Welcome to the 2022 Online HYSPLIT Workshop (DAY 4 of 4)

The broadcast is scheduled to start at:
09:00 Eastern Daylight Time (EDT) = 13:00 UTC

Workshop Web Page:
https://www.ready.noaa.gov/register/HYSPLIT_hyagenda.php

NOAA Air Resources Laboratory
June 14-17, 2022
Workshop guidance
and resources posted at
Workshop Web Page

https://www.ready.noaa.gov/
register/HYSPLIT_hyagenda.php

We will update this page each day to include any new materials or links that are relevant to the Workshop
Workshop Day 3 (Thr, June 16)
The exec/statmain executable in HYSPLIT v5.2.1 does not work correctly. Please update it by downloading statmain to your HYSPLIT exec directory.

- Windows users - fix_win10.zip (zip, 0.5 MB). Three executable files (including txt2dbf.exe and dbf2tst.exe) in the HYSPLIT v5.2.1 distribution for Windows are found to be defective.
- macOS users - fix_macOS.zip (zip, 0.3 MB).
- Ubuntu 20.04 users - fix_UbuntuOS20.04.zip (zip, 29 KB).
- Red Hat Enterprise Linux 8 / CentOS 8 users - fix_RHEL8.5.zip (zip, 29 KB).
- Red Hat Enterprise Linux 7 / CentOS 7 users - fix_CentOS7.9.zip (zip, 28 KB).
- Day 3 handout (pdf, 1.0 MB).
- Day 3 wrap-up (pdf, 1.3 MB) or Day 3 wrap-up (pptx, 1.0 MB).
- Transformation and deposition slides (pdf, 1.1 MB).
- HYSPLIT Simulation Parameters for ALOHA Chemicals (pdf, 7.8 MB).
- Wildfire applications (pdf, 0.8 MB).
- Source attribution methods (pdf, 1.2 MB).
- Workshop video recording for day 3 (mp4, 1.4 GB) and unfinished transcript (txt, 228 KB). The transcript is not available. See the above on how to download the video file.
# 2022 HYSPLIT Workshop Schedule

*Subject to change, depending on the progression of the course and at the discretion of the instructors*

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<tr>
<th>UTC</th>
<th>Eastern Daylight Time</th>
<th>Monday, June 13, 2022</th>
<th>Tuesday, June 14, 2022</th>
<th>Wednesday, June 15, 2022</th>
<th>Thursday, June 16, 2021</th>
<th>Friday, June 17, 2021</th>
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<tbody>
<tr>
<td>13:00</td>
<td>9:00 - 10:00</td>
<td>OPTIONAL* 1a. Installing HYSPLIT on Windows PC</td>
<td>Introduction</td>
<td>11. Pollutant transformations and deposition</td>
<td>15. Radioactive pollutants and dose</td>
<td></td>
</tr>
<tr>
<td>14:00</td>
<td>10:00 - 11:00</td>
<td>OPTIONAL* 1b. Installing HYSPLIT on MAC</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>15:00</td>
<td>11:00 - 12:00</td>
<td>One-on-one virtual installation sessions, by appointment</td>
<td>4. Trajectory Calculations</td>
<td>12. Air Concentration Uncertainty</td>
<td>16. Volcanic eruptions with gravitational settling</td>
<td></td>
</tr>
<tr>
<td>16:00</td>
<td>12:00 - 13:00</td>
<td>One-on-one virtual installation sessions, by appointment</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>17:00</td>
<td>13:00 - 14:00</td>
<td>One-on-one virtual installation sessions, by appointment</td>
<td>5. Trajectory Options</td>
<td>13. Source Attribution Methods</td>
<td>17. Custom Simulations</td>
<td></td>
</tr>
<tr>
<td>18:00</td>
<td>14:00 - 15:00</td>
<td>One-on-one virtual installation sessions, by appointment</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
<td>Break</td>
</tr>
<tr>
<td>19:00</td>
<td>15:00 - 16:00</td>
<td>One-on-one virtual installation sessions, by appointment</td>
<td>6. Trajectory Statistics</td>
<td>10. Alternate display options</td>
<td>14a. Wildfire Smoke</td>
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<tr>
<td>20:00</td>
<td>16:00 - 17:00</td>
<td>One-on-one virtual installation sessions, by appointment</td>
<td>Day 1 Wrap-Up</td>
<td>14b. Dust Storms</td>
<td>Day 2 Wrap-Up</td>
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<td></td>
<td></td>
<td>Day 2 Wrap-Up</td>
<td>Day 3 Wrap-Up</td>
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# Agenda – Day 4

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<tr>
<th>UTC</th>
<th>EDT</th>
<th>Agenda Item</th>
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<tbody>
<tr>
<td>13:00 – 13:15</td>
<td>09:00 – 09:15</td>
<td>Introduction to Day 4</td>
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<tr>
<td>14:45 – 15:00</td>
<td>10:45 – 11:00</td>
<td>Break</td>
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<tr>
<td>15:00 – 16:30</td>
<td>11:00 – 12:30</td>
<td>16. Volcanic Eruptions with Gravitational Settling</td>
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<td>12:30 – 13:30</td>
<td>Break</td>
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<td>17:30 – 18:30</td>
<td>13:30 – 14:30</td>
<td>17. Custom Simulations</td>
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<td>15:45 – 16:00</td>
<td>Final course wrap-up</td>
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</tbody>
</table>

Note: all times are approximate
Asking Questions

- Ask general or logistical questions about the Webinar or Go-to-Webinar in the Control Panel that was just discussed.

  ...if viewing a recording, can ask general questions by emailing arl.webmaster@noaa.gov

- Whether viewing a recording or participating in the Workshop live, ask questions about HYSPLIT and the Tutorial in the HYSPLIT Forum.

  https://hysplitbbs.arl.noaa.gov/viewforum.php?f=76
Whether viewing a recording or participating in the Workshop live, ask questions about HYSPLIT and the Tutorial in the HYSPLIT Forum

<table>
<thead>
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<th>2022 HYSPLIT Workshop Questions</th>
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<td>FORUM</td>
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<td>2. Testing the Installation</td>
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<td>3. Gridded meteorological data files</td>
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<tr>
<td>4. Trajectory calculations</td>
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<tr>
<td>5. Trajectory options</td>
</tr>
<tr>
<td>6. Trajectory statistics</td>
</tr>
<tr>
<td>7. Air concentration calculations</td>
</tr>
<tr>
<td>8. Configuring the CAPTEX simulation</td>
</tr>
<tr>
<td>9. Air concentration parameter sensitivity</td>
</tr>
<tr>
<td>10. Alternate display options</td>
</tr>
<tr>
<td>11. Pollutant transformations and deposition</td>
</tr>
<tr>
<td>12. Air concentration uncertainty</td>
</tr>
<tr>
<td>13. Source attribution methods</td>
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</tbody>
</table>
Quick Recap of Logistics

➢ **General questions:**
  • use Go-to-Webinar Question box and we will do our best to answer
  • We are not using the “raise hand” feature for questions

➢ **Detailed questions, e.g., about the model:**
  • use the HYSPLIT Forum
  • if haven’t already, “register” in upper right corner of Forum web page

➢ **Handouts:**
  • Other documents – e.g., this presentation – provided as Handouts in Go-to-Webinar and also on the Workshop Web Page

➢ **Recordings:**
  • Each day’s recording will be posted to the Workshop Web Page as soon as it is ready, generally ~4 hours after the day’s session ends.

➢ **If not installed, or if get too far behind:**
  • Perfectly ok to view one or more sessions as “demonstrations” and then go back and do the sessions on your own. The Tutorial is designed to be done on one’s own in self-paced environment.
Scripting

➢ We are not really covering scripting in this Workshop, but it may be the next step that some of you will take with HYSPLIT

➢ All of the programs in HYSPLIT can be run from the Command Line – and hence, from Scripts.

➢ In fact, there are generally more features available with scripting than from the Graphical User Interface (GUI). Not every option is programmed into the GUI.

➢ The advantage of using the GUI, like we are doing in this Workshop, is that you can clearly see the context of what entries you are making. However, you can see that even for us, it is possible to “forget to do something”, and the simulation will not go as intended.

➢ The advantage of using a script is that once you get it working, it will work every time. You don’t have to keep remembering to do each thing in the script every time you run it – the script remembers for you.
Some of you are no doubt familiar with scripts and use them in your own work.

The GUI is actually a “script”, written in the Tcl/Tk language, with the additional “point and click” functionality.

There are many other scripting languages, including DOS Batch, Linux Shell (bash, korn shell, etc.), Python, R, and others.

Script examples are available on most pages of the Tutorial, that show a script that carries out the actions on that page – click on the “gear” for a DOS Batch script and the “penguin” for a Linux shell script.
Scripting

- HYSPLIT Scripts generally follow this type of order:
  
  ✓ Define the parameters for the simulation
  
  ✓ Write the CONTROL file and the SETUP.CFG file
  
  ✓ Run HYSPLIT
  
  ✓ Run any post-processing programs (CONC PLOT, TRAJPLOT, etc.)
#! /bin/sh

WEB=""
if [ -f /usr/bin/firefox ];then WEB="/usr/bin";fi
if [ -f /usr/local/bin/firefox ];then WEB="/usr/local/bin";fi
MDL="${HOME}/hysplit"
OUT="${MDL}/working"
MET="${HOME}/Tutorial/captex"
cd $OUT

if [ ! -f ASCDATA.CFG ]; then
  echo "-90.0 -180.0" >> ASCDATA.CFG
  echo "1.0 1.0" >> ASCDATA.CFG
  echo "180 360" >> ASCDATA.CFG
  echo "2" >> ASCDATA.CFG
  echo "0.2" >> ASCDATA.CFG
  echo "'MDL/bdyfiles/" >> ASCDATA.CFG
fi
  echo "### $0 ###"

#----------------------------------------------
syr=83
smo=09
sda=25
shr=17

olat=39.90
olon=-84.22
lvll=10.0

run=25
ztop=10000.0
data="captex2_wrf27uw.bin"

#----------------------------------------------

echo "${syr} ${smo} ${sda} ${shr} " "CONTROL
echo "1" "CONTROL
echo "${olat} ${olon} ${lvll} " "CONTROL
echo "${run} " "CONTROL
echo "0" "CONTROL
echo "${ztop} " "CONTROL
### Workflow associated with a typical HYSPLIT Trajectory simulation

<table>
<thead>
<tr>
<th>Command Line or Script</th>
<th>write CONTROL file</th>
<th>write SETUP.CFG file</th>
<th>hysplit\exec\hyts-std</th>
<th>hysplit\exec\trajplot</th>
<th>additional scripts</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GUI</strong></td>
<td>Trajectory → Setup Run</td>
<td>Advanced → Config. Setup, Trajectory</td>
<td>Trajectory → Run Model</td>
<td>Advanced → View Messages</td>
<td>Trajectory → Special Runs</td>
</tr>
</tbody>
</table>

- **CONTROL file** (required)
- **SETUP.CFG file** (optional)
- **Met Data File(s)**
- **HYSPLIT Trajectory model** (hyts_std)
- **MESSAGE file**
- **Trajectory dump output file** (tdump.txt)
- **Trajectory Plotting program** (trajplot)
- **Additional post-processing programs**, e.g. trajectory clustering, trajectory frequency
<table>
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<th>hysplit\exec\concplot</th>
<th>hysplit\exec\con2asc</th>
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<tbody>
<tr>
<td><strong>GUI</strong></td>
<td>Concentration → Setup Run</td>
<td>Advanced → Config. Setup → Concentration</td>
<td>Concentration → Run Model</td>
<td>Advanced → View Messages</td>
<td>Concentration → Utilities → Convert to → Ascii (or Station)</td>
</tr>
</tbody>
</table>

**CONTROL file** (required), including Pollutant, Deposition, and Grids Setup...

**SETUP.CFG file** (optional)

If a SETUP.CFG file is present, HYSPLIT will use it, even if it's not how you wanted to do the run!

**HYSPLIT Concentration model** (hycs_std.exe)

**MESSAGE file**

**binary output file** for each concentration grid defined (cdump_1, cdump_2, cdump_3, ...)

**Concentration Plotting program** (**conclplot**)

**Concentration→Setup Run**

**Advanced→Config. Setup→Concentration**

**Concentration→Run Model**

**Advanced→View Messages**

Additional post-processing programs, e.g.

**con2asc** create ascii text file with concentration values at each grid point

**con2stn** create ascii text file with concentration values at a particular location
Many programs in the HYSPLIT exec directory (e.g., met data analysis programs); some in GUI, but not all
C:\Users\Mark\hypli\working>..\exec\trajplot

USAGE: trajplot -[options (default)]
   -a [GIS output: (0)-none 1-GENERATE_points 3-KML 4-partial_KML 5-GENERATE_lines]
   -A [KML options: 0-none 1-no extra overlays 2-no endpoints 3-Both 1&2]
   -e [End hour to plot: #, (all)]
   -f [Frames: (0)-all files on one 1-one per file]
   -g [Circle overlay: ()-auto, #circ(4), #circ:dist_km]
   -h [Hold map at center lat-lon: (source point), lat:lon]
   -i [Input files: name1+name2+... or +listfile or (tdump)]
   -j [Map background file: (arlmap) or shapefiles.<(txt)|process suffix>]
   -k [Kolor: 0-B&W, (1)-Color, N:colortraj1,...colortrajN]
      1=red, 2=blue, 3=green, 4=cyan, 5=magenta, 6=yellow, 7=olive
   -l [Label interval: ... -12, -6, 0, (6), 12, ... hrs]
      <0=with respect to traj start, >0=synoptic times]
   -L [LatLonLabels: none=0 auto=(1) set=2:value(tenths)]
   -m [Map proj: (0) Auto 1-Polar 2-Lambert 3-Merc 4-CylEqu]
   -o [Output file name: (trajplot.ps)]
   -p [Process file name suffix: (ps) or process ID]
   -s [Symbol at trajectory origin: 0-no (1)-yes]
   -v [Vertical: 0-pressure (1)-aGL, 2-theta 3-meteo 4-none]
   -z [Zoom factor: 0-least zoom, (50), 100-most zoom]

NOTE: leave no space between option and value

EXAMPLE: trajplot -itdump.txt -oFIRE -a3 -A3

• Not all program options available from GUI
• More options from scripts
• Type executable name from command line to see options
• At left: trajplot (the program that plots trajectories)
The 26th Annual George Mason University Conference on Atmospheric Transport and Dispersion Modeling will be held on July 26-28, 2022.

The deadline for submitting abstracts is July 16, 2022. Please send your abstracts to Joe Chang (gmu.atd.conference@gmail.com) and Zafer Boybeyi (zboybeyi@gmu.edu).

If there are enough HYSPLIT-related abstracts submitted, there will be a special section on HYSPLIT applications.
## Agenda – Day 4

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