



Using the “freshney.org Periodic Table” in Education environments.

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*This document is for use with;
Periodic Table Classic
Periodic Table Explorer
Periodic Table Mini*

(<http://www.freshney.org/education>)

1. Introduction

The freshney.org Periodic Table (FPT) comes with plenty of content for use in any school, college or other educational establishment, but as I was writing it I realized that it would be useful if individuals could tailor it their specific needs.

From the very beginning the FPT was designed so that it could be customised by individuals or institutions. All of the information pages (element, glossary, biographies etc.) are all stored as individual HTML pages within the 'data' directory. These can be edited and altered as you wish, please do not redistribute them though!

None of the software's data is stored in any binary format that would make alteration or customization impossible. Please feel free to customize the application as you wish, though please don't redistribute it!!

This will allow you to harness the power of the software for your own purposes as well as to make it more relevant for your teaching / educational needs.

All of the content for the Periodic Table software is created through the use of XML files (with over one hundred thousand lines of content in total) and XSL transformations. It is not my intention to release these to the public domain, but I may be willing to release them to interested individuals or educational establishments in the future....

I will be updating the content of the software for many years to come, if you have any specific requests then please don't hesitate to get in touch.

This document lists all the technical detail you will need in order to customise the software and it is broken up in to the following sections;

2. File structure
3. Important files
4. How to...

Appendices I, II, III and IV

If you have feedback regarding this document or any part of the Periodic Table then please do not hesitate to get in contact with me, <mailto:freeware@freshney.org>. I am always happy to receive feedback of any type.

If you are able to translate this document in to other languages please let me know, I'd like to reach as many people as possible with the software.

2. File structure

It is not advisable that you customise any of the following files (except for the [idx_main.htm](#) file, see later on) as these files will be altered when newer versions of the FPT are installed.

When you install the FPT all files are copied in to the following structure;

`<install dir>`

The application and the uninstaller application are copied here.

`<install dir>\data`

All HTML data, images and system data is located in here.

The images that appear in the HTML pages are all here, along with the entire 'category specific' index files as listed below;

<code>idx_biog.htm</code>	List of biographies
<code>idx_glossary</code>	Complete list of glossary entries
<code>idx_main</code>	Index page that opens when the application is first opened
<code>idx_tableview</code>	Table view page, 'table view' button

`<install dir>\data\allotrope`

Pages are named from the atomic number of the element they describe.

`<install dir>\data\atomic`

Pages are named from the atomic number of the element they describe (for all atomic reference pages) and 'mac<atomic number>' for all pages containing Mass Attenuation Data.

`<install dir>\data\biography`

Pages are named (for the most part) after the initials of the scientist they describe. Check of the [idx_biography](#) page for a comprehensive list of biographies and corresponding file names.

`<install dir>\data\compound`

Pages are named from the atomic number of the element they describe.

`<install dir>\data\country`

Contains a page and an image for each available country, named after the ISO 3166 2-letter country codes. An index pages (`zzindex.htm`) listing all countries is also present.

`<install dir>\data\displays`

The images for other Periodic Table displays are in here.

`<install dir>\data\document`

All available "documents" are in here.

`<install dir>\data\elements`

Pages are named from the atomic number of the element they describe. All images are named in a similar manner.

`<install dir>\data\elements\groups`

These are special pages that appear when a particular "group" of elements is selected. Pages are available for Group 1, Group 2, Group 17, Group 18, Actinoids and Lanthanoids.

`<install dir>\data\equations`

All equation pages and images are in here.

`<install dir>\data\glossary`

Pages are named after the initials of the glossary entry they contain, although this is not always the case. Check out the [idx_glossary](#) page for a comprehensive list of glossary entries and associated file names.

`<install dir>\data\help`

Help files are accessed from the “help bubble” images located on certain pages. There is a folder for each language version of the files. When the application cannot find the translated version of a help file it simply loads the English version.

<install dir>\data\images

The PT example images, crystal, dot diagram and spectra images are in here.

<install dir>\data\index

This contains an index file which is used to vastly improve the search times. **Do not edit this file!** (Future versions will allow you to index and search through your custom data, if you want this now then please email me)

As of v3.8 this folder also contains a complete HTML index. One page for each letter of the alphabet, listing each word contained in the index along with links to all the pages (with descriptions) that contain it.

If you would like a copy of the XML and XSLT files necessary to build the HTML index pages then email me and I'll send you a link to them.

<install dir>\data\isotope

Contains pages and images for the isotope sections of each element. Each page is named after the atomic number of the corresponding element.

<install dir>\data\language

Contains the textual translations for important application text and also elements names.

<install dir>\data\molecules

Contains the molecule data files, used by the molecule viewer.

<install dir>\data\names

The pages that contain the names of the elements in different languages are in here, one for each element, named after the atomic number.

<install dir>\data\onthisday

Contains one HTML page for each day of the year, each contain details of interesting scientific events that happened on that day. In the format *ddmm.htm*.

<install dir>\data\other

Pages that contain other element data are in here, one for each element, named after the atomic number.

<install dir>\data\production

Production/isolation pages are in here, one for each element, named after the atomic number.

<install dir>\data\reactions

Reactions of the elements are in here, one for each element, named after the atomic number.

<install dir>\data\spectra

Spectra data of the elements in here, one for each element, named after the atomic number.

<install dir>\data\system

Feel free to customise the ptx.bmp, pty.bmp and map.bmp images that exist in this folder.

Be careful not to make changes that will be obscured by the legend, element image display or element name display. Do not alter the image dimensions! Please do not redistribute the application with any changed files! Do not alter the colours or palette of the map image!

BUT **do not** alter any other file as they contain important system data.

<install dir>\data\tables

Contains the “element list” table files.

idx_byabundance.htm

List of elements in abundance (Earth's crust) order

idx_byam.htm

List of elements in atomic mass order

idx_byan.htm	List of elements in atomic number order
idx_byar.htm	List of elements in atomic radius order
idx_byav.htm	List of elements in atomic volume order
idx_bybh.htm	List of elements in Brinell hardness order
idx_bybp.htm	List of elements in boiling point order
idx_bydate	List of elements in the order they were discovered
idx_bydensity.htm	List of elements in density order
idx_bydiscoverer	List of elements by their respective discoverer
idx_byelcon.htm	List of elements in electrical conductivity order
idx_byenps.htm	List of elements in electronegativity (Pauling) order
idx_byeof.htm	List of elements in enthalpy of fusion order
idx_byeov.htm	List of elements in enthalpy of vapourisation order
idx_byhc.htm	List of elements in heat capacity order
idx_bylocation.htm	List of elements in order of their discovery location
idx_bymp.htm	List of elements in melting point order
idx_byname	List of elements in alphabetical order
idx_bysymbol.htm	List of elements in symbol order
idx_bythcon.htm	List of elements in thermal conductivity order
idx_bythex.htm	List of elements in thermal expansion order

`<install dir>\data\xhelp`
Contains the main help pages.

`<install dir>\media\i`
Images that are viewable from the “media” tab.
Resolution of 625x469 pixels, only JPEG format supported.

`<install dir>\media\v`
Contains HTML pages that contain embedded links to YouTube (and similar sites). Pages are named after the atomic number of the relevant element (1-118).

The Periodic Table Explorer (PTE) adds an extra directory that contains Periodic Table Explorer specific settings and help files. This allows them to run side-by-side on the same PC without conflict.

```
<install dir>\pte_data
<install dir>\pte_data\language
<install dir>\pte_data\notes
<install dir>\pte_data\system
```

There is a PTE specific version of the [idx_main.htm](#) file in the “pte_data” directory that can be edited. See later on for more information.

New For Version 2.9+

If you run the Periodic Table on multiple PCs on the same network then it is now possible to have all the PCs read the data from a single source. This will make updating custom content a lot easier.

Create a file called `custom.ini` and place it in folder where the application is located (for each PC). The contents of the file should be as follows, everything *between* the rows of =.

```
=====
[main]
datafolder=<path to data folder>
=====
```

The data folder can point to any UNC path.

3. Important files

The first file that you should consider customizing is the `\data\dx_main.htm` file. This is the first file that is displayed when the application is loaded. **Please do not remove any copyright information, images or web links from this page.** There is plenty of space to link to your content.

If you need to link to pages such as intranet or websites then make sure to set the “target” attribute for your links to “_blank”, or the new pages will appear inside the Periodic Table display!

New versions of the Periodic Table WILL overwrite this file, so keep a backup.

Any links added to this document will be instantly visible to your users.

Version 2.5 added the ability to resize the document display panel, always ensure that your pages are set to fill 100% of the width of the page. The minimum width of a page is 340 pixels, make sure that they don't look too squashed up at that size.

In order that future version of the Periodic Table applications don't 'break' your content please put all of your custom pages and images in to the following structure;

```
<install dir>\data\custom
```

Keep the root of this directory clean of files.

```
<install dir>\data\custom\pages
```

All HTML pages go in this directory.

```
<install dir>\data\custom\images
```

All of your custom images go in here.

By using this structure from the very beginning I can be sure that nothing I do to the main application will damage the functionality of the custom content.

Prefix pages that you don't want indexing (for searching) with “zz” (eg. zzindex.htm). The indexing of custom content will be available soon....

4. How to...

This section is all about controlling the application from within your customised content. All of the pages are standard HTML, but by some clever use of links you can add 'interactive' elements in to your content.

The application makes use of the fact that it can intercept any link that is clicked on within a page. Under normal circumstances it will just load the appropriate page, but there are several special URLs that do clever things.

Just added the relevant HTML code to your custom pages. Only the content of the HREF attribute is important.

Make an element on the Periodic Table flash;

```
<a href="flash:{atomic number of element}">some text</a>
```

To make helium flash on the Periodic Table display use the following HTML;

```
<a href="flash:2">helium</a>
```

Open the image tab set to a specific element;

```
<a href="image:{atomic number of element}">some text</a>
```

To make helium flash on the Periodic Table display use the following HTML;

```
<a href="image:2">helium image</a>
```

Open an element in the Shell Structure diagram display

```
<a href="electron:{atomic number of element}">some text</a>
```

To open the Shell Structure diagram display with Lithium activated;

```
<a href="electron:3"/>Lithium</a>
```

Open an element in the Electron Energy Configuration display

```
<a href="econfig:{atomic number of element}">some text</a>
```

To open the Electron Energy configuration table diagram display with Chlorine activated;

```
<a href="econfig:17"/>Chlorine</a>
```

Open an element in the Atomic Radius Diagram display

```
<a href="atomicradius:{atomic number of element}">some text</a>
```

To open the Atomic Radius diagram display with Carbon activated;

```
<a href="atomicradius:6"/>Carbon</a>
```

Change the Periodic Table display mode

```
<a href="dm:{mode}">some text</a>
```

Where {mode} is;

- 00: Default View
- 01: Melting Point
- 02: Boiling Point
- 03: Atomic Radius
- 04: Atomic Weight
- 05: Density
- 06: Enthalpy of Fusion
- 07: Enthalpy of Vaporisation
- 08: Heat Capacity
- 09: Thermal Conductivity
- 10: Thermal Expansion
- 11: Discovery Date

To display the elements in the Periodic Table by atomic radius;

```
<a href="dm:2">atomic radius display</a>
```

Open the dynamic temperature scale and set a temperature

```
<a href="temp:{temperature in K}">some text</a>
```

To open the scale and set a temperature to 3000K;

```
<a href="temp:3000">see the elements at 3000K</a>
```

Only use integer values!

Open a specific graph

```
<a href="graph:{type}{style}">some text</a>
```

Where {type} is;

- 001: Boiling point
- 002: Melting point
- 003: Atomic mass
- 004: Heat capacity
- 005: Thermal conductivity
- 006: Thermal expansion
- 007: Density
- 008: Electrical conductivity
- 009: Electronegativity
- 010: Enthalpy of fusion
- 011: Enthalpy of vaporisation
- 012: Abundance (Universe)
- 013: Abundance (Sun)
- 014: Abundance (Earth's crust)
- 015: Abundance (Human by weight)
- 016: Abundance (Human by number of atoms)
- 017: Electrical resistivity
- 018: Bulk modulus
- 019: Shear modulus
- 020: Young's modulus
- 021: Brinell hardness
- 022: Vickers hardness
- 023: Poisson ratio
- 024: Speed of sound
- 025: Date of discovery
- 026: Atomic volume
- 031: Atomic radius
- 032: Atomic radius (Bohr)
- 033: Atomic radius (Covalent)
- 034: Atomic radius (van der Waals)
- 035: Atomic radius (Triple bond)
- 036: Atomic radius (Metallic)

Where {style} is;

- 00 : All (up to 103)
- 01 : Transition Metals
- 02 : Alkali Earth Metals
- 03 : Halogens
- 04 : Non-metals
- 05 : Metals
- 06 : Noble Gases
- 07 : Alkali Metals
- 08 : Metalloids
- 09 : Lanthanoids
- 10 : Actinoids

To open a graph of Atomic Radii for the Halogens;

```
<a href="graph:0203">Graph of Halogen Atomic Radii</a>
```

These two links work only in the “group” display pages located in data\elements\groups;

Open an element’s isotope abundance graph

```
<a href="graph:100{atomic number}">some element text</a>
```

To open the isotope abundance graph for neon;

```
<a href="graph:10010">neon</a>
```

Open an element’s ionization energy graph

```
<a href="graph:101{atomic number}">some element text</a>
```

To open the ionization energy graph for neon;

```
<a href="graph:10110">neon</a>
```

Open an element’s data page

```
<a href="element:{atomic number}">some element text</a>
```

To open the page for lead in the main text display on the right hand side;

```
<a href="element:82">lead</a>
```

Open a glossary page

```
<a href="glossary:{filename}">text</a>
```

To open the melting point glossary page;

```
<a href="glossary:mp">melting point</a>
```

No need to add the trailing “.htm”.

For more information on available glossary terms and their filenames see “Appendix I”.

Open a document page

```
<a href="document:{filename}">text</a>
```

To open the melting point glossary page;

```
<a href="document:halogens">The Halogens</a>
```

No need to add the trailing “.htm”.

For more information on available glossary terms and their filenames see “Appendix II”.

Open an “On this day...” page

```
<a href="otd:{ddmm}">text</a>
```

To open the “On this day...” page on my birthday, April 17th;

```
<a href="otd:1704">Paul</a>
```

For “today”;

```
<a href="otd:0000">Today</a>
```

These special links only work within pages that appear within the application.

Appendix I

Glossary term file names (shown without the .htm extension which isn't needed if using the "glossary:" method.

File name	Page
aspectrum	Absorption Spectrum
xa	Abundance
acid	Acid
actinides	Actinides
actinoids	Actinoids
air	Air
aliphatic	Aliphatic
aem	Alkali Metal (alkaline-earth metals)
alkalimetal	Alkali Metal
allobar	Allobar
allotrope	Allotrope
alloy	Alloy
decay_a	Alpha Decay
amalgam	Amalgam
amorphous	Amorphous
amphoteric	Amphoteric
anhydrous	Anhydrous
anion	Anion
anode	Anode
angstrom	Angstrom
antiproton	Antiproton
antimatter	Antimatter
aneutrino	Anti-Neutrino
aquaregia	Aqua regia
aromatic	Aromatic
atom	Atom
atc	Atomic Charge
am	Atomic Mass
amu	Atomic mass unit (amu, u)
an	Atomic Number (Z)
ar	Atomic Radius
ac	Avogadro's Constant
baryon	Baryon
base	Base
betap	Beta Particle
bcompound	Binary compound
bp	Boiling Point
brinellh	Brinell Hardness
bulkm	Bulk Modulus
carcinogen	Carcinogen
cas	CAS
catalyst	Catalyst
cathode	Cathode
cation	Cation
centigrade	Centigrade (celsius)
compound	Compound
conduction	Conduction
convection	Convection
cosmogenic	Cosmogenic isotope
covalent	Covalent bonds
ct	Critical temperature
de	Decay Energy
deliquescent	Deliquescent
desiccant	Desiccant
decay_bb	Double Beta Decay
decay_ee	Double Electron Capture

dm	Doubly Magic
ductile	Ductile
eleccon	Electrical Conductivity
elecresis	Electrical Resistivity
ece	Electrochemical Equivalent
electron	Electron
decay_e	Electron Capture
elecneg	Electronegativity
decay_b-	Electron Emission (Beta- Decay)
ev	Electron Volt
ewf	Electron Work Function
element	Element
endot	Endothermic
el	Energy Levels
enzyme	Enzyme
espectrum	Emission Spectrum
eof	Enthalpy Change of Fusion (Heat of Fusion)
eov	Enthalpy Change of Vapourisation
exot	Exothermic
fahrenheit	Fahrenheit
gr	Gamma Ray
gc	Goldschmidt Classification
group	Group
hl	Half Life
halogens	Halogens
heatcap	Heat Capacity
heavywater	Heavy water (D2O)
hygroscopic	Hygroscopic
inert	Inert
ion	Ion
ionic	Ionic bonds
ione	Ionization energy
ios	Island of Stability
iop	Ionization Potential
decay_it	Isometric Transition
isotope	Isotope
itm	Inner Transition Metals
iupac	IUPAC
kelvin	Kelvin (absolute temperature)
lanthanides	Lanthanides (old name)
lanthanoids	Lanthanoids
mn	Magic Number
magord	Magnetic Ordering
massmag	Magnetic Susceptibility (Mass)
molarmag	Magnetic Susceptibility (Molar)
malleable	Malleable
massn	Mass Number (A)
mp	Melting Point (freezing point)
metalloid	Metalloids
metals	Metals
mohsh	Moh's Scale of Hardness
mole	Mole
molecule	Molecule
nucleon	Nucleon
neutron	Neutron
noble	Noble Gasses (inert gasses)
nm	Non-Metals
neutrino	Neutrino
nucleus	Nucleus
orbital	Orbital
oc	Organic chemistry
os	Oxidation State
pauling	The Pauling Scale

plaw	Periodic Law
pt	Periodic Table
period	Periods
ph	pH
photon	Photon
poisson	Poisson Ratio
positron	Positron
decay_b+	Positron Emission (Beta+ Decay)
proton	Proton
pyrophoric	Pyrophoric
qm	Quantum Mechanics
radiation	Radiation
radioactivity	Radioactivity
ree	Rare Earth Elements
reagent	Reagent
refractory	Refractory
reduction	Reduction
semicon	Semiconductor
shearm	Shear Modulus
solution	Solution
sheat	Specific heat
sos	Speed of Sound
decay_sf	Spontaneous Fission
stp	Standard Temperature and Pressure (STP)
sublimation	Sublimation
supercon	Superconducting temperature
temp	Temperature
teratogenic	Teratogenic
thercon	Thermal Conductivity
therex	Thermal Expansion
transactinides	Transactinides
tm	Transition Metals
vep	Valence Electron Potential
vdwr	van der Waals radius
vickersh	Vickers Hardness
viscosity	Viscosity
wavefunction	Wavefunction
xr	X-Rays
youngsm	Young's Modulus

Appendix II

Document file names (shown without the .htm extension which isn't needed if using the "document:" method).

File name	Page
lifeelements	Elements Commonly Found in Living Things
groupone	The Alkali (Group 1) Metals
grouptwo	The Alkaline Earth Metals (Group 2)
halogens	The Halogens (Group 17)
inertgases	The Noble Gases (Group 18)
transition	The Transition Metals (Groups 3 to 12):

Appendix III

Biography file names (shown without the .htm extension).

File name	Page
Pha	Philip Hauge Abelson
Jaa	Johann August Arfvedson
Pa	Peter Armbruster
Ajb	Antoine-Jerome Balard
Jjg	Jöns Jacob Berzelius
Pelb	Paul Emile Lecoq de Boisbaudran
Hb	Hennig Brand
Gb	Georg Brandt
Rwb	Robert Wilhelm Bunsen
Aabb	Antoine Alexandre Brutus Bussy
Hc	Henry Cavendish
Ptc	Per Teodor Cleve
Drc	Dale R. Corson
Dc	Dirk Coster
Bc	Bernard Courtois
Ac	Adair Crawford
Bafc	Baron Axel Fredrik Cronstedt
Swc	Sir William Crookes
Mc	Marie Curie (Marya Sklodowska)
Pc	Pierre Curie
Jd	John Dalton
Shd	Sir Humphry Davy
Ald	Andre Louis Debierne
Ead	Eugene-Antole Demarcay
Ajd	Arthur Jeffrey Dempster
Fed	Friedrich Ernst Dorn
Age	Anders Gustaf Ekeberg
Jje	Juan Jose Elhuyar
Gdf	(Gabriel) Daniel Fahrenheit
Mf	Michael Faraday
Ef	Enrico Fermi
Jg	Johan Gadolin
Jgg	Johan Gottlieb Gahn
Jlgl	Joseph Louis Gay-Lussac
Ag	Albert Ghiorso
Wg	William Gregor
Oh	Otto Hahn
Ch	Charles Hatchett
Gcdh	George Charles de Hevesy
Wvh	Wilhelm von Hisinger
Hirl	Institute for Heavy Ion Research (GSI)
Pjcg	Pierre Jules César Janssen
Ijc	Irene Joliot-Curie
Jwk	Joseph W. Kennedy
Grk	Gustav Robert Kirchhoff
Mhk	Martin Heinrich Klaproth
Kk	Karl Klaus
Aldl	Antoine-Laurent de Lavoisier
Asm	Andreas Sigismund Marggraf
Jcgn	Jean Charles Galissard de Marignac
Jam	Jacob A. Marinsky
Emm	Edwin Mattison McMillan
Lm	Lise Meitner
Dim	Dmitriy Ivanovich Mendeleev
Ffhm	Ferdinand Frederic Henri Moissan
Cqm	Carl Gustav Mosander

Gm	Gottfried Münzenberg
Ln	Lars Nilson
Ietn	Ida Eva Tacke Noddack
Wn	Walter Noddack
Hco	Hans Christian Oersted
Mcp	Marguerite Catherine Perey
Jp	Joseph Priestley
Swr	Sir William Ramsay
Jwsr	John William Strutt Rayleigh
Fr	Ferdinand Reich
Fjmfvr	Franz-Joseph Muller Freiherr von Reichenstein
Htr	Hieronymous Theodor Richter
Dr	Daniel Rutherford
Jcs	Julius Caesar Scaliger
Kws	Karl Wilhelm Scheele
Js	Johann Schroder
Gts	Glenn Theodore Seaborg
Ngs	Nils Gabriel Sefström
Es	Emilio Gino Segre
Fs	Frederick Soddy
Jls	Jacques-Louis Soret
fs2	Friedrich Stromeyer
fdeyds	Fausto de Elhuyar y de Suvisa
st	Smithson Tennant
ljt	Louis Jacques Thenard
mt	Morris Travers
gu	Georges Urbain
Inv	Louis Nicolas Vauquelin
acw	Arthur C. Wahl
cabvw	Carl Auer Baron von Welsbach
caw	Clemens Alexander Winkler
fw	Friedrich Wöhler
whw	William Hyde Wollaston:

Appendix IV

Map file names (shown without the .htm extension).

File name	Page
AF	Afghanistan
AL	Albania
DZ	Algeria
AR	Argentina
AM	Armenia
AU	Australia
AT	Austria
AZ	Azerbaijan
BE	Belgium
BT	Bhutan
BO	Bolivia
BA	Bosnia and Herzegovina
BW	Botswana
BG	Bulgaria
BF	:Burkina Faso
MM	Burma (Myanmar)
BI	Burundi
BR	Brazil
CM	Cameroon
CA	Canada
CL	Chile
CN	China

CO	Colombia
CR	Costa Rica
HR	Croatia
CU	Cuba
CY	Cyprus
CZ	Czech Republic
KP	Democratic People's Republic of Korea
CD	Democratic Republic of Congo
DO	Dominican Republic
EC	Ecuador
EG	Egypt
SV	El Salvador
ER	Eritrea
EE	Estonia
ET	Ethiopia
FJ	Fiji
FI	Finland
FR	France
FG	French Guiana
GA	Gabon
GM	Gambia
GE	Georgia
DE	Germany
GH	Ghana
GR	Greece
GL	Greenland
GT	Guatemala
GN	Guinea
GY	Guyana
HN	Honduras
HU	Hungary
IS	Iceland
IN	India
ID	Indonesia
IE	Ireland
IR	Iran
IL	Israel
IT	Italy
CI	Ivory Coast
JM	Jamaica
JP	Japan
JO	Jordan
KZ	Kazakhstan
KE	Kenya
KW	Kuwait
KG	Kyrgyzstan
LA	Laos
LV	Latvia
LY	Libya
MK	Macedonia
MG	Madagascar
MY	Malaysia
ML	Mali
MR	Mauritania
MX	Mexico
MD	Moldova
MN	Mongolia
MA	Morocco
MZ	Mozambique
NA	Namibia
NL	Netherlands
NC	New Caledonia
NZ	New Zealand

NI	Nicaragua
NE	Niger
NG	Nigeria
NO	Norway
OM	Oman
PK	Pakistan
PG	Papua New Guinea
PY	Paraguay
PE	Peru
PH	Philippines
PL	Poland
PT	Portugal
QA	Qatar
KR	Republic of Korea
RO	Romania
RU	Russia
RW	Rwanda
SA	Saudi Arabia
SN	Senegal
RS	Serbia
SL	Sierra Leone
SK	Slovakia
SI	Slovenia
SO	Somalia
ZA	South Africa
ES	Spain
LK	Sri Lanka
SD	Sudan
SR	Suriname
SE	Sweden
CH	Switzerland
SY	Syria
TW	Taiwan
TJ	Tajikistan
TZ	Tanzania
TH	Thailand
TT	Trinidad and Tobago
TN	Tunisia
TR	Turkey
TM	Turkmenistan
UA	Ukraine
AE	United Arab Emirates
GB	United Kingdom
US	United States of America
UG	Uganda
UY	Uruguay
UZ	Uzbekistan
VE	Venezuela
VN	Vietnam
ZM	Zambia
ZW	Zimbabwe
XX	Outer space
ZZ	Oceans / Seas