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xxxinv - Transforms input Easting and Northing to longitude and latitude for the xxx projection

SYNTAX

FUNCTION xxxinv (x, y, lon, lat)

```
double x;
double y;
double *lon;
double *lat;
```

PARAMETERS

x (input, double)

Easting value. Value given in meters.

y (input, double)

Northing value. Value given in meters.

lon (output, double)

Output longitude. Value given in radians.

lat (output, double)

Output latitude. Value given in radians.

DESCRIPTION

xxxinv() converts input Easting and Northing to the corresponding longitude and latitude for the xxx projection (xxx is replaced by the abbreviation of the projection). The following subroutines follow this general format:

```
utminv(x, y, lon, lat)      -- Universal Transverse Mercator (UTM)
stplninv(x, y, lon, lat)    -- State Plane
alberinv(x, y, lon, lat)    -- Albers
lamccinv(x, y, lon, lat)    -- Lambert Conformal Conic
merinv(x, y, lon, lat)      -- Mercator
psinv(x, y, lon, lat)       -- Polar Stereographic
```

```
polyinv(x, y, lon, lat)    -- Polyconic
eqconinv(x, y, lon, lat)   -- Equidistant Conic
tminv(x, y, lon, lat)      -- Transverse Mercator (TM)
sterinv(x, y, lon, lat)    -- Stereographic
lamazinv(x, y, lon, lat)   -- Lambert Azimuthal
aziminv(x, y, lon, lat)    -- Azimuthal Equidistant
gnominv(x, y, lon, lat)    -- Gnomonic
orthinv(x, y, lon, lat)    -- Orthographic
gvnspinv(x, y, lon, lat)   -- General Near Side Perspective
sininv(x, y, lon, lat)     -- Sinusoidal
equiinv(x, y, lon, lat)    -- Equirectangular
millinv(x, y, lon, lat)    -- Miller
vandginv(x, y, lon, lat)   -- Van der Grinten
omerinv(x, y, lon, lat)    -- Hotine Oblique Mercator (HOM)
robinv(x, y, lon, lat)     -- Robinson
sominv(x, y, lon, lat)     -- Space Oblique Mercator (SOM)
alconinv(x, y, lon, lat)   -- Alaska Conformal
goodinv(x, y, lon, lat)    -- Goode
molwinv(x, y, lon, lat)    -- Mollweide
imolwinv(x, y, lon, lat)   -- Interrupted Mollweide
haminv(x, y, lon, lat)     -- Hammer
wivinv(x, y, lon, lat)     -- Wagner IV
wviiinv(x, y, lon, lat)    -- Wagner VII
obleqinv(x, y, lon, lat)   -- Oblated Equal Area
```

init_inv() must be called once before calling any of the above subroutines. For example, if *utminv()* is to be called, *init_inv()* must be called setting the UTM projection, UTM zone, and ellipsoid. Then *utminv()* may be called as many times as needed even if *init_inv()* is called initializing another projection. The only exception is if *init_inv()* is called initializing UTM with another zone or ellipsoid, then *init_inv()* must be called again to perform the original conversion.

RETURN VALUE

```
E_SUCC   (0)  --> Successful completion
ERROR    (>0) --> An error was encountered
IN_BREAK (-2) --> Coordinates fell into interrupted area
```

SPECIAL CONSIDERATIONS:

The *xxxinv()* call is for C only.