

Meta data description for RCM model simulations in ENSEMBLES RT3

ERA40@50 Simulations

1. General:

1.1 Name of model
RACMO2

1.2 Version
Version 2.1

1.3 Reference
No reference of version 2.1

Physics package of RACMO2 is based on ECMWF model cycle 23 release 4 (also used in ERA40 reanalysis project). Documentation is found in White, P.W. (ed.), 2002: Physical processes (CY23R4). *IFS documentation* <http://www.ecmwf.int/research/ifsdocs>

Performance of RACMO2.0 and physics updates with respect to original ECMWF formulation are described in:

- i) G.. Lenderink, B. van den Hurk, E. van Meijgaard, A.van Ulden and J. Cuijpers, 2003: *Simulation of present-day climate in RACMO2: first results and model developments*, KNMI Technical Report 252, 24 pp.
- ii) C. de Bruijn and E. van Meijgaard, 2005: *Verification of HIRLAM with ECMWF physics compared with HIRLAM reference versions*, HIRLAM Technical Report 63, 39 pp.

1.4 URL
None

2. Model setup:

2.1 Grid specifications:

2.1.1 Projection
Rotated latitude-longitude

2.1.2 Number of horizontal grid points
Model domain: NLONxNLAT=114x124
Ensembles domain: 85x95

2.1.3 Number vertical levels
40

2.1.4 Type of vertical coordinate
hybrid

2.2 Soil and surface specifications

2.2.1 Name of soil and SVAT model
TESSEL: Tiled ECMWF Scheme for Surface Exchanges over Land

2.2.2 Physiographical data

e.g. orography, LSM, LAI, soil type etc.

for each please provide

Name, source, figure

e.g. orography, GTOPO30, figure

Orography related parameters are aggregated from GTOPO30

LSM and surface characteristics are compiled and aggregated from ECOCLIMAP.

Surface characteristics include: i) type of high vegetation , ii) fractional coverage with high vegetation, iii) type of low vegetation, iv) fractional coverage with low vegetation (see figures)

2.3 External Forcings

e.g. solar constant, green house gas concentration, aerosols

solar constant: 1370 W/m²

GHG-concentrations in the period 1961-2000 follow linear trends adopted from SAR

GHG	units	Reference value 1990	Annual trend
CO ₂	ppmv	353.0	1.5
CH ₄	ppmv	1.720	0.012
N ₂ O	ppbv	310.0	0.8
CFC11	pptv	280.0	9.5
CFC12	pptv	484.0	17.0

Ozone: climatology distributing the ozone mixing ratio as a function of pressure, latitude and month following Fortuin and Langematz (1994; *Atmos. Sensing and Modeling*, **2311**, 207-216)

Aerosols: four types of aerosols (maritime, continental, urban, desert) geographically distributed according to Tanre climatology (1984; in *Aerosols and Their Climatic Effects*, 133-177)

4. Additional information on model set up

5. Information on the performance

6. Email address for contact person:

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KNMI-RACMO2 50km Orography [m]

60°W

80°E

water

le 0

le 25

gt 25

gt 50

gt 100

gt 200

gt 500

gt 1000

gt 2000

60°W

40°W

20°W

0°

80°N

70°N

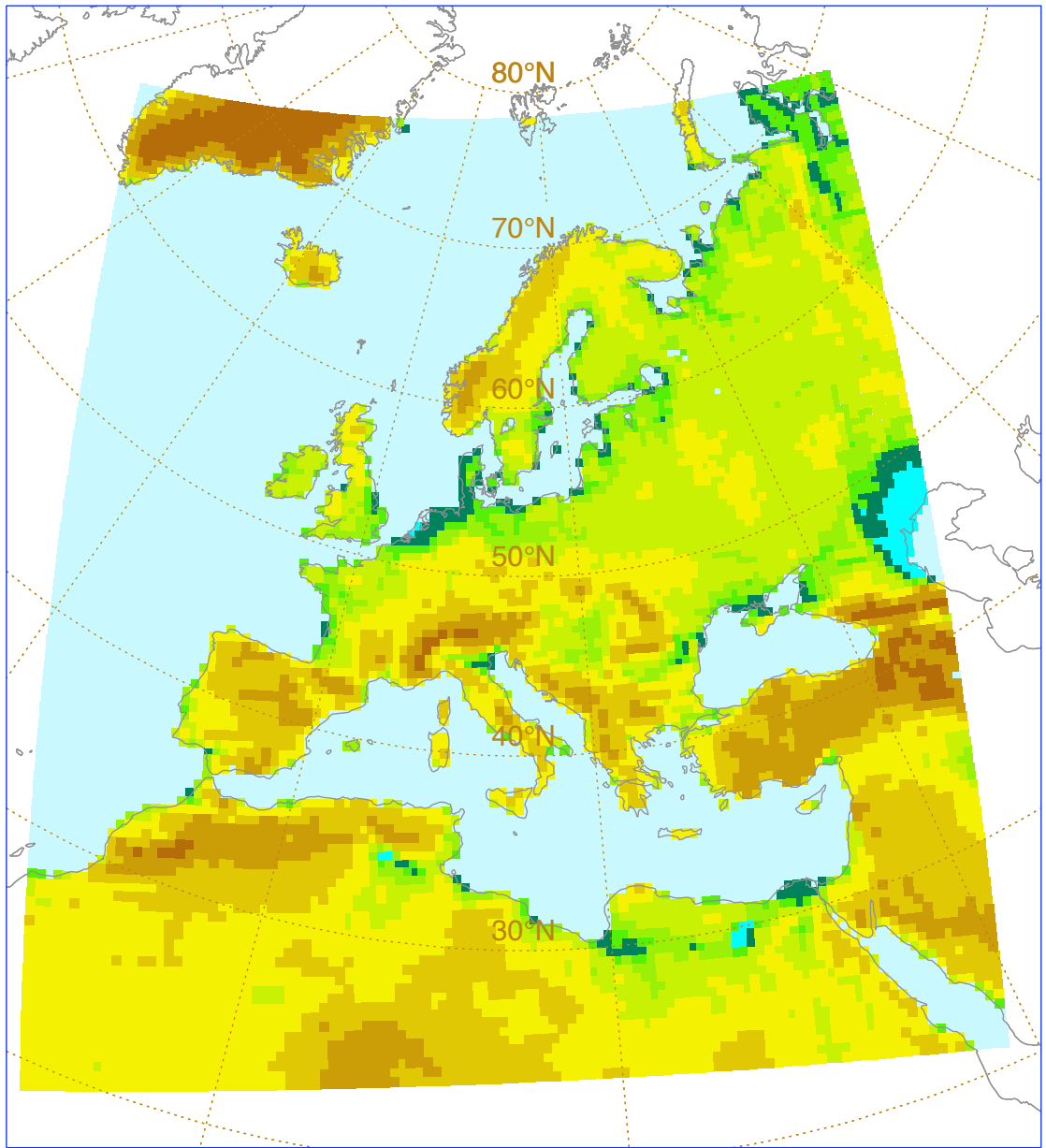
60°N

50°N

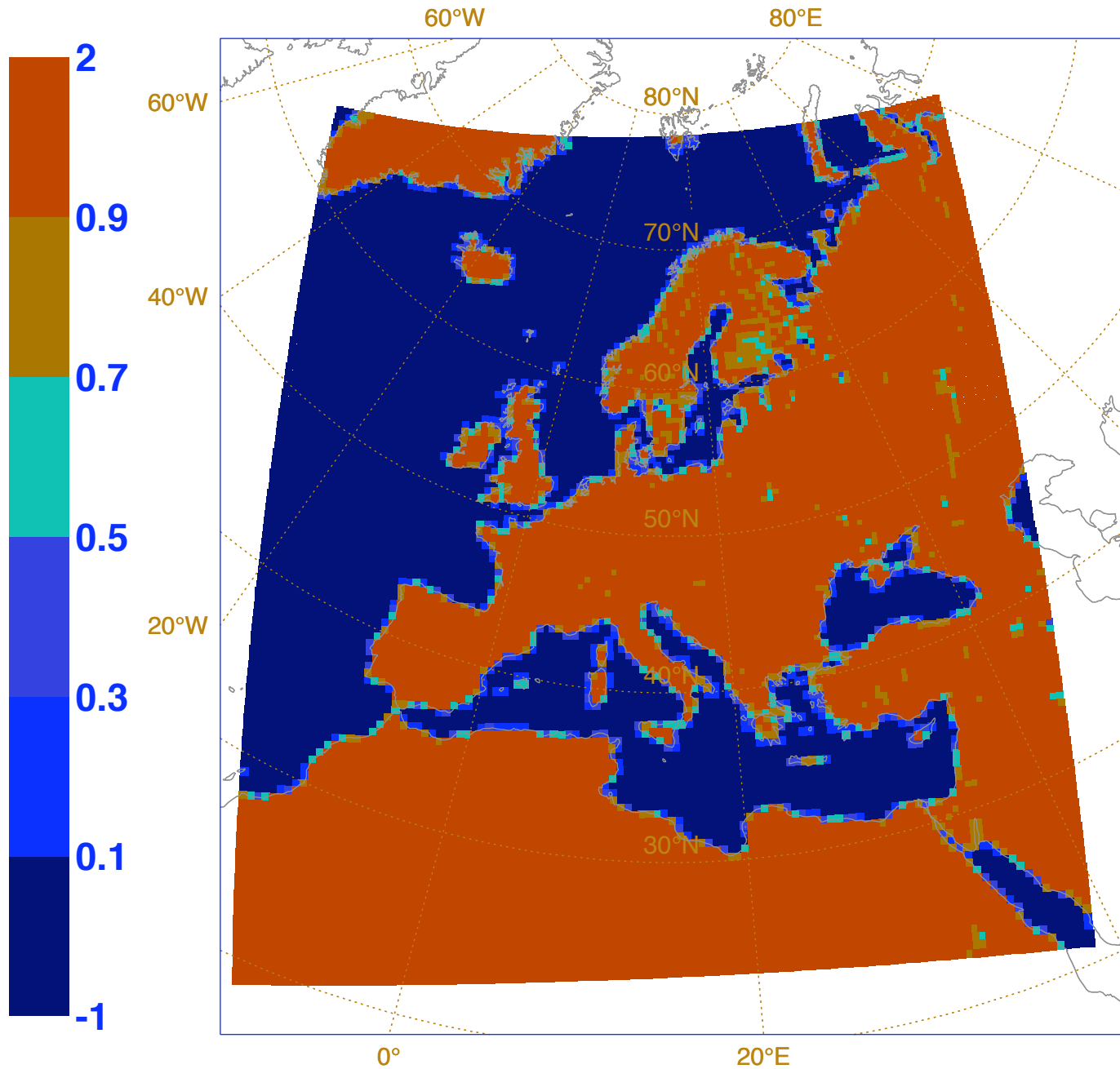
40°N

30°N

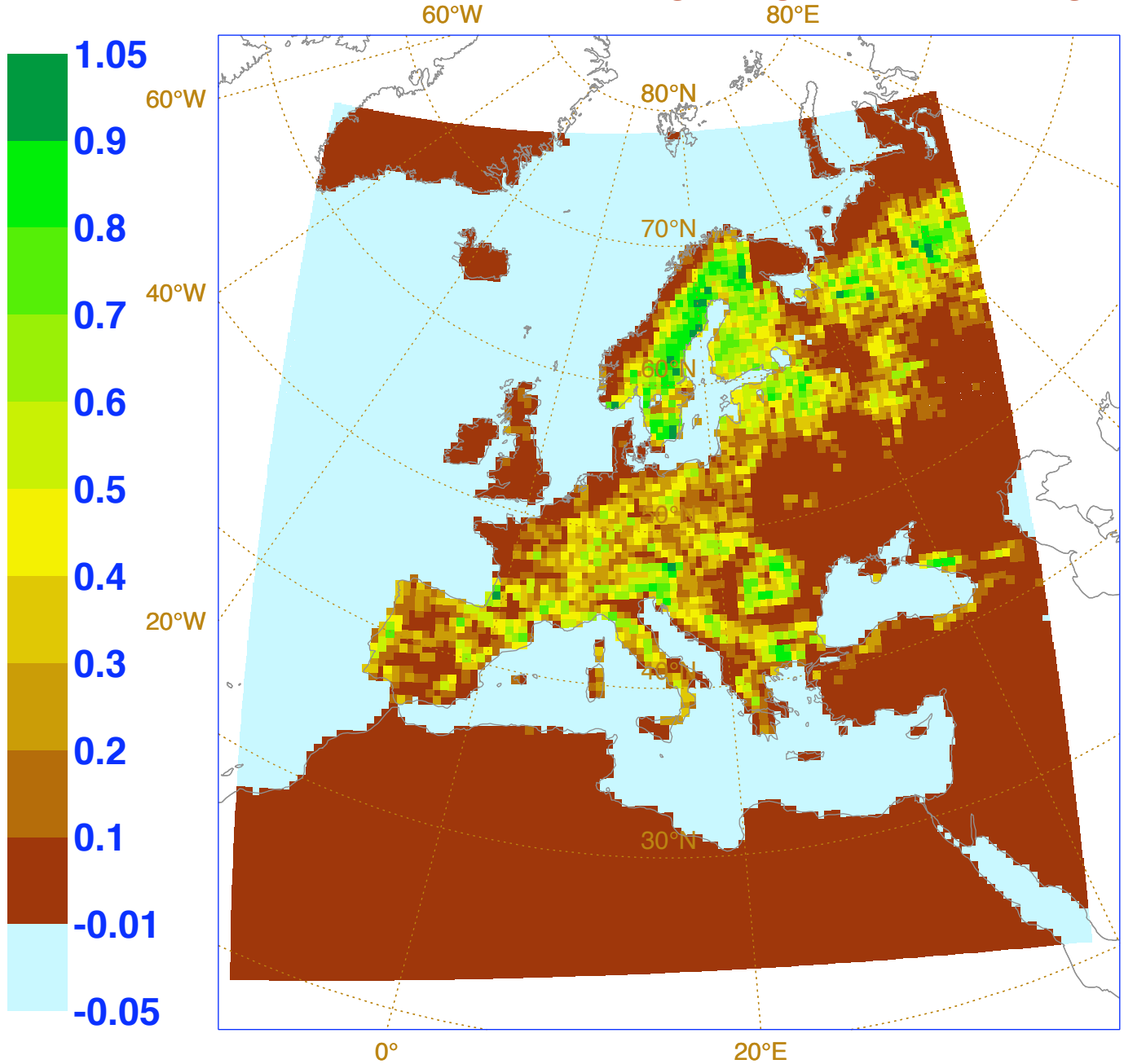
20°E



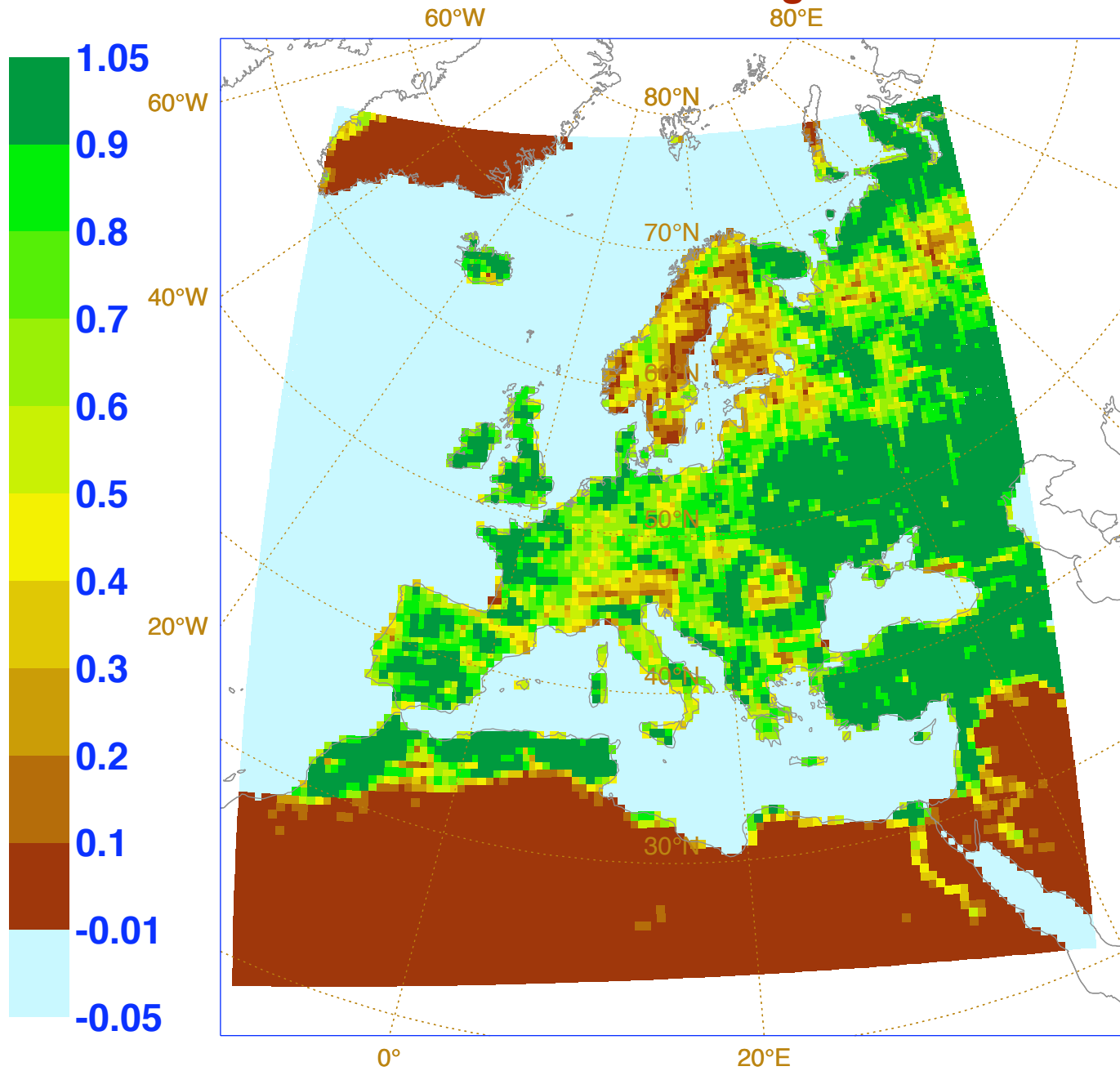
KNMI-RACMO2 50km Land Sea Mask



KNMI-RACMO2 50km High Vegetation Coverage



KNMI-RACMO2 50km Low Vegetation Fraction



KNMI-RACMO2 50km High Vegetation Type

60°W

80°E

60°W

80°N

70°N

water

40°W

none

evergr ndle

decid ndle

decid broad

evergr broad

mixed forest

intrrup fore

20°W

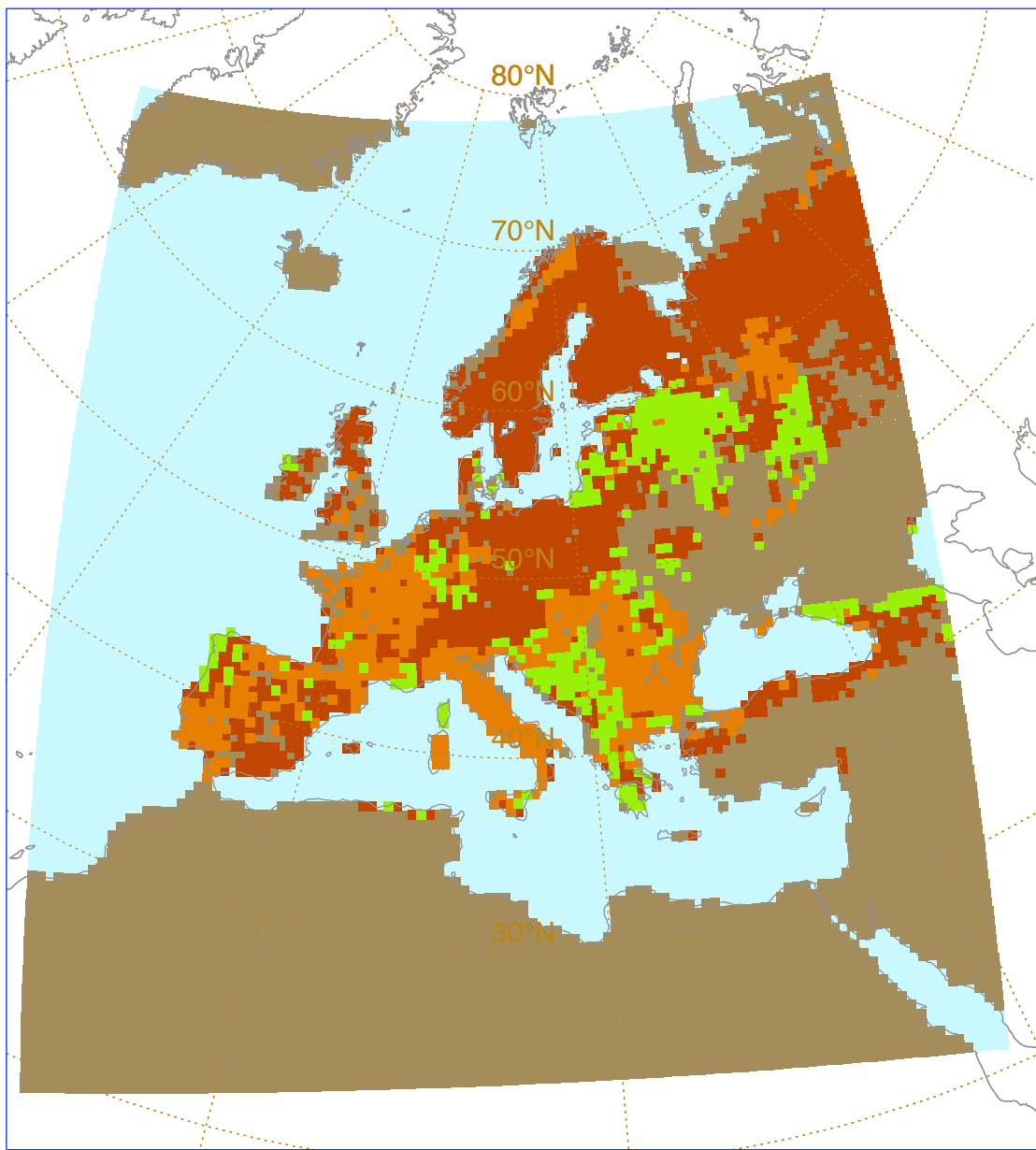
60°N

50°N

40°N

0°

20°E



KNMI-RACMO2 50km Low Vegetation Type

60°W

80°E

60°W

80°N

70°N

60°N

50°N

20°W

40°N

30°N

0°

20°E

 **crops**

 **short grass**

 **tall grass**

 **desert**

 **tundra**

 **irrigated**

 **semidesert**

 **bogs**

 **evergr shrub**

 **decid shrubs**

