



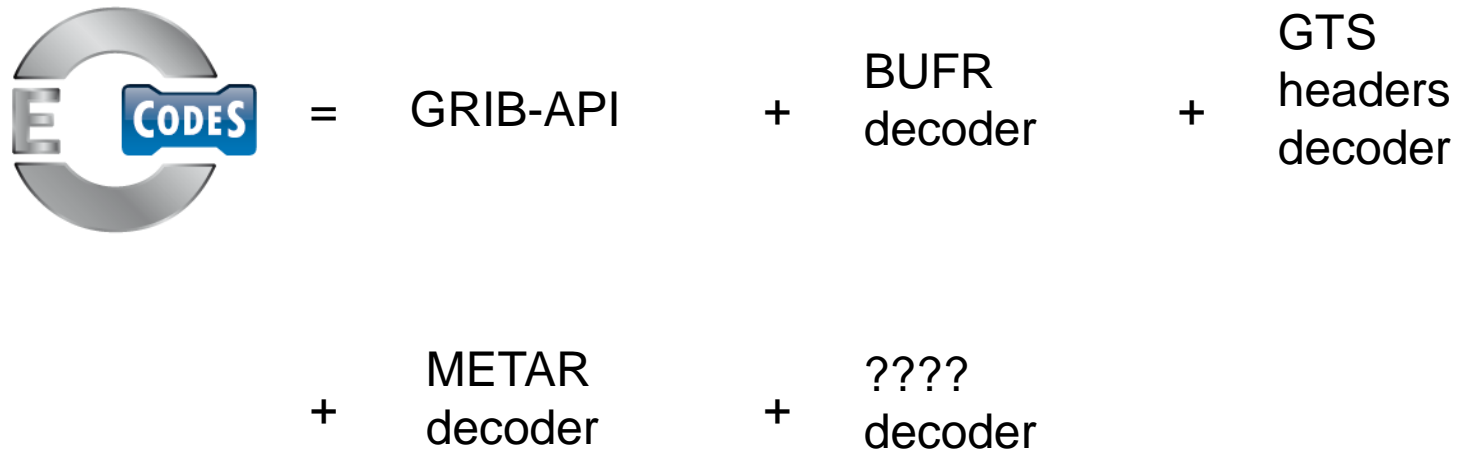
ecCodes

New BUFR and GRIB decoding software

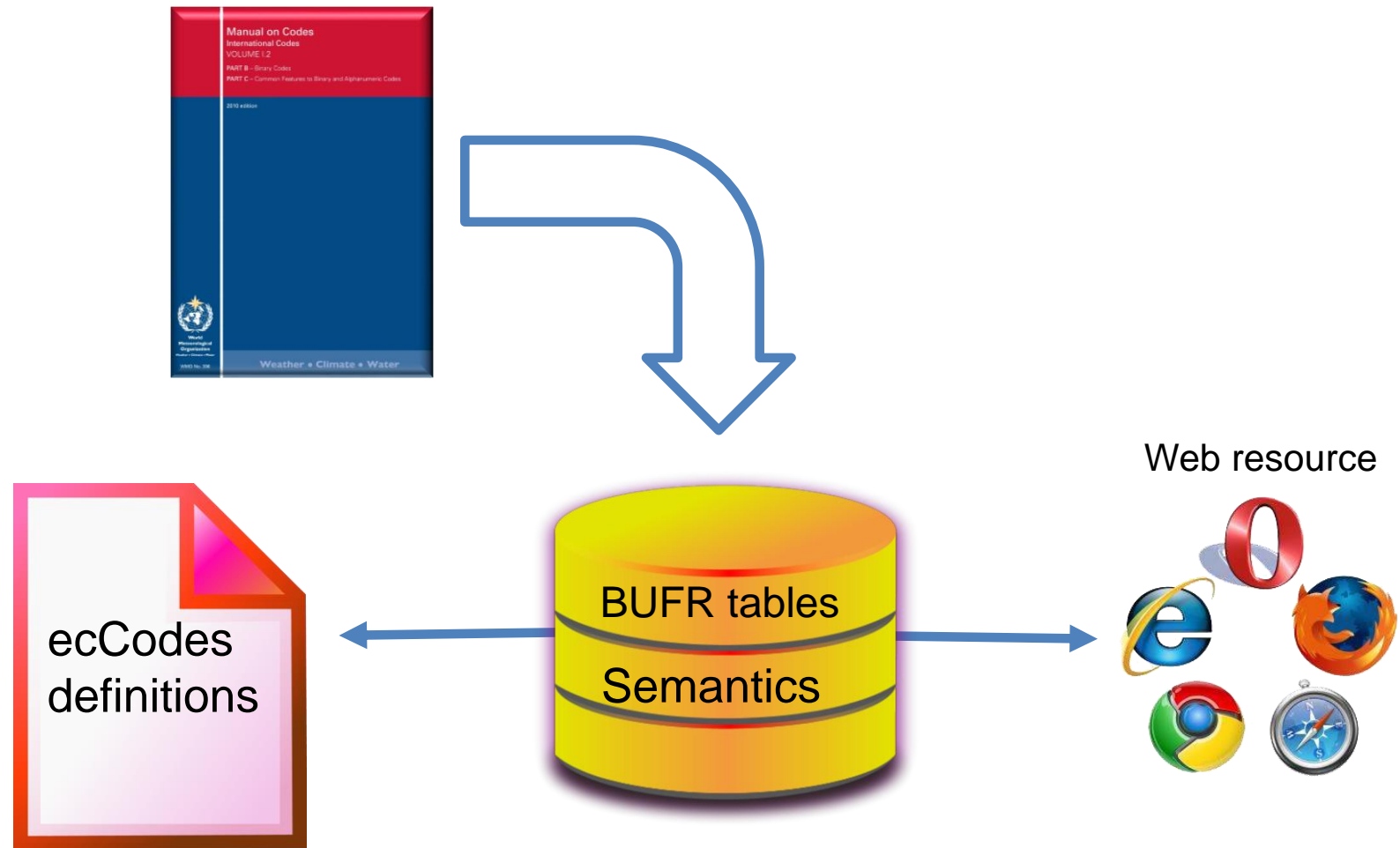
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What is ecCodes?



Vocabulary of key names



Semantic access to BUFR data (python example)

```
x=codes_get(msg, 'brightnessTemperature')
```

```
xu=codes_get(msg, 'brightnessTemperature->units')
```

```
xc=codes_get(msg, 'brightnessTemperature->code')
```

JSON output from bufr_dump

```
[ { "key" : "beamIdentifier",  
  "value" : 1,  
  "units" : "CODE TABLE" },  
  [ { "key" : "radarIncidenceAngle",  
    "value" : [...],  
    "units" : "deg"},  
    [ { "key" : "antennaBeamAzimuth",  
      "value" : [...],  
      "units" : "deg"},  
      { "key" : "backscatter",  
        "value" : [...],  
        "units" : "dB"},  
      ...  
    ],  
  [ { "key" : "beamIdentifier",  
    "value" : 2,  
    "units" : "CODE TABLE" },  
    ...  
  ]
```

Access by rank and by condition (python example)

```
x=codes_get(msg,'backscatter#2')
```

```
xu=codes_get(msg,'backscatter#2->units')
```

```
x=codes_get(msg,'/beamIdentifier=2/backscatter')
```

```
xu=codes_get(msg,'/beamIdentifier=2/backscatter->units')
```

Bitmap and QC info

```
x=codes_get(msg, 'temperature->Confidence')
```

```
xu=codes_get(msg, 'temperature->Confidence->units')
```

ecCodes semantics (example of Fortran user code)

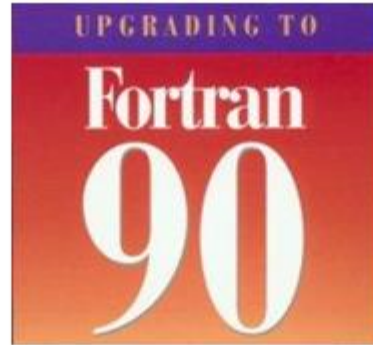
```
DO J=1,NSUP(5)
  c      identity, space, time
  IF(IF(JYY      .EQ.0.AND. KTDEXP(J)== 4001 ) JYY      =J
  IF(JMM      .EQ.0.AND. KTDEXP(J)== 4002 ) JMM      =J
  IF(JDD      .EQ.0.AND. KTDEXP(J)== 4003 ) JDD      =J
  ...
  IF (JLAT      .EQ.0.AND. KTDEXP(J)== 5001 ) JLAT      =J
  IF (JLAT      .EQ.0.AND. KTDEXP(J)== 5002 ) JLAT      =J
  ...
  c      orbit parameters
  IF (JWVC      .EQ.0.AND. KTDEXP(J)== 6034 ) JWVC      =J
  IF (JREV      .EQ.0.AND. KTDEXP(J)== 5040 ) JREV      =J
  IF (JPIX      .EQ.0.AND. KTDEXP(J)== 5033 ) JPIX      =J
  IF (JINC.EQ.0.AND.KTDEXP(J)== 2111) JINC=J
  ...JSAT      .EQ.0.AND. KTDEXP(J)== 1007 ) JSAT      =J

ENDDO
```


ecCodes semantics (example of Fortran user code)

```
call codes_get(icode, 'year', year)
call codes_get(icode, 'month', month)
call codes_get(icode, 'day', day)
call codes_get(icode, 'hour', hour)
call codes_get(icode, 'minute', minute)
...
! ***** Incidence Angle *****
call
codes_get(icode, '/beamIdentifier=1/radarIncidenceAngle', incidenceAngleF)
...
! ***** Antenna Azimuth *****
call codes_get(icode, '/beamIdentifier=1/antennaBeamAzimuth', azimuthF)
...
! ***** BackScatter *****
call codes_get(icode, '/beamIdentifier=1/backscatter', backscatterF)
...
```

Languages and Tools



`bufr_dump`
`bufr_filter`
`bufr_ls`
`bufr_get`
`bufr_copy`

Download info



- The home of ecCodes:

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

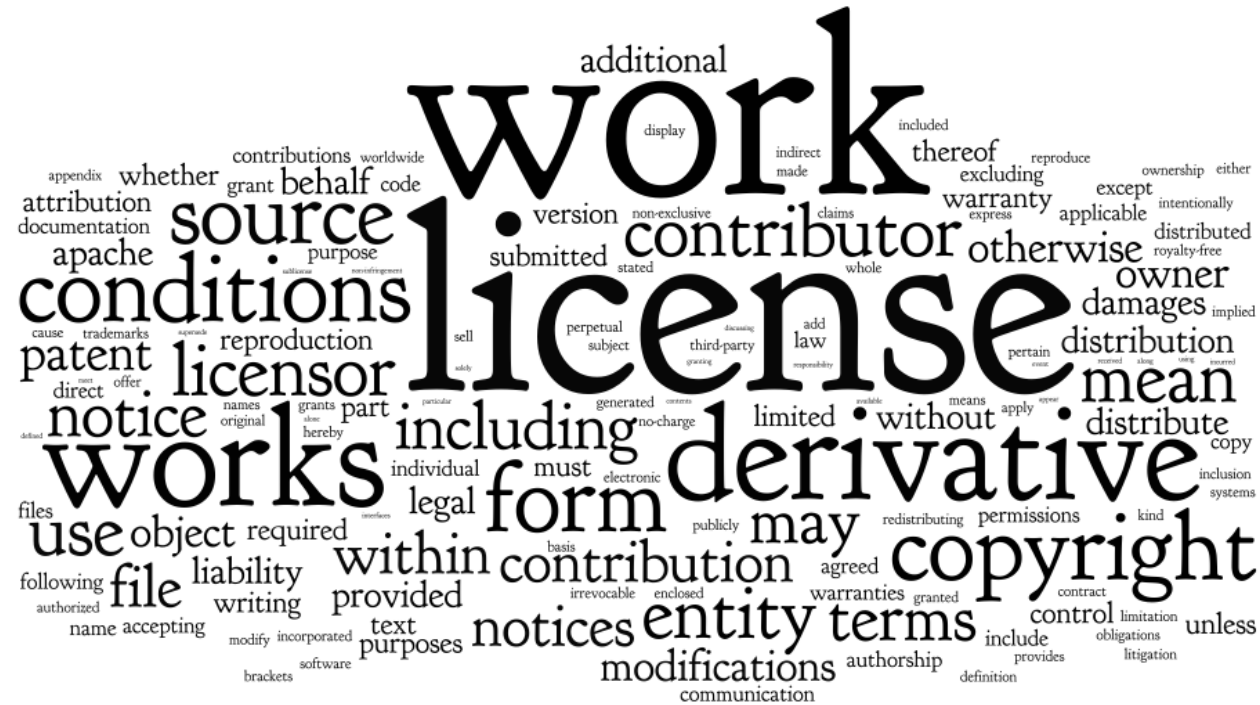
- Download the tarball from:

<https://software.ecmwf.int/wiki/display/ECC/Releases>

- To report a bug or issue, please send an email to:
software.support@ecmwf.int

All feedback is greatly appreciated 😊

Apache 2.0



Status and Roadmap

- Released as beta version in March 2015
- Release in May 2015 still as beta version. Thanks to users for giving feedback.
- Planned release later this year (still beta version).

Most important changes:

- Encoding working on a subset of BUFR messages
 - Interface change for search by rank “backscatter#3” becomes “#3#backscatter”
 - bufr_compare working for keys in data section
 - Several bug fixes
- Planned release version 1.0 to take place in 2016.
 - Ongoing work on making GRIB-API included in ecCodes identical to standalone GRIB-API to be able to replace it with ecCodes. Some impact expected on python GRIB-API interface, no impact expected on other bindings and on performance.