Sub-surface Imaging Using IFSAR

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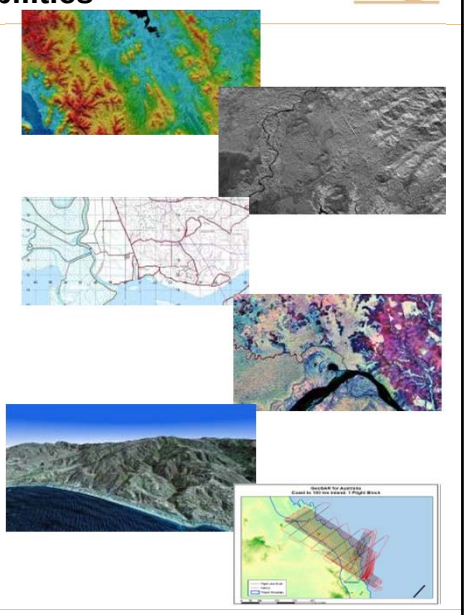
Radar Remote Sensing Capabilities

- Elevation Data
- Imagery
- Topographic Map Creation
- Security analysis
- Environmental monitoring
- Surface geology



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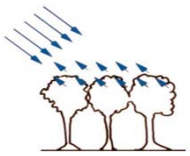
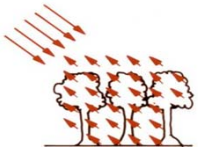
GeoSAR X-band and P-band

Simultaneously collects high accuracy elevation and image data above and beneath foliage

- **X band reflects off the first surface** seen (i.e. top of vegetation, bare ground, built up areas), producing a 3D surface map (DSM) and an interpretable image
- **P band penetrates dense vegetation** canopy 3D near surface map (DTM) to reveal underlying features and map previously obscured terrain



X-band (1.25 - 3 m resolution)



P-band (5 m resolution)

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Airborne Sub-surface Imaging

- Hydrology
- Sub-surface structures
- Archaeology

Date

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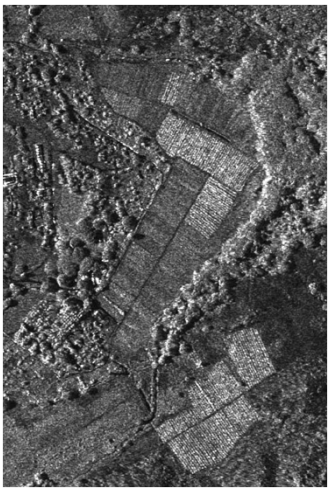
Benefits of IFSAR

- Active system and the angle of illumination can be controlled.
- Microwave energy penetrates clouds and rain and work at night.
- Sensing outside the visible and infrared spectrum provides different information on surface. Some surface features can be seen better in radar images.
- Radar may penetrate vegetation, sand, and surface layers of snow.



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Bir Safsaf Region

• Space shuttle missions SIR-A and SIR-B detected previously undiscovered paleodrainage systems

• Subsequent SIR-C/X-SAR system revealed important differences in information collected at different frequencies and polarizations

SIR-C color composite image of the Ubar fortress surrounding area:
L-HH as red, C-HH as blue and L-HV as green

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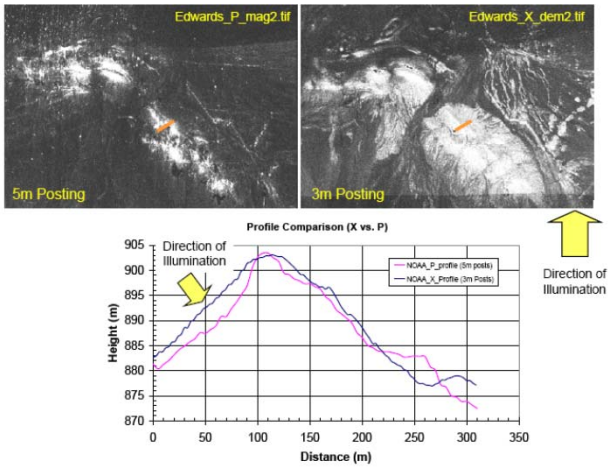
GeoSAR Mojave Study



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