

# IMAGINE SAR Interferometry

IMAGINE SAR Interferometry is a single, cost-effective module that fully integrates ERDAS IMAGINE's advanced interferometric processing capabilities. With this package, even the radar novice can extract high-quality digital elevation models (DEMs), generate coherence change products or map surface displacement at the centimeter level.

## Expertise strengthened through partnership

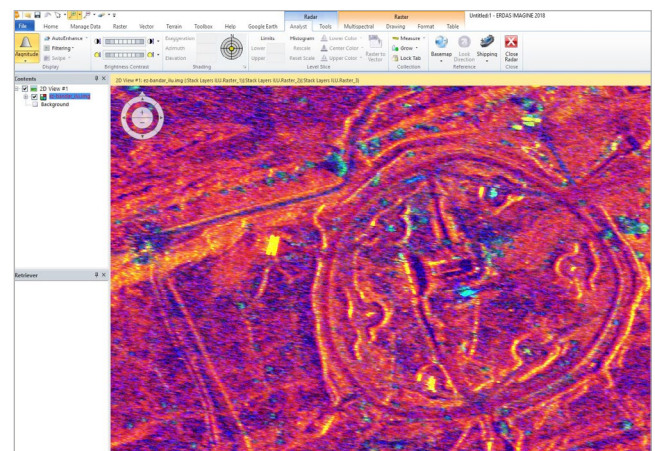
Recognizing the need for user-friendly, robust and technically sophisticated interferometric tools, Hexagon initially partnered with the German Aerospace Center (DLR), world-renowned for its development of the Space Shuttle Radar Topography Mission (SRTM)/X-SAR and the TerraSAR-X satellite. The collaboration with DLR leveraged expertise from both organizations to simplify state-of-the-art algorithms. The unmatched interferogram unwrapping technology that processed SRTM interferometric images forms the engine of IMAGINE SAR Interferometry.

In addition to DLR, continued partnerships with other international experts, including Planetek Italia in Italy, Space and Defense Technologies (SDT) in Turkey and Neva Ridge Technologies in the United States, ensure IMAGINE SAR Interferometry continues to deliver cutting-edge functionality.

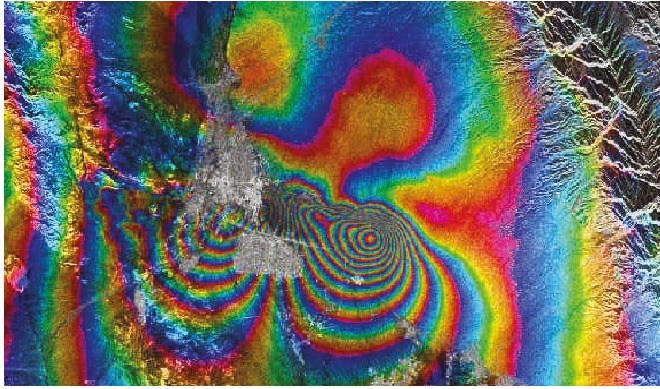
## Capabilities

### Sentinel-1

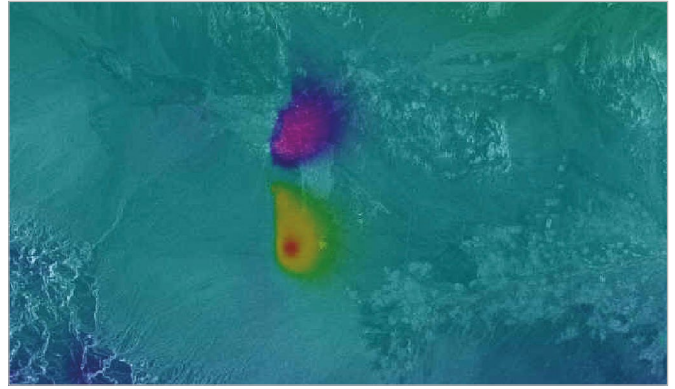
ERDAS IMAGINE ingests more imagery types, including Sentinel-1 imagery, than any other remote sensing product in the market. With their paradigm of free data distribution and continuous imaging, the Sentinel-1 radar satellites have revolutionized the use of radar imaging. To increase the uptake of radar technology for myriad applications, ERDAS IMAGINE has fully automated processing of Sentinel-1 data so anyone can easily extract information; there is no need for radar expertise.



Interferometric ILU Change Detection Product showing detailed activity at surface-to-air missile (SAM) launch site



Interferogram of earthquake in Bam, Iran. Note loss of coherence in the center due to building collapse.



Bam, Iran: Color-coded vertical displacement map fused with radar image

### Coherence Change Detection (CCD)

By comparing two radar images taken at different times, CCD functionality can detect changes at the wavelength scale. This means that surface change of an inch or less can be detected over areas of hundreds of square miles. This provides regional monitoring at a previously unattainable level.

Because CCD is such a powerful and useful change detection technique, Hexagon and its partners have invested significant effort into developing operational tools to make exploiting this technology fast, accurate and easy. Simplifying, while building on our CCD capabilities, Easy Coherence Change and Easy Sentinel Coherence Change are easy to use, requiring no radar expertise, but are computationally optimized to produce all CCD products five to 10 times faster than the traditional CCD workflow.

### Synthetic aperture radar interferometry (InSAR) DEM

By exploiting the information contained in the radar phase, the InSAR capability can quickly extract high-quality DEMs. InSAR includes a user-friendly wizard that lets you step through the workflow, accepting or modifying the default parameters. The software then automatically processes input images to DEM products, leaving you free to work on other tasks.

### Differential interferometric SAR (DInSAR)

DInSAR quantitatively maps surface change at the sub-wavelength scale, providing the ability to precisely map surface displacement, anywhere in the world, from space. This opens up the potential to create regional subsidence maps in areas of oil and gas production, aquifer depletion, sub-surface mining or tunneling. Natural phenomena, such as earthquakes or volcanoes, can be monitored or evaluated for relief efforts.

Recognizing the hugely valuable information that can be extracted by advanced DInSAR analysis was beyond the expertise of most users, Hexagon partnered with Planetek Italia to develop a truly innovative solution. ERDAS IMAGINE can be used for routine wide-area monitoring, and areas of interest, or “hot spots,” can be submitted directly from the IMAGINE SAR Interferometry interface for a very detailed time series DInSAR analysis to be performed by experts. The resultant surface displacement information is delivered as a shapefile back into ERDAS IMAGINE for evaluation and exploitation.

### Contact us

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Hexagon is the global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications. Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Safety, Infrastructure & Geospatial division improves the resilience and sustainability of the world's critical services and infrastructure. Our solutions turn complex data about people, places and assets into meaningful information and capabilities for better, faster decision-making in public safety, utilities, defense, transportation and government. Learn more at [hexagon.com](https://hexagon.com) and follow us [@HexagonAB](https://twitter.com/HexagonAB).

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