KissTool User Manual

Version 4.3.0 | JOSAST - Java Open Source Amateur Satellite Toolkit **|** AMSAT-Francophone

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1. Overview

KissTool is a desktop application for amateur satellite ground stations. It receives telemetry frames from one or more sound modems over TCP KISS, identifies the satellite that sent each frame, decodes it when a decoder is available, saves it to disk, and forwards it to the SIDS (Satellite Information Distribution System) databases: AMSAT-Francophone, SatNogs, and a custom endpoint of your choice.

Key Features

- **Multi-modem reception —** Connect to several TCP KISS demodulators at once (for example one per antenna or per band).
- **Automatic reconnection** — If a modem connection fails or drops, KissTool retries after a configurable delay (default 5 s).
- **Automatic satellite identification —** From the AX.25 callsign for most satellites, and from the frame structure for callsign-less satellites: HADES-SA, HADES-L, FramSat-1, ERMINAZ-2U/2V/2X and the GEOSCAN family.

- **Frame classification —** Every frame is classified (AX.25, SSDV, HADES-SA, HADES-L, GEOSCAN image or telemetry, FramSat-1, ERMINAZ-2, or unknown) before any decoder runs.
- **Pluggable decoders —** Satellite-specific telemetry decoders are plug-ins (SPI) loaded at runtime from the `plugins` folder.
- **HADES-SA images and voice, HADES-L voice —** HADES-SA SSDV images are rebuilt packet by packet in the **SSDV Image** tab, and HADES-SA and HADES-L Codec2 voice sessions can be played in the **Audio / Codec2** tab. They are saved as `.jpg`, `.c2` and `.wav` files.
- **Per-satellite routing —** For each callsign-less satellite, choose the NORAD ID its frames are submitted under and the databases that receive them, in one grid. The grid can be filled from your satellite list in one click.
- **SIDS reporting —** Frames are forwarded automatically to AMSAT-F, SatNogs and a custom endpoint (SIDS or CSUM protocol), without ever blocking reception.
- **Replay —** Browse, filter and inspect the frames you saved, see per-day statistics, and rebuild HADES-SA images and HADES-SA / HADES-L recordings from past passes.
- **Live dashboard —** Modems, satellites, databases and the processing pipeline, refreshed every second.
- **Three languages —** English, French and Italian.

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2. Before You Begin

Prerequisites, download links, platform-specific installation and building from source are covered in the Installation Guide. To get running in a few minutes, follow the Quick Start.

Once KissTool is installed, launch it from your Start menu or applications menu (or, for a portable build, the `KissTool.exe` / `bin/KissTool` launcher). The main window appears after a few seconds. Its minimum size is 800 px wide; every tab and label is designed to fit at that width in all three languages.

On start-up KissTool checks the AMSAT-F server for a newer release. If one exists, a dialog and the status bar tell you (see 3.2 Status Bar). The check needs an internet connection; without one, KissTool starts normally and the status bar says *Version check unavailable*.

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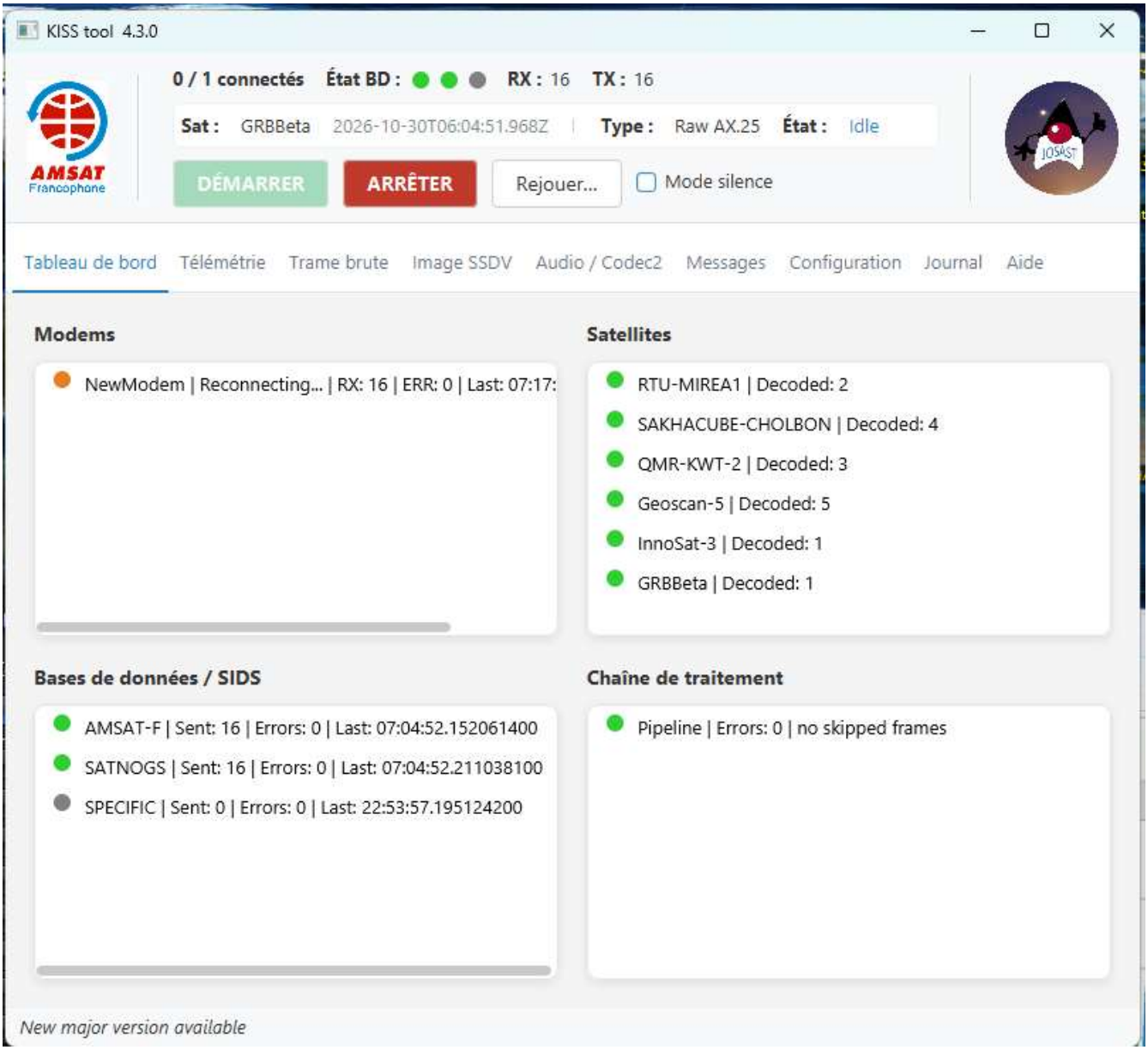
3. Application Interface

The window has a **header bar** at the top, a **tabbed workspace** in the centre and a **status bar** at the bottom.



The KissTool main window: header bar (top), tabbed workspace (Dashboard shown in its 2 × 2 grid; on a wider window the four panels sit in one row) and status bar (bottom).

3.1 Header Bar

Element	Description
START	Green button. Connects to every enabled modem and starts receiving frames.
STOP	Red button. Disconnects from all modems. Images and voice sessions still open are finished and saved.
Replay…	Opens the Replay window to browse the frames you have saved.
Silence Mode	Checkbox. See below.
N / M connected	Number of modems connected out of the number configured.

Element	Description
DB Status	Three coloured circles for the SIDS databases (AMSAT-F, SatNogs, Specific). See 18.3 Status Indicators.
RX	Frames received since the last START.
TX	Frames successfully forwarded to at least one database.
Sat	Name of the satellite identified in the last frame.
Time	Time the last frame was received (ISO 8601 UTC timestamp).
Type	Type of the last frame, for example `AX.25`, `Raw AX.25`, `SSDV`, `HADES-SA`, `HADES-L`, `GEOSCAN-V1`, `GEOSCAN-V2`, `GEOSCAN-TLM`, `FRAMSAT1-TLM`, `ERMINAZ2-TM` or `UNKNOWN`. When a decoder handles the frame, the decoder's own type name is shown.
Status	Connection state: Idle, Connecting, Connected or Error.

Silence Mode is meant for long unattended runs or busy passes. While it is on:

- the Telemetry, Raw Frame, SSDV Image, Audio / Codec2 and Messages tabs stop updating, and decoders are not run for display;
- the Log tab and the log files keep only warnings and errors;
- reception, saving to disk, forwarding to the databases and the Dashboard counters carry on as normal, and HADES-SA images and HADES-SA / HADES-L recordings are still written.

The setting is saved, so KissTool starts in Silence Mode if you left it on.

3.2 Status Bar

A thin line at the very bottom of the window shows short messages in italics, such as the message of the day from the AMSAT-F server.

Update alert. At start-up KissTool compares its own version with the latest one published by AMSAT-F. Only when the published version is **newer** does a dialog appear and the status bar read *New version X.Y.Z available!*. An older or identical published version shows nothing, and a release counts as newer than a beta of the same number (4.3.0 is newer than 4.3.0-Beta). If the server cannot be reached, the status bar reads *Version check unavailable* and nothing else happens.

3.3 Tabs

The workspace has nine tabs, in this order:

#	Tab (tooltip)	Content
1	**Dashboard**	Live monitoring panels
2	**Telemetry** (*Decoded Telemetry*)	Values decoded from the last frame
3	**Raw Frame**	Header summary and hex/ASCII dump of the last frame

#	Tab (tooltip)	Content
4	**SSDV Image**	HADES-SA images being rebuilt from SSDV packets
5	**Audio / Codec2**	HADES-SA and HADES-L voice sessions, with playback
6	**Messages** (*Sat Messages*)	Text messages broadcast by satellites
7	**Configuration**	All settings
8	**Log** (*System Log*)	Application event log
9	**Help**	Built-in help page

The three shortened tab names show their full name as a tooltip. All nine tabs fit at the 800 px minimum width. If they ever do not (for example with a larger system font), an arrow appears at the end of the tab bar; hover it to read *Show the list of all tabs*, click it to pick a tab.

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4. Dashboard Tab

The Dashboard shows four panels: **Modems**, **Satellites**, **Databases / SIDS** and **Pipeline**.

The panels share one grid and always have the same size. When the window is wide enough they sit side by side in one row; at the minimum width (800 px) they form a 2 × 2 grid (Modems and Satellites on top, Databases and Pipeline below). The panels fill the tab, and when a list holds more rows than fit, only that list scrolls. All panels refresh every second.

Modems Panel

One row per configured modem: identifier (e.g. `Modem-1`), connection state, frames received, errors and last activity. The dot on the left gives the state:

Colour	State	Meaning
Green	Connected	Connected; frames are being received
Amber	Reconnecting…	The connection failed or dropped; KissTool is waiting before the next attempt
Red	Disconnected	Not connected, and no retry is scheduled

Satellites Panel

One row per satellite heard during the session: a green dot, its name and the number of frames received from it (`<Satellite> | Decoded: <n>`).

Databases / SIDS Panel

One row per database endpoint (AMSAT-F, SATNOGS, and your Specific endpoint): whether it is reachable, frames sent, send errors and the time of the last transmission.

Pipeline Panel

The health of the step that classifies, saves and forwards each frame:

- a green dot and `Errors: 0 | no skipped frames` while every frame was processed;
- otherwise a red dot, the number of frames skipped because of a processing error, the time of the last one, and a short summary of its cause (frame type, modem and error name).

A skipped frame never stops reception; the full error, with the frame's bytes, is written to the log file.

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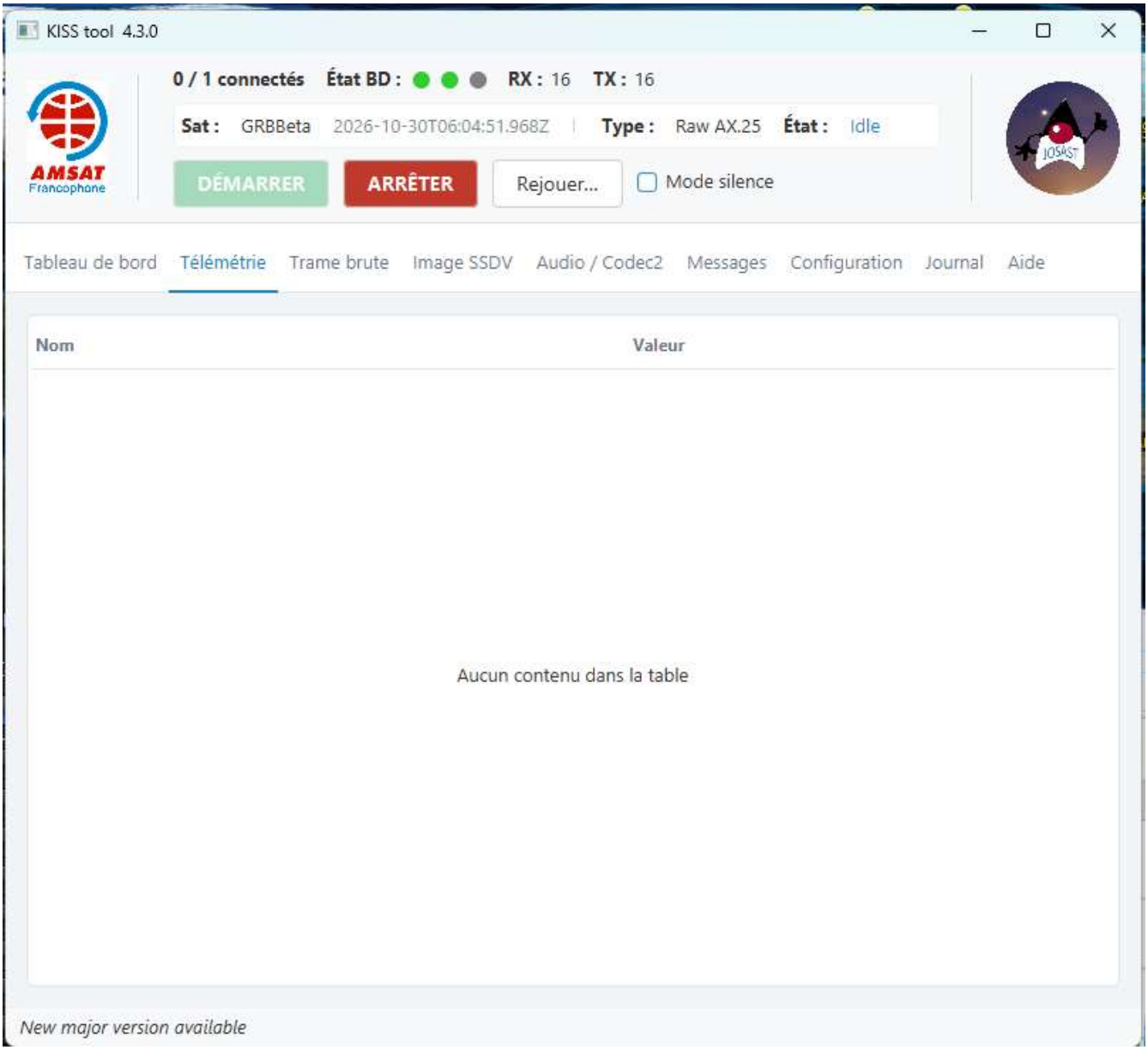
5. Telemetry Tab

When a decoder is available for the satellite, this tab shows the values decoded from the last frame as a two-column table:

Column	Description
Name	Field name (e.g. “Battery Voltage”)
Value	Decoded value, with its unit where the decoder provides one

The table is replaced by each newly decoded frame. Without a decoder for the satellite, the tab stays empty: use the **Raw Frame** tab to see the data. To find out which decoders are loaded, open **Configuration > SPI Plugins**.



The Telemetry tab when no SPI decoder matches the last frame (see 13.2 Frames Tab for an example of decoded telemetry fields).

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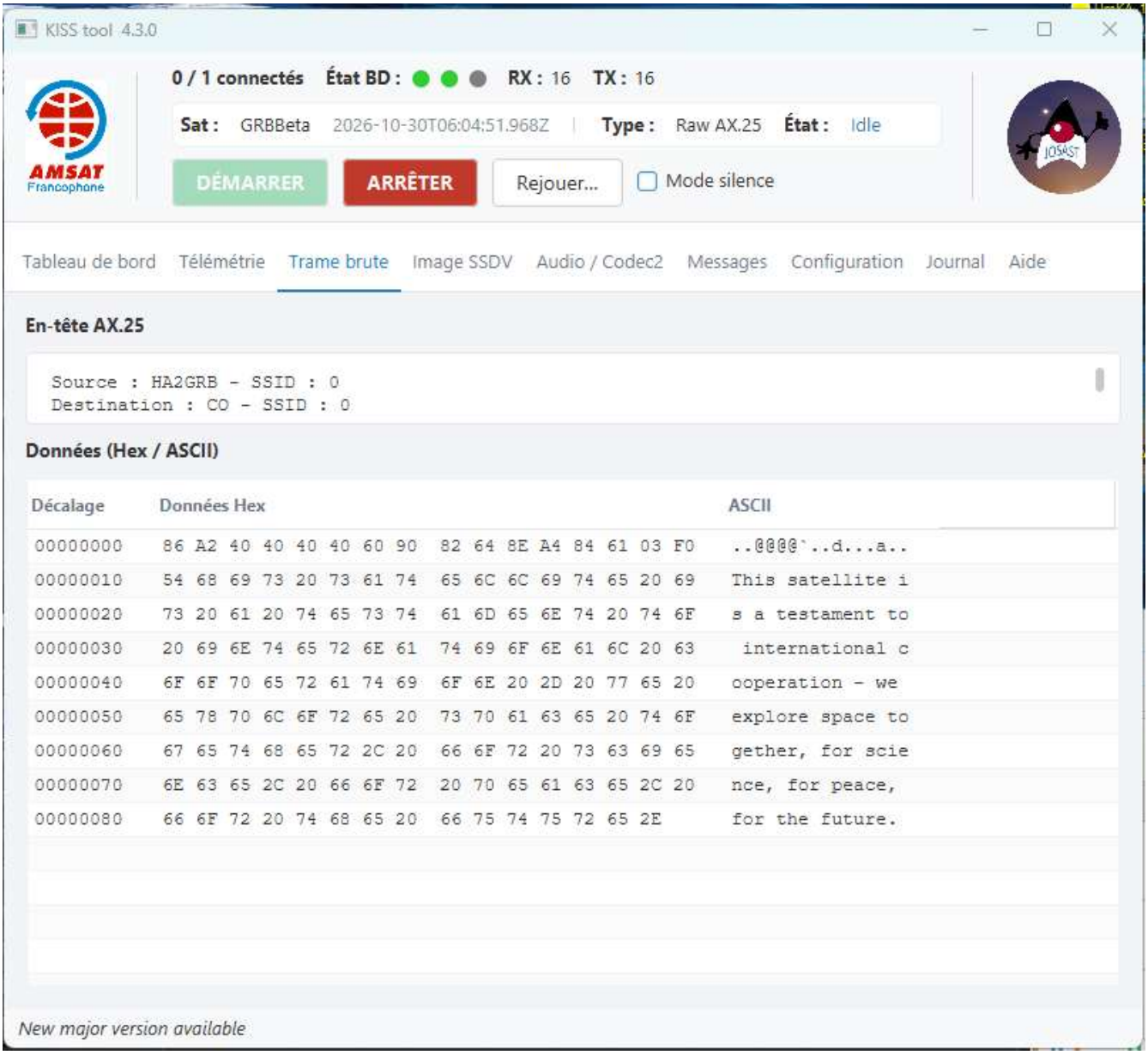
6. Raw Frame Tab

This tab shows every received frame, decoded or not: a header summary on top and the raw bytes below.



The Raw Frame tab: AX.25 header summary on top and 16-byte monospaced hex/ASCII dump below.

Header Area

A read-only text area whose content depends on the frame type:

- **AX.25 frames —** source and destination callsigns and the protocol fields.
- **SSDV frames —** the SSDV packet summary:

Field	Description
Callsign	Station callsign from the SSDV packet header
Type	`FEC (0x66)` (Reed-Solomon error correction) or `No FEC (0x67)`
Image ID	Image number (0–255)
Packet #	Packet index within the image (0–65535)
Dimensions	Image size in pixels and MCU blocks (e.g. `160 × 128 px (10 × 8 MCU)`)

Field	Description
Quality	JPEG quality index (0–7), end-of-image flag and chroma mode
CRC32	Packet checksum
Status	`VALID`, `VALID_FEC_RECOVERED`, `CORRUPT` or `REJECTED`

- **HADES-SA frames —** the HADES-SA sub-type (SSDV image, Codec2 voice or telemetry) and the parsed HADES-SA header fields.
- **Other frames** (HADES-L, GEOSCAN, FramSat-1, ERMINAZ-2, unknown) **—** what KissTool could read from the frame; the satellite name and frame type are also in the header bar, and the bytes are in the table below.

Payload (Hex / ASCII)

A three-column table with the full frame, 16 bytes per row. All columns use a monospaced font and are wide enough for a full row:

Column	Description
Offset	Offset of the row's first byte, 8 upper-case hex digits (`00000000`, `00000010`, …)
Hex Data	Up to 16 bytes in upper-case hex, in two groups of 8 separated by a double space; a short last row is padded so every row has the same width
ASCII	The same bytes as text: printable characters (`0x20`–`0x7E`) as is, every other byte as `.`

Example:

```
00000000  82 A0 A4 A6 40 40 E0 8C  68 A8 8A A6 A8 61 03 F0  ....@@..h....a..
00000010  48 45 4C 4C 4F                                    HELLO
```

The Replay window's **Hex** tab uses the same table and layout.

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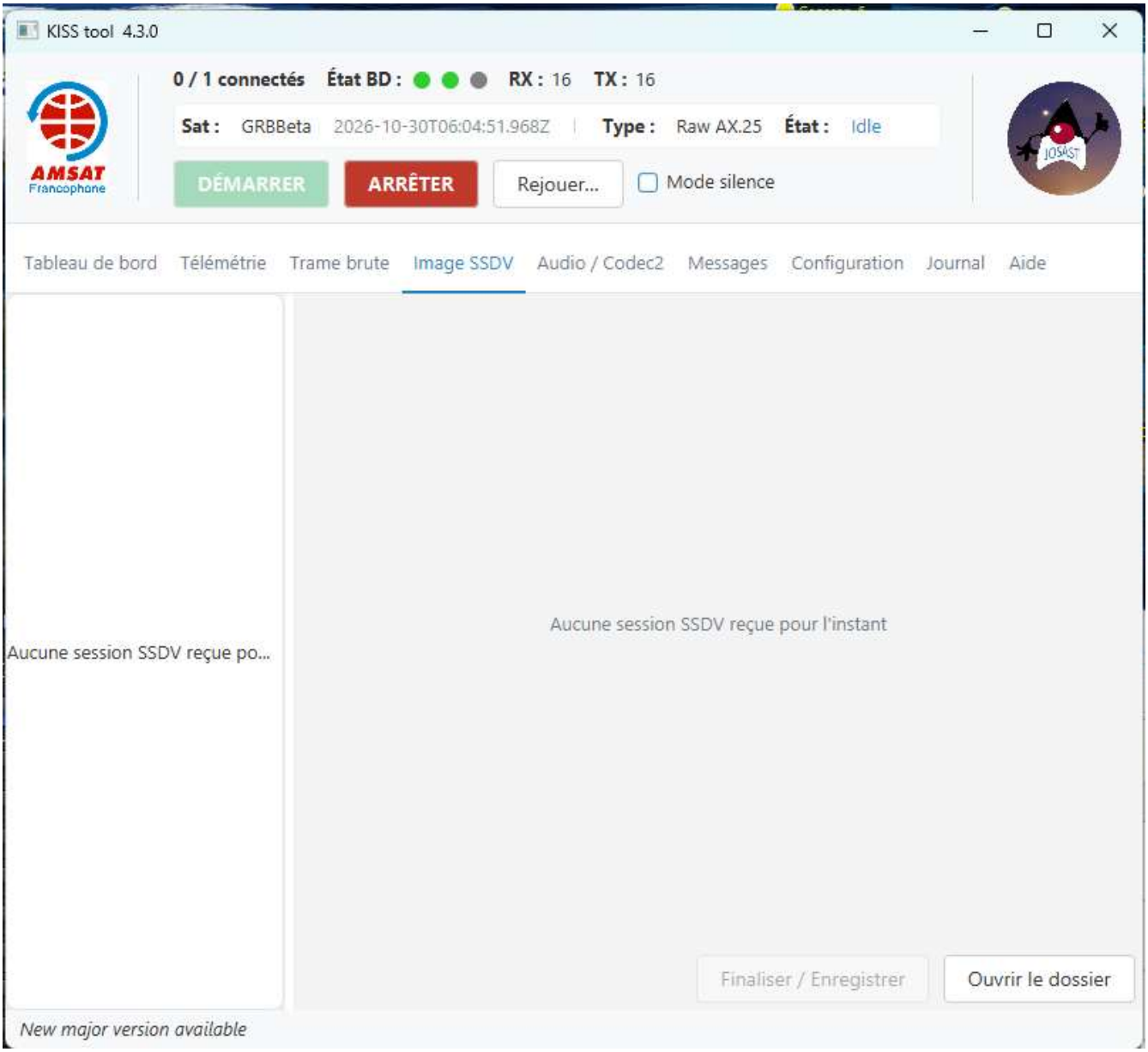
7. SSDV Image Tab

HADES-SA sends pictures as SSDV packets (HADES-SA Type 10). KissTool rebuilds each image as its packets arrive and saves it as a `.jpg`.



The SSDV Image tab: session list on the left, image preview and metadata on the right, and Flush / Save and Open Folder at the bottom (see 13.4 Media Tab for a reconstructed HADES-SA image).

Area	Description
Session list (left)	One entry per image being received or already completed during this run.
Image (right)	The selected image, growing packet by packet while it is being received, with its metadata (image ID, packets received, size, status) below it.
Flush / Save	Finishes the open image session now and writes its `.jpg`. It also finishes any open Codec2 voice sessions (HADES-SA and HADES-L).
Open Folder	Opens the folder holding the saved images.

Following the live image. With nothing selected, the tab follows the session being received. Selecting a session pins it; clear the selection (Ctrl+click the selected entry) to follow the live one again.

When is an image finished? An open session is closed and saved when no packet has arrived for 120 s, when you click **Flush / Save**, when you click **STOP**, or when KissTool closes. Images go to `<Repository>/HADES_SA/images/` (see 17. Files and Folders).

In Silence Mode the tab does not update, but images are still saved.

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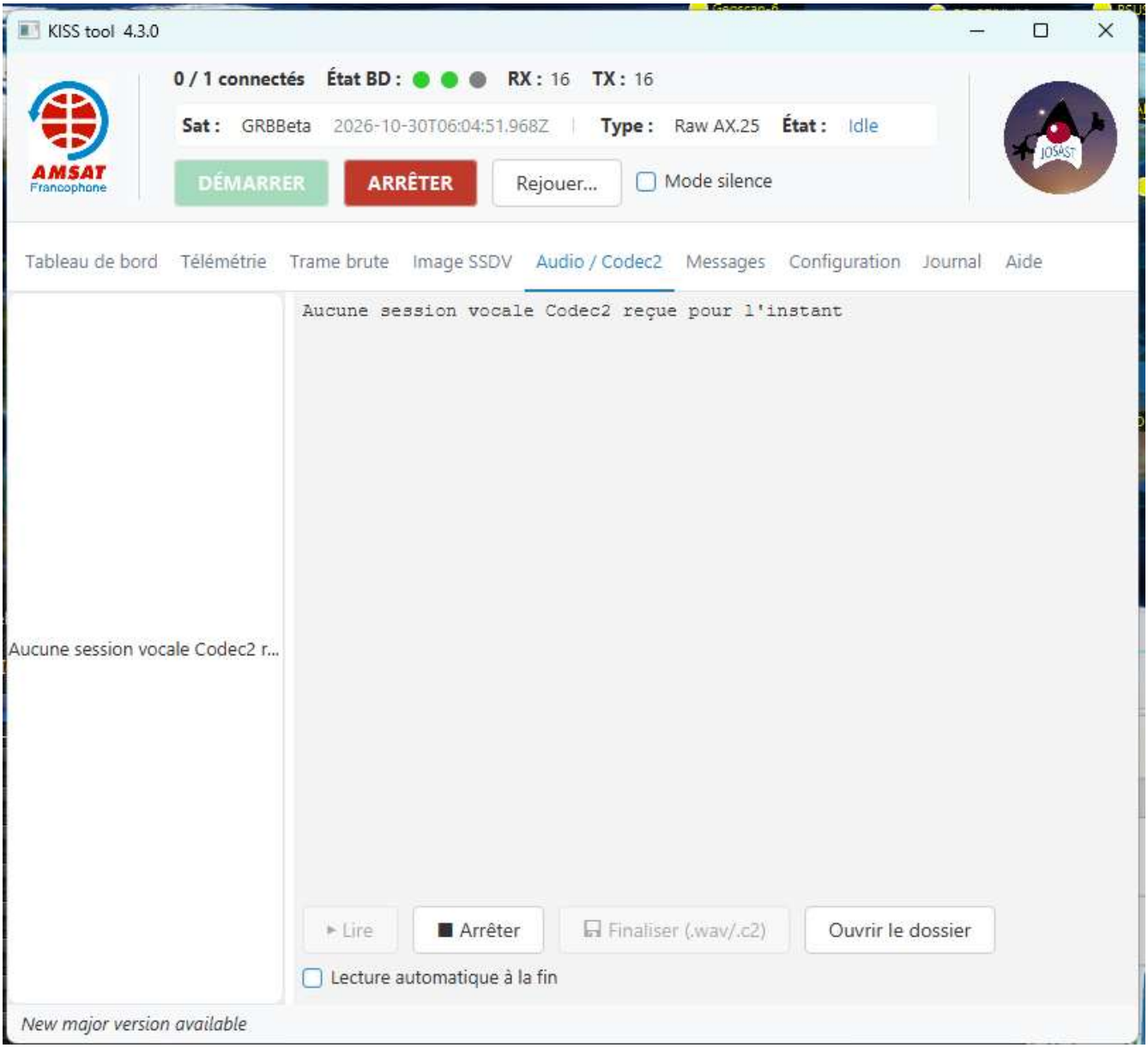
8. Audio / Codec2 Tab

HADES-SA and HADES-L send voice as Codec2 700C frames (Type 11: first byte `0xB3` for HADES-SA, `0xB5` for HADES-L). KissTool assembles each voice session and saves it as `.c2` (raw Codec2) and `.wav` (playable audio). Both satellites share this tab, but each has its own sessions: a HADES-L frame never joins a HADES-SA session, and the other way round. HADES-L sends no images, so the **SSDV Image** tab stays HADES-SA only.

> **HADES-L voice is not yet confirmed on a real capture.** No HADES-L voice frame has been received yet, so the scrambling mask and Codec2 mode KissTool uses for HADES-L (the same as HADES-SA) are an assumption until a real recording confirms them. KissTool's tests use HADES-SA voice frames re-addressed to `0xB5`. If a HADES-L recording sounds like noise, this is the likely cause; keep the saved frames: they can be extracted again from Replay later, but only if **Save Raw Files** (Configuration > Files) was on during the pass.



The Audio / Codec2 tab: session list on the left, session details on the right, and playback / finalisation controls at the bottom (see 13.4 Media Tab for completed voice sessions).

Area	Description
Session list (left)	One entry per voice session of this run, starting with its satellite: `HADES SA #n · …` or `HADES L #n · …`.
Session card (right)	Satellite and session, frames received, missing frames, 1-bit repairs, audio duration and status of the selected session.
▶ Play	Plays the selected session. An open session plays what has been received so far, without closing it; a completed session plays its `.wav`.
■ Stop	Stops playback.
💾 Finalize (.wav/.c2)	Finishes the open voice sessions (HADES-SA and HADES-L) now and writes their files. It also finishes any open SSDV image session.

Area	Description
Open Folder	Opens the folder holding the recordings of the selected session's satellite (`HADES_SA/audio` or `HADES_L/audio`); with no session selected, the HADES-SA folder.
Auto-play on completion	Plays each session as soon as it is complete. This choice is not saved between runs.

Selection pins a session exactly as in the SSDV Image tab. Sessions are finished on the same events as images (120 s without a frame, **Finalize**, **STOP**, closing KissTool). HADES-SA recordings go to `<Repository>/HADES_SA/audio/` and HADES-L recordings to `<Repository>/HADES_L/audio/`, named after the time the session completed: `<completion time>_hades_sa_codec2_session_NNN.c2` / `.wav` and `<completion time>_hades_l_codec2_session_NNN.c2` / `.wav`.

In Silence Mode the tab does not update, but recordings are still saved.

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9. Messages Tab

Some decoders extract text messages from the telemetry. They appear here, oldest first. Every row shows the date, the satellite and the message:

Column	Description
Date	Time the frame was received, in local time (`yyyy-MM-dd HH:mm:ss.SSS`)
Satellite	Satellite name KissTool identified for the frame (not the name the decoder reports)
Message Data	Message content

New messages are added at the bottom and the table scrolls to the latest one.

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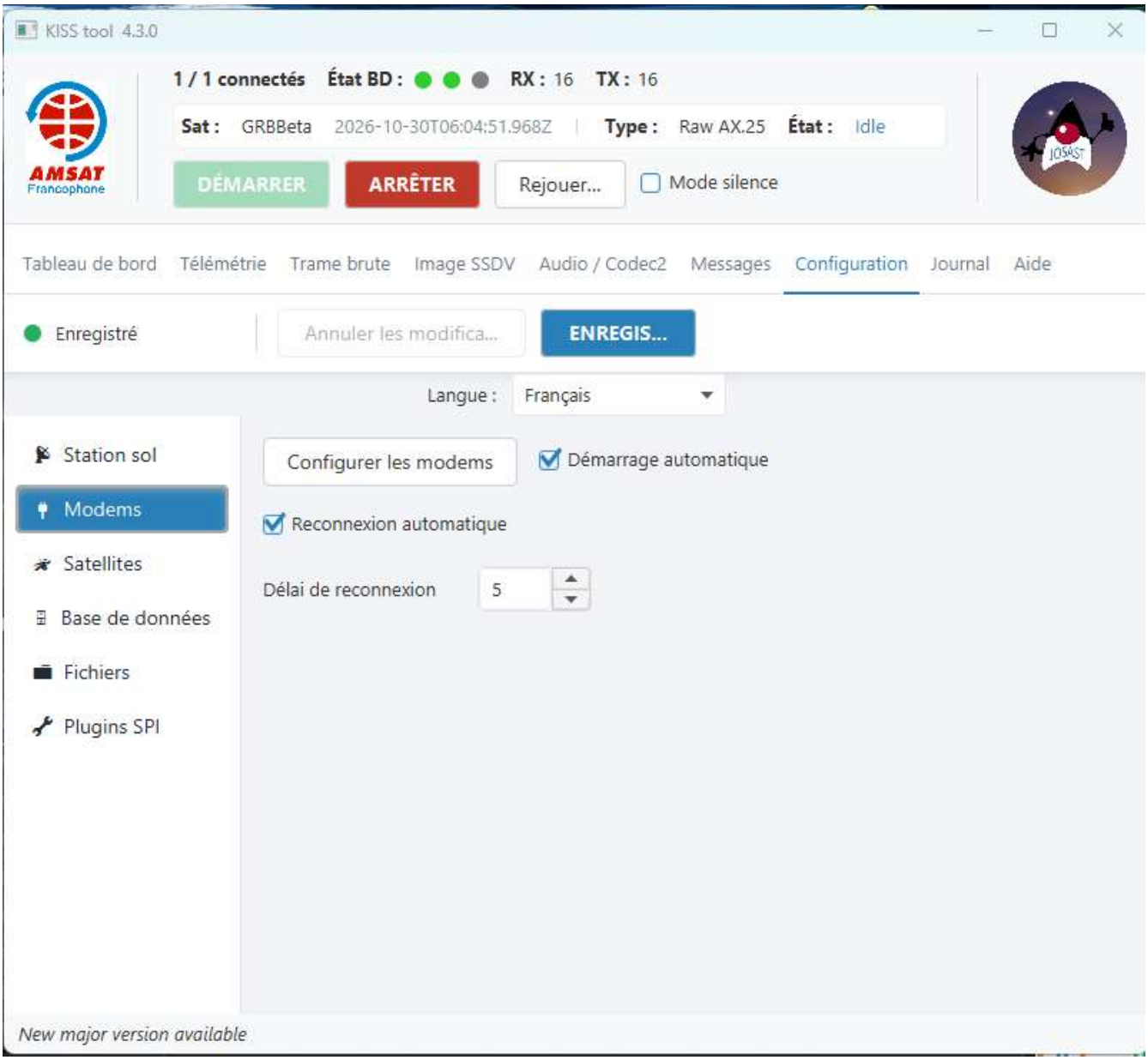
10. Configuration Tab



The Configuration tab: the toolbar with Saved / Modified status, Discard Changes and SAVE; the Language selector; the section menu on the left; the selected section (Modems) on the right.

The Configuration tab has six sections listed in a menu on the left: **Ground Station**, **Modems**, **Satellites**, **Database**, **Files** and **SPI Plugins**. Click an entry to show its section on the right; exactly one is selected at a time (**Ground Station** when the tab opens).

A toolbar above the menu holds:

- a status dot and label: **Saved** (green) or **Modified** (orange);
- **Discard Changes** and **SAVE** (see 10.7 Saving);
- the **Language** selector (English, Français, Italiano) — a change asks you to restart KissTool.

Every section that holds unsaved changes shows a small **orange dot** before its name in the menu (hover it to read *Unsaved changes*). The comparison is by value: if you change a field and then type the original value back, the dot disappears.

Invalid fields get a **red border** as soon as you type.

10.1 Ground Station

These values identify your station in every SIDS report.

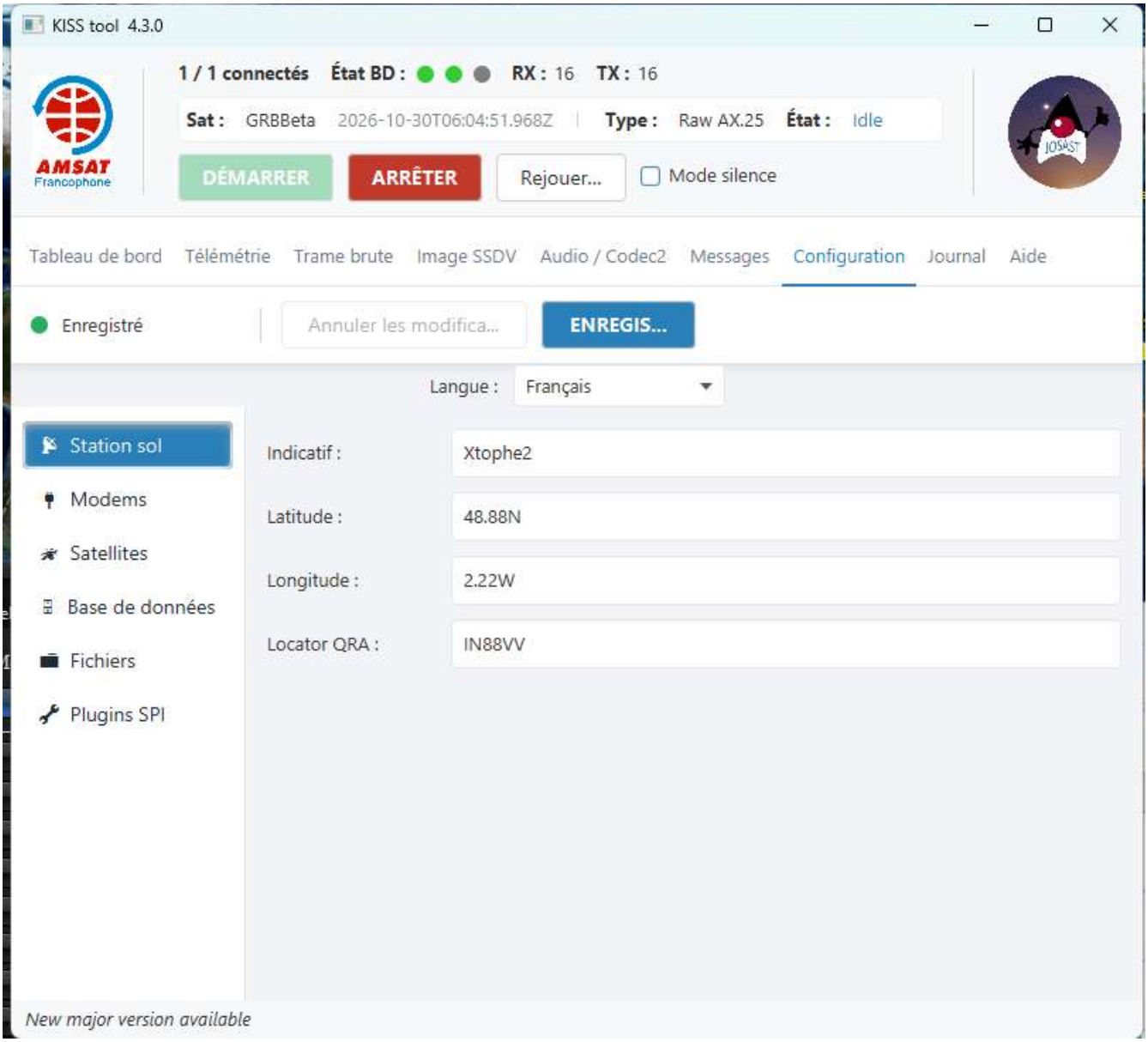
Field	Format	Default	Description
Callsign	Free text	`Anonymous`	Your callsign or listener identifier. Cannot be empty.
Latitude	`XX.XXN` or `XX.XXS`	`0.0N`	Station latitude, 0 to 90, followed by `N` or `S`. Example: `48.85N` for Paris.
Longitude	`XX.XXE` or `XX.XXW`	`0.0W`	Station longitude, 0 to 180, followed by `E` or `W`. Example: `2.35E` for Paris.
QRA locator	4 or 6 characters, e.g. `JN18` or `JN18EU`	derived from latitude/longitude	Your Maidenhead locator, kept in sync with latitude/longitude. Saved in `configuration.json` but **not** sent to the databases.

Lower-case compass letters are accepted and saved in upper case (`48.85n` becomes `48.85N`). Always include the letter: a value without it is refused.

Entering your position as a QRA locator. Type your locator in the **QRA locator** field (any case: `jn18`, `JN18EU`) and press **Enter** or leave the field:

- If your latitude/longitude already lie in that square, they are kept; only the locator is completed to 6 characters (`JN18` becomes `JN18EU`).
- Otherwise latitude/longitude move to the centre of the square (a 4-character locator uses the centre sub-square `LL` : `JN18` becomes `JN18LL`). A 6-character square is about 5 km × 2.5 km, so type your exact coordinates afterwards if you need more precision.
- An invalid locator changes nothing and gets a red border.

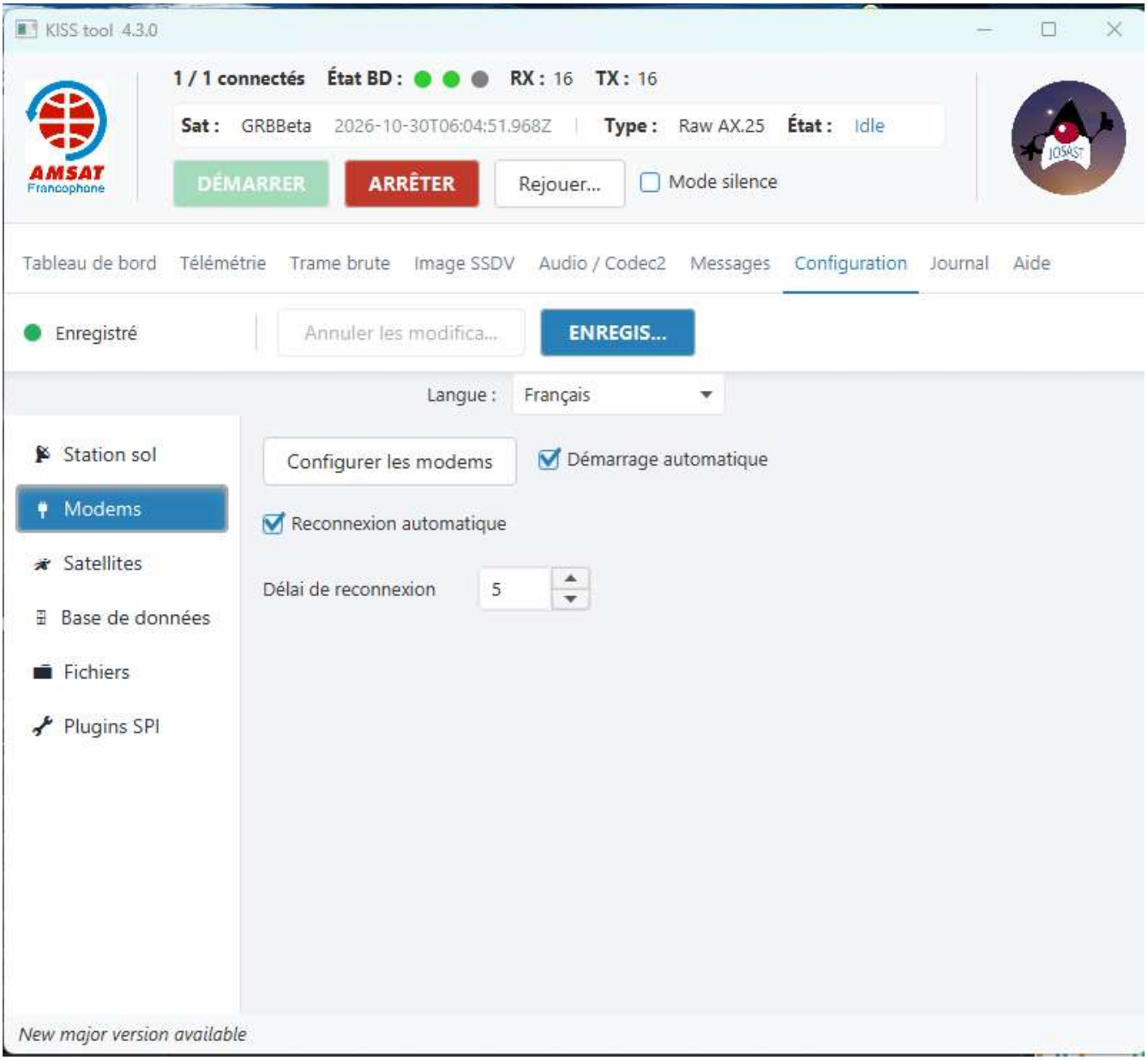
Editing latitude or longitude updates the locator automatically.



The Ground Station section: callsign, latitude, longitude and QRA locator.

10.2 Modems

Control	Default	Description
Configure Modems	—	Opens the Modem Editor to add, remove or edit modem connections.
Autostart	Off	Connect to all enabled modems as soon as KissTool starts, without clicking START.
Auto-reconnect	On	Retry automatically when a connection fails on START or drops during a session. The Dashboard modem dot turns amber while waiting and green once connected. Unchecked, a single attempt is made.
Reconnection delay	5 s	Seconds to wait between attempts (1–300). Only active with **Auto-reconnect**. Increase it if your modem software needs time to start.



The Modems section: Configure Modems, Autostart, Auto-reconnect and Reconnection delay.

10.3 Satellites

This section sets the default satellite and the routing of every satellite whose frames carry no AX.25 callsign.

Control	Description
Default Satellite	The satellite list entry used when a frame's callsign is not recognised (initially *Default*, NORAD 99999). Pick the satellite you are tracking.
Satellites definition	Opens the Satellite Editor, where you maintain the satellite list.
Fill from satellite list	Fills the routing grid from the satellite list (see below).
Routing grid	One row per callsign-less satellite (see below).

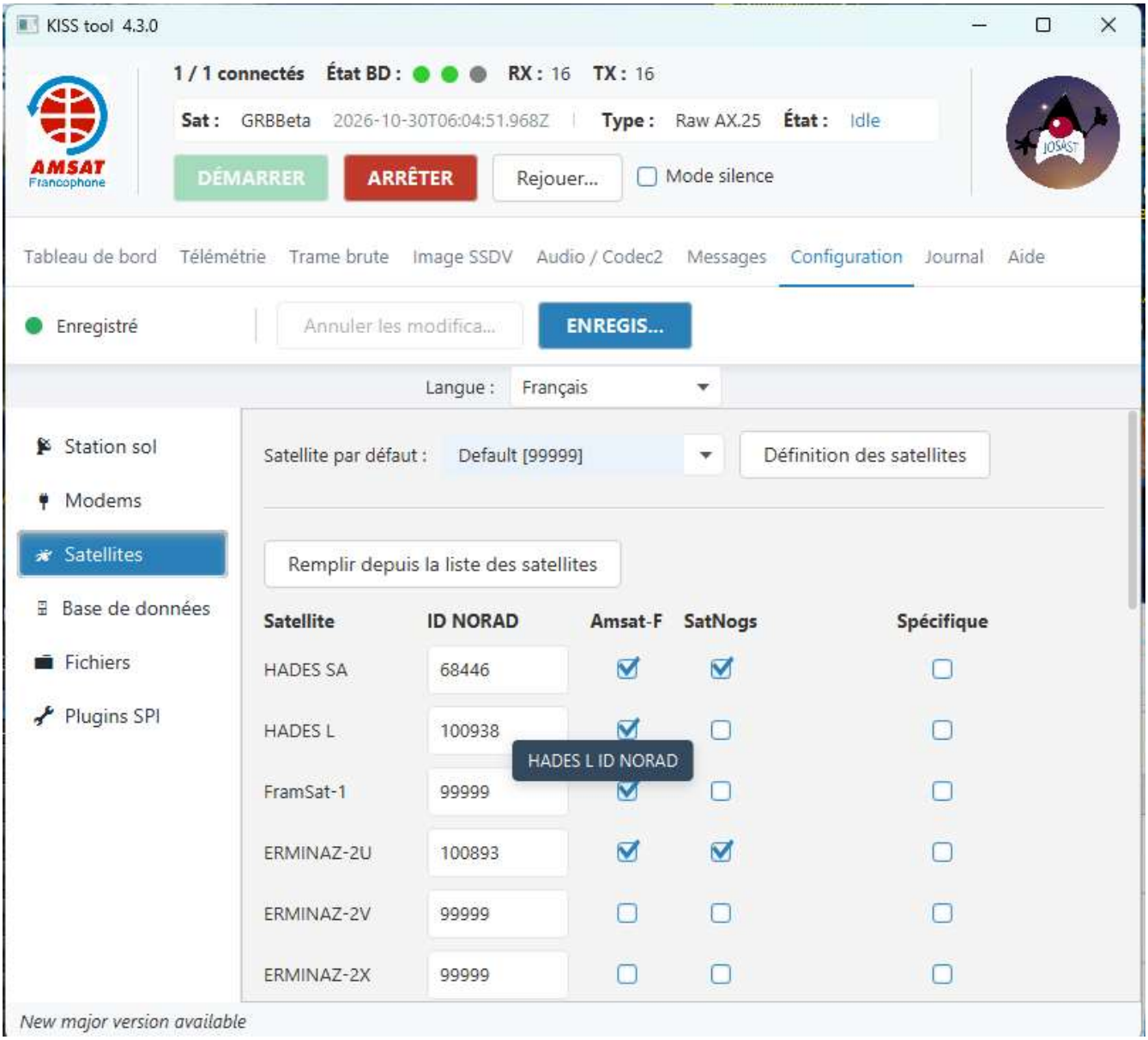
The routing grid. Its columns are **Satellite | NORAD ID | Amsat-F | SatNogs | Specific**. For each satellite, type the NORAD ID its frames are submitted under and tick the databases that receive them. A database must also be enabled in the **Database** section to receive anything. With all three boxes unticked, the satellite's frames are still saved and displayed, but not forwarded. An invalid NORAD ID (empty, zero, negative or not a number) turns its cell red and Save is refused. Hover a checkbox to see which satellite and database it belongs to.

Rows	Default	Notes
HADES SA, **HADES L**, **FramSat-1**	NORAD 68446, 100938, 99999; all databases off	
ERMINAZ-2U, **ERMINAZ-2V**, **ERMINAZ-2X**	NORAD 100915 (2U), 99999 (2V, 2X); all databases off	
GEOSCAN family (17 rows, below a title and a hint): Geoscan-Edelveis, StratoSat-TK2, Horizon, RTU-MIREA1, TUSUR-GO, Colibri-S, Vizard-ion, 239Alferov, InnoSat-3, Geoscan-1 to Geoscan-6, InnoSat-16, Lobachevsky	Not stored until you edit it	A row you have never edited shows what the satellite gets today — the Default Satellite's NORAD ID and the databases ticked for it in the satellite list — and keeps following that setting. Once you change the row and save, the satellite is forwarded under its own NORAD ID to its own databases only.

Fill from satellite list. Clicking this button copies, for every grid row whose satellite name matches an entry of the satellite list, that entry's NORAD ID and its Amsat-F / SatNogs / Specific choices:

- Names must be identical apart from upper/lower case: the HADES rows match only entries named `HADES SA` and `HADES L` (not `HADES-SA`).
- A matched row is overwritten even if you had edited it. Rows with no match are left alone.
- If the list holds the same name twice with different values, the row is left unchanged and reported as ambiguous.
- A status line next to the button reports how many rows were filled and names the rows not found in the list and the ambiguous ones. It says so if the list is empty or could not be read.
- **Nothing is saved.** The Satellites entry shows the orange dot; check the rows, then **SAVE**, or **Discard Changes** to undo the fill.

A GEOSCAN row filled with values different from what it showed is stored like a row you edited by hand.



The Satellites section: default satellite, Satellites definition, Fill from satellite list and the routing grid.

> **Upgrade note (ERMINAZ-2):** ERMINAZ-2 frames are not forwarded by the global database switches alone. After upgrading from a version before 4.3.0, every ERMINAZ-2 checkbox is off, so ERMINAZ-2U/2V/2X frames are not forwarded until you tick their databases in the grid. Earlier versions labelled every ERMINAZ-2 frame **Colibri-S**: frames received before the upgrade stay in the `Colibri-S` folder, new ones go to `ERMINAZ-2U`, `ERMINAZ-2V` or `ERMINAZ-2X`.
> **Upgrade note (GEOSCAN):** nothing changes for GEOSCAN frames when you upgrade. Every GEOSCAN satellite is forwarded exactly as before until you edit its row and save.

10.4 Database

Up to three SIDS endpoints. Each row has:

- a **checkbox** to enable the endpoint — the master switch for that database;
- a **source** field: the identifier shown in the reports, usually your callsign;
- a **protocol** selector.

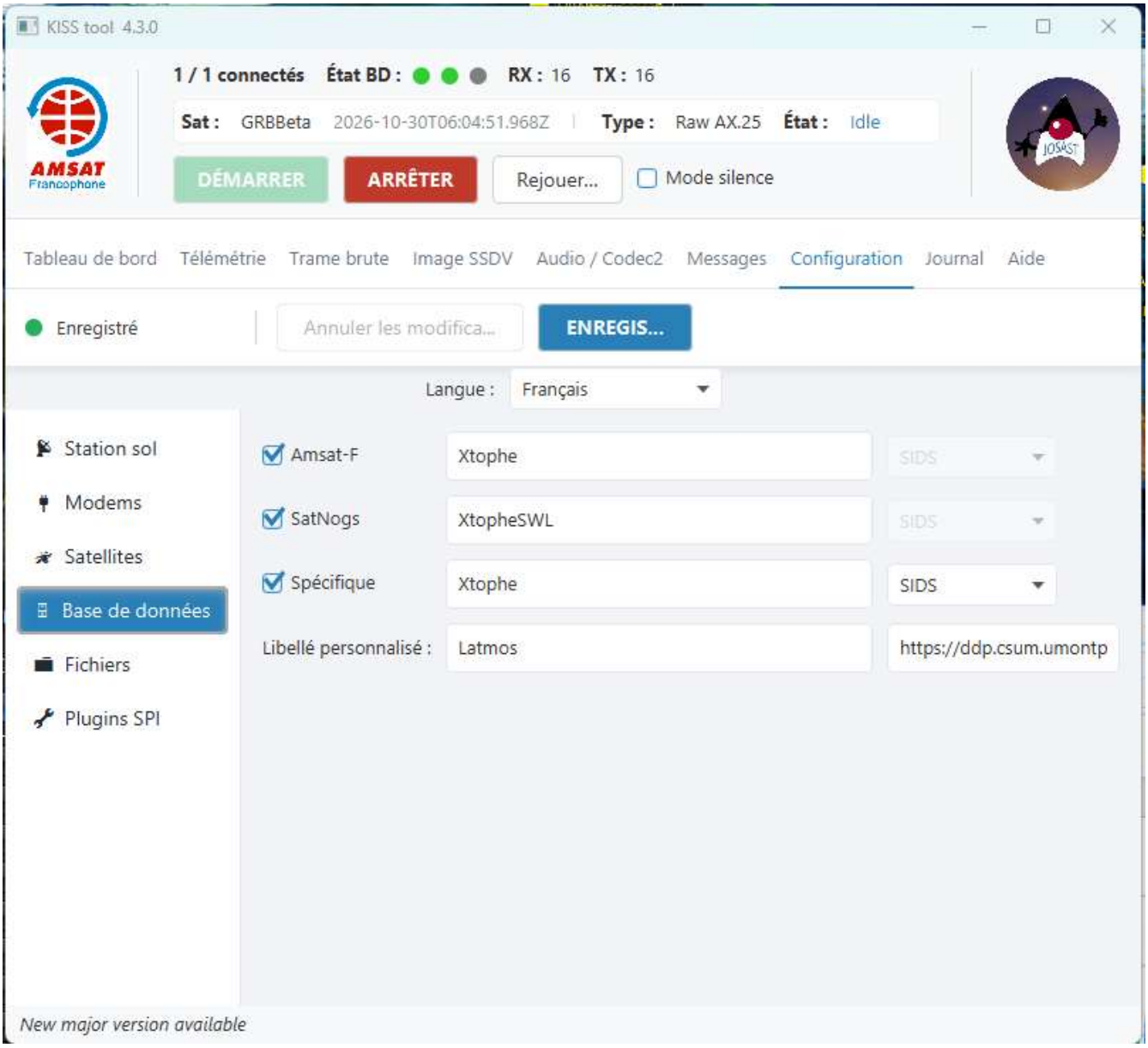
Row	Enabled by default	Description
Amsat-F	Yes	The AMSAT-Francophone SIDS server. The source defaults to `Anonymous`: replace it with your callsign to have your contributions credited.
SatNogs	No	The SatNogs network.
Specific	No	A server of your choice (SIDS or CSUM protocol), for institutional or experimental endpoints.

The **Specific** row has two more fields:

Field	Default	Description
Custom Label	`Latmos`	Short name shown on the Dashboard and in the logs.
URL	`https://ddp.csum.umontpellier.fr/store_beacon`	Full address of the server; must start with `http://` or `https://`.

The Amsat-F and SatNogs addresses are built in and not shown.

Which frames reach a database is decided per satellite: by the satellite list flags (for satellites identified by callsign) or by the routing grid (for callsign-less satellites), and always only when the database is enabled here.



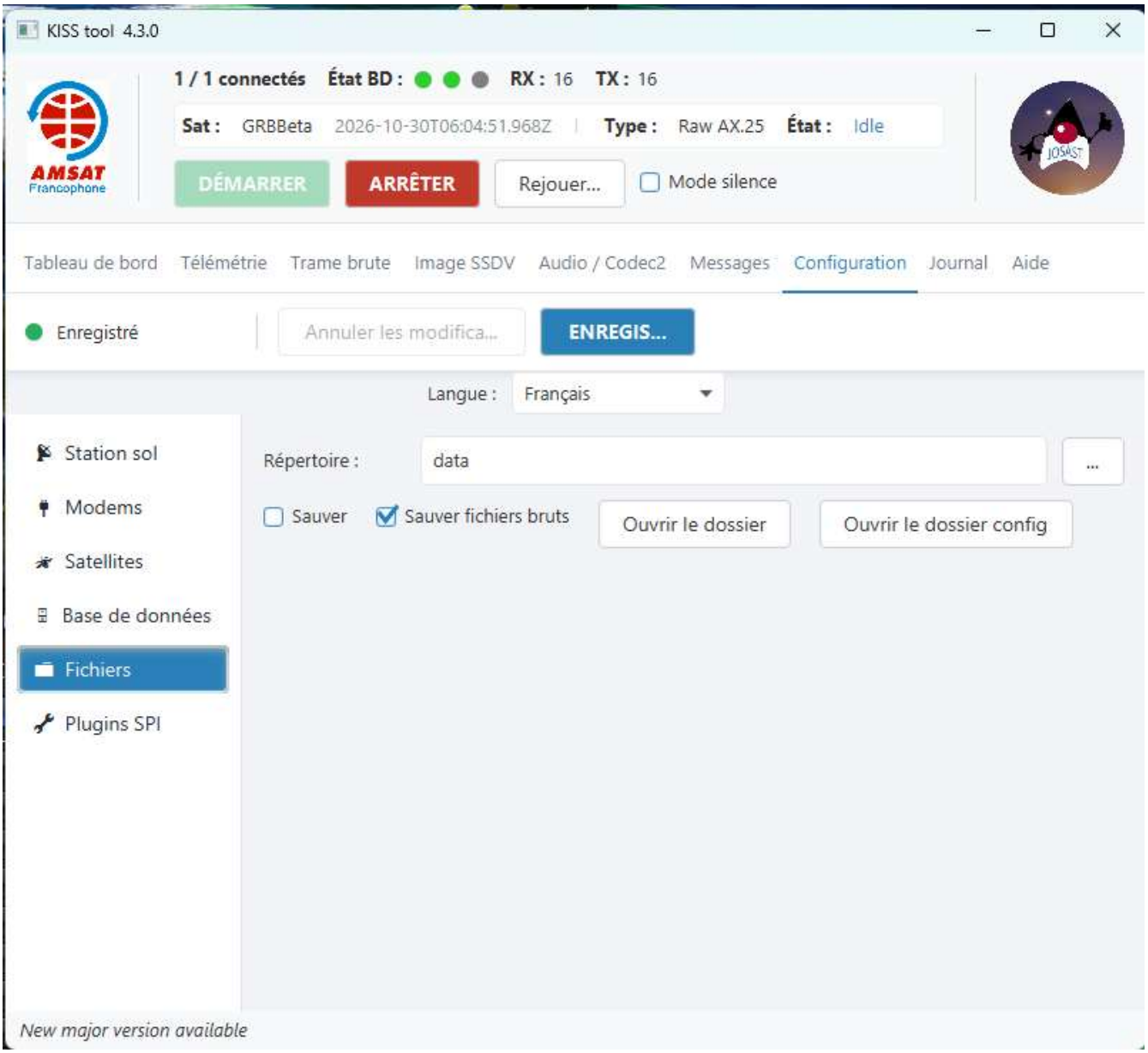
The Database section: the three endpoints with their source fields and protocol selectors.

10.5 Files

Control	Default	Description
Repository	`data`	Folder where frames, images and recordings are saved, one sub-folder per satellite. Type a path or click **…** to browse. A relative path such as the default `data` is resolved from the folder KissTool was started from. Cannot be empty.
…	—	Opens a folder picker.
Save JSON	Off	Save each frame as a JSON file (hex payload, station information, timestamp).
Save Raw Files	Off	Save each frame as a raw binary `.bin` file. The Replay window reads these files, so keep this on if you want to replay passes.

Control	Default	Description
Open Folder	—	Opens the Repository folder in your file explorer.
Open Config Folder	—	Opens KissTool's `config` folder.

File names and the folder layout are described in 17. Files and Folders.



The Files section: Repository, Save JSON / Save Raw Files and the folder shortcuts.

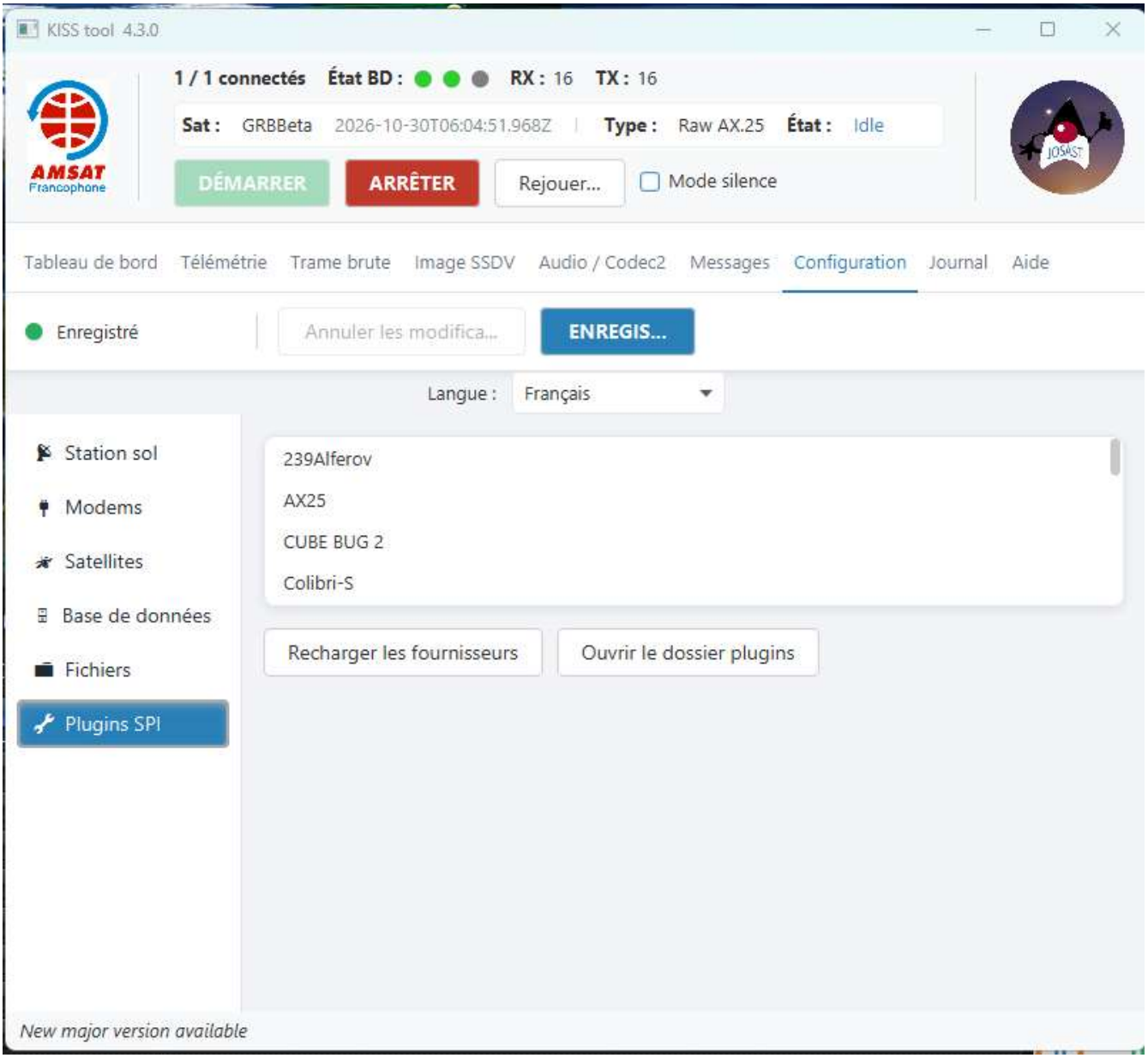
10.6 SPI Plugins

Decoders are plug-ins, each able to decode one or more satellites.

Control	Description
Provider list	The decoders currently loaded.

Control	Description
Reload Providers	Scans the `plugins` folder again, without restarting. Use it after adding or removing a decoder.
Open Plugins Folder	Opens the `plugins` folder in your file explorer.

Adding a decoder. Decoders are distributed as separate `.jar` files (JOSAST publishes the AMSAT-F decoders as the *kisstool-plugins* package). Copy the `.jar` into the `plugins` folder (see 17.1), then click **Reload Providers**. A frame with no matching decoder is still shown in the Raw Frame tab, saved and forwarded.



The SPI Plugins section: the loaded decoders with Reload Providers and Open Plugins Folder.

10.7 Saving the Configuration

Button	Description
SAVE	Checks every field, then saves all sections to `config/configuration.json`. Changes take effect immediately (except the language, which needs a restart).
Discard Changes	Reloads every field from the last saved configuration. Enabled only while something is modified.

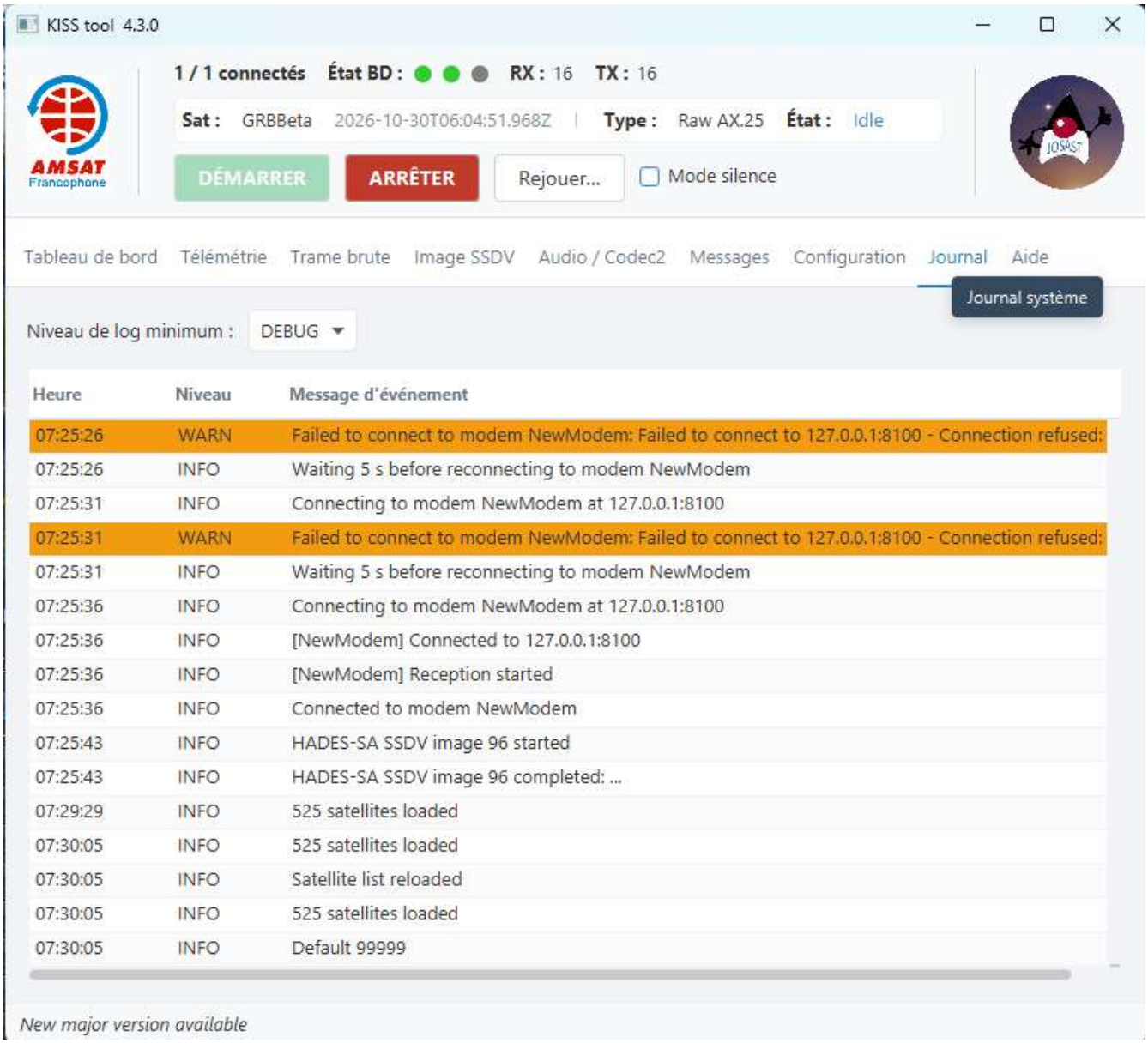
You must click **SAVE** to keep a change. Moving between sections or tabs keeps your edits on screen, but closing KissTool without saving loses them, without asking.

Validation. If any field is invalid when you click **SAVE**, nothing is saved and a *Validation error* dialog lists every problem. Saving is refused when:

- **Callsign** is empty;
- **Latitude** is not `0` – `90` followed by `N` or `S`, or **Longitude** not `0` – `180` followed by `E` or `W`;
- **QRA locator** is empty or not a valid 4- or 6-character locator;
- **Repository** is empty;
- **Amsat-F** or **SatNogs** is enabled with an empty source;
- **Specific** is enabled with an empty source, **Custom Label** or **URL**, an invalid URL, or no protocol;
- a NORAD ID in the routing grid is not a positive whole number (for a GEOSCAN row, the message names the satellite).

If the file cannot be written (disk full, folder read-only…), a *Save Error* dialog says so, nothing is applied, and the configuration stays **Modified** so you can fix the cause and save again.

11. Log Tab



The Log tab: minimum log level selector, time, level and message columns, with WARN entries highlighted in orange.

The Log tab lists application events as they happen.

Minimum log level. The drop-down at the top hides events below the chosen level: `TRACE` → `DEBUG` → `INFO` → `WARN` → `ERROR` → `FATAL` (default `INFO`). It only filters the screen.

Column	Description
Time	`HH:mm:ss`
Level	Severity
Event Message	Description of the event

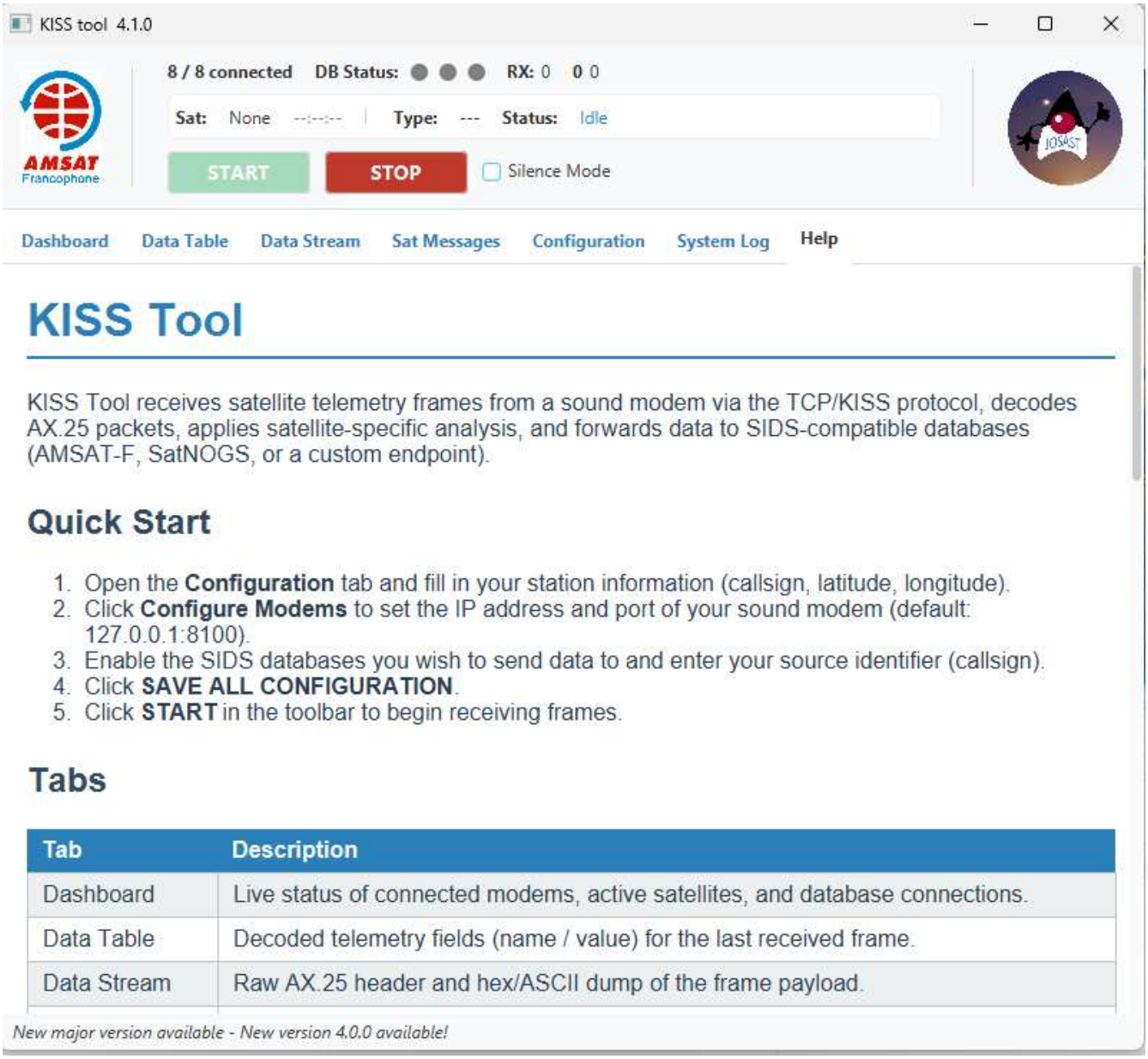
Colour	Meaning
Red background	ERROR or FATAL — needs attention
Orange background	WARN — something unexpected happened
Grey text	DEBUG
Light grey text	TRACE
Default	INFO

Log files are written to the `logs` folder (see 17.1). In Silence Mode, only warnings and errors are logged.

---

12. Help Tab

Shows a built-in help page: an overview, quick-start steps, a description of every tab, the Replay window and the configuration, and the file locations. It is available in English only. This manual is the complete reference.



The Help tab.

13. Replay Window

Click **Replay…** in the header bar to browse the frames saved in the Repository folder. Replay reads the `.bin` files written when **Save Raw Files** is on (Configuration > Files); frames received with that option off cannot be replayed.

Replay only reads. It never sends anything to the databases, never saves frames again, and never changes the Dashboard counters. The only files it writes are the images and recordings you extract (see 13.4). You can keep receiving live while the Replay window is open.

13.1 Selecting Frames

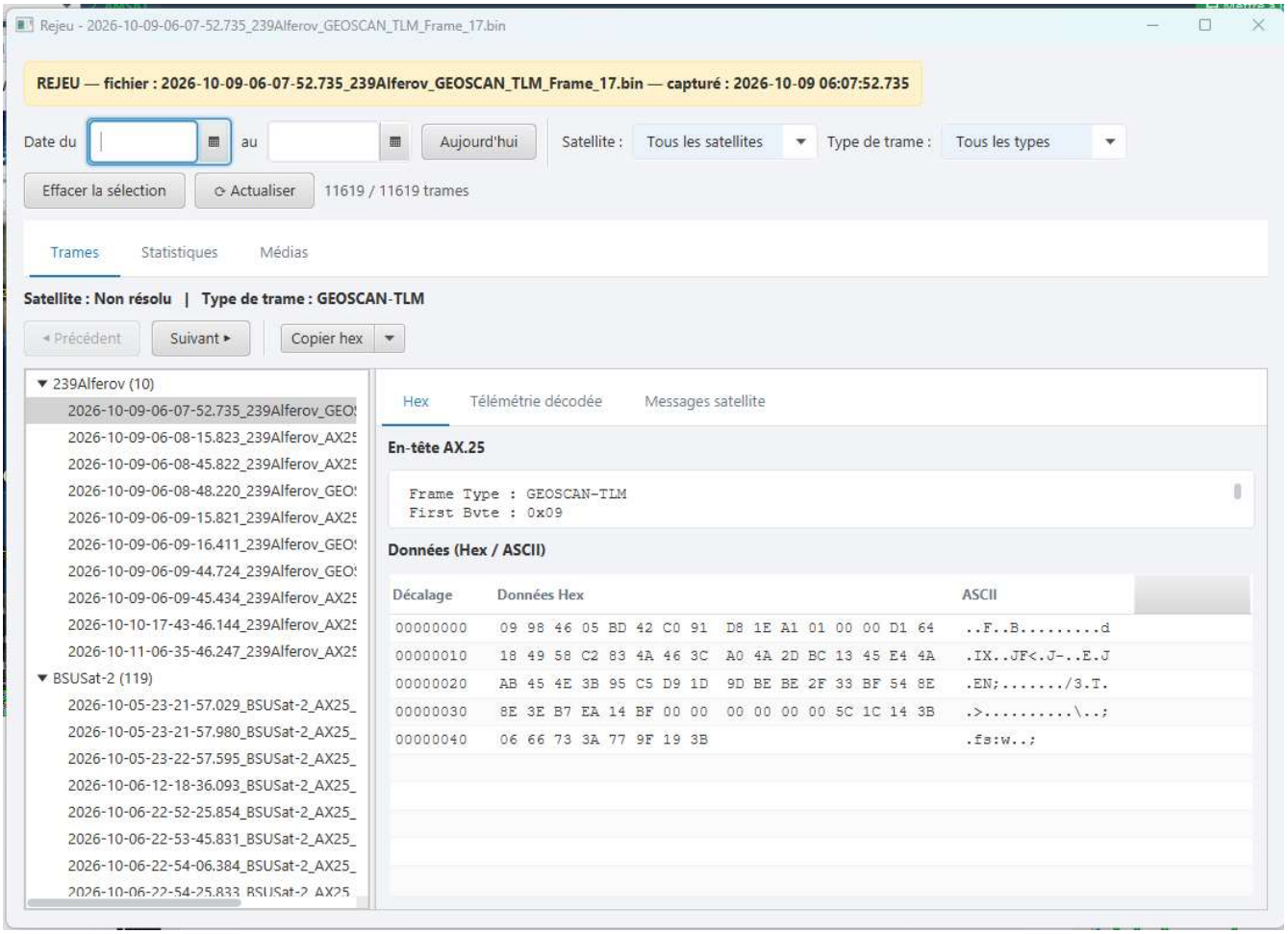
The bar at the top of the window restricts which frames are shown:

Control	Description
Date from … to	Date range. **Today** sets both dates to today.
Satellite	One satellite, or all.
Frame type	One frame type, or all. For HADES-SA it also offers the sub-types read from the first byte of each frame: **HADES-SA SSDV (image)** (Type 10), **HADES-SA CODEC2 (voice)** (Type 11) and **HADES-SA TLM (telemetry)** (every other HADES-SA type). For HADES-L it offers **HADES-L CODEC2 (voice)** (Type 11) and **HADES-L TLM (telemetry)** (every other HADES-L type); HADES-L has no SSDV sub-type.
Clear selection	Resets all filters.
⟳ **Refresh**	Scans the Repository folder again (for frames saved since the window opened).
Counter	How many frames match the filters.

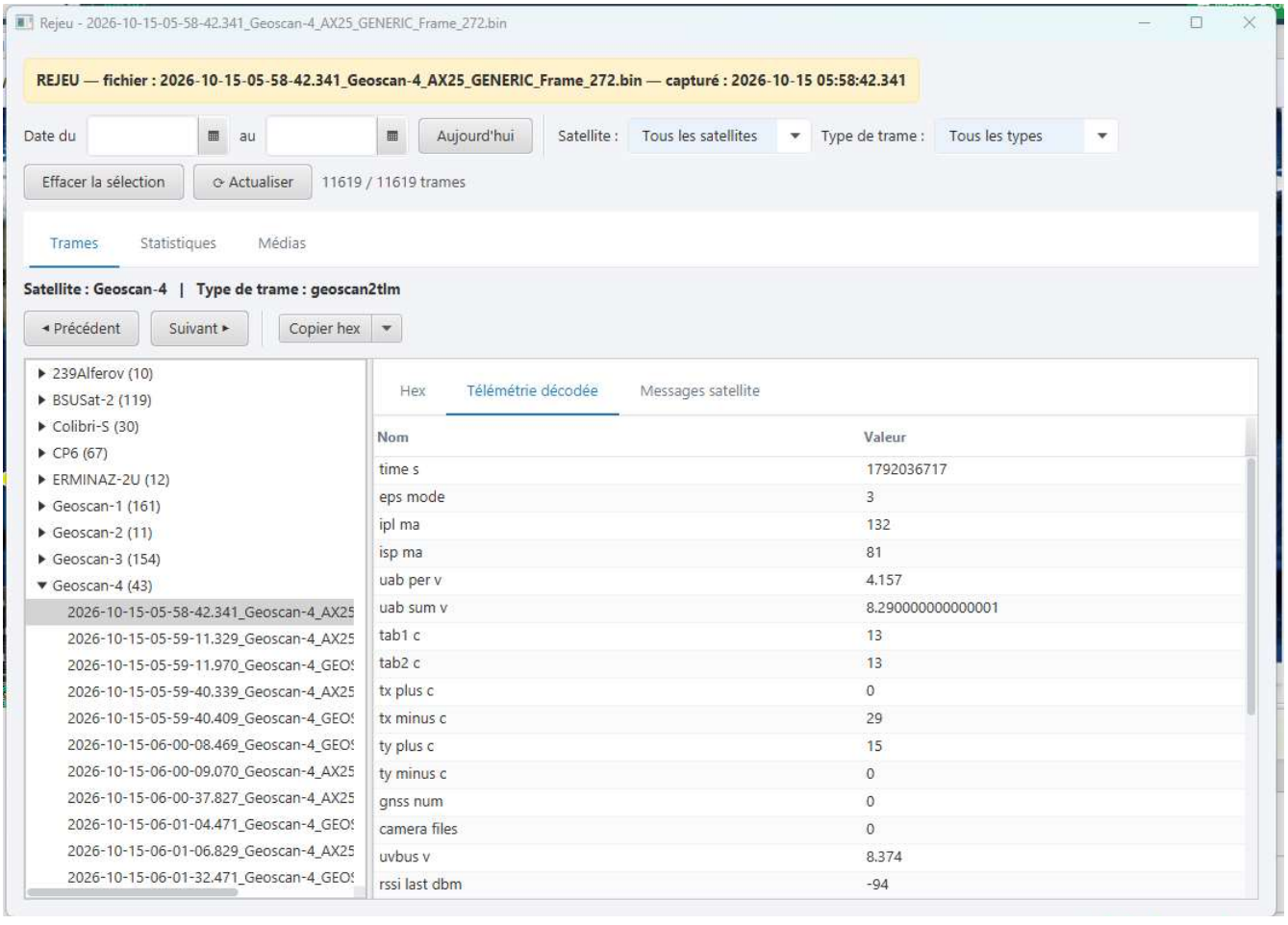
13.2 Frames Tab

The selected frames one by one, with a tree of the saved files on the left.

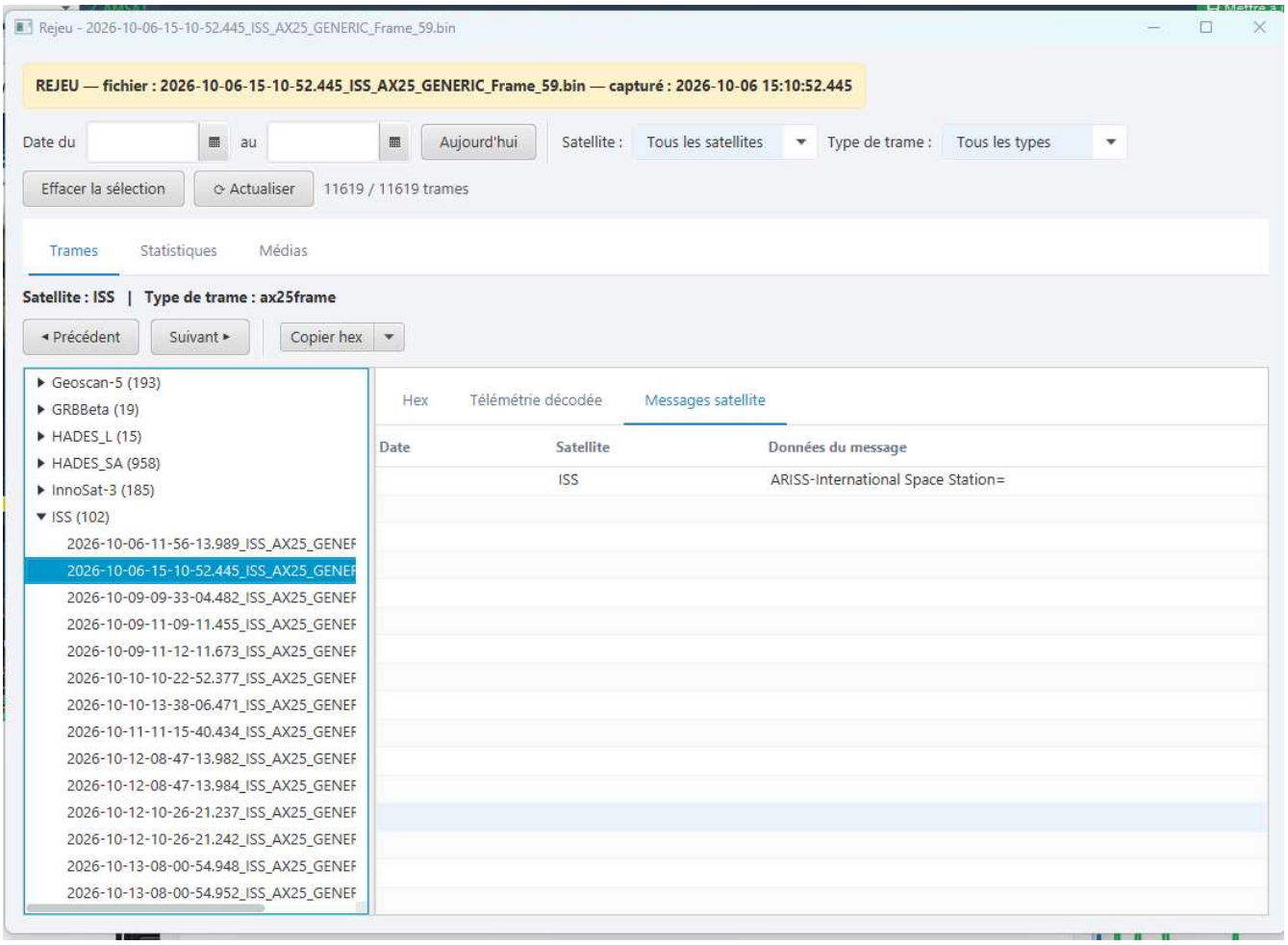
- ◀ **Previous** / **Next** ▶ move through the selection.
- **Copy hex** copies the current frame as spaced or compact hex. In the **Hex** table, right-click to copy the selected rows or the whole frame.
- The sub-tabs show the frame as live: **Hex** (header summary and hex/ASCII dump, as in the Raw Frame tab), **Decoded Telemetry** (when a decoder is loaded) and **Sat Messages**.
- In **Sat Messages**, each row shows the date, the satellite and the message, as in the Messages tab. The date is the capture time from the file name (local time, the same as the banner). If the file was renamed and the capture time is unknown, the date is left empty.



The Replay window's Frames tab: filter bar at the top, saved frames tree on the left, and the Hex sub-tab on the right.



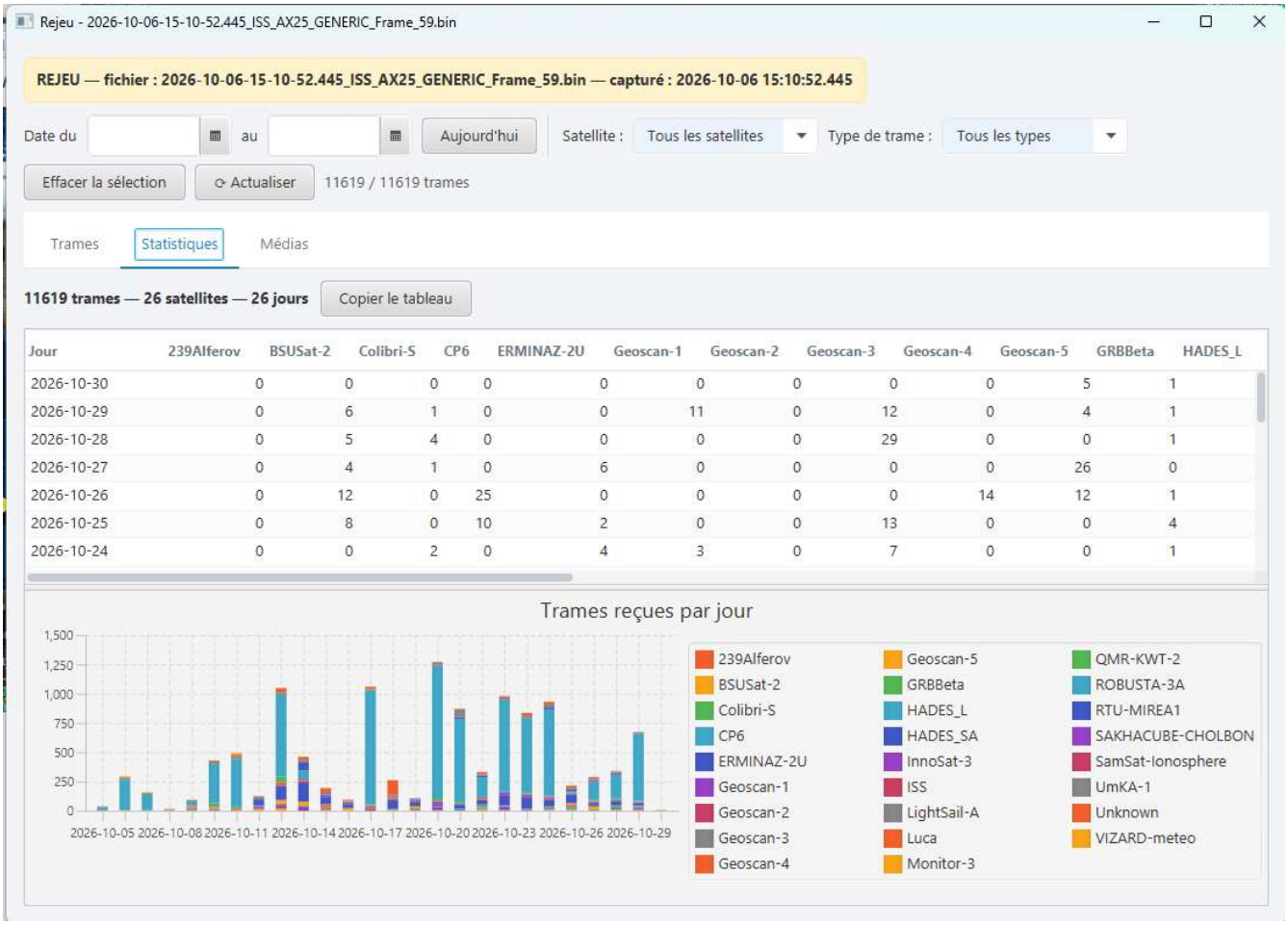
The Decoded Telemetry sub-tab in Replay, showing the decoded telemetry fields of a Geoscan-4 frame.



The Sat Messages sub-tab in Replay, showing a message extracted from an ISS frame.

13.3 Statistics Tab

Frame counts per day and per satellite for the current selection, as a table and as a *Frames received per day* chart. **Copy table** copies the counts as tab-separated text, ready to paste into a spreadsheet.



The Statistics tab in Replay: per-day and per-satellite counts table, Copy table button, and the stacked bar chart of frames received per day.

13.4 Media Tab (HADES Images and Voice)

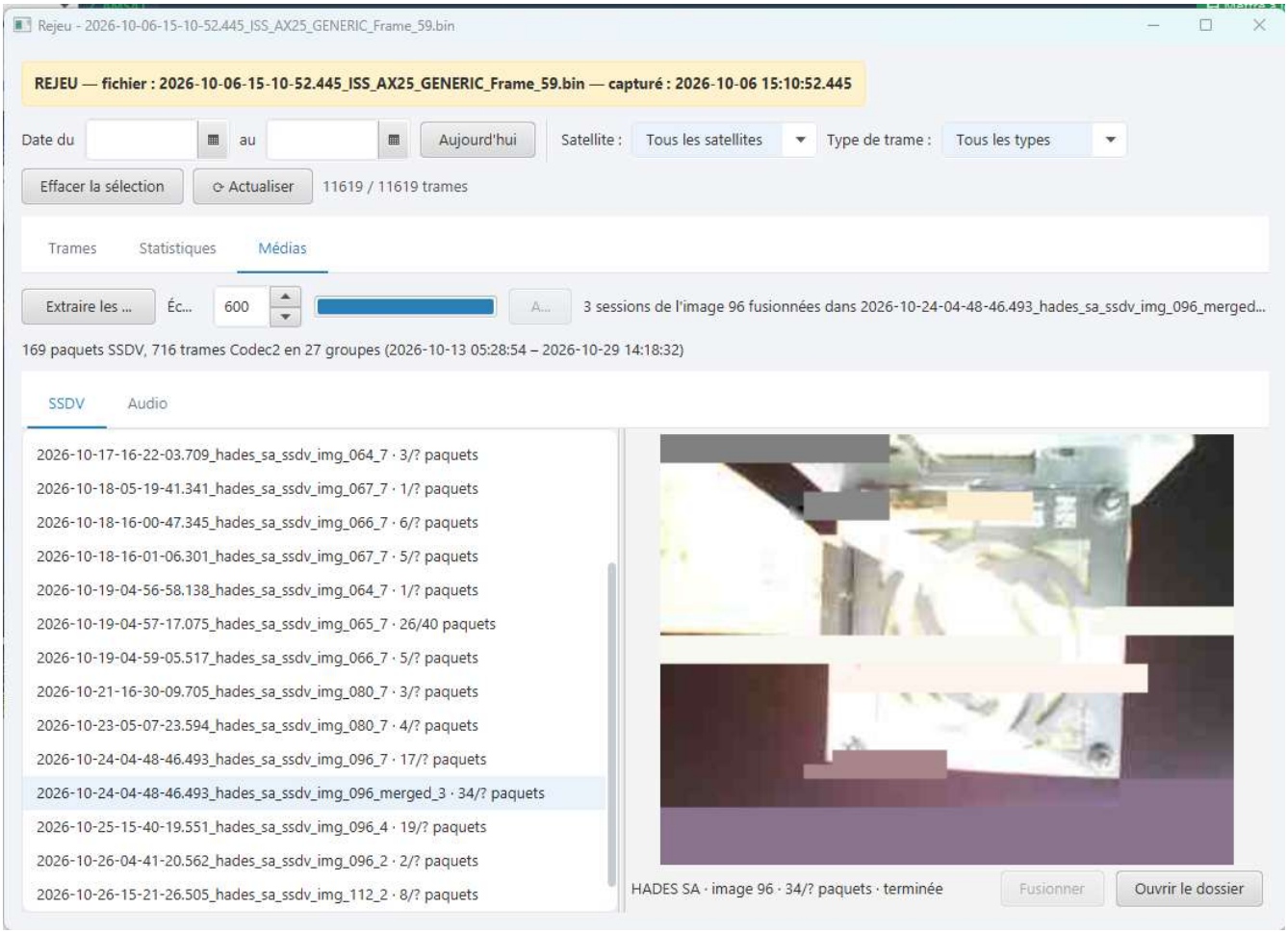
Rebuilds the SSDV images and Codec2 recordings carried by the selected HADES-SA frames, and the Codec2 recordings carried by the selected HADES-L frames (HADES-L has no images). Tip: set **Frame type** to *HADES-SA SSDV (image)*, *HADES-SA CODEC2 (voice)* or *HADES-L CODEC2 (voice)* first.

Control	Description
Extract media	Enabled when the selection holds at least one HADES-SA SSDV or Codec2 frame, or HADES-L Codec2 frame, with a capture time. Runs in the background with a progress bar; the status line then reports the images, recordings, groups and skipped frames. A new extraction clears the session lists first.
Gap (s)	Frames are sorted by capture time and split into groups — normally one per pass — wherever two frames are more than this many seconds apart. Default 600 (10 min: longer than a silence inside a pass, much shorter than the time between two passes); minimum 1. Each satellite is grouped separately, and each group is decoded separately, so two passes — or HADES-SA and HADES-L — never mix.
Cancel	Stops a running extraction. Changing the filters, **Refresh**, a new extraction or closing the window also cancels it.

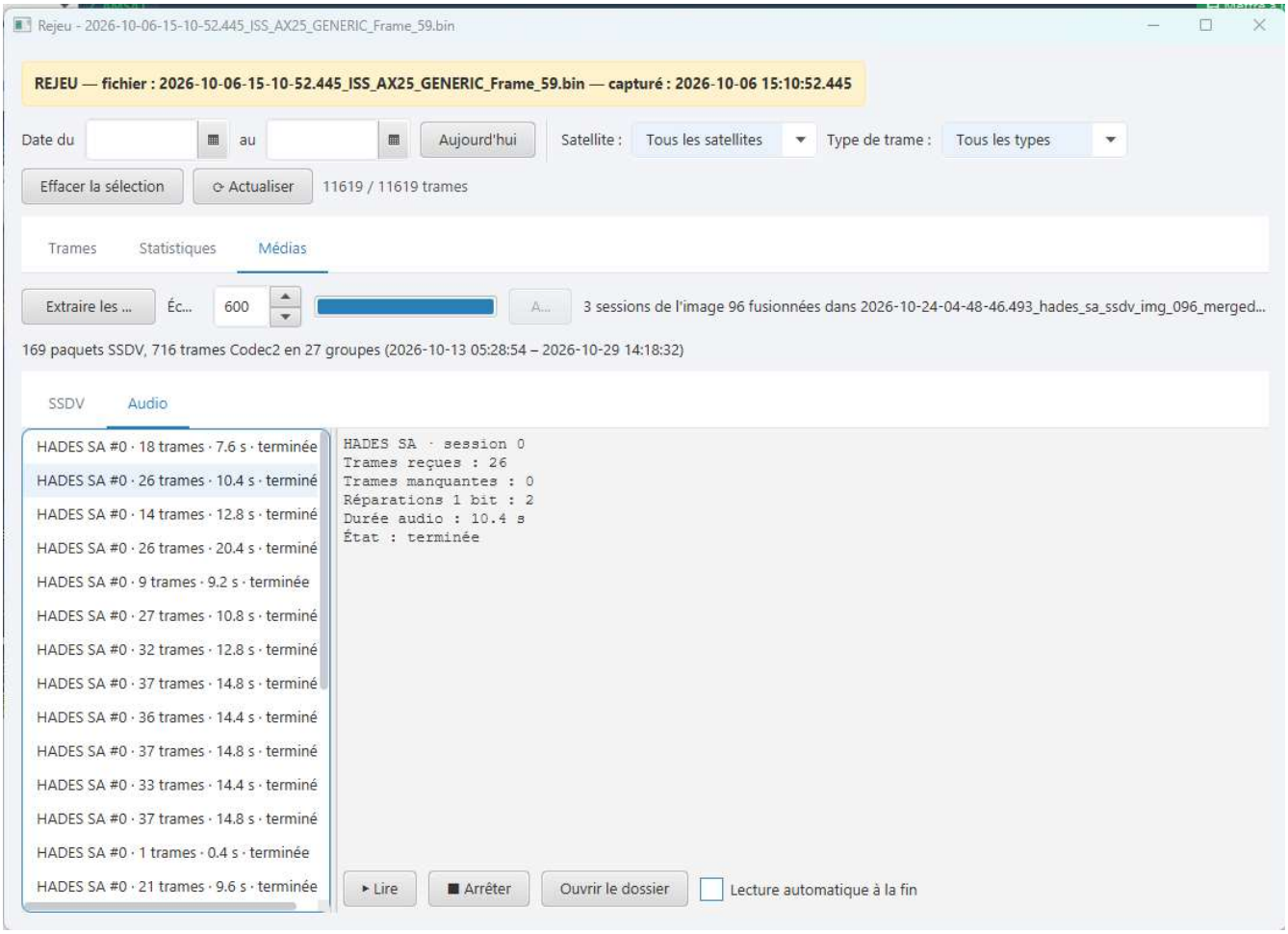
Control	Description
Preview line	What an extraction would process, e.g. *12 SSDV packets, 40 Codec2 frames in 2 groups (2026-10-20 08:15:30 – 2026-10-20 09:45:35)*. HADES-L voice frames count as Codec2 frames. Groups are counted per satellite (from the frame type the frame was saved under) and then added up; the extraction itself separates satellites by the frame's first byte, so the two agree unless a saved file's type does not match its first byte. It follows the filters and the gap. Frames without a capture time in their file name are not counted.
SSDV and **Audio** sub-tabs	Work like the live SSDV Image and Audio / Codec2 tabs (session list, ▶ Play, ■ Stop, Auto-play on completion, Open Folder, which opens the selected session's satellite folder — `HADES_SA/replay/audio` or `HADES_L/replay/audio`, and `HADES_SA/replay/audio` with no session selected), without Flush / Save and Finalize.

Merging partial images. HADES-SA often sends the same image again on later passes, so one image ID can give several partial images. In the **SSDV** sub-tab, Ctrl+click or Shift+click two or more completed images with the same image ID from the same source, then click **Merge**: their packets are combined (one copy of each) into `<first capture time>_hades_sa_ssdv_img_<id>_merged.jpg`, which is selected and shown at once. The partial images are kept. The list is sorted by file name (capture time), so a merged image sits right after its parts. Only merge images you are sure show the same picture: the satellite reuses image IDs.

Output. HADES-SA images go to `<Repository>/HADES_SA/replay/images/` (`.jpg`) and HADES-SA recordings to `<Repository>/HADES_SA/replay/audio/` (`.c2` + `.wav`); HADES-L recordings go to `<Repository>/HADES_L/replay/audio/` (`.c2` + `.wav`). Files are named after the capture time of the session's first frame, e.g. `<capture time>_hades_l_codec2_session_000.wav`. Existing files are never deleted: extracting the same frames again creates `_1`, `_2`, … copies. The live `HADES_SA/images`, `HADES_SA/audio` and `HADES_L/audio` folders are never touched. The HADES-L mask caveat of 8. Audio / Codec2 Tab applies here too.



The Media tab's SSDV sub-tab in Replay: extracted HADES-SA SSDV image sessions on the left and a merged image preview on the right.



The Media tab's Audio sub-tab in Replay: extracted HADES-SA Codec2 voice sessions on the left and the selected session's details and playback controls on the right.

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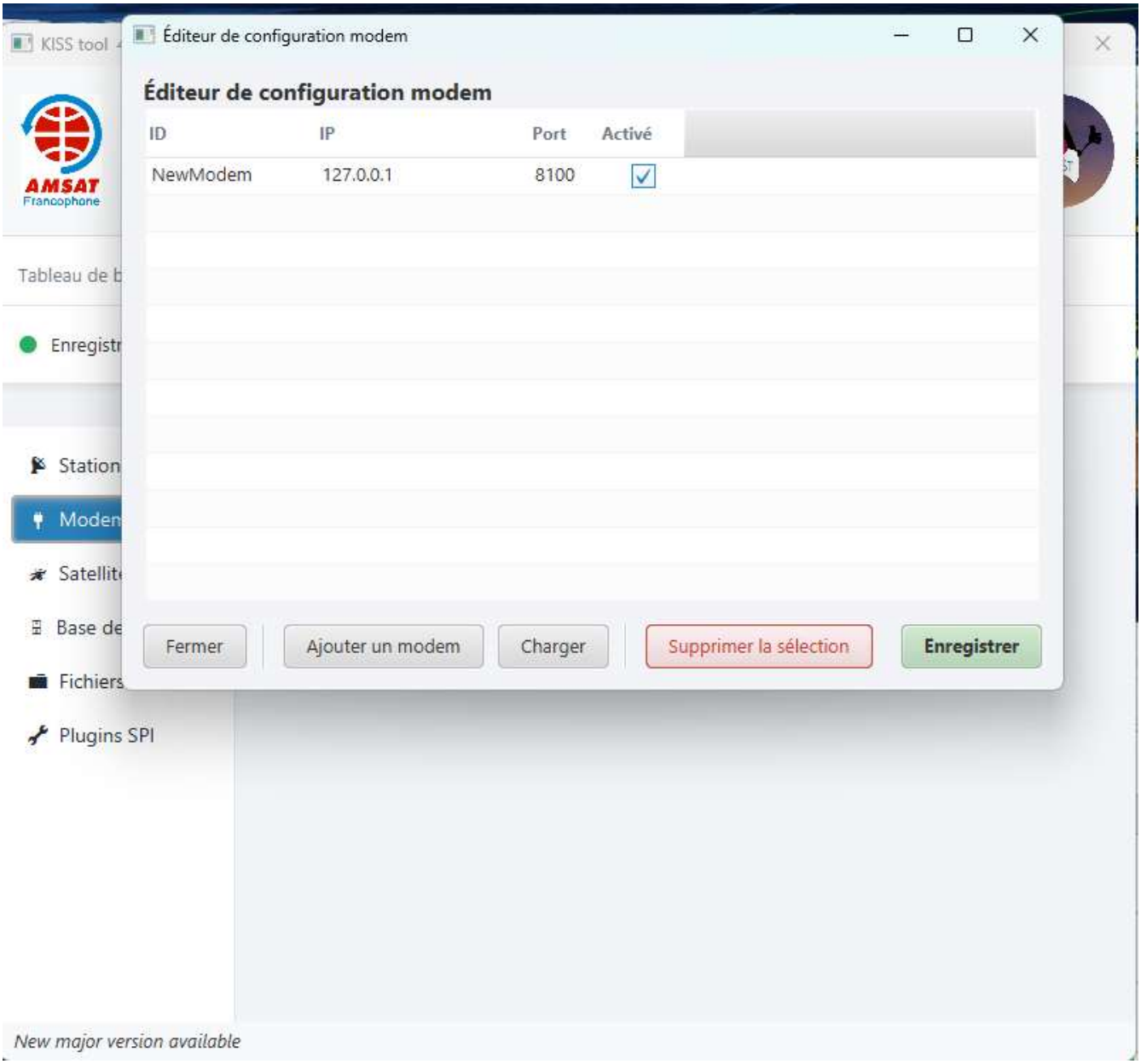
14. Modem Editor Dialog

Opened from **Configuration > Modems > Configure Modems**. The window title is **Modem Configuration Editor**.



The Modem Configuration Editor: one row per modem, with Close on the left, Save on the right and Remove Selected in red.

Column	Description
ID	Modem name shown on the Dashboard (e.g. `Modem-1`).
IP	Address of the computer running the modem software; `127.0.0.1` for the same computer.
Port	TCP port of the modem (1–65535). The UZ7HO SoundModem default is `8100`.
Enabled	Whether START connects to this modem. Untick to skip a modem without deleting it.

Click a cell once to select the row, then again (or press F2) to edit it.

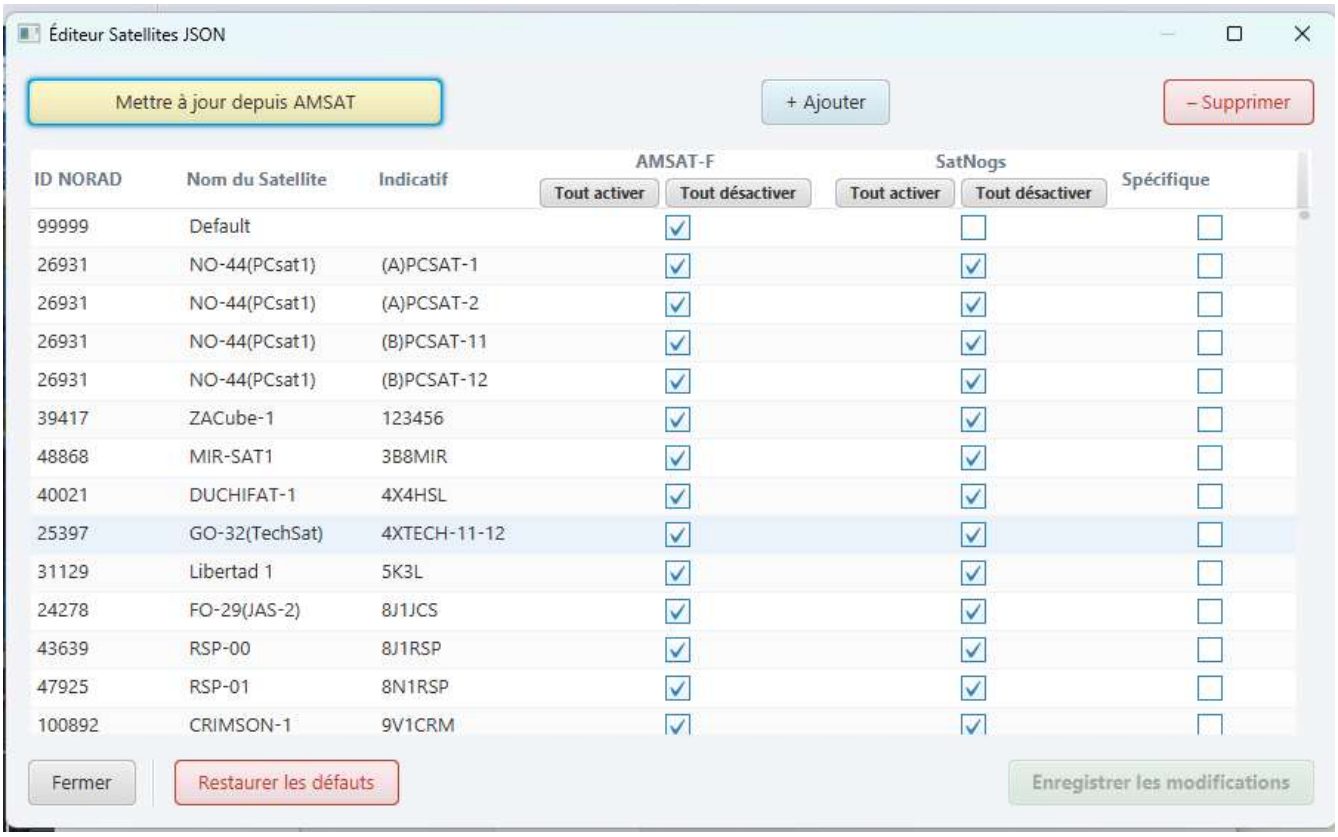
Button	Description
Close (left)	Closes without saving; unsaved changes are lost.

Button	Description
Add Modem	Adds a row (`127.0.0.1` , port `8100` , enabled).
Load	Reloads the saved list, discarding unsaved changes.
Remove Selected (red)	Deletes the selected row, after you confirm.
Save (right, green)	Checks every row (ID not empty, valid IP, port 1–65535) and saves the list to `config/modems.json` .

Modem changes take effect at the next START.

15. Satellite Editor Dialog

Opened from **Configuration > Satellites > Satellites definition**. The window title is **Satellite JSON Editor**. This is the satellite list KissTool uses to recognise satellites from their AX.25 callsign, to find their NORAD ID, and to decide which databases receive their frames.



The Satellite JSON Editor: NORAD ID, name, callsign and per-database flags, with All On / All Off in the AMSAT-F and SatNogs column headers.

Top Actions

Control	Description
Update from AMSAT	Downloads the AMSAT-F reference list and merges it into the table (a spinner shows progress). When a satellite's NORAD ID differs from yours, the *NORAD ID Conflicts* dialog opens (see below).
+ Add	Adds an empty row.
– Remove (red)	Deletes the selected row, after you confirm.

Satellite Table

Column	Description
NORAD ID	NORAD catalogue number, sent in the SIDS reports.
Satellite Name	Name shown throughout KissTool. Also used to find the satellite's decoder and by **Fill from satellite list**.
Callsign	AX.25 callsign the satellite transmits; frames are recognised by it.
AMSAT-F	Forward this satellite's frames to AMSAT-F.
SatNogs	Forward them to SatNogs.
Specific	Forward them to your Specific endpoint (off by default).

The **AMSAT-F** and **SatNogs** column headers each carry **All On** and **All Off**, which set that column for every satellite at once. They stay above their column when you resize, and never sort the table.

Bottom Actions

Button	Description
Close (left)	Closes without saving.
Restore Defaults (red)	Replaces the whole list with the factory list, after you confirm. Cannot be undone.
Save Changes (right, green)	Saves the list to `config/SatelliteNoradList.json`. It applies to the next frames received.

NORAD ID Conflicts Dialog

After **Update from AMSAT**, if the AMSAT-F list gives a different NORAD ID for a callsign you already have, this dialog lists each conflict (callsign, name, current NORAD, remote NORAD). Tick **Accept** on the rows to update (or use **Accept All** / **Reject All**), then **Confirm**.

Default Satellites

NORAD ID	Satellite Name	Callsign
47438	UVSQsat	LATMOS
99999	Default	*(none — catch-all)*
99749	UVSQSat-NG	UVSQ
58470	ENZO	FX6FRC

The **Default** entry (NORAD 99999) catches frames whose callsign matches no other entry. You can choose another catch-all in **Configuration > Satellites > Default Satellite**. The file format is described in Satellite Configuration.

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16. Typical Workflows

16.1 First-Time Setup

1. Launch KissTool and open the **Configuration** tab.
2. **Ground Station**: replace `Anonymous` with your callsign and enter your latitude and longitude (e.g. `48.85N` / `2.35E`), or type your QRA locator and press **Enter**.
3. **Modems**: click **Configure Modems** and check the IP address and port of your sound modem (default `127.0.0.1`, port `8100`). Click **Save** in the editor.
4. **Database**: keep **Amsat-F** enabled and enter your callsign as its source.
5. **Files**: choose a Repository folder and tick **Save Raw Files** if you want to replay passes later.
6. Click **SAVE**.

16.2 Receiving a Pass

1. Start your sound modem software and tune your receiver to the satellite.
2. Click the green **START** button.
3. On the **Dashboard**, a green modem dot means you are connected; amber means KissTool is waiting to retry (normal while the modem software starts).
4. When frames arrive:
   - **RX** in the header increases and **Sat** shows the satellite;
   - decoded values appear in the **Telemetry** tab, and every frame in the **Raw Frame** tab;
   - HADES-SA images appear in the **SSDV Image** tab, and HADES-SA and HADES-L voice in the **Audio / Codec2** tab;
   - frames are forwarded to the enabled databases, and **TX** increases.

5. Click the red **STOP** button after the pass. Open images and recordings are saved.

16.3 Monitoring Several Modems

1. **Configuration > Modems > Configure Modems**.
2. Click **Add Modem** for each modem and set its IP address and port (modems can run on other computers of your network).
3. Click **Save**, then **START**: all enabled modems connect at once, and the Dashboard shows each one separately.

16.4 Adding a Satellite Identified by Callsign

1. **Configuration > Satellites > Satellites definition**.
2. Click **+ Add** and enter the NORAD ID, **Satellite Name** and **Callsign**.
3. Tick the databases (**AMSAT-F**, **SatNogs**, **Specific**).
4. Click **Save Changes**. The satellite is recognised in the next frames.

16.5 Routing a Callsign-less Satellite

1. **Configuration > Satellites**.
2. Find the satellite's row in the routing grid (HADES, FramSat-1, ERMINAZ-2 or a GEOSCAN satellite).
3. Type its NORAD ID and tick the databases that should receive its frames. Or, if your satellite list already has entries with the same names, click **Fill from satellite list** and check the result.
4. Make sure those databases are enabled in **Database**, then click **SAVE**.

16.6 Getting HADES-SA Images and HADES-SA / HADES-L Voice

- **Live:** during a pass, watch the **SSDV Image** and **Audio / Codec2** tabs. Files are written automatically; click **Flush / Save** or **Finalize** to close a session early.
- **Afterwards:** open **Replay…**, set the date range and **Frame type** to *HADES-SA SSDV (image)*, *HADES-SA CODEC2 (voice)* or *HADES-L CODEC2 (voice)*, open the **Media** tab and click **Extract media**. Merge partial images of the same picture with **Merge**.

16.7 Unattended Station

1. **Configuration > Modems**: tick **Autostart** and keep **Auto-reconnect** on; increase the **Reconnection delay** (e.g. 15–30 s) if your modem software starts slowly.
2. Tick **Silence Mode** in the header bar to keep the screen and the logs quiet.
3. Click **SAVE**. On the next launch KissTool connects by itself and reconnects after any drop.

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17. Files and Folders

17.1 Application Folders

KissTool keeps its settings, plug-ins and logs next to its own program file, **not** in your user home folder:

- **Installed or portable package:** in the `app` folder of the KissTool installation, e.g. `C:\Program Files\KissTool\app\` on Windows, `/opt/kisstool/lib/app/` on Linux, or `KissTool\app\` in a portable ZIP.
- **Built from source:** next to the `.jar` you run.

This manual calls that folder `<app-dir>`.

Content	Location
Settings	`<app-dir>/config/configuration.json`
Modem list	`<app-dir>/config/modems.json`
Satellite list	`<app-dir>/config/SatelliteNoradList.json`
Decoder plug-ins	`<app-dir>/plugins/`
Log files	`<app-dir>/logs/`

Open Config Folder and **Open Plugins Folder** (Configuration > Files and SPI Plugins) open these folders directly. On Windows, if KissTool is installed under `C:\Program Files`, saving settings may require write access to that folder.

17.2 Received Data (Repository)

Received data goes to the **Repository** folder (Configuration > Files, default `data` in the folder KissTool was started from):

Content	Location and name
Raw frames (**Save Raw Files**)	`<Repository>/<Satellite>/<timestamp>_<Satellite>_<FrameType>_Frame_<n>.bin`
JSON frames (**Save JSON**)	`<Repository>/<Satellite>/<timestamp>_<Satellite>_<FrameType>_Data_<n>.json`
HADES-SA live images	`<Repository>/HADES_SA/images/*.jpg`
HADES-SA live recordings	`<Repository>/HADES_SA/audio/*.c2` and `*.wav`
HADES-SA images extracted in Replay	`<Repository>/HADES_SA/replay/images/*.jpg`
HADES-SA recordings extracted in Replay	`<Repository>/HADES_SA/replay/audio/*.c2` and `*.wav`
HADES-L live recordings	`<Repository>/HADES_L/audio/*.c2` and `*.wav`

Content	Location and name
HADES-L recordings extracted in Replay	`<Repository>/HADES_L/replay/audio/*.c2` and `*.wav`

- `<Satellite>` is the identified satellite name with unsafe characters replaced; unidentified frames go to `Unknown`.
- A satellite whose name is reserved on Windows (`CON`, `PRN`, `AUX`, `NUL`, `COM1`–`COM9`, `LPT1`–`LPT9`) is saved under `failsafe` instead, and a warning is logged once.
- The JSON file holds the complete frame in hex, every byte included.
- Each frame gets its own file; nothing is ever overwritten.

---

18. SIDS Protocol

SIDS (Satellite Information Distribution System) is the standard way amateur stations share received telemetry. KissTool forwards each frame to every database that is enabled and selected for that satellite. Forwarding runs in the background, so a slow or unreachable server never delays reception.

18.1 Data Sent

Each report contains:

- your **source** (the identifier entered for that database, usually your callsign);
- your **latitude / longitude**;
- the satellite's **NORAD ID**;
- the **reception time** (ISO 8601);
- the **complete frame** in hex.

18.2 Endpoints

Endpoint	Address	Protocol
AMSAT-Francophone	`https://amsat.electrolab.fr/api/V2/SIDS`	SIDS
SatNogs	`https://db.satnogs.org/api/telemetry/`	SIDS
Specific (e.g. CSUM)	Your **URL** (Configuration > Database)	SIDS or CSUM

18.3 Status Indicators

The three circles in the header bar show each database's state:

Colour	Meaning
Green	Reachable; frames sent successfully
Orange	Reachable but some sends failed

Colour	Meaning
Red	Unreachable or sends keep failing
Grey	Disabled

Hover a circle to read its state as text.

---

19. Troubleshooting

Cannot connect to a modem

- With **Auto-reconnect** on (default), KissTool keeps retrying: amber on the Dashboard means retrying, green means connected. You do not need to click START again.
- If it stays amber, check that the modem software is running and that the IP address and port match (**Configuration > Modems > Configure Modems**). For a modem on the same computer, use `127.0.0.1` and port `8100` (UZ7HO SoundModem default).
- Check the **Log** tab for the error.

Frames received but not decoded

- Not every satellite has a decoder. The **Raw Frame** tab always shows the bytes, and the frame is still saved and forwarded.
- Check **Configuration > SPI Plugins** for the loaded decoders; add the missing `.jar` to the `plugins` folder and click **Reload Providers**.
- For a satellite identified by callsign, check that its **Callsign** in the Satellite Editor matches exactly what it transmits.

A callsign-less satellite is not forwarded

- Check its row in **Configuration > Satellites**: at least one database ticked and a valid NORAD ID.
- Check that the database is enabled in **Configuration > Database**.
- ERMINAZ-2 rows are all unticked after an upgrade; tick them.

Nothing appears in the Telemetry, Raw Frame, SSDV Image or Audio tab

- Check that **Silence Mode** is off: it stops all display updates (data is still saved and forwarded).
- The **Type** label in the header shows what the last frame was.

No HADES-SA / HADES-L image or recording file

- A session is written when it completes, after 120 s without packets, on **Flush / Save** / **Finalize**, on **STOP** or when KissTool closes. Check `<Repository>/HADES_SA/images` and `audio`, and `<Repository>/HADES_L/audio`.

- Only HADES-SA Type 10 (image) and Type 11 (voice) frames and HADES-L Type 11 (voice) frames produce files; other HADES frames are telemetry. HADES-L sends no images.
- A HADES-L `.wav` that holds noise instead of speech is possible: the HADES-L mask is not yet confirmed on a real capture (see 8. Audio / Codec2 Tab).

Replay shows no frames

- Replay reads `.bin` files only: **Save Raw Files** must have been on when the frames were received.
- Check the **Repository** path and the filters (**Clear selection**), then click ⟳ **Refresh**.

A database circle is red

- Check your internet connection and the **Log** tab for the HTTP error.
- Check that the database's source field is not empty, and that your callsign and coordinates are saved.
- For **Specific**, check the URL and protocol.

The configuration is not saved

- Click **SAVE**; changing tab is not enough.
- Read the *Validation error* dialog: it lists every field that blocks the save (red borders).
- A *Save Error* dialog means the file could not be written: check that the `config` folder is writable.

The language did not change

- Restart KissTool after choosing a language and clicking **SAVE**.

The application does not start

- Installed and portable packages include their own Java runtime. If you run from source or from the `.jar`, Java 25 or later is required (`java -version`).
- On Linux, with the portable build, make the launcher executable: `chmod +x KissTool/bin/KissTool`.
- Look in the `logs` folder (see 17.1) for the cause.

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20. What's New in 4.3.0

The full list is in the Release Notes. In short:

- **HADES-SA images and voice** — live **SSDV Image** and **Audio / Codec2** tabs, and extraction from saved frames in the Replay **Media** tab, with merging of partial images.
- **Replay —** filters (date, satellite, frame type and HADES-SA sub-type), frame-by-frame view with hex copy, per-day statistics.
- **New satellites —** HADES-L, ERMINAZ-2U/2V/2X (each with its own NORAD ID and databases), per-satellite routing for the 17 GEOSCAN satellites.
- **Configuration —** sections in a menu on the left, orange dots on modified sections, invalid fields shown in red and blocking the save, QRA locator entry, one routing grid for every callsign-less satellite, **Fill from satellite list**.
- **Interface —** the update alert only appears for a newer version, full button labels and translated titles in every language, all tabs visible at 800 px, a uniform dashboard grid, an aligned hex/ASCII dump, clearer editor buttons with confirmation before deleting.

- **Reliability —** a failed configuration save is reported; frames starting with zero bytes are sent and saved at full length; satellite names reserved on Windows are saved under `failsafe`; each JSON file gets a unique name.

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21. Support

For questions, bug reports and feature requests:

- **Forum:** AMSAT-Francophone — KissTool Section
- **Source code:** JOSAST Repository

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22. License

KissTool is part of the JOSAST project, maintained by AMSAT-Francophone.

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