



Administrators Workshop – June 18, 2008



Facts and History of the Cooperative Institute for Climate Studies (CICS)

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Research Coordinator



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CICS History and Background

- **Established in 1983 through a MOU with the Department of Meteorology, Climate Analysis Center (NWS) and the Office of Research and Applications (NESDIS)**
 - **Professor Ferd Baer was our first Director (1983 – 1989); he was succeeded by Bob Ellingson (1990 – 2001), Tony Busalacchi (2001 – 2006), and Phil Arkin (2006 – present)**
 - **Original emphasis was on climate diagnostic studies, but with a shift toward satellite-oriented research beginning around 1990**
 - **Increased amount and diversity of research beginning about 2000, much from collaboration with ORA (now STAR), but also with NCEP and OGP**
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The Purpose of CICS

- **Foster collaborative research between NOAA and the University of Maryland in studies of satellite climatology, climate diagnostics, modeling and prediction.**
- **Serve as a center at which scientists and engineers working on problems of mutual interest may focus on studies contributing to the understanding of the earth-ocean-atmosphere climate system, climate modeling, climate prediction and satellite climatology.**
- **Stimulate the training of scientists and engineers in appropriate disciplines**
- **For two decades CICS has fostered collaborative research between NOAA and the University that has covered a wide range of problems in radiation budget studies, climate diagnostics and atmospheric chemistry.**



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How CICS is Structured

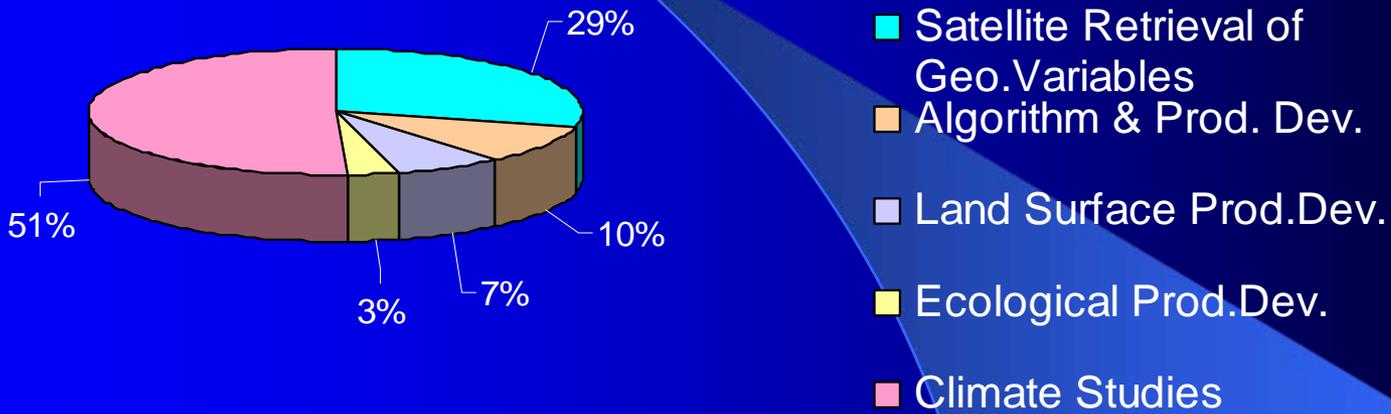
- **CICS is administered by ESSIC, which concentrates on four major research areas that are well aligned with the CICS themes: climate variability and change; atmospheric composition and processes; the global carbon cycle; and the global water cycle.**
- **CICS is led by its Director, Phil Arkin, who is also the Deputy Director of ESSIC and has an active research program; and has a Research Coordinator (me) that doubles as a Research Coordinator for ESSIC; and relies on the secretarial staff of ESSIC for support**
- **CICS scientists obtain and integrate satellite observations of the Earth System, and develop and apply models of widely varying complexity to understand the behavior of the system and to predict its future.**
- **CICS tasks are consistent with the CoRP themes of satellite retrieval of geophysical variables; algorithm & product development; land surface product development; ecological product development; and climate studies.**



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CICS Tasks by CoRP Themes - 5 year average





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Interactions with Other Offices & NOAA

- **CICS interactions with the other elements of the University are through ESSIC**
- **CICS participates in Outreach Programs on the Campus, such as Maryland Day, by providing posters displaying our research activities for the general public and through other exhibits**
- **CICS has a Website that is linked to the University's website to facilitate interactions with all groups on campus**
- **CICS interacts closely with NESDIS/STAR through SCSB and the Department of Geography and Atmospheric and Oceanic Science (AOS) through their affiliation with ESSIC**



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MARYLAND DAY CICS ACTIVITIES





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MARYLAND DAY CICS ACTIVITIES

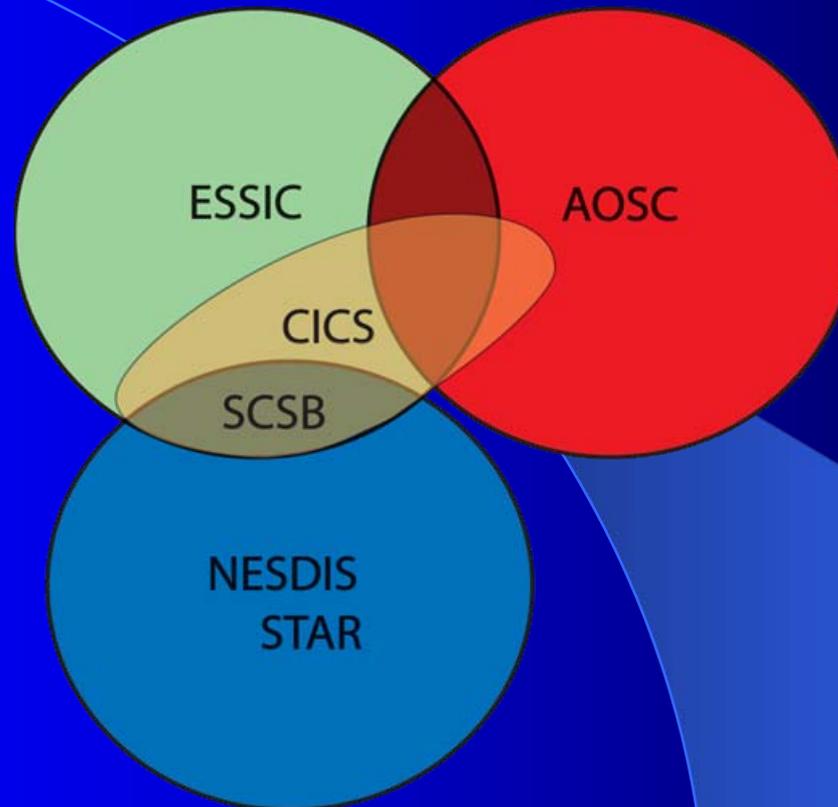




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Relationship among ESSIC, AOSC, SCSB and CICS





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CICS Growth

- **During the first five years of the current cooperative agreement (2001 – 2006), CICS scientists have conducted collaborative research on roughly 50 separate tasks, with at least 10 tasks that we know has advanced NOAA's operational effort and at least another 14 tasks that will advance their operational goals.**
- **CICS funding has grown from about \$500,000 in 2002 to more than \$6,000,000 in 2007, with a comparable growth in CICS tasks from 8 to 63. CICS currently has about 25 principal investigators.**
- **CICS underwent scientific and administrative 5-year reviews near the end of 2005 and received a strong endorsement of its success and recommendations for continuation.**
- **CICS contributes to the Climate, Satellite Mission Support, Weather and Water, and Ecosystem NOAA Mission Goals, and the CICS mission and vision are consistent with the NOAA Research Plan and Vision.**



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CICS TASKS THAT HAVE ADVANCED NOAA'S OPERATIONAL EFFORTS

CICS TASK	PI & NOAA Collaborator
OMPS Total Ozone and Limb Profile Retrieval Studies	(R. Hudson; NOAA Collaborator L. Flynn)
An Experimental Operational Program Physically-Based SST Analysis	(A. Harris; NOAA Collaborator E. Maturi, N. Nalli)
Development of an EOS-PM1 AMSR Land Rainfall Algorithm	(J. McCollum; NOAA Collaborator, R. Ferraro)
Regional Reanalysis	(E. Kalnay; NOAA Collaborators, S. Lord, G. DiMego and J. Huang)
Analysis and Improvement of Satellite-Derived Global Hydrological Products	(A. Sudradjat; NOAA Collaborator R. Ferraro)
Ongoing Analysis of the Climate System	(P. Arkin, NOAA Collaborators M. Johnson, W. Murray)
Physical Controls of the Upper Ocean Optical Properties: Applications to Climate Modeling	(R. Murtugudde, J. Ballabrera, NOAA Collaborator E. Bayler)
Readiness of Operational Outgoing Longwave Radiation Production for NOAA-N Satellite	(H.-T. Lee; NOAA Collaborator I. Laszlo)
GOES Surface Ultraviolet Radiation Datasets	(R. Pinker; NOAA Collaborators I. Laszlo, R. G. Reynolds, P. Chang)
Development of a Model for Predicting Sea Nettles in Chesapeake Bay	(R. Murtugudde; NOAA Collaborator C. Brown)



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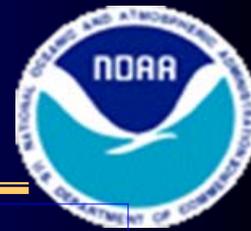


CICS TASKS THAT WILL ADVANCE NOAA'S OPERATIONAL EFFORTS

CICS TASK	PI & NOAA Collaborator
Land Surface Classification and Emissivity Determination – LAND	(K. Vinnikov; NOAA Collaborator Norman Grody)
An Experimental Operational Program Physically-Based SST Analysis	(A. Harris; NOAA Collaborators E. Maturi, N. Nalli)
Applications of Global Precipitation Climatology Project Data	(A. Gruber; NOAA Collaborator R. Ferraro)
Use of Microwave Satellite Products for Hurricane Forecasts with the Penn State/NCAR Mesocale Model – MESO	(D.-L. Zhang; NOAA Collaborators F. Weng, N. Grody)
Ensemble Forecasting with Coupled Ocean-Atmosphere Systems	(E. Kalnay, NOAA Collaborators S. Lord, Z. Toth, S. Tracton, J. Whitaker)
Toward Satellite Monitoring of Global Climate Change	(K. Vinnikov, NOAA Collaborators M. Goldberg, N. Grody)
Variability of Precipitation Associated with the North American Monsoon System	(P. Arkin, NOAA Collaborators M. Patterson, J. Huang)
Interannual Variability of Oceanic Phytoplankton Biomass	(R. Murtugudde; NOAA Collaborator C. Brown)



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CICS TASKS THAT WILL ADVANCE NOAA'S OPERATIONAL EFFORTS

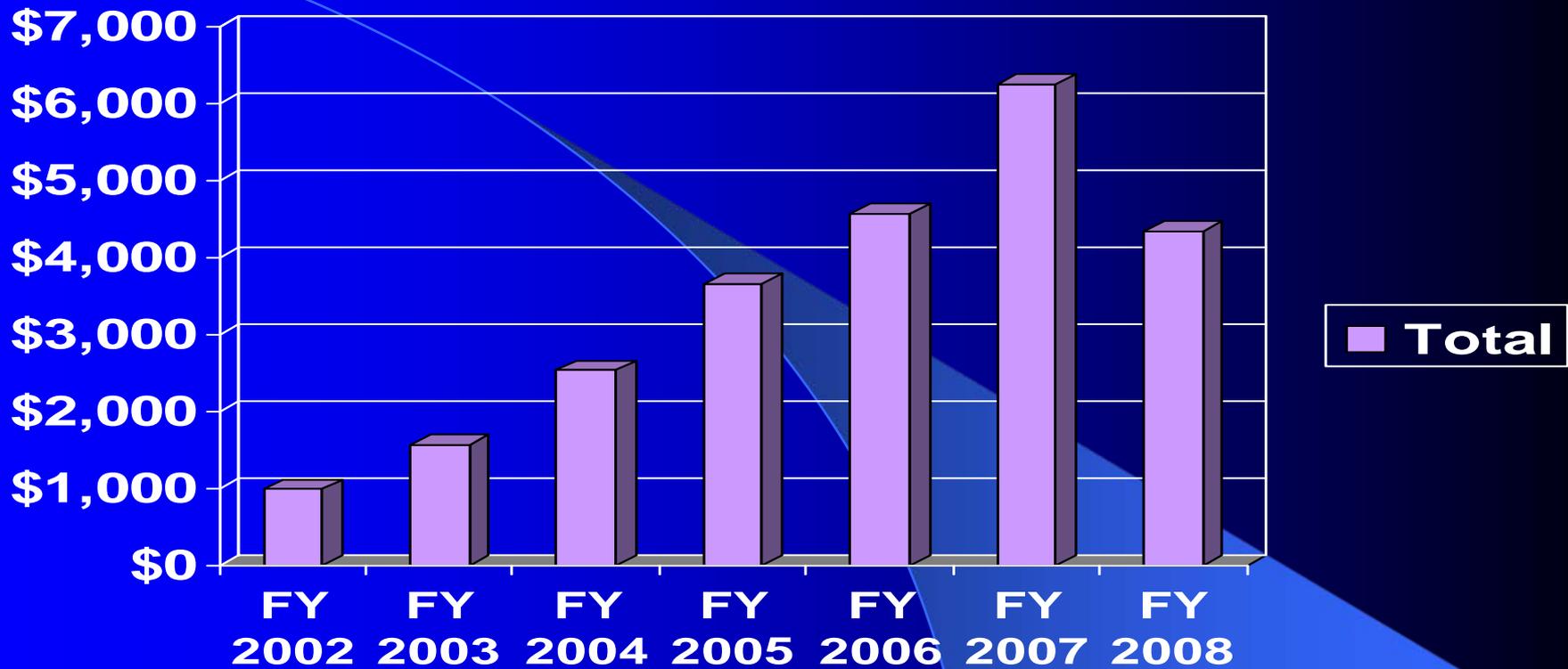
CICS TASK	PI & NOAA Collaborator
Improved Analysis of Tropical Upper Ocean Conditions for Seasonal to Interannual Forecasting	(J. Carton, G. Chepurin; NOAA Collaborator S. Lord)
Retrieval and Validation of Surface and Atmospheric Parameters Using Satellite Polarimetric Measurements	(Z. Li; NOAA Collaborator F. Weng)
Risk Reduction and Algorithm Evaluation/Improvement of Aerosol Retrievals from AVHRR, MODIS and VIIRS and the Study of Aerosol Radiative Forcing	(X. Zhao; NOAA Collaborators I. Laszlo, D. Tarpley)
Assess the potential for estimating snow fraction and snow depth using Terra MODIS observations	(P. Romanov; NOAA Collaborator D. Tarpley)
Validation of the Simulated Cloud Fields by the Weather Research and Forecasting Model	(D.-L. Zhang; NOAA Collaborator X. Li)
Global Mean Tropospheric Temperature Observed by Satellites	(K. Vinnikov; NOAA Collaborators M. Goldberg, N. Grody)



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CICS FUNDING (in \$1000)

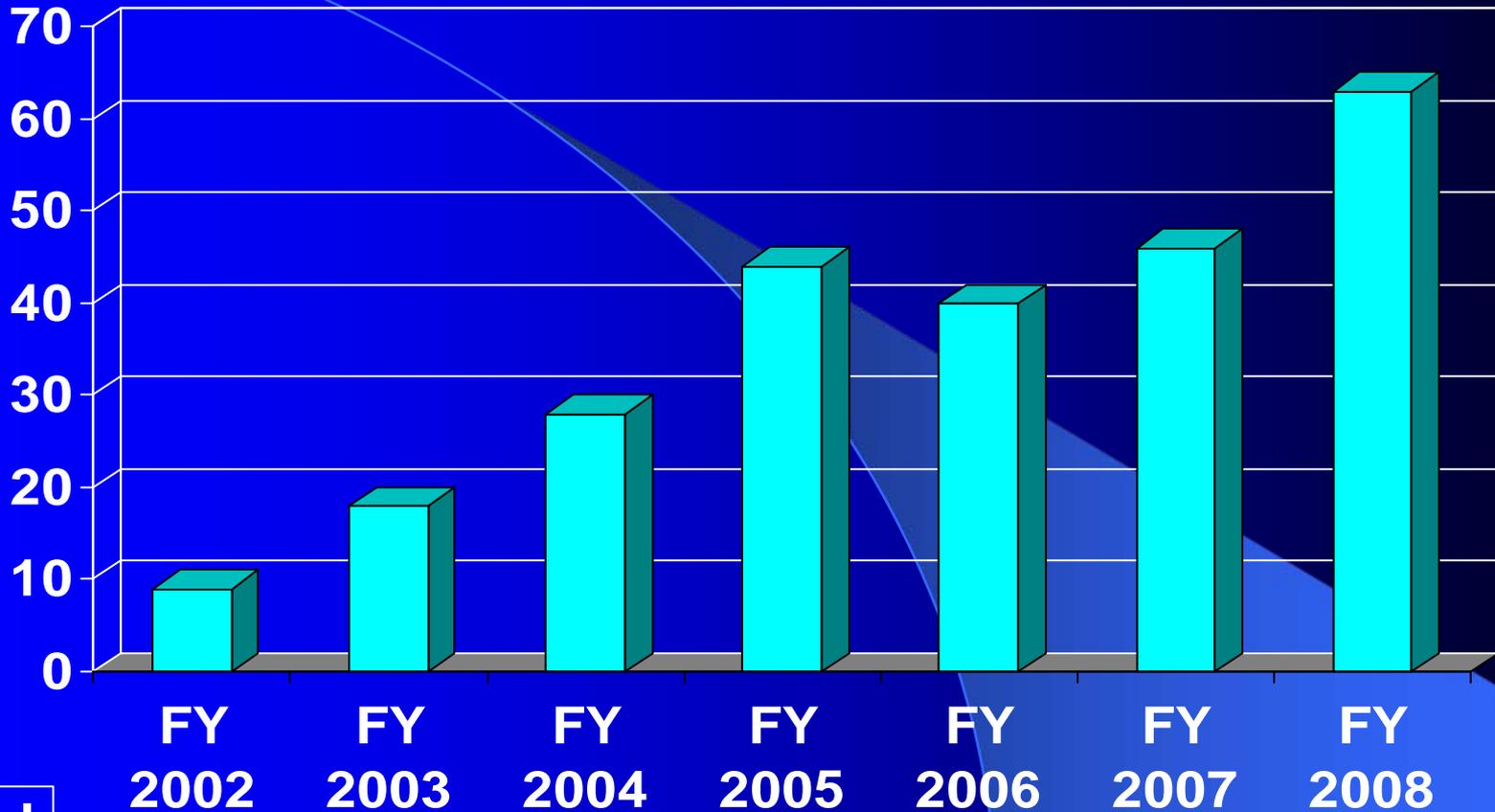




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CICS TASKS



■ Total



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NAME	Principal Investigators/ Collaborators	Affiliation
P. Arkin	Senior Research Scientist	ESSIC
H. Berbery	Research Professor	AOSC
C. Brown (NOAA)	Visiting Associate Research Scientist	SCSB/ESSIC
A.J. Busalacchi	Professor	ESSIC/AOSC
J. Carton	Professor	AOSC
R. Ferraro (NOAA)	Visiting Associate Research Scientist	SCSB/ESSIC
A. Gruber	Visiting Senior Research Scientist	ESSIC
A. Harris	Assistant Research Scientist	ESSIC
R. Joseph	Research Associate	AOSC
E. Kalnay	Professor	AOSC
H.-T. Lee	Research Associate	ESSIC
Z. Li	Professor	ESSIC/AOSC
A. Mariotti	Assistant Research Scientist	ESSIC
F. Mesinger	Visiting Senior Research Scientist	ESSIC
R. Murtugudde	Associate Professor	ESSIC/AOSC
R. Pinker	Professor	AOSC



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CICS	Principal Investigators/ Collaborators	Affiliation
P. Romanov	Associate Research Scientist	ESSIC
M. Sapiano	Research Associate	ESSIC
S. Nigam	Professor	AOSC
T. Smith (NOAA)	Visiting Associate Research Scientist	NCDC/ESSIC
A. Sudradjat	Research Associate	ESSIC
D. Vila	Research Associate	ESSIC
K. Vinnikov	Senior Research Scientist	AOSC
N.-Y. Wang	Research Associate	ESSIC
N. Zeng	Associate Professor	AOSC
D.-L. Zhang	Professor	AOSC
R. Zhang	Associate Research Scientist	ESSIC
X. Zhao	Assistant Research Scientist	ESSIC



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CICS Tasks by NOAA Goals - 5 year average

