A Proposal to Unidata in response to a Call for Proposals: 2007 Unidata Community Equipment Awards

Title: A multidisciplinary computer lab for meteorological and oceanographic applications at the Florida Institute of Technology.

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1. Project Summary

A brief summary of the project and how the proposer intends to use equipment funded through this award program.

The project includes two basic components, namely 1.) the upgrade of an old PC in one of the lecture classrooms and 2.) the upgrade of the Department of Marine and Environmental Systems (DMES) computer laboratory. The classroom is a shared lecture space for DMES and thus an ideal environment to integrate the IDV into the diverse curricula of our program. The IDV software will be installed on both the lab and lecture room PCs. FIT Students and faculty already have access to Unidata's GARP, NMAP2, and NSHARP via the campus server. These GUIs are viewable through X window software (Cygwin) which is currently installed on all campus lab and classroom PCs. The proposal leverages ongoing research here at FIT to integrate sea surface temperatures into the IDV in support of various course curricula and, in turn, introduce our multidisciplinary faculty and students to these tools. In particular the proposal is designed to directly impact an introductory oceanography course and a Capstone-like summer program (see section 4 below).

2. Project Description

Describe details of the equipment requested, and what part it will play in meeting the relevant criteria, above. Describe how equipment requested will help to meet the overall goals of the project.

11 desktop PC systems (dual boot Linux/Windows) are requested as part of a dedicated computer laboratory for meteorological and oceanographic applications. The current DMES PC lab contains 11 identically configured Dell platforms with 2.4 GHz processor speed and Pentium 4 CPUs. These machines were donated by NASA and are not IDV-friendly in terms of RAM with only 256 Mb. A 12^{th} PC is requested to replace an old instructor workstation in a DMES classroom. 11 of the requested PCs will replace those in the DMES PC Lab which is used by all DMES students (Oceanography, Meteorology, Ocean Engineering, and Environmental Science. For a breakdown see Table 1).

1) The PC Lab will be used by students for course assignments and projects.
2) The PC Lab will be used by students for relevant research projects.
3) The PC Lab will be used by faculty for course instruction.
4) The PC Lab will provide a dedicated space where students in the relevant courses (see below) can work in a common environment in close proximity to faculty and support staff.
5) The classroom PC will be instructor access only.

Discuss the benefits to research and/or education, and the added value that this project will bring to the Unidata community at-large.

The PC Lab will impact the following during the 1st year of implementation:

1) OCN 4911-4913:	Environmental Field Projects*
2) ENS 1001:	Whole Earth
3) OCN 1010:	Oceanography*
4) OCN 2407:	Meteorology
5) MET 3401-3402:	Synoptic Meteorology I/II
6) MET 4233:	Remote Sensing for Meteorology
7) MET 1999:	Weather Briefing*
8) MET4410:	Mesoscale Meteorology

*Indicate courses where the Unidata-IDV software will be introduced. Specific details regarding the integration of the IDV are included in the relevant project milestones and appendices.

The Department of Marine and Environmental Systems (DMES) is somewhat unique in that it combines oceanography, ocean engineering, environmental science, meteorology and coastal zone management under one roof (for 2006 undergraduate student numbers, see Table 1). Activities within the Department of Marine and Environmental Systems reflect the interdisciplinary nature of the interests and expertise of a closely related faculty. The department strongly supports collaboration and the PI and Co-I's are involved in an effort to integrate the coastal ocean and atmosphere through various regional networks such as the Florida Coastal Ocean Observation System and the Southeast Atlantic Coastal Ocean Regional Association. The PI has been involved in several related projects including: 1.) COMET Partner (grant #S04-44701) support to create a near-real time high resolution MODIS/GOES sea surface temperature product (Lazarus et al. 2007, in press Monthly Weather Review); 2.) a parallel/collaborative effort with the Short-Term Prediction and Research Transition (SPoRT) Center involving MODIS SST composites and short-term WRF forecasts; and 3.) potential (we are next on their funding list) Collaborative Science, Technology, and Applied Research (CSTAR) funding for a real-time effort involving high resolution coastal wave forecasting and atmospheric modeling. The models include hydrodynamic and wave, supported by the U.S. Army Engineering and Research Center Coastal Hydraulics Lab, and the Weather Research and Forecast (WRF) Non-Hydrostatic Mesoscale Model (NMM). As part of this proposal, we intend to *leverage* some of this prior work, namely:

a. make the FIT GOES and SPoRT MODIS SST products available in IDV-friendly format (to the Unidata community),

b. FIT students are participating in the Linked Environments for Atmospheric Development (LEAD) project under Dr. Chiao. LEAD is an HSF funded effort to make numerical model outputs more accessible to students and the community. Currently, students and faculty at Florida Tech are actively using LEAD as a tool

for participating in the National Forecast Contest (i.e., WxChallenge). Students have been using a single machine in Dr. Chiao's lab to run IDV. We anticipate that the proposed meteorological computer lab upgrade will extend the accessibility of using the LEAD portal at Florida Tech. IDV/WRF model output is shown for the final 2006/2007 NFC location, Rapid City South Dakota, in Appendix A.

and, pending funding of the CSTAR proposal,

c. produce a combined high-resolution 10 m wind, SST, wave height/period product (in the central Florida coastal zone) in IDV-friendly format for use by DMES faculty in the courses listed above.

Discuss the relationship of the proposed system to the existing computing facilities, both departmental and institutional.

Computing facilities available to students include the following:

1) FIT Campus computer labs outside of DMES
   a) The Applied Computing Center (2nd floor of Evans Library)
      i) Unidata software is currently not available on these systems.
   b) 5 Common Computer Labs (Olin Engineering Building)
      i) Unidata software is currently being used on these systems.
      ii) These labs experience heavy use during the semester as they double as instructional rooms. Students often find it difficult to access these systems to use Unidata software. Weekends and late evenings are generally free for students use.
2) Individual faculty PCs.
   a) Some DMES faculty have PCs available that are primarily for graduate student use and are only occasionally used by undergraduates students for research related projects.
3) Current DMES PC Lab.
   a) This lab has undergone an upgrade since we last submitted an unsuccessful Unidata proposal in 2005. The upgrade was a NASA donation of "old equipment" (2.4 GHz/256 RAM PCs). IDV is not installed on these PCs. The proposed PC lab would replace of the current DMES PC Lab.

Figure 1 depicts access to Unidata software and data sets at FIT. Unidata software (GEMPAK, GARP, McIDAS, NMAP2, and NSHARP) is installed on the main campus server (my.fit.edu). Meteorological data feeds are archived on a system (cumulus.dmes.fit.edu) in the PI's lab. The system is virtually mounted to the main campus server and has two 2.8 GHz processors and ¾ of a terabyte of disk space. Any student or faculty can access Unidata software and datasets via the main campus server.

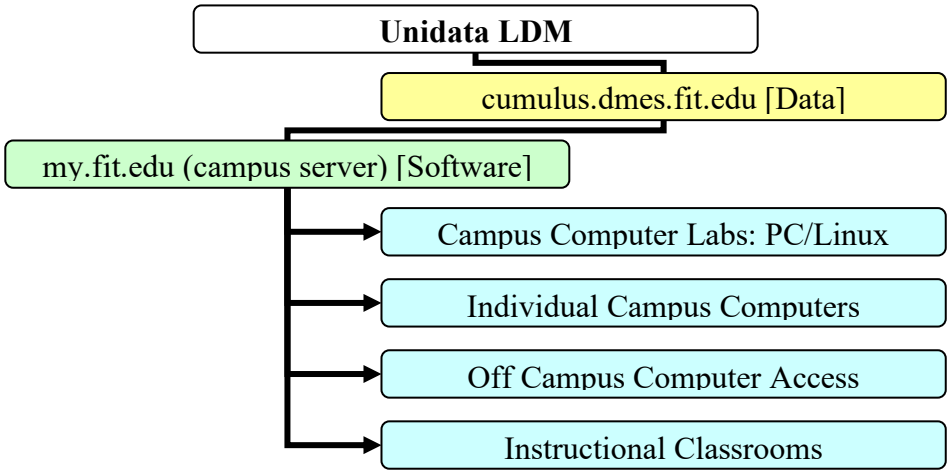


Figure 1

Faculty currently enjoy access to the Unidata software and datasets in the multimedia instructional classrooms on the FIT campus. Approximately 40 multimedia classrooms are available for faculty instruction. Several of the classrooms also contain "Smart Boards" which enable the instructor to annotate and capture the various images generated using the Unidata software. The new PC Lab would access the main campus similar to the existing systems.

Discuss the percentage of the departmental computing resources that the proposed system comprises; and the relationship of the proposed equipment to the departments overall plan for computing capabilities.

The new PCs will replace the current DMES PC lab computers and an instructor workstation. The instructor workstation is accompanied by projection equipment In terms of lab availability, access to instructors, and the ability to run Unidata software, the impact will be considerably larger.

3. Budget

Provide a short explanation of the budget (budget justification). Describe any university contributions to the project (such as PI time, system administration time, co-sponsorship, computer time, and partial or total waiver of indirect costs).

University contributions:

A) Infrastructure:
   a. 30 ft x 30 ft lab space on 1st floor of the Link Building (across from the DMES main office). See floor plan in Appendix B.
   b. Internet connectivity (ports) provided by DMES.
   c. Desks, chairs and tables provided by FIT.

B) PI & Co-PI Time:
   a. Dr. Steven Lazarus:
      i. Integration of Unidata software (IDV) into the Whole Earth, Weather Briefing, and Mesoscale Meteorology course curricula. (See Appendix C)
   b. Dr. Kevin Johnson
      i. Integration of Unidata software into the Oceanography courses. (See Appendix D).
   c. Mr. Michael Splitt:
      i. Continued management of Unidata software for DMES
      ii. Training students/faculty on software use (class and workshops).
      iii. Integration of Unidata software into the Summer Field Projects (FP, see Appendices C and D)

C) FIT Information Technology Support (IT, System Administration):
   a. Installation/set-up and management of new DMES computer lab.
   b. Software bundle for PC and Linux worth roughly $200-$300 per system. (See Appendix E for FIT software details).
   c. Installation and maintenance (i.e., upgrades) of Unidata software on the main campus server

In a line item budget, show all key elements of cost as well as line-item detail for proposed purchases.

Quote obtained from: http://www.premier.dell.com

12 Dual Boot PCs: 12 @ $1570.60 = $1344.14 = $16,129.68

Specifications for proposed dual boot systems:

-OptiPlex 745 Minitower: Intel(tm) Core™ 2 Duo Processor E6600 (2.40GHz, 4M, 1066MHz FSB) : 724T4 [222-5689]File System: NTFS File System for all Operating Systems : NTFS [420-3699]
-Memory: 2GB DDR2 Non-ECC SDRAM,800MHz, (2 DIMM) : 2G2N82 [311-6407]
-Keyboard: Dell USB Keyboard, No Hot Keys, English, Black : EUSB [310-8010]
-Monitors: Dell 17 inch UltraSharp™ 1707FP Flat Panel, Adjustable Stand, VGA/DVI : 1707FP [320-4565]
-Video Card: 128MB ATI Radeon X1300 (1 DVI/1 TV-out), full height : 128DVEF [320-4931]
-Boot Hard Drives: 160GB SATA 3.0Gb/s and 8MB DataBurst Cache™ : 160S [341-4216]

-Floppy Drive and Media Card Reader Options: 1.44MB 3.5 Inch Floppy Drive : FD [341-3840]
-Operating System(s): Genuine Windows(tm) XP Professional, SP2, x32, with -Media, English : XPP232E [420-6287] [310-8617]
-Mouse: Dell USB 2-Button Entry Mouse with Scroll, Black : USBE [310-8008]
-Lead Free Motherboard: RoHS Compliant Lead Free Chassis and Motherboard : ROHS [464-1131]
-Removable Media Storage Devices: 16X DVD+/-RW SATA, Roxio Creator™ Dell Edition : DRM16 [313-4378]
-Speakers: Internal Dell Business Audio Speaker : INTSPK [313-3350]
-Resource CD: No Resource CD : NORCD [313-3673]
-Hardware Support Services: 3 Year Limited Warranty plus 3 Year NBD On-Site -Service : U3OS [970-8862] [980-4900] [985-2497] [985-2498]
-Installation Support Services: No Onsite System Setup : NOINSTL [900-9987]

Cost sharing by the department or university is encouraged but not required.

A) The FIT Instructional Technology (IT) Department provides system administration support for networks installed on campus. The IT folks have provided a great deal of support for the PI and have installed and are currently maintaining Unidata software on both the campus server and Sun/Linux boxes in the PIs office.

B) DMES will provide funds, if needed, for establishing network connections for all the PCs in the computer lab.

C) FIT will provide space and furniture for the computer lab.

4. Project Milestones

Provide information about how soon equipment will be purchased after receipt of the award, and when it will be deployed as part of the broader project objective.

Ideally, the equipment will be purchased and installed in time to support the DMES FP this summer. A brief description of the courses impacted by the integration of the Unidata software and time table follows. The Unidata IDV tool, which has already been introduced/used in the Whole Earth course, will be introduced into two courses: 1) the freshman Oceanography class (Fall 07) and 2) Field Projects (Summer 07). Other courses here at FIT that use Unidata software are also included to give a

Milestones and Unidata Applications:

1) FIT-Unidata workshops

Over the past couple of years, FIT has sponsored several local Unidata workshops for our students and faculty. The presentations, conducted by Co-I Mike Splitt, included a two part introduction to GEMPAK/GARP featuring available meteorological and oceanographic data sets including observations and model output as well as an

introduction to GARP & NSHARP. To encourage the use of the various Unidata software packages, we have developed an MsWord document detailing the procedures for installing X-window software (Cygwin) from home PCs. *Beginning the Fall 2007, we will add IDV to the workshop presentation.*

2) Field Projects (OCN 4911-4913): SUMMER 2007

Field Projects (FP) is an *interdisciplinary* Capstone-style course for seniors in the DMES. Six different FP faculty introduce students to diverse aspects of marine sciences as students of various disciplines gain hands-on experience conducting research in oceanography, environmental science, meteorology, and ocean engineering. Students develop hypotheses, design experiments, collect data, and perform statistical analysis, prepare reports and give presentations. Additionally, some students present their research at national meetings and publish their data. More information on the FP is available on the web at: http://www.fit.edu/mfp.

This year's FP meteorology/oceanography projects will emphasize: 1.) sea breeze generated deep convection, and 2.) transects of the Florida Current on board the Gulf Stream Eagle – both of which are scheduled for June, with the data analysis occurring during the latter part of the month. The computer lab will be used for both the data collection (i.e., supplemental/support data) and data analysis portions of the field project. As part of this project, *we propose to integrate SST measurements obtained with a Heitronics IR thermometer with the SST products from the GOES and MODIS platforms using IDV*. (See Appendix D for related information).

3) Whole Earth (ENS 1001): FALL 2007

When the FIT 2005 Unidata proposal was submitted, we had not yet developed or used IDV in a classroom here at FIT. That has since changed as a result of the PI's participation in an FIT sponsored Faculty Institute – a weeklong summer workshop designed to promote and support the use of technology in the classroom. Although an educational module was initially proposed for the multidisciplinary Whole Earth course, See Appendix C) – a more modest outcome resulted in the introduction of IDV as an instructor tool in this "team taught" course. The Whole Earth course is team taught and is composed of sections on the cosmosphere, geosphere, hydrosphere, atmosphere, biosphere, anthroposphere with faculty from the College of Engineering, the School of Aeronautics, and the College of Science and Liberal Arts. An example of the concept demonstrated during the Fall of 2005, using IDV, is given in Appendix C.

4) Oceanography (OCN 1010): FALL 2007/SPRING 2008

This course, taught by Co-I Dr. Kevin Johnson, is an introductory oceanography class. Dr. Johnson has also participated in FIT's Summer Faculty Institute, developing a simple ocean Ekman pumping module (using Excel) for his students. The porting of the high resolution operational MODIS and GOES SST composites into IDV will be of direct use for Dr. Johnson's course. An example of an upwelling episode off the Florida coast, a SPoRT MODIS and the operationally generated FIT GOES composites are shown in Appendix D. The PI will work with the Co-I's to integrate the SST products into the IDV. *This bullet directly addresses this year's Unidata goal for integration of the IDV into the oceanography curriculum.*

5) Meteorology (OCN2407**):** SPRING 1010 2008

This course, taught by Co-I Dr. George Maul, is an introductory meteorology class. The course content includes both lecture and "briefings". This is the first year that Unidata software (GARP, NMAP2, NSHARP) has been used in this course. The PI will interact with the instructor of this course in order to ensure the continued use of the Unidata software.

6) Synoptic Meteorology (MET 3401 and MET 3402): FALL 2007/SPRING 2008

This course is taught by Co-I Mike Splitt. Unidata data/software, already used extensively in this course, will be expanded with the planned use of the IDV SST/wind product.

7) Remote Sensing of the Atmosphere (MET4233): FALL 2007

This is a new course that is taught by Dr. Sen Chiao – a recent faculty hire from N.C. State. Unidata software is currently used in his course. Dr. Chiao will be providing the WRF support for the CSTAR project. As previously mentioned, if the project is funded (anticipated), a combination WRF/wave product will be made available to the suite of Unidata GUIs.

8) Weather Briefing (MET1999) FALL 2007/SPRING 2008

The PI teaches this course 1/week with a focus on the National Forecasting Contest. For the most part, this course is taken by students in their freshman and sophomore years. With the exception of IDV, Unidata GUIs are used extensively (almost exclusively) in this course. The use of IDV in this classroom is problematic given the performance/age of the instructor workstation. A new instructor workstation (requested herein) will greatly enhance the use of all Unidata software and will allow the faculty that use this particular facility to run IDV interactively. Once installed, the PI will begin to use IDV in this course.

9.) Mesoscale Meteorology (MET4410) SPRING 2008

This class was taught at FIT for the first time this Spring 2007. The course is designed to embed our students in real data and thus already makes significant use of Unidata software (especially GARP, NSHARP) and the COMET CODIAC server (see Appendix C).

Describe any dependencies that may alter the project goals and deadlines (for example, new space must be acquired or altered before a system can be installed).

Although currently designated to replace the DMES computer lab, the location of the proposed lab may change depending on availability..

Appendix A: FIT LEAD and IDV

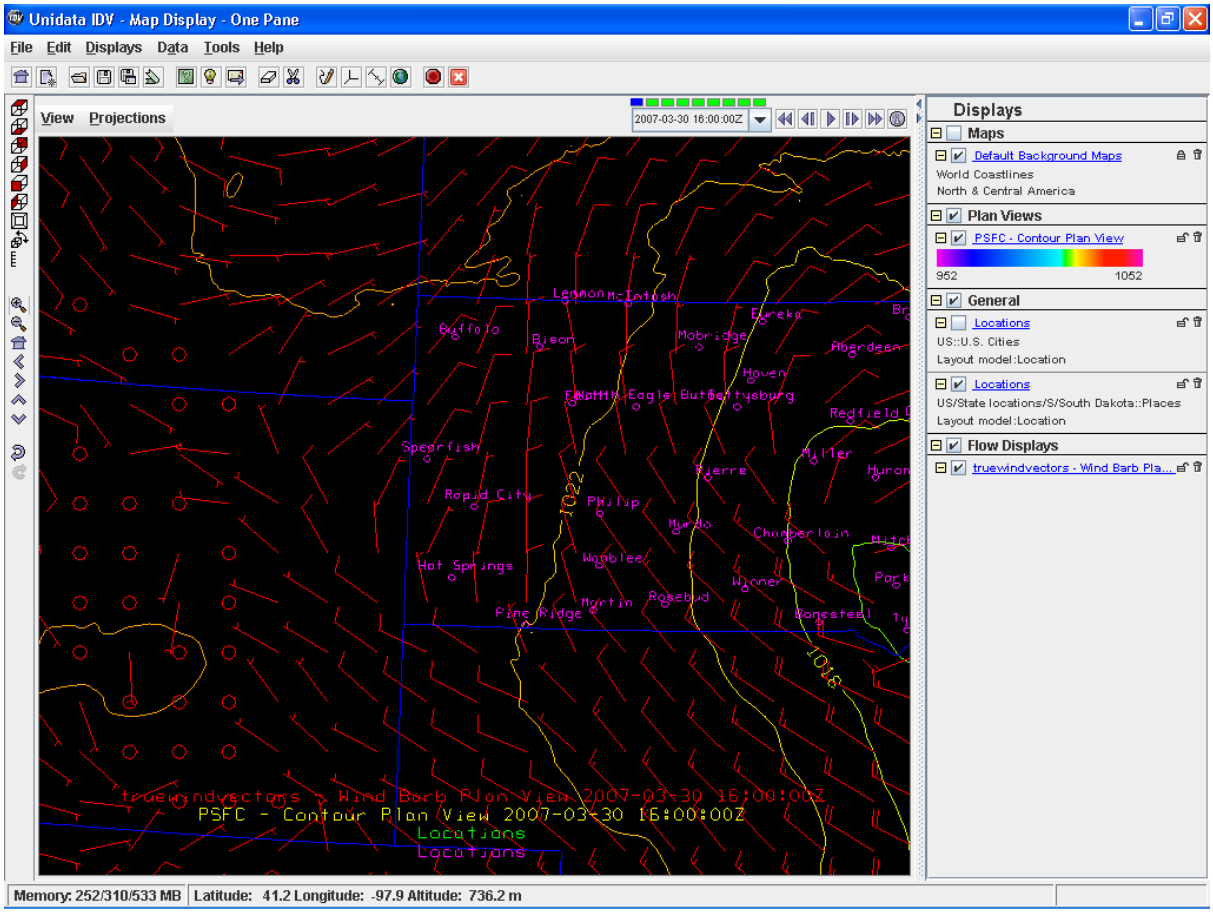
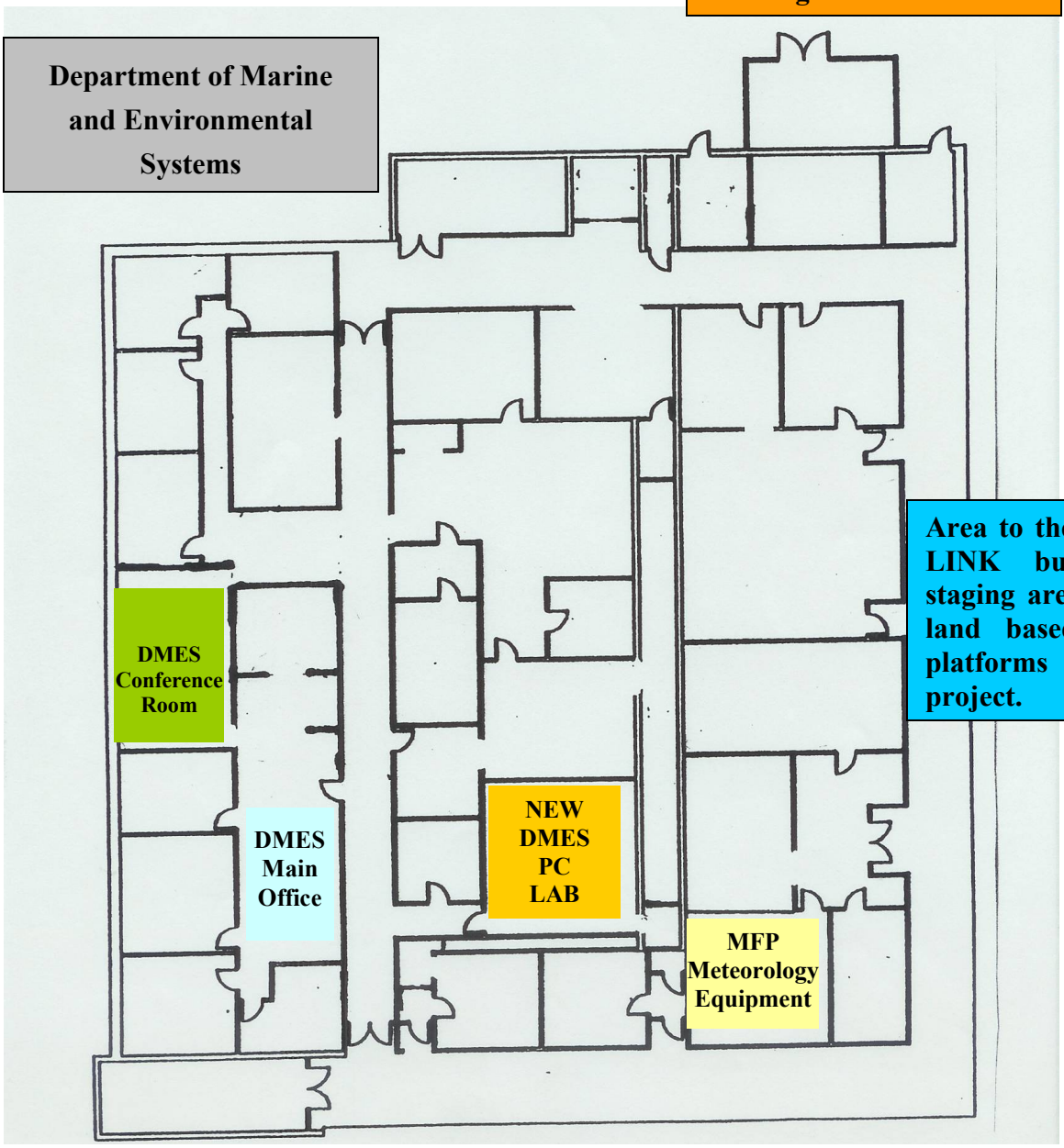


Figure 2: WRF forecast (embedded in IDV) for 16 UTC 30, 2007 for Rapid City, SD. Image generated at FIT as part of the LEAD project in conjunction with the National Forecast Contest.

Appendix B. DMES Floor Plan – First Floor, LINK

DMES faculty offices are located on the 1st and 2nd floors of the LINK building.



Appendix C: Applications of Unidata Software in the FIT Classroom

Whole Earth Course (ENS1001)

As a result of an FIT sponsored Faculty Summer Institute in 2005, the PI used IDV as an instructor tool in the Whole Earth Course (ENS1001). The goal was to better illustrate the concept of the polar jet and its relationship to atmospheric temperature. The IDV was a natural candidate for this since the concept is highly three-dimensional. This subject is commonly addressed in introductory meteorology, oceanography, and general science education texts. For example, in FIT's Whole Earth Course (ENS1001) text, "The Blue Planet" states

"Recall from Chapter 12 that unequal heating of the earth's surface causes the top of the troposphere (the tropopause) to be much lower at high latitudes. The region where the height of the tropopause changes most rapidly is over the polar front (Fig.13.13). A large body of cold, polar air fills the troposphere poleward of the polar front, while the warmer, subtropical air fills the troposphere on the equatorial side, but the top of the top of the troposphere is everywhere at the same pressure. In other words, the tropopause is an isobar. This means that, in the stratosphere, there is a very steep pressure gradient over the polar front; high pressure is on the poleward side, and low pressure on the equatorial side of the stratosphere. Steep pressure gradients mean high-speed winds..."

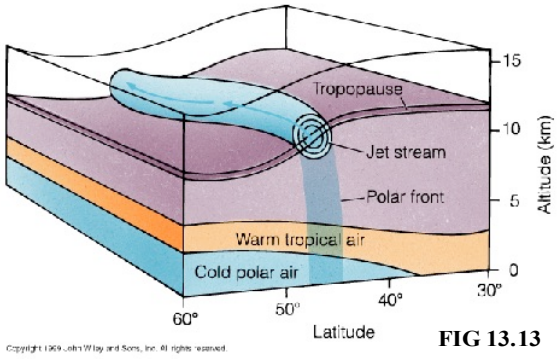
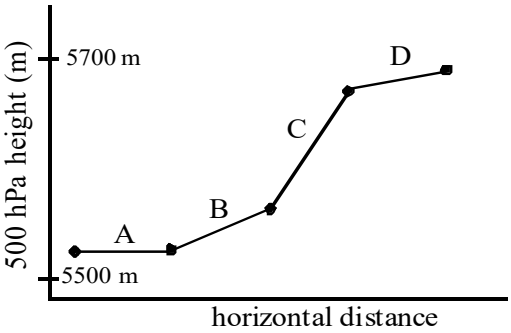


FIG 13.13

This is a difficult subject for an introductory text to cover, with sufficient detail, an abstract concept without the aid of additional sources and tools. For example, he PI asked the following question on the meteorology exam inENS1001:

Using the figure below, answer the following questions by placing the appropriate letter (A, B, C, or D) in the blank next to each question (assume Northern Hemisphere)



The warmest region is ____
The coolest region is ____
The polar jet stream is likely in region ____
The geostrophic winds are weakest in ____

During the Fall of 2006, IDV was installed on an instructor platform in the Life Sciences building. The PI generated (prior to class) the following near-real time image within his lecture on the atmosphere in the Whole Earth course. Using IDV the PI rotated the figure to give students a perspective on how the "Jet Streak" (yellow isosurface) position related to the 0ºC isosurface (blue). Also included on the figure are the 300 hPa heights. Ultimately, the idea is to design a simple, but dynamic, interactive web-based module that illustrates the relationship between the sloping pressure surfaces, temperature and the polar jet stream.

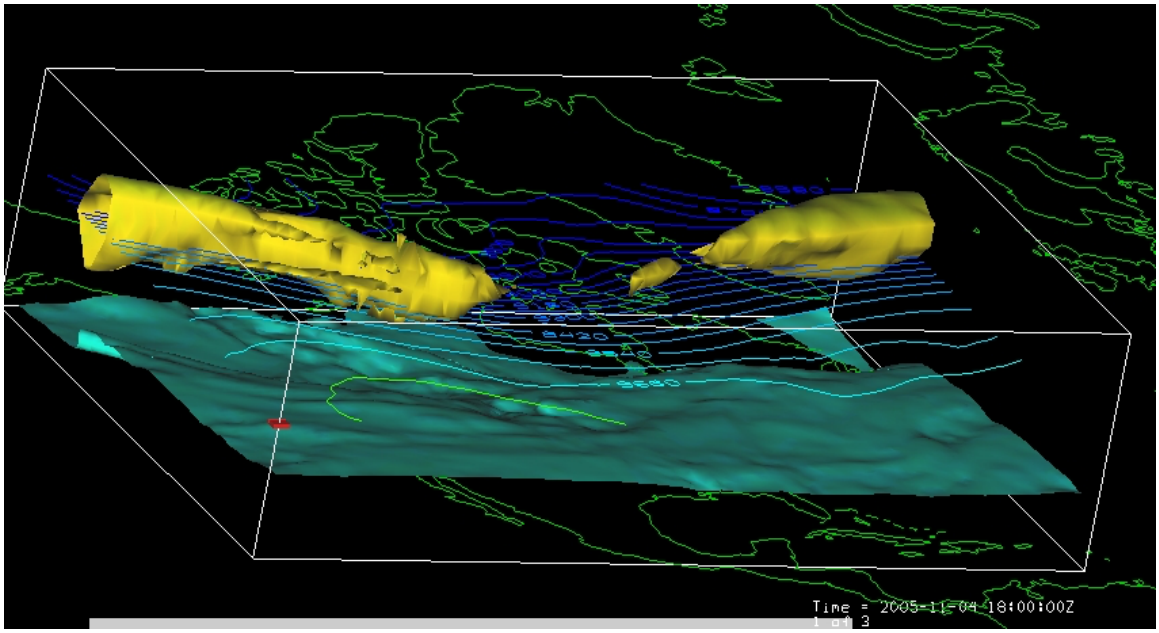


Figure 3: IDV-generated image valid 18 UTC 4 November 2005. 300 hPa contours (m), 300 hPa 35 kt wind speed isosurface (yellow), and 0ºC isosurface (cyan).

Mesoscale Meteorology (MET4410)

The figures shown below were generated by a student as part of an assignment in Mesoscale Meteorology this spring. Also listed below are the associated homework questions from which these figures were created. These data were provided by COMET through the CODIAC data server at http://data.eol.ucar.edu/codiac/projs?COMET.

***Using GARP**, load the 2350 and 2355 UTC KTLX radar radial velocity images, zoom in on the supercell bearing down on Cleveland County where, at this time, it is producing an F5 tornado (~lat 35.25º and ~lon -97.66º note cursor gives you the lat/lon!). Indicate the mesocyclone signature (on both images) by circling the feature on this storm only. Using the velocity scale on the image, what is the maximum inbound velocity (i.e., toward the radar)? What is the maximum outbound velocity (i.e., away from the radar) for the 2350 UTC scan (note that motion toward the radar is given by a negative value, and away is given by a positive). Are either of the couplets (i.e., inbound vs. outbound) stronger than the other? If your answer is yes, then which one appears to be stronger and why? Compare the 2350 UTC radial velocity for this storm with that of the 2355 UTC scan. What is happening to the outbound velocity? (Hint: Look up Doppler velocity aliasing).*

***Using NSHARP**, display the OUN (Norman OK) soundings for 3 May 1999 at 12 and 18 UTC (special sounding), and 4 May 00 UTC. (Select the "load" tab and a second gui window will launch named "observed sounding selection". Select "file" and then "browse" and yet another gui will pop up "file selection window". In the filter box enter the following path: /ldm_data/gempak/PROJECT/upperair/ and then hit return. You will now see a bunch of soundings labeled as YYMMDD_upa.gem. Note that you will have to select two different days for the three soundings. Select the 3 May file and hit the "OK" button. Various times will appear in the "observed sounding selection gui". Select the times given above. Note that if you click on the "skewt" tab you can see the hodograph. Hand in each of the 3 hodographs and one sounding plot with the 18 UTC 3 May and 00 UTC 4 May soundings overlaid (i.e., turn 'on' the tab says "overlay").*

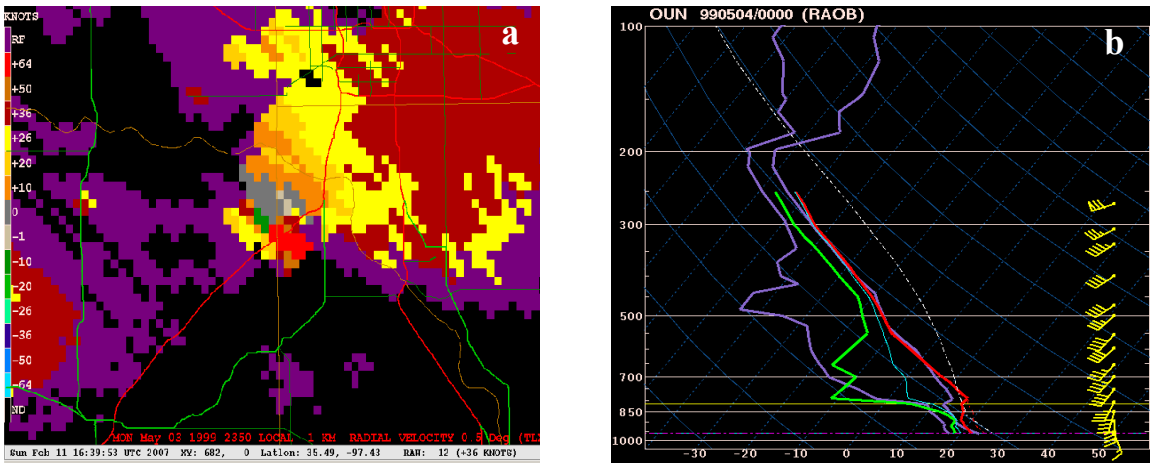


Figure 4: a) 2350 UTC 3 May 1999 KTLX 0.5º radar radial velocity and b) 18 UTC 3 May 1999 sounding (purple) and 00 UTC 4 May 1999 sounding (red/green). Data obtained via the COMET CODIAC data server.

Synoptic Meteorology (MET3401/02)

A combination of data from the CODIAC server (GOES7 and surface), NCDC buoy/ship, and NCEP pmsl reanalyses were integrated for the "Storm of the Century" illustration below. Data for this event is used for both lecture and homework in the Synoptic Meteorology sequence here at FIT and students regularly use Unidata software (with the exception of IDV) as part of their core curriculum.

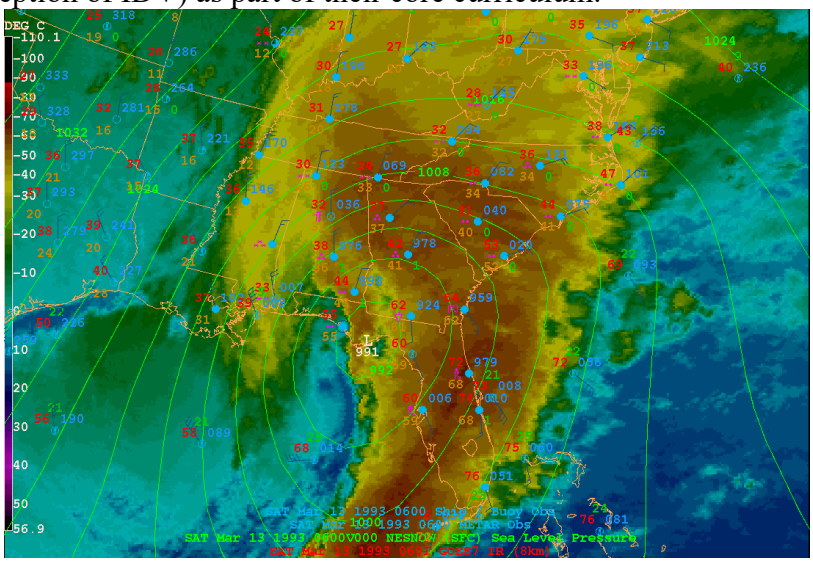


Figure 5: 0600 UTC 13 March 1993 NCDC ship/buoy observations, NCEP Reanalysis mean sea level pressure (mb), and CODIAC GOES7 infrared image.

Field Projects (OCN 4911-4913)

Meteorological field data from 3 platforms (circled below) were collected and integrated using Unidata software during the Summer 2004 FP: WFIT: a mobile platform which followed the sea breeze inland; WFTS: a field station located at Melbourne Beach; and WFTD data collected on-board an economical near-shore FIT research vessel.

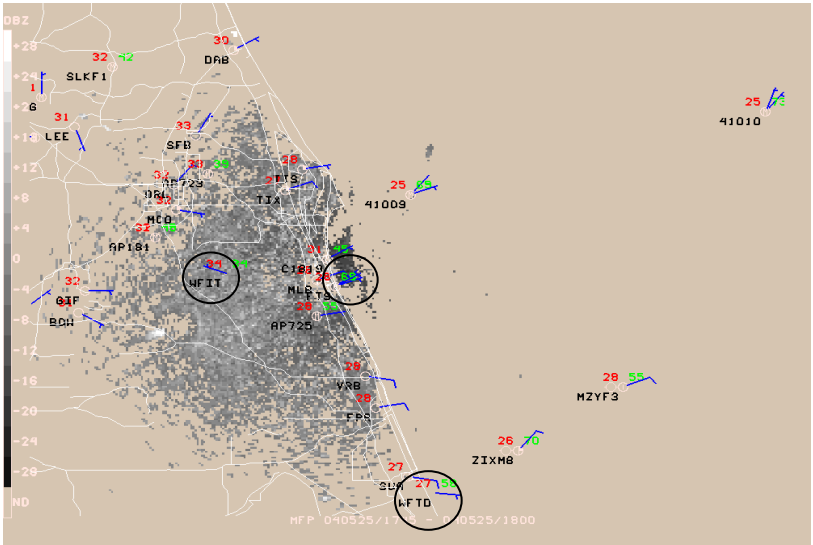


Figure 6: Integrated data from traditional surface observations, a mobile network, and cruise observations on board the FIT Delphinus for 18 UTC 25 May 2004. Circles denote non-traditional sources of data that were integrated into GARP.

APPENDIX D: Integrated Products for use in OCN 1010 and OCN 4911.

Examples of the MODIS-SPoRT SST composite product (Fig. 7a) and the FIT GOES composite product (Fig. 7b) are shown below. *These data (i.e., the composite products) will be integrated into IDV*. Note that the composite products are operational and thus are available in near-real time.

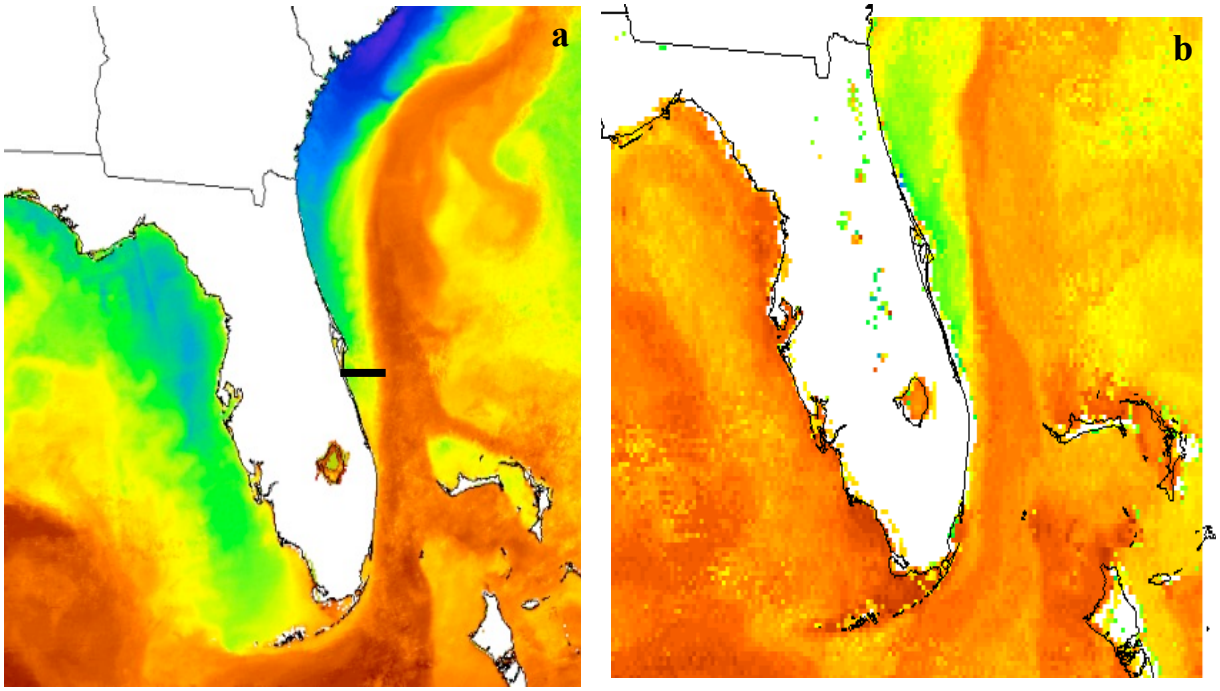


Figure 7: SST composites from a.) MODIS-SPoRT product valid 5 March 2006 (daytime only), and b.) FIT generated GOES product valid 29 May 2004.

Figure 8 to the right depicts an upwelling event and is intended to illustrate the potential benefits for integrating high resolution SSTs within the IDV (and other Unidata software). Once integrated, SSTs can be combined with model winds, for example, as a supplemental tool within OCN 1010 to reinforce such concepts as coastal upwelling.

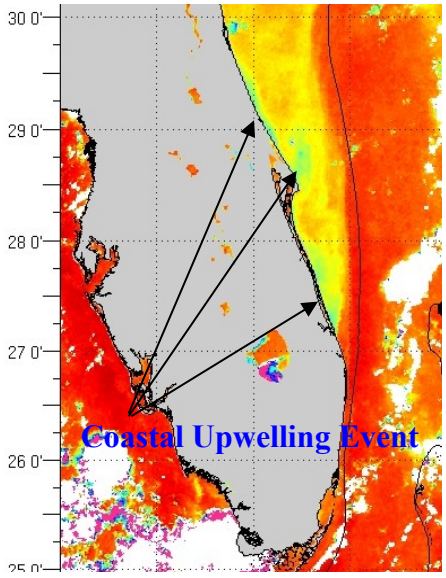


Figure 8: Coastal upwelling event observed by the NOAA-15 1129 UTC overpass 23 Aug 2006.

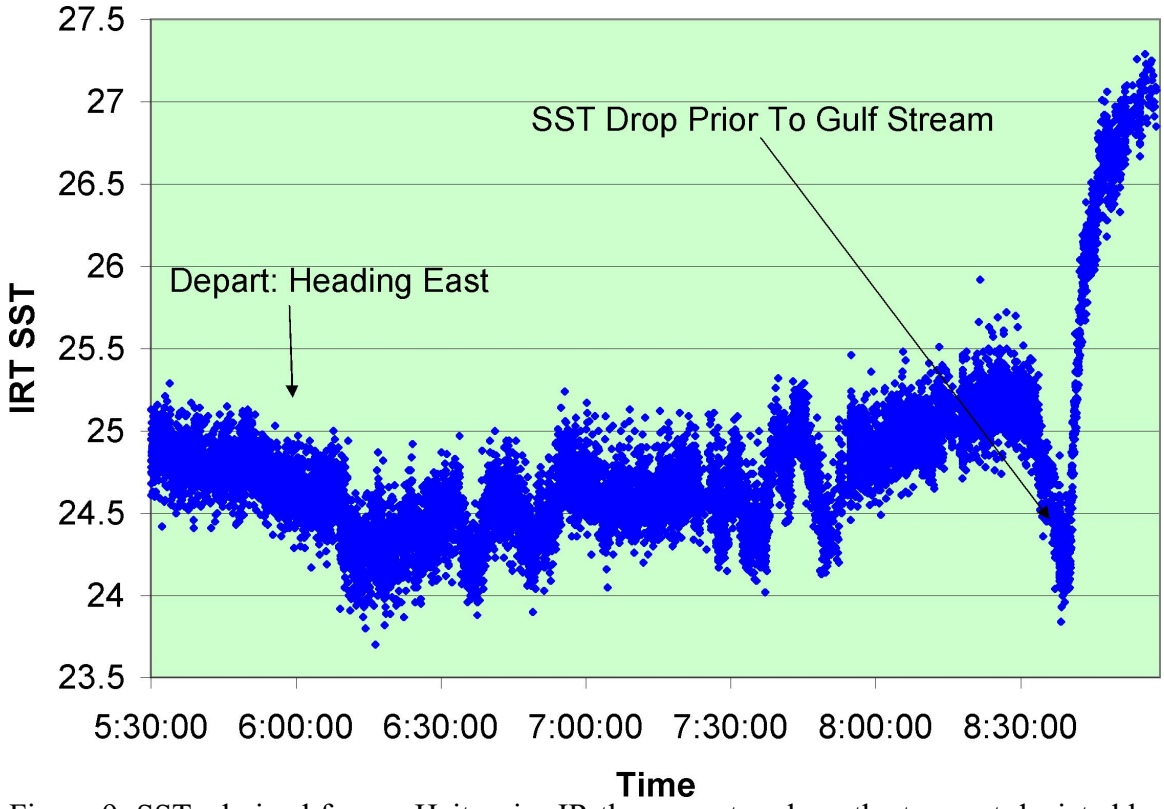


Figure 9: SSTs derived from a Heitronics IR thermometer along the transect depicted by the thick solid line in Fig. 7a. Data from an FIT cruise on 20 June 2006.

An example of SSTs measured by the on-board IR thermometer from the 2006 FP campaign is shown above in Fig. 9. The IR measured SST transects that will be taken during early June 2007 will be processed and incorporated into Unidata software. This will facilitate comparison with space-born instrumentation. The new PC lab will be used as a "data collection center" during the field phase of the sea breeze and SST projects.

Table 1: Undergraduate students in the FIT Marine and Environmental Systems program

B.S.	
Environmental Science	**6**
Meteorology	**43**
Oceanography	**29**
Ocean Engineering	**79**

APPENDIX E: FIT Software Bundle

The IT department installs the following software bundle on dual boot systems that are networked on the FIT campus.

Windows XP SP2 (All PC Labs)

Active state ActivePerl 5.8
Adobe Acrobat Reader 7
Adobe SVG Viewer
AFPL Ghostscript
Alice v2.0
Apple Quicktime 7 Player
Audacity
bbMPEG Encoder
Bigloo Scheme Compiler
BlueJ - Java IDE
CLisp - LISP Interpreter
Cyberlink PowerDVD
Cygwin - Linux-like environment for windows
DataFIT 6.1 - Curve Fitting and Data Plotting Software
Eclipse 3.2.1 - Java Development Environment
FlaskMPEG - MPEG Encoder
Free Pascal - Pascal Compiler
GHC 6.4.2 - Haskell Compiler
GSView - PostScript viewer
GIMP 2.0-Image Editing Software
GNAT Ada95 Compiler with AdaGIDE
IrfanView-Image viewing software
Itunes
Jester package for Java
JCreater LE with Java2 SDK Reference
JUnit, JUnitX and JUnit-addons for Java
Macromedia Flash Player
Macromedia Shockwave Player
Matlab 2006b w/ Toolboxes
Microsoft Frontpage 2003
Microsoft Office 2003 Pro
Microsoft OneNote 2003
Microsoft Producer 2003
Microsoft Project 2003 Professional
Microsoft Publisher 2003
Microsoft Visio 2003 Professional
Microsoft Visual Studio 2005 Pro (C++.NET,VB.NET C#.NET, J#.NET)
Mozilla 1.7
Mozilla Firefox 1.5
National Instruments Labview 8
Netbeans IDE 5.0 - Java Development Environment
NoUnit package for Java
Open Watcom 1.5 IDE for C++ and FORTRAN
OpenOffice.org 2 Office Suite
Panda3d
Polymath 6.1 - Computation System
Pro/Engineer Wildfire 3.0
Pro/Mechanica Wildfire 3.0
proTeXt w/MikTeX - TeX editing software
Python 2.5
Realplayer 10.0
Ruby 1.8 Compiler with SciTE editor
SPSS 14.0 w/Advanced Toolboxes
SSH Secure Shell Client with SecureFTP Client
Subclipse plug-in for Eclipse
Sun Java SDK 5.0
SWI Prolog Interpreter
TeXnicCenter IDE
7zip
Virtualdub - AVI Encoding software
WinAMP 5.3
Windows Media Encoder 9
Windows Media Player 10
XEmacs

GNU Linux (All PC Labs)

Adobe Acrobat Reader 7.0
ANT - Java Build Tool
AFPL Ghostscript
Anjuta C/C++ IDE

BlueJ - Java IDE
CVS - Concurrent Version System
Dia - Diagramming Tool

GCC 3.4-Compiler Collection (C, C++,FORTRAN77 Java)
Grace-Plotting Software
GIMP 2 - Image Manipulation Software
Jester package for Java
KDevelop - Integrated Development Environment
Mozilla 1.7
MPlayer - Multimedia file player
NoUnit package for Java
Perl 5.8
Quanta - Web development tool
Sun Java SDK 1.5

TeTeX - TeX editing software
XEmacs

XMMS Audio Player

CLISP - Lisp Interpreter
DDD - Data Display Debugger
Eclipse 3.2.1 - Java Development Environment
GCC 4.0.3 - Compiler Collection (C, C++ FORTRAN77, Java)
GSView - Postscript Viewer
Glade - GTK Interface Designer
JUnit, JUnitX and JUnit-addons for Java
KOffice - Office Suite
Mozilla Firefox 1.5
National Instruments Labview 8
OpenOffice.org 2.0 Office Suite
Python 2.4.2
Ruby 1.8.5 Compiler
NetBeans IDE 5 - Java Development Environment
Trolltech QT Toolkit
Ximian Evolution - Calendaring, Email, and Tasks