Tools for EO/IR Sensing System Performance Analysis

S&T Campaign: Analysis and Assessment
Developing Tools, Techniques, and Methodologies
EW SLV

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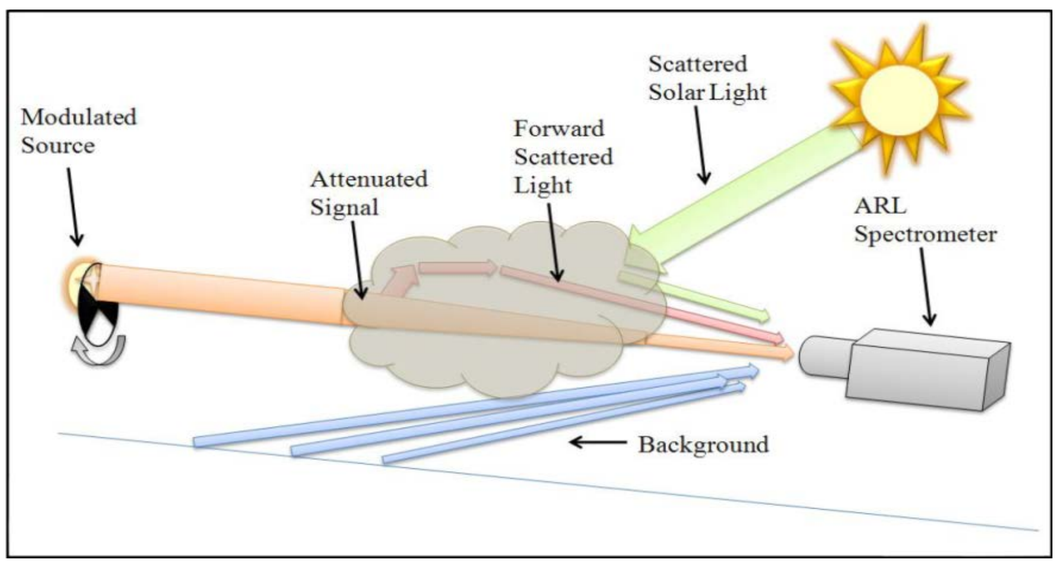
Objective

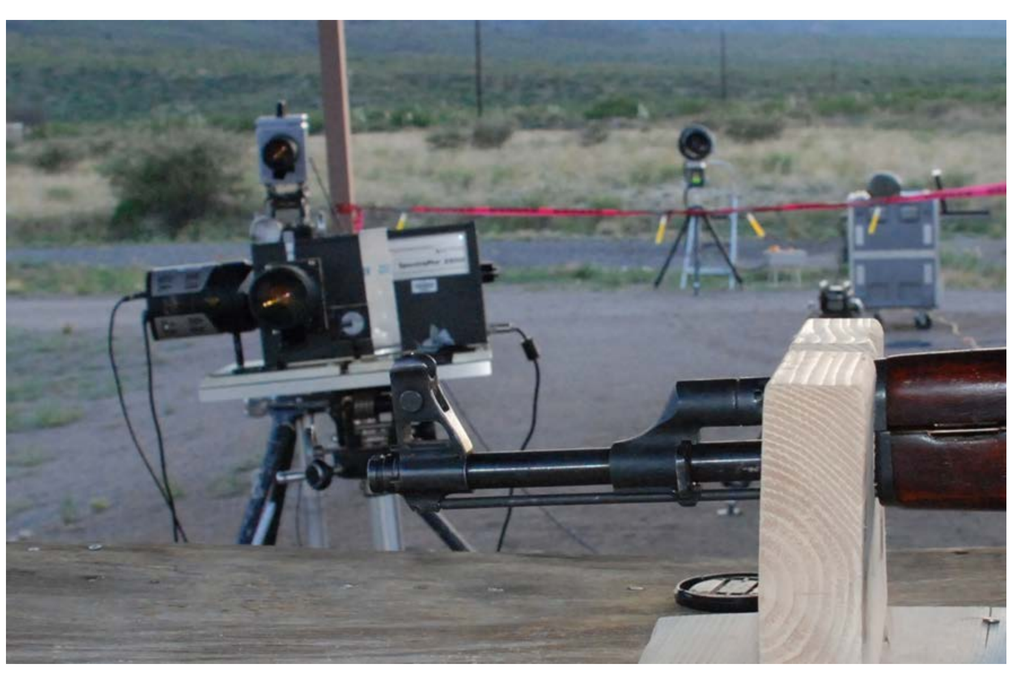
- **To develop improved signature analysis capabilities, new modeling & simulation methods, or novel device design/concepts leading to new electro-optical sensing systems and increasing performance of existing systems.**
- **To develop physics based characterization of the signature energy that is available at operational ranges, while accounting for the extensive variations caused by atmospheric conditions.**



Spectral Transmission

Challenges

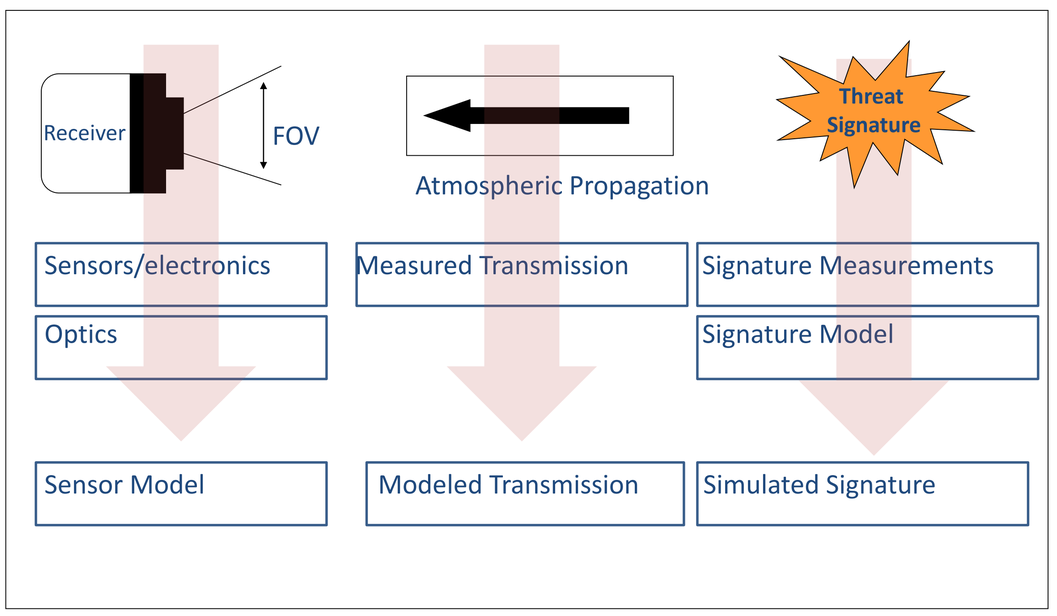
- **Advanced optical system design requires accurate signatures of targets. Very little measured signature data exists.**
- **Countering the evolving battlefield threats will require the continued evaluation of sensing performance. As new targets develop, tools for analysis need to evolve as well.**
- **Significant effort remains to improve sensing system designs, performance and utility.**
- **Spectral effects of attenuation through the atmosphere and battlefield obscurants are constantly changing.**



Signature measurement

ARL Facilities and Capabilities Available to Support Collaborative Research

- **Radiometric imagers, radiometers and spectrometers, including data acquisition systems.**
- **Signature database and query tools to access database.**
- **Infrastructure and field equipment for live fire signatures acquisition.**
- **Scientists and engineers with expertise in signature measurement, sensor system performance analysis, and hostile fire indication processes.**
- **Scientists and engineers with expertise in spectral atmospheric transmission and attenuation effects from obscurants.**



Tools used for performance assessments

Complementary Expertise/ Facilities/ Capabilities Sought in Collaboration

- **Expertise in physics based modeling and simulation of electro-optical signatures from Ultraviolet to Long Wave Infrared.**
- **Expertise in physics based modeling and simulation of the effects of atmospheric transmission on electro-optical signatures.**
- **Expertise in designing hostile fire systems, threat warning systems, and command/control process.**