Tracking Extension

User Manual

JMap®

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Welcome to the Tracking Extension

The Tracking extension is used to manage mobile units such as people, vehicles and equipment in JMap Pro applications.

Tracking offers functionality to:

- Track the activity of mobile units in real time.

  Tracking integrates telemetry data, such as geopositioning, the position of a snow removal truck's plow, a truck's road salting activity, etc.

- Analyze, in a map-based interface, the movement and activity of units over a period of time defined by the user.

- Geofence mobile units by sending alerts when rules are violated.

- Generate reports on the analyses and the characteristics of the mobile units, and export these reports to various formats.
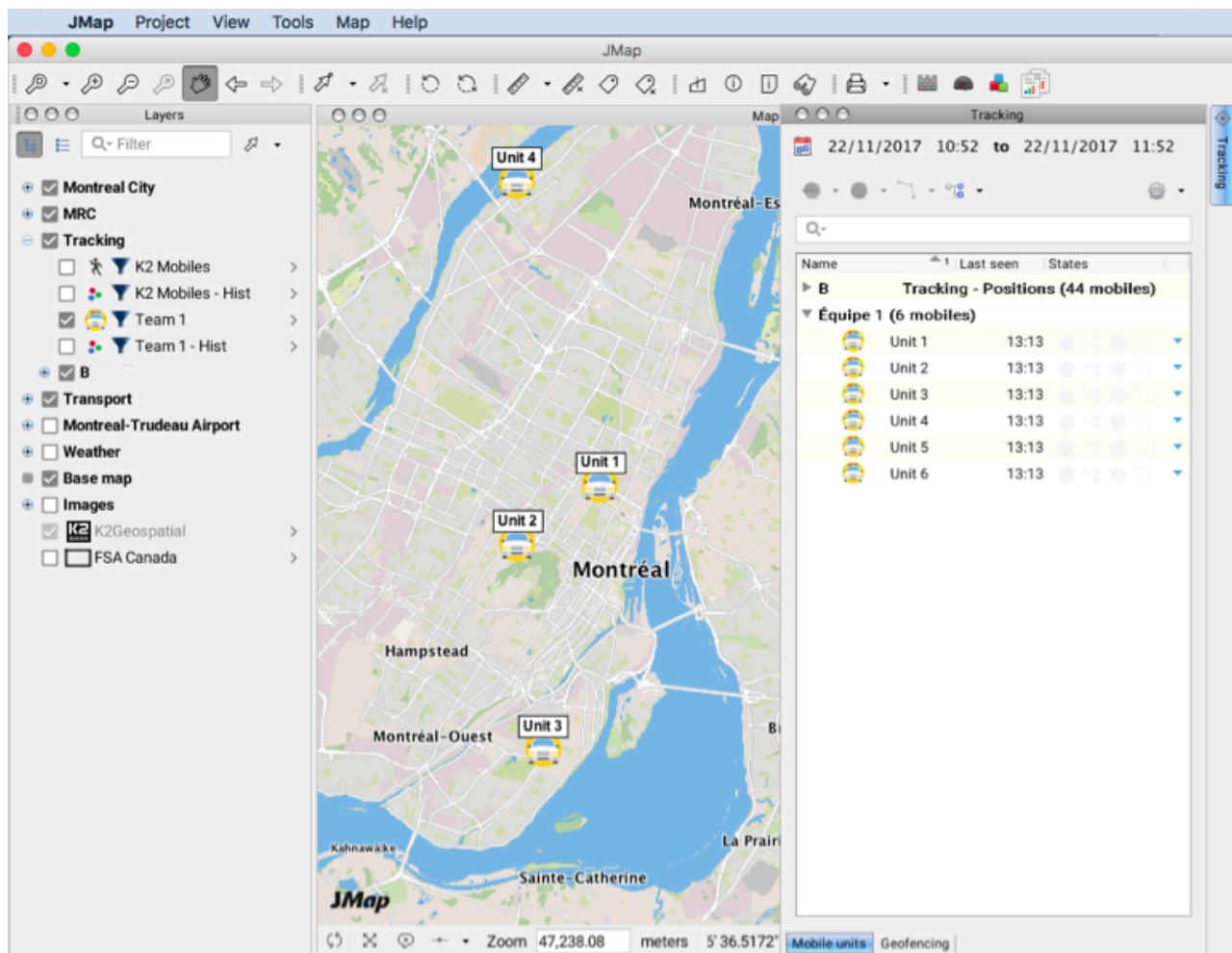
The Graphical Interface

The mobile units managed with Tracking are represented by the map elements integrating the layers that the JMap administrator has created and made available to users in the application's layer manager.

Tracking's graphical interface is comprised of a dockable window, which provides information on the movement of mobile units. A set of buttons in the toolbar also allows you to perform specific functions.
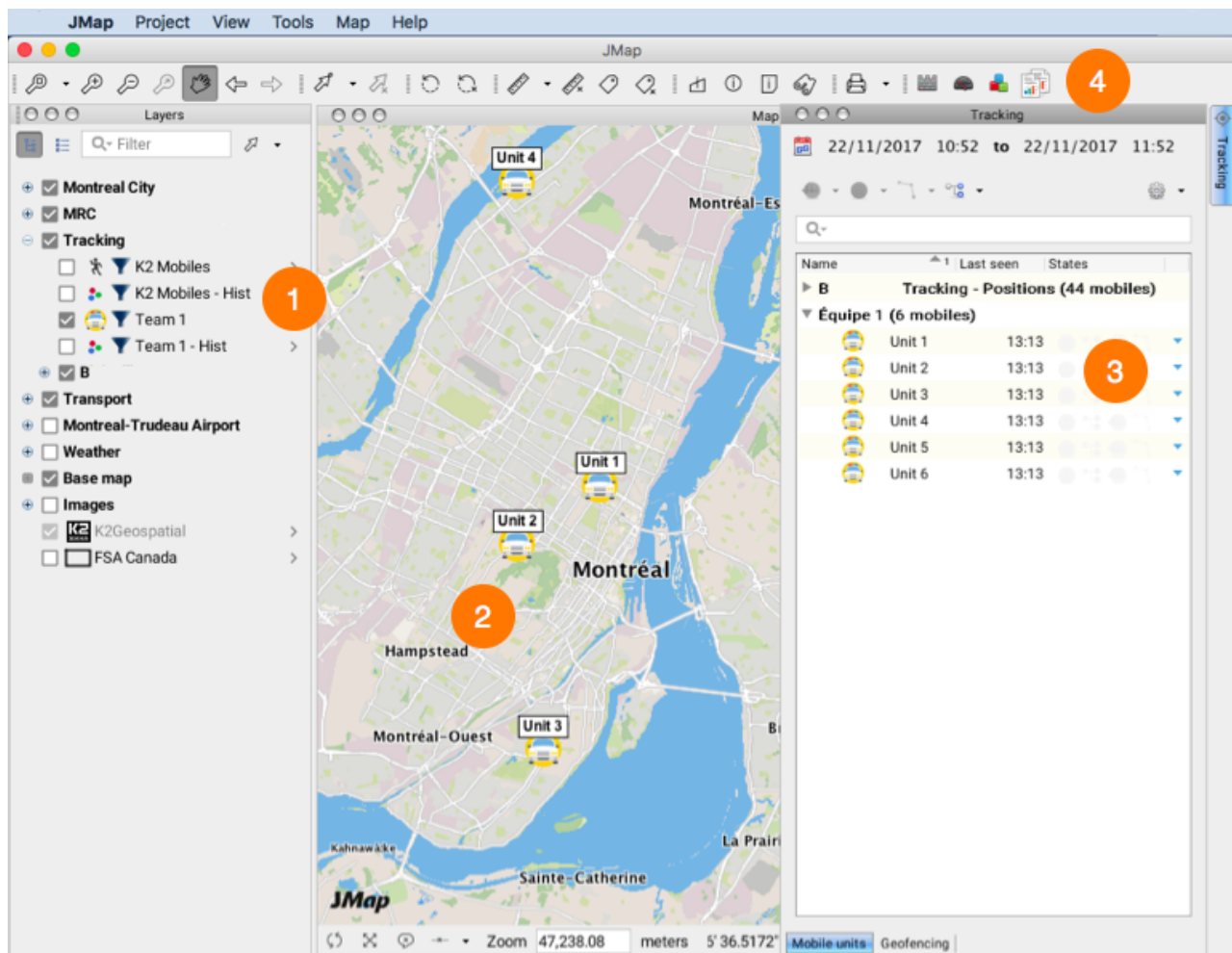
1   Layers managed by Tracking, including the mobile units and their movement history.

2   Mobile units and their movement displayed in the map interface.

3   Tracking window displaying information on mobile objects and offering access to various functions.

**4** Tracking tools available in the toolbar.

The Tracking window

This is Tracking's most complex graphical interface. It contains two tabs: **Mobile units** and **Geofencing**.

Like any other window in JMap Pro, the Tracking window can be toggled to floating mode or hidden.

The window displays when you position the mouse cursor on the tab of the ◎ Tracking extension.

It can also be enabled or disabled by clicking in the **View - > Tracking** section of the application's menu bar.
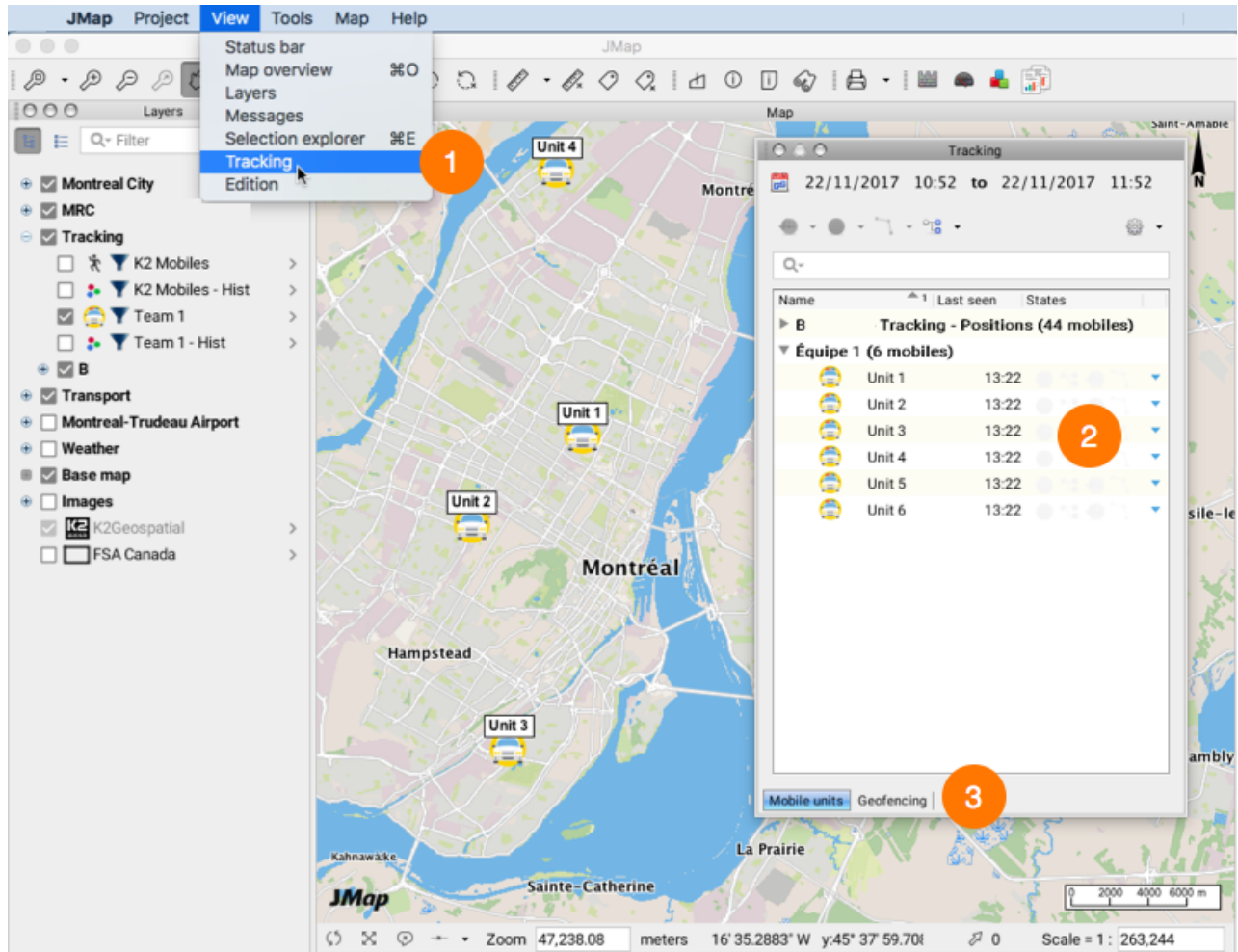
1 Enable or disable the Tracking window from the menu bar.

2 The window can be displayed in floating mode, hidden from the screen or attached to the application's map interface.

3 Both tabs offer specific information and functionality.

Layers Managed by Tracking

The JMap administrator creates layers for specific types of elements, and these elements represent the mobile objects managed with Tracking. The movement of objects within a given period of time is stored in specific layers of these elements. The administrator also creates layer groups to better organize the information.

In the layer manager, you can access the layers managed by Tracking in **Hierarchical mode** and in **List mode**, as with the application's other layers. Therefore, you can move these layers in the list, enable them or disable them.

Layers managed by Tracking are also enabled automatically when you perform one of Tracking's functions.
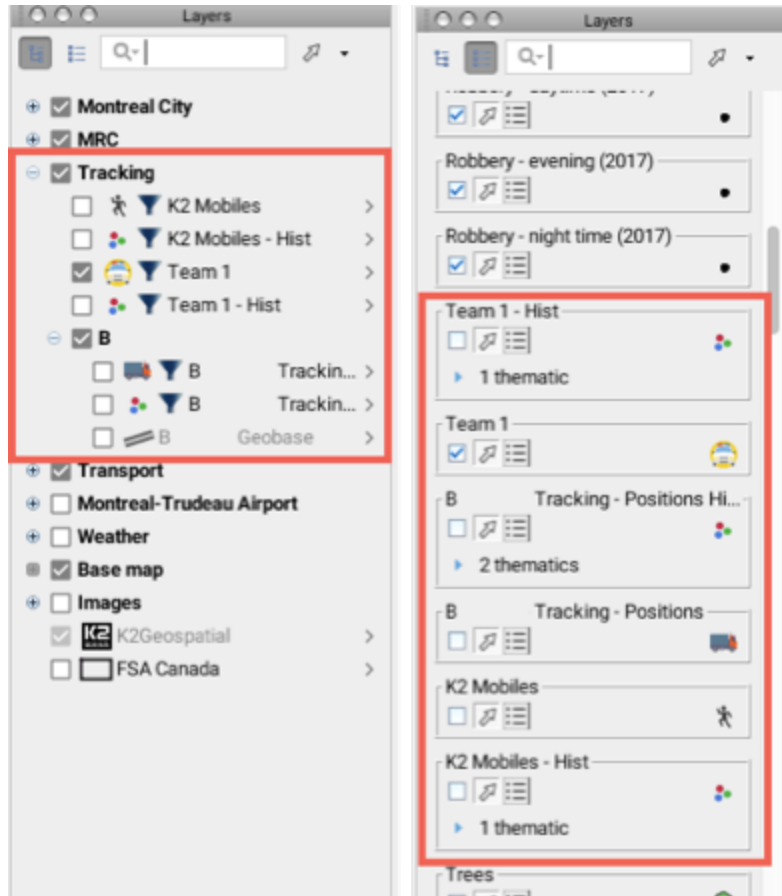
Layer manager in Hierarchical mode and in List mode

Tracking layers display the same pop-up menu as the other layers, and their settings can be configured by users (display, style, thematics, mouseover bubbles).
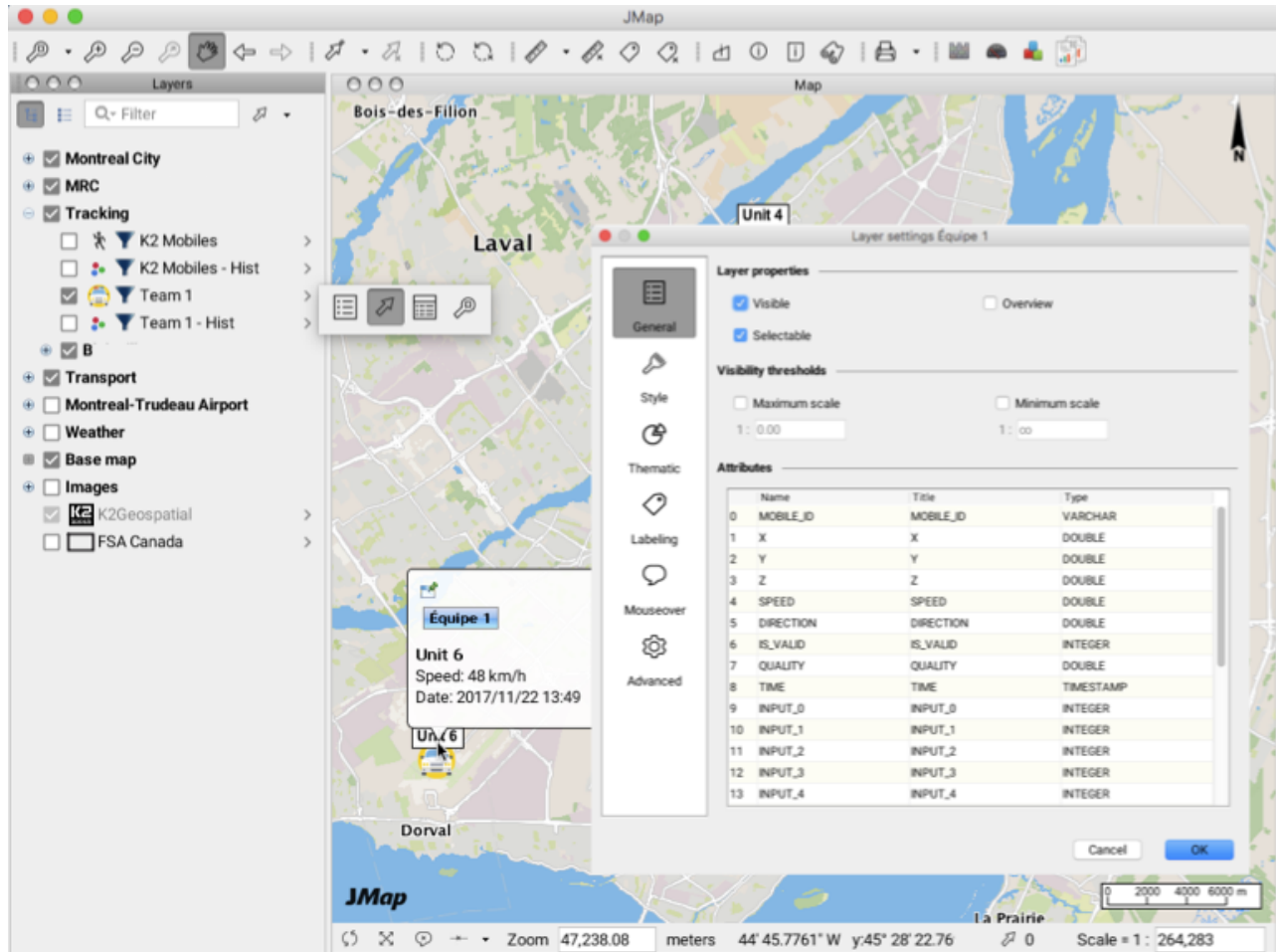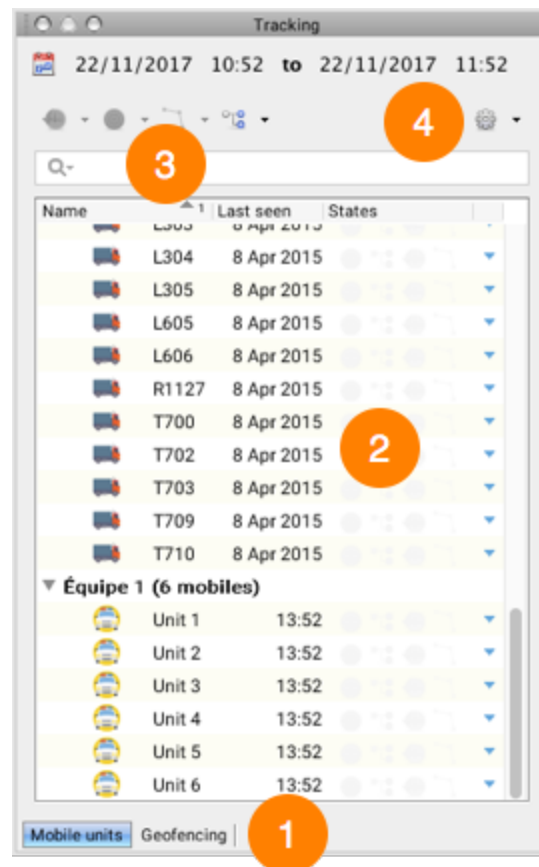
Tracking layers can be exported to Mid/Mif, SHP, KML, WKT or GeoJson files using the **Exportation** extension. They can also be used to elaborate spatial queries or they can be used in attribute selection queries.

Tracking's Functions
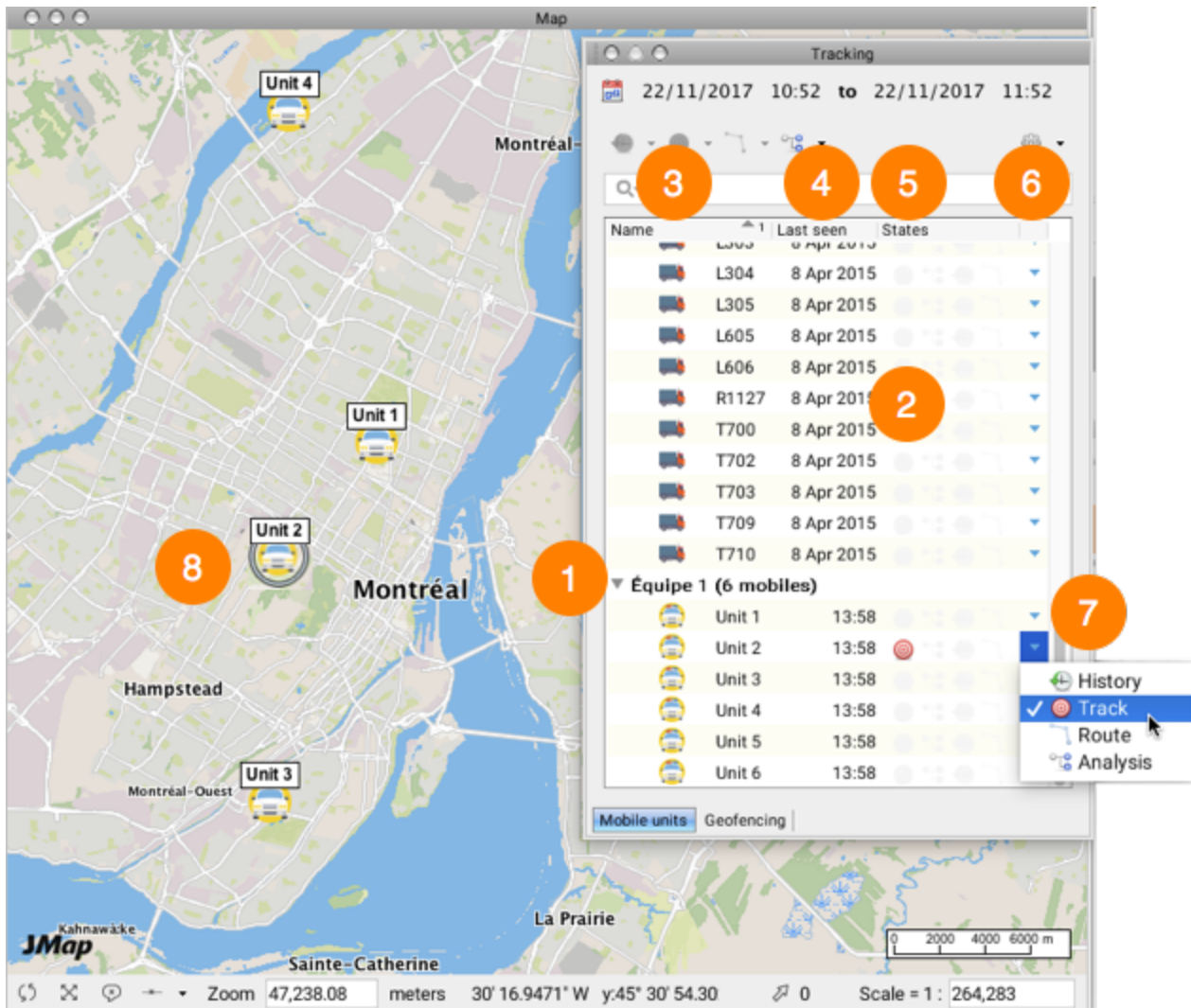
Displaying Mobile Units

You can view mobile units and their information in the **Mobile units** tab of the Tracking window.

1 Mobile units tab.

2 List of mobile units integrating the layers managed by Tracking.

3 Tool used to search for and hide the layers and mobile units displayed in the Tracking window (does not affect the map interface).

4 Tool used to apply a time-based filter to the units displayed in the Tracking window and in the map interface.

List of mobile units

This section of the Tracking window displays the mobile units, listed by layer. It includes information and functions organized into a table, as shown in the following figure:

1 Name of the layer managed by Tracking, along with the number of mobile units it contains, in parenthesis.

To open a layer:

1. Click on ▶. Mobile units are displayed.

2. To close the layer, click on ▼. Only the name of the layer is displayed.

Layers are defined by the JMap administrator. In a vehicle tracking context, the term Fleet is used to identify them.

2 Mobile units.

Double-click on a mobile unit to zoom in on it in the map interface.

You can select mobile units and apply functions to them using the window's function buttons.

3 **Name** column. Displays the name of the mobile unit and the symbol representing it in the map layer.

Allows you to sort, search, and hide the mobile units displayed in the list.

4 **Last seen** column. Displays the date of the mobile unit's last activity.

The column displays the date or time (as appropriate) of the last information entered in the database.

Allows you to sort, search, and hide the mobile units displayed in the list.

5 **States** column. Displays the functions that are enabled for a mobile unit.

6 This column allows you to enable or disable functions for each mobile unit.

7 1. Click on the blue arrow ▼ to show the drop-down menu containing the **History**, **Track**, **Route**, and **Analysis** functions.

2. Double-click on the row to zoom in on the corresponding mobile unit.

8 In the map interface, the mobile unit displays the symbols indicating the functions that are currently active: the circle represents the Track function, and the H is for History.

Filters applied to the **Name** and **Last seen** columns are saved to the user's profile and applied at login.

Filtering mobile units

You can apply two types of filters to the mobile units viewed: (1) a filter based on their name or on characters contained in their name; and (2) a time-based filter.

Filtering mobile units based on their name or on characters in their name

You have two possibilities:

To display a mobile unit or a layer based on its name, use the filter associated with the Name column:

1. Click on the filter's symbol ☑ located in the header of the **Name** column. The drop-down menu appears and displays all available options.

2. Select the mobile unit or the layer you wish to display. The list is modified and displays your choice. This will not affect the map interface.

    The filter also offers the options **All** and **Custom...**. The latter allows you to define specific conditions (refer to the Conditions section).

3. Select **All** to clear the filter and display all layers and mobile units.

To display a mobile unit or a layer based on the characters in its name:

1. Enter the desired characters in the search field ☌ . All mobile units whose name contains the string of characters entered are displayed in the list. The other mobile units are hidden. The map interface is not modified.

2. Delete the characters to display all layers and mobile units.

Filtering mobile units based on time

You can filter mobile units based on the date of their last activity, either in the list of mobile units using the filter of the **Last seen** column, or in the mobile units list and map interface using the ⚙ ▾ tool.

To display only the list of mobile units based on the date of their last activity:

1. Click on the ☑ symbol located in the header of the **Last seen** column. The drop-down menu appears and displays the list of available options.

2. Select the desired date. The list is modified to display the mobile units whose last activity date is the one you selected. The map interface is not modified.

    The filter also offers the options **All** and **Custom...**. The latter allows you to define specific conditions (refer to the Conditions section).

3. Select **All** to clear the filter and display all layers and mobile units.

To display the mobile units of a layer based on their last activity date, in the list and map interface:

1. Click on ⚙ ▾ to display the list of layers managed by Tracking.

2. Click on the name of the layer whose units you wish to filter.

3. Select the period (in days, hours or minutes) as of which the filter will be applied. Mobile units whose last activity occurs after the period will be shown in the map interface and in the list of mobile units shown in the Tracking window. All other units will not be displayed.

Custom filter conditions

The filters of the **Name** and **Last seen** columns offer the following custom conditions:

Is anything: Displays all values.

Is: one of the existing values.

Doesn't equal: one of the existing values.

Is in: a set of existing values.

Isn't in: a set of existing values.

Is empty: displays units for which there is no value.

Is not empty: displays units for which there is a value.

Is greater than: one of the existing values.

Is greater than or equal to: one of the existing values.

Is less than: one of the existing values.

Is less than or equal to: one of the existing values.

Is between: a range defined between two existing values.

Is not between: a range defined between two existing values.

Tracking Mobile Units

You can track the movement of one or more mobile units, which may belong to the same or to different layers managed by Tracking. These units are identified in the map interface using a circle surrounding the unit's symbol. When the units move, the map is modified to automatically display the zone in which they are located.

Tracking a mobile unit

1. Click on ▼ to open the functions menu of the mobile unit you wish to track.

2. Click on **Track** 🎯 to enable the function. The 🎯 symbol is displayed in the **States** column, and the mobile unit is surrounded by a circle in the map interface. The interface moves in order to display the tracked mobile unit at all times.
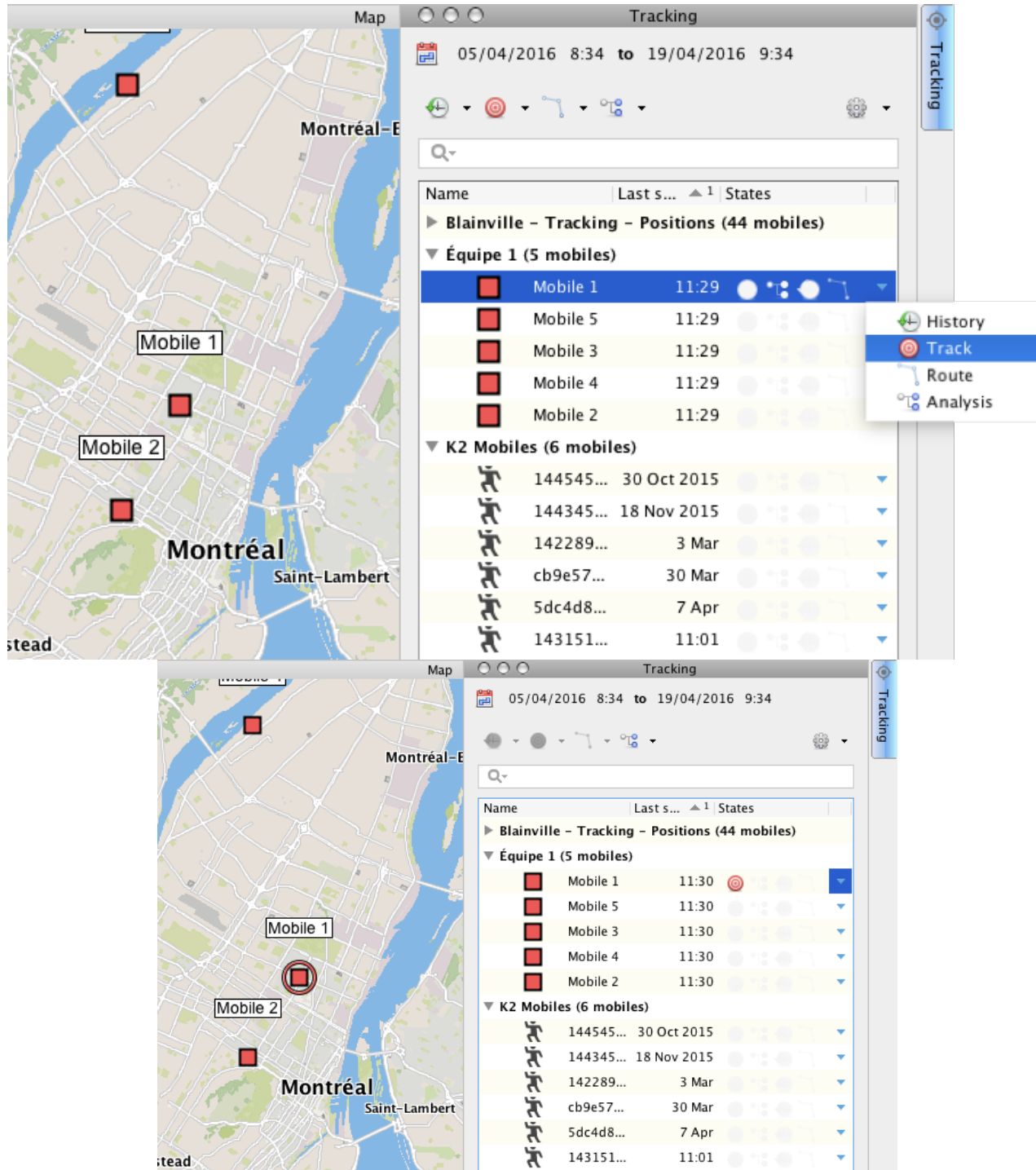
3. Click on **Track** 🔴 again to disable the function.

Using this method, you can enable the **Track** function for several mobile units belonging to the same layer or to different layers, using the functions menu of each unit.

Tracking several mobile units

1. Click on the mobile unit to select it. By pressing and holding down the **CTRL** key you can select several mobile units. The Tracking window's function buttons are enabled.

2. Click on **Track** menu ⊙ ▾ to display the available options.

3. Click on **Track** selected mobiles. The ⊙ symbol displays in the **States** column of each mobile unit selected, and in the map interface, they are surrounded by a circle. The interface moves in order to display the tracked mobile units at all times.
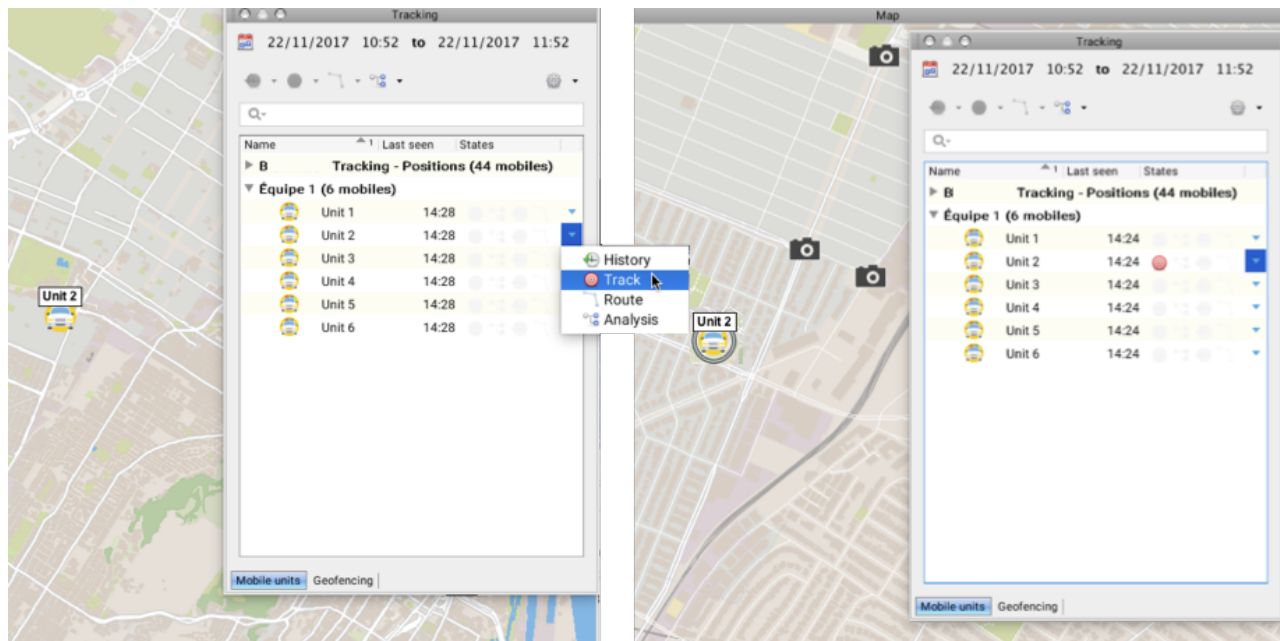
4. Select the mobile units you no longer want to track.

5. Click on **Track** ⊙ ▾. A menu appears, displaying available options.

6. Click on **Stop tracking for selected mobiles**. The ⊙ symbol displayed in the **States** column for the selected units will be disabled. In the map interface, the units are no longer surrounded by a circle.

Viewing Activity History

Tracking stores the location and telemetry data of mobile units in a database. Thus, you can access the history of their activity for analysis and mapping purposes.

To view the history of mobile units, you must start by defining the period for which you wish to display the mobile units' activity.

Defining a period of time for data selection

The period is the time frame for which Tracking considers the activity data of mobile units to display their history and routes and to analyze them.

To define a time frame, click on the **Edit period...** icon located in the **Mobile units** tab of the Tracking window. The Display period configuration interface appears.
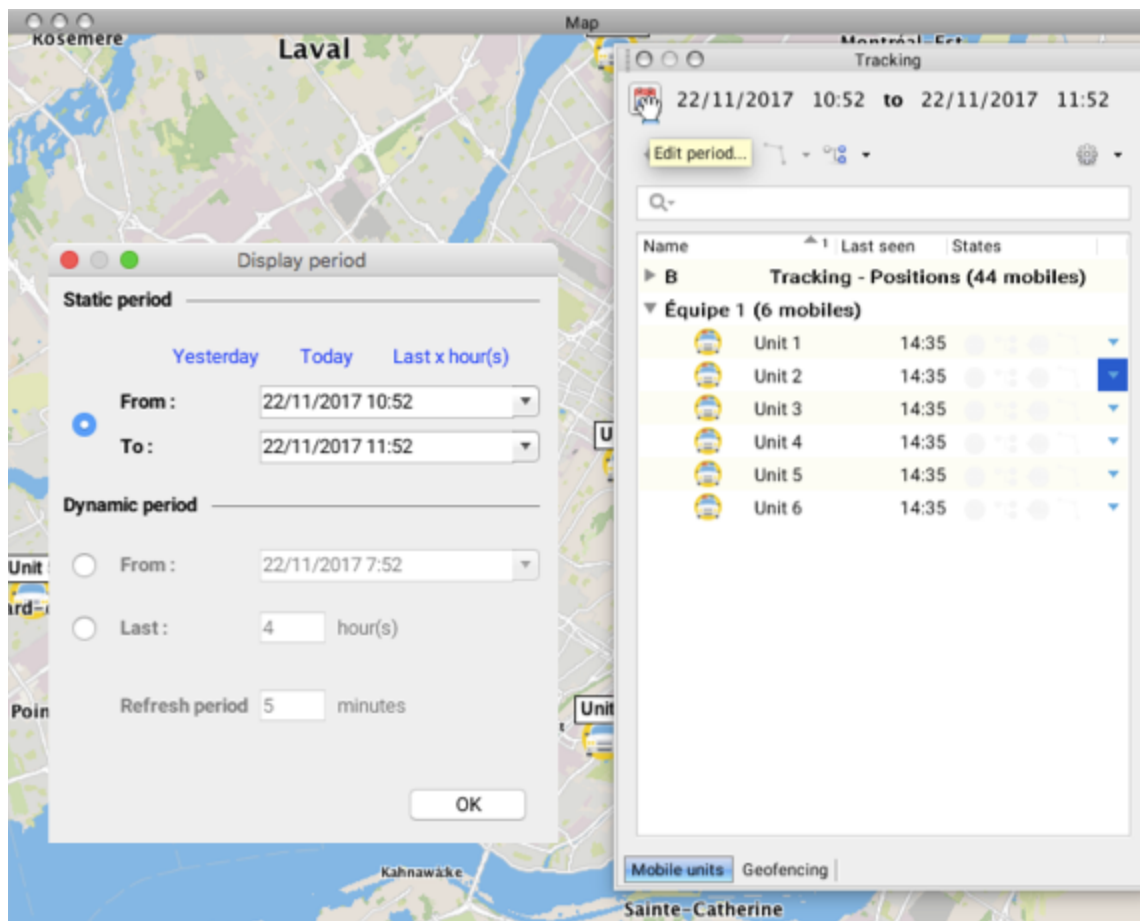
Two different types of periods can be configured: a static period and a dynamic period. The static period is set between two moments (start and finish) and has a fixed duration. As for the dynamic period, either its duration or start date is variable.

Static period

This time frame is set between a start and end date and has a fixed duration. By default, the static period is set to 1 hour before you logged in.

Several options are available to configure a static time period.

Yesterday: The period is set on the day before the time frame was configured, between 0:00 and 23:59.

Today: The period is set on the day the time frame is configured, between 0:00 and 23:59.

Last x hour(s): The period is set a certain number of hours before the time frame was configured.

From and To: Allow you to manually define the date and time that the period of time starts and ends.

Dynamic period

This type of period has a variable duration or a variable start date. Two options are available to configure it:

From: Allows you to set the start time and date of the period, which extends to the present. In this case, the duration of the period is variable.

Last: Allows you to define a fixed number of hours for the duration of the period, starting from the present moment. In this case, the start date of the period of changes over time.

The dynamic period changes in real time as the GPS sends data to JMap. You can define the data refresh frequency in the application, by specifying the period in minutes in the **Refresh period** field.

Once you have defined the period for which the location and activity data is displayed, you can select one or more mobile units to view the history.

Viewing the activity history of a mobile unit

1. Click on ▼ to open the functions menu for the mobile unit whose history you wish to view.

2. Click on **History** ⊕ to enable the function. The symbol ⊕ appears in the **States** column.

The map interface displays the route traveled by the mobile unit in the time period previously defined. The route is made up of points corresponding to each positioning data item received by Tracking.

A square of the same color as the route appears in the **Name** column of the mobile unit in the Tracking window. This means that the history is enabled.

In the map interface, the mobile unit's symbol is surrounded by a box and marked with an H, which indicates that the history is displayed.
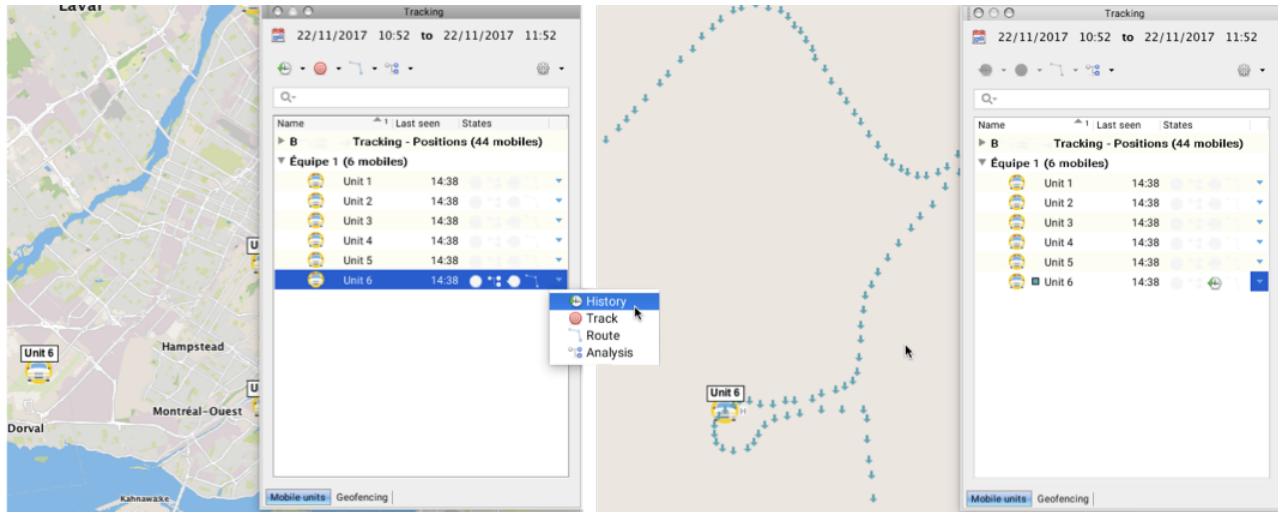
3. Click on ⏰ again to disable the function. The points representing the route are no longer shown on the map interface; the box and the H are no longer shown on the mobile unit's symbol either.

You can use this process to enable the **History** function of several mobile units on the same layer or on different layers, using the functions menu of each layer.

Viewing the history of several mobile units

1. Click on the mobile unit to select it. By pressing and holding the **CTRL** key you can select several mobile units. The function buttons of the Tracking window are enabled.

2. Click on **History** menu ⏰ ▾ to display the options available.

3. Click on **Show history for selected mobiles**. The symbol ⏰ displays in the **States** column of each mobile unit selected.

   The map interface displays the routes of the mobile units in the time period previously defined. The routes are made up of points corresponding to each data item received by Tracking.

   A square of the same color as the route appears in the Name column of each mobile unit in the Tracking window. This means that the history is enabled.

   In the map interface, the symbol of each mobile unit is surrounded by a red box and marked with an H, which also indicates that the history is displayed.
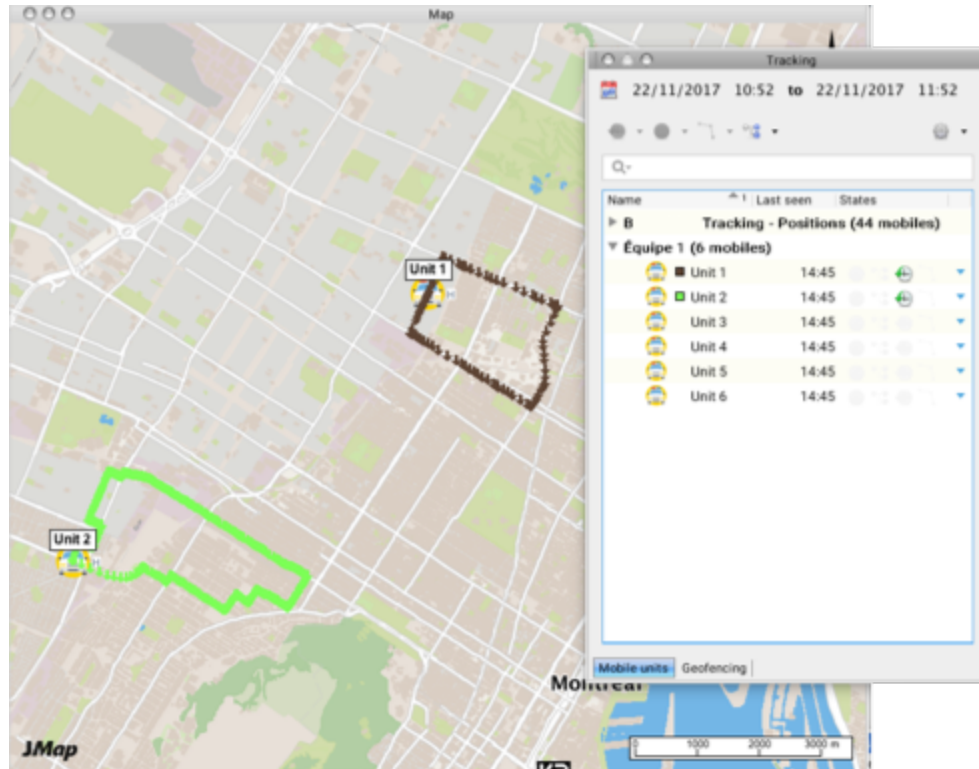
4. Select the mobile units for which you no longer want to display the history.

5. Click on **History** ▾ to display the available options.

6. Click on **Hide history for selected mobiles**. The symbol in the **States** column is disabled for the selected units.

   The box surrounding the units and the H are no longer displayed in the map interface. The Tracking window's function buttons are also disabled.

Viewing Routes

You can view the activity history of one or more mobile units in the form of routes, instead of as a sequence of points. This function can be useful in a situation where you need to view the direction of the routes traveled by mobile units.

The first step consists of defining a period of time within which the data will be considered. This process is defined in the section Defining a period of time for data selection of the Viewing Activity History chapter. .
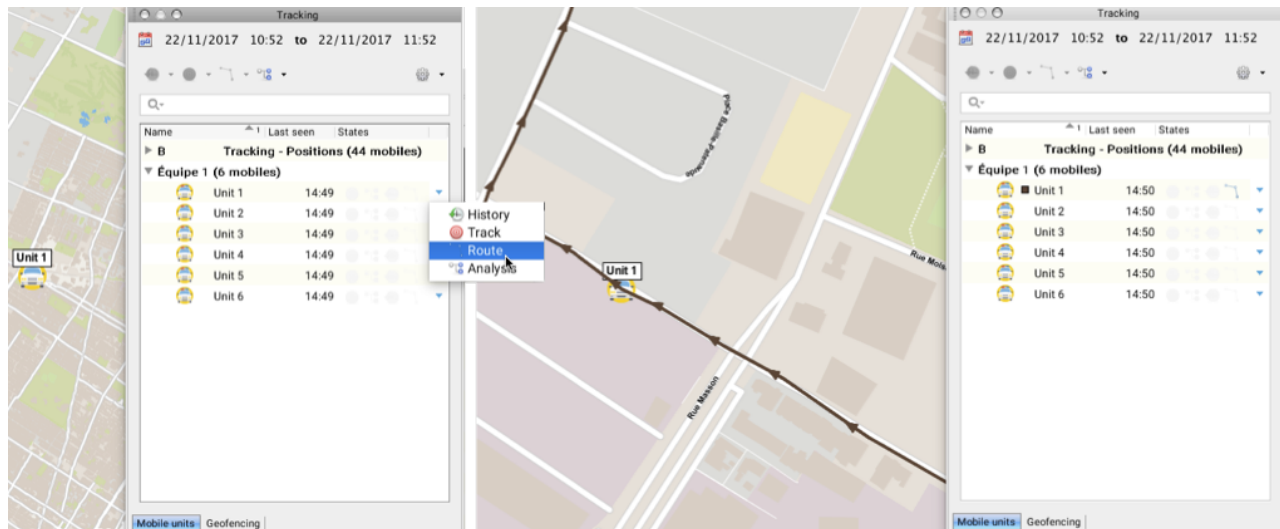
Viewing the route of a mobile unit

1. Click on ▼ to open the functions menu of the mobile unit for which you wish to display the route.

2. Click on **Route** ⌐ to enable the function. The symbol ⌐ appears in the **States** column.

The map interface displays the route traveled by the mobile unit in the period previously defined. The route is made up of arrows corresponding to the positioning data received by Tracking. The tip of the arrow indicates the direction of the trip.

In the Tracking window, a square of the same color as the route is displayed in the Name column of the mobile unit, indicating that the route is displayed.

In the map interface, the symbol of the mobile unit is surrounded by a box, also indicating that the route is displayed.

3. Click on **Route** ⌐ again to disable the function. The arrows representing the route disappear from the map interface, as does the black box around the mobile unit's symbol.

You can use this process to enable the **Route** function of several mobile units on the same layer or on different layers, using the functions menu of each one.

Viewing the routes of several mobile units

1. Click on a mobile unit to select it. By pressing and holding the **CTRL** key you can select several mobile units. The Tracking window's function buttons are enabled.

2. Click on **Route** menu ⌐ ▼ to display the available options.

3. Click on **Show route for selected mobiles**. The symbol ⌐ displays in the **States** column of each mobile unit selected.

The map interface displays the routes of the mobile units that fall within the period previously defined. Routes are made up of arrows corresponding to each data item received by Tracking.

In the Tracking window, a square of the same color as the route is displayed in the Name column of each mobile unit, indicating that the route is being displayed.

In the map interface, the symbol of each mobile unit is surrounded by a box, also indicating that the route is displayed.
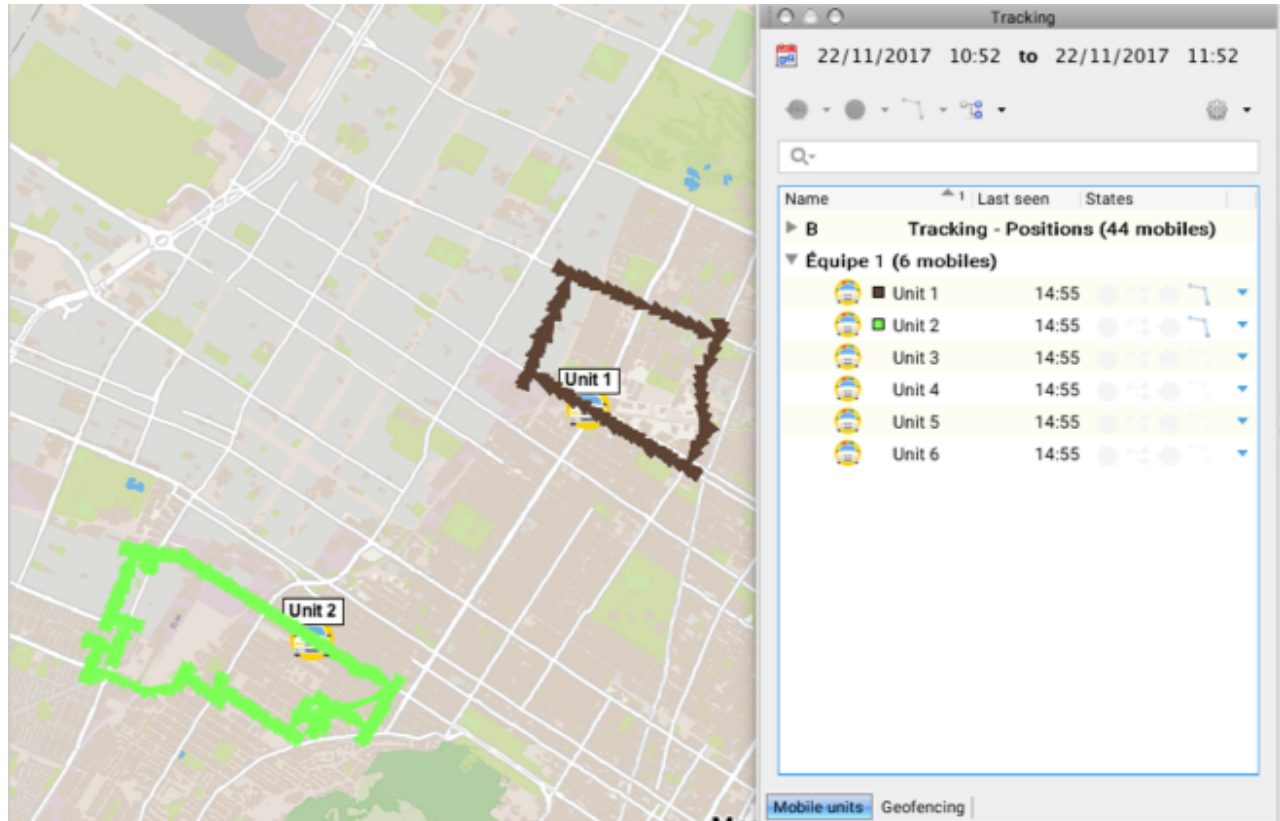
4. Select the mobile units for which you no longer want to display the route.

5. Click on **Route** to display the available options.

6. Click on **Hide route for selected mobiles**. The symbol of the **States** column is disabled for the selected units.

The box surrounding the units disappears from the map interface.

Analyzing Activity Data

You can analyze data on the activity of mobile units to produce thematic maps that are easily interpretable.

The JMap administrator configures all the details of the analyses that are available to you and that you can customize and display in the application.

Some of these analyses are based on a road network. These will offer information on the routes traveled by mobile units over a given period of time, for instance. Other analyses do not require a road network and instead use the geopositioning data of mobile units.

The road network on which the analysis is based may not be accessible to you, depending on the configuration set by the JMap administrator. It may also be a double road network, in which each traffic direction is indicated using a different line. This type of road network representation is necessary when the activity of a mobile unit involves only one traffic direction, as is the case for snow removal or road cleaning activities.

Analysis results are layers that display in the application's layer manager. These vector layers can be used to elaborate spatial requests, to perform spatial analyses (to create buffer zones, for instance), or they may be exported using the **Exportation** extension.

To perform analyses, you must start by defining a period of time for the analysis in the **Mobile units** tab of the Tracking window. The details are presented in the section Defining a period of time for data selection.
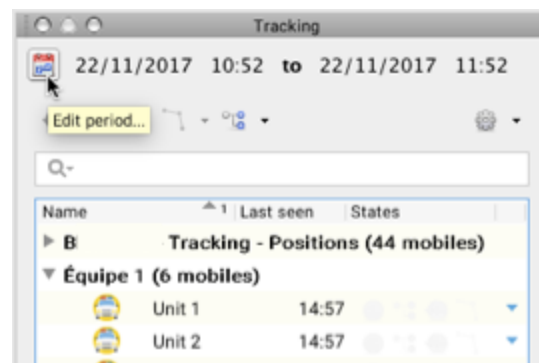

You can define static or dynamic periods for your analyses. The first option is useful for performing a posteriori analyses on how the activities were conducted, whilst the second type of analysis allows you to view results almost in real time, as the activity is being carried out.
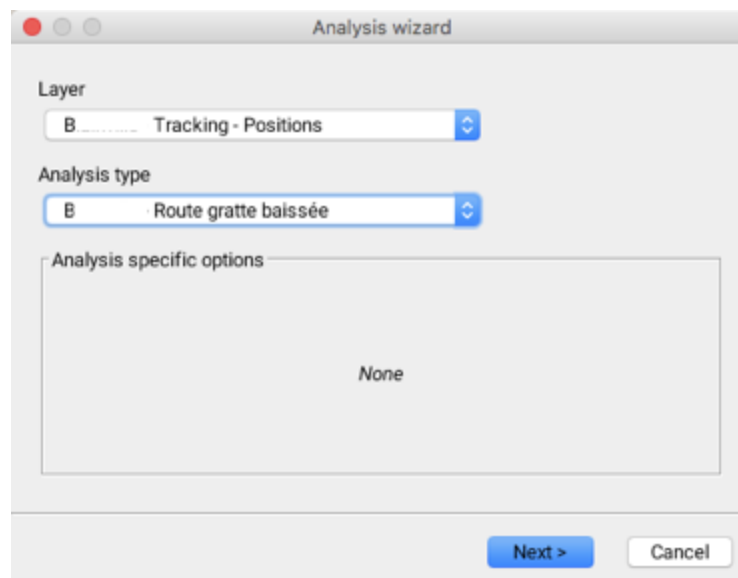
Analyzing the activity of a mobile unit

1. Click on ▼ to open the functions menu of the mobile unit whose activity you wish to analyze.

2. Click on **Analysis** to enable the function. The **Analysis** symbol displays in the **State** column.

3. Click on the **Analysis** function's button in the Tracking window. A menu showing the available options appears.
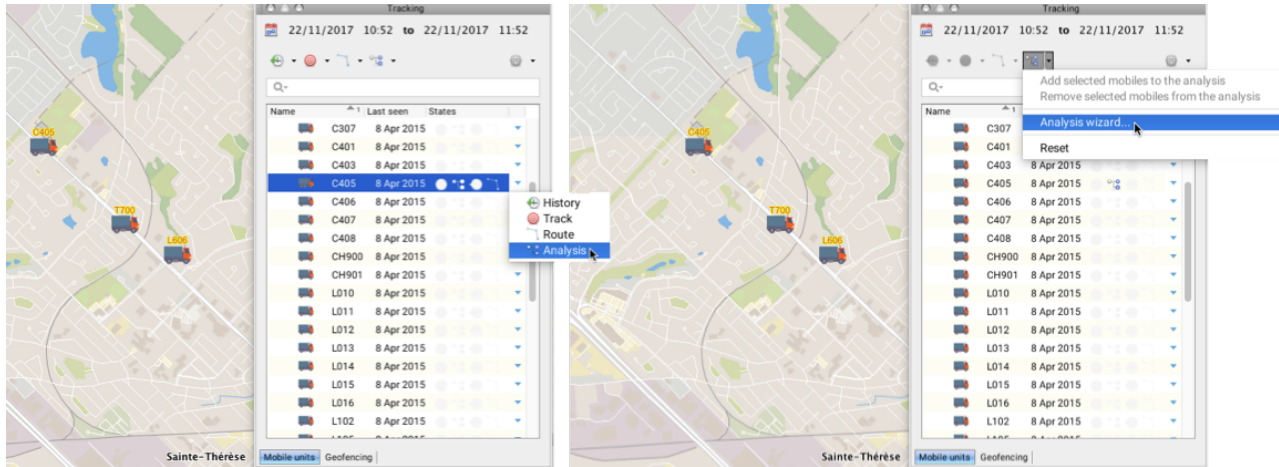

4. Select **Analysis wizard...**.

The **Layer** parameter allows you to select the Tracking layer on which you wish to perform the analysis. In this case, you have already selected the layer because you have selected the mobile unit.

The **Analysis type** parameter allows you to select the analysis you wish to perform. Some types of analyses have specific options you must configure.

A few examples of analysis types are presented afterwards. The list may vary based on the types of analyses configured.

Road traveled analysis

1. Select the **Road traveled** analysis type. This analysis does not require you to configure specific options.

2. Click on **Next**. An interface displays, allowing you to select the layer's mobile units. You can add other mobile units to your analysis.

3. Click on **Finish**. The result of the analysis is displayed in the map interface. It consists of the road network sections covered by the mobile unit during the specified period.
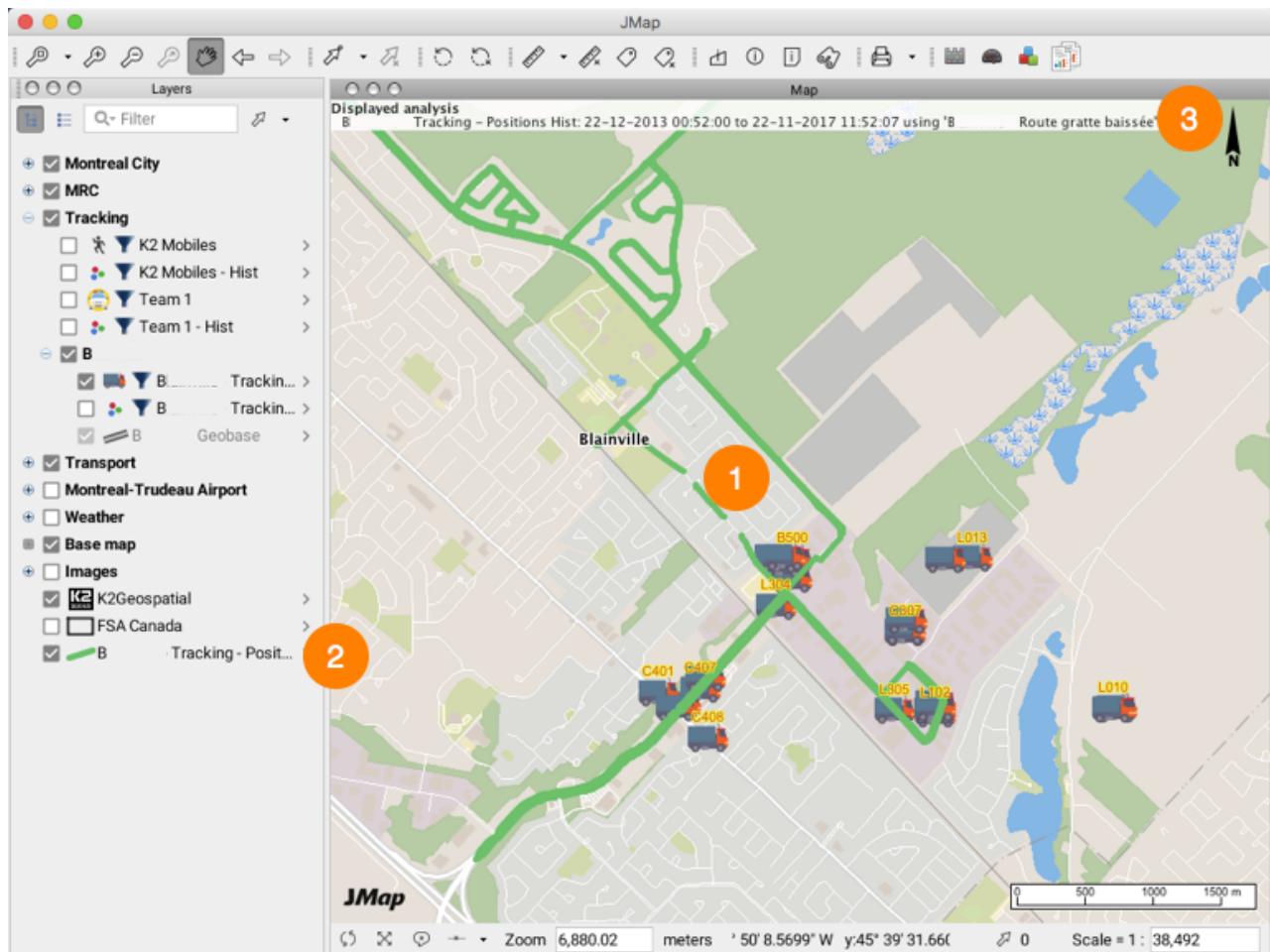
1 Route covered by the mobile unit, displayed in the map interface.

2 Layer containing the route covered by the mobile unit in the Layer manager. You can customize the layer's parameters if you have the appropriate permissions, similarly to the application's other layers.

3 A title in the header of the map interface displays the details of the analysis.

You can also configure mouseover bubbles displaying the positioning data of the mobile unit over time.
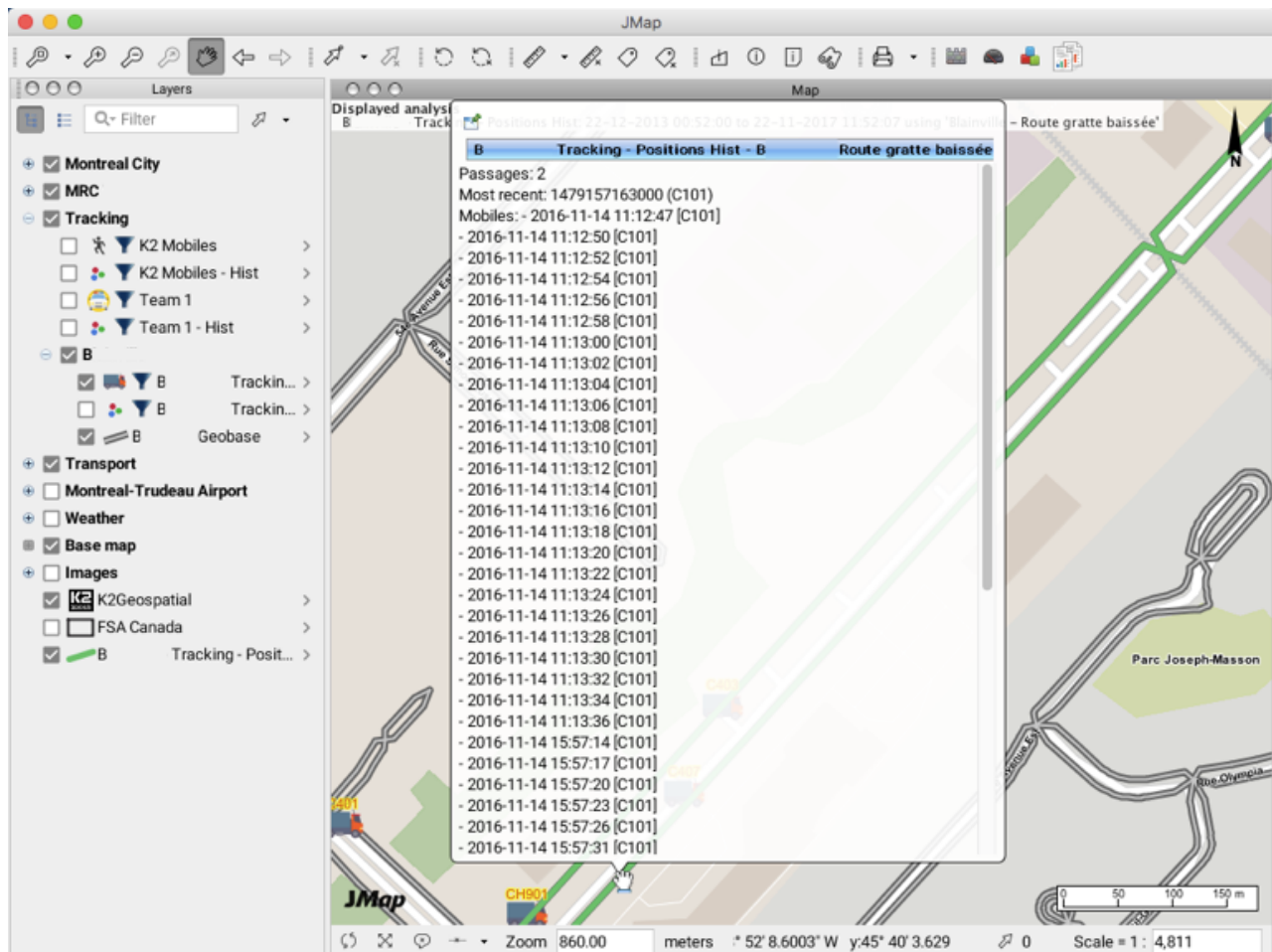

Passages plow down analysis

1. Select the **Passages plow down** analysis type. This analysis provides information on the activity of plows used for snow removal operations.To perform this analysis, you must determine the time elapsed between two passages, i.e. the minimum time frame to consider that the truck made two separate passages.

2. Click on **Next**. An interface displays, allowing you to select the layer's mobile units. You can add other mobile units to your analysis.

3. Click on **Finish**. The result of the analysis is displayed in the map interface.
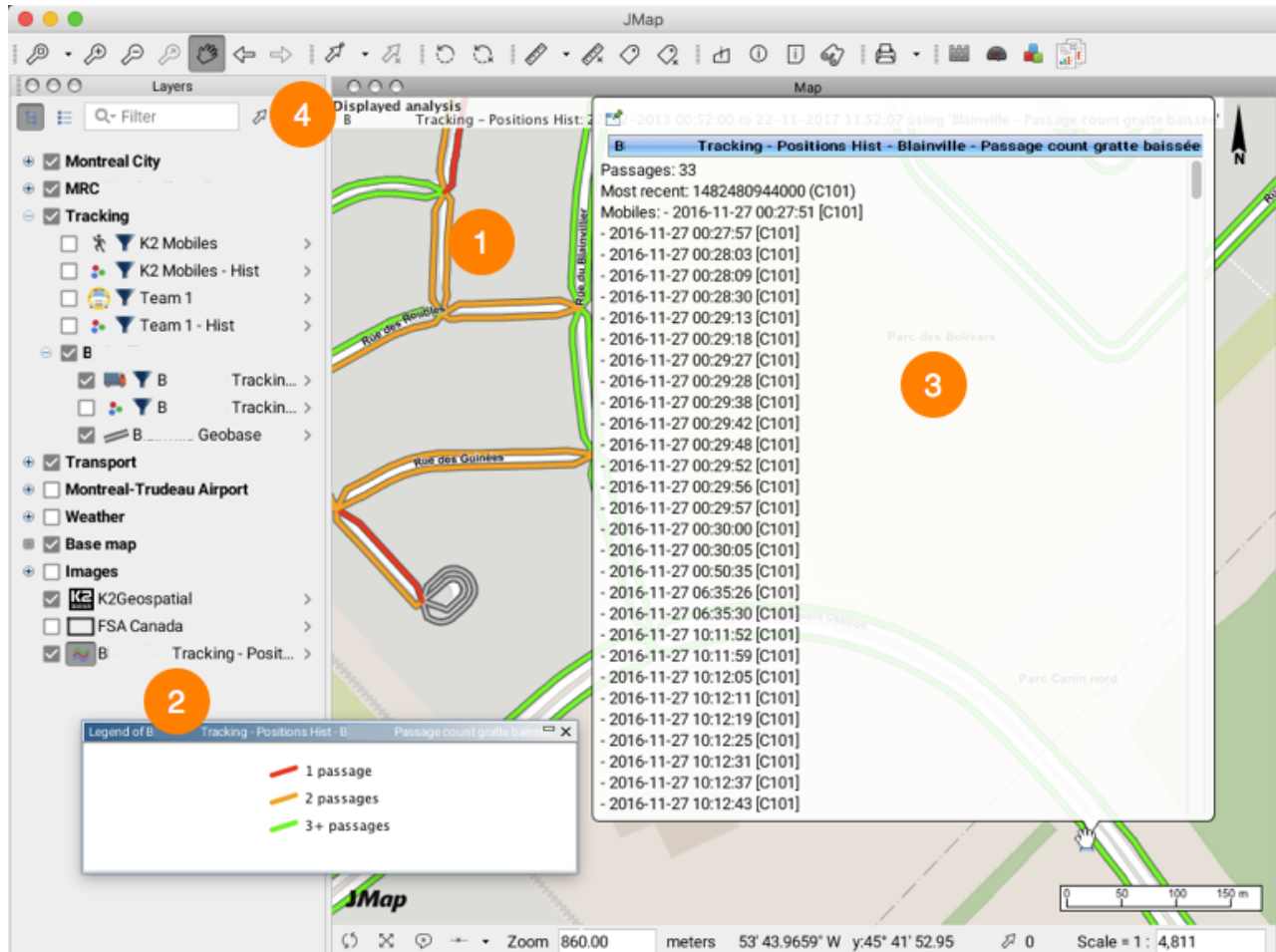
1. Route covered by the mobile unit, displayed in the map interface. Using a double road network allows you to analyze the passages of a mobile unit independently for each traffic direction.

2. Layer containing the route covered by the mobile unit in the Layer manager. A thematic automatically displays, indicating if the mobile unit made one, two, or three or more passages for each section of the road network.

   You can customize the layer's parameters if you have the appropriate permissions, similarly to the application's other layers.

3. A title in the header of the map interface displays the details of the analysis.

4. You can also configure mouseover bubbles displaying data on the passages of the mobile unit over time.

Analysis on the spreading of products

1. Select the option **Épandage avec blasts**. This analysis provides information on the regular spreading of abrasives as well as blasts, in the context of snow removal operations on roads. The other types of analyses either cover the spreading of products, or blasts. Given their configuration, these analyses do not require a road network because the route of a mobile unit is determined based on its geopositioning data. The driver indicates when the spreading or blasting begins and when the activity is finished. Using the vehicle's GPS data at those moments, it is possible to track its route.

2. Click on **Next**. An interface displays, allowing you to select the layer's mobile units. You can add other mobile units to your analysis, if they are available.

3. Click on **Finish**. The result of the analysis is displayed in the map interface.
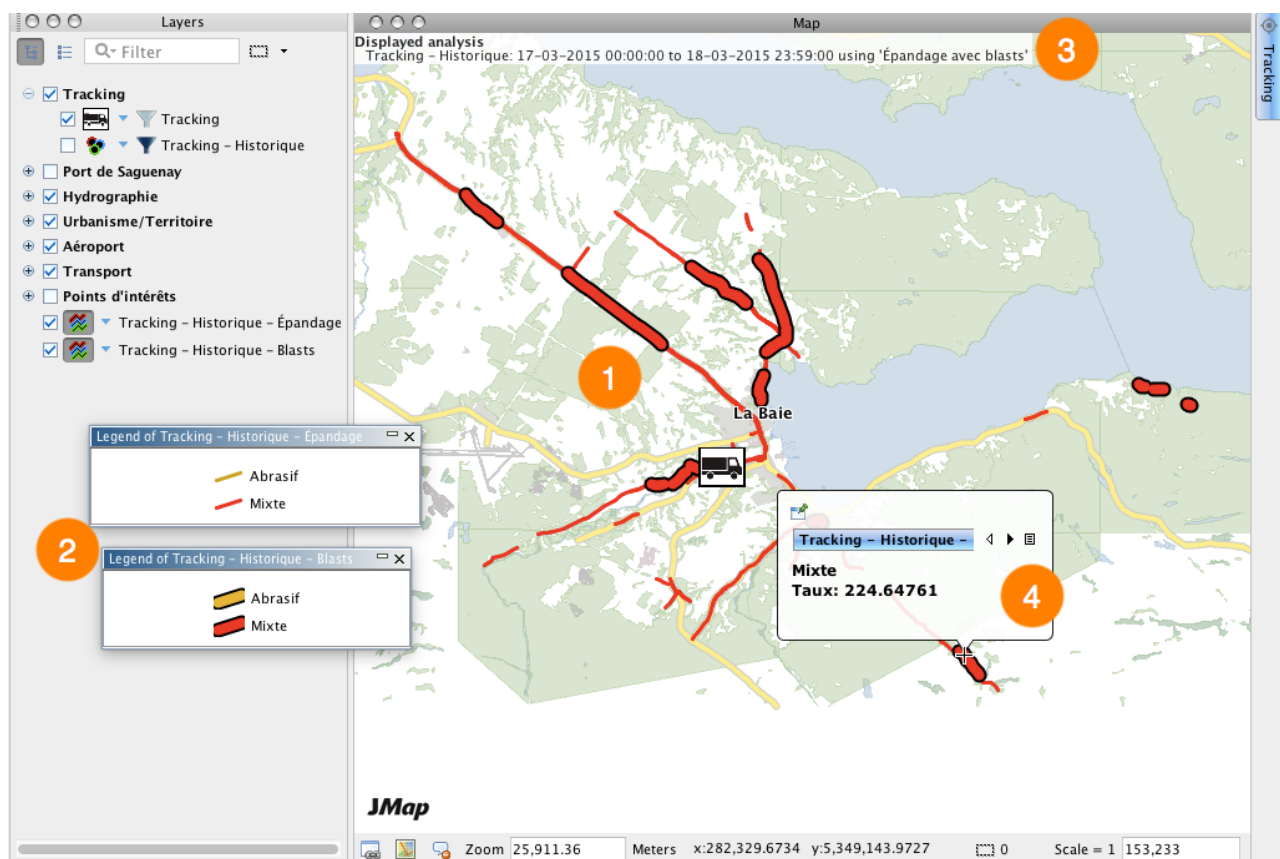
1 Route covered by the mobile unit during the spreading of products and blasts, displayed in the map interface.

2 Layers containing the road covered by the mobile unit in the Layer manager. There is one layer for the regular spreading of products and another for blasts. A thematic automatically

displays, indicating the type of product used.

You can customize the layer's parameters if you have the appropriate permissions, similarly to the application's other layers.

3 A title in the header of the map interface displays the details of the analysis.

4 You can also configure mouseover bubbles displaying data on the mobile unit's spreading activity over time.

Analyzing the activity of several mobile units

You can select several mobile units for your analyses, and there are different ways to do this. The previous section explained how to add or remove mobile units in the Analysis wizard when an analysis was initiated for a single unit. This section shows some other ways to do this.

From the mobile units list in the Tracking window

1. Click on a mobile unit to select it. By pressing and holding the **CTRL** key you can select several other mobile units. The Tracking window's function buttons are enabled.

or

2. Select several mobile units by left-clicking and dragging the mouse. The Tracking window's function buttons are enabled.

3. Click on **Analysis** menu to display available options. These include **Add selected mobiles to the analysis** that was previously defined, as well as the **Analysis wizard...**.

   If you select **Add selected mobiles to the analysis**, the mobile units will be added to the last analysis specified. The analysis symbol displays in the **States** column of each selected unit.

4. Click on **Analysis** again to enable the function. The button changes color, indicating that the server is performing the analysis. When the task is finished, the button returns to its original format, and the results are displayed in the map interface.

From the Analysis menu in the Tracking window

The Analysis menu is always active. You can initiate an analysis using this button, without selecting the mobile units.

1. Click on **Analysis** . The menu opens, displaying the available options: **Analysis wizard...** and **Reset**. You access the Analysis wizard, select the Tracking layers you want among those that are available, and specify the analysis type. Afterwards, you can select the mobile units to which the analysis will apply, as detailed in the previous section.

Geofencing

Geofencing consists of defining geofences (or sets of rules) to manage the activity of mobile units and receive alarms when the rules are infringed.

Rules may be based on spatial constraints related to the mobile unit's position, or they may be based on a mobile unit's attribute values. Demarcating an area the mobile unit cannot leave is an example of a rule with a spatial constraint; imposing a speeding limit is an example of a rule related to an attribute of the mobile unit.

Rules can also have a time component, as their application can be restricted to a specific period of time.

You can create, edit, enable, disable, and delete geofences using the functions in the **Geofencing** tab of the Tracking window.
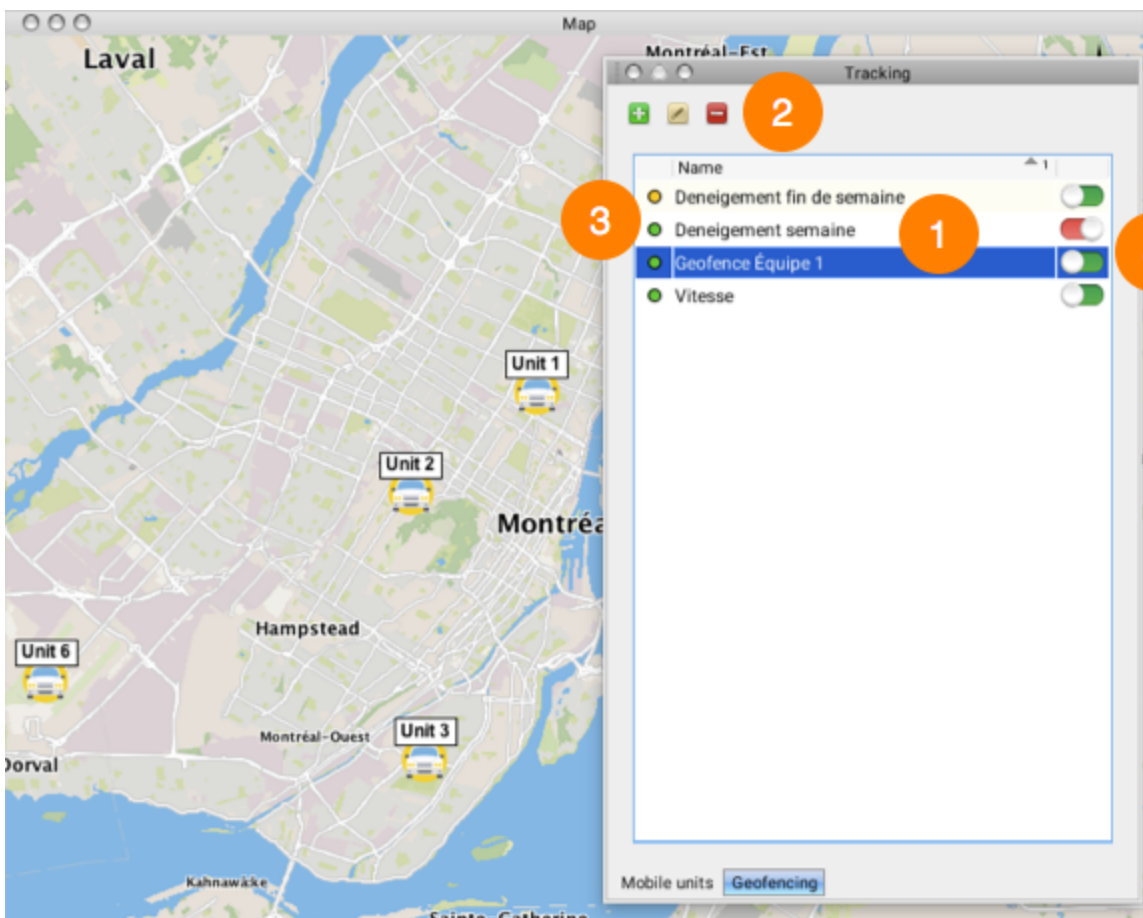
1 The list of geofences. You can sort them by name.

Double-click on the name of a geofence to open its configuration interface.

2 Functions to:

 Create a geofence.

 Edit a geofence.

 Delete a geofence.
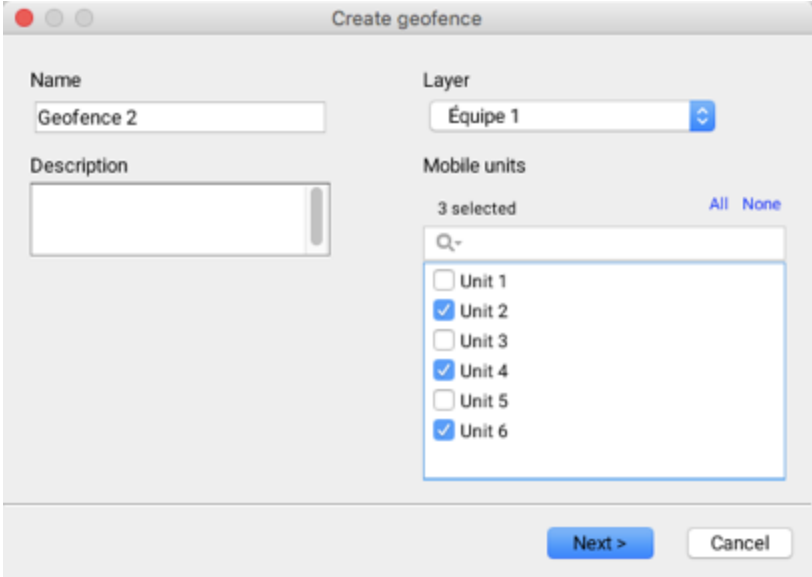
3 Indicates if the geofence is enabled or disabled .

4 Indicates if the geofence is enabled () or disabled () when viewing the map, based on the activity time period defined for that geofence.

Creating a geofence

To create a geofence:

1. Click on the **Add** button. The geofence's creation interface displays.


2. Enter a name for the geofence.
3. Describe the geofence (optional).
4. Select the layer managed by Tracking to which the geofence applies.
5. Select the mobile units of the layer to which the geofence applies.
6. Click on **Next**. The rules configuration interface displays.
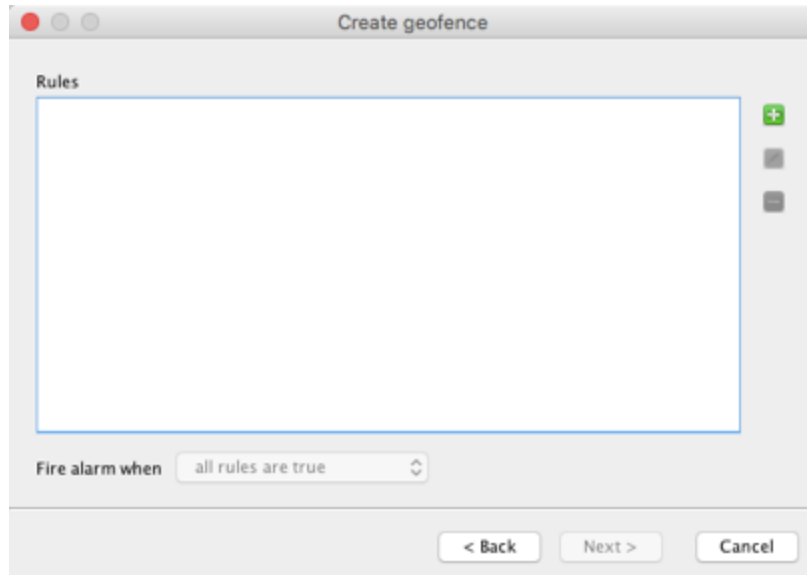
7. Click on the **Add** [+] button to create a rule. The **Create rule** interface displays.

8. Select the **Type of rule** you wish to create. Two options are available: **Attribute value** and **Geolocation**.

9. If you selected **Attribute value** as the type, configure the rule's settings:
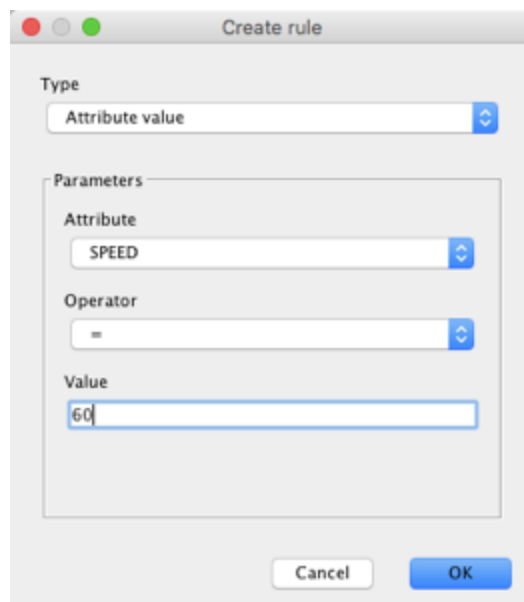

Attribute: the drop-down menu lists the attributes that are available in the layer to create the rule.

Operator: the drop-down menu lists the available operators, based on the type of data of the attribute. The operators are: equal to (=), greater than or equal to (>=), greater than (>), lower than (<), lower than or equal to (<=), and different from (!=).

Value: The reference value (a speed value, for instance).

10. If you selected **Geolocation** as the type, configure the rule's settings:
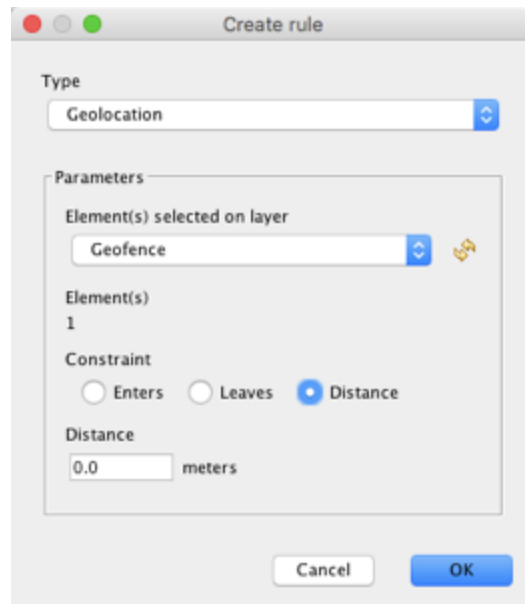
Element(s) selected on layer: The drop-down menu shows the layers in which you have selected elements. These elements can be polygons, lines or points. They represent the regions used to define the spatial constraints.

Element(s) indicates the number of elements selected in the layer.

Constraint: Indicates the relationship between the mobile units and the element selected in the layer, which triggers an alarm or an action. There are three constraints:

   **Enters**, when the mobile unit enters the selected element;

    Leaves, when the mobile unit leaves the selected element;

    Distance, when the mobile unit moves away from the value indicated.

Distance: The value used to define the Distance constraint.

Note: When you create a zone to apply a Geolocation type rule, the polygon, line or point created is copied in a new map layer. This layer is associated to the rule. If the layer is modified, the rule will not reflect the changes, therefore, the rule must be edited.

11. Click on **OK** to create the rule. You are returned to the rules configuration interface.
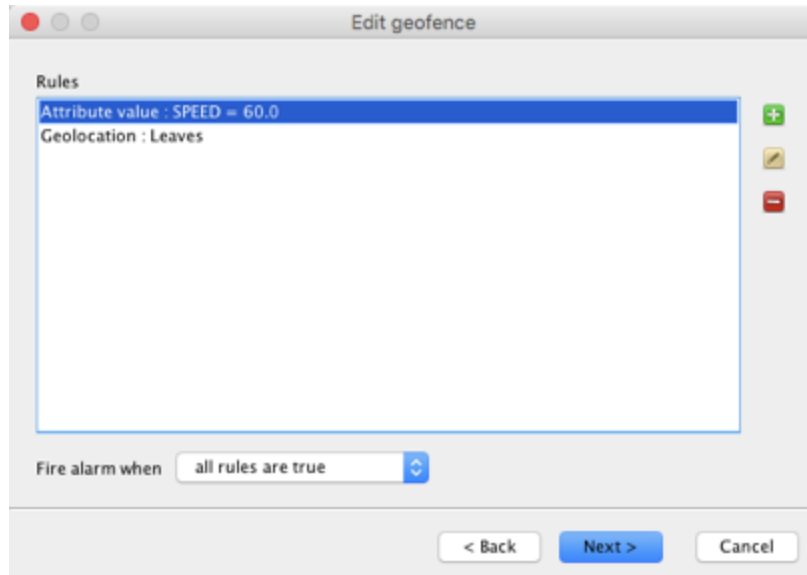
The rules are listed, along with their type and the constraint associated with them.

You can add new rules with **Add** , edit rules with **Edit** or delete rules with **Delete** .

Rules can be independent from one another. All rules apply to the selected mobile units.

You can choose to fire an alarm when all rules are true or when at least one rule is true. If you select the latter, you cannot select the rule that will fire the alarm.

Tracking verifies the data involved in the geofences at a frequency configured by the JMap administrator (the default is every 10 seconds). However, to fire an alarm, all data received in the specified time interval is analyzed. An alarm is fired if data received in the time interval violates a rule.

12. Click on **Next** to move on to the next step. The wizard displays the interface to configure the geofence's time component.
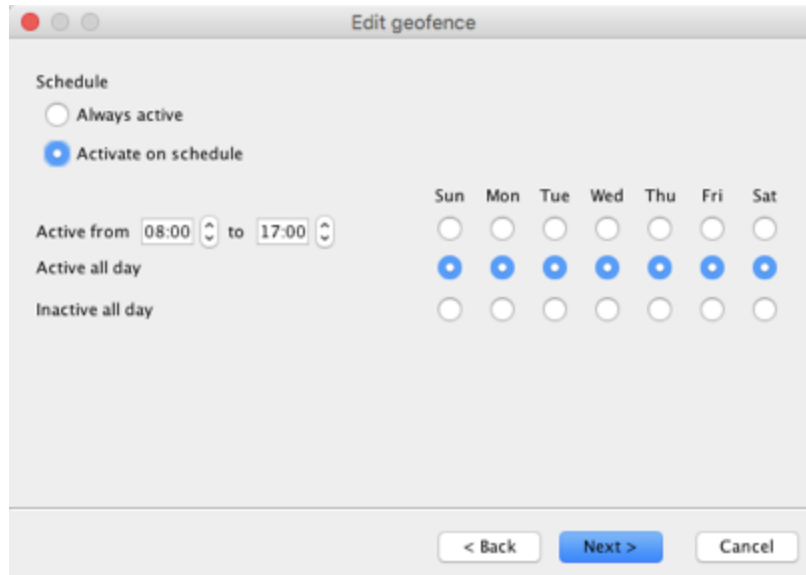
The **Schedule** section allows you to determine if the geofence will be **Always** active or if it will **Activate on schedule**. The second option allows you to set the time period of the geofence's activity.

For each day of the week, you can indicate that the geofence will be active for a specific period of time or for the entire day, or you can indicate that it will be inactive all day.

13. Click on **Next**. The notifications management interface displays.
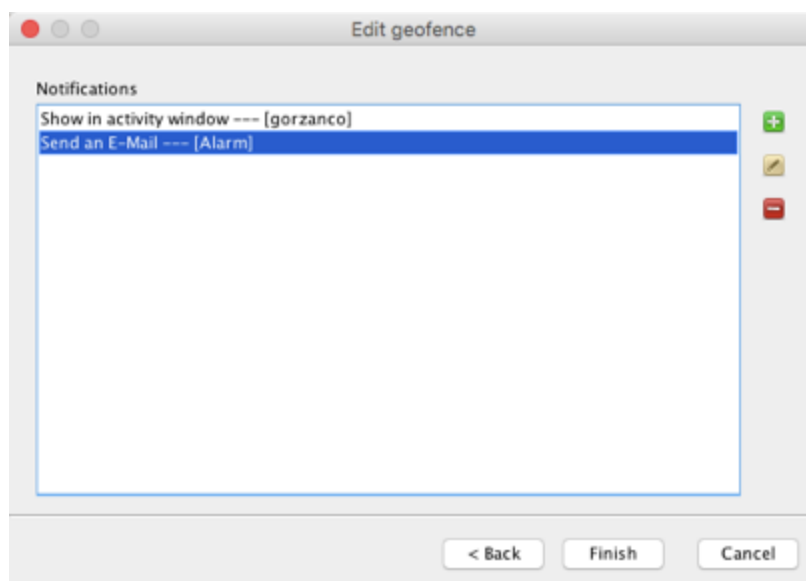
Notifications are listed along with their type and their recipients, if applicable.

You can add new notifications using **Add** ✚, edit notifications using **Edit** ✎ , and delete notifications using **Delete** ➖.

14. Click on the **Add** ✚ button to create a notification. The **Create notification** interface displays.

15. Select the **Type of notification** you wish to create. Two options are available: **Show in activity window** or **Send an E-Mail**. The latter can send either an email or a text message.

16. If you select **Show in activity window** as the type, configure the notification's settings: click on ✚ to add recipients. You can select these among the users who have access to the application.

    Once you have selected the notification's recipients, click on **OK** to complete the configuration. You are returned to the notifications creation interface. You can add or delete recipients for the notification.

17. If you select **Send an E-Mail** as the type, configure the notification's settings: **Recipient**, **Subject**, and **Message**. In the **Recipient** field, you can put an email address if you want to send an email. If you want to send a text message, enter the phone number in the following format: 10-digit phone number@pcs.phone company.com (1234567890@pcs.xxxxxxx.com, for example).

    Once you have completed the configuration, click on **OK**. You are returned to the notifications management interface.

18. Click on **Finish** to complete the geofence's configuration.

The notifications displayed in the activity window will enable the 📋 button in the application toolbar. The number indicates how many notifications were received; to view these:

1. Click on 📋 to display the geofencing alarms interface.
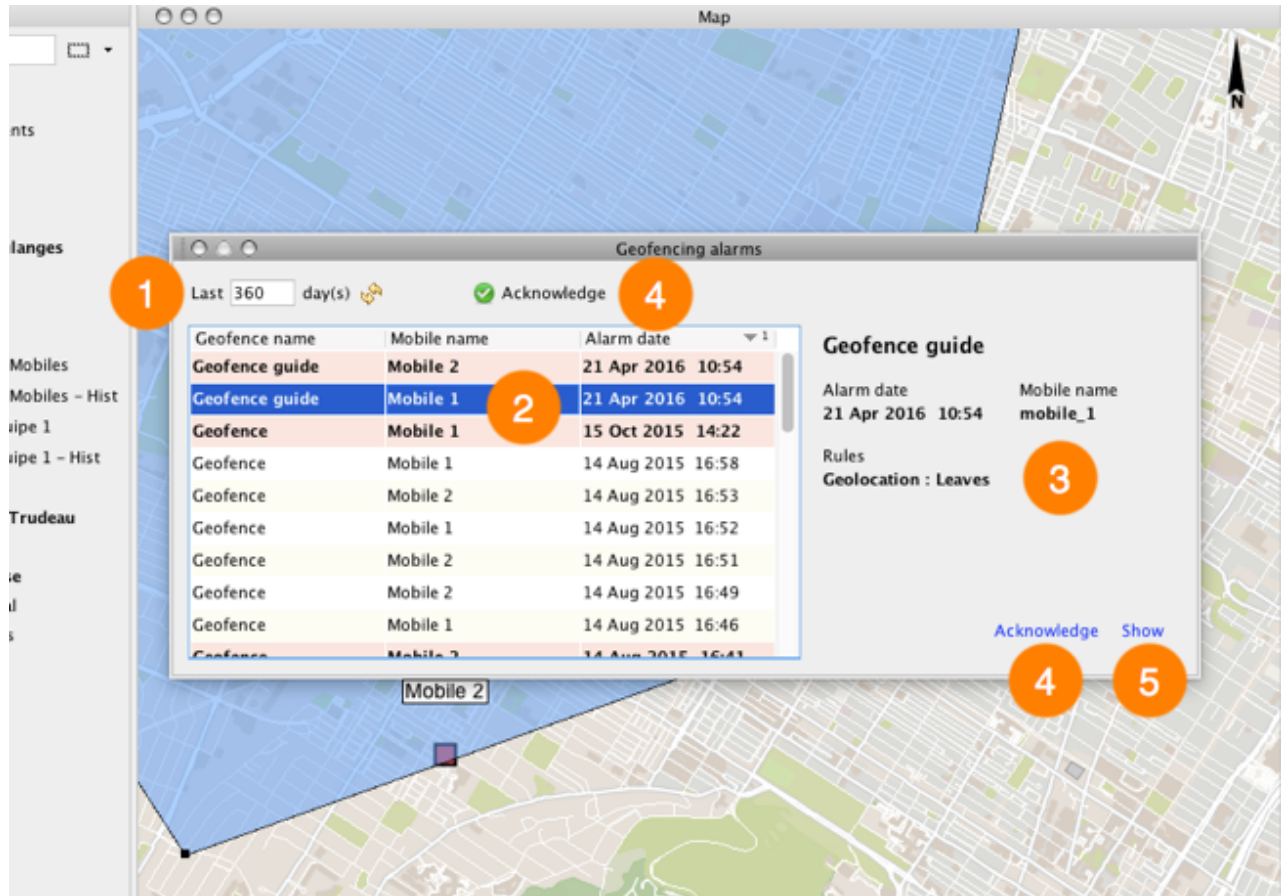
1 You can indicate a period to display the notifications received within that time frame.

All alarm notifications are stored in the database, but you can choose to display only the most recent ones.

2 The list of notifications received, along with the name of the geofence, the name of the mobile unit associated with it, and the date the alarm was produced.

Click once to display the notification details.

Click twice to display, in the map interface, the position of the vehicle at the moment when the notification was produced.

3 Notification details.

4 The **Acknowledge** function indicates that you have seen the notification. When you click on one of the buttons, the notification row turns white. Notifications whose details you haven't viewed are shown in pink.

5 The **Show** function allows you to view, in the map interface, the vehicle's position at the moment when the notification was produced.

You will receive an email or a text message for each notification sent.

☐ ☆ 📒	mplante	**Alarm** - Alarm Geofence.	10:55
☐ ☆ 📒	mplante	**Alarm** - Alarm Geofence.	10:55

Defining Levels of Service

Tracking allows you to define and manage levels of service for various types of operations, such as snow removal on streets, and to assign these levels to road network sections. For example, you could assign level 1 to the city's main roads, level 2 to main streets, and level 3 to less important streets. This offers a quick way to organize and track the progress of operations based on specific levels, which respect the priorities defined. You can also use activity reports to document the operations based on the levels.

To define service levels:

1. Click on **Levels of service...** 🖼 in the functions toolbar to display the Levels of service management interface.
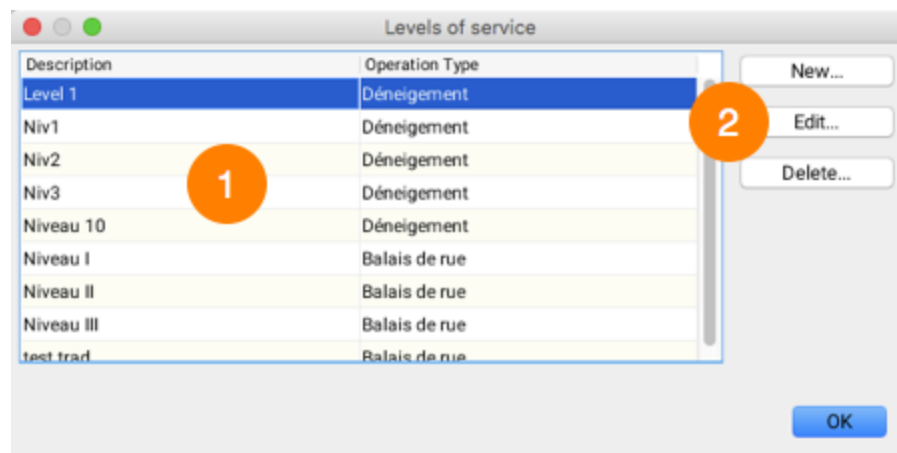
1 List of levels defined, along with the type of operation associated with each one.

**2** These buttons allow you to create a new level, edit an existing level or delete a level.

2. Click on **New...** to create a new service level. An interface displays, allowing you to define the level.
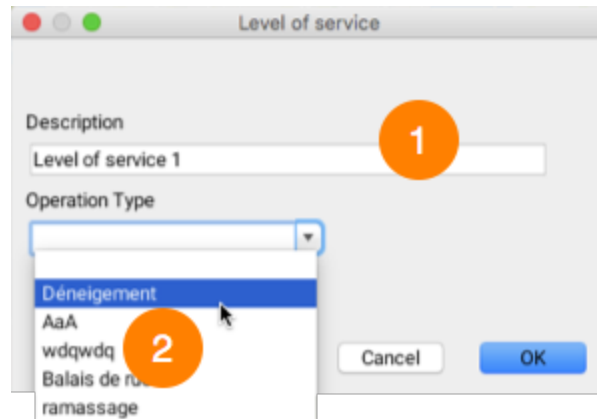
1 You must enter a name for the level.

2 You can select the type of operation in the drop-down menu. The options have been defined by the JMap administrator.

3. Click on **OK** to complete the configuration. The level you created is displayed in the list.

4. Click on **Edit...** to modify the level. The level's configuration interface displays. The options are the same as for step 2.

5. Click on **Delete...** to remove the selected level of service.

Once you have established levels of service for the various types of operations, you can associate road sections to the levels. To do this, you must have a layer with the road network's data.

1. Select the road section(s) to which you want to associate the level of service.

2. Right-click to open the pop-up menu.

3. Open the following menu: **Level of service -> Set service level to**.

4. Select the type of operation and the desired level of service.
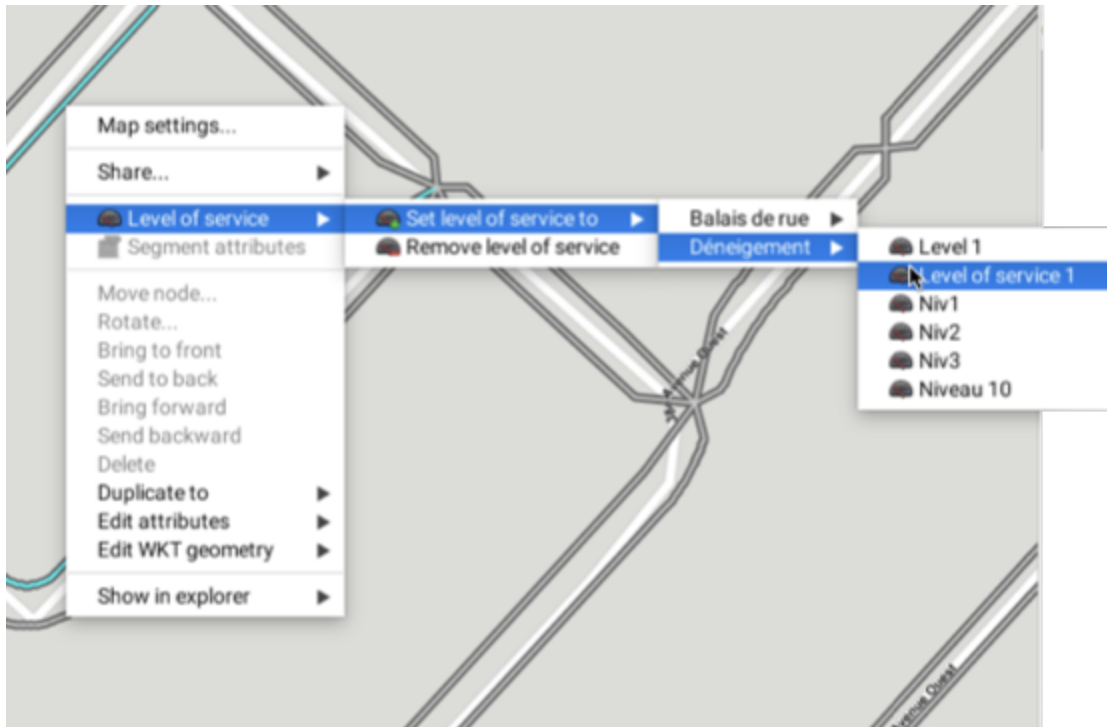
Using a report configured by the JMap administrator, you can view the progress of the operations in the road network, categorized according to the levels of service.

Reporting

Tracking offers a tool to create reports detailing the activity of mobile units for a specific time period. The administrator configures the reports, which you can deploy as needed.

To create a report:

1.   Click on **Reports** in the toolbar to display the report configuration interface.

1 The **Report** field shows the list of available reports. By default, two types of complementary reports are available: **Analyse Sommaire** and **Analyse Détaillée**. The administrator may create other types of reports and make them available, for instance, to display information on the spreading of abrasives.

2 The **From** and **To** fields define the time period to which the report applies.

3 For certain types of reports, a **Road network layer** must be selected to produce the information of the analyses on the mobile units' activity. Your JMap administrator will indicate which reports require this as well as the layer that must be selected.

4 This window shows the layers managed by Tracking and their mobile units.

2. Select **Analyse Sommaire**, define a time period, and select the mobile units for which you want to produce the report. You can select an entire layer or some of the mobile units.

3. Click on **Generate**. The report displays in a new window of your default web browser.

Rapport sommaire d'activité ①

The report contains the following information:

1 A **title** indicating the type of report.

2 The **date** the report was produced.

3 The **time frame** of the activity reported.

4 The **mobile units**, organized into **groups** defined by the JMap administrator.

5 Each mobile unit analyzed, with information on the distance covered in the selected time frame, as well as the **maximum speed**, **average speed**, and the **start and end times of the activity**.

6 Information on the **total distance covered**, **maximum speed**, and **average speed** of all the analyzed units that form the group.

7 Information on the **total distance covered**, the **maximum speed**, and the **average speed** of all units analyzed for all groups.

8 JMap's reporting tools allow you to export and save the report's information to various formats.

4. Select **Analyse Détaillée**, define a time period, and select the mobile units for which you want to produce the report.

5. Click on **Generate**. The report displays in a new window of your default web browser.

The report contains the following information:

1   A **title** indicating the type of report.

2   The **date** the report was produced.

3   The **time frame** of the activity reported.

4   The **mobile units**, organized into **groups** defined by the JMap administrator.

5   For each mobile unit analyzed, detailed information on the activity is displayed:

6   Each activity is reported, with information on the **start and end times of the activity**, the **mobile unit's state**, the **duration**, the **distance covered**, the **maximum speed**, and the **average speed**.

7   Information on the **total distance covered**, the **maximum speed**, and the **average speed** of the entire activity for the mobile unit.

8   JMap's reporting tools allow you to export and save the report's information to various formats.

The following figure shows another type of report, which includes detailed information on salting activities. The same settings must be configured, i.e. the mobile units for which the data is displayed and the time period to which the analysis applies.

Rapport d'épandage

Du 17 mars 2015
Au 18 mars 2015

Camion		SEL			ABRASIF			MIXTE			TRANSPORT
		Kilomètre km	Quantité tonnes	Taux d'épandage kg/km	Kilomètre km	Quantité tonnes	Taux d'épandage kg/km	Kilomètre km	Quantité tonnes	Taux d'épandage kg/km	Quantité tonnes
Épandeur	auto.	0,00	0,00	0,00	0,00	0,00	0,00	182,90	55,20	301,80	0,10
	blast	0,00	0,00	0,00	0,00	0,00	0,00	3,50	2,30	657,14	0,30
	TOTAL	0,00	0,00	0,00	0,00	0,00	0,00	186,40	57,50	308,48	0,40
TOTAL		0,00	0,00	0,00	0,00	0,00	0,00	186,40	57,50	308,48	0,40
CUMULATIF											
Épandeur		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
TOTAL		0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00

1,00 / 1,00