

# BUFR with ecCodes

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# ecCodes package



- Provides set of command line tools for examining BUFR files
- API Fortran and Python
- Semantic BUFR keys used for decoding/encoding
- Key's attributes are obtain using -> (arrow sign)
- Accessing BUFR key elements by rank using # (hash sign)
- [ecCodes BUFR tables](#)

## ecCodes command line tools

- **bufr\_ls**
- **bufr\_dump**
- **bufr\_copy**
- **bufr\_compare**
- **bufr\_set**
- **bufr\_filter**

Why and when I would use bufr\_ls?

What info give us bufr\_dump?

How bufr\_copy could be useful?

```
cp /home/ectrain/trx/ecCodes/2019/bufr_with_eccodes/synop.bufr $SCRATCH
```

# Accessing BUFR key elements by rank

```
bufr_dump -p synop.bufr
```

```
'latitude'
```

```
'longitude'
```

```
'airTemperatureAt2M'
```

```
'dewpointTemperatureAt2M'
```

```
'windSpeedAt10M'
```

```
'windDirectionAt10M'
```

```
'#1#cloudAmount' # cloud amount (low and mid level)
```

```
'#1#heightOfBaseOfCloud'
```

```
'#1#cloudType' # cloud type (low clouds)
```

```
'#2#cloudType' # cloud type (middle clouds)
```

```
'#3#cloudType' # cloud type (highclouds)
```

```
cp /home/ectrain/trx/ecCodes/2019/bufr_with_eccodes/synop.bufr $SCRATCH
```

```
codes_get (ibufr, '#2#cloudType')
```

# BUFR key attributes

`bufr_dump -ja synop.bufr`

```
"key" : "unexpandedDescriptors",
  "value" :
  [
    307005, 13023, 13013, 222000, 101049, 31031, 1031, 1032, 101049, 33007
  ]
    {
      "key" : "airTemperatureAt2M",
      "value" : 277.5,
      "index" : 18,
      "code" : "012004",
      "units" : "K",
      "scale" : 1,
      "reference" : 0,
      "width" : 12,
      "percentConfidence" :
      {
        "key" : "percentConfidence",
        "value" : 70,
        "index" : 119,
        "code" : "033007",
        "units" : "%",
        "scale" : 0,
        "reference" : 0,
        "width" : 7
      }
    }
  },
```

```
codes_get(ibufr, "airTemperatureAt2M->percentConfidence")
```

# References

- ecCodes

<https://software.ecmwf.int/wiki/display/ECC/ecCodes+Home>

- ecCodes BUFR tables

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