Telesupervised Adaptive Ocean Sensor Fleet
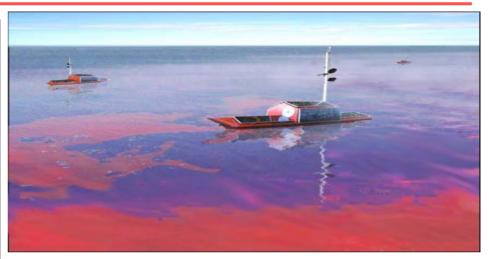
PI: John Dolan, CMU

Objective

• Improved in-situ study of Harmful Algal Blooms (HAB), coastal pollutants, oil spills, and hurricane factors

• Expanded data-gathering effectiveness and science return of existing NOAA OASIS (Ocean Atmosphere Sensor Integration System) surface vehicles

• Establishment of sensor web capability combining ocean-deployed and space sensors

• Manageable demands on scientists for tasking, control, and monitoring

Artist's conception of telesupervised sensor fleet investigating a Harmful Algal Bloom.

Approach

• Telesupervision of a networked fleet of NOAA surface autonomous vehicles (OASIS)

• Adaptive repositioning of sensor assets based on environmental sensor inputs (e.g., concentration gradients)

• Integration of complementary established and emergent technologies (System Supervision Architecture, Inference Grids, Adaptive Sensor Fleet, Instrument Remote Control, and OASIS)

• Thorough, realistic, step-by-step testing in relevant environments

Co-I's/Partners

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• Alberto Elfes / JPL

• Gregg Podnar / CMU

Key Milestones

• Interface Definition Document	Feb 2007
• Test components on one platform in water	May 2007
• Autonomous multi-platform mapping of dye	Jul 2007
• Science requirements for Inference Grid	Feb 2008
• Multi-platform concentration search simulation	May 2008
• HAB search in estuary for high concentration	Jul 2008
• Moving water test plan & identify location	Feb 2009
• Simulate test using in-situ and MODIS data	May 2009
• Use MODIS data to target and reassign fleet	Jul 2009

TRL_{in} = 4