Windisp Documentation

Converting a grid from one projection and datum to another.

This example converts a WGS84 UTM zone 10 grid to NAD27 UTM Zone 10.

1) Open Windisp and set the projection information to the projection of the source grid
   Edit > Area Limits, Scale, and projection
   Projection tab > scale:100000
   frame type: Easting/Northing
   projection: Universal Transverse Mercator
   Zone number: 10
   Hemisphere: Northern
   Spheroid: WGS84

   Done

2) Load the image file and check it

   Edit > images - select image to display and transform

   Display grid details – all OK?

   Copy image limits to Plot limits (top of image file specification panel)

   Done

3) Check the image, then go back to the image menu and transform it

   Edit > images >transform grid

   Transform using “Convert Geographic Grid”

   Current grid coordinates “grid”

   Tick “use same projection as current layout”

Cont’d…

Define Projection and Datum Transform

Check source datum and projection info: ie expect UTM, WGS84, Zone 10N

Enter name for transform in Transform entry “WGS84 to NAD27 NWT Z10”

Enter DX, DY, DZ for WGS84 to NAD27 & Scale: -4.0, -159, -188, 0.9996

Save to store values for future use, note they now appear in the pulldown list.

Test the transform

In ”Source Data coordinates” (top half of panel)

Enter reasonable values for East and North: 500000, 8000000

Try: “East/North ->Lat/lon” , get reasonable answer 123 0 0.000 E, 72 5 57.201N

Try “convert Source data to map”, get reasonable answer below

In Convert Source Data to Map (bottom half of panel)

Try “Lat/lon -> East/North” get reasonable answer, note shift values reported

DONE (tested transformation parameters, now return to Define Source Datum Definitions panel

DONE (now return to Grid Transformations and transform grid)

Set output cell size: 150, 150

Output file name “DEM-G_NAD27”

File Format: “Geosoft”

Perform Transformation

(this will transform the grid using the following steps: projected coordinate system > source geographic > datum shift >target geographic > projected coordinate system)

Wait for transformation complete button – press “OK”

Cont’d…

For next grid, load image file, display and repeat steps. Note that the transformation parameters are already loaded now, so one can proceed through a series of grids sequentially.

To check the transformation, contour a target grid, and then display the image from the corresponding source grid, with the the contours from the target grid laid over. The displacement should be as expected.

Note that the scale of the target projection needs to be provided, as the algorithm goes from projection, to geographic cords, does the datum change, and then reprojects into the target projection. For NAD27 UTM the scale is "0.9996". This is the same as the scale of the WGS84 UTM projection system.

Converting a database from one projection and datum to another.

This example converts a WGS84 UTM zone 10 XYZ to WGS84 UTM Zone 9 XYZ.

1) Open Windisp and select Edit – Posting – Select Posting File – Text file (text file is appropriate for importing an XYZ)

2) Select X and Y channels and Define Projection and Datum Transform
   Projection – UTM
   Spheroid – WGS84
   Zone – 10

3) Keep all remaining settings as default. Click OK.

4) Select data variables to be exported. It is not necessary to reselect the X and Y channels. Click on Display Data Range to import the data.

5) Select OK and exit Data Posting Specification.

6) To change projection, Edit – Posting – Edit Posting Specification

7) Click on Define Coordinates. Be sure to check OFF Use same projection as current layout. Otherwise the transform will not work. Click on Define Projection and Datum Transform. Change UTM zone to 9.
   Optional – To test if transform has worked, enter an Easting/Northing into the Source Data Coordinates. Click East/North->Lat/Long button to get Lat/Long coordinates. Click Convert

Source Data to Map button. The new Lat/Long coordinates will appear. Click Lat/Long-> East/North button to covert to UTMs. The Distance and Azimuth should be representative of the transform. Click Done and Done, then click OK.

8) In Data Posting Specification, Click Export Data. Note - you may need to click on Define Data Variable to change number of decimal places (default is 2). Choose a new filename for the exported data and click OK.

9) The exported XYZ should be in the new projection.

A list of common datum conversions to WGS84 follows:

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    Datum transforms from local datum to WGS84

    [Datums]
    Adindan=Clarke 1880
    Afgooye=Krassovsky 1940,-43,-163,45,Somalia
    Ain el Abd 1970=International 1924
    American Samoa 1962=Clarke 1866,-115,118,426,American Samoa Islands
    Anna 1 Astro 1965=Australian National,-491,-22,435,Cocos Islands
    Antigua Island Astro 1943=Clarke 1880,-270,13,62,Antigua (Leeward
Islands)
    Arc 1950=Clarke 1880
    Arc 1960=Clarke 1880
    Ascension Island 1958=International 1924,-205,107,53,Ascension Island
    Astro Beacon E 1945=International 1924,145,75,-272,Iwo Jima
    Astro DOS 71/4=International 1924,-320,550,-494,St Helena Island
    Astro Tern Island (FRIG) 1961=International 1924,114,-116,-333,Tern
Island
    Astronomical Station 1952=International 1924,124,-234,-25,Marcus Island
    Australian Geodetic 1966=Australian National,-133,-48,148,Australia,
Tasmania
    Australian Geodetic 1984=Australian National,-134,-48,149,Australia,
Tasmania
    Ayabelle Lighthouse=Clarke 1880,-79,-129,145,Djibouti
    Bellevue (IGN)=International 1924,-127,-769,472,Efate and Erromango
Islands
    Bermuda 1957=Clarke 1866,-73,213,296,Bermuda
    Bissau=International 1924,-173,253,27,Guinea-Bissau
    Bogota Observatory=International 1924,307,304,-318,Colombia
    Bukit Rimpah=Bessel 1841,-384,664,-48,Indonesia (Bangka and Belitung Ids)
    Camp Area Astro=International 1924,-104,-129,239,Antarctica (McMurdo Camp
Area)
    Campo Inchauspe=International 1924,-148,136,90,Argentina
    Canton Astro 1966=International 1924,298,-304,-375,Phoenix Islands
    Cape=Clarke 1880,-136,-108,-292,South Africa
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Cape Canaveral=Clarke 1866,-2,151,181,Bahamas, Florida
Carthage=Clarke 1880,-263,6,431,Tunisia
Chatham Island Astro 1971=International 1924,175,-38,113,New Zealand (Chatham Island)
Chua Astro=International 1924,-134,229,-29,Paraguay
Corrego Alegre=International 1924,-206,172,-6,Brazil
Dabola=Clarke 1880,-83,37,124,Guinea
Deception Island=Clarke 1880,260,12,-147,Deception Island, Antarctia
Djakarta (Batavia)=Bessel 1841,-377,681,-50,Indonesia (Sumatra)
DOS 1968=International 1924,230,-199,-752,New Georgia Islands (Gizo Island)
Easter Island 1967=International 1924,211,147,111,Easter Island
European 1950 (ED 50)=International 1924
European 1979 (ED 79)=International 1924
Fort Thomas 1955=Clarke 1880,-7,215,225,Nevis, St. Kitts (Leeward Islands)
Gan 1970=International 1924,-133,-321,50,Republic of Maldives
Geodetic Datum 1949=International 1924,84,-22,209,New Zealand
Graciosa Base SW 1948=International 1924
Guam 1963",Clarke 1866,-100,-248,259,Guam
Gunung Segara=Bessel 1841,-403,684,41,Indonesia (Kalimantan)
GUX 1 Astro=International 1924,252,-209,-751,Guadalcanal Island
Herat North=International 1924,-333,-222,114,Afghanistan
Hjorsey 1955=International 1924,-73,46,-86,Iceland
Hong Kong 1963=International 1924,-156,-271,-189,Hong Kong
Hu-Tzu-Shan=International 1924,-637,-549,-203,Taiwan
Indian (Bangladesh)=Everest (India 1830),282,726,254,Bangladesh
Indian (India, Nepal)=Everest (India 1956),295,736,257,India, Nepal
Indian (Pakistan)=Everest (Pakistan),283,682,231,Pakistan
Indian 1954=Everest (India 1830),217,823,299,Thailand
Indian 1960=Everest (India 1830)
Indian 1975=Everest (India 1830),209,818,290,Thailand
Indonesian 1974=Indonesian 1974,-24,-15,5,Indonesia
Ireland 1965=Modified Airy,506,-122,611,Ireland
ISTS 061 Astro 1968=International 1924,-794,119,-298,South Georgia Islands
ISTS 073 Astro 1969=International 1924,208,-435,-229,Diego Garcia
Johnston Island 1961=International 1924,189,-79,-202,Johnston Island
Kandawala=Everest (India 1830),-97,787,86,Sri Lanka
Kerguelen Island 1949=International 1924,145,-187,103,Kerguelen Island
Kertau 1948=Everest (Malay. and Singapore 1948),-11,851,5,West Malaysia and Singapore
Kusaie Astro 1951=International 1924,647,1777,-1124,Caroline Islands
L. C. 5 Astro 1961=Clarke 1866,42,124,147,Cayman Brac Island
Leigon=Clarke 1880,-130,29,364,Ghana
Liberia 1964=Clarke 1880,-90,40,88,Liberia
Luzon=Clarke 1866
M'Poraloko=Clarke 1880,-74,-130,42,Gabon
Mahe 1971=Clarke 1880,41,-220,-134,Mahe Island

Massawa=Bessel 1841,639,405,60,Ethiopia (Eritrea)
Merchich=Clarke 1880,31,146,47,Morocco
Midway Astro 1961=International 1924,912,-58,1227,Midway Islands
Minna=Clarke 1880
Montserrat Island Astro 1958=Clarke 1880,174,359,365,Montserrat (Leeward Islands)
Nahrwan=Clarke 1880
Naparima BWI=International 1924,-10,375,165,Trinidad and Tobago
North American 1927 (NAD 27)=Clarke 1866
North American 1983 (NAD 83)=GRS 80
North Sahara 1959=Clarke 1880,-186,-93,310,Algeria
NTF (Nouvelle Triangulation de France)=Clarke 1880 (IGN),-168,-60,320,France (incl. Corsica)
Observatorio Meteorologico 1939=International 1924,-425,-169,81,Azores (Corvo and Flores Islands)
Old Egyptian 1907=Helmert 1906,-130,110,-13,Egypt
Old Hawaiian=Clarke 1866
Oman=Clarke 1880,-346,-1,224,Oman
Ordnance Survey Great Britain 1936=Airy 1830
Pico de las Nieves=International 1924,-307,-92,127,Canary Islands
Pitcairn Astro 1967=International 1924,185,165,42,Pitcairn Island
Point 58=Clarke 1880,-106,-129,165,Mean for Burkina Faso and Niger
Pointe Noire 1948=Clarke 1880,-148,51,-291,Congo
Porto Santo 1936=International 1924,-499,-249,314,Porto Santo, Madeira Islands
Provisional South American 1956=International 1924
Provisional South Chilean 1963=International 1924,16,196,93,Chile (Near 53øS) (Hito XVIII)
Puerto Rico=Clarke 1866,11,72,-101,Puerto Rico, Virgin Islands
Pulkovo 1942=Krassovsky 1940,28,-130,-95,Russia
Qatar National=International 1924,-128,-283,22,Qatar
Qornoq=International 1924,164,138,-189,Greenland (South)
Reunion=International 1924,94,-948,-1262,Mascarene Islands
Rome 1940=International 1924,-225,-65,9,Italy (Sardinia)
Rijks Driehoeksmeting=Bessel 1841,-593,-26,-478,Netherlands
S-42 (Pulkovo 1942)=Krassovsky 1940,28,-121,-77,Hungary
S-JTSK=Bessel 1841,589,76,480,Czechoslavakia (Prior 1 JAN 1993)
Santo (DOS) 1965=International 1924,170,42,84,Espirito Santo Island
Sao Braz=International 1924,-203,141,53,Azores (Sao Miguel, Santa Maria Ids)
Sapper Hill 1943=International 1924,-355,21,72,East Falkland Island
Schwarzeck=Bessel 1841 (Namibia),616,97,-251,Namibia
Selvagem Grande 1938=International 1924,-289,-124,60,Salvage Islands
South American 1969=South American 1969
South Asia=Modified Fischer 1960,7,-10,-26,Singapore
Tananarive Observatory 1925=International 1924,-189,-242,-91,Madagascar
Timbalai 1948=Everest (Sabah Sarawak),-679,669,-48,Brunei, E. Malaysia (Sabah Sarawak)
Tokyo=Bessel 1841

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    Tristan Astro 1968=International 1924,-632,438,-609,Tristan da Cunha
    Viti Levu 1916=Clarke 1880,51,391,-36,Fiji (Viti Levu Island)
    Voirol 1960=Clarke 1880,-123,-206,219,Algeria
    Wake Island Astro 1952=International 1924,276,-57,149,Wake Atoll
    Wake-Eniwetok 1960=Hough 1960,102,52,-38,Marshall Islands
    WGS 1984=WGS 84,0,0,0,Global Definition
    Yacare=International 1924,-155,171,37,Uruguay
    Zanderij=International 1924,-265,120,-358,Suriname

    [Adindan]
    Burkina Faso=-118,-14,218
    Cameroon=-134,-2,210
    Ethiopia=-165,-11,206
    Mali=-123,-20,220
    Mean=-162,-12,206,Mean for Ethiopia, Mali, Senegal, Sudan
    Senegal=-128,-18,224
    Sudan=-161,-14,205

    [Ain el Abd 1970]
    Bahrain=-150,-250,-1
    Saudi Arabia=-143,-236,7

    [Arc 1950]
    Botswana=-138,-105,-289
    Burundi=-153,-5,-292
    Lesotho=-125,-108,-295
    Malawi=-161,-73,-317
    Mean=-143,-90,-294,Mean for Botswana, Lesotho, Malawi, Swaziland, Zaire,
Zambia, Zimbabwe
    Swaziland=-134,-105,-295
    Zaire=-169,-19,-278
    Zambia=-147,-74,-283
    Zimbabwe=-142,-96,-293

    [Arc 1960]
    Mean=-160,-6,-302,Mean for Kenya, Tanzania

    [European 1950 (ED 50)]
    Cyprus=-104,-101,-140,Cyprus
    Egypt=-130,-117,-151,Egypt
    England Channel=-86,-96,-120,England, Channel Islands, Scotland, Shetland
Islands
    England=-86,-96,-120,England, Ireland, Scotland, Shetland Islands
    Finland Norway=-87,-95,-120,Finland, Norway
    Greece=-84,-95,-130
    Iran=-117,-132,-164
    Italy Sardinia=-97,-103,-120,Italy (Sardinia)
    Italy Sicily=-97,-88,-135,Italy (Sicily)
    Malta=-107,-88,-149
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Mean Europe=-87,-98,-121,Mean for Austria, Belgium, Denmark, Finland, France, W Germany, Gibralter, Greece, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland
North West Europe=-87,-96,-120,Mean for Austria, Denmark, France, W Germany, Netherlands, Switzerland
Middle East=-103,-106,-141,Mean for Iraq, Israel, Jordan, Lebanon, Kuwait, Saudi Arabia, Syria
Protugal Spain=-84,-107,-120,Portugal, Spain
Tunisia=-112,-77,-145,Tunisia

[European 1979 (ED 79)]
Mean=-86,-98,-119,Mean for Austria, Finland, Netherlands, Norway, Spain, Sweden, Switzerland

[Indian 1960]
Vietnam Cons Son=182,915,344,Vietnam (Con Son Island)
Vietnam Near 16N=198,881,317,Vietnam (Near 16øN)

[Luzon]
Philippines=-133,-77,-51,Philippines (Excluding Mindanao)
Philippines Mindanao=-133,-79,-72,Philippines (Mindanao)

[Minna]
Cameroon=-81,-84,115,Cameroon
Nigeria=-92,-93,122,Nigeria

[Nahrwan]
Oman=-247,-148,369,Oman (Masirah Island)
Saudi Arabia=-243,-192,477
United Arab Emirates=-249,-156,381

[North American 1927 (NAD 27)]
Alaska=-5,135,172,Alaska (Excluding Aleutian Ids)
Alaska Aleutian East=-2,152,149,Alaska (Aleutian Ids East of 180øW)
Alaska Aleutian West=2,204,105,Alaska (Aleutian Ids West of 180øW)
Bahamas=-4,154,178,Bahamas (Except San Salvador Id)
Bahamas San Salvador=1,140,165,Bahamas (San Salvador Island)
Canada=-10,158,187,Mean for Canada
Canada West=-7,162,188,Canada (Alberta, British Columbia)
Canada Middle=-9,157,184,Canada (Manitoba, Ontario)
Canada East=-22,160,190,Canada (New Brunswick, Newfoundland, Nova Scotia, Quebec)
Canada North=4,159,188,Canada (Northwest Territories, Saskatchewan)
Canada Yukon=-7,139,181,Canada (Yukon)
Canal Zone=0,125,201
Cuba=-9,152,178
Greenland=11,114,195,Greenland (Hayes Peninsula)
Caribean=-3,142,183,Mean for Antigua, Barbados, Barbuda, Caicos Islands, Cuba, Dominican Republic, Grand Cayman, Jamaica, Turks Islands

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    Central America=0,125,194,Mean for Belize, Costa Rica, El Salvador,
Guatemala, Honduras, Nicaragua
    Conus=-8,160,176,Mean for CONUS
    Conus East=-9,161,179,Mean for CONUS (East of Mississippi River Including
Louisiana, Missouri, Minnesota)
    Conus West=-8,159,175,Mean for CONUS (West of Mississippi River Excluding
Louisiana, Minnesota, Missouri)
    Mexico=-12,130,190

    [North American 1983 (NAD 83)]
    Alaska=0,0,0,Alaska (Excluding Aleutian Ids)
    Alaska Aleutian=-2,0,4,Aleutian Ids
    Canada=0,0,0,Canada
    Conus=0,0,0
    Hawaii=1,1,-1
    Central America=0,0,0
    Mexico=0,0,0

    [Old Hawaiian]
    Hawaii=89,-279,-183
    Kauai=45,-290,-172
    Maui=65,-290,-190
    Mean=61,-285,-181,Mean for Hawaii, Kauai, Maui, Oahu
    Oahu=58,-283,-182

    [Ordnance Survey Great Britain 1936]
    England=371,-112,434,England
    England Wales=371,-111,434,England, Isle of Man, Wales
    Mean=375,-111,431,Mean for England, Isle of Man, Scotland, Shetland
Islands, Wales
    Scotland=384,-111,425,Scotland, Shetland Islands
    Wales=370,-108,434

    [Provisional South American 1956]
    Bolivia=-270,188,-388,Bolivia
    Chile North=-270,183,-390,Chile (Northern, Near 19øS)
    Chile South=-305,243,-442,Chile (Southern, Near 43øS)
    Colombia=-282,169,-371
    Ecuador=-278,171,-367
    Guyana=-298,159,-369
    Mean=-288,175,-376,Mean for Bolivia, Chile, Colombia, Ecuador, Guyana,
Peru, Venezuela
    Peru=-279,175,-379
    Venezuela=-295,173,-371

    [South American 1969]
    Argentina=-62,-1,-37
    Bolivia=-61,2,-48
    Brazil=-60,-2,-41
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    Chile=-75,-1,-44
    Colombia=-44,6,-36
    Ecuador=-48,3,-44
    Ecuador Baltra=-47,26,-4,Ecuador (Baltra, Galapagos)
    Guyana=-53,3,-47
    Mean=-57,1,-41,Mean for Argentina, Bolivia, Brazil, Chile, Colombia,
Ecuador, Guyana, Paraguay, Peru, Trinidad and Tobago, Venezuela
    Paraguay=-61,2,-33
    Peru=-58,0,-44
    Trinidad and Tobago=-45,12,-33
    Venezuala=-45,8,-33

    [Tokyo]
    Japan=-148,507,685
    Mean=-148,507,685,Mean for Japan, South Korea, Okinawa
    Okinawa=-158,507,676
    South Korea=-146,507,687
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