

## How to use the Network Earth Rotation Service

There are three levels of using the *NERS*:

### Level 1: using your browser

- To get a desired Earth orientation parameter: `eop_online.html`
- To get a desired Earth orientation parameters for the current moment of time: `eop_online_now.html`
- To get a Earth orientation parameter time series `eop_series.html`

Advantage of using *NERS* with a browser: you see what you get.

Disadvantage of using *NERS* client library: usually you need the Earth orientation parameters for computations.

### Level 2: using at as Internet service

An Internet service is a request to a HTTP server with parameters. The server returns the answer upon receiving the request. Although An Internet service works with any browser, normally it used with a non-interactive client such as [wget](#). Here are supported services:

UTC minus TAI:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=utcmTai'</code>
UT1 minus TAI:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=ut1mtai'</code>
X pole coordinate:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=xpol'</code>
Y pole coordinate:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=ypol'</code>
$\Delta\psi$ nutation angle:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=dpsi'</code>
$\Delta\epsilon$ nutation angle:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=deps'</code>
UT1 rate:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=ut1rat'</code>
X pole rate:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=xpolr'</code>
Y pole rate:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=ypolr'</code>
Length of day:	<code>wget -q -O - '/cgi-bin/eop_online.py?req_date=now&amp;param=lod'</code>

## NERS use cases

Euler angle axis 1:	wget -q -O - '/cgi-bin/eop_online.py?req_date=now&param=e1'
Euler angle axis 2:	wget -q -O - '/cgi-bin/eop_online.py?req_date=now&param=e2'
Euler angle axis 3:	wget -q -O - '/cgi-bin/eop_online.py?req_date=now&param=e3'
Rotation matrix:	wget -q -O - '/cgi-bin/eop_online.py?req_date=now&param=mat'
Rotation matrix rate:	wget -q -O - '/cgi-bin/eop_online.py?req_date=now&param=matr'
Rotation matrix accl:	wget -q -O - '/cgi-bin/eop_online.py?req_date=now&param=matrr'

Value of parameter req\_date can be replaced to the date string that is [ISO 8601](#) compatible, i.e. in format YYYY.mm.ddTHH:MM:SS.SSSSS, for instance 20110.04.19T08:19:15.545

Advantage of using *NERS* as an Internet Service: you can include calls to internet service in your program

Disadvantage of using *NERS* as an Internet Service: Internet service is rather slow.

### Level 3: using the client library *NERS*

Download and install [NERS client library](#).

You need insert three calls to your program

1. `ners_init ( config_file, ners, time_tai_start, time_tai_stop, iuer )` — initialization of the ners object using configuration parameters from the config file, start and stop time.
2. `ners_get_eop ( ners, time_tai, cpar, m_par, l_par, pars, iuer )` — return an array of Earth orientation parameters cpar on the specified time.
3. `ners_quit ( code, ners )` — release dynamic memory allocated by ners.

Advantage of using *NERS* client library: it is very fast serve in your program.

Disadvantage of using *NERS* client library: you need to know how to program.

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