

„Umweltmonitoring mit Unmanned Aerial Vehicles“

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Geoinformation & Umwelttechnologien
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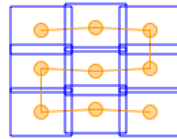


Erfassung von kleinräumigen Luftbildern „on Demand“

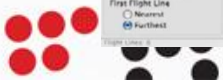
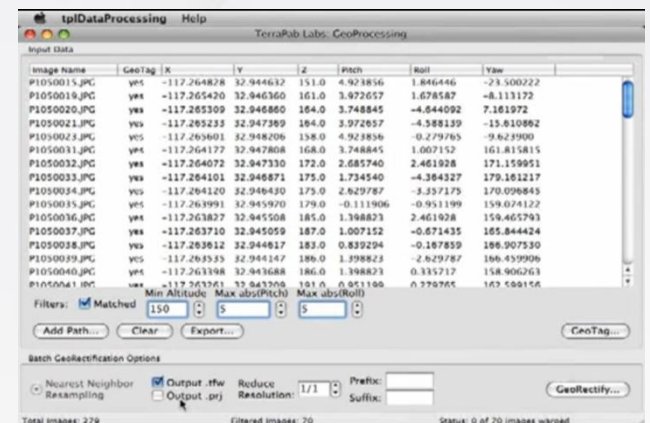
Cooperation with TerraPanLabs, San Diego, USA



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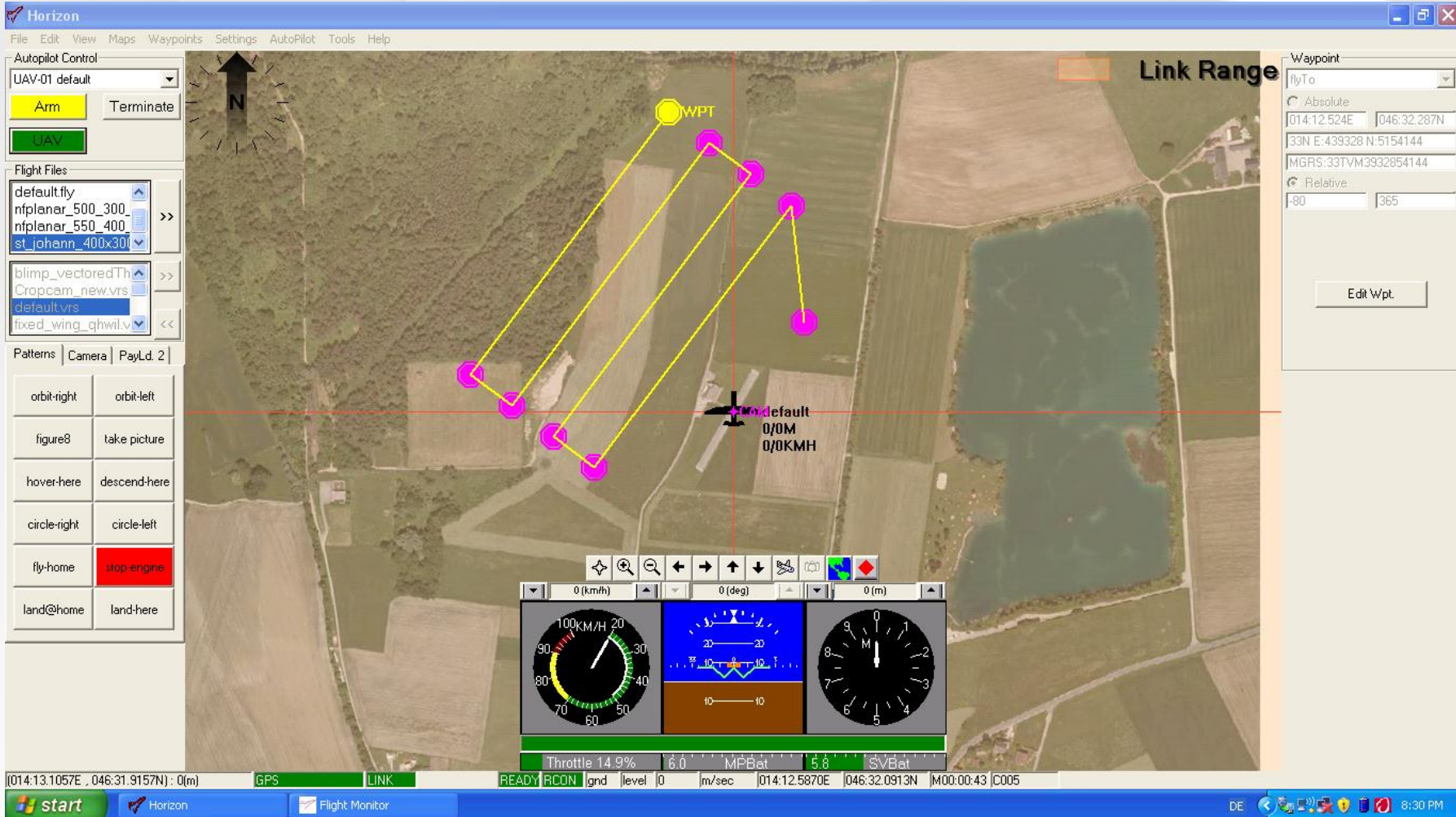
Plan – Fly – Map



Gesamtsystem Überblick



Micropilot Flight Operation



The screenshot displays the Horizon flight simulator interface. The main window shows a top-down view of a flight path over a rural landscape with fields and a lake. A yellow line connects several waypoints, with a yellow circle labeled 'WP1' at the start. A small aircraft icon is positioned at the center of the path, with the text 'default 0/0M 0/0KMH' next to it. A red 'Link Range' indicator is visible in the top right corner.

The interface includes several panels and controls:

- Autopilot Control:** A dropdown menu set to 'UAV-01 default', with 'Arm' and 'Terminate' buttons. A green 'UAV' button is also present.
- Flight Files:** A list of files including 'default.fly', 'nfplanner_500_300', 'nfplanner_550_400', 'st_johann_400x300', 'blimp_vectoredTh', 'Cropcam_new.vrs', 'default.vrs', and 'fixed_wing_qhwil.v'.
- Patterns:** A grid of buttons for various actions: 'orbit-right', 'orbit-left', 'figure8', 'take picture', 'hover-here', 'descend-here', 'circle-right', 'circle-left', 'fly-home', 'stop engine', 'land@home', and 'land-here'.
- Waypoint Panel:** Located on the right, it shows 'flyTo' set to 'Absolute' with coordinates '014:12.524E' and '046:32.287N', and 'Relative' set to '365'. An 'Edit Wpt.' button is at the bottom.
- Instrument Cluster:** At the bottom center, it features three gauges: a speedometer (0-100 km/h), a heading indicator (0-360 degrees), and an altimeter (0-2000 m). Below these are status indicators for 'Throttle 14.9%', 'MPBat 6.0', and 'SVBat 5.8'.
- Telemetry Bar:** At the very bottom, it displays 'READY RCON gnd level 0 m/sec 014:12.5870E 046:32.0913N 000:00:43 0005'.

The Windows taskbar at the bottom shows the 'start' button, 'Horizon' application, 'Flight Monitor' application, and the system tray with the time '8:30 PM'.

Micropilot Telemetrie

Datalog Viewer

File Tools Help

Log Browser Log Data Log Plots User Defined Fields

Select Units: Metric (m/s) Imperial (feet/s) Metric (kph) Imperial (knots) Raw units

Select Aircraft Type: Fixed Wing Helicopter Blimp

Log filename: logs\log20111031_222302.txt
Log download date: 2011-10-31 22:23:02(default)

Servo mixing: No mixing Unmix servos Sort fields by name

Double click a field label to show or hide that field on the time plot

	Body Pitch Dot (degrees / s)	Body Roll Dot (degrees / s)	Body Yaw Dot (degrees / s)	Changed Status	Climb State	Command State	Compass Heading (degrees)	Correction Pitch (degrees)	Correction Pitch Dot (degrees / s)	Correc (degre
9:04.136	11.77	57.55	-25.49	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	44.87	2.30	
9:04.306	10.19	8.82	-33.55	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	2.97	2.30	
9:04.515	18.97	-10.19	-24.34	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	2.97	0.36	
9:04.715	17.31	-24.43	-22.59	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	2.97	0.36	
9:04.922	20.68	-13.77	-25.41	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	2.97	0.36	
9:05.138	17.56	-26.18	-28.69	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	2.97	0.36	
9:05.332	6.18	-1.24	-12.92	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	25.46	0.36	
9:05.540	16.75	12.75	-23.79	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	25.46	0.58	
9:05.736	8.01	22.34	-24.26	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	25.46	0.58	
9:05.971	12.36	18.84	-33.21	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	25.46	0.58	
9:06.153	6.74	5.07	-20.85	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	11.25	0.58	
9:06.349	6.48	14.37	-24.17	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	11.25	1.48	
9:06.559	6.78	14.07	-30.74	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	11.25	1.48	
9:06.754	12.53	20.72	-33.00	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	11.25	1.48	
9:06.959	11.64	-0.30	-19.82	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	11.25	1.48	
9:07.186	9.93	18.20	-19.48	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	11.25	1.48	
9:07.369	15.43	5.03	-22.72	Flying, PIC mode, Be	Climb, UAV Moc	0	0.00	27.70	1.48	
9:07.634	70.13	31.42	16.71	Flying, CIC mode, Be	Climb, UAV Moc	3	0.00	27.70	1.65	
9:07.823	-14.54	75.37	-6.52	Flying, CIC mode, Be	Climb, UAV Moc	3	0.00	27.70	1.65	
9:08.014	30.18	6.27	-30.14	Flying, CIC mode, Be	Climb, UAV Moc	3	0.00	27.70	1.65	
9:08.226	16.16	26.30	14.84	Flying, CIC mode, Be	Climb, UAV Moc	3	0.00	27.70	1.65	
9:08.414	1.07	27.07	-8.74	Flying, CIC mode, Be	Climb, UAV Moc	3	0.00	23.05	1.65	
9:08.615	-1.41	6.74	-11.08	Flying, CIC mode, Be	Climb, UAV Moc	3	0.00	23.05	0.55	

Ready

start Microsoft PowerPoint ... Datalog Viewer DE 8:36 PM



Sensoren

➤ Kamerasystem

- adaptierte Lumix LX5 mit 10 Mpixel
- Elektronische Triggerung
- Kalibriert

➤ Multispektrale Aufnahmen

- RGB (Farbbilder)
- NIR (Nahes Infrarot z.B. Vegetationsklassifizierung)
- UV (Ultraviolett z.B. Gewässeranalyse)

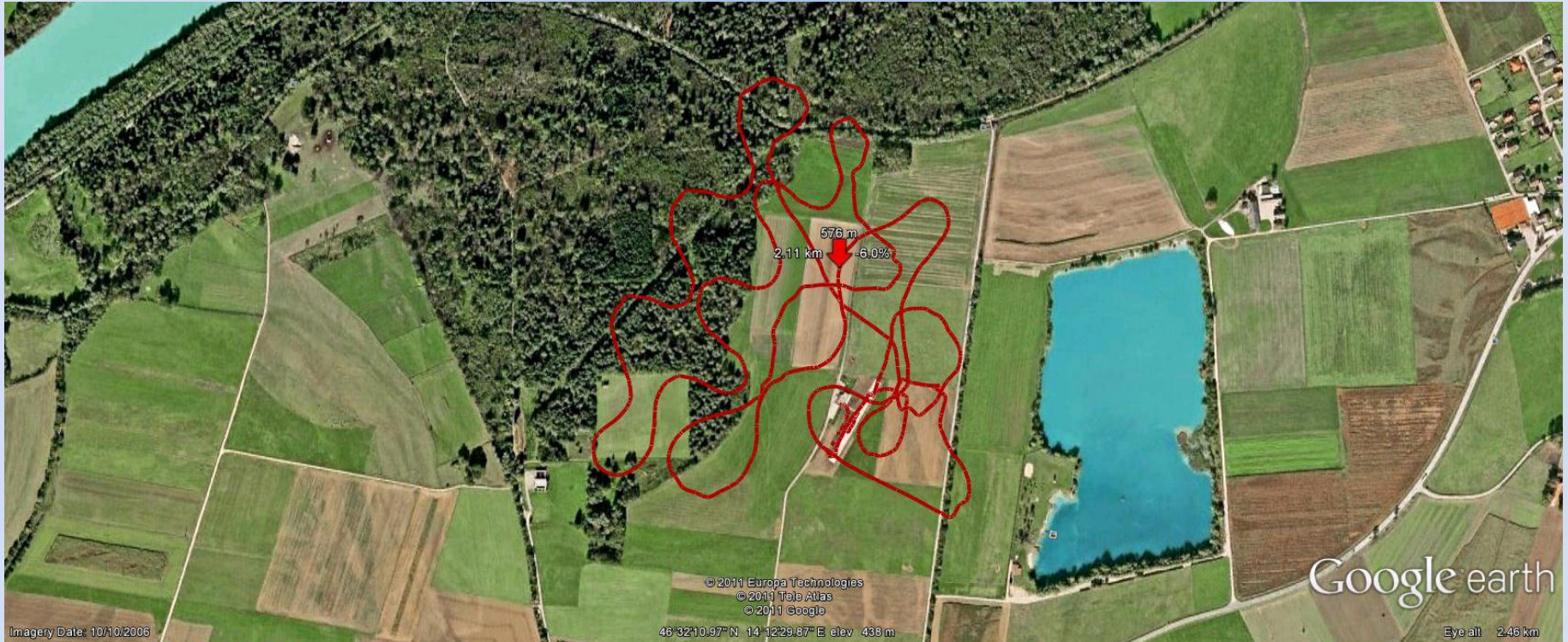


Video



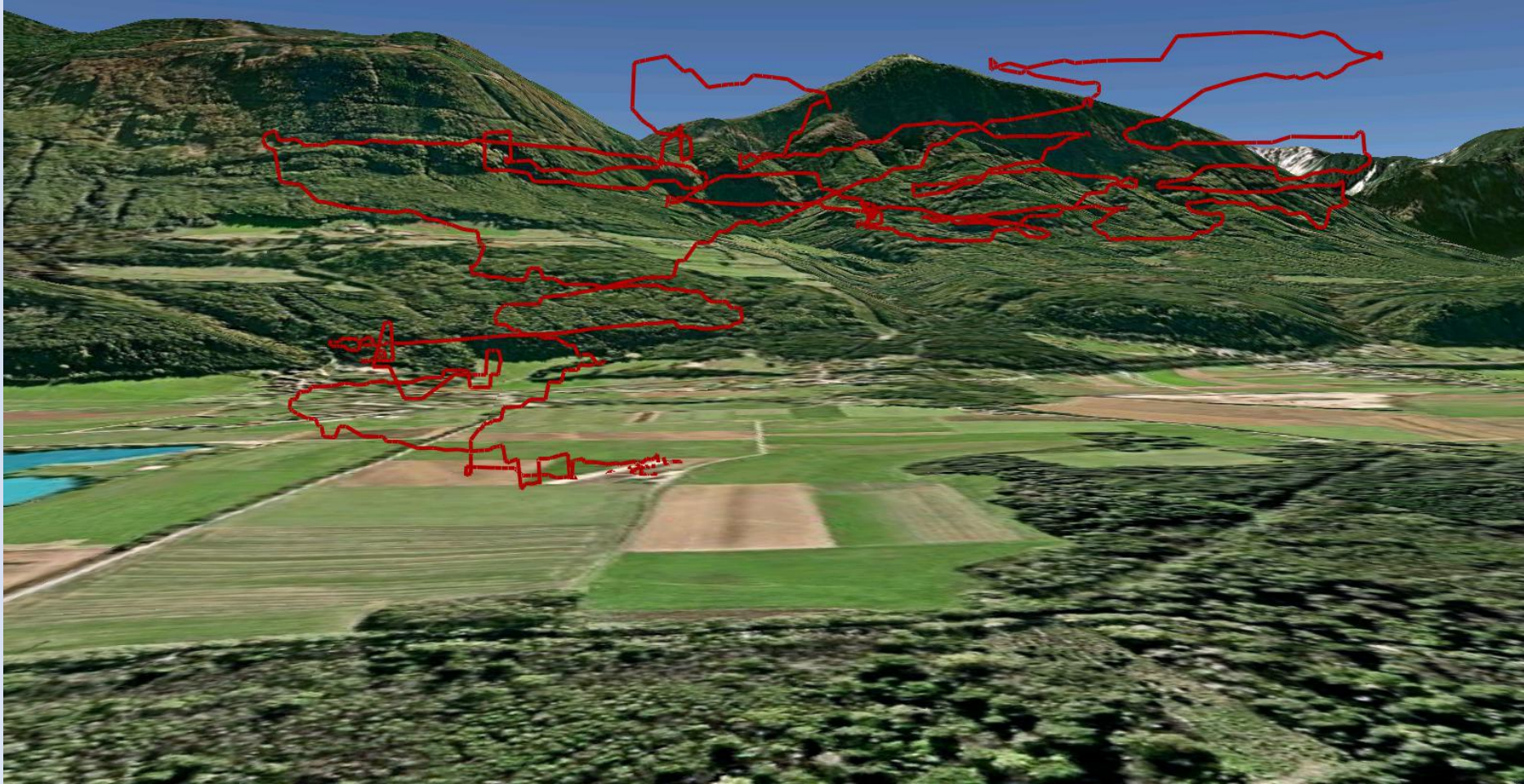
LOUIS Testflug 27.9.2011

2D Visualisierung & Höhenprofil - Google Earth
Modellflugplatz St. Johann/Rosental

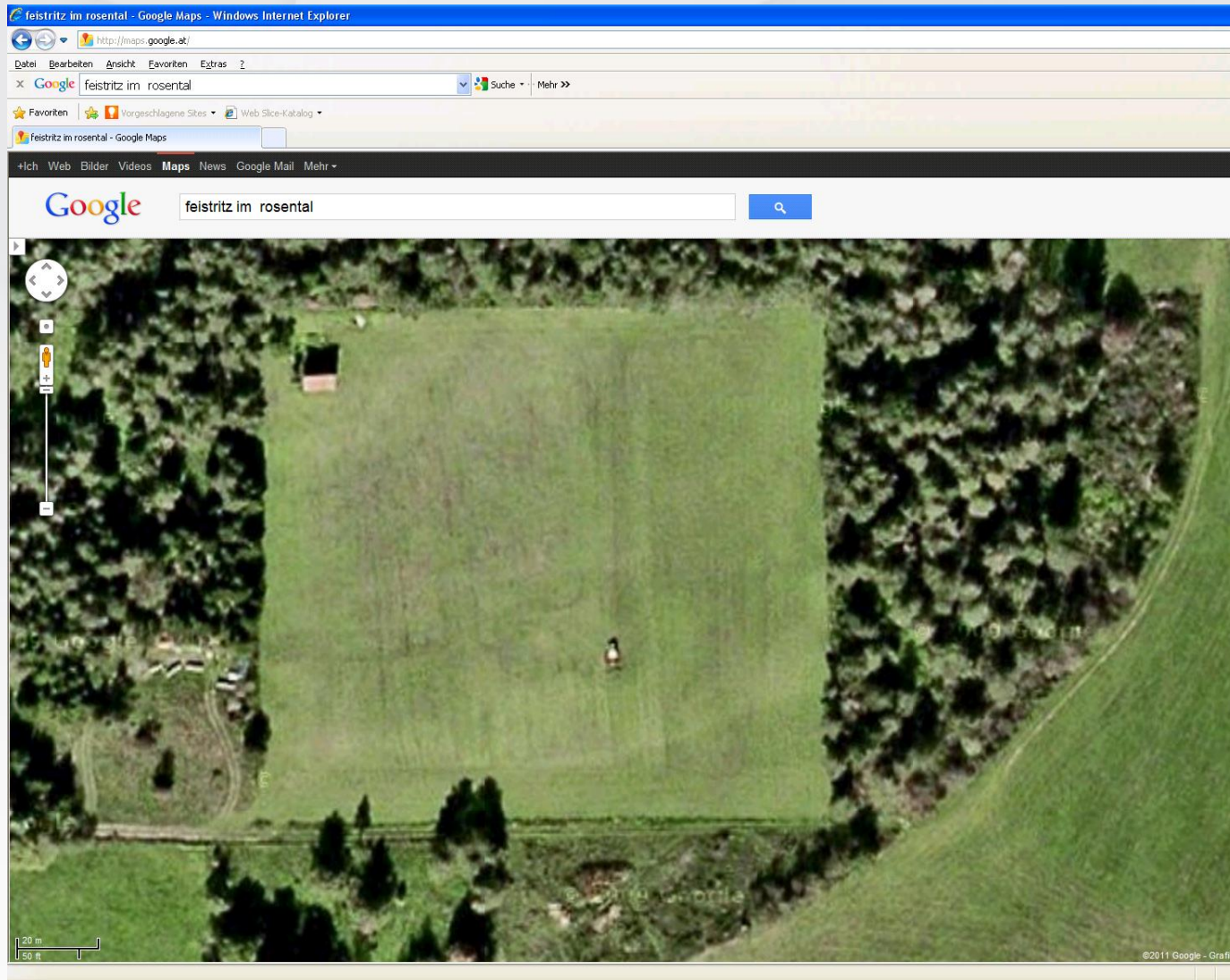


LOUIS Testflug 27.9.2011

3D Visualisierung - Google Earth
Modellflugplatz St. Johann/Rosental



Aktuelle Luftbilder im Web Google Maps



Aktuelle Luftbilder im Web Bing Maps

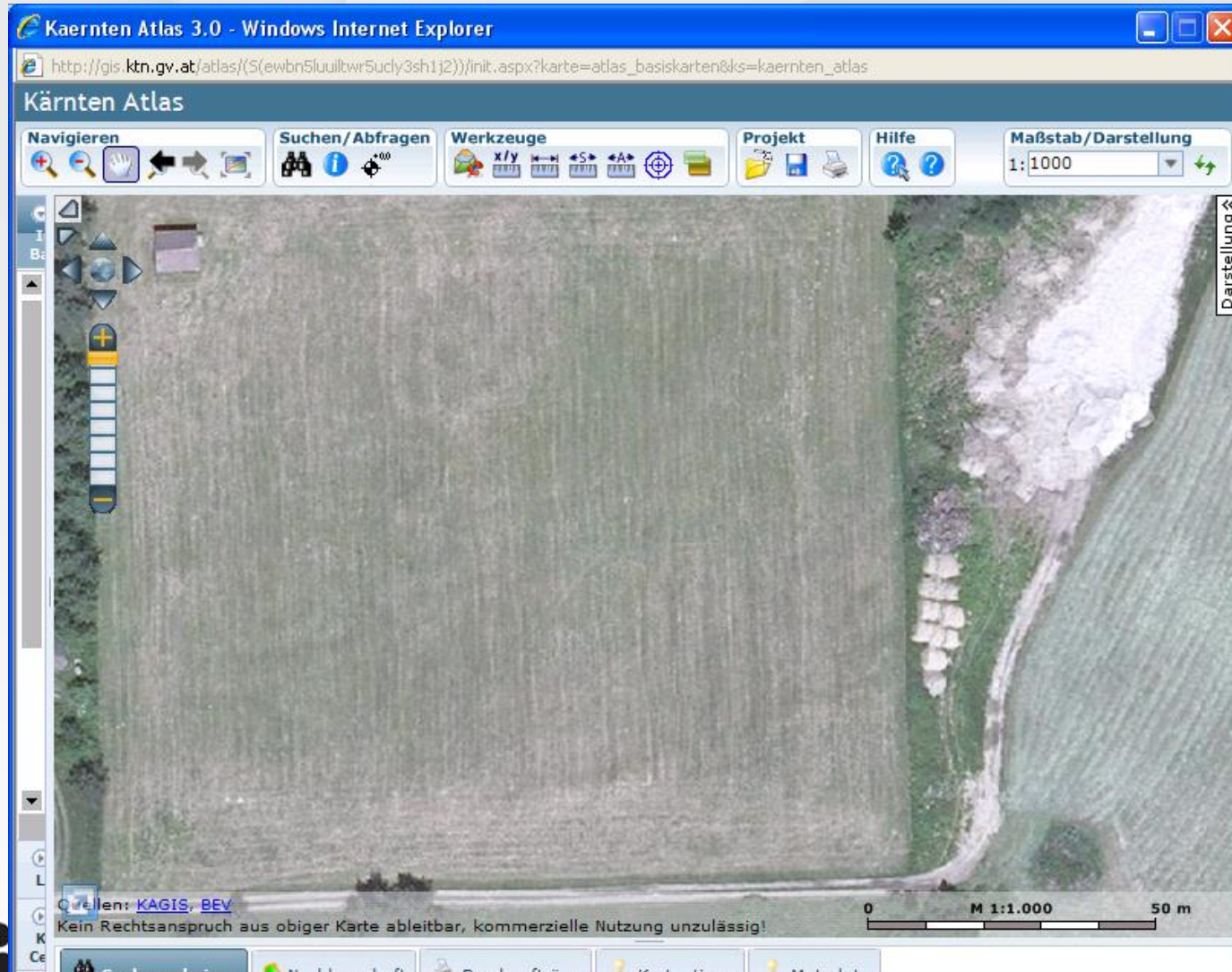



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The screenshot shows a Windows Internet Explorer browser window displaying the Bing Maps website. The address bar shows the URL: <https://www.bing.com/maps/default.aspx?y=2&xp=44.023938&y=99.71&style=h&hl=4&tilt=-89.8759188651938&dr=0&alt=7669462.6842358#3nE9LmZaVNDcm0eUlyYmLJT3cm9zW50YVwWn2Yec3QuMCLU3Z2BnLJEYm19NTUuOD11NTRk1NTM0NDg1OCU3Z202P440ODg3MjA2MTL1JTdMjkuMzADOTc0>. The search bar contains the text "feistritz im rosental". The map shows an aerial view of the town of Feistritz im Rosental, Austria, with a red rectangle highlighting a specific area. The map includes labels for "Sankt Johann im Rosental", "Rosental Bundesstrasse", and "Weizelsdorf". The browser interface includes the address bar, search bar, and map controls.



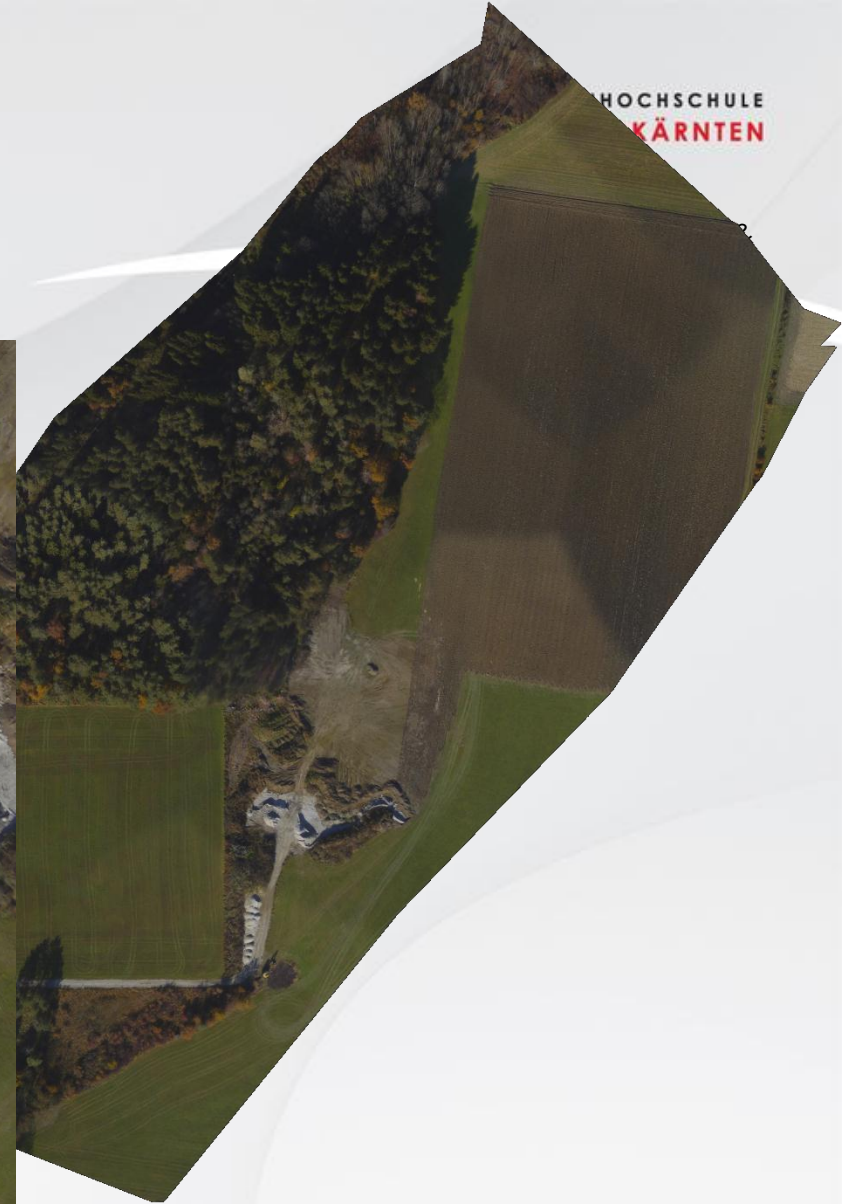
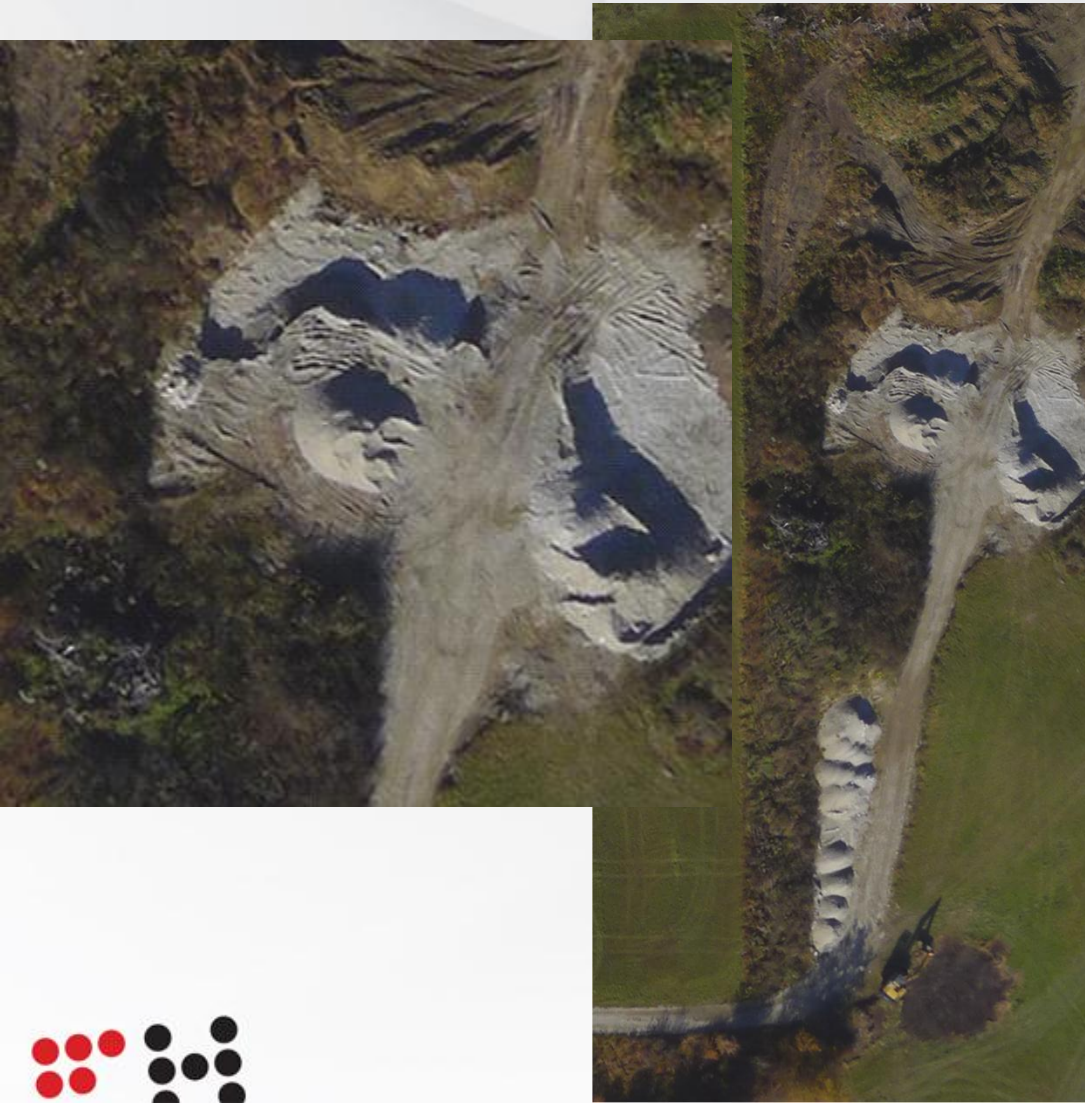
Aktuelle Luftbilder im Web Kärnten Atlas - KAGIS



An aerial photograph showing a large green field with a road at the bottom. The field has faint, light-colored lines or tracks. On the right side, there is a dirt path or road leading to a wooded area. A small yellow vehicle is visible on the dirt path. In the top left corner, there is a small white building with a dark roof. The text "Luftbilder 29.10.2011" and "UAV - LOUIS" is overlaid in white in the upper left quadrant.

Luftbilder 29.10.2011
UAV - LOUIS

Ortholuftbildmosaik

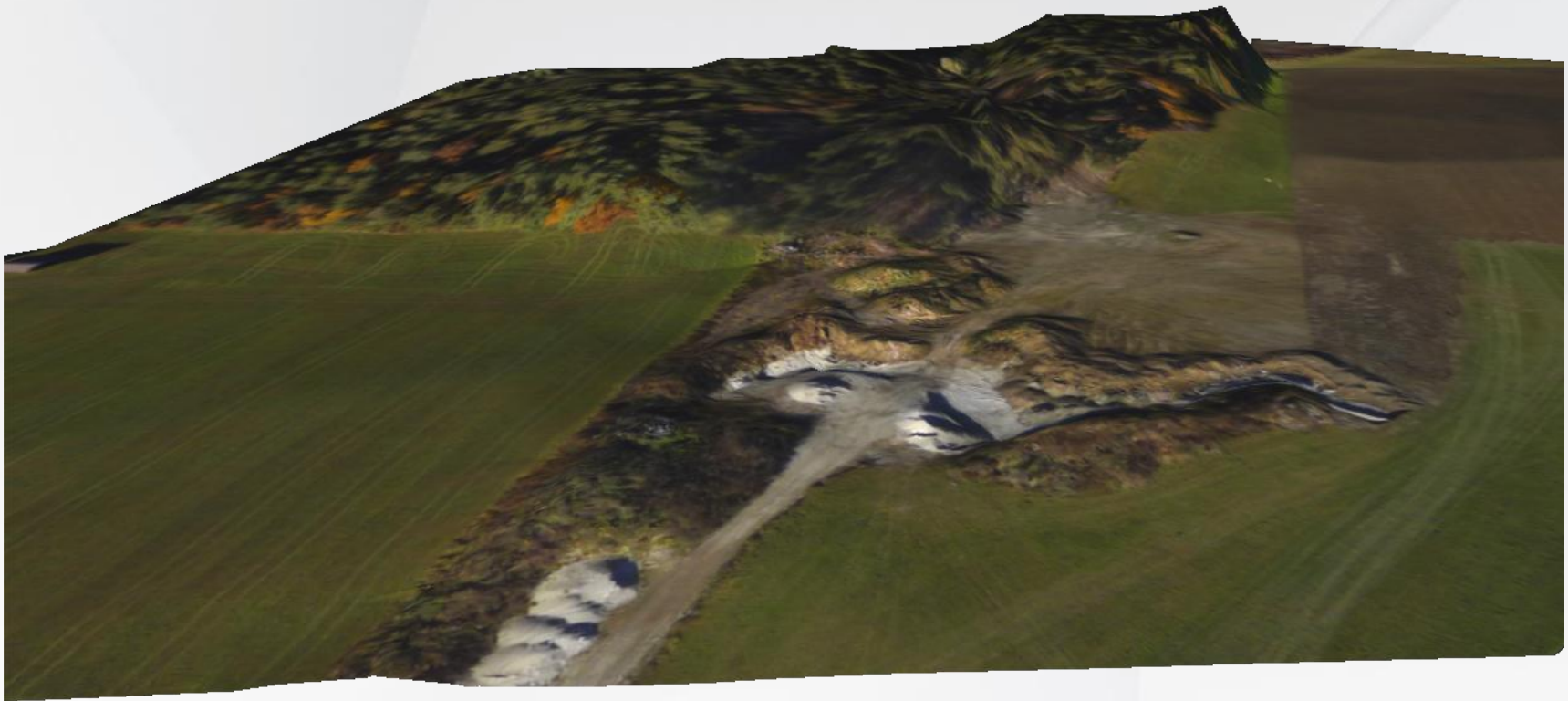


Mittlere Flughöhe: 200m
Auflösung: 7cm

WWW.FH-KAERNTEN.AT



Photogrammetrisch abgeleitetes Digitales Geländemodell



UAV High Resolution georeferenced Aerial images



UAV High Resolution georeferenced Aerial images



Anwendungsbereiche

- **Tagesaktuelle Luftbilder**
- **Schadensdokumentation nach Naturkatastrophen**
- **Hochauflösendes Monitoring** von
 - Umweltprozessen
 - Infrastrukturen
 - Land- und Forstwirtschaft
- **Change Detection**
- **Sensortestplattform**
- **Ausbildung und Lehre**

