Personalized User dictionary

In "xrec", the identification of variables, as well as the definition of contour intervals, is done by loading a dictionary in memory.

This dictionary is located in $ARMNLIB/data/dict_rec.e ($ARMNLIB/data/dict_rec.f in the french version). Users have the possibility to modify the default settings of variables existing in the "official" RPN dictionary, or to add new variables not present in the dictionary.

To create a personalized dictionary, follow these steps

1) create a file named ".recrc" in your $HOME directory.
2) insert DEFVAR statements in the file for every variable you want to add or modify.

Actually the dictionary supports three statements :

- DEFVAR
- GRILLE
- VECTEUR

The syntax of the DEFVAR statement is as follows:

```
DEFVAR(variableName, identification, units, paletteName,
       scalingFactor, defaultIntervalIndex,
       interval1, interval2, interval3,
       interval4, interval5, ..., interval24)
```

Some definitions :

variableName	the 4-letter code used for "NOMVAR" in the RPN standard files (ex. 'GZ', 'HR', etc.)
Identification	a 64-character string used in the legend; this represents the "meaningful name" of the variable (ex. 'Geopotential height' for 'GZ', 'Relative humidity' for 'HR', etc.)
Units	a 32-character string used to identify the physical units of the variable (ex. 'decametres' for 'GZ', 'deg C' for 'TT', etc.)
paletteName	a 32-character string used to associate a color palette to a variable. This option is currently not implemented and ignored. Use 'none' as default.
scalingFactor	a floating point number representing the typical order of magnitude of the variable.

Here are some examples:

Variable	Units	Magnitude
DD	s**-1	1.0E-06
GZ	dm	1.00
HR	%	0.01
TT	deg.C	1.00

The "defaultIntervalIndex" is an integer, ranging from 1 to 24, and represents the interval number that will be used in the list of intervals (following after this value), used for the variables.

The remaining parameters, whose number may range from 1 to 24, allow the definition of the intervals that will appear in the "Contour Interval" menu. These values are multiples of the scaling factor. For example, if one wants to contour the divergence field ('DD') every 5.E-5 s^{-1}, and the scaling factor of 'DD' is 1.0E-6, the value to insert will be 50. (50.*1.0E-6 = 5.E-5).
These intervals can take two forms:

- a floating point number. This gives the ordinary contour interval.
- a list of floating point numbers, surrounded by square brackets ([---]). In that case, only the values appearing in that list will be contoured, and the color scaling will depend on the length of the list rather than the numerical spread of the data. This list can contain up to 32 values, which must be sorted by ascending order.

Here is an example for the TT variable.

```
defvar('TT', (variable name)
       'Air Temperature', (identification)
       'deg C', (physical units)
       'none', (color palette - ignored)
       1.0, (scaling factor)
       5, (default interval index (4.0))
       0.1, 1., 2., 3., 4., 5., 10., 20., (list of intervals)
       [-1., 0., 1.], [-10., -5., 5., 10.])
```

In this example:

- the identification of TT is 'Air Temperature',
- units are 'deg C',
- the name of the color palette is 'none',
- scaling factor is 1.0,
- the default interval used to display the variable will be the 5th on the list (which is 9 items long), and is 4.0.
- the list of intervals is composed of 7 ordinary intervals (0.1, 1., 2., 4., 5., 10., 20.) and 2 list of numbers (([-1., 0., 1.], [-10., -5., 5., 10.]).

Some syntax rules apply:

- a line should not be more than 80 characters.
- tabs should not be used to align text.
- floating point numbers must end with a period at the end (ex. "1." instead of "1").
- in exponential notation, a capital "e" ("E") must be used (as in 1.0E-5)
- A character string must not contain apostrophes.

The GRILLE statement

The GRILLE statement allows the user to define its own output grids. The syntax is almost identical to the GRILLE command used in PGSM. The exception is that the first argument of the statement is the name that the defined projection will have in the "GRID" menu of xrec.

Some examples

```
grille('GEM LAM- PS 10km'   , PS, 1201,776, 536.,  746., 10000.0, 21.0, NORD)
grille('GEM LAM- PS 15km'   , PS, 801,517, 357.,  497., 15000.0, 21.0, NORD)
grille('GEM LAM- PS 30km'   , PS, 401,259, 179.,  249., 30000.0, 21.0, NORD)
grille('GEM LAM- PS 50km'   , PS, 241,155, 107.,  149., 50000.0, 21.0, NORD)
grille('Maritimes - PS 10km', PS, 351,241, 103.,  595., 10000.0,-20.0, NORD)
grille('Quebec    - PS 10km', PS, 401,310, 103.,  559., 10000.0,  0.0, NORD)
grille('GEM LAM- PS 2km'    , PS, 1201,931, 301., 1681., 4000.0, 0.0, NORD)
grille('Prairies  - PS 10km', PS, 351,241, 175.,  491., 10000.0, 20.0, NORD)
grille('Colombie  - PS 10km', PS, 351,241, 207.,  491., 10000.0, 30.0, NORD)
grille('USA       - PS 10km', PS, 701,521, 243.0, 775., 10000.,  21.0, NORD)
grille('NorthPole - PS 10km', PS, 501,501, 250.0, 250., 10000.,   0.0, NORD)
grille('SouthPole - PS 10km', PS, 501,501, 250.0, 250., 10000.,   0.0, SUD)
```

The VECTEUR statement

The "VECTEUR" statement allows the user to define pairs of variable that will be interpreted as vectors in xrec.
The default association for vector fields is "UU", "VV" and "WW", which define respectively the x-component, the y-component and the z-component of the wind.

The syntax is

```
vecteur(uu_component, vv_component, ww_component)
```

Some examples

```
vecteur('UUOC', 'VVOC', 'WWOC')
vecteur('WATX', 'WATY', ' ')
```

In the latter example there is no vertical component of vector pair (WATX-WATY).

In the current implementation the ww_component is read but not processed. This will be addressed in future versions.