Introduction to EdGCM

EdGCM User Interface

- Toolbar
- Setup Simulation window
- Analyze Output window
- Panoply mapping tool

EdGCM Toolbar

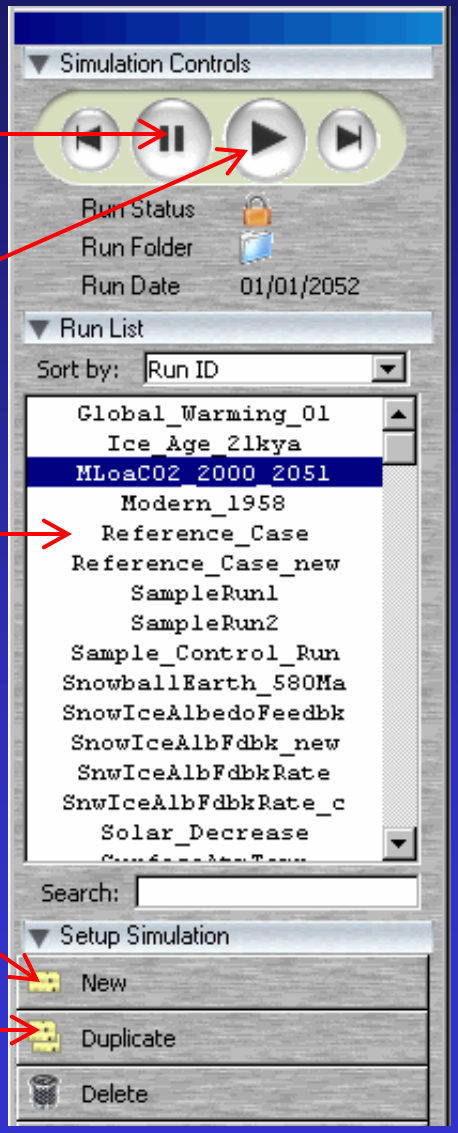
Pause Run

Start/Resume Run

List of all runs

Create new run setup

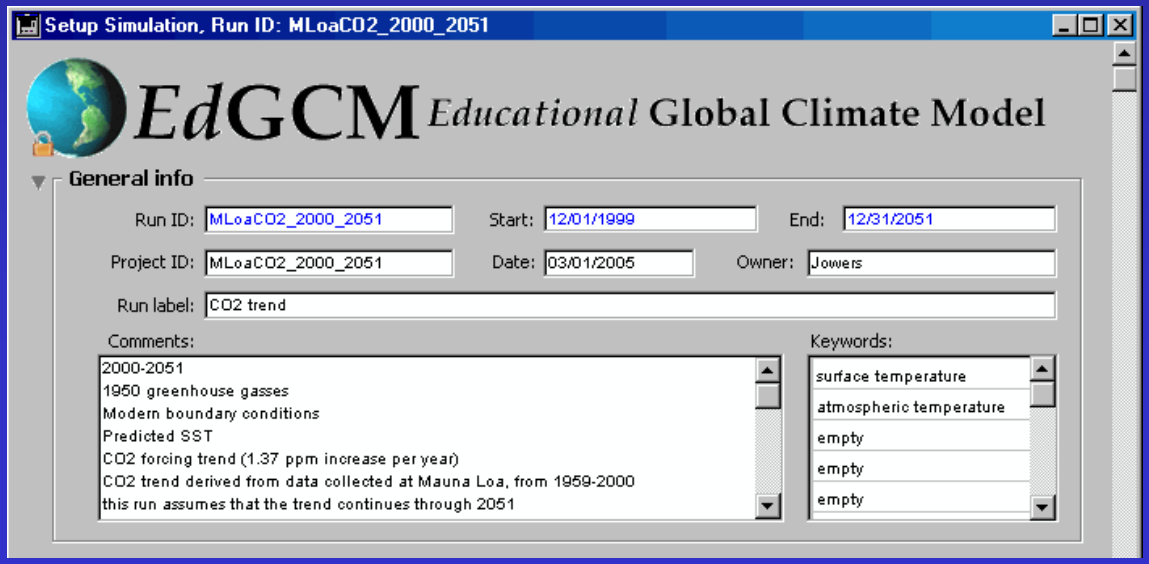
Duplicate existing setup for modification



Setup an EdGCM Run

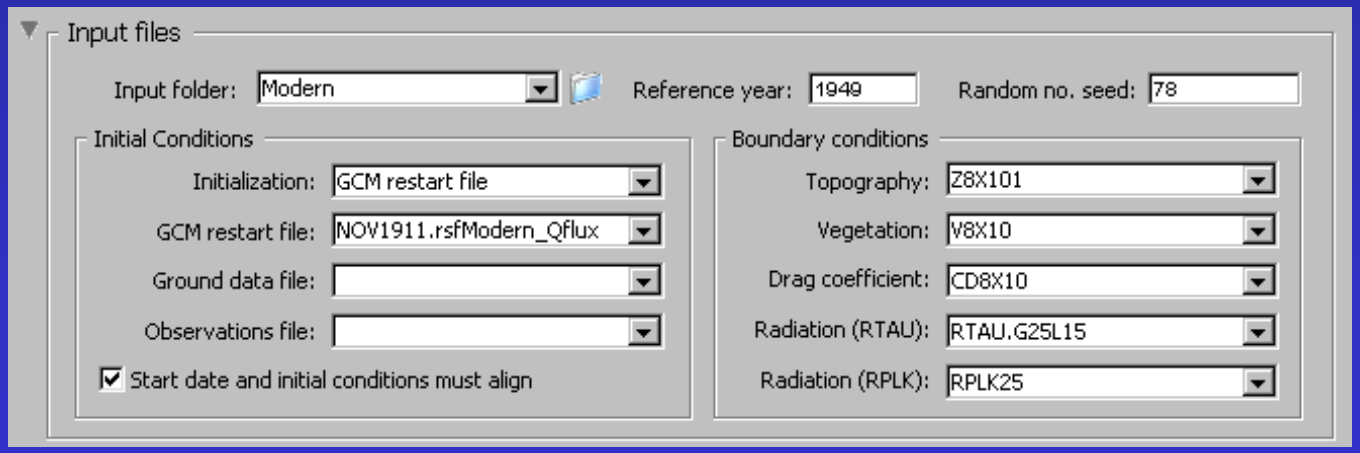
- Highlight any run from list
- Open its Setup Simulation window

  (top menu bar → “Window” → “Setup Simulations”)
- In toolbar, click “New” button
- New Setup window opens
- Enter IDs, start & end dates



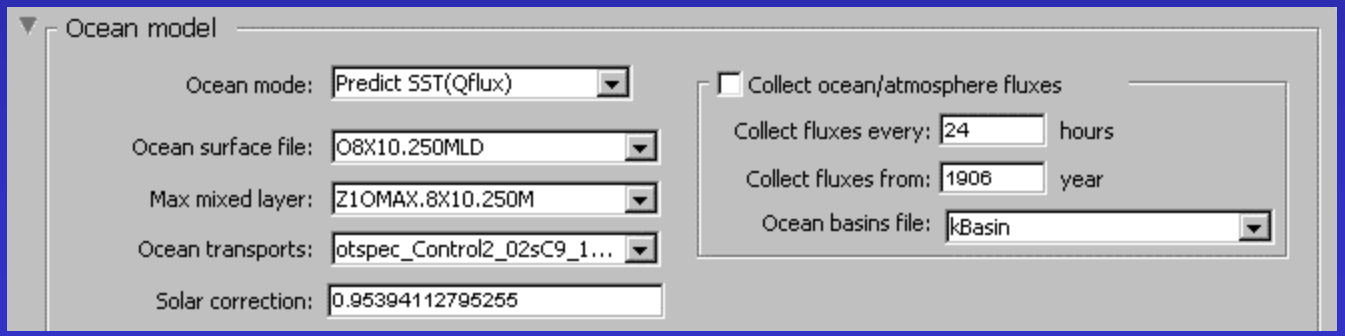
Input File Setup

- Choose input folder time period (in setup window)
- For near past, present, & near future runs, use “Modern”
- Choose reference year to match start date
- Leave initial & boundary conditions at default



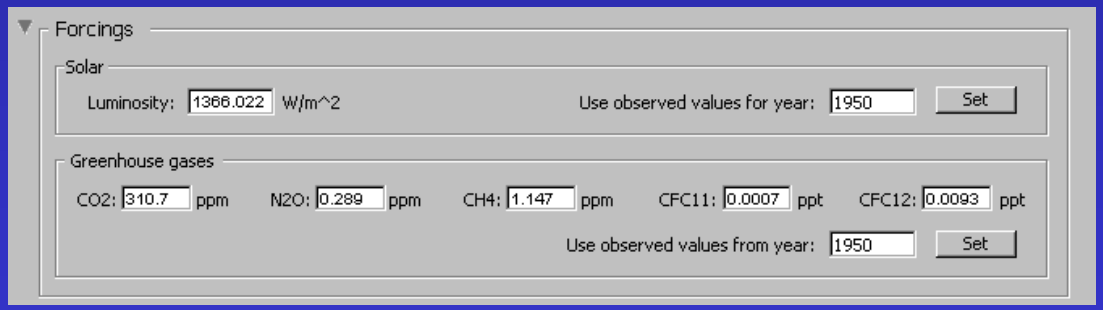
Ocean Mode Options

- “Predict SST” lets model predict SSTs throughout the run
- “Specify SST” uses observed SSTs, should not be used for future or paleoclimate runs
- Leave other ocean options at default



Setup Forcings

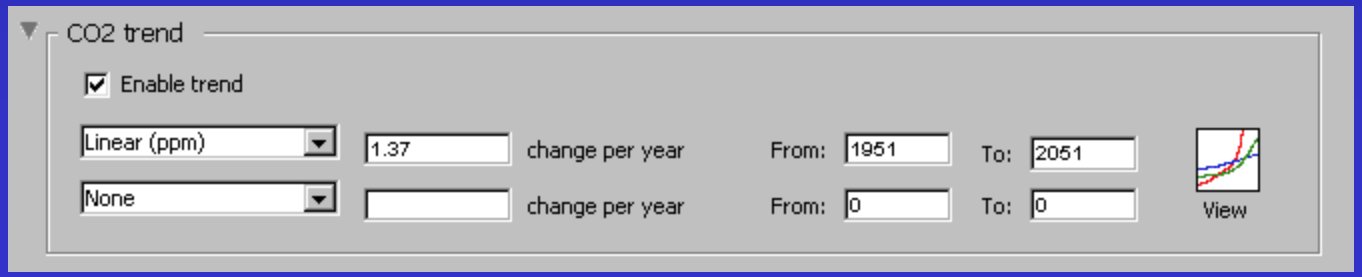
- Use “observed” values - enter year & click “Set”
- Or enter values of your choice
- Solar luminosity values available 1500 – 1998
- GHG values available 1850 – 2050
  - 1850-1957: ice core bubbles
  - 1958-2000: observed
  - 2001-2050: projections



- Entered values remain constant throughout run, unless . . .

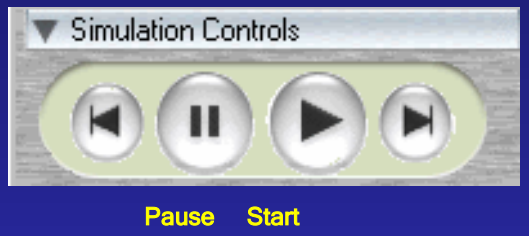
Forcings Trend Setup

- Enable trend(s) to change values over time
- For solar luminosity & each GHG
- Choose trend type (i.e. linear, exponential)
- Enter change per year
- Enter start & end years of trend
- Note: start & end years of trend(s) not confined to start & end dates of run
- Click “View” icon to see values trend produces



Run the Model

- After setup, highlight run ID in run list
- Click start button
- Calculates one cycle, then stops
- Click start button again to finish run
- Can pause run any time & resume later
- When complete, close & restart EdGCM (necessary to analyze output)



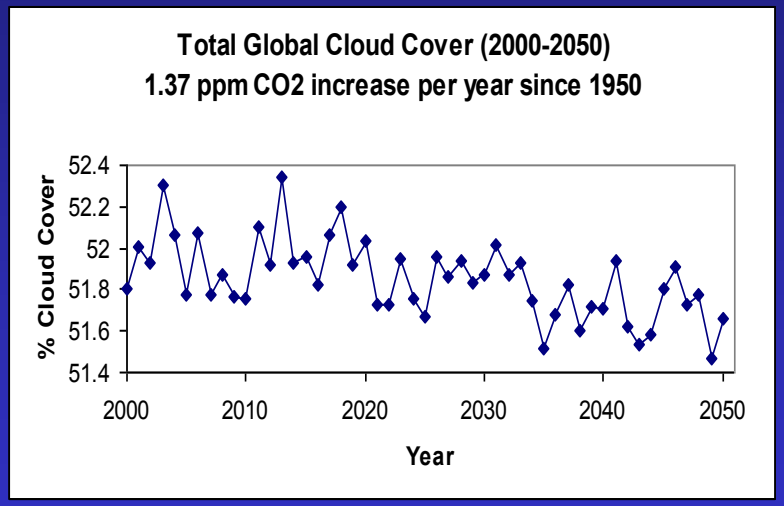
Analyze Output: Tables

- Highlight run in list
- Open its Analyze Output window

  (top menu bar → “Window” → “Analyze Output”)
- Select “Tables” tab
- Select start & end years for averaging
- Click “Average” button
- Check boxes of time period averages to view (months, seasons, annual)
- Click “Get Tables” button
- Highlight table name & click “View”

Analyze Output: Plots

- Analyze Output window → “Plots” tab
- Select start and end years
- Click “Time Series” button
- Select variables to plot
- Click “Get Plots”
- Highlight plot name you wish to view
- Click “View”
- Excel opens & data may be easily plotted

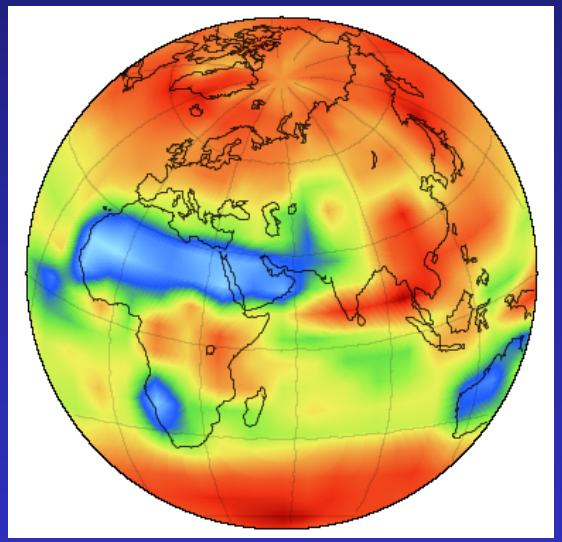


Analyze Output: Maps

- Analyze Output window → “Maps” tab
- Select start & end years for averaging
- Click “Average”
- Select time period(s) to map (i.e. annual)
- Select variables to map
- Click “Get Maps”
- Highlight time period in “Viewable Maps” list
- Click “View”

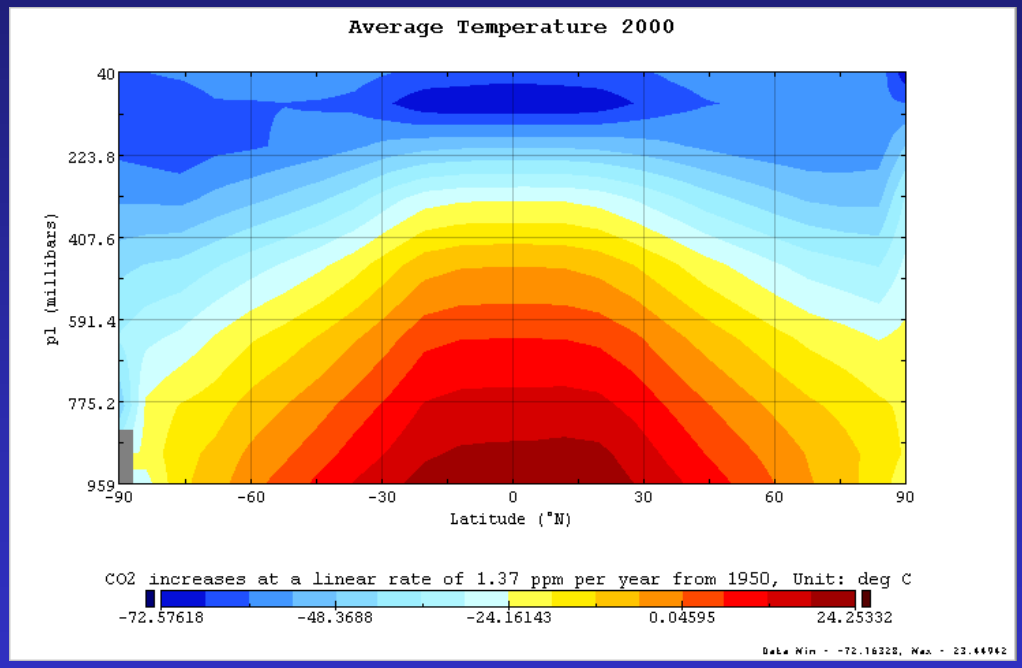
Panoply Mapping Tool

- After clicking “View”, Panoply opens
- Highlight map name
- Click “Create Plot”
- Many map options to choose from
- Drop down box to change time period mapped (i.e. ANN, DJF, JAN)
- Note: map will be lost if you close map window without saving



Analyze Output: Vertical

- In Analyze Output window, “Vertical” tab
- Procedure is similar to “Maps” tab
- Vertical profile also uses Panoply
- Zonal averages depicted in profile



Known Problems

- First calendar year of any run cannot be analyzed
- SST cannot be mapped
- Map images do not save well
- In some cases, data for a certain range of years cannot be averaged for analysis
- Vertical profile variable check boxes are off by one

Sample Run

- Start: 12/01/2005 End: 12/31/2007
- Input folder: Modern
- Reference Year: 2005
- Predict SST
- Choose to generate monthly average data tables
- Solar: 1998 value
- GHGs: 2005 values
- Choose to enable CO2 trend
- Linear (ppm) trend
- 2.75 ppm CO2 change per year (~2x current rate)
- Trend From: 2006 To: 2007