about 5 -1 10 minutes to complete
#To exit R (⌘ + Q (OS X) or ctrl + Q (PC).


```
cd /jumbo/keller-lab/models/GCAM/gcam-core-gcam-v6.0
make xml

cd /jumbo/keller-lab/models/GCAM/gcam-core-gcam-v6.0/exe
```

 # GCAM reference scenario can now be run from that directory with
```
./gcam.exe -C configuration_ref.xml
```