

# Qpack2

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# What is Qpack2?

- A retrieval environment
  - Part of Atmlab (i.e. Matlab)
- Scope
  - So far just single-spectra cases (ground-based)
  - Considering 2D retrievals
- Rather similar to Qpack, but
  - A total reimplementation
  - Uses ARTS (v2)
  - Removed: plotting and conditional simulations

# Implementation

- Mainly a merge of “systems”
- OEM
  - Seperate and general function
- Qarts
  - Forward model and remaining retrieval variables defined through Qarts' Q
- Atmdata
  - Definition of “climatology” data
- Format for measurement and retrieved data:
  - qp2\_y and qp2\_l2

# Qpack2 features

- The flexibility of ARTS can be fully used
  - Any observation geometry possible
  - Handles many sensor parts/types
- OEM
  - Flexible definition of  $S_x$  and  $S_e$
- Batch inversions
- Automatic set-up of a priori atmosphere
  - From provided climatology data

# Getting started

- A short (practical) user guide
  - Built-in documentation for Qarts, OEM, qp2\_y ...
- See elsewhere for understanding of OEM
- One example in atmlab/demos
  - qp2\_demo.m

# Qpack2 is simple to use ;-)

- A retrieval:

```
>> [Q,O] = my_q_fun;
```

```
>> Y = my_y_fun;
```

```
>> L2 = qpack2( Q, O, Y );
```

- To simulate spectra matchinfg a priori:

```
>> Y.Y = [];
```

```
>> Ysim = qpack2( Q, O, Y );
```