#### Raw topography data set:

- GLOBE (globally available, 30")
- ASTER (180° W 180° E, 60° N 60° S, 1")

#### Grid is given by the raw data

#### Raw land-use data set:

- GLCC (global, 30")
- GLC 2000 (no Antarctica, 30")
- GLOBCOVER (no Antarctica, 10")

'INPUT\_grid\_oro'

'INPUT\_COSMO/ICON/GME\_GRID'

'INPUT ORO'

'INPUT\_OROSMOOTH'

extpar\_globe\_to\_buffer

'INPUT\_grid\_oro'
'INPUT\_COSMO/ICON/GME\_GRID'
'INPUT\_LU'

extpar\_lu\_to\_buffer

## Topo aggregated to target grid: (GLOBE\_buffer.nc)

- Geometric height of the earth surface above sea level
- Angle of principal axes
- Angle of sub-gridscale orography
- Slope of sub-gridscale orography
- Fraction land
- Roughness length
- Lat / Ion
- ...

#### Aggregated on target grid

# Land-use aggregated to target grid: (extpar\_landuse\_buffer.nc)

- Fraction Land
- Ice fraction
- Plant cover maximum
- Leaf area index max/min
- Min stomata resistance
- Urban area fraction
- Fraction of deciduous forest
- Longwave surface emissivity
- ...

### Extpar\_consistency\_check:

- Total roughness length is computed
- Fraction ocean and lake are corrected
- Consistency check of land-use and soil type for ice and water points
- Computation of the soil fractions for HWSD data
- Manual definition of Death Sea, Caspian Sea and depth of Lake Constance
- Defining maximal and minimal lake depth
- NDVI values are set to undef for water elements and a min value is defined
- Albedo values smaller than minimum are corrected

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### External parameters as grib and netcdf file:

- Fraction Land
- Ice fraction
- Plant cover maximum
- Leaf area index max/min
- Min stomata resistance
- Urban area fraction
- Fraction of deciduous forest
- Fraction of evergreen forest
- Longwave surface emissivity
- Root depth
- Roughness length
- Normalized difference vegetation index (NDVI)
- Geometric height of the earth surface
- Geopotential

- Angle of principal axes
- Angle of sub-gridscale orography
- Slope of sub-gridscale orography
- Slope aspect
- Slope angle
- Horizon angles
- Skyview factor
- CRU near surface temperature climatology
- Fraction lake
- Lake depth
- Soil type
- Fraction sand
- Fraction silt
- Fraction clay

- Fraction organic carbon
- Bulk density
- Subsoil type
- Sub fraction sand
- Sub fraction organic carbon
- Sub bulk density
- Landuse class fraction
- Albedo
- Near infrared Albedo
- UV Albedo
- Monthly mean NDVI climatology
- AOT of black carbon
- AOT of organic aerosol
- AOT of SO4 aerosol
- AOT of sea salt aerosol