Article 5 of the Radio Regulations (Edition of 2016)

Table of Frequency Allocations

RR5FATViewer (Beta 2.0) User's Guide

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Note: This guide is still under development.

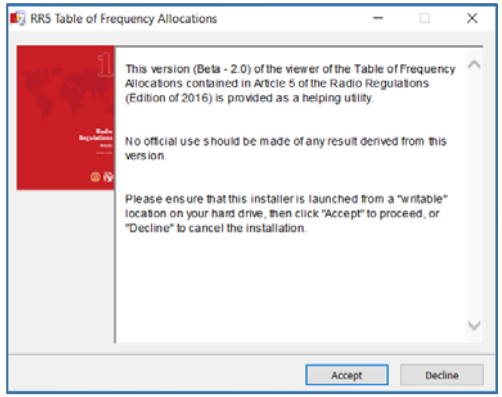
Getting Started ….

Package Installation and Initialization

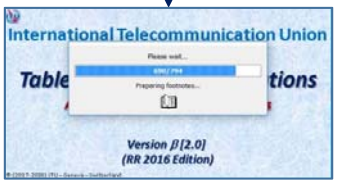
The package installation is straight forward from the ***RR5FATViewerInstaller*** package located at M:\BR_SOFT\M:\BR_SOFT\RR5FATViewer

After successful installation, a shortcut icon should appear on your desktop.

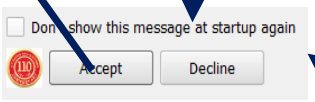
Once you accept the "conditions of use", the installation package unpacks the ***RR5FATViewer*** software to your hard drive, performs a set of checking utilities and then launches the appropriate application and presents its "opening screen" as shown here.



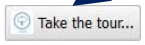
Acknowledging the "opening screen" causes the ***RR5FATViewer*** software to starts it initialization and preparation phase. This may take a few minutes to complete. Upon successful completion, the software opens then its default mode: ***The Main Table View***.



Check this box to prevent the "opening screen" from being displayed when you run the *RR5FATViewer again.*



The "Take the tour..." opens this guide



Should you face any troubles installing or initializing the package, please contact us at ***TerRaSoftHelo@itu.int***.

What is RR5FATViewer Software package about?

The ***RR5FATViewer*** is a standalone application which runs on individual user's PC (it does not require network nor Internet connections). It provides a mechanism to electronically use, query and analyze the ***Table of Frequency Allocations*** (called the **Main Table** throughout this guide) and its associated footnotes, as they appear in the ***Article 5 of Radio Regulations*** (called Article 5 throughout this guide). It is built with a friendly user interface and deep search capabilities, around a electronic relational database model reflecting the layout, content and "meaning" of the various components of the Main Table and its associated footnotes.

RR5FATViewer enhances and compacts the **cross-referencing mechanisms** inside the Article 5 main Table and its components on one hand, and between the Article 5 Main Table provisions and other sources, on the other hand (Other RR Articles, Appendices, Rules of Procedure, Worldwide & Regional Agreements, etc.)

RR5FATViewer **minimizes the need for "working with paper copies"**, so as to ease the browsing and footnotes lookup when working with Article 5 Main Table. It hence helps the Membership Administrations in finding their appropriate frequency allocations, checking for their relevant footnotes, resolving contradicting provisions and interpretations, etc. via software tools.

RR5FATViewer enhances the readability of the Article 5 Main Table Radiocommunication Services and their categories (Primary, Secondary), by introducing **"non language dependent markers"** in the database (no interpretation of Latin upper case, no underline, no bold etc.).

RR5FATViewer allows for **customized "human" display, print and export of the Article 5 Main Table**, global or restricted to a given Region or Radiocummincation Service, and consolidated with only the relevant footnotes and various applicable provisions, regardless of their "place" in the paper textbook.

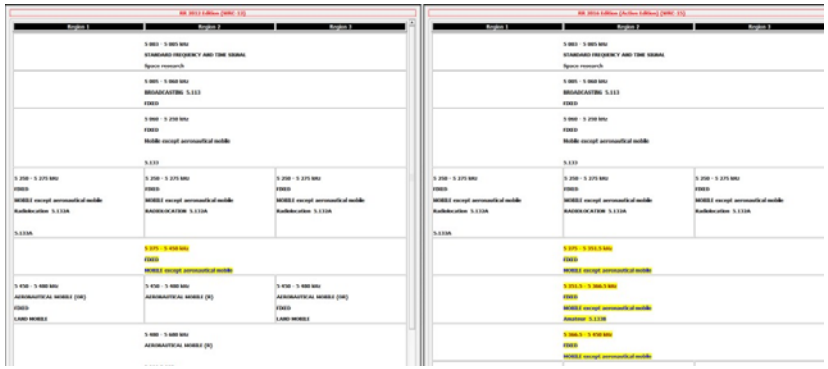
RR5FATViewer provides for **powerful "click-and-get" search tools** based on appropriate cross-references and combinations of frequency bands, Regions and geographical areas, and Radiocommunication Services, according to their definitions and inter-relationships in Article 1 of the ***Radio Regulations*** and their declensions and applications in Article 5. This may prove very useful when looking for "sharing" between various services and categories in given frequency bands and areas.

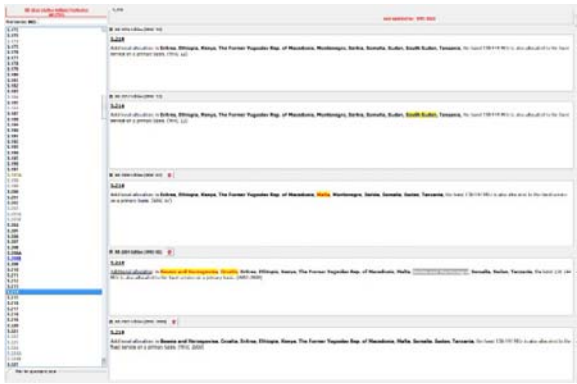
What is RR5FATViewer Software package about?

RR5FATViewer allows for the automatic **"software-driven" extraction of the Frequency Allocations** "International Plan" for a given geographic area (country), as it results from combining all of the Article 5 Main Table allocations and relevant provisions and footnotes.

RR5FATViewer is equipped with various tools and utilities, allowing the **tracing and comparison of the evolution of the Article 5 Main Table** through the various editions of the ***Radio Regulations***, as they resulted from the various ***World Radiocommunication Conferences*** (WRCs). This comparison mechanism goes back up to the Edition of 2001 (WRC-2000).

RR5FATViewer is also equipped with similar **tracing and comparison tools for the evolution of the Article 5 footnotes** through the various editions of the ***Radio Regulations***, as they resulted from the various ***World Radiocommunication Conferences*** (WRCs). This comparison mechanism also goes back up to the Edition of 2001 (WRC-2000) and easily permits to find out which footnote was deleted, added or modified by a specific WRC, and when a given country joined or left a given footnote provisions.



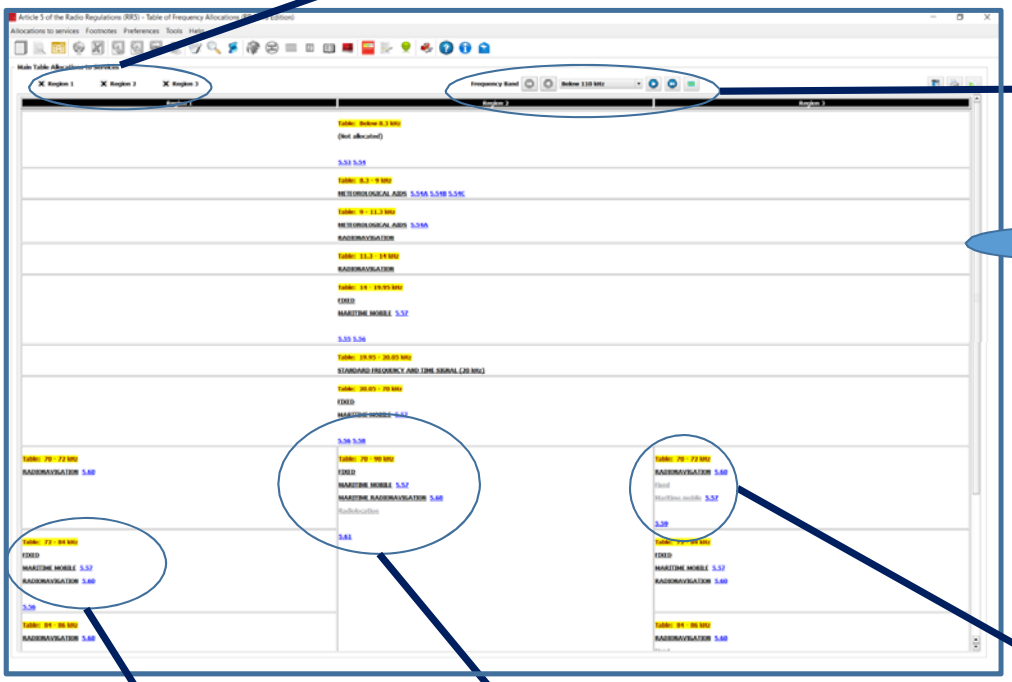


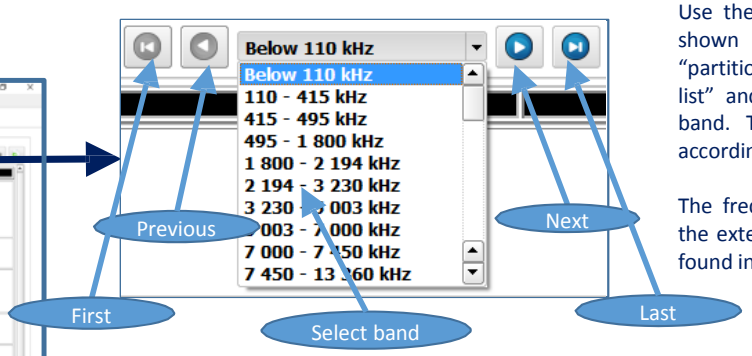
RR5FATViewer is equipped with many more features and utilities…

It is however
limited only to the boundaries of the Article 5 of the *Radio Regulations*.

The Main Table View

Use these boxes if you wish to restrict the Main Table display to one or two regions.

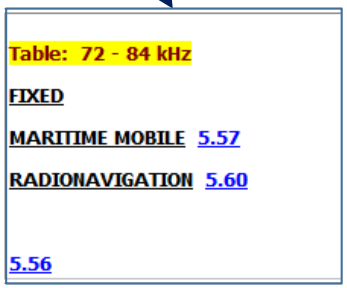


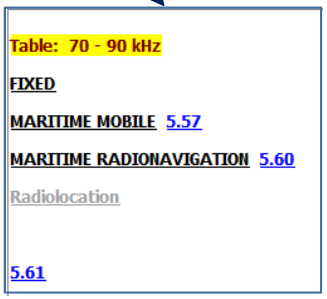


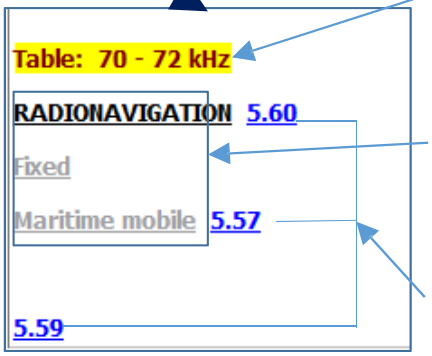
Use the Frequency Bands navigation pane, as shown here, to navigate the Main Table "partition". You may also drop down the "bands list" and directly select the desired frequency band. The displayed "page" will be updated accordingly.

The frequency bands partition is matching (to the extent feasible) the corresponding partition found in the Article 5 textbook.

The **Main Table View** mode is the default operational mode of the ***RR5FATViewer***. In this mode, the Main Table is presented and laid out (to the extent feasible) as it looks in the Article 5 text, with three columns representing the three Regions, and the corresponding "**frequency allocations boxes**".





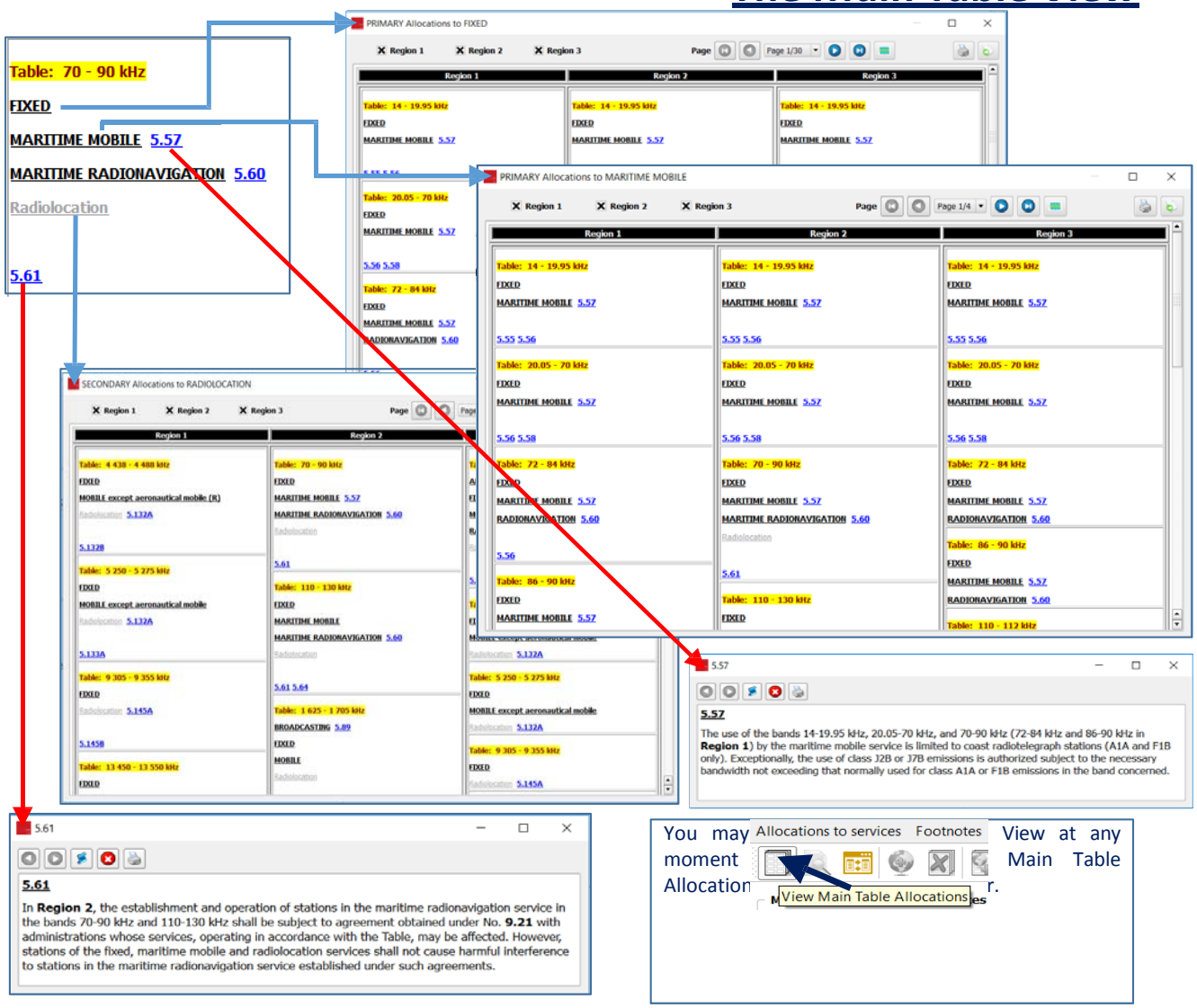


Every frequency allocation box consists of:

- a *highlighted indication of the frequency band* it covers;
- an *enumeration of the radiocommunication services* to which the box is allocated; (Primary services are displayed by default as **BOLD-UNDERLINED-UPPERCASE**, and Secondary services by default as Gray-underlined-lowercase).
- and *the list of footnotes* (if any) associated with each service or with the box as a whole.

Continued...

The Main Table View



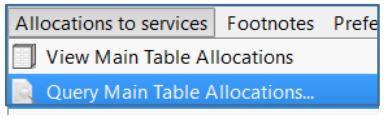
The radiocommunication services and footnotes inside every frequency allocation box are made "clickable" so as to provide more information as follows:

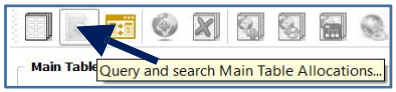
- When you **click on a given service** label, the software searches for all frequency allocation boxes **with an exact match to that service and its category**.

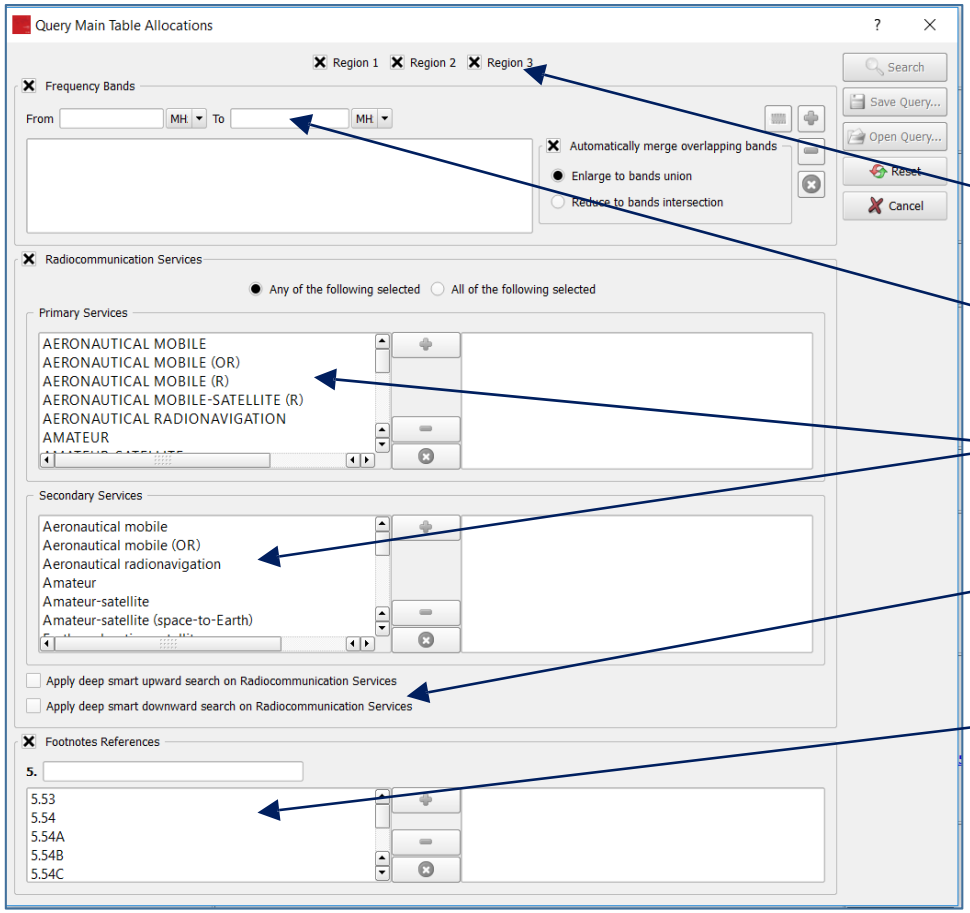
  As the examples shown here illustrate, when **FIXED** is clicked, the software presents all "PRIMARY Allocations to FIXED". And when **Radiolocation** is clicked, the software presents all "SECONDARY Allocations to RADIOLOCATION".

- When you **click on a given footnote number** label, the software displays **the text of the relevant footnote**. When applicable, that is, when the concerned footnote refers to other provisions, further navigation may become available.

Querying the Main Table







Complex queries on the content of the Main Table can be performed by invoking the "Query Main Table Allocations" dialog. This is accessible via the menu item "**Allocations to services – Query Main Table Allocations...**" or, alternatively, by clicking on the corresponding icon on the main toolbar as shown here.

The Main Table Query dialog allows for the combination of various criteria, namely:

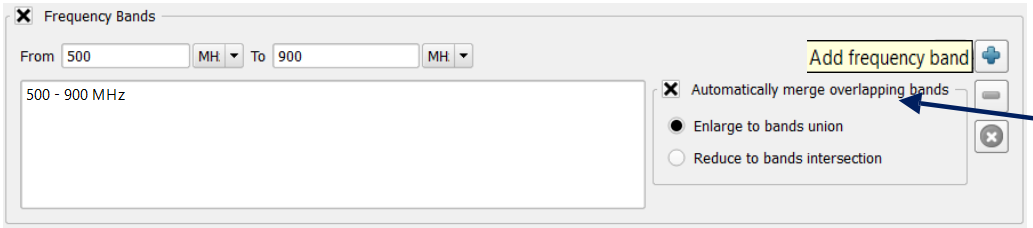
- Specify one (or more) region(s).
- Specify one (or more) frequency(ies) or frequency band(s). The specified frequency bands do not necessarily have to match exactly the Main Table Partition.
- Specify one (or more) radiocommunication service(s) and category(ies) and combine them "and/or" wise.
- Specify "smart upward" and/or "smart downward" search strategy, thus defining the way the software should walk through the ***radiocommunication services families and relationships***.
- Specify one (or more) relevant footnote(s).

The following examples illustrate the usage of these criteria in details.

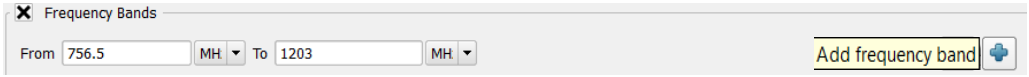
Continued...

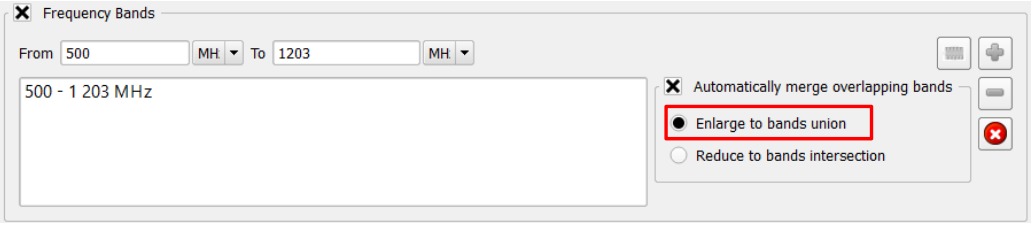
Querying the Main Table

Specifying frequencies or frequency bands

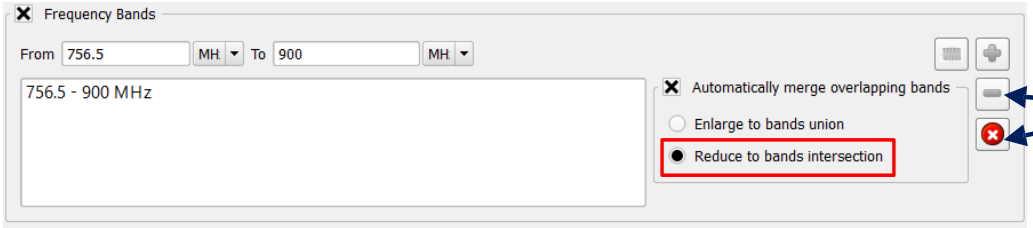


Type in the minimum and maximum frequencies, then click "Add frequency band". You may specify more than one frequency band.

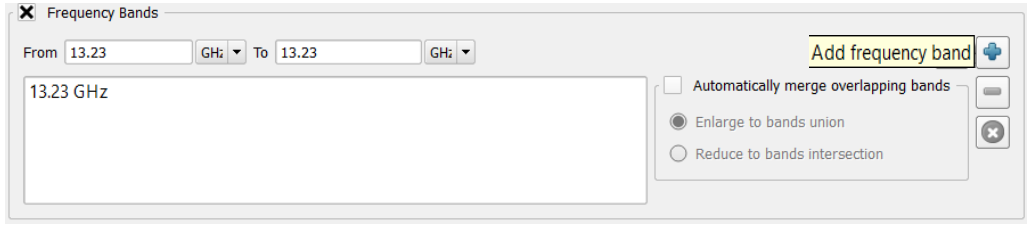




However, when adding a new band, <u>if this box is checked and the specified bands are overlapping</u>, the software will "merge" them by enlarging to bands union or restricting to bands intersection, according to the selected option. Thus, for instance, if after adding the band 500-900 MHz you chose to add the band 756.5-1203 MHz, the union merge results in the band 500-1203 MHz and the intersection merge results in the band 756.5-900 MHz, as shown here.



You may use these two buttons to remove a previously specified frequency band or to clear the frequency bands selection.

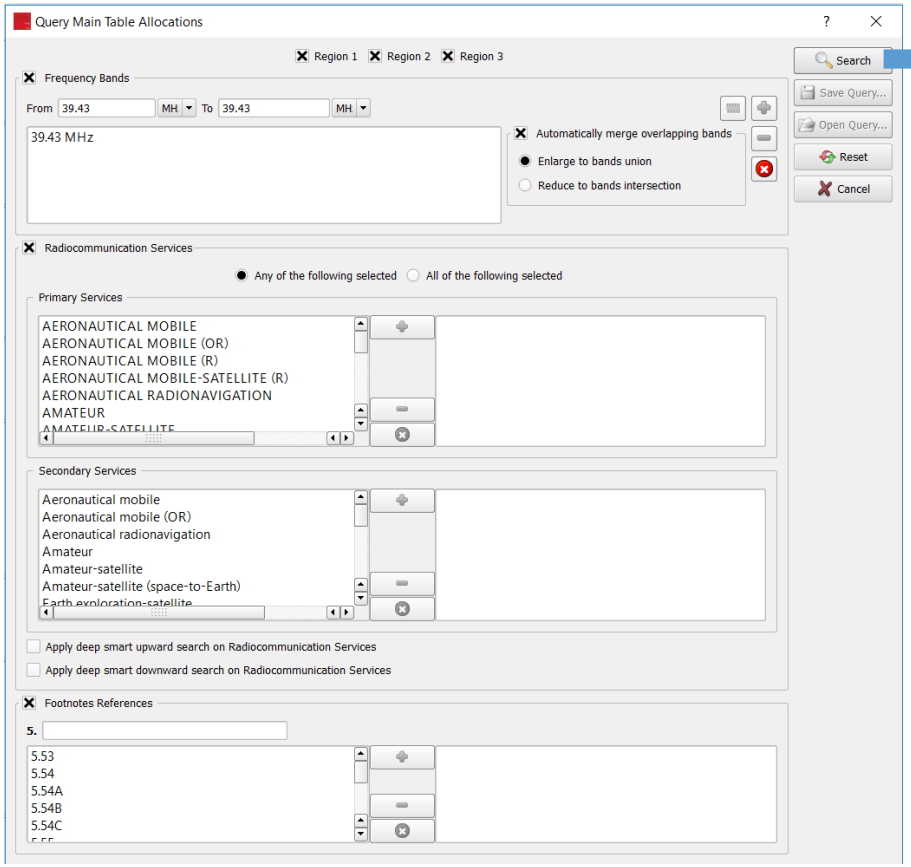


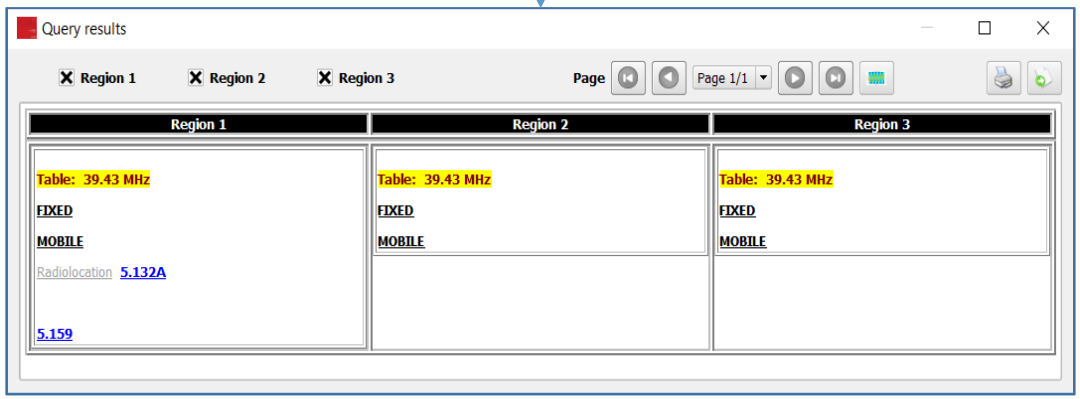
If you are only interested in a single specific frequency (say 13.23 GHz, for instance), simply make the minimum and maximum frequencies equal to the desired frequency value.

Continued...

Querying the Main Table

Specifying frequencies or frequency bands – Example 1





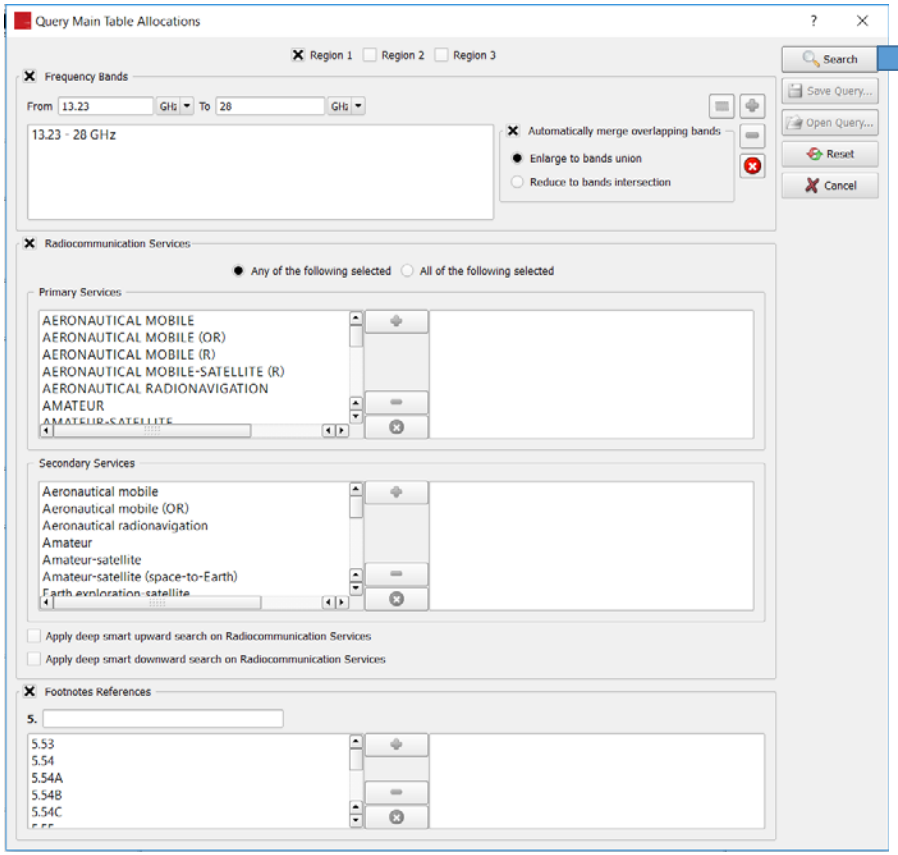
This query causes the software to search for the Main Table allocations on the frequency 39.43 MHz in all three Regions.

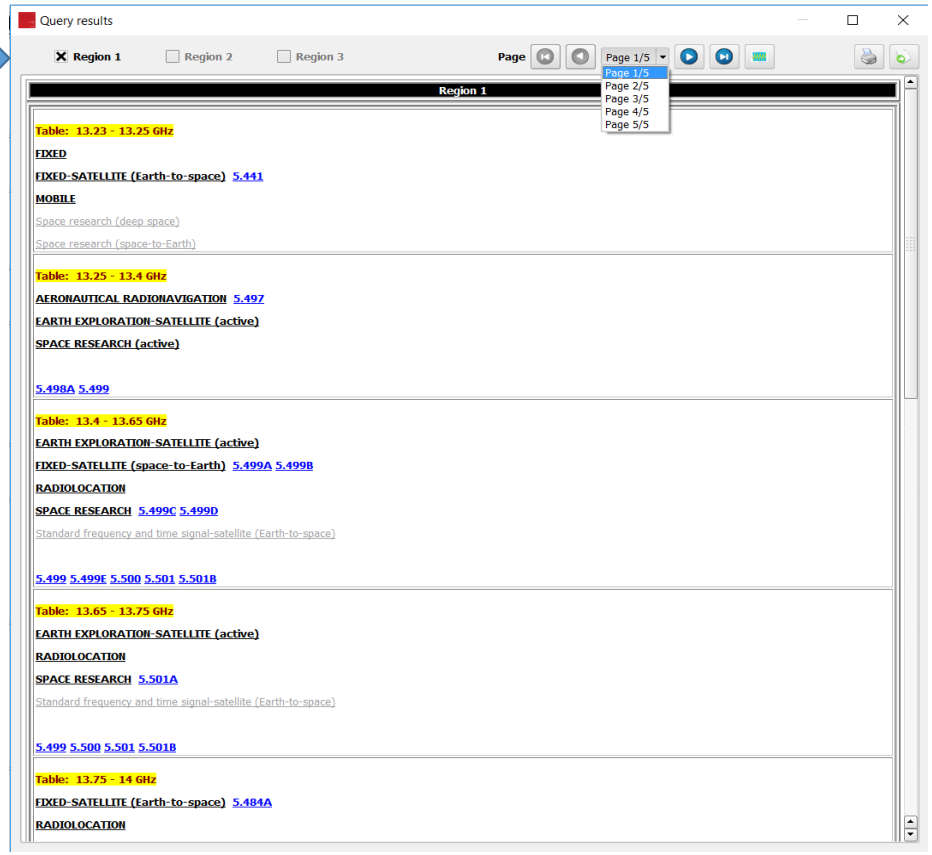
Upon successful execution, the query results are presented and laid out in a similar way to the Main Table View. You may navigate the results in a "standard way".

Continued...

Querying the Main Table

Specifying frequencies or frequency bands – Example 2





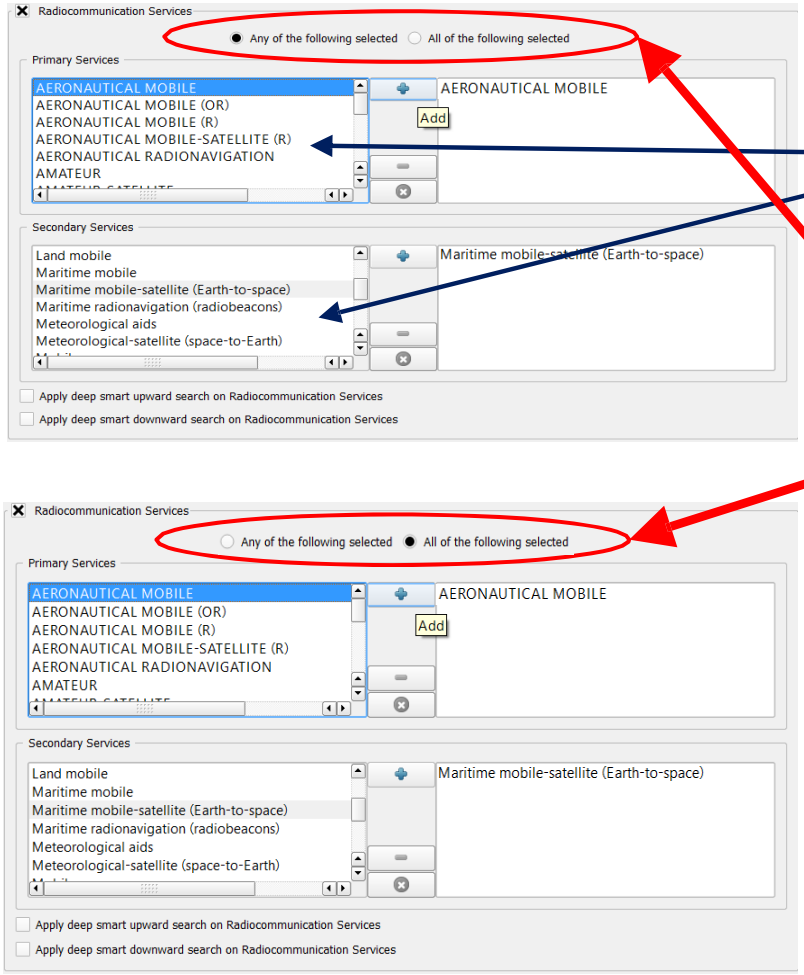
This query causes the software to search for all allocation boxes in the Main Table, corresponding to the frequency band 13.23-28 GHz, in Region 1 only.

Upon successful execution, the query results are presented in a series of pages, laid out in a similar way to the Main Table View. You may navigate the results in a “standard way”.

Continued...

Querying the Main Table

Specifying radiocommunication services



Select the relevant radiocommunication service(s) from the lists of "available services", according to the desired service category, then click "Add" to build the search list of the radiocommunication services. The lists of available services are already filtered according to their "existence" in the Main Table. That is, if a given service-category combination does not appear in the lists, it is mainly because no such allocation exists.

When you select more than one service, you may combine your selection in order to instruct the software to "or-wise" search for those frequency bands allocated to "any selected service", or to "and-wise" search for those frequency bands allocated to "all select services".

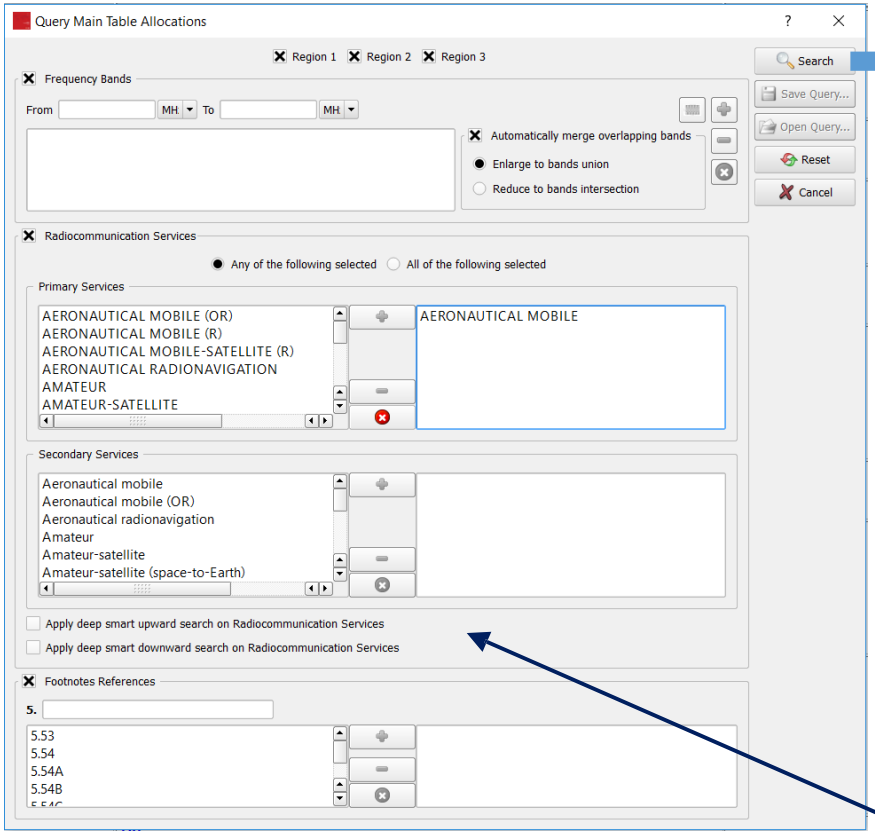
Thus, the first example shown here causes the software to search for all "frequency allocation boxes" where **either** AERONAUTICAL MOBILE (primary) **or** Maritime mobile-satellite (Earth-to-space) (secondary) appears.

Whereas the second example causes the software to search for all "frequency allocation boxes" (if any) where **both** AERONAUTICAL MOBILE (primary) **and** Maritime mobile-satellite (Earth-to-space) (secondary) appear.

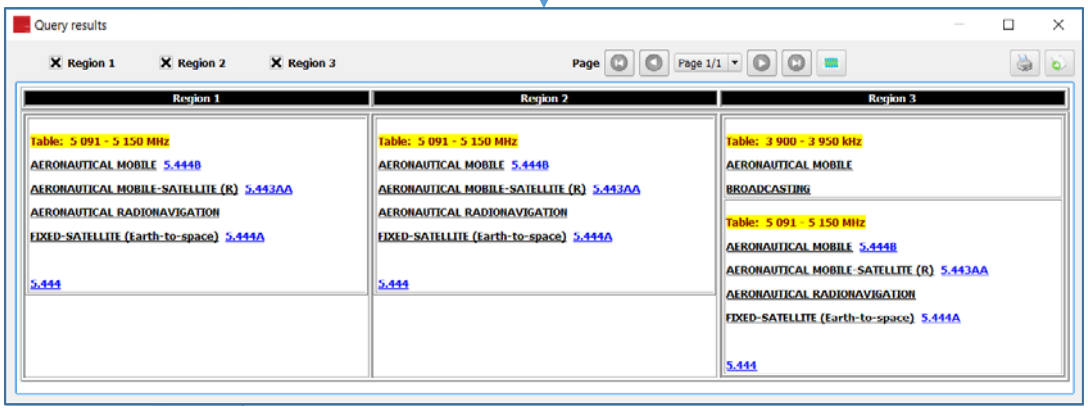
Continued...

Querying the Main Table

Specifying radiocommunication services – Example 1



This query causes the software to search the Main Table for all allocation boxes in all the three Regions, where an allocation to AERONAUTICAL MOBILE as a primary service exists.



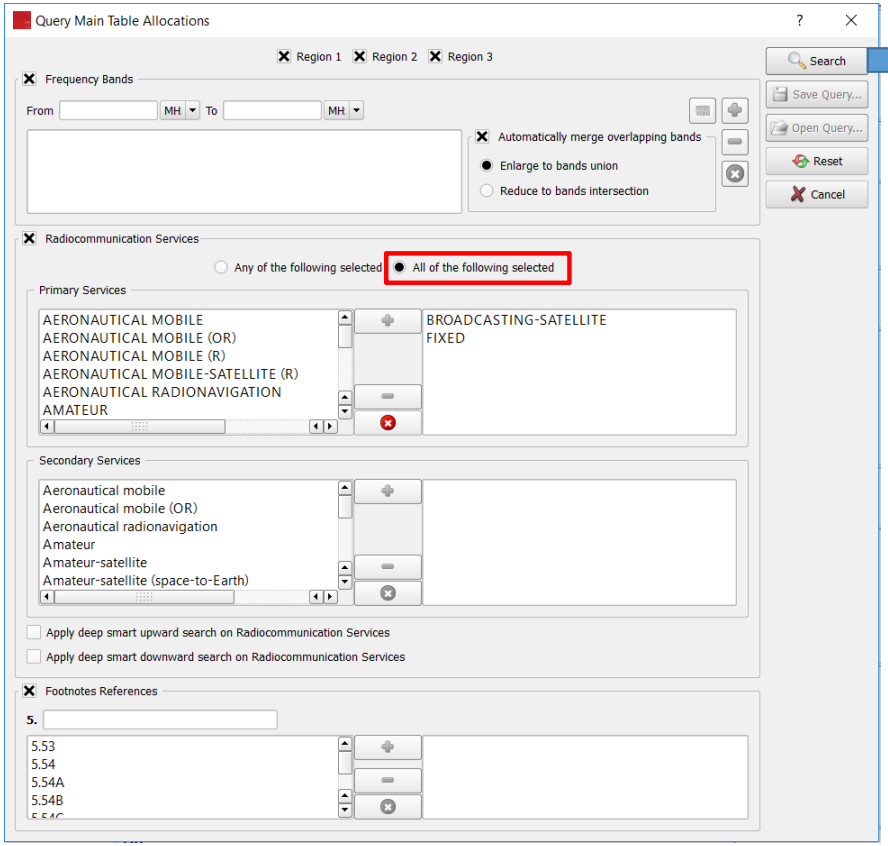
Upon successful execution, the query results are presented and laid out in a series of pages, in a similar way to the Main Table View. You may navigate the results in a "standard way".

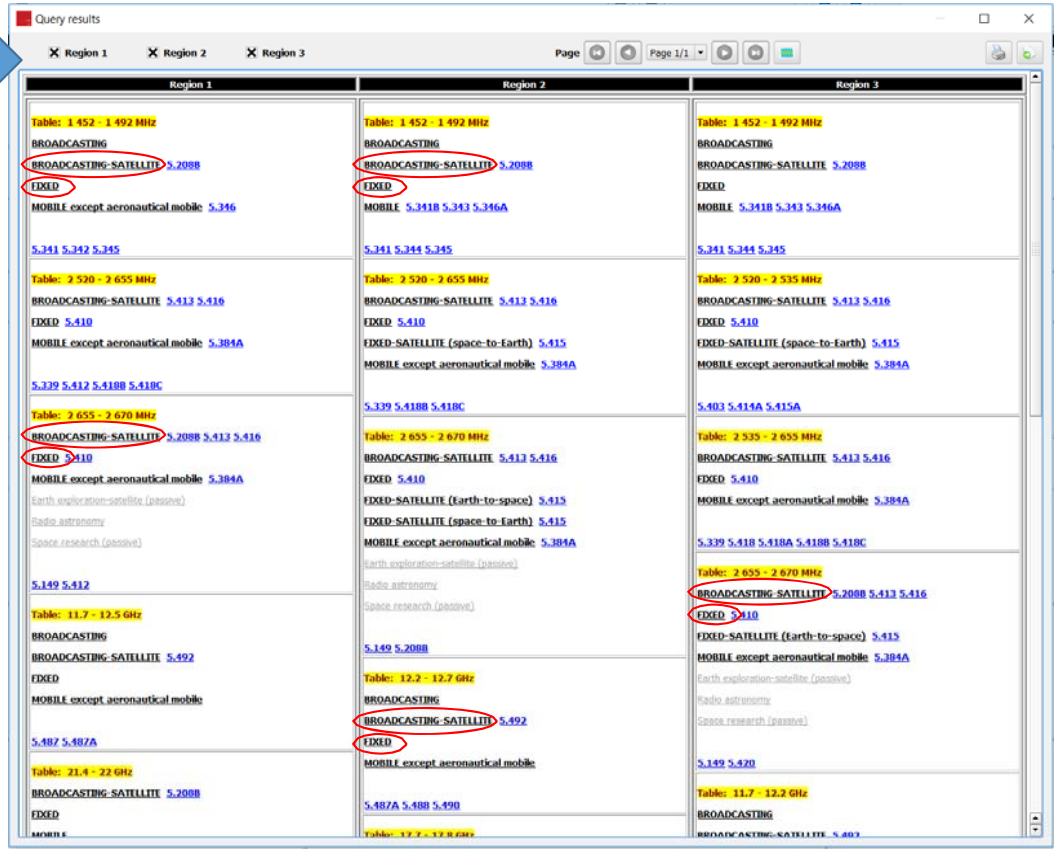
It should be noted that this query setting causes a search for the exact matching service. That is, the software does not consider "ascendant/descendant" services relationships for the search. Hence, allocation boxes with primary allocation to MOBILE for instance are not taken into account. This behavior can be controlled using these boxes, as shown later in this section.

Continued...

Querying the Main Table

Specifying radiocommunication services – Example 2





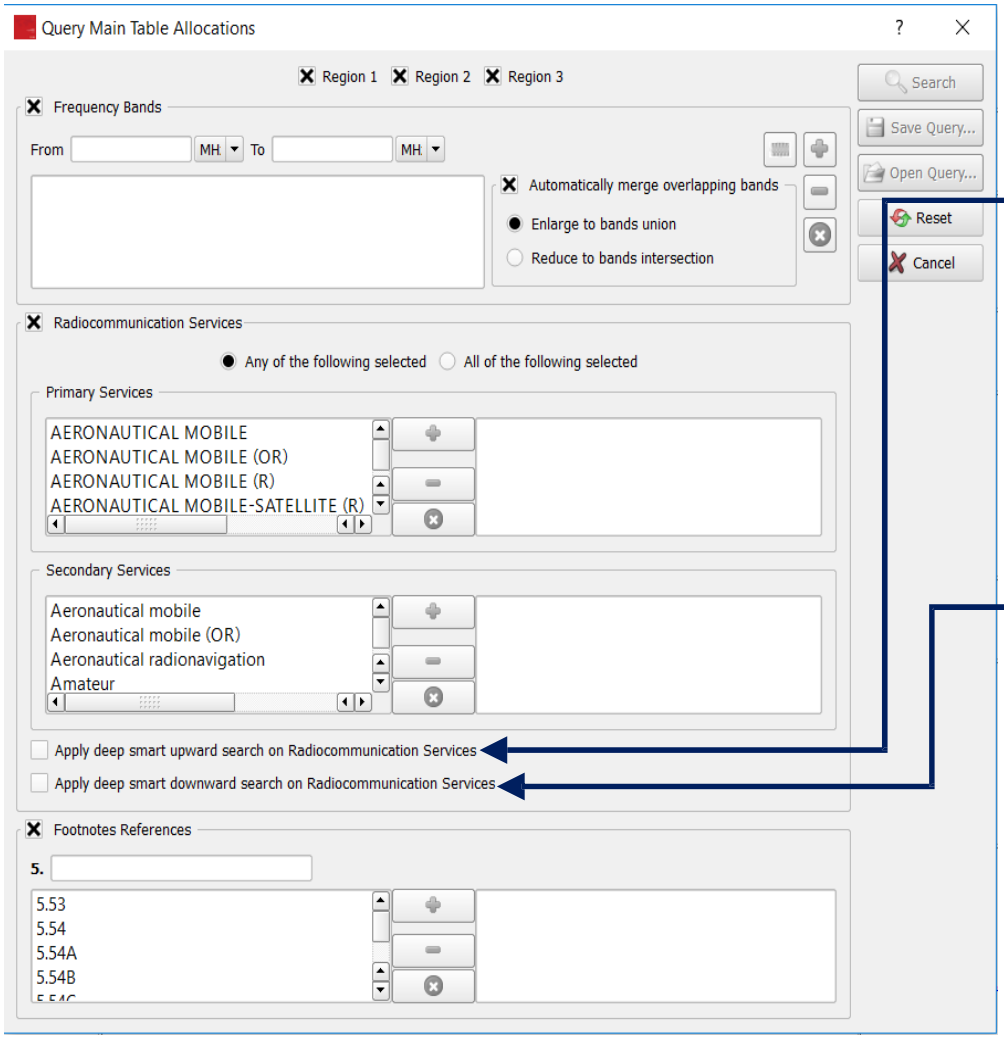
This query causes the software to search the Main Table for all allocation boxes in all the three Regions, where there is a **sharing between BROADCASTING-SATELLITE and FIXED services, both a primary services**.

Upon successful execution, the query results are presented in a series of pages, laid out in a similar way to the Main Table View. You may navigate the results in a “standard way”.

Continued...

Querying the Main Table

Specifying radiocommunication services – Applying the "smart" search



If you check this box, the search on services will follow a deep upward search, taking into account the inter-relationships between the various services and their ascendants. For instance, if you search for MARITIME MOBILE while this box is checked, the software will also search for all the corresponding upward components (MOBILE, MOBILE except aeronautical mobile etc.).

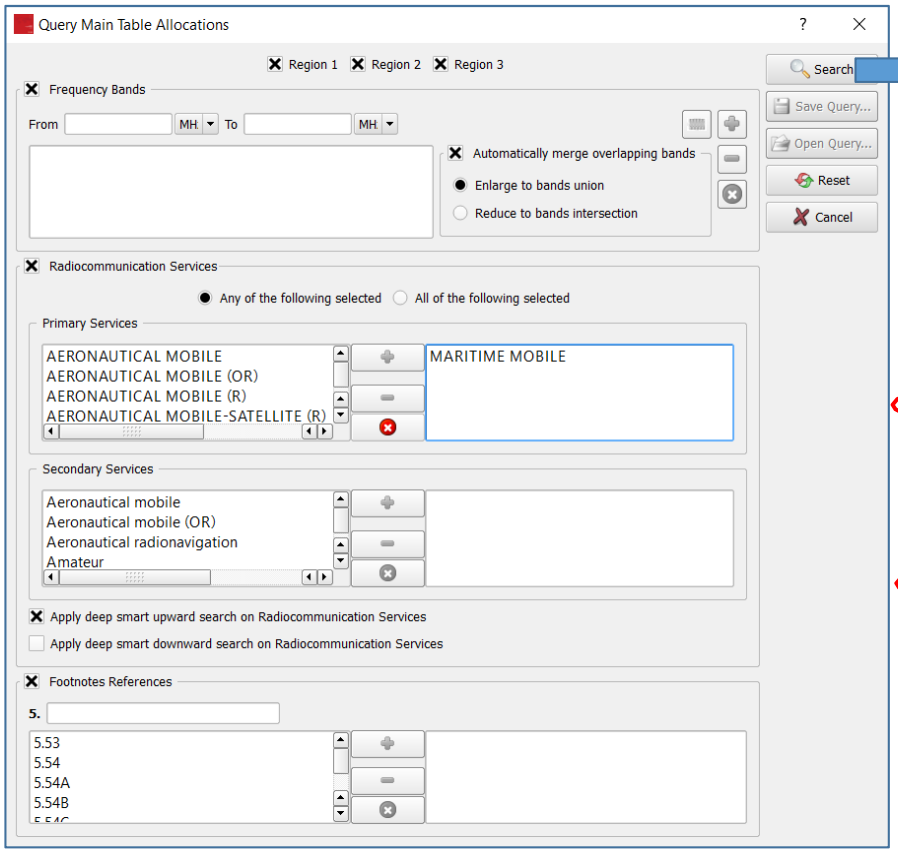
If you check this box, the search on services will follow a deep downward search, taking into account the inter-relationships between the various services and their descendants. For instance, if you search for MOBILE while this box is checked, the software will also search for all the corresponding downward components (MOBILE, AERONAUTICAL MOBILE, MARITIME MOBILE, LAND MOBILE, etc.).

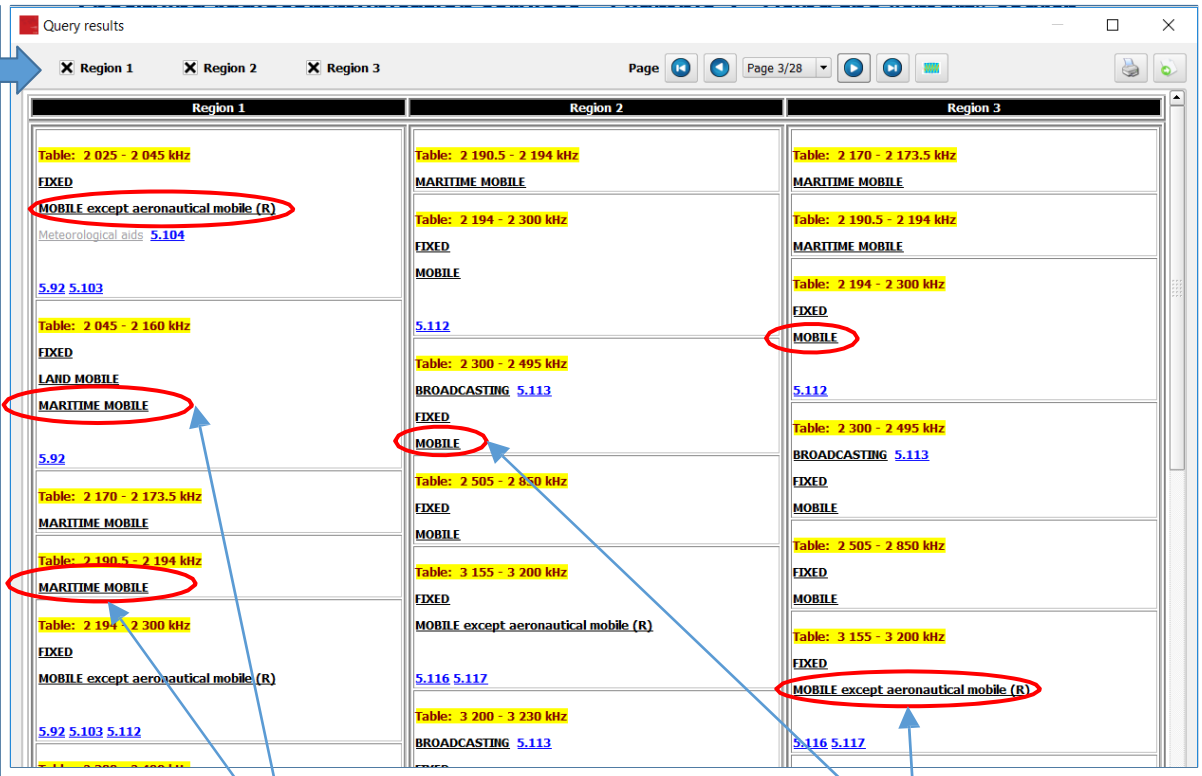
Please refer to the *radiocommunication services families and relationships* for more information.

Continued...

Querying the Main Table

Specifying radiocommunication services – Example 3 - Using the "smart" search





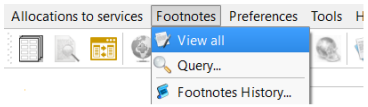
As it appears on the query results,

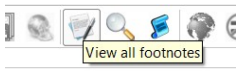
This query causes the software to search the Main Table for all allocation boxes in all the three Regions, where an allocation to MARITIME MOBILE as a primary service exists, taking into account all its **"parent" services.**

some allocation boxes are matched with the **exact service-category combination**

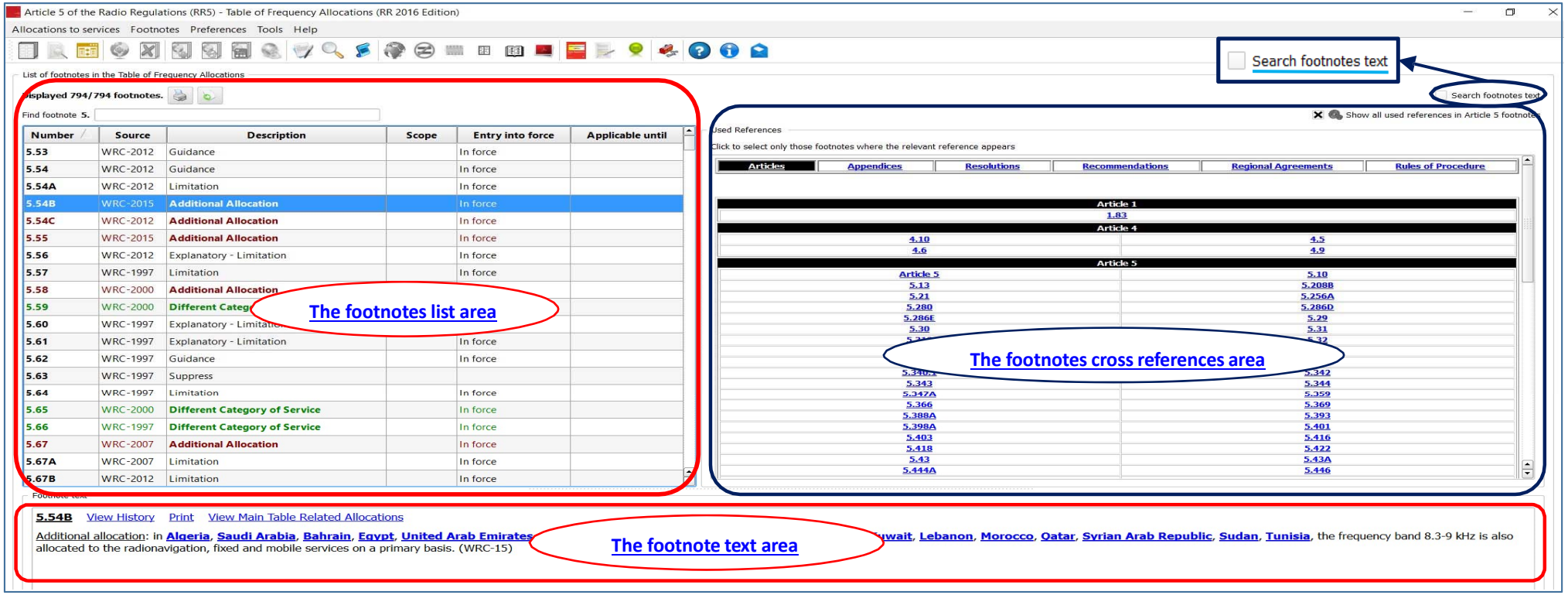
and some others are matched due to the **suitable "parent"-category combination**.

The Footnotes View





The **Footnotes View** mode is another important operational mode of the ***RR5FATViewer***. It is accessible via the menu item "**Footnotes – View all**" or, alternatively, by clicking the corresponding icon on the main toolbar.

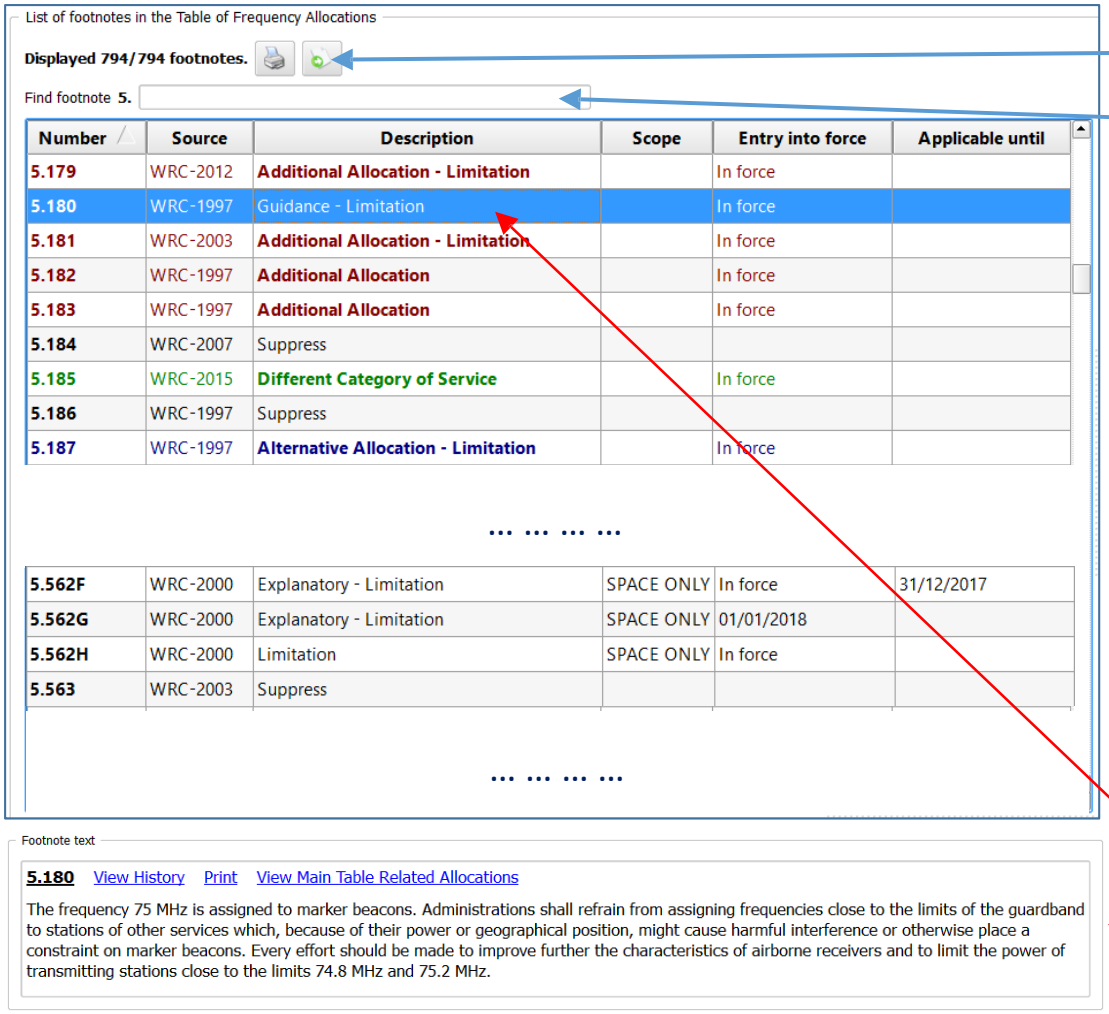


In this mode, the software loads and presents the **list of all footnotes** of the Article 5, associated with the Main Table. The display is organized in three main areas as shown here.

Continued...

The Footnotes View

The footnotes list area



You may use these buttons to print the details of the displayed footnote list, or to export it in PDF format.

You may directly jump to a given footnote by typing its number in this box.

The footnotes list area shows a summary list with some "meta-data" relating to every footnote. This includes:

- the **footnote** (provision) **number**,
- its **source** (the last "known to the software" WRC which modified this footnote),
- a short **description** (this is typically describing the role of the footnote when it is modifying the Main Table allocations via Additional allocations, Alternative allocations or Different Category of Service provisions),
- the **scope** of the footnote (this is generally blank unless the footnote applies to Space Services only, in which case it indicates SPACE ONLY),
- And when and if applicable, the **dates of entry into force and expiry** of the provisions described in the footnote.

When a given row in the list is activated (via mouse click for instance), the text of the corresponding footnote appears in the footnote text area. Further actions may be available there as explained hereafter.

Continued...

The Footnotes View

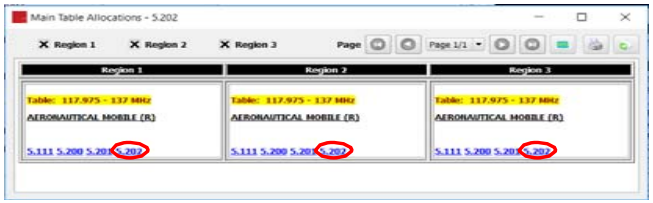
The footnote text area

Footnote text

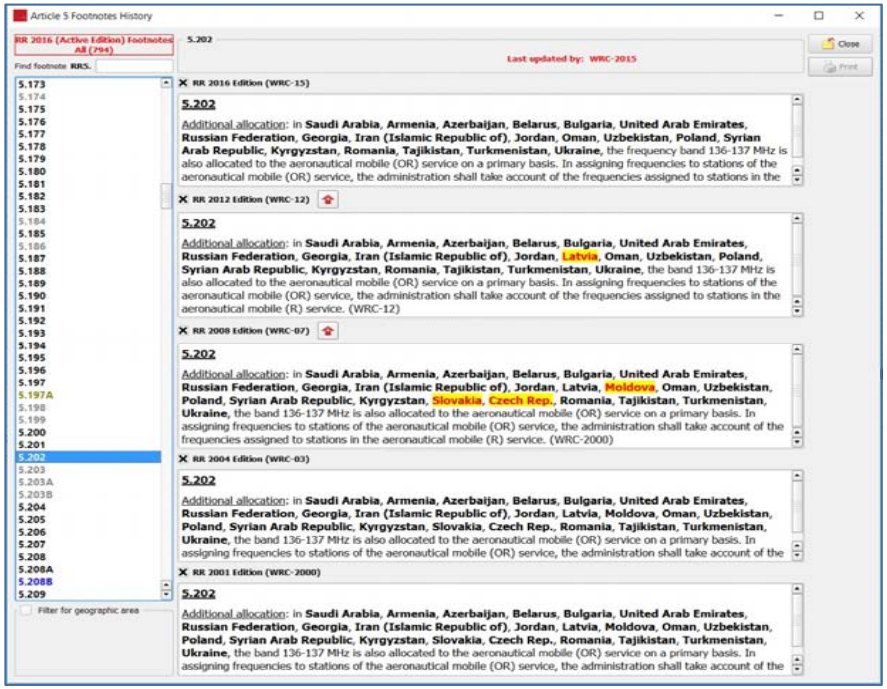
5.202 View History Print View Main Table Related Allocations

Additional allocation: in **Saudi Arabia**, **Armenia**, **Azerbaijan**, **Belarus**, **Bulgaria**, **United Arab Emirates**, **Russian Federation**, **Georgia**, **Iran (Islamic Republic of)**, **Jordan**, **Oman**, **Uzbekistan**, **Poland**, **Syrian Arab Republic**, **Kyrgyzstan**, **Romania**, **Tajikistan**, **Turkmenistan**, **Ukraine**, the frequency band 136-137 MHz is also allocated to the aeronautical mobile (OR) service on a primary basis. In assigning frequencies to stations of the aeronautical mobile (OR) service, the administration shall take account of the frequencies assigned to stations in the aeronautical mobile (R) service. (WRC-15)

Click this link to display all allocation boxes from the Main Table where the relevant footnote applies.



Click this link to display the relevant footnote history and examine its evolution through the various WRCs, since WRC-2000. Please refer to ***The Footnotes History View*** for more details.



When the footnote text contains a list of geographic areas (countries), you may click on the country name to obtain the **list of all footnotes where that country name appears**. (The example shown here applies to Poland).

List of footnotes in the Table of Frequency Allocations

Displayed 21/794 footnotes.

Find footnote 5.

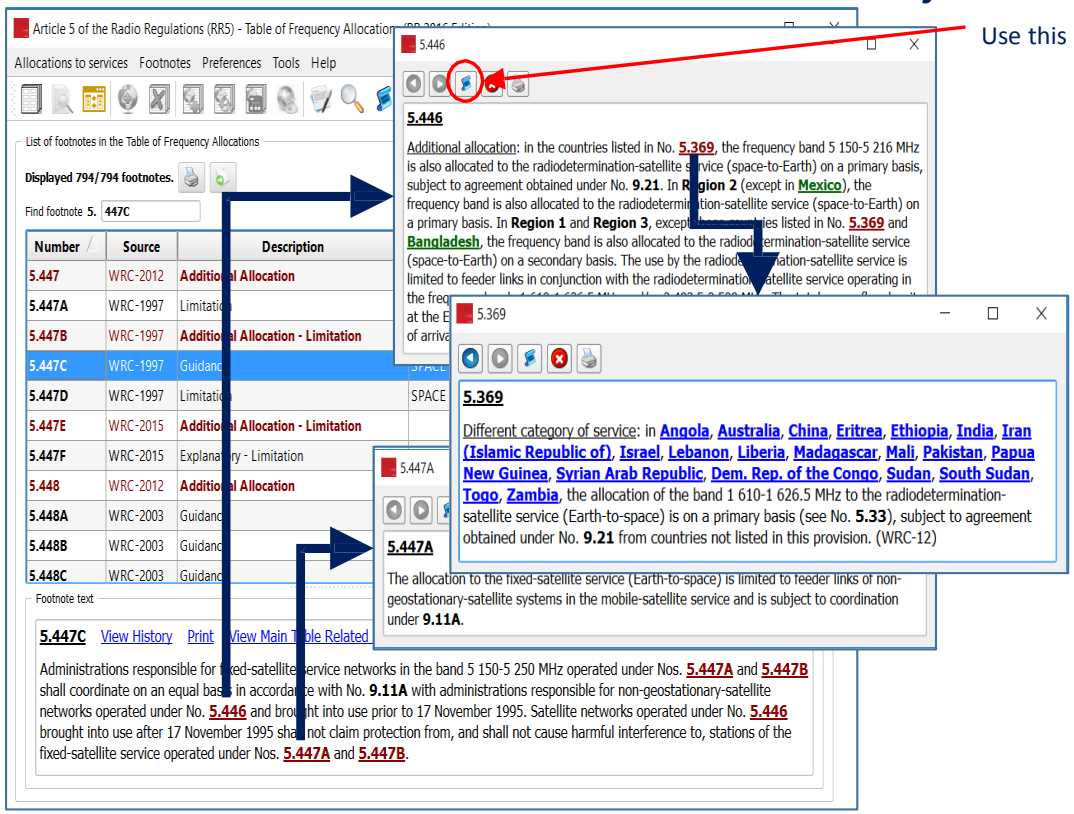
Number	Source	Description	Scope	Entry into force	Applicable until
5.93	WRC-2015	**Additional Allocation**		In force	
5.96	WRC-2015	Guidance - Limitation		In force	
5.162A	WRC-2000	**Additional Allocation - Limitation**		In force	
5.164	WRC-2015	**Additional Allocation - Explanatory**		In force	
5.201	WRC-2015	**Additional Allocation**		In force	
5.202	WRC-2015	**Additional Allocation**		In force	
5.206	WRC-2000	**Different Category of Service**		In force	
5.221	WRC-2015	Explanatory - Limitation	SPACE ONLY	In force	
5.277	WRC-2012	**Additional Allocation**		In force	
5.296	WRC-2015	**Additional Allocation**		In force	
5.312	WRC-2015	**Additional Allocation**		In force	
5.323	WRC-2012	**Additional Allocation - Limitation**		In force	
5.331	WRC-2012	**Additional Allocation - Limitation**		In force	
5.359	WRC-2015	**Additional Allocation - Guidance**		In force	
5.382	WRC-2015	**Different Category of Service - Limitation**		In force	
5.469	WRC-2012	**Additional Allocation**		In force	
5.473	WRC-2007	**Additional Allocation**		In force	
5.506	WRC-1997	Limitation	SPACE ONLY	In force	
5.510	WRC-2015	Limitation	SPACE ONLY	In force	
5.536B	WRC-2015	Limitation		In force	
5.546	WRC-2012	**Different Category of Service - Limitation**		In force	

You may restore the list of all footnotes at any moment by clicking the "View all footnotes" icon on the main toolbar.

Continued...

The Footnotes View

The footnote text area



When a given footnote text is making reference to other Article 5 footnotes, these references are highlighted. If you click on a referenced footnote number, the software "pops-up" a window displaying the corresponding footnote text, as shown above. The same "navigating" facilities are then also available in the newly opened window.

Use this button to open the corresponding footnote history view.

By convention in the context of the software, the country names appearing in the footnote text are highlighted using three different colors, according to their "conventional roles":

Angola, Australia, China, Eritrea, Ethiopia,

- In **blue** when they are possible "**NOTIFIERS**" of frequency assignments in the context of the footnote. This covers the majority of cases.

- In **green** when they are explicitly "**EXCEPTED**" or "**EXCLUDED**" from the provisions stated in the given footnote, or when the footnote is explicitly stating that a given service is not applicable in the relevant country (see No. 5.435 as an example).

China, Iran (Islamic Republic of), Japan, Uzbekistan.

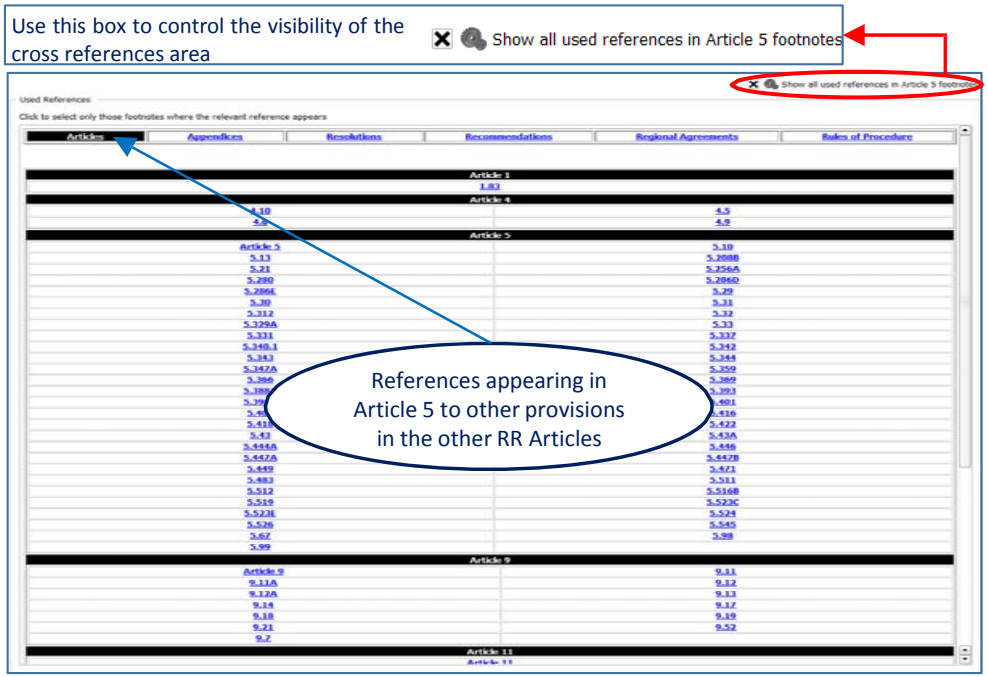
- In **red** when they are identified in the text of the relevant footnote as "**AFFECTED**" countries: either the protection of their services is explicitly stated (see No. 5.379E for an example), or their explicit agreement is required or some hard limits are specified to protect the services in their territories (see No. 5.388B as an example).

Continued...

The Footnotes View

The cross references area

Use this box to control the visibility of the cross references area



The cross references area provides for a quick search and find mechanism of the various references appearing in Article 5 toward other relevant provisions (Articles, Appendices, Recommendations, Resolutions, etc.). By clicking on the appropriate heading, the relevant references are immediately shown.

The incorporation of the appropriate cross-references toward the relevant RoPs is still under development.

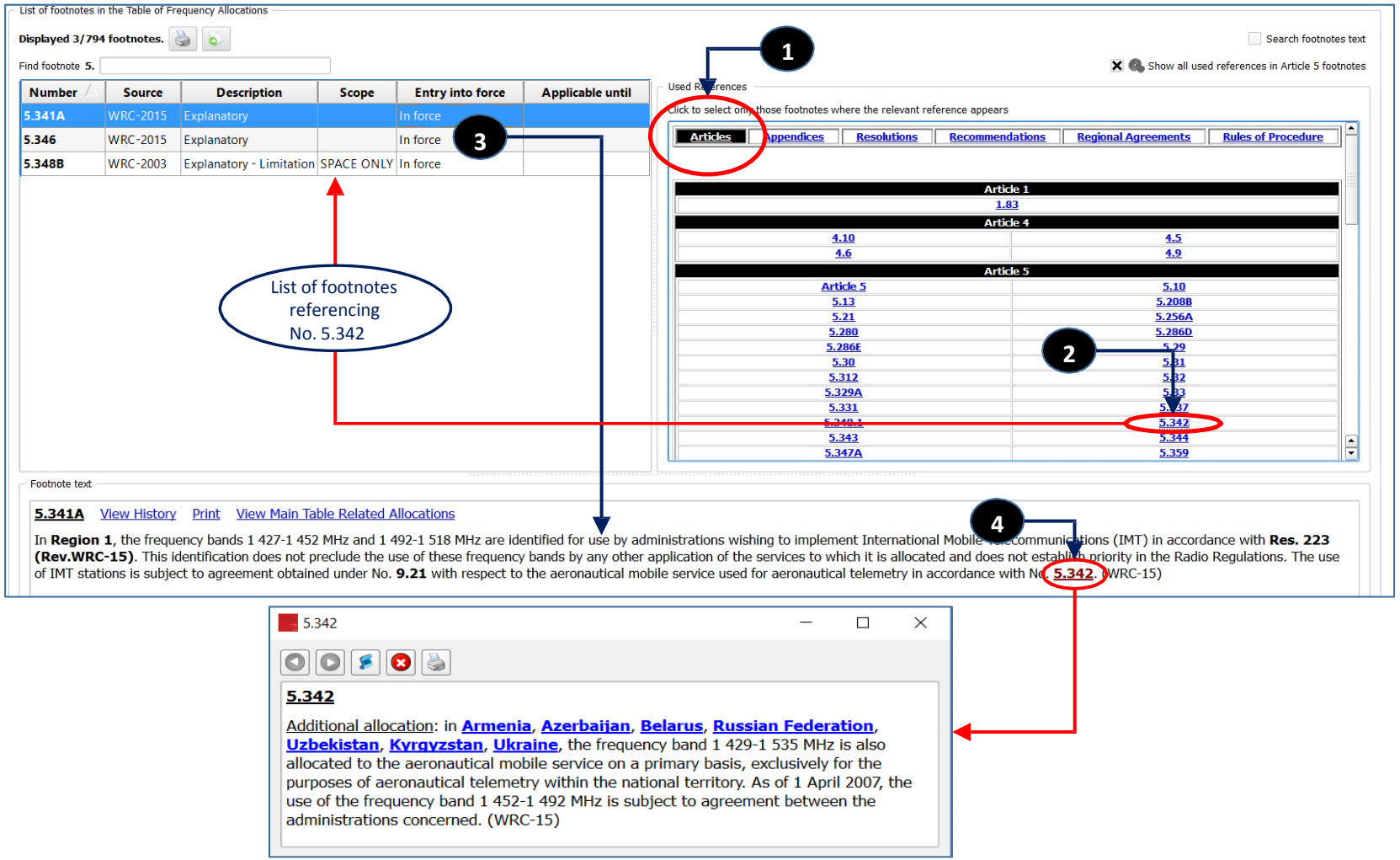
As the examples which follow hereafter illustrate, when you click any of the shown references, the software loads **the list of all footnotes where the relevant reference is mentioned**.

Please note that, except those references made to other Article 5 footnotes (and appropriate RoPs when available), the content of the "external" references is not handled by this software package, nor it is part of it.

Continued...

The Footnotes View

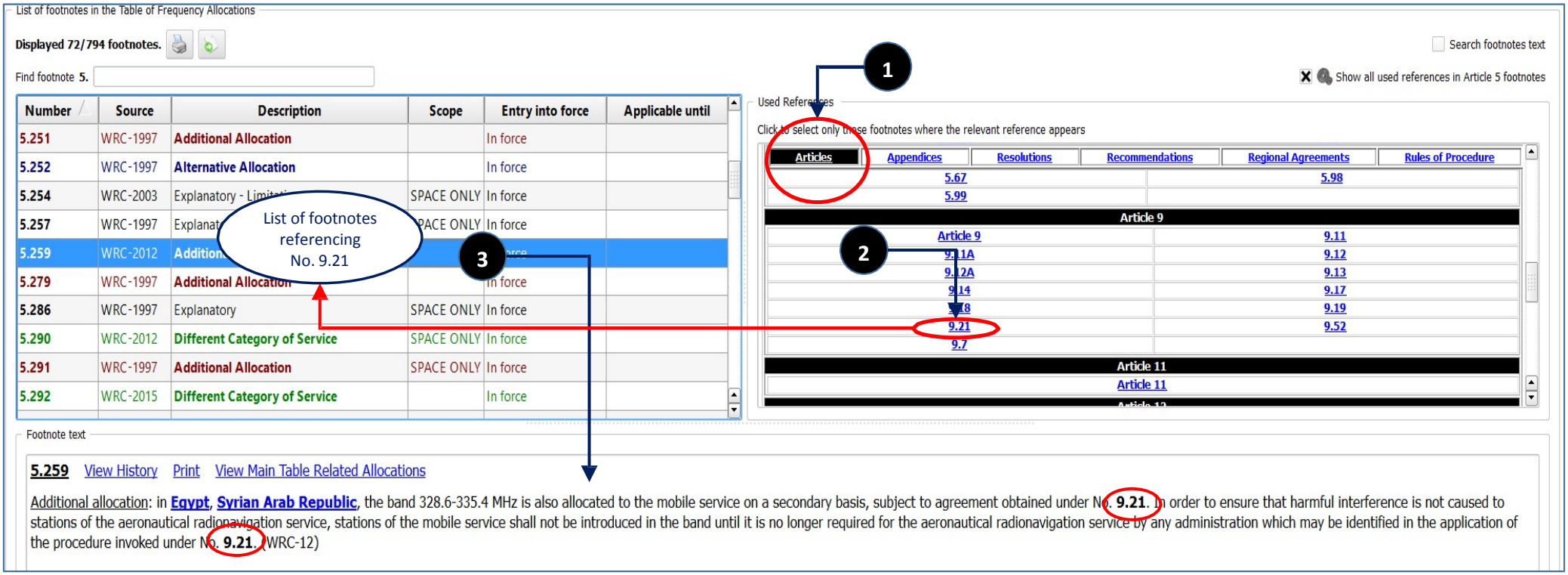
The cross references area – Example 1 – Footnotes referencing another footnote



Continued...

The Footnotes View

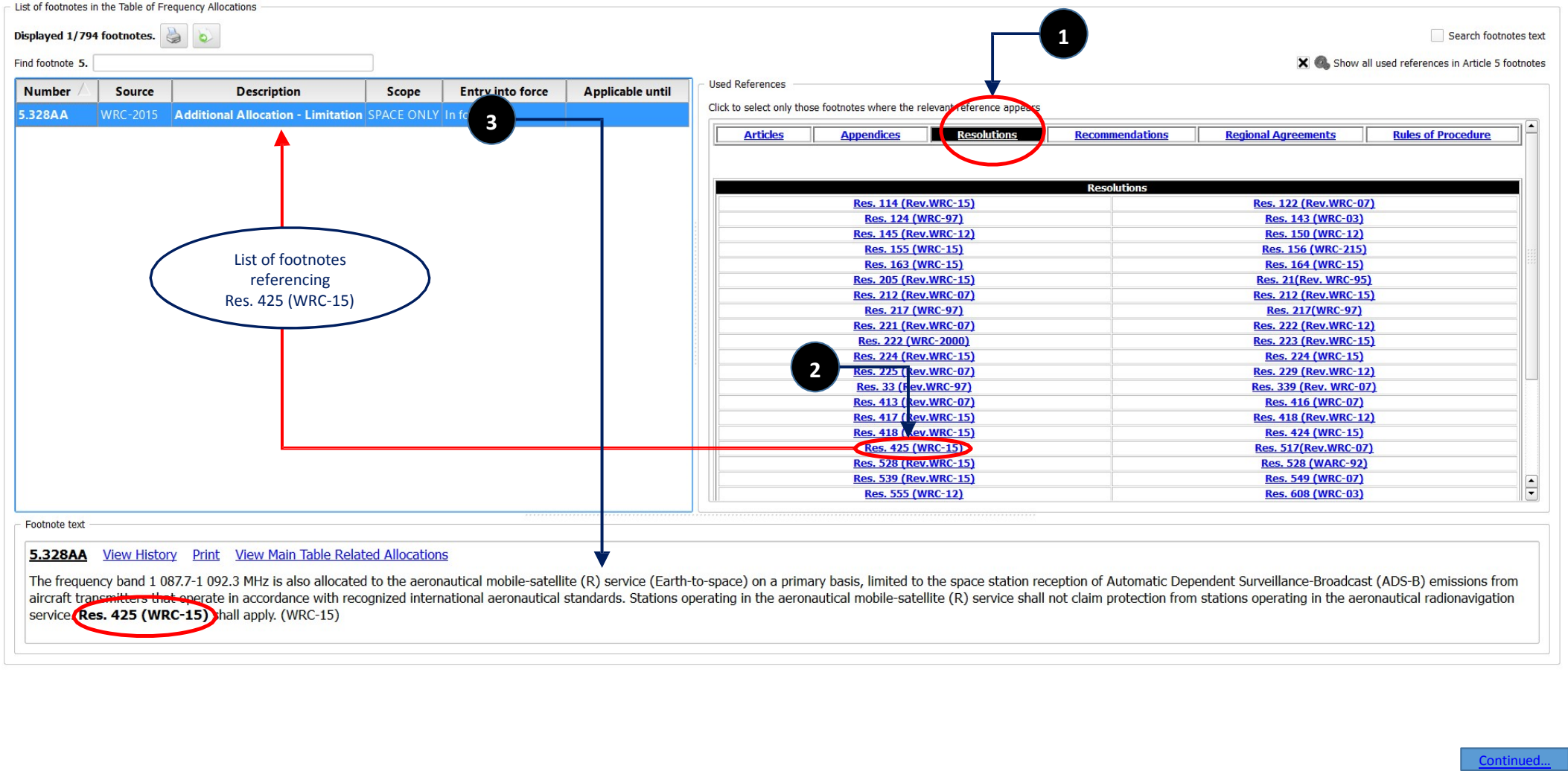
The cross references area – Example 2 – Footnotes referencing provisions from another article



Continued...

The Footnotes View

The cross references area – Example 3 – Footnotes referencing a given Resolution

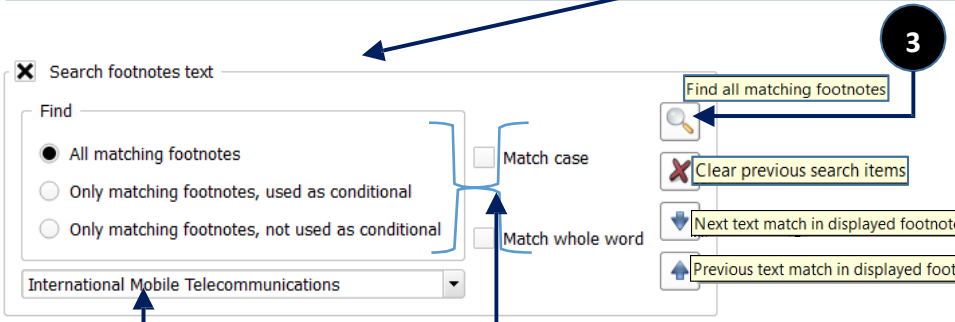


Continued...

The Footnotes View

The footnotes "text search utility"

When working with the Footnotes View, the software provides a utility for **"basic exact text matching search"** in the text of the Article 5 footnotes. This is accessible by clicking the box shown here.



3

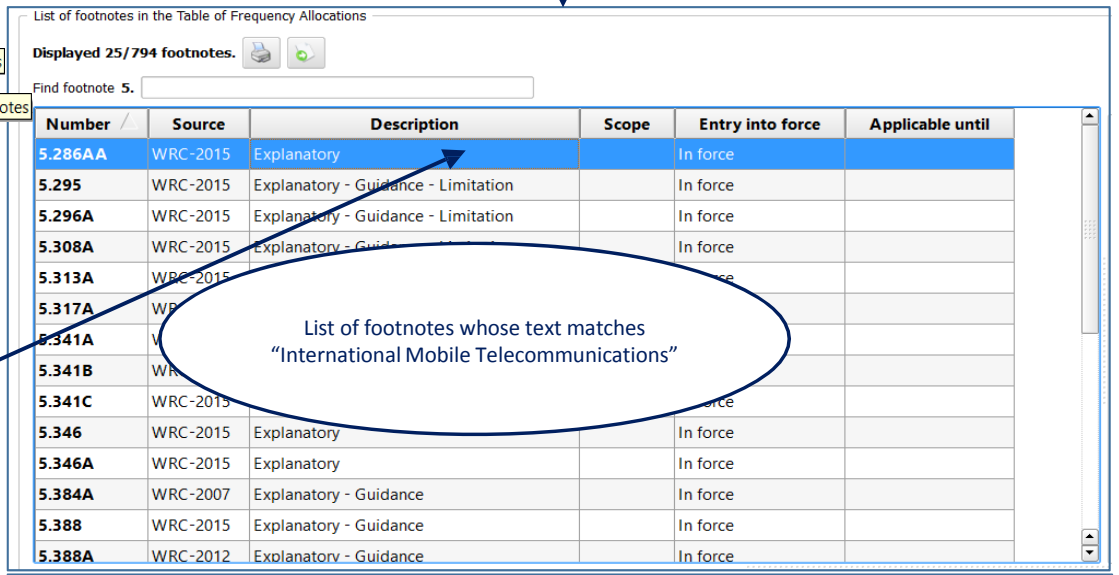
Click the "Find…" button to perform your text search and obtain **the list of all footnotes containing the matching text**.

Type in the text you would like to find in this box. (The software "remembers" your last 10 searches)

1

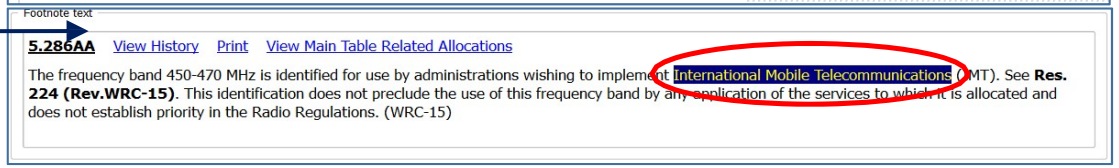
Specify any additional "criteria for your text search. Please refer to ***Conditional Allocations Footnotes*** for more information about the use of conditional footnotes.

2



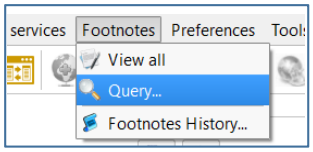
List of footnotes whose text matches "International Mobile Telecommunications"

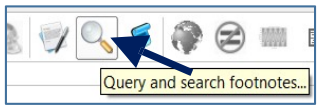
4



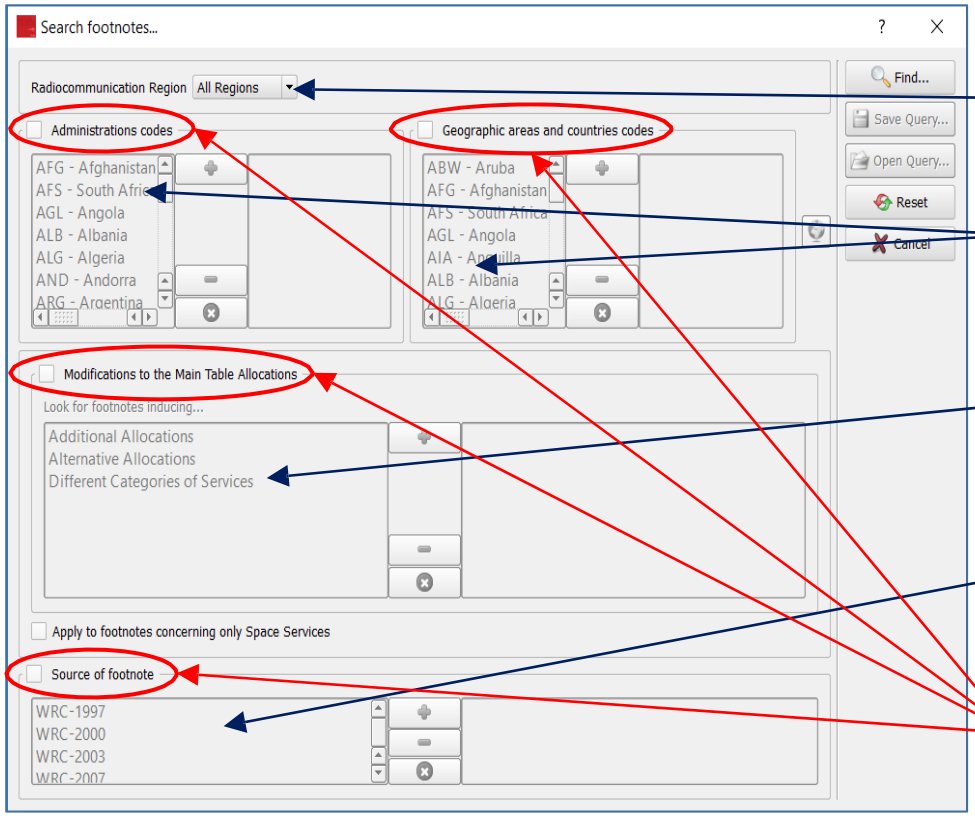
Once the "matching footnotes" are displayed, you may "navigate" them in the standard "Footnotes View" way described previously and check their text, "allocation boxes", cross references, history, etc.

Querying Footnotes





Advanced queries on the Article 5 footnotes meta-data can be performed by invoking the "Search footnotes" dialog. This is accessible via the menu item "**Footnotes – Query...**" or, alternatively, by clicking on the corresponding icon on the main toolbar as shown here.



The Search footnotes dialog allows for the combination of various criteria, namely:

- Specify one (or more) region(s).
- Specify one (or more) Administrations, or one (or more) geographic areas or countries (depending on the selected Region. The implemented relationships between Regions, Administrations and country codes is further described on the next page).
- Specify one (or more) type of modifiers of the Main Table (Additional allocations, Alternative allocations, Different Categories of Services provisions).
- Specify one (or more) footnote source, being understood that the footnote source is the considered to be either the WRC which introduced or suppressed the footnote, or the last "known to the software" WRC which modified the footnote.

Combining these various criteria can be controlled by checking/unchecking the corresponding boxes.

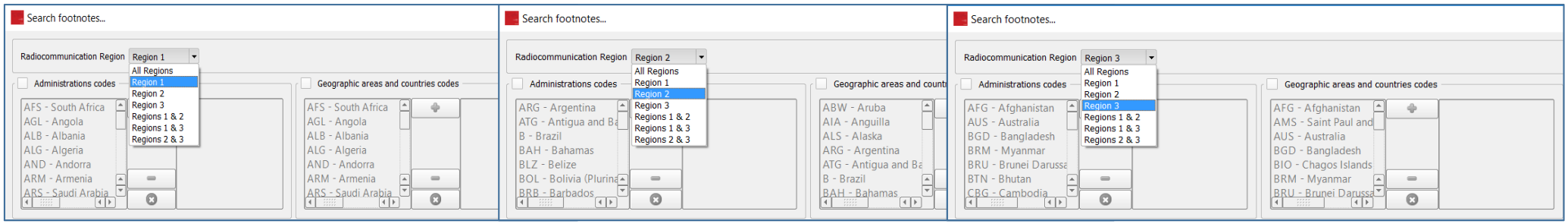
The following examples illustrate the usage of these criteria in details.

Continued...

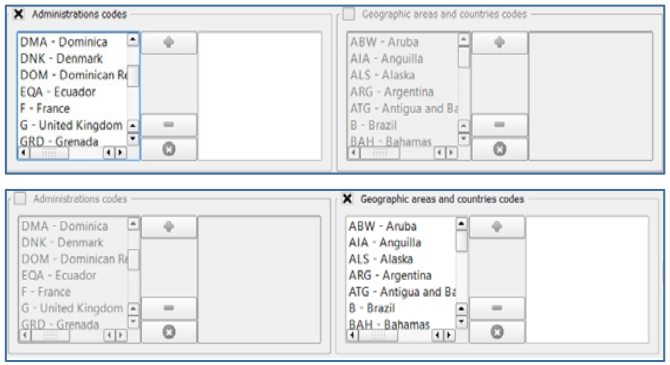
Querying Footnotes

Implemented Regions-Administrations-Geographic areas relationships

When a given Region (or Regions) is (are) specified, the software automatically adjusts and fills in the lists of geographic areas and Administrations accordingly (as shown below), so that **only those geographic areas and countries "belonging" to the specified Region(s) are available for selection and only those Administrations responsible for "territories" in the specified Region(s) are available for selection**.

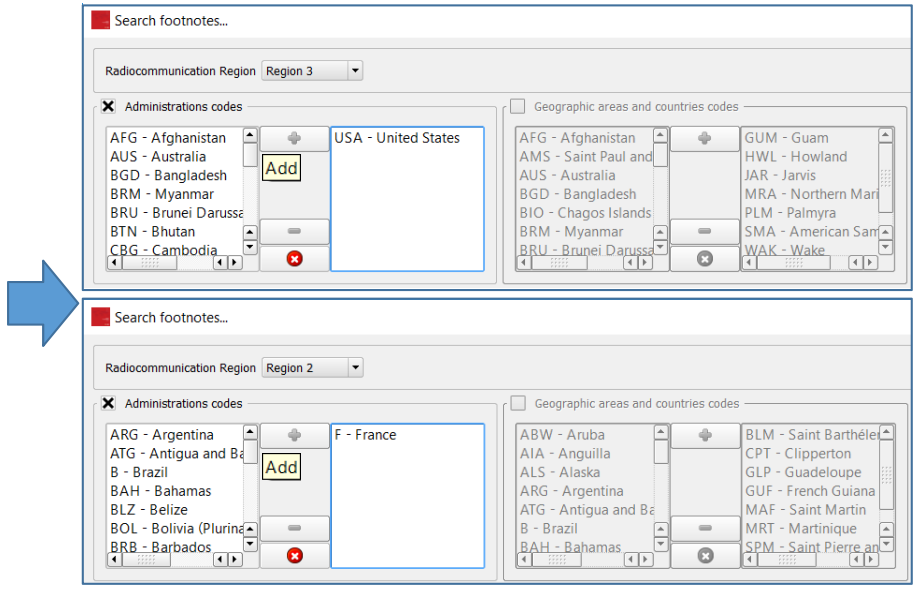


Furthermore, it should be noted that the "direct" selections of Administrations and Geographic areas are **mutually exclusive**. Checking one of the corresponding boxes disables the other box, as shown below.



The idea here being that upon specifying a given Region and an appropriate Administration code, the software automatically adjusts and fills in the list of Geographic areas with those in the specified Region, falling under the responsibility of the specified Administration.

The examples shown here illustrate how this concept applies for instance to the territories under the responsibility of the French Administration in Region 2, or under the responsibility of the US Administration in Region 3.

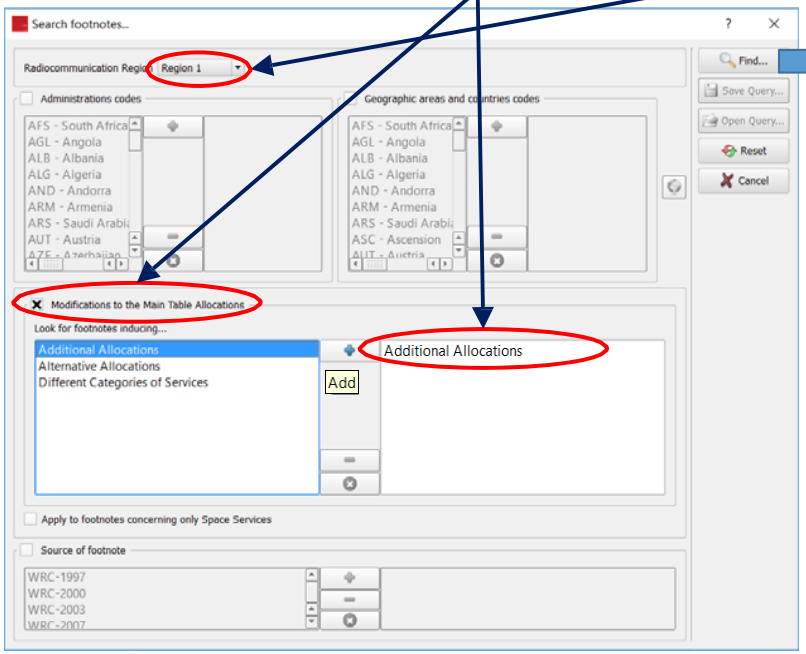


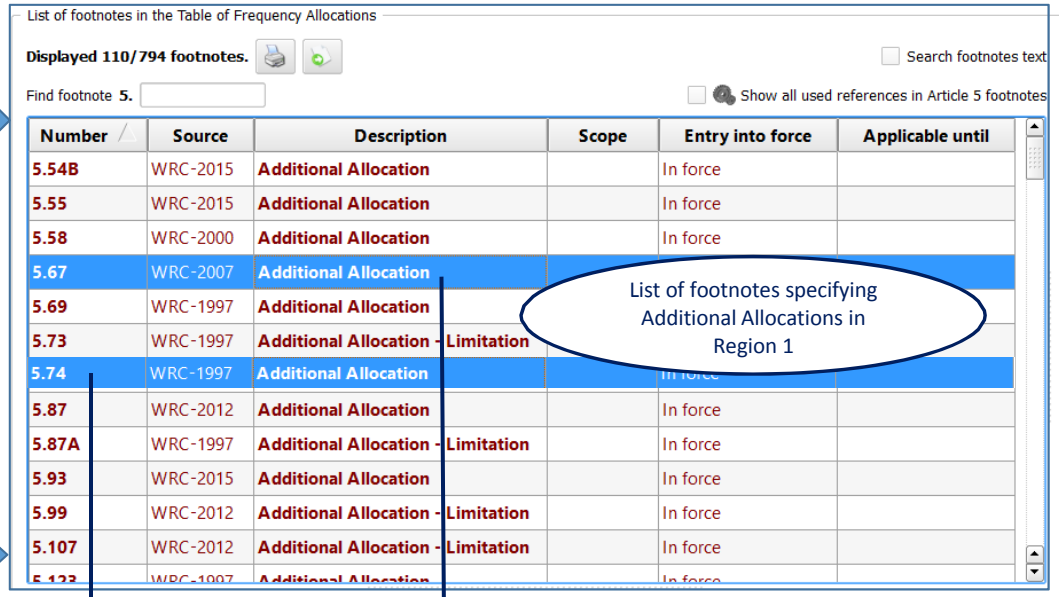
Continued...

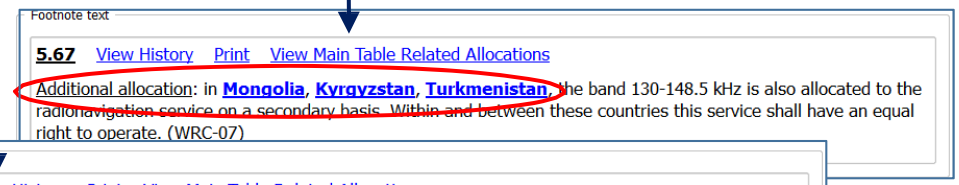
Querying Footnotes

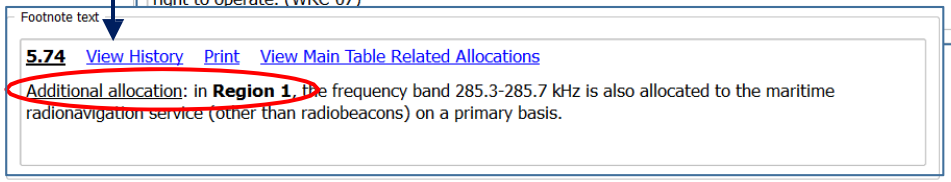
Example 1

Find all footnotes specifying **Additional Allocations in Region 1.**









It is worth noting that this query finds matching footnotes specifying Additional Allocations which apply to countries "belonging" to the specified Region(s) as well as "Global" Additional Allocations applying to the whole specified Region(s) (Region 1 in this case), as shown here.

Once the "matching footnotes" are displayed, you may "navigate" them in the standard "Footnotes View" way described previously and check their text, "allocation boxes", cross references, history, etc.

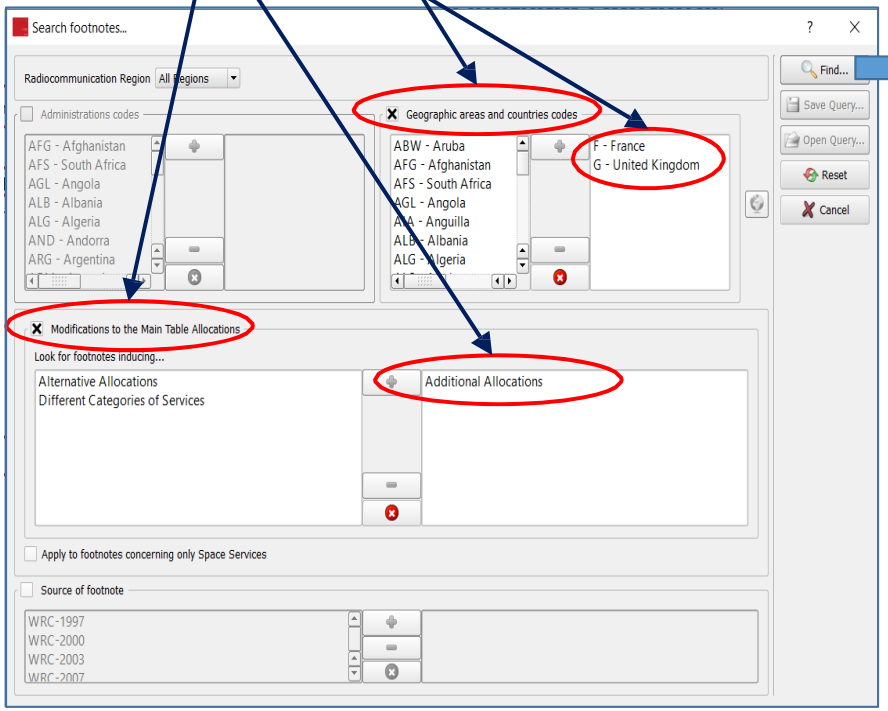
Continued...

Querying Footnotes

Example 2

Find all footnotes:

- specifying Additional Allocations,
- which apply to a any of the specified Geographic areas (countries),



List of footnotes in the Table of Frequency Allocations

Displayed 14/794 footnotes. Search footnotes text

Find footnote **5.** Show all used references in Article 5 footnotes

Number	Source	Description	Scope	Entry into force	Applicable until
5.162A	WRC-2000	Additional Allocation - Limitation		In force	
5.164	WRC-2015	Additional Allocation - Explanatory		In force	
5.210	WRC-2007	Additional Allocation	SPACE ONLY	In force	
5.211	WRC-2015	Additional Allocation		In force	
5.225A	WRC-2012	Additional Allocation - Limitation		In force	
5.235	WRC-1997	Additional Allocation		In force	
5.281	WRC-1997	Additional Allocation	SPACE ONLY	In force	
5.296	WRC-2015	Additional Allocation		In force	
5.331	WRC-2012	Additional Allocation - Limitation		In force	
5.359	WRC-2015	Additional Allocation - Guidance		In force	
5.451	WRC-1997	Additional Allocation - Limitation		In force	
5.471	WRC-2015	Additional Allocation - Limitation		In force	
5.495	WRC-2015	Additional Allocation - Limitation		In force	

Footnote text

5.162A View History Print View Main Table Related Allocations

Additional allocation: in Germany, Austria, Belgium, Bosnia and Herzegovina, China, Vatican, Denmark, Spain, Estonia, Russian Federation, Finland, France, Ireland, Iceland, Italy, The Former Yugoslav Rep. of Macedonia, Latvia, Liechtenstein, Lithuania, Luxembourg, Monaco, Montenegro, Norway, Netherlands, Poland, Portugal, Czech Rep, United Kingdom, Serbia, Slovenia, Sweden, Switzerland, the band 46-68 MHz is also allocated to the radiolocation service on a secondary basis. This use is limited to the operation of wind profiler radars in accordance with **Res. 217(WRC-97)**. (WRC-12)

Once the “matching footnotes” are displayed, you may “navigate” them in the standard “Footnotes View” way described previously and check their text, “allocation boxes”, cross references, history, etc.

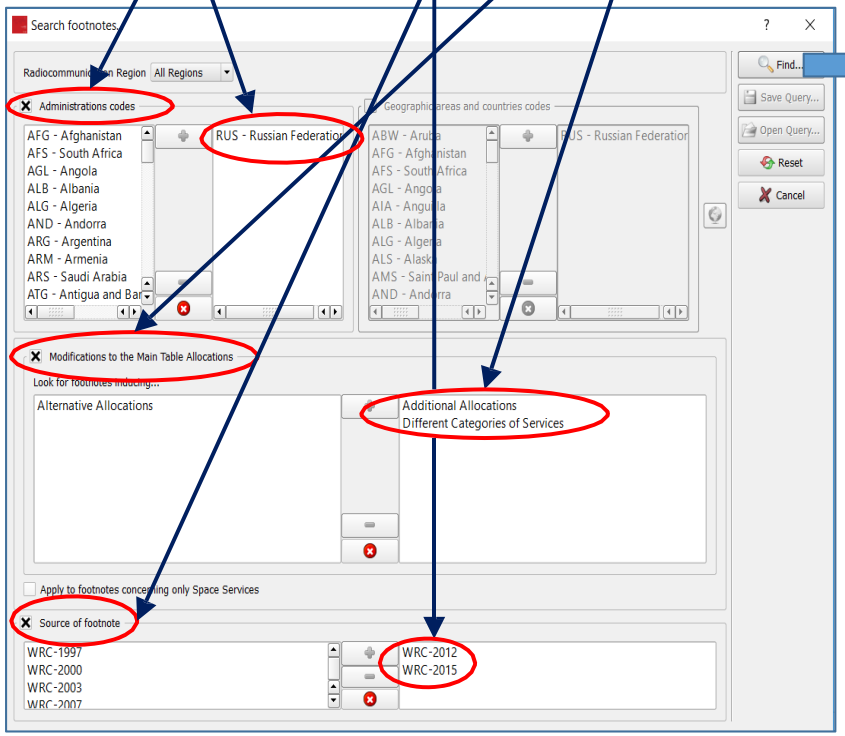
Continued...

Querying Footnotes

Example 3

Find all footnotes:

- specifying either Additional Allocations or Different Categories of Services,
- which apply to a given Administration,
- and which were introduced or last modified by WRC-12 or WRC-15.



List of footnotes in the Table of Frequency Allocations

Displayed 26/794 footnotes.

Find footnote 5.

Show all use

Number	Source	Description	Scope	Entry into force	Applicable until
5.54B	WRC-2015	Additional Allocation		In force	
5.55	WRC-2015	Additional Allocation		In force	
5.77	WRC-2012	Different Category of Service		In force	
5.93	WRC-2015	Additional Allocation		In force	
5.133	WRC-2012	Different Category of Service - Limitation		In force	
5.163	WRC-2012	Additional Allocation		In force	
5.179	WRC-2012	Additional Allocation - Limitation		In force	
5.201	WRC-2015	Additional Allocation		In force	
5.202	WRC-2015	Additional Allocation		In force	
5.225A	WRC-2012	Additional Allocation - Limitation		In force	
5.256A	WRC-2015	Additional Allocation	SPACE ONLY	In force	
5.262	WRC-2012	Additional Allocation		In force	
5.277	WRC-2012	Additional Allocation		In force	
5.290	WRC-2012	Different Category of Service	SPACE ONLY	In force	
5.312	WRC-2015	Additional Allocation		In force	
5.323	WRC-2012	Additional Allocation - Limitation		In force	
5.331	WRC-2012	Additional Allocation - Limitation		In force	
5.342	WRC-2015	Additional Allocation - Limitation		In force	
5.359	WRC-2015	Additional Allocation - Guidance		In force	
5.382	WRC-2015	Different Category of Service - Limitation		In force	
5.398A	WRC-2012	Different Category of Service - Limitation		In force	
5.454	WRC-2012	Different Category of Service	SPACE ONLY	In force	
5.459	WRC-2015	Additional Allocation	SPACE ONLY	In force	
5.469	WRC-2012	Additional Allocation		In force	
5.546	WRC-2012	Different Category of Service - Limitation		In force	
5.550	WRC-2012	Different Category of Service	SPACE ONLY	In force	

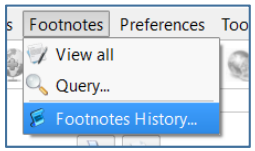
Footnote text

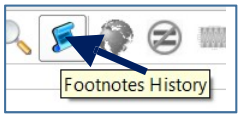
5.54B View History Print View Main Table Related Allocations

Additional allocation: in Algeria, Saudi Arabia, Bahrain, Egypt, United Arab Emirates, Russian Federation, Iran (Islamic Republic of), Iraq, Kuwait, Lebanon, Morocco, Qatar, Syrian Arab Republic, Sudan, Tunisia, the frequency band 8.3-9 kHz is also allocated to the radionavigation, fixed and mobile services on a primary basis. (WRC-15)

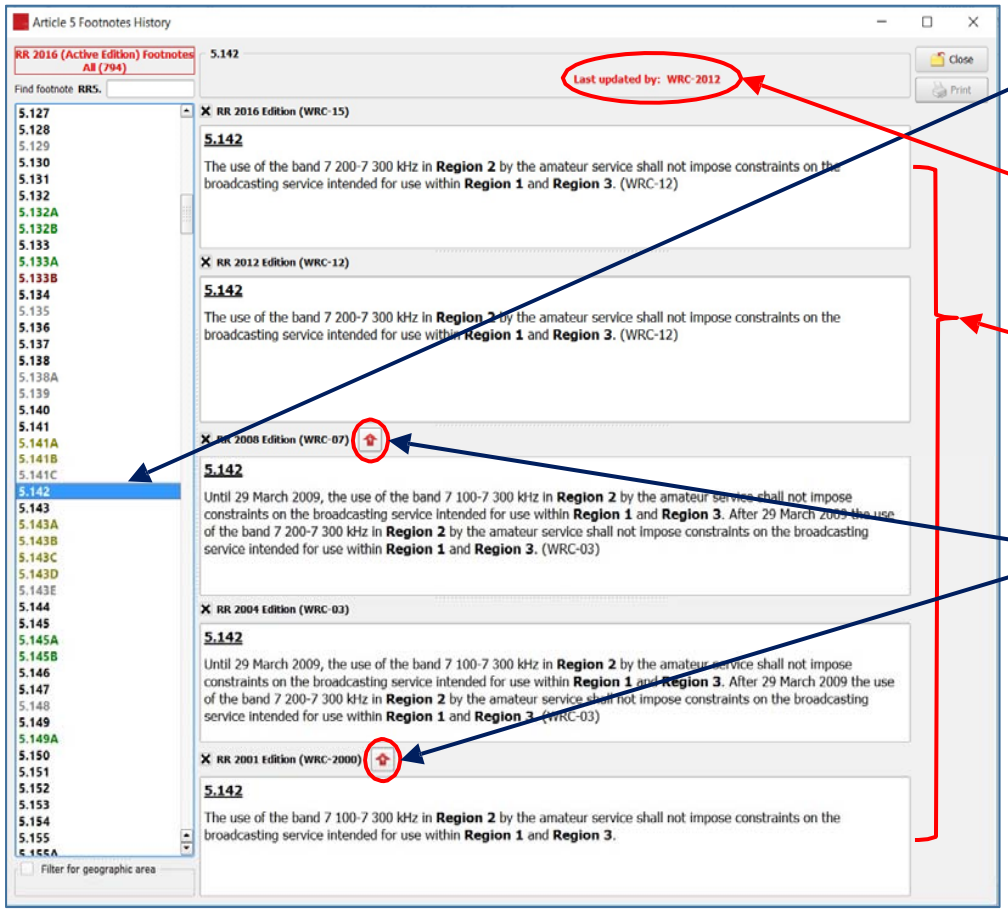
Once the “matching footnotes” are displayed, you may “navigate” them in the standard “Footnotes View” way described previously and check their text, “allocation boxes”, cross references, history, etc.

The Footnotes History View





The **Footnotes History** utility can be invoked by using the menu item "**Footnotes – Footnotes History…**" or, alternatively, by clicking on the corresponding icon on the main toolbar as shown here. The Footnotes History View is a utility which enables "tracing" and examining the "lifetime" and evolution of the provisions specified by individual footnotes, **back to WRC-2000 (RR Edition of 2001) onward**.



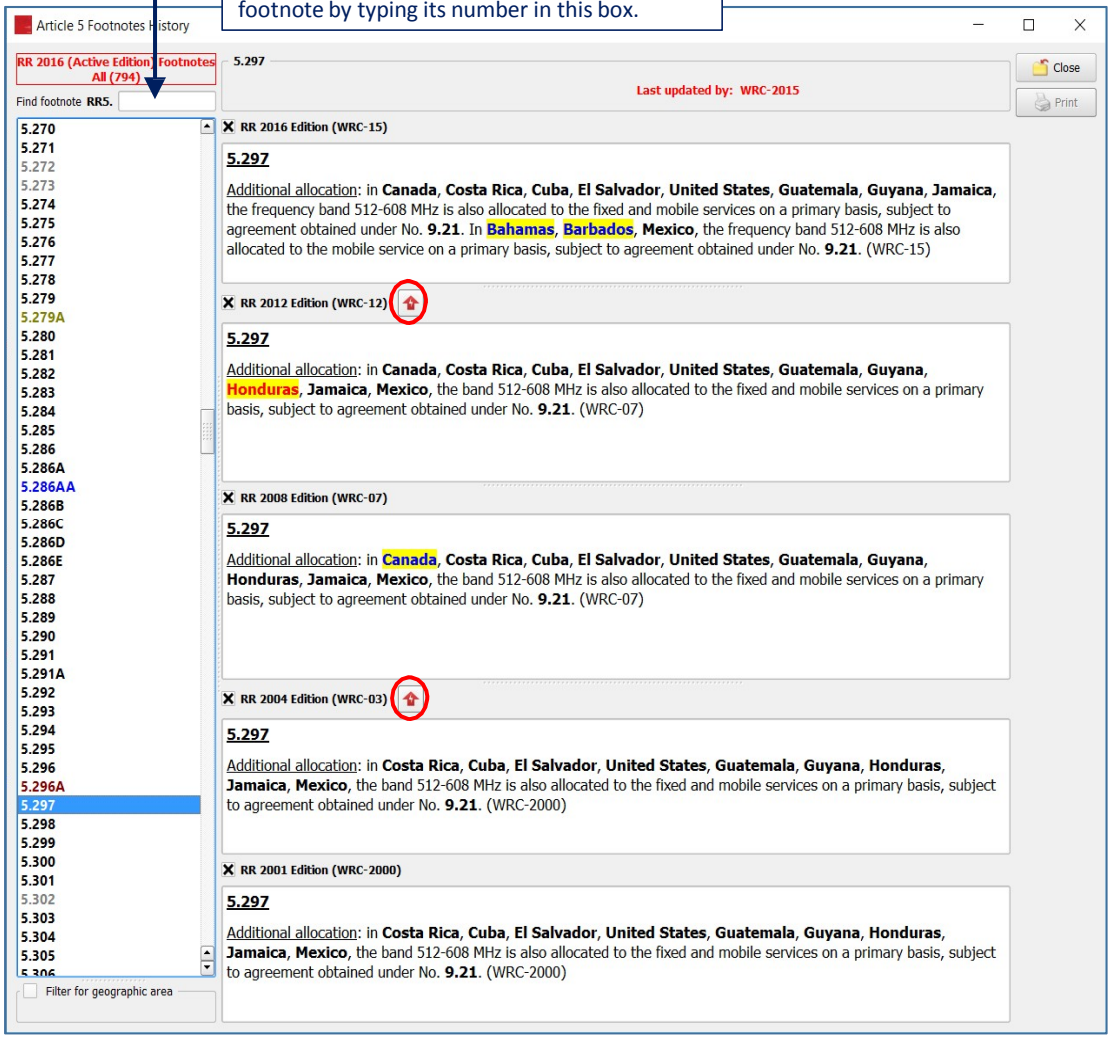
When a footnote number is selected from the list of footnotes, the software

- indicates the last WRC which updated the relevant footnote,
- and (depending on its availability) displays its text as it has evolved through the successive WRCs and in the successive resulting RR Editions,
- displays (when appropriate) the corresponding indicators of the "next WRCs" which modified the previous footnote text. The absence of such an indicator means that the "Next WRC" left the relevant footnote unchanged.

Thus, the example shown here clearly indicates that No. 5.142 for instance, as it was standing in the RR 2001 Edition, was subsequently modified by WRC-03. It then remained unchanged by WRC-07 and was last modified by WRC-12.

Continued…

The Footnotes History View



When applicable, footnotes involving **list of countries** (typically Additional Allocations, Alternative Allocations and Different Categories of Services provisions) are **further highlighted** so as to mark the list of countries "joining or leaving" the provisions of the relevant footnote through the successive WRCs:

- Countries (or geographic areas) highlighted in **blue** are those who "joined" (added their names to) the relevant footnote **in the relevant WRC**.

Honduras

- Countries (or geographic areas) highlighted in **red** are those who "left" (removed their names from) the relevant footnote **at the next WRC**.

Thus, the example shown here clearly indicates that No. 5.297 for instance, as it was standing in the RR 2001 Edition, was subsequently modified by WRC-07 where **Canada** "joined" the footnote at that WRC. It remained unchanged by WRC-12 and was last modified by WRC-15, where (in addition to other changes in the provisions) **Honduras** "left" and both **Bahamas** and **Barbados** "joined".

Continued...

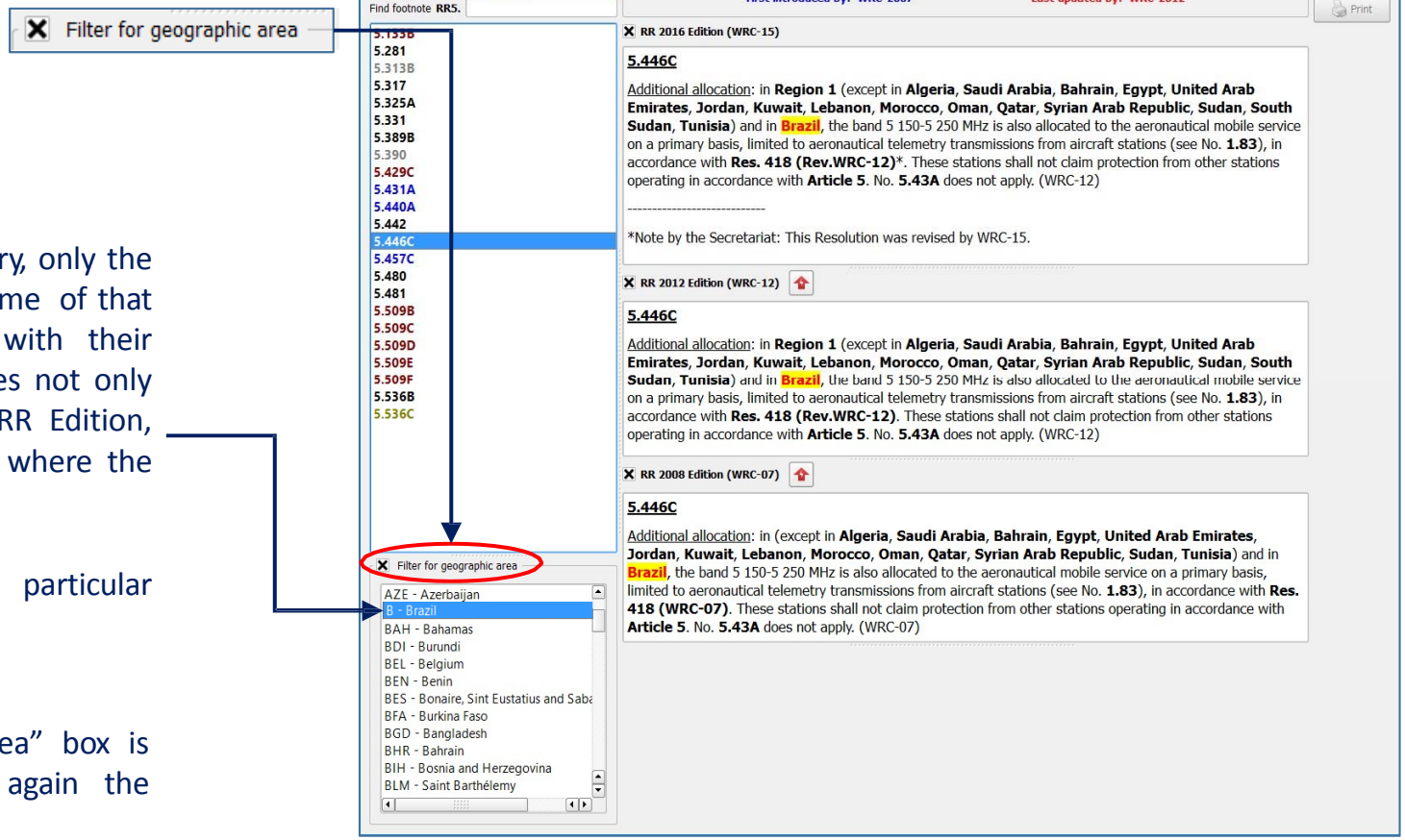
The Footnotes History View

When working with the Footnotes History View, an additional utility consists in "filtering" the displayed footnotes list for a given geographic area (country). This may be achieved by checking the corresponding box, as shown here.

Consequently, upon selecting a given country, only the list of appropriate footnotes where the name of that country appears is displayed, together with their history. The displayed footnotes list includes not only the relevant footnotes from the current RR Edition, but also those from previous RR Editions where the specified country "used" to appear.

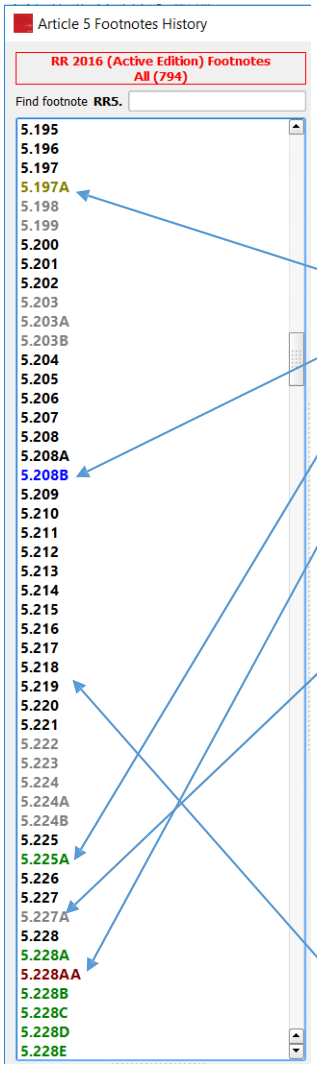
This is very useful to examine when a particular country has joined/left a particular footnote.

As soon as the "Filter for geographic area" box is unchecked, the software displays back again the complete list of footnotes.

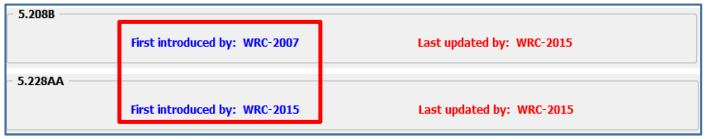


Continued...

The Footnotes History View

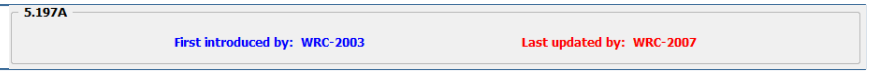


In addition to the last updating WRC, the software also displays the "first" source of the footnote (the WRC which first introduced the footnote), when it can determine it.

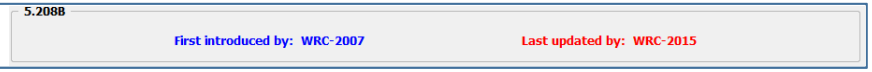


Thus, in the Footnotes History View, the list of footnotes is displayed using the following color schema:

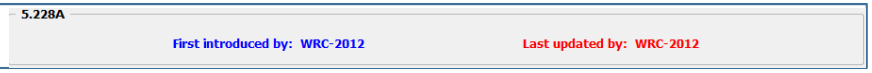
Dark Yellow is used for the footnotes first introduced by WRC-2003.



Blue is used for the footnotes first introduced by WRC-2007.

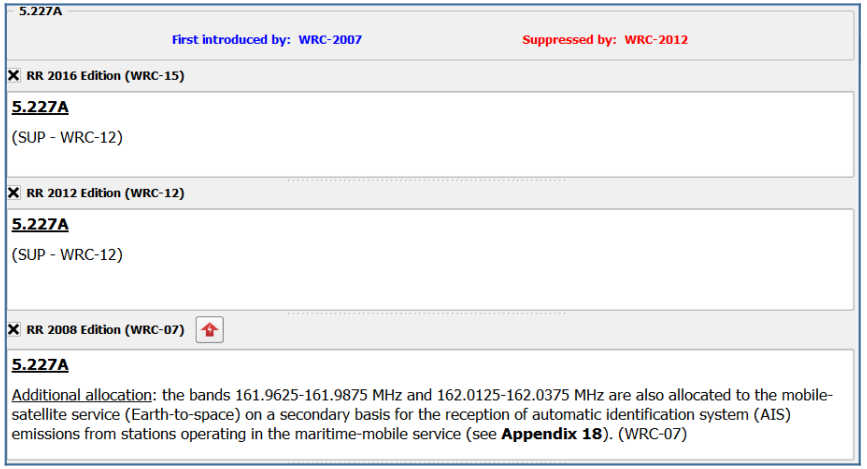


Dark Green is used for the footnotes first introduced by WRC-2012.



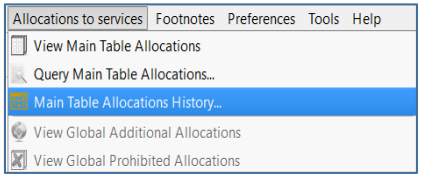
Dark Red is used for the footnotes first introduced by WRC-2015.

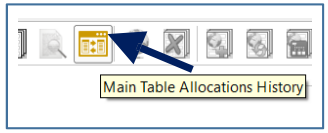
Dark Gray is used for the footnotes suppressed by any WRC. In this case, the software indicates the WRC which suppressed the footnote, if it is able to determine it. The history displays the "last know text" of the footnote before its suppression, if available.



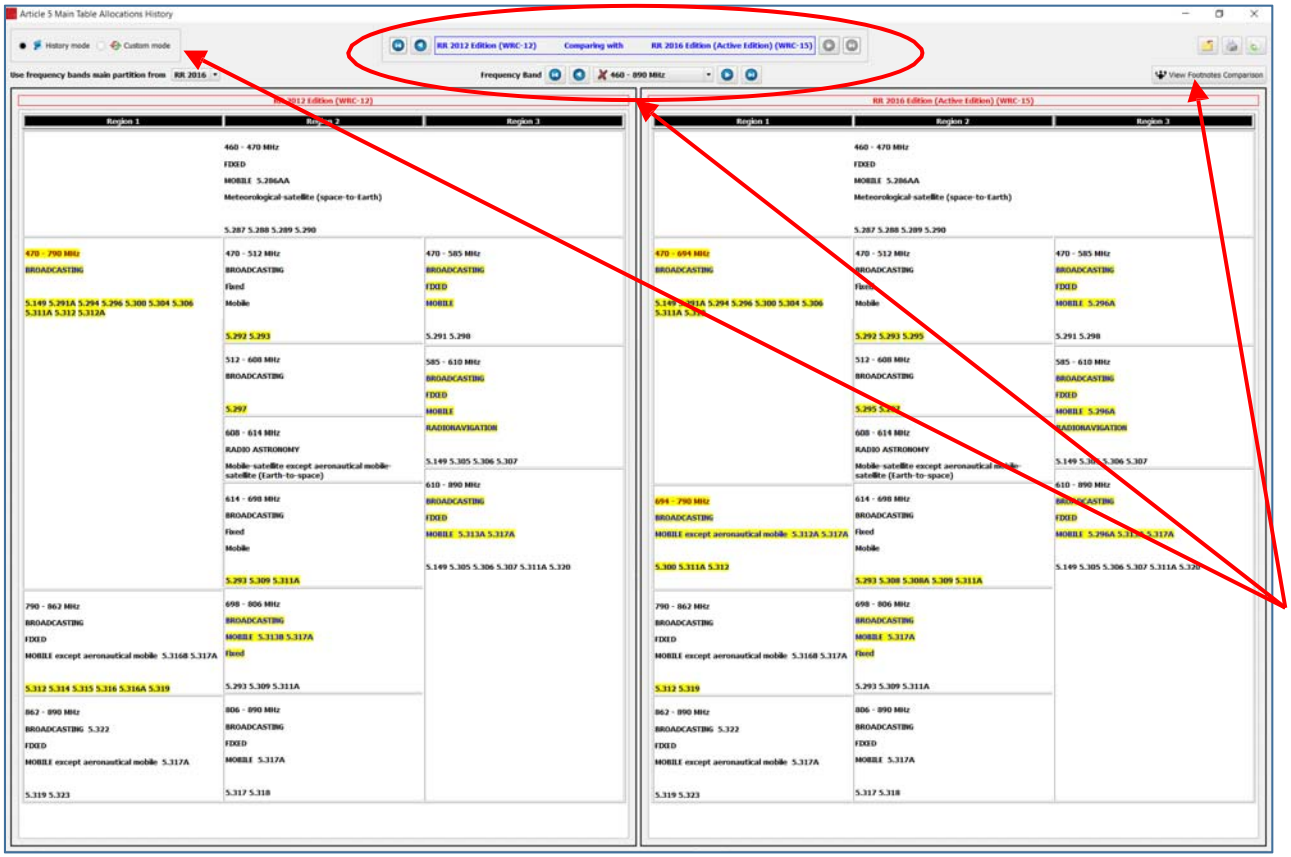
Black is used in all other cases where the software is not able to determine the suitable information. (This is usually the case for footnotes first introduced or suppressed by or prior to WRC-97 or WRC-2000).

The Main Table History View





The **Main Table History View** can be invoked by using the menu item "**Allocations to services – Main Table Allocations History…**" or, alternatively, by clicking on the corresponding icon on the main toolbar as shown here. This utility enables "tracing", comparing and examining the "lifetime" and evolution of the Main Table Allocations, **back to WRC-2000 (RR Edition of 2001) onward**.



When first invoked, the Main Table History View is presented by default in its so called "History Mode": it displays a side-by-side comparison of the Main Table allocations between the active RR Edition (RR 2016) and the previous RR Edition (RR 2012), aligned to frequency bands partition.

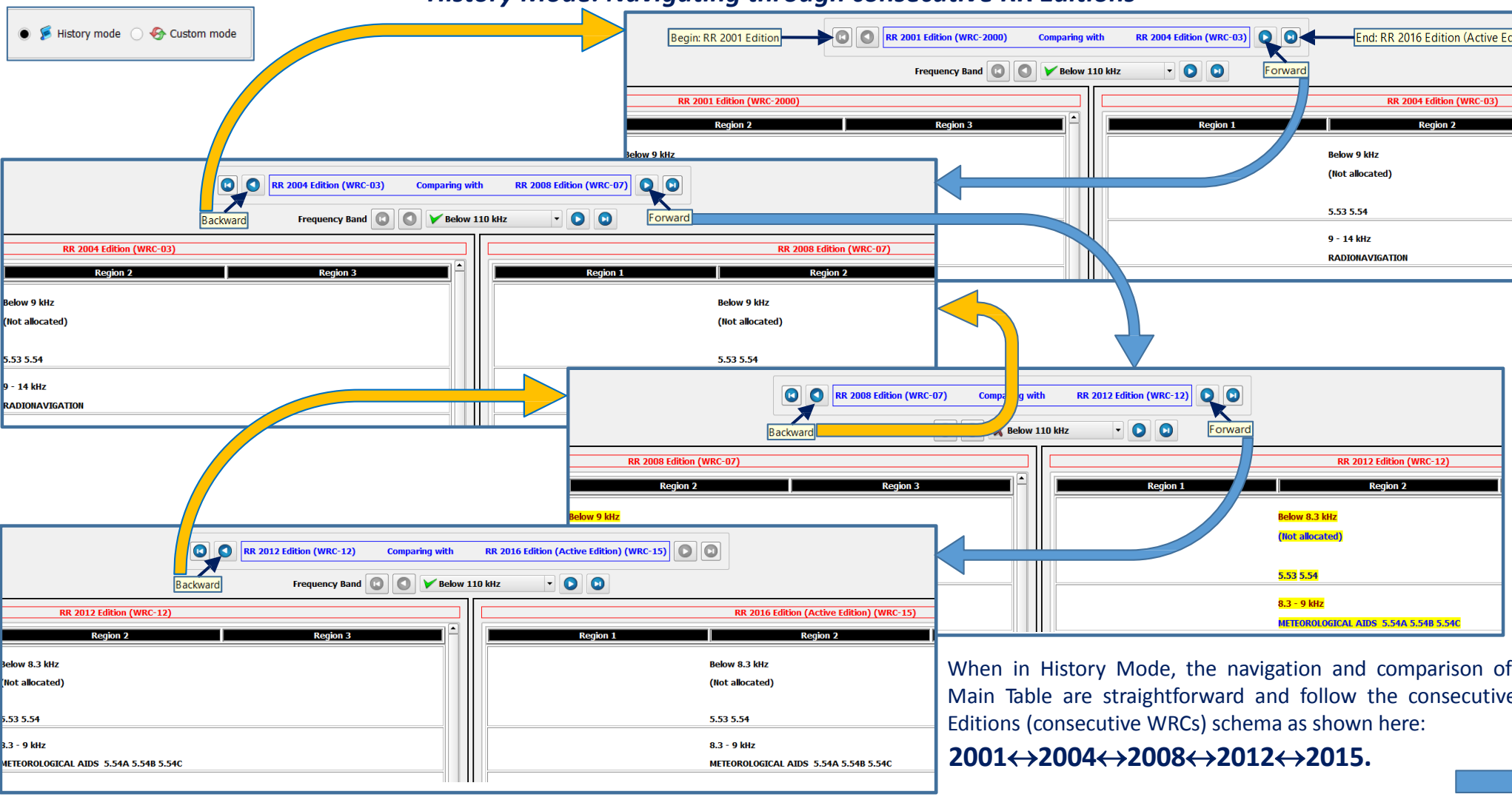
When applicable, the comparison is done on a "box-by-box" basis and the software tentatively marks and highlights the various differences, including box frequency bands, services and associated footnotes.

Navigation tools are available on an "RR Edition – Frequency band" combination basis, and various comparison and customization tools are provided, including footnotes.

The following examples describe the corresponding features in more details.

The Main Table History View

History Mode: Navigating through consecutive RR Editions



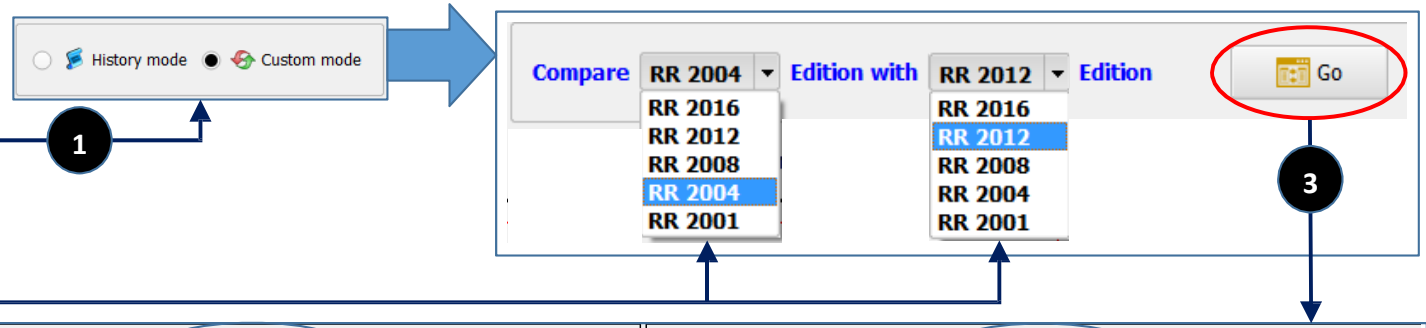
When in History Mode, the navigation and comparison of the Main Table are straightforward and follow the consecutive RR Editions (consecutive WRCs) schema as shown here:

2001↔2004↔2008↔2012↔2015.

The Main Table History View

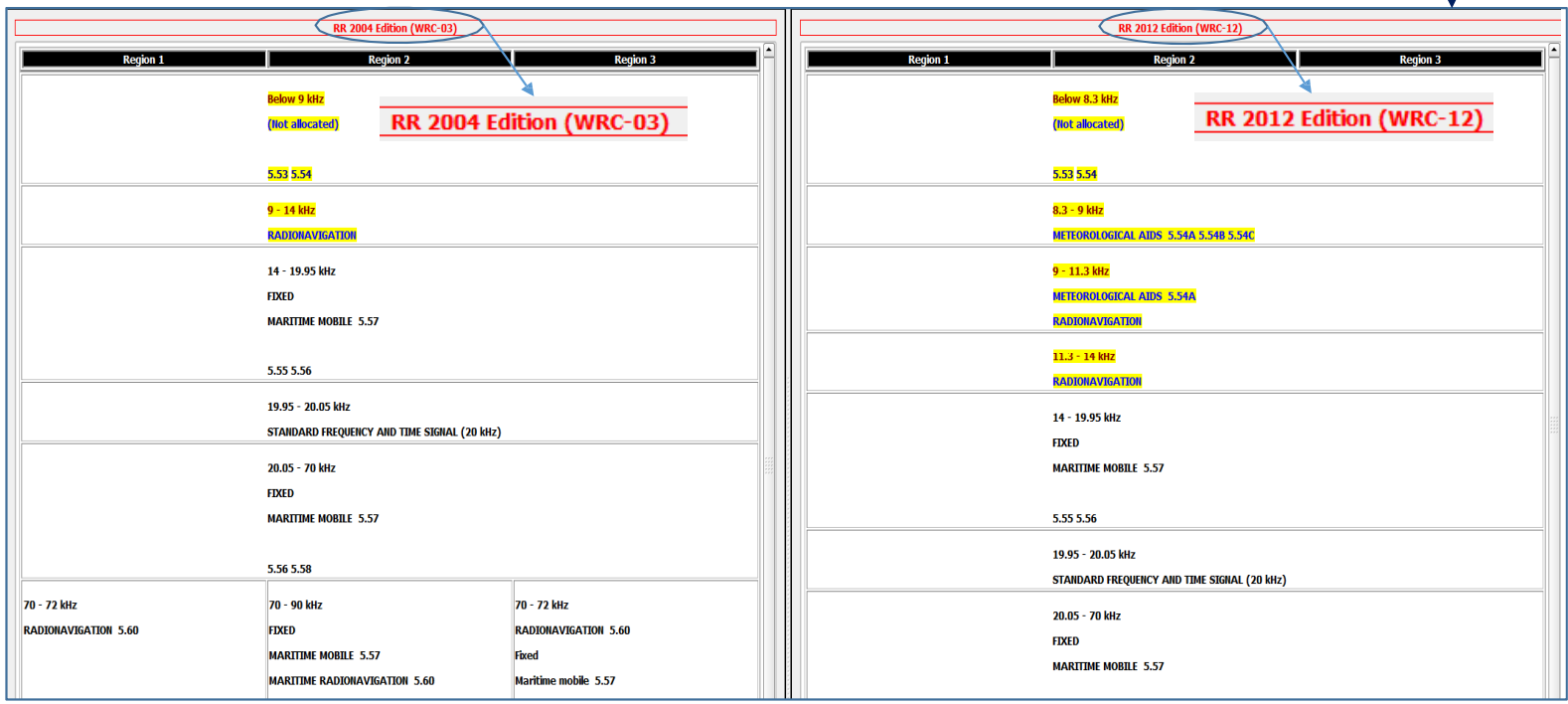
Custom Mode: comparing the Main Table allocations from non-consecutive RR Editions

The Main Table History View also provides for a "**Custom Mode**" comparison, when you are interested in comparing the allocations from two non-consecutive RR Editions (two non-consecutive WRCs). This is accessible via the box shown here.



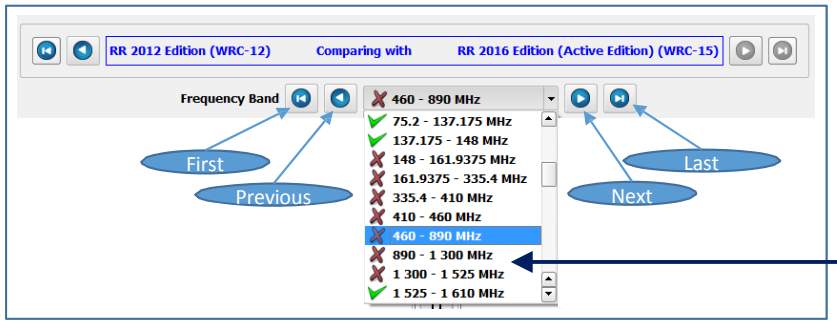
You may then specify the two RR Editions from which you would like to compare the Main Table allocations, then click Go to perform the comparison.

The example shown here for instance leads to comparing the Main Table allocations from RR 2004 Edition (WRC-03) with the Main Table allocations from RR 2012 Edition (WRC-12).



The Main Table History View

Navigating frequency bands and checking differences



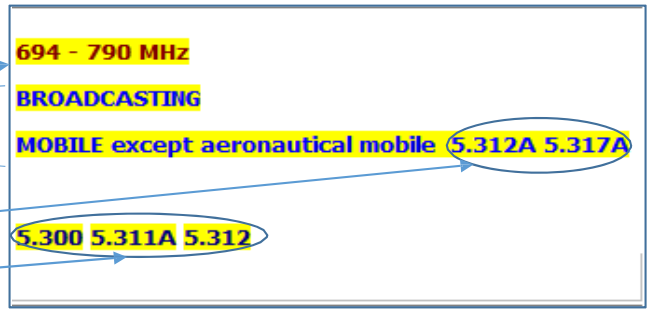
When the comparison of the Main Table allocations from two RR Editions is completed, you may then navigate the specified partition of the frequency bands using the usual "first-previous-next-last" layout. **In addition**, however, if you drop-down the list of the frequency bands, you may notice that the **various bands are marked as follows**:

✔ The green mark next to a frequency band indicates that **no differences** were found in the allocation boxes in that band, between the two compared Main Tables.

✘ The red mark next to a frequency band indicates that **differences** were found in the allocation boxes in that band, between the two compared Main Tables.

The software tentatively performs the comparison of the Main Table allocations from two RR Editions on a **"Region-by-Region/box-by-box"** basis, trying (in addition to Region applicability) for every allocation box to match the following data:

- *The frequency band,*
- *The list of radiocommunication services, and then*
  for every service, the list of associated "service footnotes" (if any),
- *The list of "box footnotes" applying to the box as a whole.*

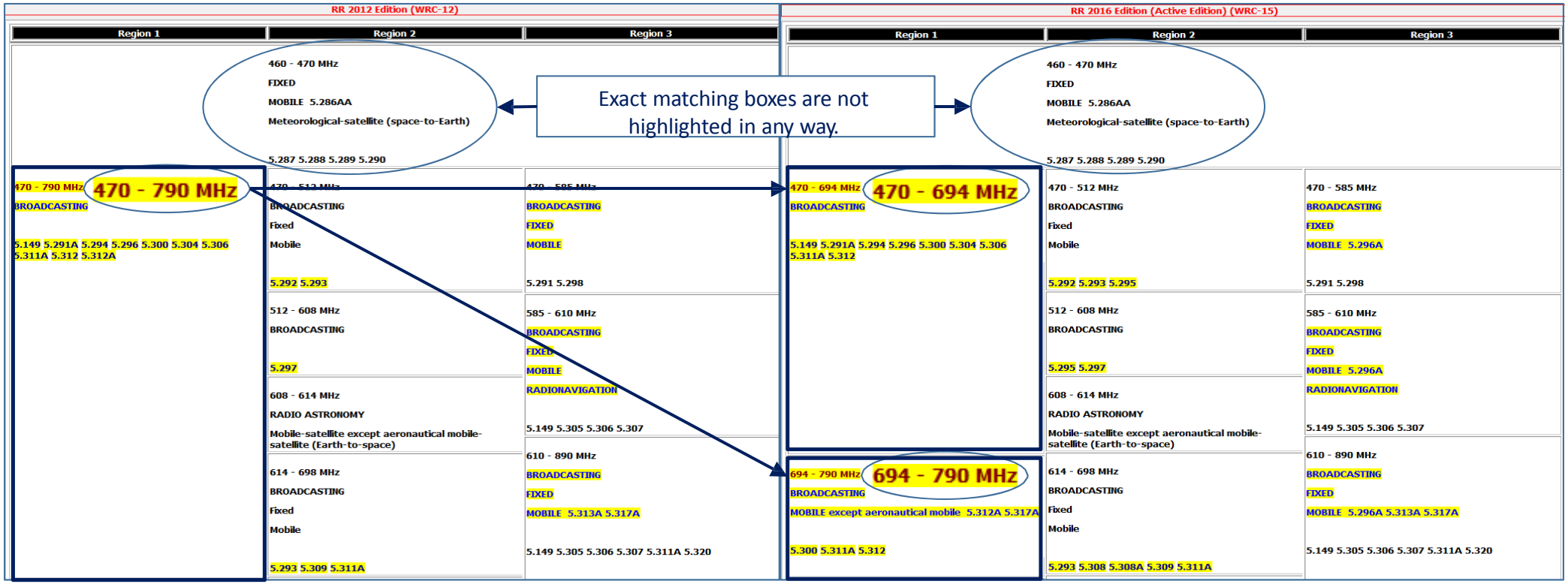


When differences are found, they are marked accordingly in both Tables, inviting checking, as explained below.

Continued...

The Main Table History View

Navigating frequency bands and checking differences



Box frequency bands are only highlighted when “no matching boxes” with for the same Region/bands combination are found. This usually is the result of the “split” operated by a given WRC of the box from the “previous” edition into two (or more) boxes, introducing allocations to “new” services:

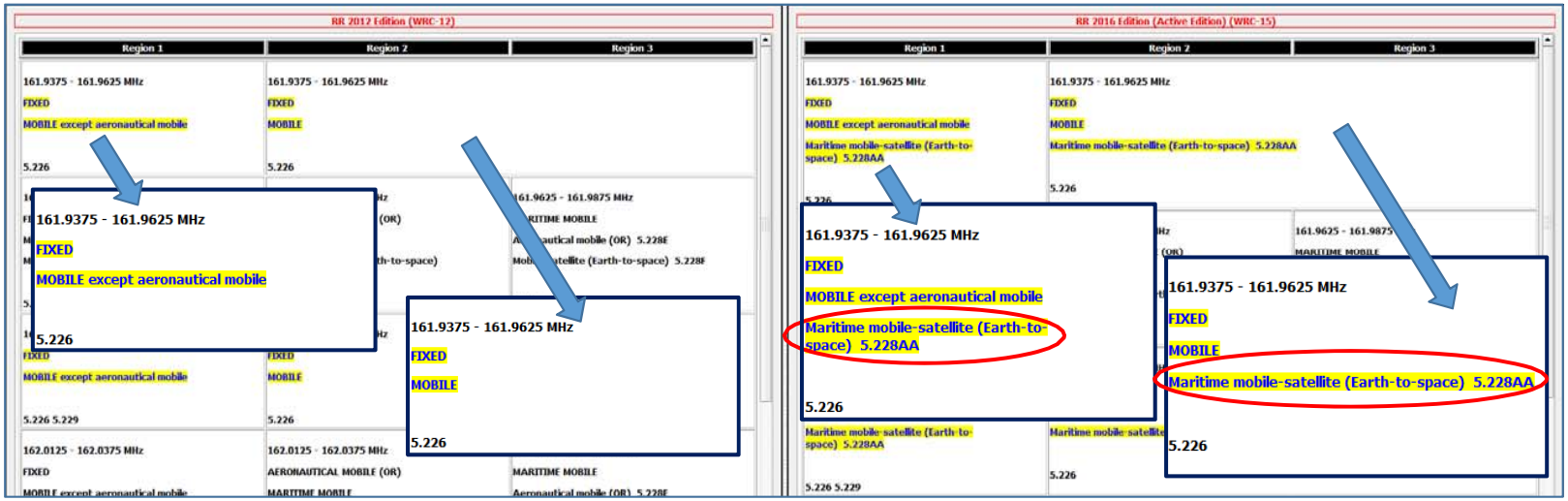
In such cases, the boxes are considered “totally mismatching” and all their content is highlighted.

In less frequent cases, this may also result from the “merge” of two (or more) boxes (from two or more Regions). See for example the comparison of the band 1 700 – 1 710 MHz between RR 2001 and RR 2004 Editions.

Continued...

The Main Table History View

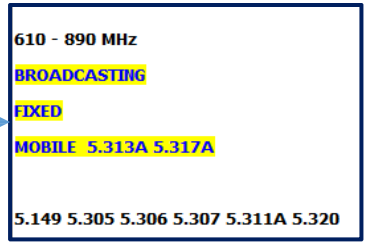
Navigating frequency bands and checking differences

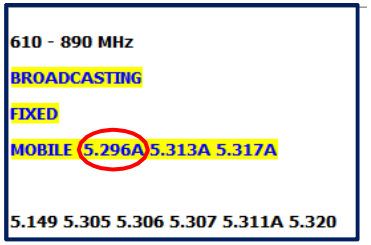


When the list of services in a given box is highlighted, this indicates either :

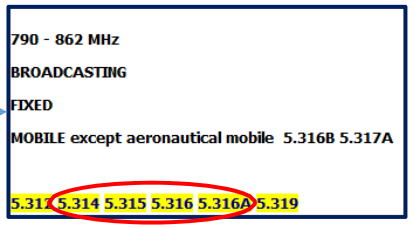
- A difference in the list of services (a service is present on one side and absent on the other), as shown above,
- Or a difference in the list of "service footnotes", associated with any of the services in the list (a footnote is present on one side and absent on the other), as shown here.

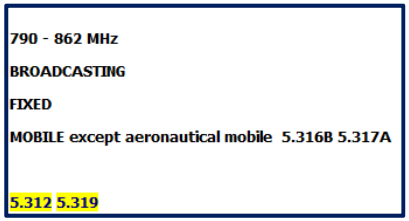
Please note that the software marks the complete list of services in both cases, inviting further checking to determine the differences.





Similarly, the list of "box footnotes" associated with the box as a whole is also highlighted so as to indicate the corresponding difference, as shown here.



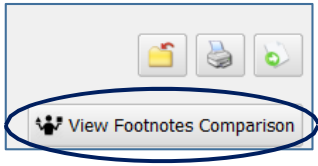


Continued...

The Main Table History View

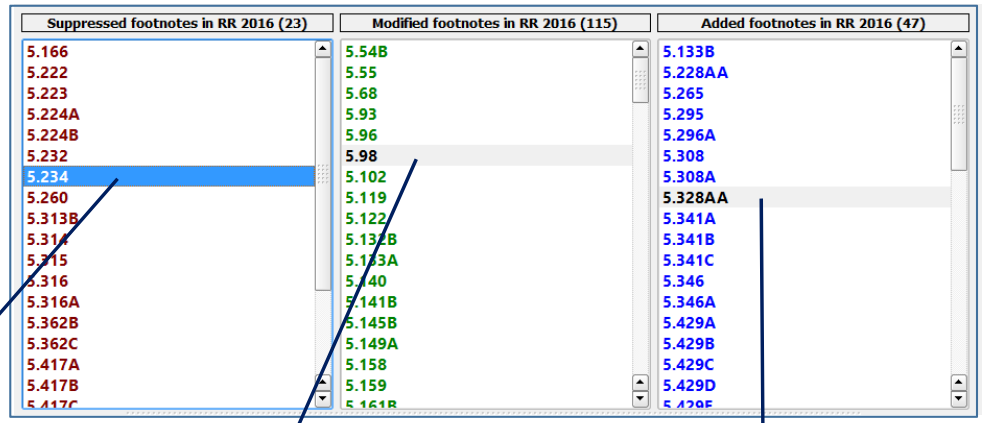
Comparing footnotes from two consecutive RR Editions

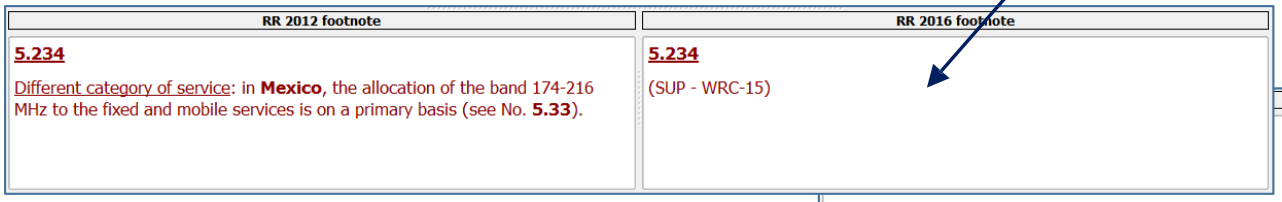
When comparing the Main Table allocations from **two consecutive RR Editions** (typically in the History Mode), the software provides for comparing the corresponding Article 5 footnotes. This is available by clicking the button shown here.

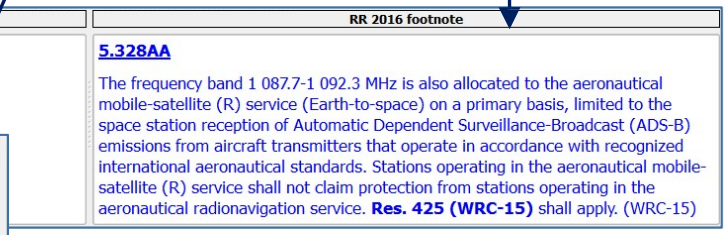


The footnotes from the two editions are then displayed, organized and split in three main columns: the newly added footnotes in the more recent edition, the modified footnotes in the more recent edition and the suppressed footnotes in the more recent edition (the example here applies to RR 2016 versus RR 2012).

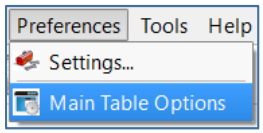
Selecting any footnote from any list causes the software to display its text in the two editions (when applicable), so that it makes it easy to check the changes in the modified footnotes text, review the text of the suppressed footnotes in the recent edition and the examine the provisions which are added in the recent edition.

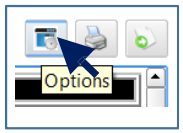


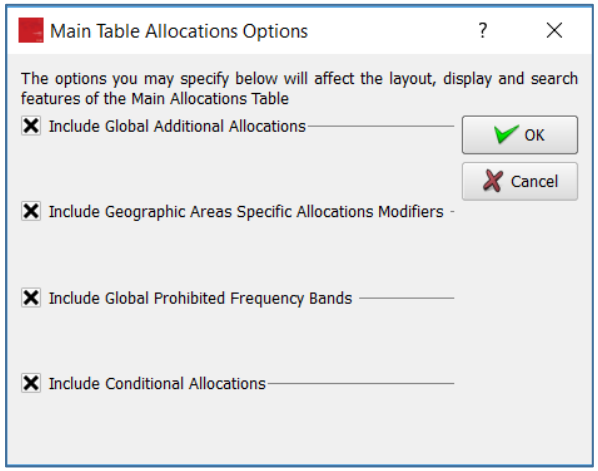




Customizing the Main Table Display – Main Table Options







Working with the Main Table View, you may customize the display of the allocation boxes so as to include and properly embed in the Main Table the various allocations components, derived from the appropriate footnotes and other Article 5 provisions. This is accessible via the menu item "**Preferences – Main Table Options**" or, alternatively, by clicking on the corresponding icon.

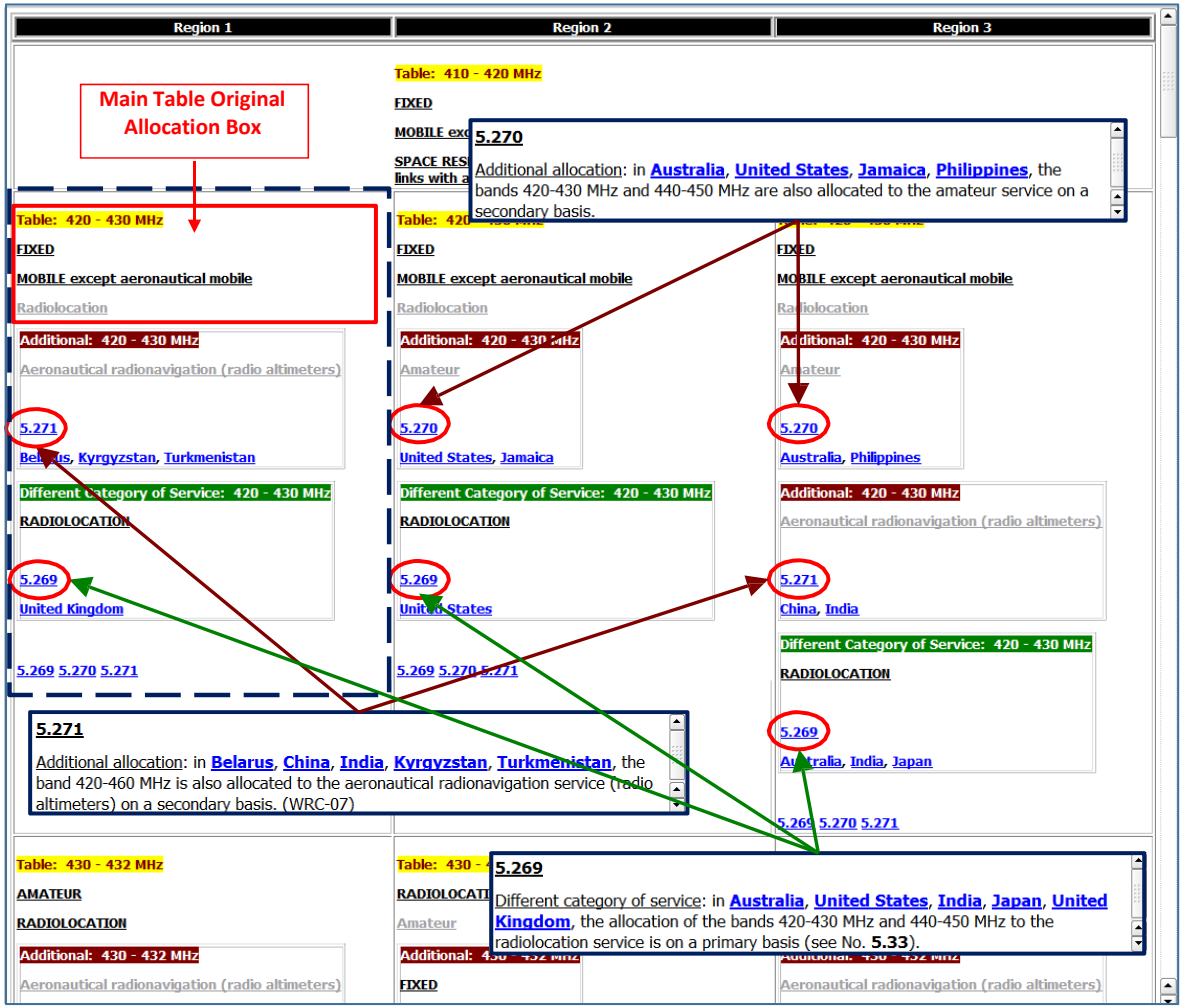
In the Main Table Allocations Options dialog, you may specify the relevant component you wish to embed in the display of the Main Table View. This includes:

- The Global Additional Allocations, applicable to one or more whole Region(s).
- The Allocations Modifiers applicable to specific geographic areas or countries (i.e., specific additional allocations, alternative allocations, different categories of services).
- The Global Prohibited Emissions (resulting for instance form No. 5.340).
- The Conditional Allocations (allocations with dates or service limitations, declensions or applications).

Based on the specified options (if any), the software customizes the Main Table in order to include the relevant data. This may take a few moment to compete. The selected options will then apply to the display, the search and the various features that may be available depending on the context. The software "remembers" these settings from one session to the next. You may get back to the "Standard Main Table View" at any moment by invoking this dialog again and turning off all customization feature.

In order to obtain the best use of this utility, it is recommended when customizing the Main Table to include all of the available options. The Main Table is then said to be in its **Fully Customized Mode**. Various additional possibilities and features become available when viewing the allocation boxes and the associated services and footnotes, as explained with some details in the following examples.

The Main Table View – Fully Customized Mode



In its Fully Customized Mode, in addition to the "basic allocation various allocations resulting from the appropriate footnotes, by **based on "frequency bands" and "Region" applicability**. When a "Table Modifier" footnote applies to a list of countries, the software "splits and places" the countries according to the Region to which they belong.

As the example shown here indicates, every allocation box from the Main Table is then "enlarged" to include "sub-boxes", representing the appropriate allocation information, according to the following "terminology" and color schema:

Table: 420 - 430 MHz	**Original frequency band from the original Main Table Partition.**
Additional: 420 - 430 MHz	**Allocation sub-box for an additional allocation.**
Alternative: 430 - 432 MHz	**Allocation sub-box for an alternative allocation.**
Different Category of Service: 420 - 430 MHz	**Allocation sub-box where a change in service category applies.**

When appropriate, in every allocation sub-box, the software also indicates the footnote number which "induces" the corresponding information.

The Main Table View – Fully Customized Mode

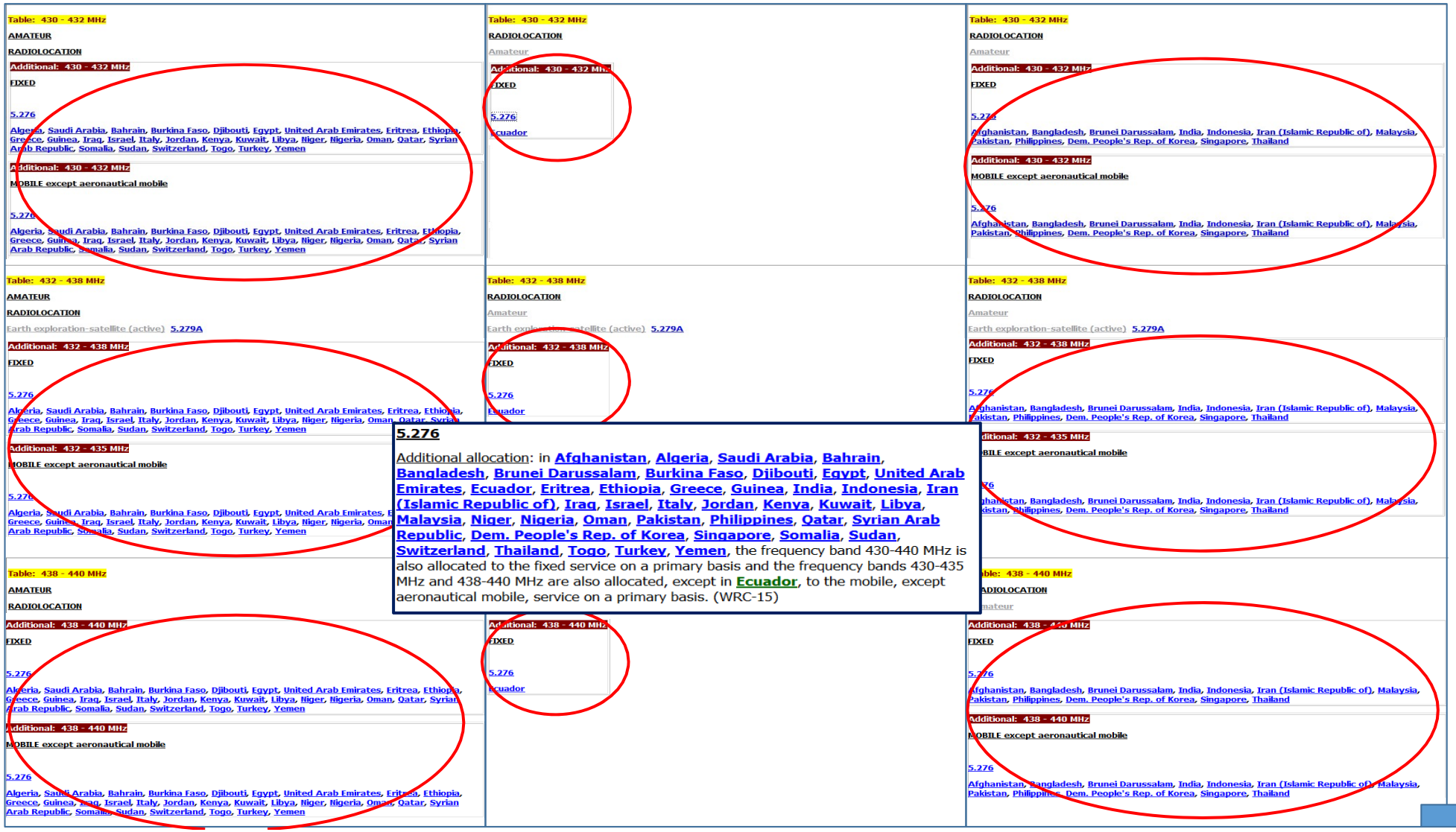
It should be noted that, in the Fully Customized Mode, when the provisions of a given Article 5 footnote cover (or overlap with) more that one Main Table original allocation box, the software "creates" the appropriate "new sub-boxes" accordingly, so that the resulting allocation modifiers fit appropriately within the boundaries of every original allocation box.

The simple case example of the additional allocation resulting from No. 5.379, illustrated here, clarifies the idea.

When working with the software, other more complex cases can be found, applying to "overlapping" box frequency bands, as well as radiocommunication services (this typically occurs when a given footnote concerns more than one service).

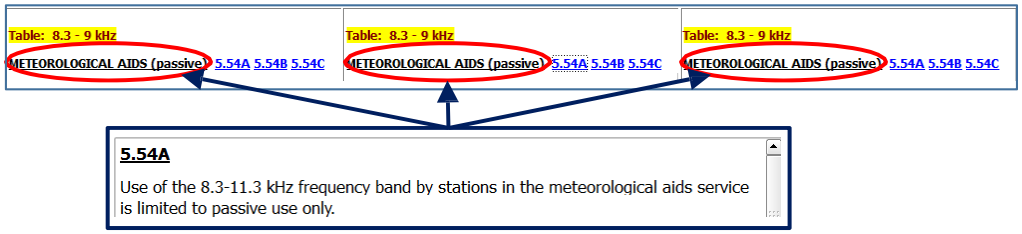
In this context, the following example illustrates how the data model and the software handles the (complex) case resulting from No. 5.276.

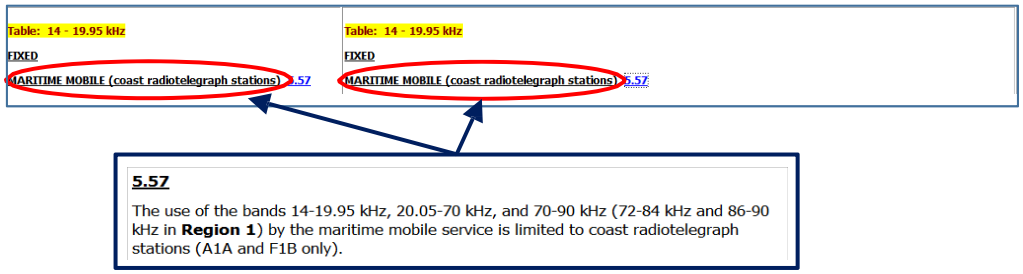
The Main Table View – Fully Customized Mode

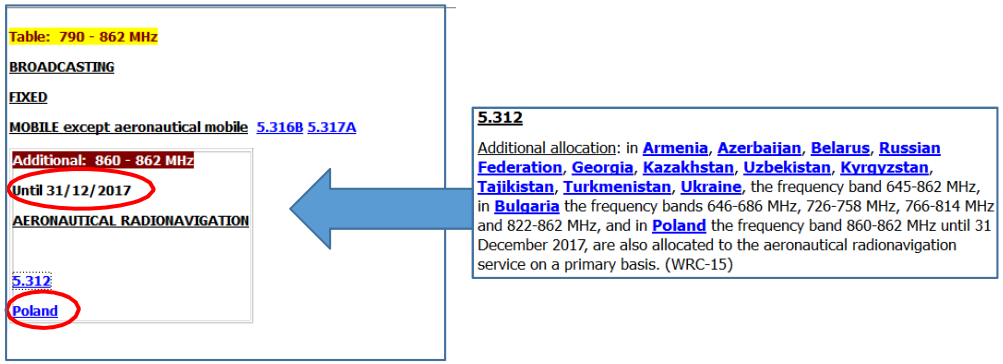


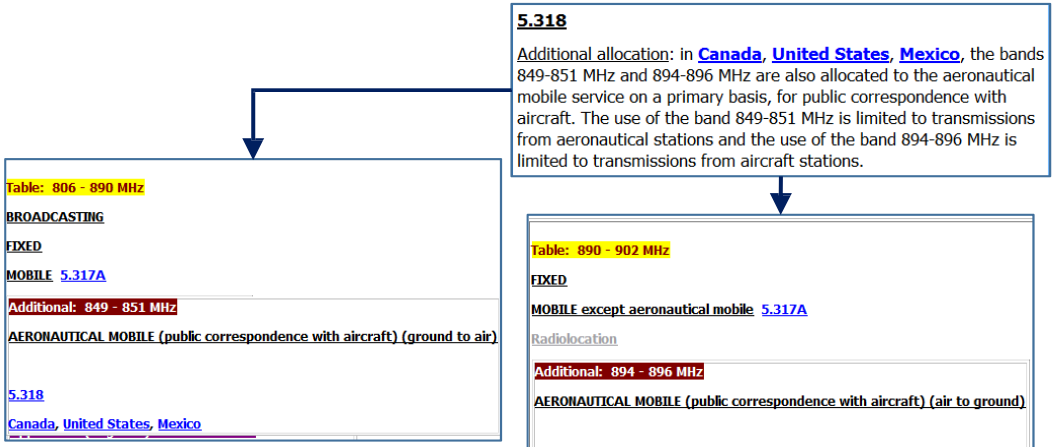
The Main Table View – Fully Customized Mode

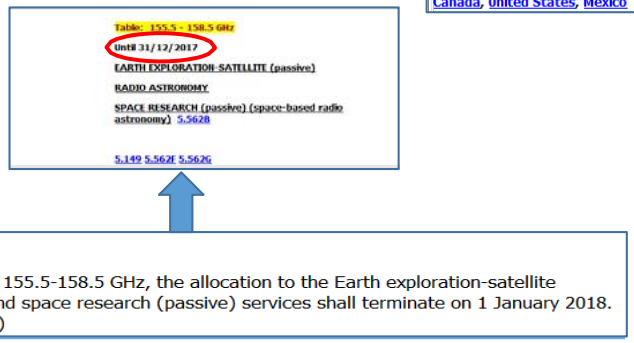
In the Fully Customized Mode, when the provisions of a given Article 5 footnote introduce a limitation, condition or expiry date, the Main Table View takes into account these various "conditional footnotes" and accordingly displays "service declensions", limitations and expiry dates, to the extent feasible. This applies to the Main Table allocation boxes, as well as to any derived "sub-box" as shown in the examples here.





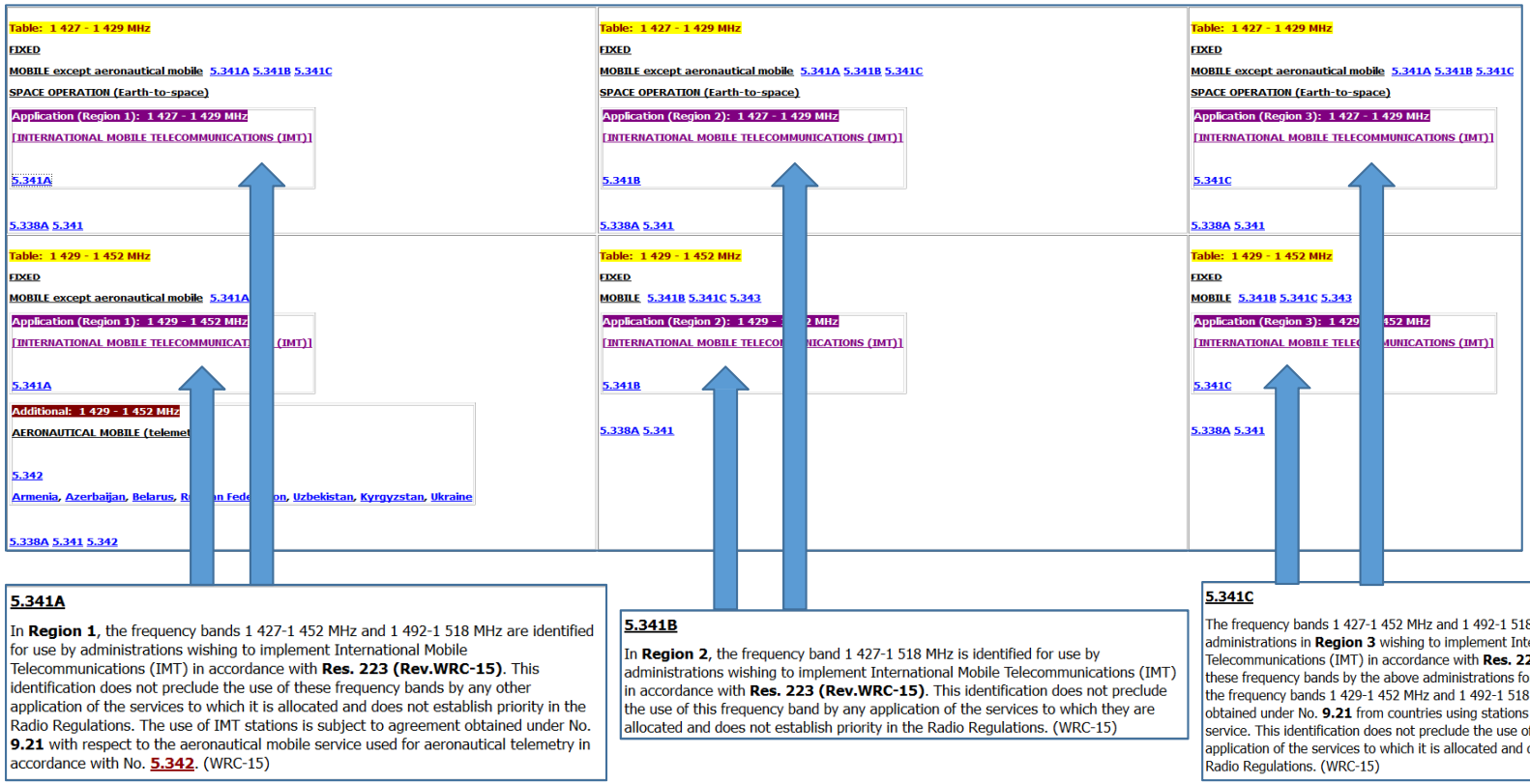






The Main Table View – Fully Customized Mode

Radiocommunication services "applications"



When applicable, in the Fully Customized Mode, the software tentatively embeds specific-boxes in the Main Table original boxes, showing "particular" radiocommunication services applications identifications specified in the provisions of Article 5 footnotes.

"Applications" sub-boxes are marked with a specific color, with an indication of the frequency band, the application label and the footnote inducing the identification.

5.341A

In **Region 1**, the frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with **Res. 223 (Rev.WRC-15)**. This identification does not preclude the use of these frequency bands by any other application of the services to which it is allocated and does not establish priority in the Radio Regulations. The use of IMT stations is subject to agreement obtained under No. **9.21** with respect to the aeronautical mobile service used for aeronautical telemetry in accordance with No. **5.342**. (WRC-15)

5.341B

In **Region 2**, the frequency band 1 427-1 518 MHz is identified for use by administrations wishing to implement International Mobile Telecommunications (IMT) in accordance with **Res. 223 (Rev.WRC-15)**. This identification does not preclude the use of this frequency band by any application of the services to which they are allocated and does not establish priority in the Radio Regulations. (WRC-15)

5.341C

The frequency bands 1 427-1 452 MHz and 1 492-1 518 MHz are identified for use by administrations in **Region 3** wishing to implement International Mobile Telecommunications (IMT) in accordance with **Res. 223 (Rev.WRC-15)**. The use of these frequency bands by the above administrations for the implementation of IMT in the frequency bands 1 429-1 452 MHz and 1 492-1 518 MHz is subject to agreement obtained under No. **9.21** from countries using stations of the aeronautical mobile service. This identification does not preclude the use of these frequency bands by any application of the services to which it is allocated and does not establish priority in the Radio Regulations. (WRC-15)

The above shown example applies to the identification to **International Mobile Telecommunications**, resulting (for instance) in the appropriate Regions from the provisions of Nos. 5.314A, 5.314B and 5.314C.

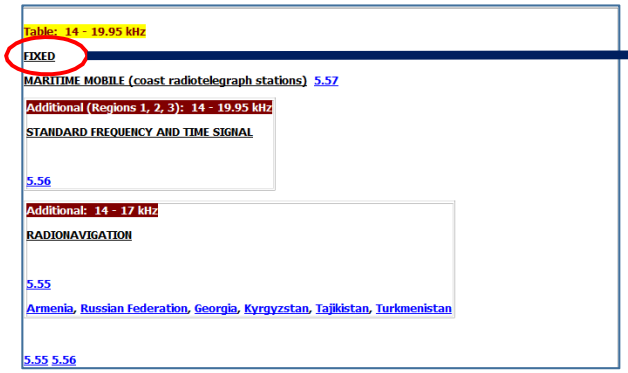
When appropriate, similar sub-boxes corresponding to other applications, such as **HAPS**, are also displayed. In abstract, the applications are surrounded with square brackets ([]) to distinguish them from the radiocommunication services, but they are also made clickable so as to retrieve "all" the corresponding frequency bands where an identification to the concerned application appears in the Article 5.

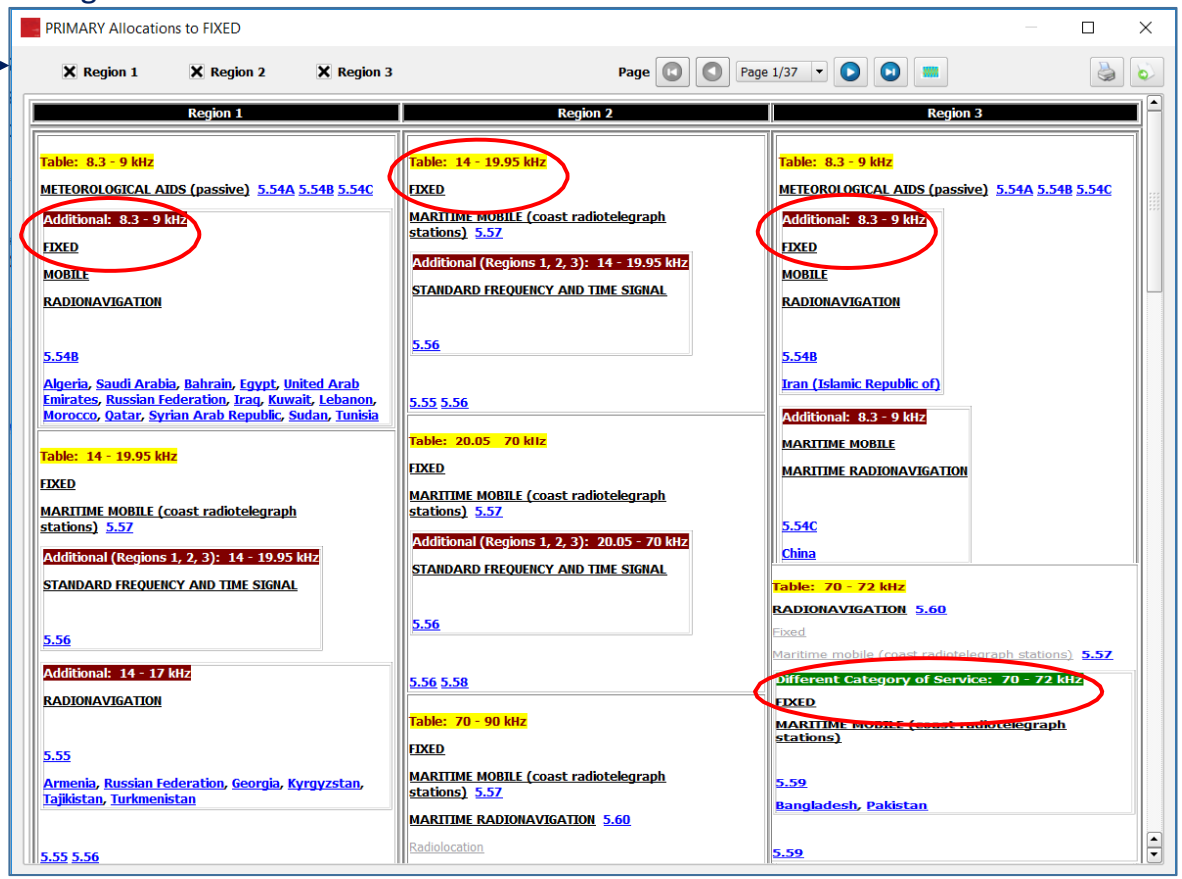
Continued...

The Main Table View – Fully Customized Mode

Effects on the Main Table search utilities

The Fully Customized Mode of the Main Table also affects the ways the software uses to perform the “search and walk” through the Main Table boxes. In particular, when clicking on a given service label, the software then performs the corresponding search taking into account “all” customized sub-boxes which were embedded in the Main Table original allocation boxes.





As the example shown here illustrates, when you click on **FIXED**, the software retrieves **all allocation boxes with a matching primary allocation to FIXED, be it from the Main Table original boxes or from the sub-boxes resulting from the Main Table customization**.

Typically, this means that when determining the matching “service-category” combinations, the search is also operated on additional allocations, alternative allocations and different categories of services provisions.

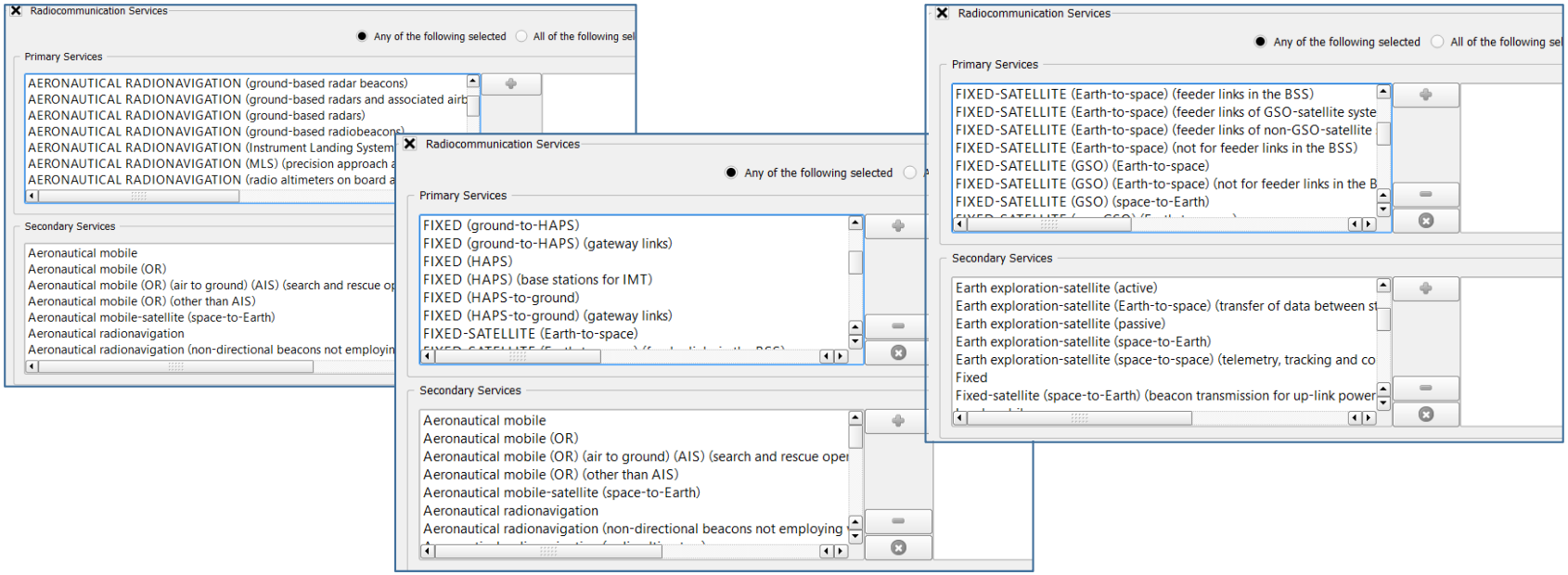
Continued...

The Main Table View – Fully Customized Mode

Effects on the Main Table search utilities

The Fully Customized Mode of the Main Table similarly affects the search options in the "**Query Main Table Allocations**" dialog.

More precisely, the lists of radiocommunication services, available for search and selection, are "updated" as consequence of the full customization. As shown here, all the used declensions of services, derived from the appropriate conditional footnotes and Main Table modifiers are then available, including "radicommunication services applications".

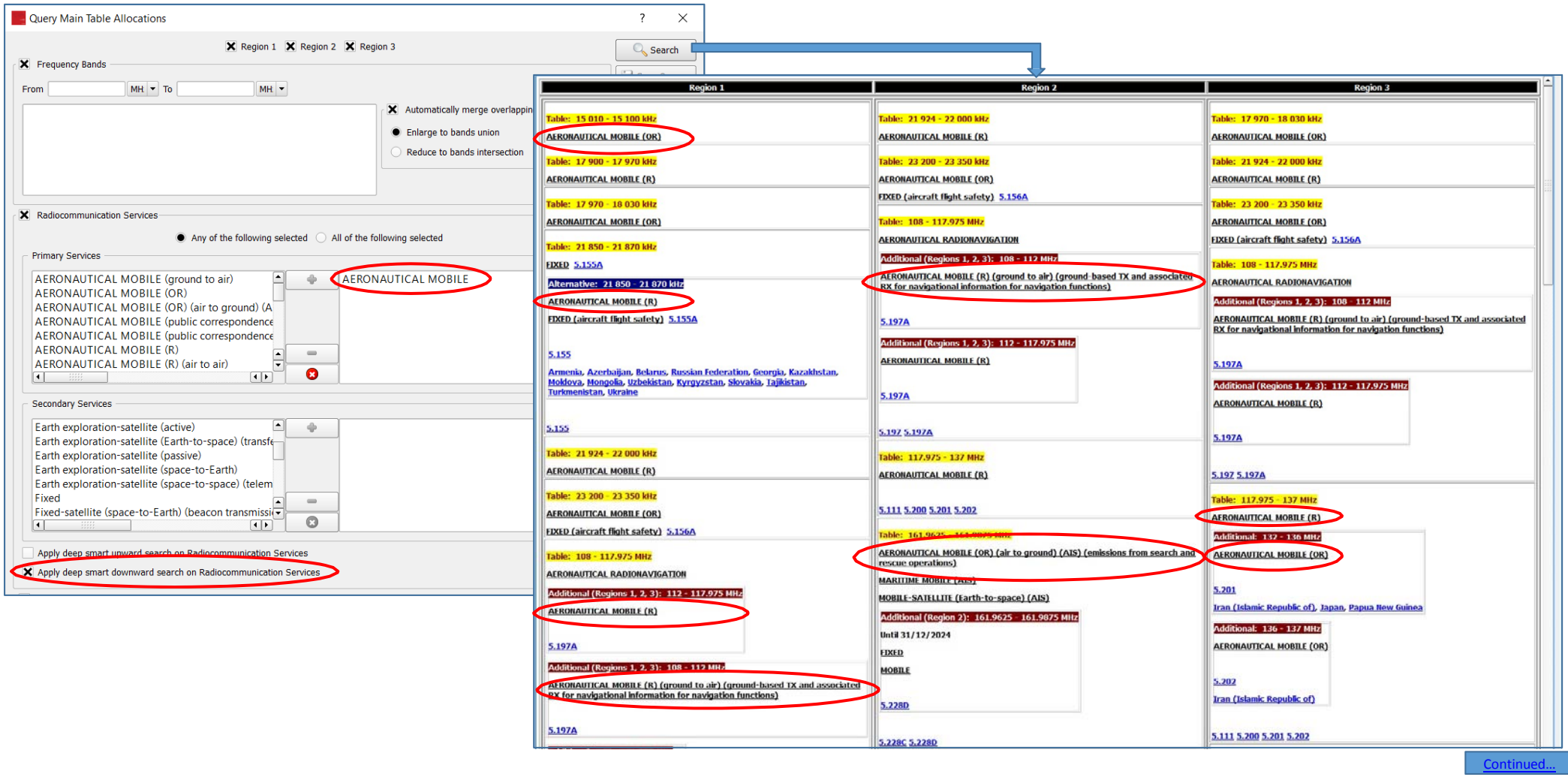


The following example shows the effect of this "full customization", when performing for instance a "smart downward search" on all derived "declensions" from the AERONAUTICAL MOBILE service.

Continued...

The Main Table View – Fully Customized Mode

Effects on the Main Table search utilities

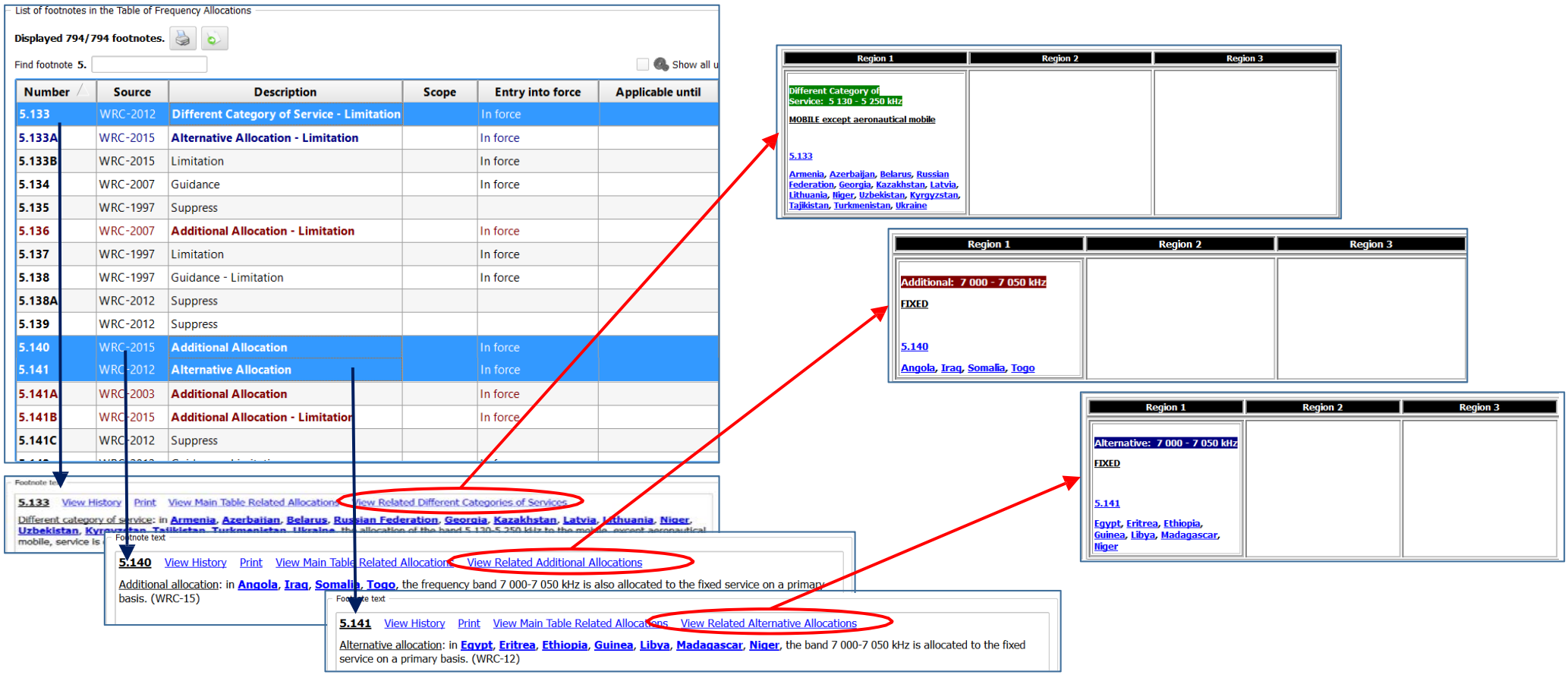


Continued...

The Main Table View – Fully Customized Mode

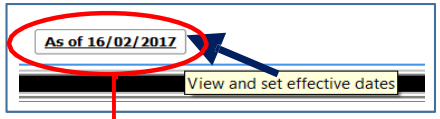
Effects on the Footnotes View

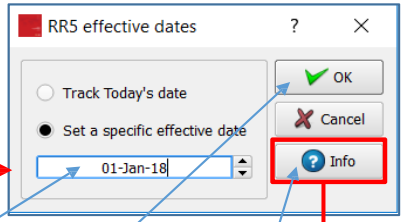
The Fully Customized Mode of the Main Table also induces a modification in the display of footnotes when working with the Footnotes View. Indeed, when browsing footnotes specifying additional or alternative allocations, or different categories of services provisions, the **footnote text area** contains an additional link which leads to displaying the "resulting sub-box" which is embedded in the Main Table.



Fully Customized Mode – Advanced Features

RR 5 important allocations expiry/entry into force dates



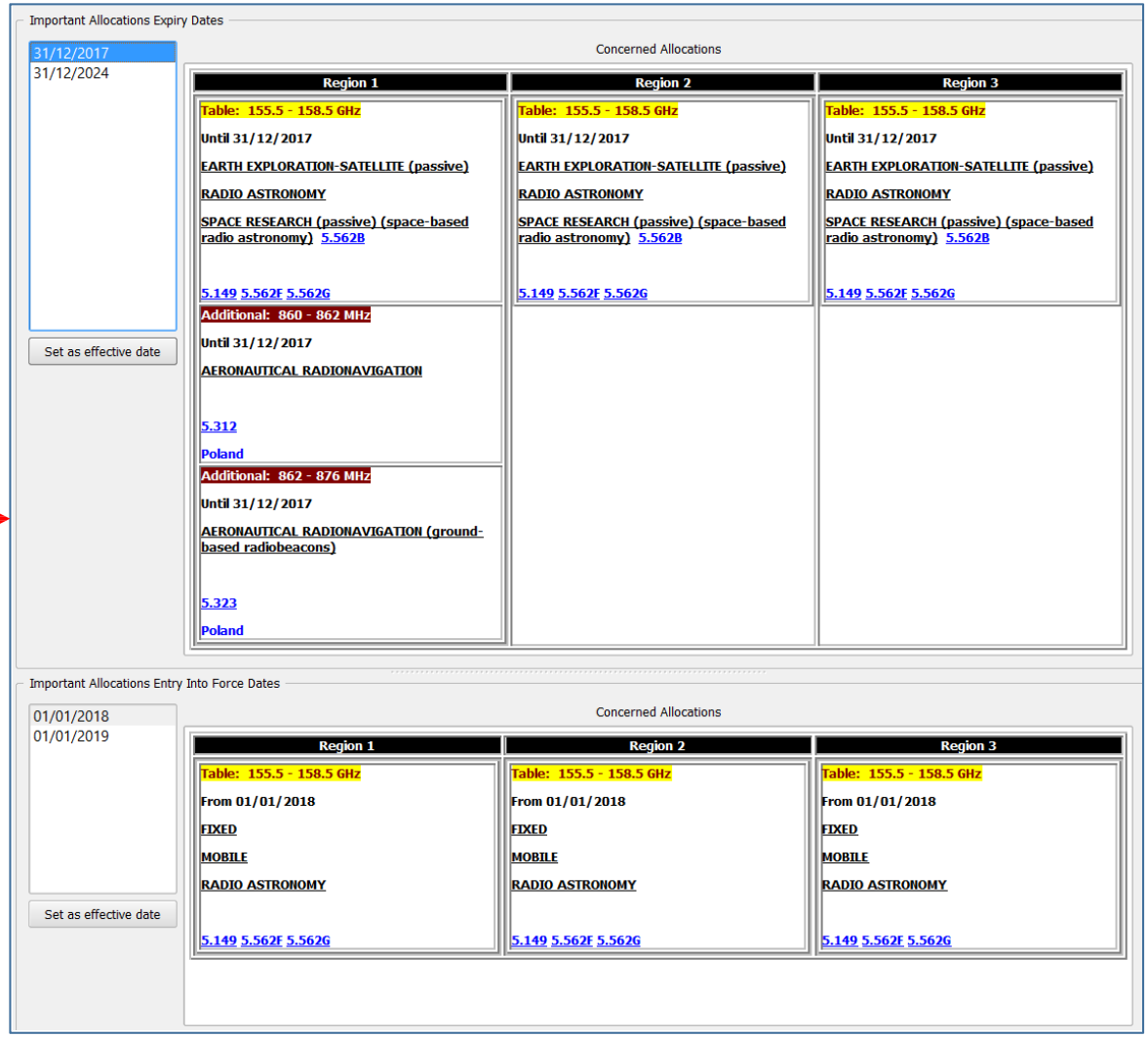


Click the date button to invoke the important dates dialog.

Set the desired date here

Then click here to "re-create" the Main Table as it would look like at that date: the software recombines the Main Table, taking into account all effective dates for expiry and entry into force of the relevant allocations, as it derives from the various Article 5 conditional footnotes.

Click the "Info" button to see the important dates detected by the software and the data model, and to check the corresponding "before/after" effects on the relevant allocations.

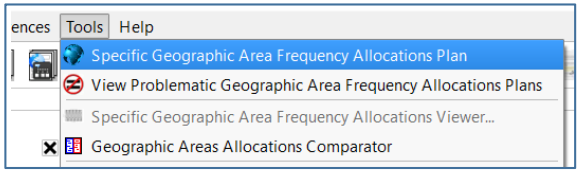


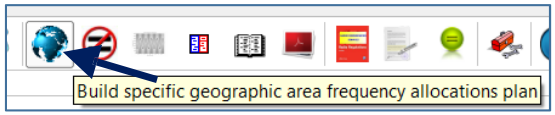
Fully Customized Mode – Advanced Features

Derived "International" allocations table for specific geographic area

When in its Fully Customized Mode, the software provides for viewing the international allocations table applicable to a given geographic area (country) by using an algorithm* for combining all of the following:

- The Original Main Table allocation boxes
- The Global additional allocations applicable to the Region to which that country belongs
- All of the Table Modifiers (additional allocations, alternative allocations, different categories of services) induced by footnotes which apply to that specific country (generally because the country name directly appears in the footnote, but also in some cases because it may be induced that the provisions of the footnote apply to that country).
- All of the conditional footnotes (specifying exceptions, prohibited emissions, service limitations, expiry dates, entry into force dates, etc.).





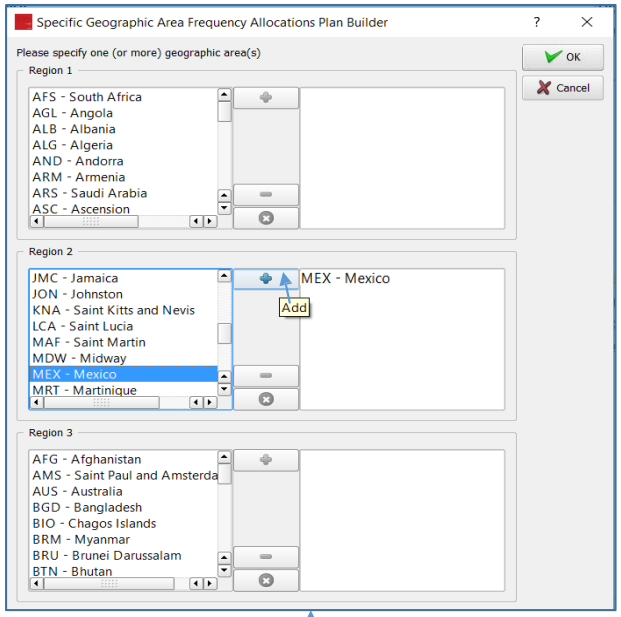
This is accessible via the menu item "**Tools – Specific Geographic Area Frequency Allocations Plan**" or, alternatively, by clicking on the corresponding icon on the main toolbar, as shown here.

**Note: detailed description of the used algorithm is under preparation for this guide.*

Continued...

Fully Customized Mode – Advanced Features

Derived "International" allocations table for specific geographic area



When invoked, as shown here, this utility allows the user to specify one or more geographic area(s) (country(ies)), in order to obtain its (their) resulting combined international allocations table.

When working with the fully customized Main Table view, the same functionality can be obtained by clicking on the country name when it appears in any allocation sub-box embedded into the original allocation box, as show here.

It should therefore be noted that the effect of **clicking on a given country name is "context dependent"** :

- When working with the Fully Customized Main Table View, it leads to building and displaying the derived country specific international allocations table;
- When working with the Footnotes View, it leads to displaying the list of Article 5 footnotes where the name of that country appears.

Continued...

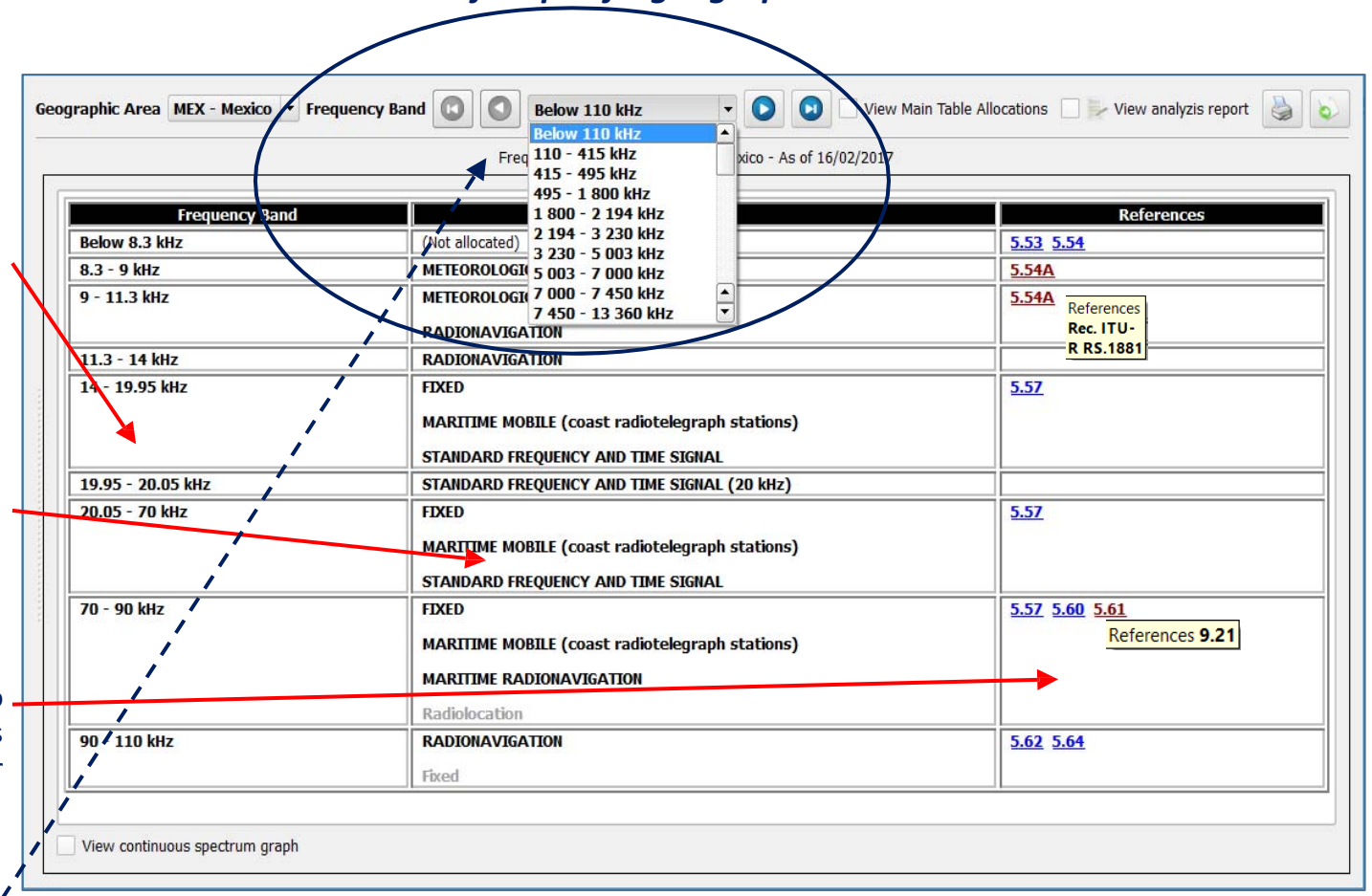
Fully Customized Mode – Advanced Features

Derived "International" allocations table for specific geographic area

The allocations table derived for a specific geographic or country is organized mainly in three columns:

- The frequency bands, as they result from the "merge/split" process of combining the various Article 5 components (original Table and footnotes table modifiers).
- The radicommuniaction services to which the frequency band is allocated in that country. Service declensions and categories are those resulting from the "merge/split" process of combining the various Article 5 components. When appropriate, indications of radiocommunication applications are also given.
- The list of references (footnotes) applicable to the concerned allocation box. Footnotes marked in red indicate that they are further referencing other RR provisions.

Frequency bands may be "navigated" as usual.



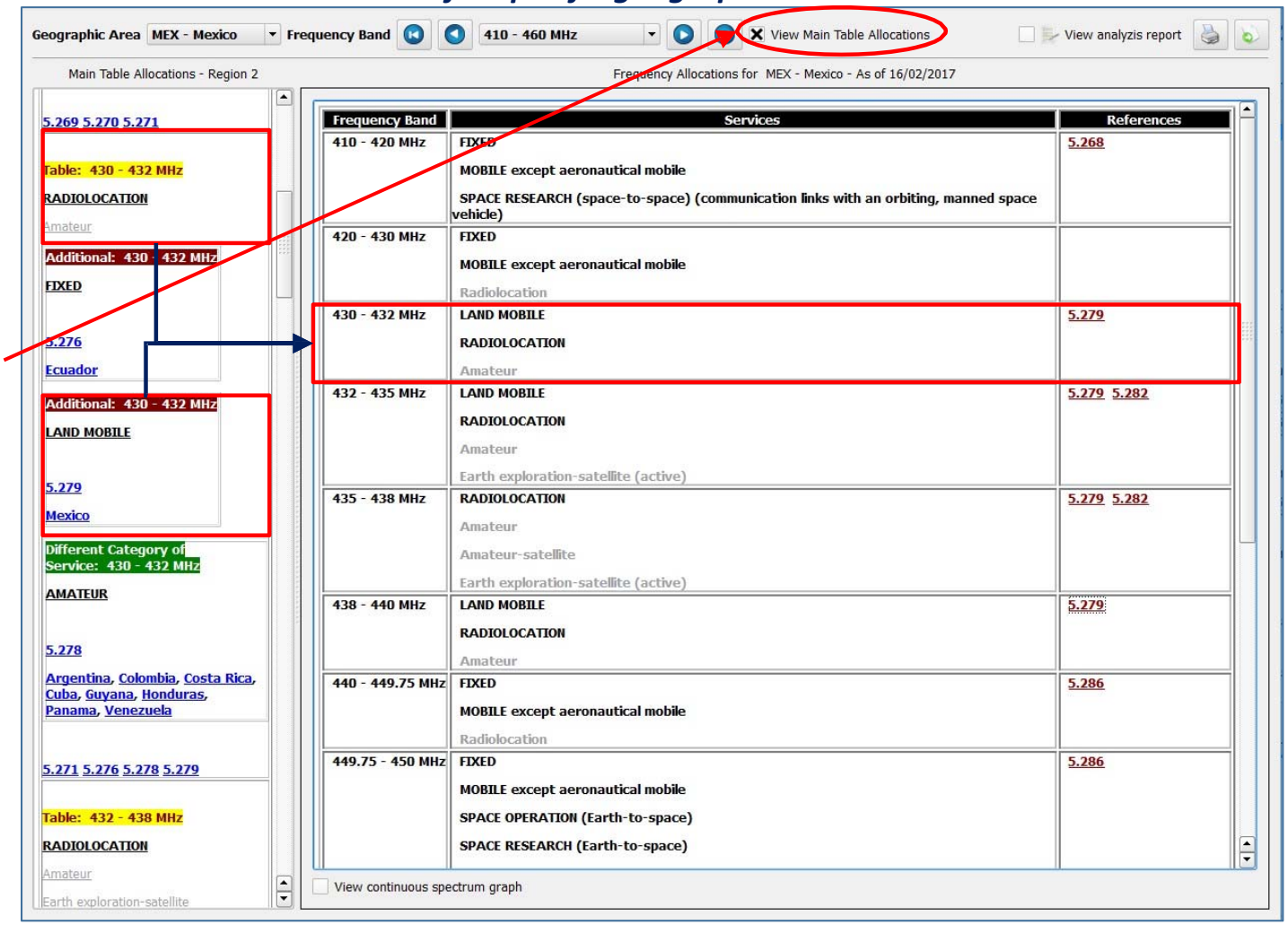
Continued...

Fully Customized Mode – Advanced Features

Derived "International" allocations table for specific geographic area

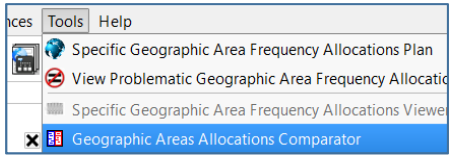
When displaying the allocations table derived for a specific geographic or country, the software provides for the adjacent display of the fully customized Main Table allocations for the appropriate Region. This is accessible by checking the box shown here.

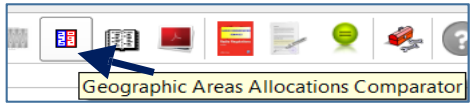
This allows to check the details of the way in which the various components were combined all together to derive the allocations table for a specific geographic or country (the example shown here illustrates the case of the frequency band 430-432 MHz for Mexico).

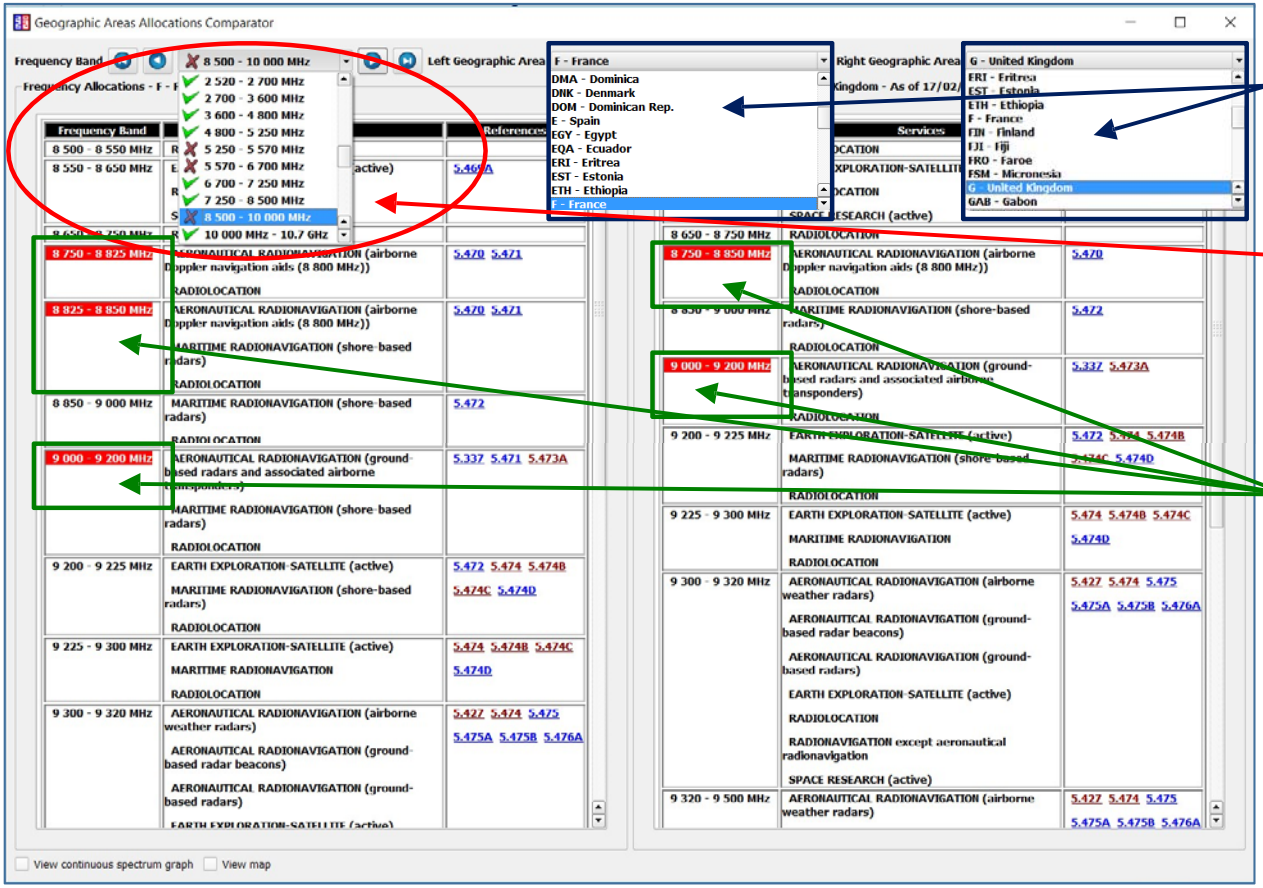


Fully Customized Mode – Advanced Features

Comparing "International" allocations tables for specific geographic areas







With the Fully Customized Main Table Mode, the software provides a utility for comparing the specific derived allocations table for two (usually neighboring) countries). This is accessible via the menu item and the corresponding icon as shown here.

Use these two lists to specify the countries (geographic areas) for which the software compares the specific allocation tables.

Upon comparison, the frequency bands from the Main Table partition are then marked to indicate the presence or absence of "differences" between the two compared specific tables, as shown here.

The software appropriately highlights the frequency bands where differences are found. This may result from either:

- A difference in the frequency bands boundaries (usually resulting from a split due to a specific footnotes inducing a Main Table Modifier for one of the two countries).
- A difference in the radiocommunication services or in their categories.
- A difference in the list of references (footnotes provisions) applicable to one of the tow countries in the relevant frequency band.

Limitations and Future Enhancements

Incorporate cross-references to the relevant **Rules of Procedure**.

The software currently **works in English only**: future enhancements to introduce **multilingual** user interface and data display.

Create possible **cross-links to the terrestrial and space BR IFICs**.

Elaborate a **programming interface (API)** so as to allow third party software to query and use the data model programmatically.

Describe the data model and the various used algorithms.

Provide for the extraction of data and creation of a “writable” data model, allowing the user to modify the model according to national use.

Investigate portability to platforms other than Windows.