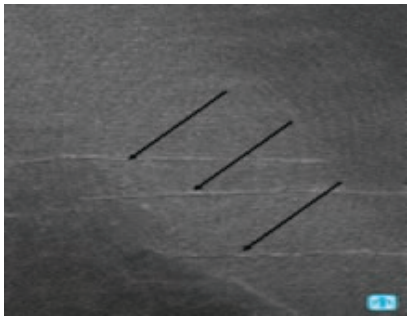
CyOak CONSULTING

Synthetic Apeture Radar (SAR) Training

SAR Image of C-130 Aircraft on Flight Line at Kirtland AFB, NM Courtesy of Sandia National Laboratories, Radar ISR'

Synthetic Aperture Radar (SAR) is an imaging technique that offers a range of valuable capabilities to include day/night imaging and seeing through clouds. SAR also provides several other valuable capabilities that are not available from sensors such as Electro Optical (EO), Infrared Thermal (IR) or Spectral. CyOak Consulting is pleased to present SAR training courses which provide an understanding of basic SAR fundamentals and how they may be applied in support of different problem sets. The courses include instruction on SAR topics such as phenomenology, imaging parameters, exploitation, etc. Illustrations and case studies are used to demonstrate the capabilities of this sensor.



Tres Hermanas Crevasses in Antarctica Courtesy of Sandia National Laboratories, Radar ISR'

1. Basic Radar Concepts/ Fundamentals of SAR

Review of radar fundamentals necessary for understanding how SAR systems work and how they produce high quality images. This includes topics such as the history of radar, how raging radar systems operate, and the relationship between wavelength and frequency.
DURATION - 3 DAYS

What to Expect

This course will provide background in the basic radar fundamentals that are required to understand the unique capabilities of SAR. Students will learn the origin and evolution of radar and the transition to SAR. An overview of SAR phenomenology will be discussed to include topics such as the synthetic aperture effect, the coherent nature of SAR, key angles, azimuth, range, layover, shadow, frequency/ wavelength relationship, and polarization. Additional concepts include dihedrals, multi-bounce, natural/ man-made motion, and change detection. An overview will be provided of current airborne and spaceborne commercial sensors and how they operate.

Who Should Attend

Imagery, All Source, and remote sensing professionals and managers who want to understand SAR and how it may be used to solve a variety of analytical requirements. The only prerequisite for the class is a basic understanding of imagery analysis and remote sensing.

2. Synthetic Aperture Radar Concepts/Basic SAR Image Interpretation

How SAR airborne and commercial satellite systems work. Includes discussions on SAR operating modes, layover and shadow, range and azimuth, polarization, grazing angle, slant plane vs. ground plane projection, change detection, natural and man-made motion.
DURATION - 3 DAYS

What to Expect

This course provides students with an understanding of the analytical process and how to interpret SAR images to address a variety of military and civil requirements. Instruction will be provided on how to evaluate Key Intelligence Questions (KIQ), Essential Elements of Intelligence (EEI's) and conduct target research. Advance topics such as order of battle, terrain analysis, change detection, collection parameters, and Interferometric SAR will also be discussed. The course will conclude with discussion on emerging SAR concepts and a specialized SAR exploitation exercise.

Who Should Attend

Imagery, All Source, and remote sensing professionals and managers who want to understand SAR and how it may be used to solve a variety of analytical requirements. The only prerequisites for the class are a basic understanding of imagery analysis and basic SAR concepts.

3. SAR Fundamentals for Managers

A background in radar fundamentals that are necessary for the understanding and appreciation of synthetic aperture radar (SAR), the products derived from it and how SAR systems operate. In addition, a high-level description of radar polarization will also be presented.
DURATION - 4 HOURS

What to Expect

This 4 hour course is designed to provide instruction for managers who are not imagery analysts but require basic knowledge on how SAR operates and benefit their organizations requirements. A high-level review of radar principles, SAR phenomenology and analysis will be provided.

Who Should Attend

Imagery, All Source, and remote sensing supervisors and managers who want to understand SAR and how it may be used to solve a variety of analytical requirements.