# ALL Action Item – CREST-STAR Technical Meeting – December 7-8, 2009

| Theme/Action Item | WHAT | WHERE | TIMELINE | RESOURCES NEEDED | CONSTRAINTS | CREST Members | NESDIS Members |
|---|---|---|---|---|---|---|---|
| **THEME I: Troposphere Air Quality and Climate** | | | | | | | |
| Task 1:<br><br>**Ozone and Stratospheric Aerosols** | Work towards an ozone Climate Data Record at NESDIS and CREST;<br><br>Improve coordination of activities on ozone Studies;<br><br>Include stratospheric aerosol studies (SAGE—SCIAMACHY—CALIPSO—GLORY—NPP OMPS) | Global | 3-5 years | Small expansion in each of these areas, money for exchanges between HU and NESDIS | NASA requirement for stratospheric monitoring (need for coordination with NOAA) | Pat McCormick<br>John Anderson | Larry Flynn |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| Task II:<br><br>**Tropospheric Aerosols** | Continue development of the CREST Lidar Network (CLN);<br><br>integrate work into the Air Quality Proving Ground and prepare for GOES-R;<br><br>tropospheric aerosol algorithm development & validation for new instruments (NPOESS) using Calipso/Glory | Eastern U.S. and Caribbean at first, national later | 5 years | Exchanges between CCNY and NESDIS, equipment and staffing of CLN operations | Resources and mandate | Ray Hoff, Fred Moshary, Pat McCormick, Hamed Parsiani, Barry Gross | Shobha Kondragunta, Istvan Laszlo |

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| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| Task III: **Temperature -Humidity** | | | | | | | |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| Task IV: **UTLS Water Vapor** | Provide a path from AIRS and IASI retrievals of water vapor to a CDR which is useful for climate and trends | Global | 30 years | Resources needed: GOES-R Risk reduction and cal/val funds for the 6µm channel | infrequent overpasses and clear air bias | Bill Rossow, Ray Hoff, Pat McCormick, Fred Moshary (H20 Raman LIDARS) | Mitch Goldberg, Chris Barnet, ACARS folks |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **THEME II: Coastal Water Remote Sensing** | | | | | | | |
| **Ocean color *validation* using coastal in-situ measurements** | CREST - Long Island Sound in-situ measurements – LISCO Platform<br>NOAA – Leveraging LISCO data for algorithm develop and validation | | | NOAA travel support needed; CREST/NOAA Post-Docs/Student support needed; Equipment | Need tropospheric LIDAR @ LISCO site (Currently located @ CCNY) | | Menghua Wang (NOAA) – algorithms, validation; Mike Ondrusek (NOAA) – in- |

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| | | | | | | | situ measurements; |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Algorithm development in turbid coastal water (NIR, SWIR, et. al.) for Chl a, TSM, CDOM, $K_{490}$, POC, etc.** | CREST - Long Island Sound (LISCO Platform)<br><br>NOAA - Chesapeake Bay (In-situ measurements) | Other locations of opportunity – U.S. East Coast Field Campaigns | | Field campaign support, travel support, CREST/NOAA Post-Docs/Student support, equipment, instrument calibration support; Potential Add-on: Airborne hyperspectral observations – flight costs | Time and Funding | | Menghua Wang (Atmospheric Correction), Mike Ondrusek (In-situ Measurements ), Chris Brown (Applications), Marilyn Yuen-Murphy (Indicators), plus CREST Team |
| Outcomes and Costumers: | | | | | | | |
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| **Develop Oceans and Human Health – Water Quality, HABs, Pathogens, Pollutants, etc. In support of beach closures, fisheries management (shell fish, aquaculture**) | Develop and implement algorithms, indicators, models (hydrodynamic, ecological, statistical), applications for monitoring and forecasts for Long Island Sound | | | High-resolution (spatial, temporal, spectral) observations, travel support, CREST/NOAA Post-Docs/Student support | Time and funding, acquiring data, user engagement, prioritization | | Chris Brown (NOAA), Marilyn Yuen-Murphy (NOAA), Rick Stumpf ? (NOAA) |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Modeling / Data Assimilation – Long Island Sound** | Decrease forecast error<br>Explore and identify linkages for NOAA LOs/Users | | | Travel support, CREST/NOAA Post-Docs/Student support | Time and funding, user engagement, prioritization | | Eric Bayler ? (NOAA), Chris Brown (NOAA) |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |

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| **THEME III: Land/Terrestrial/Hydrology** | | | | | | | |
| **Integrated snow hydrology monitoring system** | combination of hydrographic information (e.g. snow models, hydrographs, river networks) with remote sensing of snow properties | US Continent | 36 months/ start date 2010 (prototype) | 4 Post Docs (2 CREST: RS + hydrographics, 2 STAR: developers – reanalysis + system development) | NONE | Balazs Fekete, Shayesteh Mahani and Bill Rossow | Romanov, Ferraro, Kongoli, Caesar |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Regional ecosystem monitoring and services** | need-based operational system (e.g. biodiversity, water quality, carbon monitoring, | Continental US or EEZ | 60 Months (12 Mnths scoping, 48 Mnths execution) **start date 2011** | CREST: 2 postdocs, 2 students (leveraged), STAR: 2 postdocs) | need for Landsat-class data, parallelizing HPC | Charlie Vorosmarty, Caroline Hermans, Fabrice Papa | Csiszar, Kogan, Vargas, Gallo, Goldberg |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |

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| **Agricultural water and food security** | monitor rain-fed and irrigated agriculture from the perspective of trans-boundary water (USGS, USDA, IWMI, FAO, GEO) | Conterminous US -> global | 60 months (36 US prototyping, 24 global) start date 2011 | CREST: 2 Post Docs, 2 students, STAR: 1) | coordination through agencies, users | Lakhankar, Vörösmarty, Papa, Hermens, Harmsen, Roytman, Fekete, Mahani | Kogan, Vargas, Ferraro, Kuligowski, Zhan |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Fundamental research and development on multiple platforms sensors** | soil moisture retrieval algorithm and validation-multiple satellite sensors; | Wherever applicable | 36 months, start date 2010 | CREST: 1 Post Docs, 2 students, STAR: 1 Post Doc | Coordination with NASA for site selection | Lakhankar, Harmsen, Temimi | Zhan, Weng, Ralph Ferraro |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |

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| **Soil moisture climatology** | multi-satellite long-term global soil moisture time series | Global | 36 months start date 2011 | CREST: 1 Post Doc + 1 student, STAR: 1 Post Doc; data storage | International collaboration on validation | Fabrice Papa, Marouane Temimi, Bill Rossow, Eric Harmsen | Zhan, Weng, Ralph Ferraro, Mitch Goldberg |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Global water security** | high resolution (4 km) operational monitoring water stress patters using remote sensing (USDOS, USDA, DOD, DHS, UN) | Global | 60 months (for prototype ) start date 2011 | CREST: 2 Post Docs + 2 student, STAR: 2; data storage | Processing High Resolution Data | Charlie Vörösmarty, Balazs Fekete, Fabrice Papa, Tarendra Lakhankar, Shayesteh Mahani, Balk?? | Felix Kogan, Csiszar, Bob Kuligowski, Zhan, Ralph Ferraro |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Improved hydrological cycle characterization** | using hydrologic variables for constraining hydrometeorological model solutions (NCEP) | Continental US -> global | 48 months/start date 2010 (prototype) | CREST: 2 postdocs, 2 students, STAR 1, NCEP 1 | NONE | Balazs Fekete, Shayesteh Mahani, Tarendra Lakhankar, Fabrice Papa, Eric Harmsen, Ramirez Nazario | Peter Romanov, Ralph Ferraro, Ceazar Kongoli, Bob Kuligowski, Zhan |
| Outcomes and Costumers: | | | | | | | |

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| Advocate to keep us on track: | | | | | | | |
| **Environmental surveillance for public health** | exploratory dialogue with health and disease experts to identify geophysical products needed | Global | 24 months/start date 2010 (prototype) | CREST: 1 postdocs, 1 students, STAR 1, travel funding | NONE | Charlie Vörösmarty, Balazs Fekete, Lenny Roytman, Shayesteh Mahani, Tarendra Lakhankar, Fabrice Papa, Ramirez Nazario | Felix Kogan, Zhan, Ralph Ferraro, Bob Kuligowski, Csiszar |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Urbanization and development** | coastal urban metabolism | US Coastal | 36 months start date 2011 | CREST: 1 postdoc, 1 student, STAR: 1 postdoc) | permits to work in urban areas | Charlie Vörösmarty, Balazs Fekete, Marouane Temimi, Papa, Caroline Hermens, Jorge Gonzales, Reggie Blake, Fred Moshary, Shayesteh Mahani | Gallo, Felix Kogan, Marco Vargas, Ralph Ferraro, Bob Kuligowski, Bob Rabin |
| Outcomes and Costumers: | | | | | | | |

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| Advocate to keep us on track: | | | | | | | |
| **THEME IV: Severe Weather and Hazards** | | | | | | | |
| **Convection Research** | Cast convective buoyancy and entrainment in the context of existing downburst potential indices | | | Student for analysis; Funding for CREST; Funding for travel for research collaboration | NESDIS/STAR - Office/work space | Johnny Luo | Ken Pryor |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Now Casting** | Connecting geo-based nowcasting of deep convective storms to existing downburst indices | | | Student for analysis; Funding for CREST PIs; Funding for travel for research collaboration | Real time transfer of datasets | Brian Vant Hull | Ken Pryor, Bob Rabin |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Hurricane Intensity Forecasting** | Application of machine-learning to rapid intensity change forecasting | | | Student for analysis; Funding for CREST PIs; Funding for travel for research collaboration | | Michael Grossberg, Irina Gladkova | Mark DeMaria |

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| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Hurricane Intensity Analysis** | Using stereoscopic cloud top height dataset to test a hurricane intensity theory toward development of sat-based intensity algorithm | | | Student for analysis; Funding for CREST PIs; Funding for travel for research collaboration | | Johnny Luo | Mark DeMaria |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Fire Potential Monitoring** | Evaluate and improve methods to estimate fire potential based on remote sensing soil moisture and vegetation | | | Student for analysis; Funding for CREST PIs; Funding for travel for research collaboration | | N. Krakauer/M. Temimi/M. Grossberg | Xiwu Zhan, Bob Rabin |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |

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| **THEME V: Education; Outreach and Professional Development** | | | | | | | |
| **Task I** | **Increasing applications from CREST to NOAA opportunities** | National | Ongoing | CREST educational and outreach coordinator, people to coach/mentor students applying) | Money for CREST educational and outreach coordinator, communication key among all the partners, student motivation, information exchanges | Shakila Merchant & All Campus Coordinators | Priti Brahma and Ingrid Guch |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: **CREST Education & Outreach Coordinator** | | | | | | | |
| **Task II** | **Training our current and future Remote Sensing Scientists to communicate NOAA and CREST science value to the public** | | | coursework development that includes outreach | many scientists think they can do this already – low motivation for them to learn communication skills | Brian Vant-Hull, Fred Moshary, Reza Khanbilvardi | Dan Pisut, Ken Pryor, |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: | | | | | | | |
| **Task III** | **Masters ERT internships, other contract positions** | | | people, money, time? | | | |
| Outcomes and Costumers: | | | | | | | |

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| Advocate to keep us on track: | | | | | | | |
| **Task IV** | **Increasing CoRP Science exchanges** | | | undergraduate expansion, improved communication, CREST universities mirroring each others/CUNY outreach activities, CREST education/outreach position | communication difficult | Shakila Merchant, Reza Khanbilvardi, Bill Lawrence, all CREST campus partner | Patty Mayo, Ingrid Guch, Dan Pisut, , Al Powell, |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: **Patty Mayo/NESDIS** | | | | | | | |
| **Task V** | **CUNY ESE Masters Program - expected to be a terminal degree** | | | NSF funds requested last month to fund 18 students over three years, if not approved more funds from CUNY will be needed, would like to implement Fall 2011, CUNY approval, funding after NSF funds needed, | student preparation, particularly for BS rather than BE students | Meg, Reza | Hal Bloom/ERT will take 1-2 for this program, Al Powell, Stan Wilson, Ingrid Guch |

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| | | | | $250K/year | | | |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: **Meg Krudysz/CREST; Persons (working Level**) | | | | | | | |
| **Task VI** | **Suitland/CREST/NSOF/NESDIS Partnerships** | | | NSF STEM, curriculum development, university science mentors, star science mentors, satellite ops engineering mentors, CREST Education and Outreach, cyber-mentoring techniques, Bowie State in PG county participation | no NOAA funds allocated or included in NSF grant program request, unsure of CREST/CCNY commitment | Bill Lawrence, Shakila Merchant, Howard University, NCAS, ISET, CREST (co-recipients on NSF weather camp award), | Ingrid Guch, Christine Carpino, Pablo Clemente-Colon, Suitland Family Life and Development Corporation, PG County schools, Gwen Allen |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: **Christine Carpino/NESDIS** | | | | | | | |

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| **Task VII** | **International Training and Curriculum Development** | | | curriculum development, university science mentors, star science mentors, satellite engineering mentors, CREST Education and Outreach, cyber-mentoring techniques; education and public outreach for GEO and CEOSS | International Travel Funds | Reza Khanbilvardi, Shakila Merchant, Ray Hoff, Bill Lawrence, Hamed Parsiani, | Ingrid Guch, George Jungbluth |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: **George Jungbluth/NESDIS; Shakila Merchant/CREST** | | | | | | | |
| **Task VIII** | **Graphyte/Visit Modules** | | | | | Michael Grossberg, Irina Gladkova, | Al Powell, Ingrid Guch |
| Outcomes and Costumers: | | | | | | | |
| Advocate to keep us on track: **Michael Grossberg/CREST** | | | | | | | |