

findmine

findmine GmbH – Explosives search with the help of UAVs.

FM-GPSAR



28.09.2026

Public

URS ENDRESS
foundation.



Introduction findmine GmbH

Who we are:

Startup initiated and financed by the Urs Endress Foundation in 2022
9 employees, location in South Germany

Our Mission:

Making humanitarian demining faster, safer and cheaper by new sensor technologies

First contribution:

FM-GPSAR (Ground Penetrating Synthetic Aperture Radar)

Uniqueness:

Detecting buried or grass-hidden objects from an UAV-based sensor operating in a safe flight altitude

Application:

Support demining teams, demining machines and robotized demining with sensor information from the air where optical sensors can not help

Availability:

Ready to sell the GPSAR to first pilot customers in 2026



FM GPSAR System



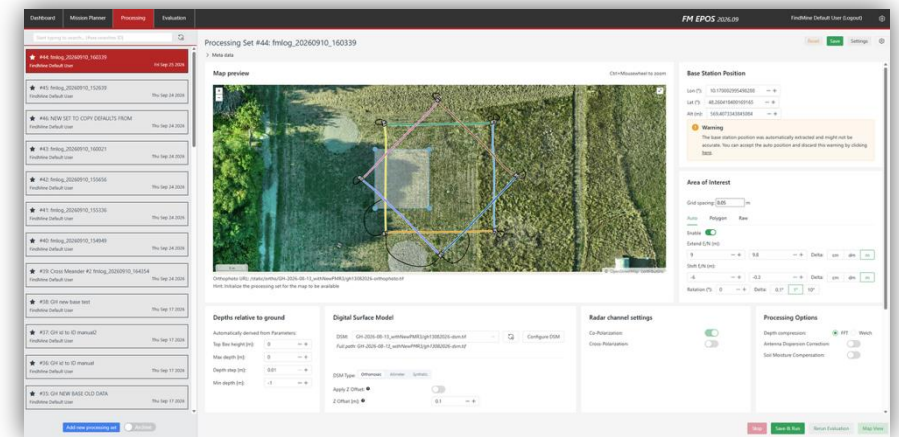
FM-GPSAR UAV
Un-manned Aerial Vehicle with
Ground Penetration Synthetic Aperture Radar



FM-BSR
Base Station and Router



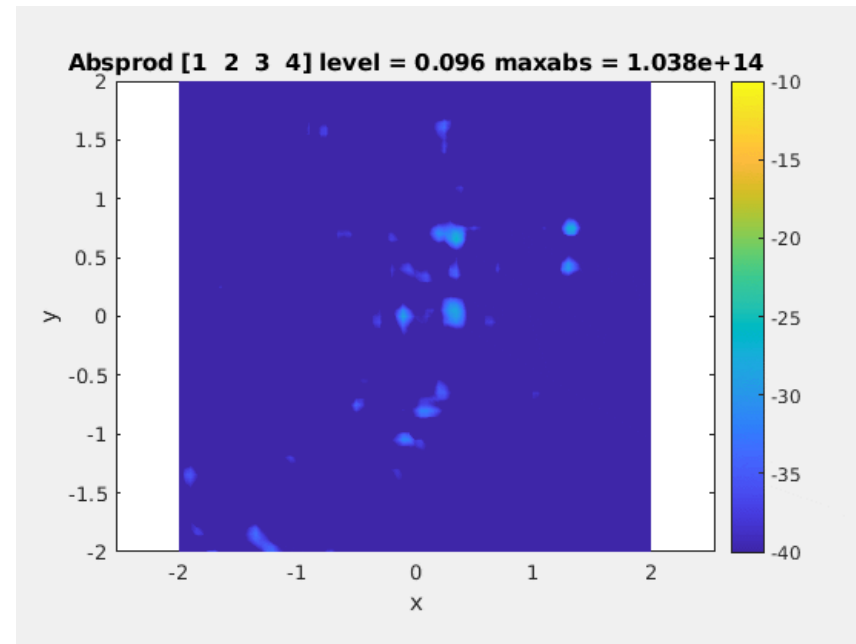
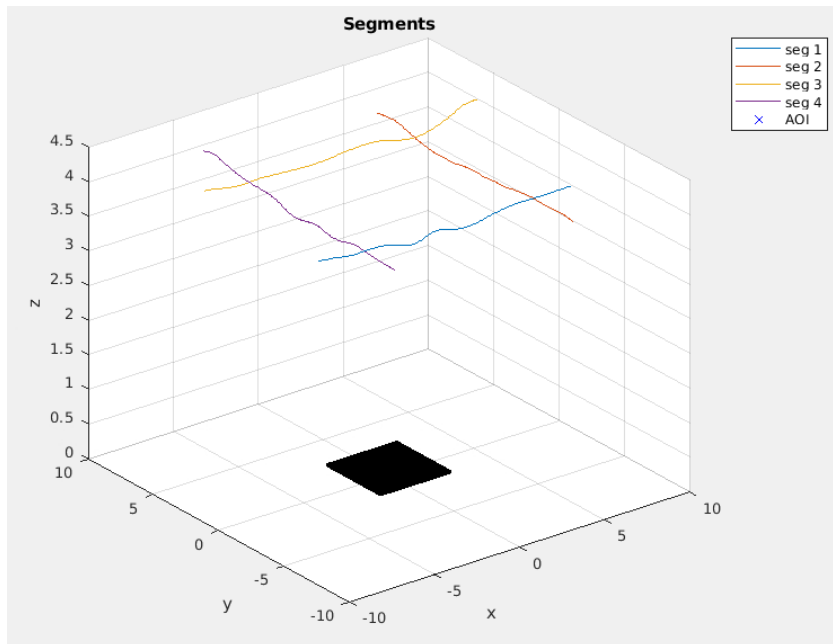
FM-FPU
Field Processing Unit



FM-EPOS
Evaluation Processing and Operation Software

GPSAR Principle

- Combination of Ground Penetrating Radar and Side-Looking Synthetic Aperture Radar
- Provides 3D radar images from the upper soil of an area surrounded by the GPSAR UAV



FM GPSAR Properties

- Controlled automated flights planned with orthophotos
- Flight altitude 4m to 10m
- Area Coverage 2000m²/h
- Typical area resolution 5cm with RTK accuracy
- Typical depth resolution 1cm
- Maximum depth >20cm (up to 50cm in dry soil)
- Processing and Evaluation directly after the search flight in the field
- Good detectable: AVMs and metal APMs in dry soil
- Challenging: Wet soil and plastic APMs
- One software package (EPOS) for operation, processing and evaluation
- System needs 2 persons to operate and 1 car for transport



GPSAR Results

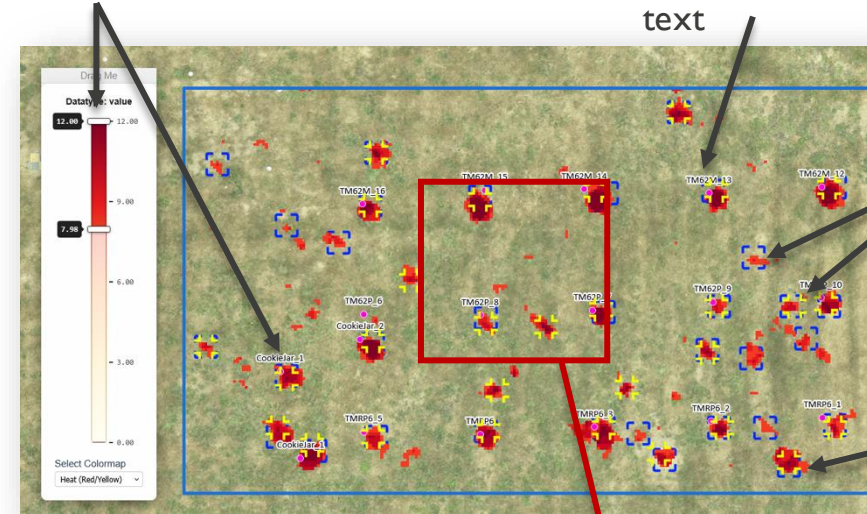
- Heatmaps indicating detections for different threshold levels
- Orthophotos in the background of the heatmaps
- Separate heatmaps for different polarization and their combinations
- Layered 2D or 3D CFAR detection
- Target lists from automated detections
- Detailed information of detections by layered radar images, depth profiles and histograms
- Exportable target lists in absolute or relative coordinates with RTK accuracy

3D adjustable threshold detector results as red-color-coded heatmap

Known ground-truth points of interest visualized by text

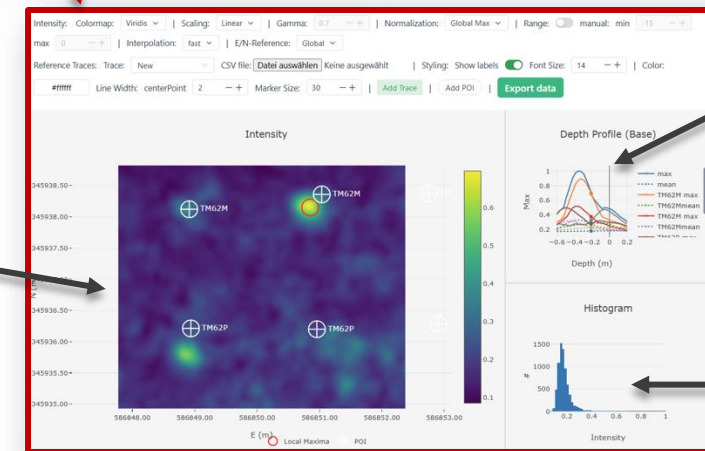
Yellow and blue symbols indicating autodetections from different polarizations

Background visualization from an orthophotograph (grass vegetation)



Close-up with detailed radar information

Layered radar images with real-time depth-slider



A-scans at marked points of interest

signal histogram