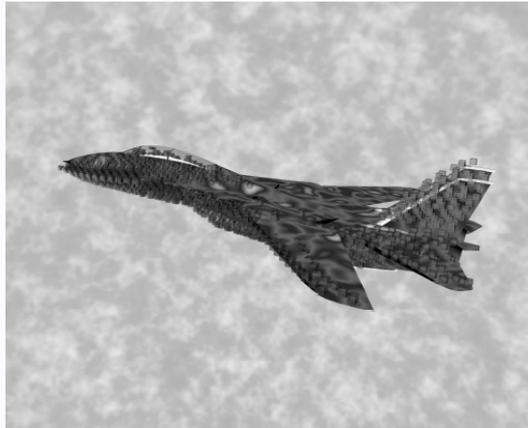
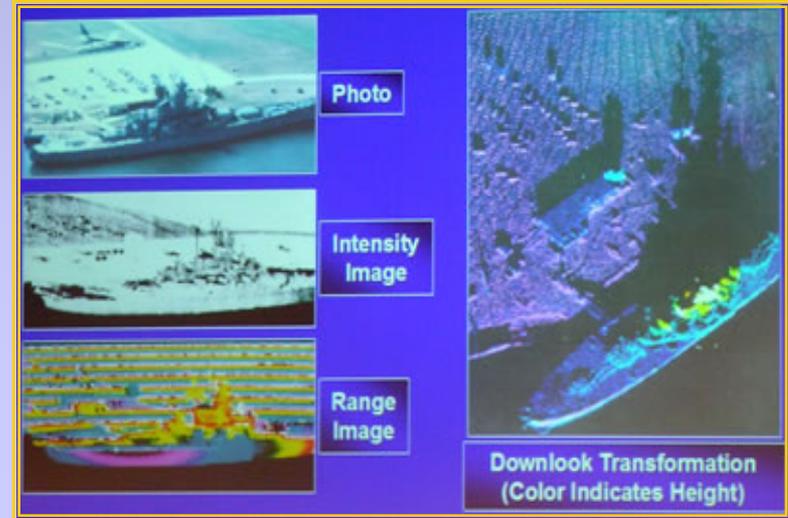
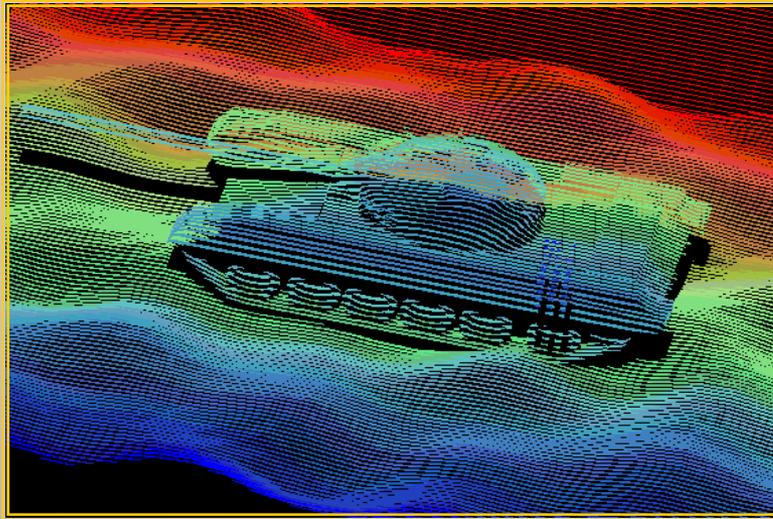




Mitigation Approaches for Active Optical Imaging through Clouds and Fog



Why Optical Imaging?



- Wavelength (λ) is smaller in optical range resulting in a higher resolution compared to RF
- Laser Radar (LADAR) seeker can detect objects and identify specific features with very high definition of up to 15cm resolution (from a distance of 1,000 meters).
- Image quality - more like visible.
- Short Acquisition Times (10,000 times) because of shorter λ .

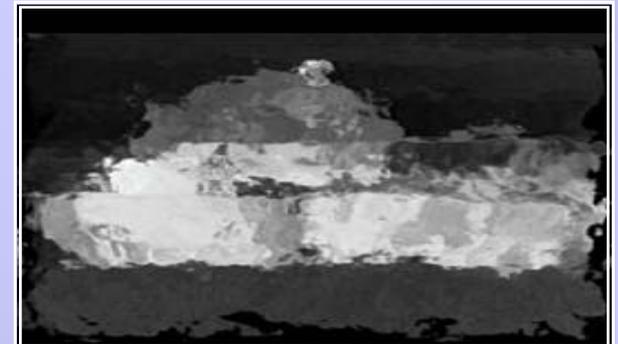
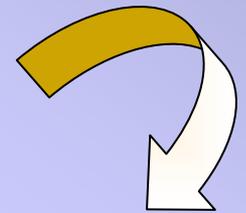
Challenges

■ Atmospheric Turbulence

- ◆ Signal Fluctuations.
- ◆ Defocusing and Blurring.

■ Scattering

- ◆ Angular, Spatial, and Temporal pulse broadening and Attenuation.



Mitigation Approaches

- Multiple laser beams for target illumination.
- Multiple aperture receiver to combat fading and attenuation.
- Design of a MIMO LADAR imager for exploiting multi-aperture transmitter and receivers to their best.
 - ◆ Spatial Resolution Gain
 - ◆ Diversity gain

