

## IBIS-FL

An innovative sensor for remote displacement monitoring of slopes and movement in terrain and structures



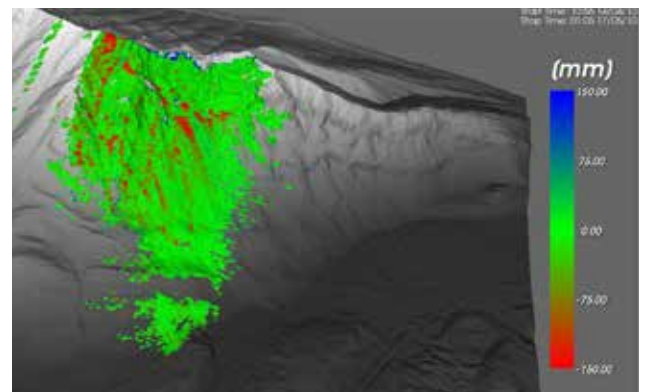
IBIS-FL: real-time remote displacement monitoring based on microwave interferometry

IDS GeoRadar: Innovative Interferometric Radar for Environmental and Civil Engineering Applications  
[www.idsgeoradar.com](http://www.idsgeoradar.com)

IBIS-FL is a highly innovative solution for monitoring movement in slopes and structures. It uses interferometry to remotely measure the simultaneous displacement of thousands of points over large areas. This is done remotely without the need for direct access to the site or any invasive equipment. IBIS-FL provides a highly accurate displacement time series for each point allowing areas of movement to be clearly distinguished and alerts to be issued if movements exceed a selected threshold. IBIS-FL can be used to provide information and early warnings on landslides, terrain subsidence, and volcanoes as well as man-made structures such as dams and cultural heritage sites.

### IBIS-FL BENEFITS

- **Helps identify areas of risk** for landslide prevention and landslide mitigation projects by providing a complete and real time stability assesment of a slope
- **Provides accurate monitoring** of a landslide or a large structure remotely without the need to place contact sensors in areas of risk
- **Reduces the time taken** to obtain a complete kinematic characterization of a landslide, monitoring the displacement



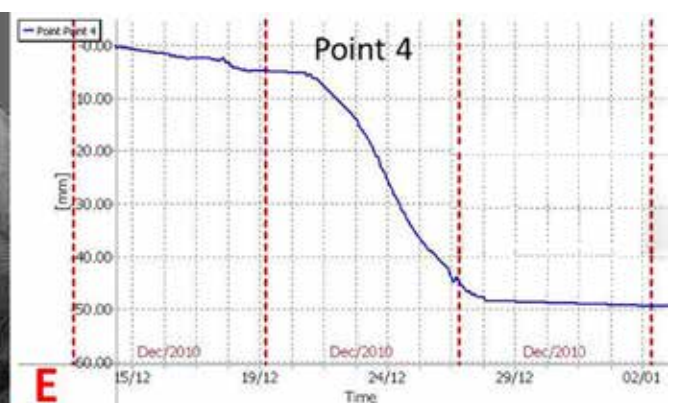
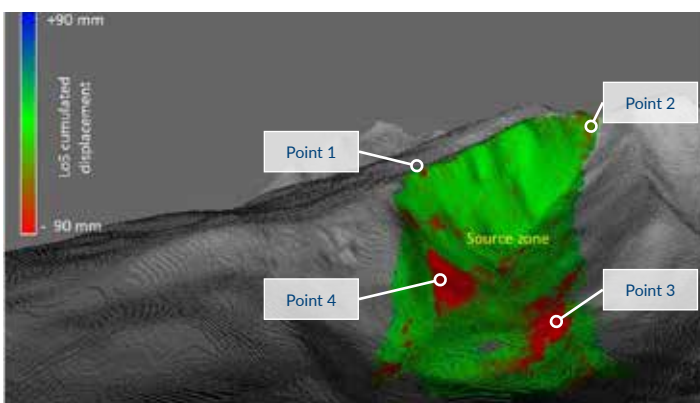
IBIS Guardian cumulative displacement map

### IBIS-FL FEATURES

- **Remote sensing:** Real time remote sensing at up to 4km with no need for equipment to be installed on the monitored area
- **Accuracy:** Measures displacements of as little as 0.1mm @ 4km range. No other instrument can match the same accuracy
- **3D rendering:** Real time 3D map of displacements over areas of several square kilometers. The user can easily understand and locate the displacements
- **Always operative:** Operates day & night in all weather conditions



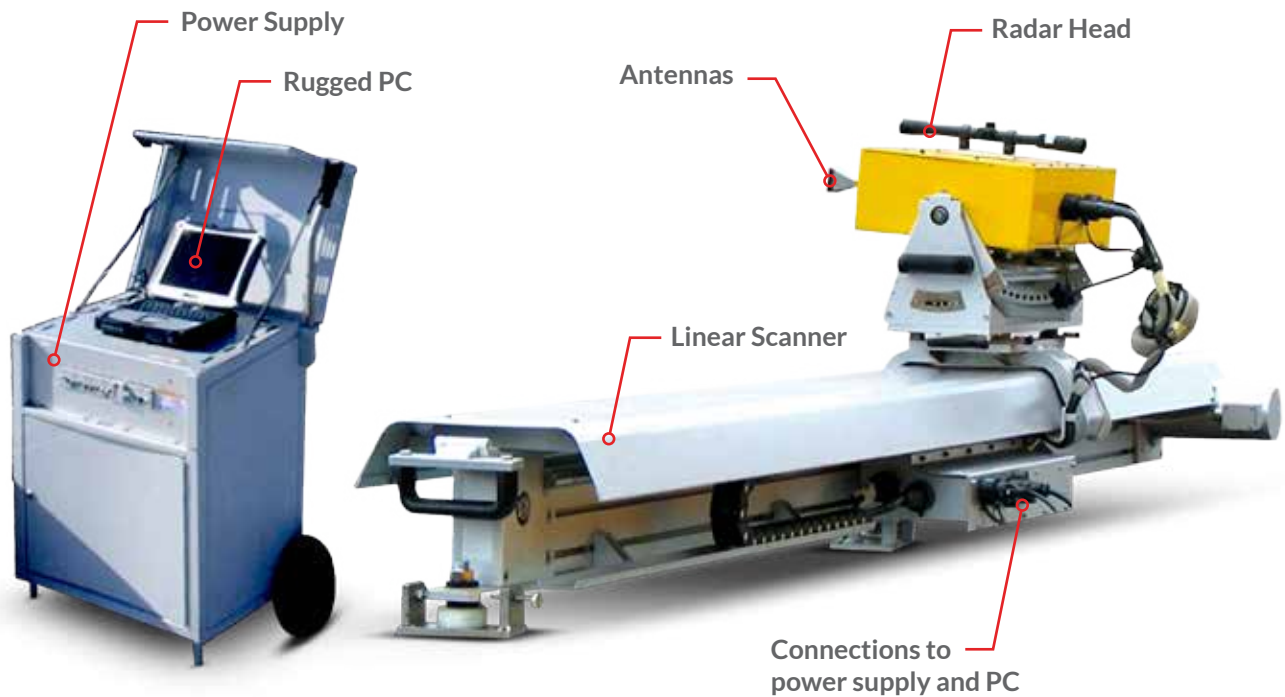
IBIS-FL monitoring a dam



IBIS Guardian Monitoring software showing a cumulative displacement map and the displacement over time at a specific point

**IBIS-FL CONFIGURATION**

IBIS-FL consists of a radar head mounted on a rail to allow accurately measured lateral movement which can be set up anywhere with a line of sight within 4km of the target area. IBIS-FL's Guardian software suite provides automatic real-time processing of radar data, visualization of displacement maps with multiple analysis options (extraction of time series for displacements, velocity, inverse of velocity) and the possibility to create multiple hazard-maps with user-defined alarm criteria for active monitoring.



SYSTEM SPECIFICATIONS		SOFTWARE SPECIFICATIONS	
SPATIAL RESOLUTION	Range: 0.5m Cross range: 4.4mrad (0.5m by 4.4m @ 1km; 0.5m by 8.8m @ 2.2km)	IBIS GUARDIAN	<ul style="list-style-type: none"> <li>User friendly intuitive interface</li> <li>Real-time automatic processing</li> <li>Automatic advanced atmospheric corrections</li> <li>Alarm generation with user-defined levels and multiple alarm criteria</li> <li>Long datasets for geotechnical back analysis</li> <li>Fully geo-referenced interactive data handling</li> <li>User defined zones for alarm generation</li> <li>Import of multiple digital layers for displaying geological information</li> <li>Exportability of output to mine planning software</li> </ul>
ACCURACY	0.1mm (depending on range)		
OPERATING RANGE	10m to 4000m		
FREQUENCY BAND	17.1 - 17.3GHz		
RADIO FREQUENCY EXPOSURE (RADIATED POWER)	0.400W		
SCAN TIME	< 3 min		
POWER CONSUMPTION	< 100W		
ENVIRONMENTAL	IP65		
CERTIFICATION	EC, FCC, IC		



**IDS GeoRadar Srl**  
Via Enrica Calabresi 24, 56121 Pisa (PI) Italy  
Tel. +39 050 3124 501 Fax +39 050 3124 205  
[www.idsgeoradar.com](http://www.idsgeoradar.com)  
[info@idsgeoradar.com](mailto:info@idsgeoradar.com)