The Collaborative Science, Technology, and Applied Research (CSTAR) Program

Research, Innovation, and Transition Team (RITT) Forum

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Outline

- ✓ What?
  - Types of awards
  - Mechanics
  - History
- ✓ Who/Where?
  - Current Projects
- ✓ How Much?
  - Current Budget and Budget Outlooks

CSTAR Program

Overview

- ✓ An umbrella program for NWS/university collaborative research consisting of:
  - *Fully competitive, in-house, applied research grant program started in 2000*
    - One to three-year studies--maximum funding level $125K/yr
    - Objective: To improve local NWS forecast and warning services by exploiting S&T improvements to the fullest
    - Applied research and education projects involving collaboration between NWS forecasters and university experts
    - Proposals must address national, regional or NCEP-related science needs/priorities

COMET Outreach

- COMET Outreach Program
  - Smaller-scale competitive grant program managed by UCAR/COMET via OST funding and oversight
  - Funded out of generally same “budget pie” as CSTAR
  - Cooperative Projects: one- to three-year studies of $30-$40K/year
  - Partners Projects: One-year, up to $15K/year
  - Case-study oriented
  - Workshop support

Mechanics

- CSTAR FFO/RFP issued every summer (every 3rd year is an “off year”)
- RFP based on science priorities established with input of SSD Chiefs, NCEP, and others (see example handout)
- Proposals evaluated by team consisting largely of the above
- Announcement of awards around the New Year
- Funding obligated by May 1
- COMET Outreach RFP administered by COMET
- Partner’s Projects typically “in the queue” when NWS provides funding

CSTAR Benefits

- ✓ Forecast and Warning Improvement
  - Quantitative comparisons demonstrate offices participating in collaborative research projects outperform those that do not (Waldstreicher, 2005)
  - Accelerated transition of research to operations

- ✓ Leveraging Resources
  - Value of engaging world-class researchers, staffs, students at academic institutions far exceeds cost
  - Excellent student recruiting tool for university recipients

CSTAR Benefits

- ✓ As of early Spring 2012, at least 76 CSTAR “alumni” have been subsequently employed by NOAA
- ✓ 3 former PIs
- ✓ Of the 76 students, at least 71 are currently full time NOAA employees
- ✓ 6 SOOs (e.g., David Novak of HPC).

Current CSTAR Awards

University of Oklahoma

"A Partnership to Develop, Conduct, and Evaluate Realtime Convection-Resolving Probabilistic and Deterministic Forecasts for Convective-scale Hazardous Weather: Moving to the Next Level"

- PIs: Ming Xue, Xuguang Wang, Fanyou Kong, and Keith Brewster
- NWS Collaborating Offices: SPC, AWC, EMC, WFO OUN
- Provide HWT storm-scale ensemble forecasts for demonstrating and evaluating potential future high-resolution, convection-permitting and convection-resolving NWP products.
- Term: 5/1/10 – 4/30/13

Current CSTAR Awards

University of Utah

"Advancing Analysis, Forecast and Warning Capabilities for High Impact Weather Events"

- PIs: John D. Horel and W. James Steenburgh
- NWS Collaborating Offices: Multiple WFOs, WR
- MesoWest data mining, hourly surface analyses and sensitivity studies with MesoWest and related data sources, atmospheric rivers
- Term: 5/1/10 – 4/30/13

Current CSTAR Awards

Texas A&M (Galveston)

"Development of an Integrated Wave-Current-Wind Forecasting System for Coo Inlet: Supplementing NCEP's Forecasting Efforts"

- PIs: Vijay Panchang
- NWS Collaborating Offices: WFOs Galveston/Houston, Anchorage, EMC/MMB
- 2-day ocean wave prediction system for Cook Inlet AK using WRF, WAVEWATCH III and SWAN
- Term: 5/1/10 – 4/30/13

Current CSTAR Awards

SUNY Albany

"Collaborative Research with the National Weather Service on Cool-and Warm-Season Precipitation Forecasting over the Northeastern United States "

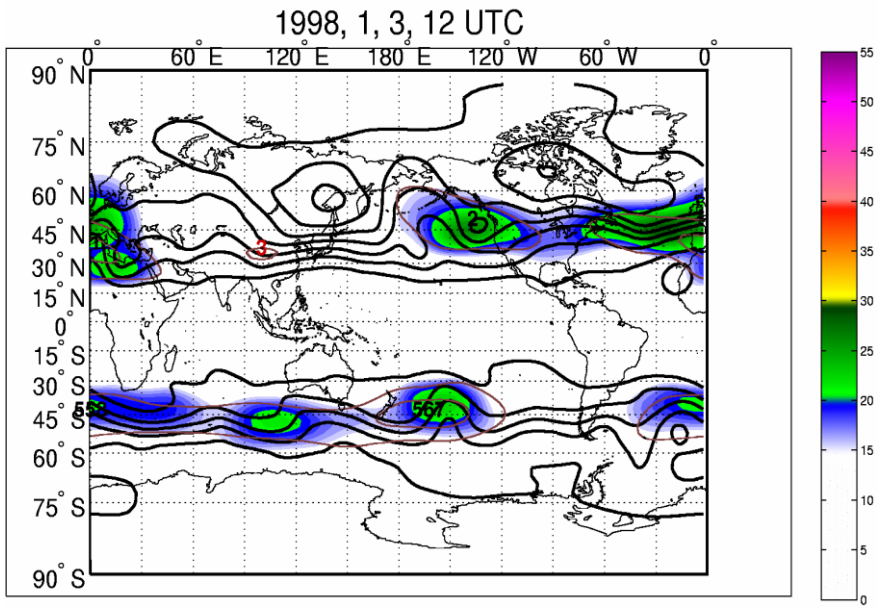
- PIs: Lance Bosart and Dan Keyser
- NWS Collaborating Offices: WFOs ALY, BGM, LWX
- Ice storms and freezing precipitation in the northeastern U.S., Appalachian lee troughs Mesoscale substructure in winter storms inland reintensification of tropical cyclones (TCs) over the eastern U.S. resulting from TC-jet streak interactions.
- Term: 5/1/10 – 4/30/13

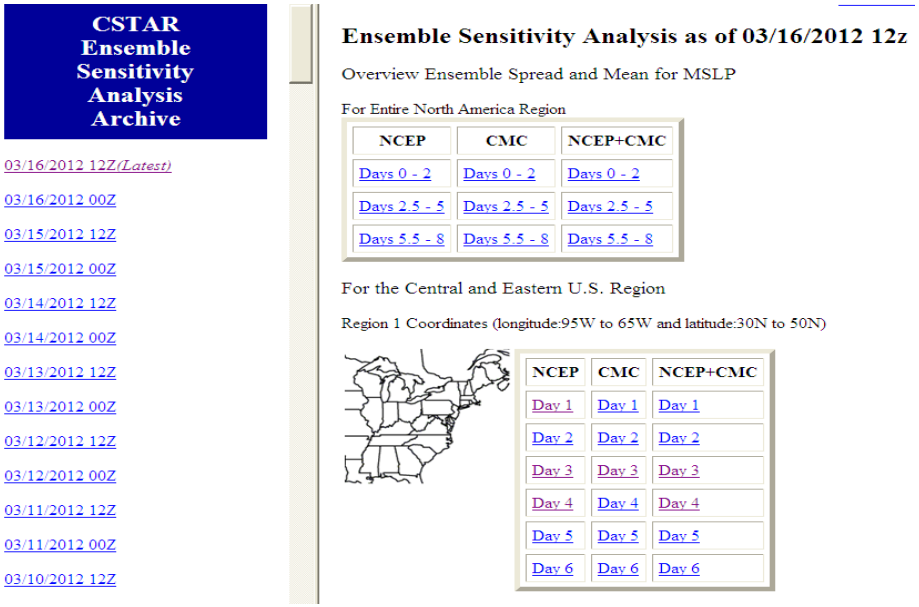
Current CSTAR Awards

SUNY Stony Brook

Predictability of High Impact Weather during the Cool Season over the Eastern U.S

NWS CSTAR Partners: David Novak and Mike Bodner (HPC); Yuejian Zhu, Yan Luo; Jun Du, and Jordan Alpert (EMC); Joseph Sienkiewicz (OPC), Jeff Tongue (WFO-OKX); Al Cope (WFO-PHI); Richard Grumm et al. (WFO-CTP)





- ✓ * Complete a Rossby Wave Packet Climatology and Ensemble Validation Using Automated Tracking.
- ✓ * Test new operational ensemble tools
- ✓ (ALPS, wave packets…) and post-processing (BMA)

- ✓ * Explore the predictability of mesoscale snowbands using multi-model ensembles.
- ✓ * Develop a real-time ensemble sensitivity tool to point forecasters toward important upstream synoptic features.

Current CSTAR Awards

NC State

"Improving Prediction of Severe Winds, Convection, and Heavy Precipitation in the Southeastern United States"

- PIs: Gary Lackmann, Matt Parker, Anantha Aiyyer
- NWS Collaborating Offices: WFOs throughout SE, EMC, SPC, TPC
- Inland wind accompanying tropical cyclones, heavy precipitation and localized flodding associated with TCs, severe convective storms under conditions of marginal instability and strong vertical shear
- Term: 5/1/10 – 4/30/13

Current CSTAR Awards

Texas Tech University

"Integration of Forecast Sensitivity into the NWS Forecasting Process to Improve Predictability of High-impact Weather "

- PIs: Brian Ancell and Chris Weiss
- Collaborating Offices: WFOs ABQ, AMA, Corpus, SAT, FWD, LBB and OUN; SR, SPC
- tuning and testing of the WRF ensemble Kalman filter (EnKF) assimilation/forecasting, forecaster evaluation of ensemble products and the development of forecast sensitivity products for convection, winter storms, and flooding
- Term: 5/1/11 – 4/30/14

Current CSTAR Awards

Portland State University

"Towards Objective Multi-Modeling for Multi-Institutional Seasonal Water Supply Forecasting "

- PIs: Hamid Moradkhani
- Collaborating Offices: NWRFC, CBRFC
- Optimally combine the multi-model ensemble hydrologic forecasts usung the Community Hydrologic Prediction System (CHPS) as a framework to incorporate the suite of water supply forecasting models developed over the last three decades.
- Term: 5/1/11 – 4/30/14

COMET OUTREACH
Current Awards

- Approximately 19 ongoing Partners Projects (see handout)
- 5 ongoing Cooperative Projects
- No OST-overseen RFP for Cooperative projects in recent years due to lack of funds from OST
- However several Cooperative Projects and Partners Projects supported by GOES-R Program Office

Current Budget Picture

FY12 Requirement: $897,376

- ✓ NWS Program Base reduced from $890K to $590K in FY11
- ✓ Existing Projects: $897,376
  - *NWS Program Base = $590,000*
  - *OAR/OWAQ Contribution= $205,737*
    - Supports NC State and SUNY SB (HMT-related)
- ✓ No new projects funded in FY12
- ✓ COMET Outreach contribution from AWIPS-II zeroed out for FY12
  - *AWIPS-II has previously provided up to $500K to support COMET Outreach*
- ✓ Some FY11 “leftover” was provided to COMET to support Partners Projects in FY12
- ✓ Operating deficit for FY12 of $101,639 (HELP!!!)

FY 13 Requirement: $212,305

- ✓ Two existing projects (Portland and Texas Tech)
- ✓ Base (at this time) remains $590,000
- ✓ Support for up to 2 fully funded new CSTAR proejects
- ✓ OAR has indicated no new support for new projects
- ✓ Need to collaborate with Regions and Centers on how best to allocate remainder

THANK YOU

Questions/Comments?

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