

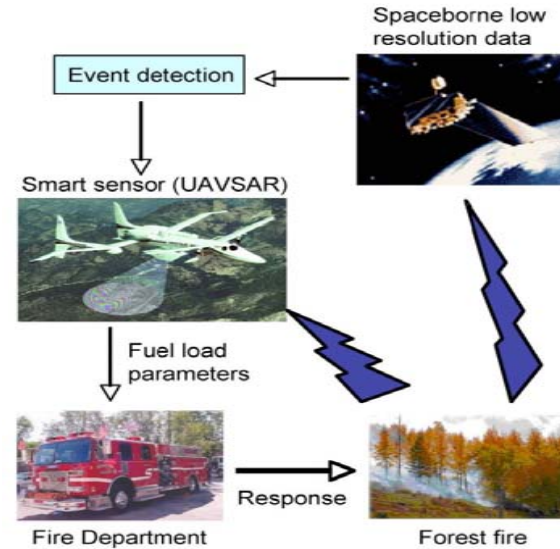
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Objective

Improve the fidelity of a previously developed AIST onboard SAR processor by including:

- Polarimetric and interferometric calibration
- Science algorithms for detecting and monitoring fire and hurricane-induced disturbances
- Artificial intelligence for decision making, and onboard data acquisition replanning capability

The product of this development is a prototype smart sensor for demonstration on NASA's UAVSAR, a compact, L-band polarimetric repeat-pass InSAR.



The detection and response architecture of a forest fire sensor web.

Approach

- Develop an onboard SAR processor for L-band data, with motion compensation, near real-time interferogram generation, polarimetric and interferometric calibration, ortho-rectification, and autonomous disturbance detection
- Develop an onboard automated response component, using planning software, enabling the overall system to modify its future mission plan based on an onboard analysis of data.

Co-I's/Partners

- Duane Clark / Leeward Engineering
- Steve Chien, Sassan Saatchi, Ronald Muellerschoen, Scott Hensley / JPL

Key Milestones

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| • Functional Onboard Processor for UAVSAR | Aug. 07 |
| • Demonstrate Retask UAVSAR from Sensor Web | Sep. 07 |
| • Calibrate Onboard Processor | Feb. 08 |
| • Demonstrate Smart Sensor Package in Lab | Sep. 08 |
| • Demonstrate Self Retasking with UAVSAR | Dec. 08 |
| • Demonstrate External Tasking of UAVSAR | May. 09 |
| • Final Report | Sep. 09 |

TRL_{in} = 3