


STILT simulations:

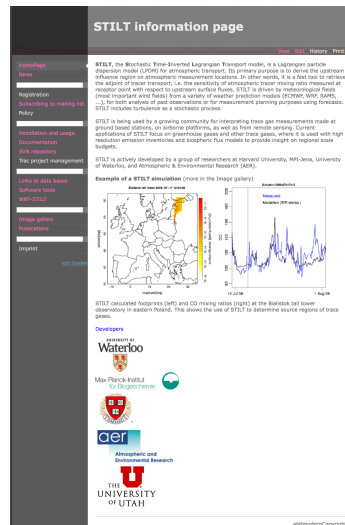
Some hands-on experiments with a Lagrangian transport model

STILT: Stochastic Time Inverted Lagrangian Transport

 (www.r-project.org) to

- Manage STILT fortran I/O
- Provide simpler user interface
- Generate graphical output

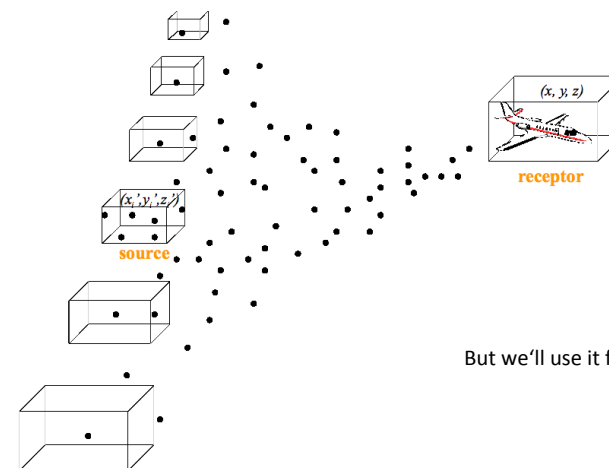
STILT website: stilt-model.org



STILT: Stochastic Time Inverted Lagrangian Transport

- LPDM (Lagrangian particle dispersion model)
- Particles = air parcels (fluid elements)
- Particles follow winds + turbulent motion
- Turbulence: stochastic process (Markov chain)
- Offline: uses analyzed or forecasted meteorological fields

STILT: Stochastic Time Inverted Lagrangian Transport



Citation: Lin, J. C., C. Gerbig, S. C. Wofsy, A. E. Andrews, B. C. Daube, K. J. Davis, and C. A. Grainger. A near-field tool for simulating the upstream influence of atmospheric observations: The Stochastic Time-Inverted Lagrangian Transport (STILT) model. *J. Geophys. Res.*, 108(D16), 4493, doi:10.1029/2002JD003161, 2003.

STILT: Stochastic Time Inverted Lagrangian Transport

Some exercises to

- Understand how STILT operates
- Track emissions from a power plant (Jena power station)
- Understand GHG measurements made at a specific location (tall tower observatory near Bialystok, eastern Poland)

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Installation (courtesy of Friedemann Reum):

- download the cygwin/x installer from <http://x.cygwin.com>
- run the cygwin/x installer
- > in the "Select packages" window, add to the selected packages:
 - Category X11 -> xorg-server, xinit, xterm
 - Category Net -> openssh

Log on to the BGC cluster with cygwin/x:

- Start the cygwin terminal
- start the X server by typing:
startxwin
- > a new terminal window opens (xterm)
- in the new xterm-window, connect to the BGC cluster and with X forwarding:
ssh -Y <your username>@login.bgc-jena.mpg.de

Test the connection:

- Open a program with a graphical user interface on the remote machine, e.g. gedit:
gedit
- The connection works if gedit opens in a new graphical window.

STILT: Stochastic Time Inverted Lagrangian Transport

on a terminal:

```
ssh -Y imprsuser@pc026
```

```
Enter Password ... (contact me)
```

```
cd STILT_model/
```

```
„ls“ shows user directories user1 – user20;  
change to one of them (everybody a different  
one)
```

```
Open IMPRS_STILT.r in editor (rstudio, or nedit)
```

```
Start R, copy and paste sections from  
IMPRS_STILT.r to R session
```