ALADIN workshop 2002

Local exploitation of e923

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e923

Preparing climatological files for ALADIN model

- **interpolates information from global fields into chosen limited area**

- **everywhere on the Earth**

- **write out predefined 2D fields**

Const.Clim

Climatological 2D fields:

- **Constants describing orography**

- **Constants describing surface, soil, vegetation – monthly dependent**

- **Monthly climatological values for soil and surface variables (temperature, ...)**

e923 – step 1

definition of orography

```
land(1)/water(0) mask
surface geopotential (grid point)
surface geopotential (spectral)
standard deviation of the orography x g
anisotropy coefficient
direction of principal axis of topography
roughness length of bare surface x g
fraction of land
fraction of urbanization
```

e923 – step 2

definition of surface, soil and vegetation characteristics without annual cycle

```
dominant land use type

bare ground albedo

emissivity

maximum depth of the soil column

percentage of clay

percentage of sand

maximum vegetation fraction

useful depth of the soil column
```

e923 – step 3

definition of monthly climatological values, modification of albedo and emissivity according to the climatology sea-ice limit

```
climatological surface temperature
climatological deep soil temperature
climatological surface relative moisture
   content
climatological deep soil relative moisture
   content
empirically estimated equivalent water depth
   snow climatology
relaxation values for deep temperature
relaxation values for deep soil moisture
emissivity (monthly) modified over sea only
albedo  (monthly)  modified over sea only
```

e923 – step 4

definition/modification of the vegetation and surface characteristics

`leaf area index (monthly)`

`minimum surface resistance (monthly)`

`thermal roughness length x g(monthly)`

`kinetic roughness length x g (monthly`

`global roughness length is changed (adding contributions from vegetation and urbanization)`

`fraction of vegetation cover (monthly)`

`albedo     (monthly)`

e923 – step 5

modification of fields created by step 2 or 4 over land from high resolution datasets   (for each month)

using input data in higher resolution

e923 – step 6

modification of climatological values

using input data from one-year assimilation simulation with ARPEGE

Input files

- **134 files, 1GB**

- **global,**
  for step 5 over Europe
  for step 1 zoom can be prepared

- **delage: ~mrpe603/***

- **binary, some also in ascii format**

namelists

- **definition of step - NAMMCC**

- **input datasets - NAMCLI**

- **orography in spectral – NAMCLA**

- **grid dimensioning - NAMDIM**

- **domain definition - NEMGEO**

- **ISBA scheme - NAMPHY**

Compilation and runing – portability issues

In general, there should be no major problems:

- **Majority of the problems come from reading of binary files**
  - integer*2
  - integer*4

- **Compiler dependent: some compilers do the automatic promotion of integer and real variables to X bytes, so the special care has to be taken**

How to run e923

- **Input files**

- **File with namelists**

- **Run the master for each step (AL12_04)**

- **Some testing for orography**
  - ↪ **GLOB95 or GTOPT030**
  - ↪ **cost function (Bouteloup or Jerczynski)**
  - ↪ **tuning of cost function parameters**