



GINA® Geophones in Avalanches

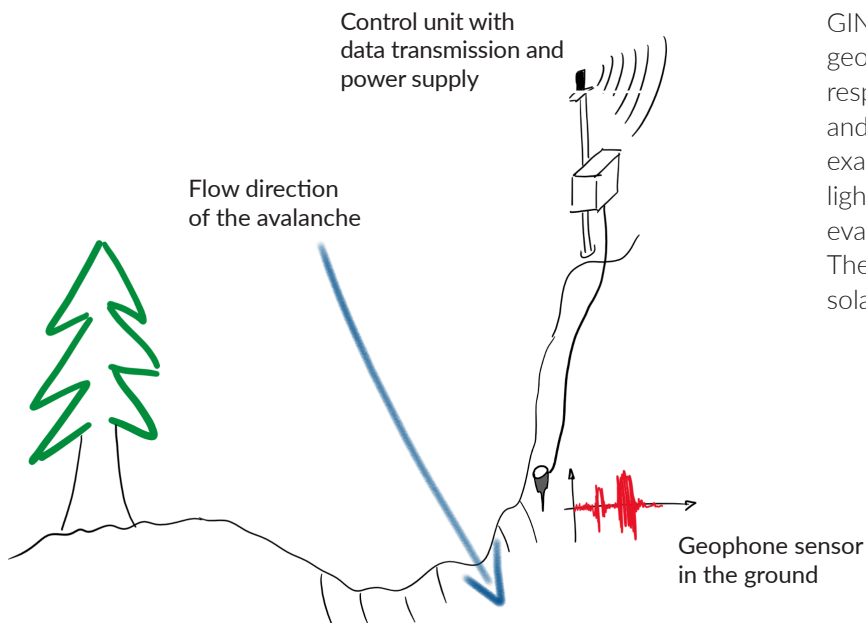
GINA® enables the monitoring of avalanche activity in specific avalanche paths. The system represents a cost-efficient way of monitoring individual areas and is fully integrated in the Wyssen Avalanche Control Center WAC.3®.

Advantages

- ✓ Highly reliable, local information
- ✓ Independent of weather and visibility
- ✓ Direct detection of avalanches
- ✓ Real-time detection



GINA® records the ground vibrations caused by avalanches and enables the detection of both natural and preventive avalanches (see figure below).



GINA® consists of a control unit and a geophone sensor. The control unit is responsible for data transmission via mobile radio and for communication with other devices, for example with any connected avalanche traffic lights, while the sensor continuously records and evaluates ground vibrations. The battery supplying the power is charged via a solar panel.

Facts / Technical Data

Measurement of	ground vibrations from avalanches, debris flows or similar gravitational natural hazards
Resolution & Frequency	24-bit / 80Hz
Range	up to 50m (165 ft)
Opening angle	360°
Installation	of the sensor elements: in the ground near the avalanche descent path of the control unit and power supply: outside the avalanche descent path on a tree or in combination with a cross-bracing or screw-in foundation
Communication	Mobile phone network
Power supply	Solar
Number of sensors	connection of several redundant sensors to the control unit and power supply is possible
Display	fully integrated in our Wyssen Avalanche Control Center WAC.3®

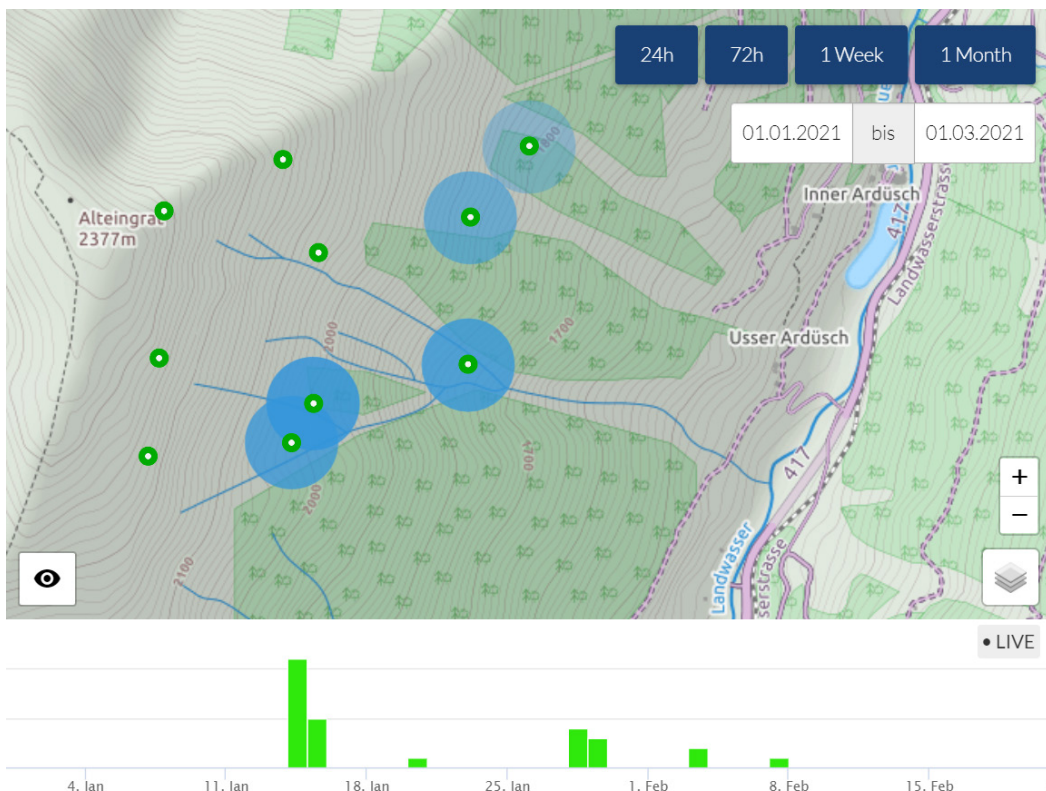
Local trigger

The elementary STA/LTA trigger for an event is defined as a ratio between the short-term average (STA) value and the long-term average (LTA) value. This creates a threshold that enables the detection of events of all magnitudes while simultaneously remaining immune to gradual changes in ambient ground noise. When the trigger is activated, the system switches from energy-saving mode to full operational capability. The sensor itself does not differentiate whether the event is an avalanche, a debris flow or a rockfall during the measurements.

Central processing

All data during the event is recorded, transferred and evaluated in the scope of data processing on Wyssen's servers. A central algorithm then determines whether the recorded event is an avalanche or another type of vibration that activated the trigger. Finally, all detections relevant for the user are displayed on the Wyssen Avalanche Control Center WAC.3®. Users can configure alerts of relevant events via SMS or email.

Visualization of GINA® detections in WAC.3®



Installation of a GINA® control unit and solar panel on a tree

