

# ICES SOAP data request using Python

Below a script to request data from the ICES database (<http://ocean.ices.dk>) via a SOAP operation using PYTHON2.7 with the [SUDS](#) package, a lightweight SOAP python client for consuming Web Service. For windows user, get [PythonXY](#) and manually install the suds package with [easy\\_install](#).

```
python # start python in DOS shell to install easy_install
>>> from ez_setup import use_setuptools
>>> use_setuptools()
>>> exit() # now easy_install works outside python
easy_install suds
```

Now work with Suds as follows

```
# import modules
from suds.client import Client

# define URL
url = 'http://ocean.ices.dk/webservices/hydchem.asmx?WSDL'

# request for client object
client = Client(url)

# get the result for one parameter (PSAL)
result = client.service.GetICEData('PSAL',2009,2010,1,12, -2,9, 49,57, 0,1e5)

# write data to a csv file
afn = r'ICES_PSA_2009-2010.txt'
af = open(afn,'wb')
af.write('Longitude'+','+'Latitude'+','+'DateTime'+','+'Pressure'+','+'Value'+'\r\n')
for i in range(len(result['ICEData'])):
    af.write(str(result['ICEData'][i]['Longitude'])+','+str(result['ICEData'][i]['Latitude'])+','+str(result
['ICEData'][i]['DateTime'])+','+str(result['ICEData'][i]['Pressure'])+','+str(result['ICEData'][i]['Value'])
+'r\n')

af.close()
```

This request takes about 30 seconds, which is nearly twice as fast as the [Matlab equivalent](#). All time is spent in `client.service.GetICEData` that consists of the server-response time and the parsing of the xml answer. In the Matlab equivalent these are separate, and shows us that the server-response time is negligible, while most time is spent parsing xml. It shows that xml is not a very efficient way of transporting data over the web. The python xml parser is faster than the Matlab one, which makes a significant performance difference when processing xml that is used in many (OGC) like, e.g. [WxS](#).

ICES delivers the following services:

- `GetICEData`
- `GetICEDataAverage`

The full list of services including the methods and types can be derived via `print client`

Requests have to be build up using the following elements

```
"ParameterCode" type="tns:ParameterCodeEnum"
"FromYear" type="s:int"
"ToYear" type="s:int"
"FromMonth" type="s:int"
"ToMonth" type="s:int"
"FromLongitude" type="s:double"
"ToLongitude" type="s:double"
"FromLatitude" type="s:double"
"ToLatitude" type="s:double"
"FromPressure" type="s:double"
"ToPressure" type="s:double"
```

The following parameters can be requested for:

```
<s:enumeration value="TEMP" />
<s:enumeration value="PSAL" />
<s:enumeration value="DOXY" />
<s:enumeration value="PHOS" />
<s:enumeration value="TPHS" />
<s:enumeration value="AMON" />
<s:enumeration value="NTRI" />
<s:enumeration value="NTRA" />
<s:enumeration value="NTOT" />
<s:enumeration value="SLCA" />
<s:enumeration value="H2SX" />
<s:enumeration value="PHPH" />
<s:enumeration value="ALKY" />
<s:enumeration value="CPHL" />
```

A full description the complete service can be derived via <http://ocean.ices.dk/webservices/hydchem.asmx?WSDL>

See also: [ICES SOAP data request using matlab](#), [NOAA CO-OPS SOAP services](#) as implemented in [DelftDashBoard](#)