

Welcome CAP Executive Board



June 3, 2010

The background of the image is a tropical sunset. The sun is a bright, glowing orb in the center of the frame, partially obscured by soft, white and yellow clouds. The sky transitions from a deep orange near the horizon to a pale blue at the top. Two palm trees are silhouetted against the sky, one on the left and one on the right. The ocean is visible at the bottom, with gentle waves. The overall mood is warm and serene.

Mahalo Nui Loa

**CSE Department Chairman Keith Marzullo
and the Ukulele Class of 2010
for sharing their musical talents!**

CAP Leadership 2009 - 2010



**CAP Chairman:
Danny Brown, Ph.D.
VP Technology Development,
Cymer**



**CAP Vice Chairman:
Anton Monk, Ph.D. UCSD '94
Co-founder & VP Technology
Entropic Communications**

Welcome New CAP Executive



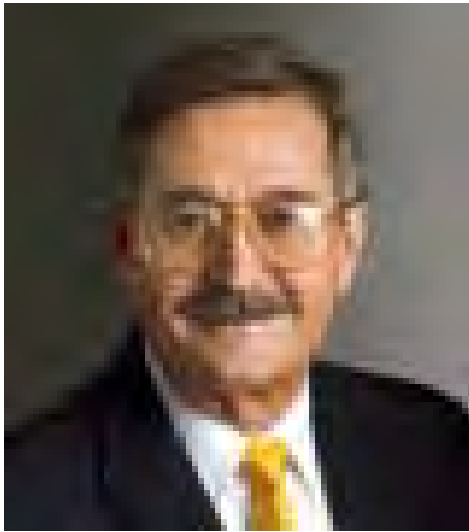
Leo Holland
Head of Advanced Projects
Advanced Technologies Group
General Atomics

Welcome New CAP Executive



Jason Butchko
VP and GM, Networks
Ideal Industries

Welcome New CAP Member!



communications

Mike Andrews, Ph.D.
Chief Technology Officer
L-3 Communications

Welcome New CAP Members!



**semantic
system™**
Biologically Inspired Intelligence

Welcome Distinguished Students

- Jacobs School Scholars and Fellows



- New TESC President: Jack Ly, MAE '11



- IEEE President: Jordan Rhee, ECE'10





Jack Ly, **NEW** TESC President, MAE '11

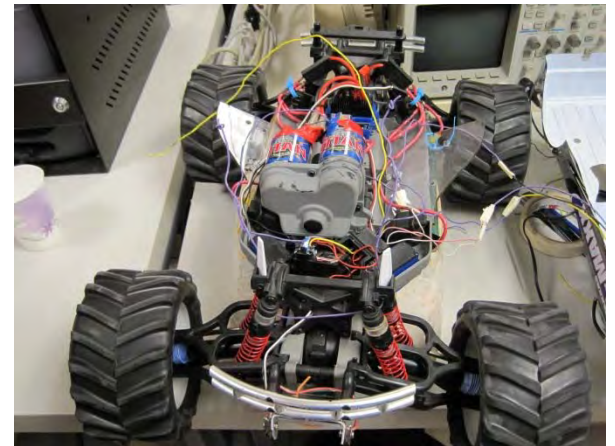
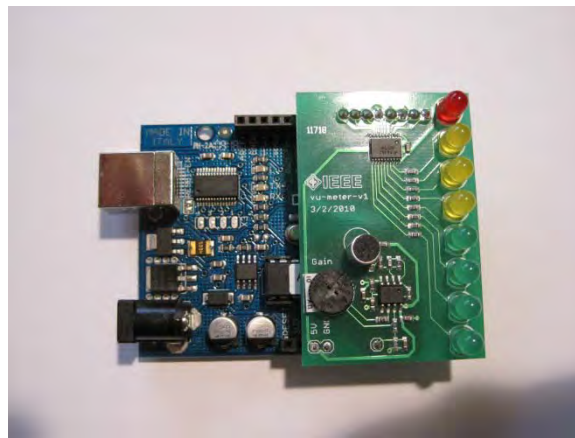
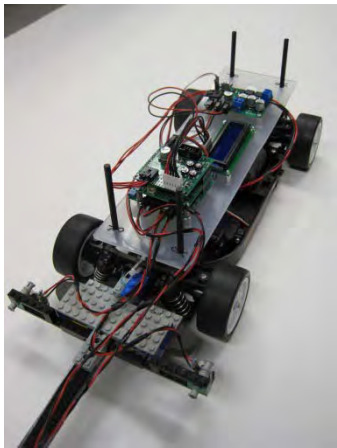
jkly@ucsd.edu

<http://tesc.ucsd.edu/>



IEEE

Jordan Rhee, Outgoing President
Mike Ortiz, Robomagellan Lead





ViaCar Competition



1. UCLA (7ft/s)
2. UCSD (5ft/s)

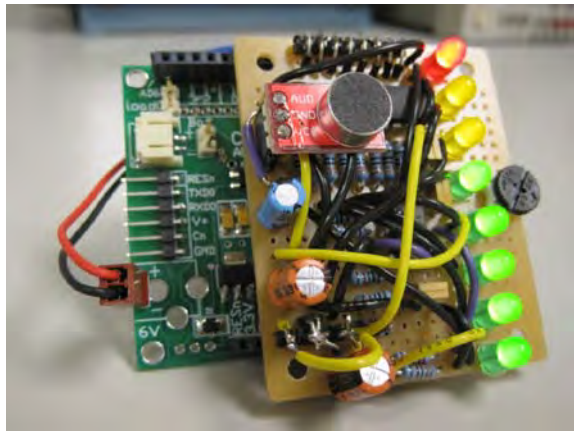
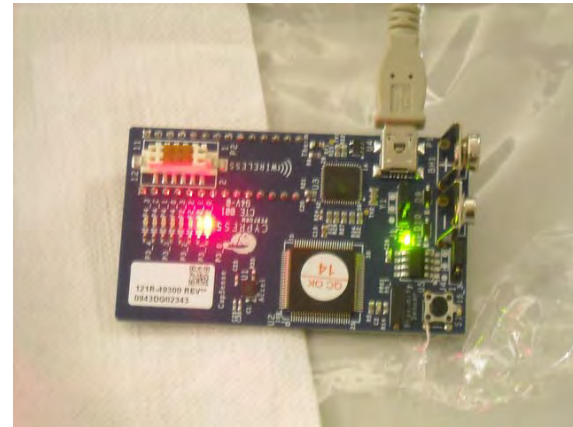


Technical Workshops

ARM Workshop



Cypress PSoC Workshop



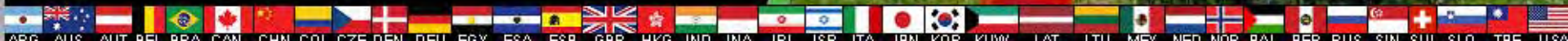
ROBOMAGELLAN

- International Robotics Competition
- Autonomous Ground Vehicle
- Interdisciplinary Project
- Highly Challenging
- Lots of Fun



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ROBOGAMES
РОБОИГРЫ



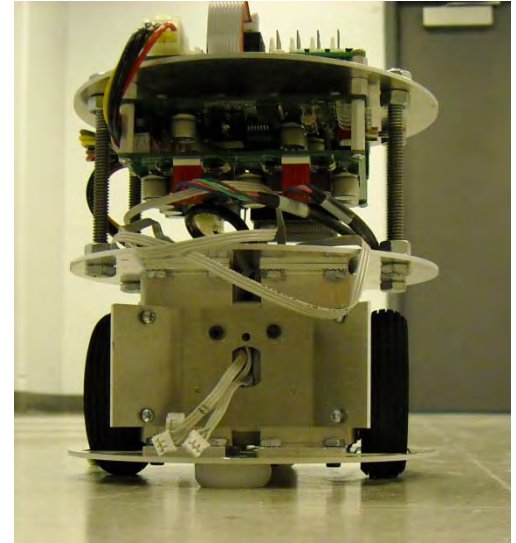
Thank you!

ViaSat

NORTHROP GRUMMAN



Vistaprint



Dean's Report

Dean Frieder Seible
Jacobs School of Engineering



Engineering Building Unit IV

http://smeb-bldg.ucsd.edu/view/viewer_index.shtml?id=593



- Home for NanoEngineering, Structural Engineering, Visual Arts Studios
- Serving: 1180 students; 50 faculty
- Construction expected to be completed 2012/2013
- Architects: Muller/Hull and Safdie Rabines Architects



5/21/10 Engineering Building Unit IV Site



ag-I



Jacobs Hall



Engineering
Student
Services

FROM
FINEST
CHAIRS
ONLY

Engineering Student Services





Gordon Center
von Liebig Center





Qualcomm Conference Center



Team Internship Program Summer 2010 *preview*



Team Internship Program	2003	2004	2005	2006	2007	2008	2009	*2010
Students	3	18	35	50	61	72	93	120
Teams	1	5	9	18	20	29	37	52
Companies	1	5	8	14	15	14	16	39
New sponsors	1	4	5	8	4	3	6	23
Returning sponsors	3	1	3	6	11	11	10	16
Multiple teams			1	3	3	8	7	7
International teams				1	2	8	0	6

* In progress

Team Internship Program Summer 2010

52 Teams, 39 Companies

6 International Teams

Schaan, Liechtenstein



HILTI

Beijing, China



QUALCOMM

Osaka, Japan



SANYO

Guangzhou, China



SUN Engineering Consultants International, Inc.
瀚阳工程咨询有限公司

Shenzhen, China



SOLAR POWER INC.
Energy for Life™

Seoul, Korea



QUALCOMM

SANYO



Hiroshi Hanafusa
GM, Energy Solutions
Business Division
Sanyo Electric Co.

Tony Li
MBA, Rady School of
Management 2011

Revathi Dukkupati
Jacobs School
MS, Electrical & Computer
Engineering 2010

Dean Frieder Selble
Jacobs School of Engineering

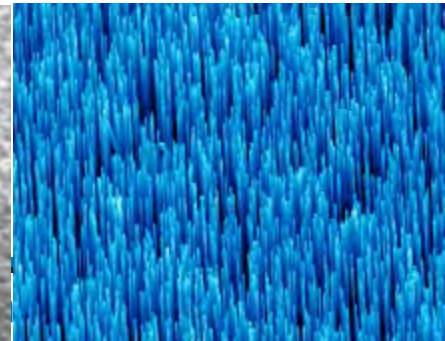
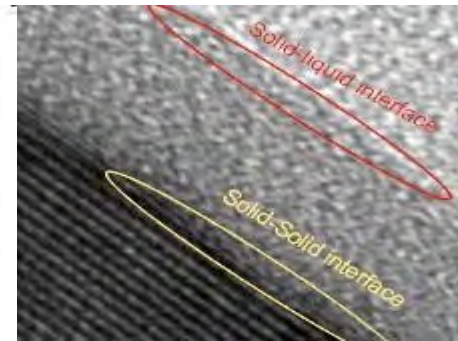
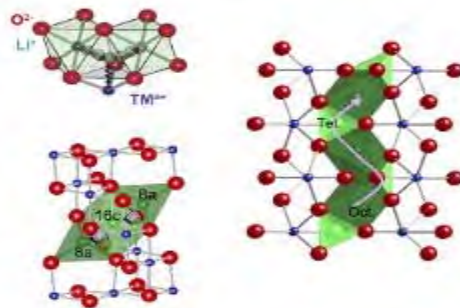
Inaugural NanoEngineering Class

Starts Fall 2010:

- **13 students already enrolled**
- *Advanced Degree Program Approved yesterday!*

Objectives:

- Provide grounding in nanoscale science and engineering, with understanding of materials at the atomic and nanometer scales, including the relationship between the scale and the properties of materials.
- Educate a new generation of engineers who can seed high-technology companies as nanotechnology results in a new industrial revolution.
- Form strong multidisciplinary educational links through joint team projects that cross the traditional areas of science and engineering.



Master of Advanced Studies Degree Program

- Finish in 2 years (9 courses, 36 units), team project
- Targeted to professional engineers: convenient course times
- Lectures available online



Approved (Pending UC Presidential Signature)

Architecture-Based Enterprise Systems Engineering (Computer Science/Mechanical and Aerospace Engineering)

Submitted for Approval

- Wireless Embedded Systems (Electrical and Computer Engineering/Computer Science Engineering)
- Medical Devices (Mechanical Engineering/Bioengineering)
- Simulation Based Engineering (Structural/Mechanical and Aerospace Engineering)
- Structural Health Monitoring (Structural/Electrical and Computer Science/Mechanical and Aerospace Engineering)

Faculty Proposed Recruitment In Our Focus Areas

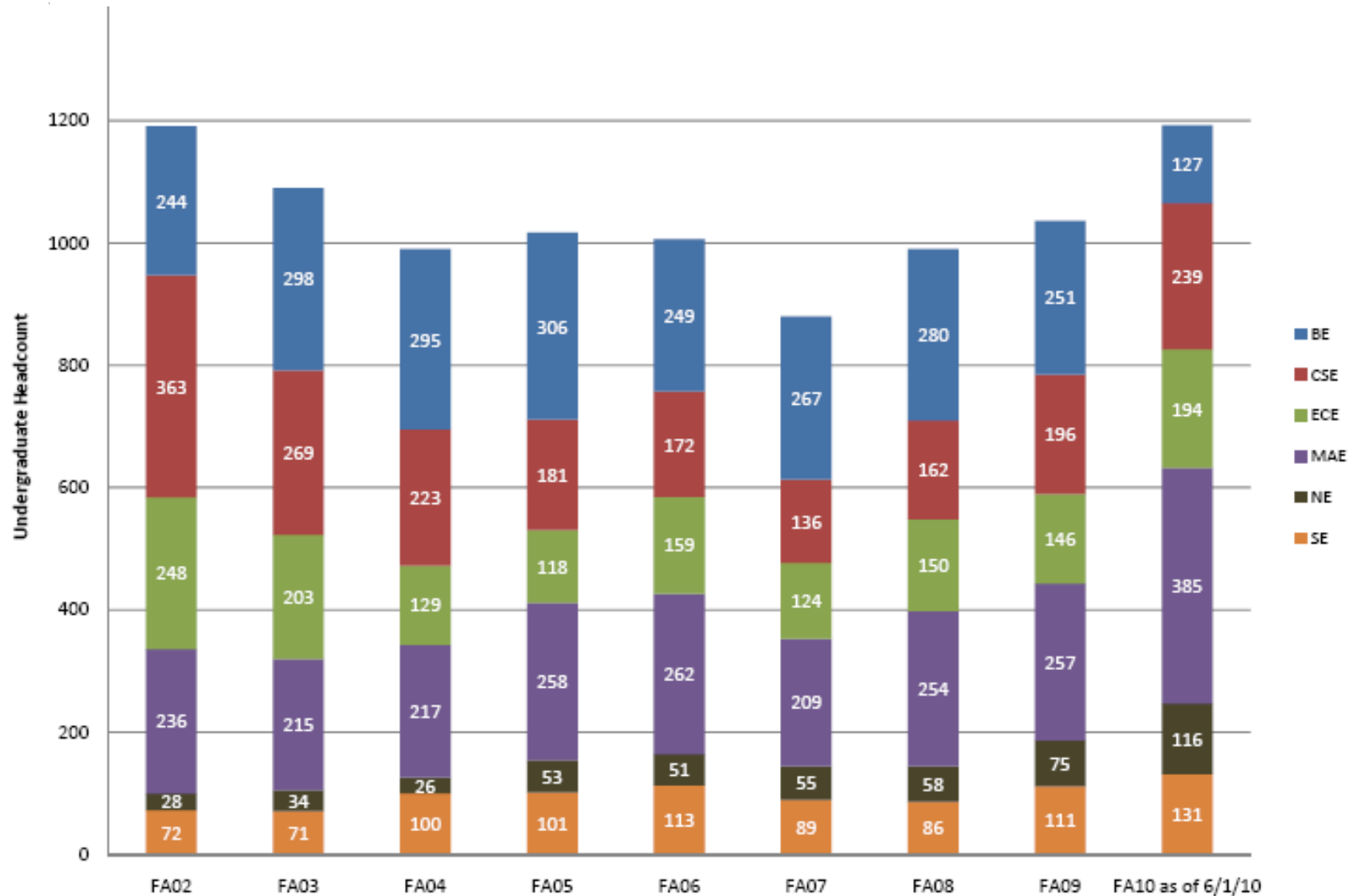


1. Applied Algorithms (software/graphics)
2. Excellence FTE (diversity leadership)
3. Biochemical, Bioelectronics/optics OR Neuroengineering
4. Aviation safety of composite structures
5. Environmental engineering (modeling)

Requests for Future Hiring

- Excellence FTE (visiting)
- Embedded systems (healthcare systems)
- Nanotechnology (energy/environment)
- Electronic devices and materials
- Chemical engineering
- Structural safety/blast mitigation
- Mechanics/design

Jacobs School New Undergraduate Engineering Enrollment



*subject to 3rd week enrollment changes in fall

Possible Strategies to Improve Recruiting and Retention of Underrepresented Students

- **Role Models and Mentoring for Retention**

Faculty Recruitment
Visiting Faculty and Scholars
Alumni and Industry Connection
Peer Tutoring Program
Workshops and seminars

- **Scholarships/Fellowships for Recruiting**
- **Center to Focus Efforts**



Ideas and Support from Industry Partners Needed and Welcome!

Distinguished Faculty Presentation



Professor Jan Kleissl
Mechanical & Environmental Engineering
UC San Diego

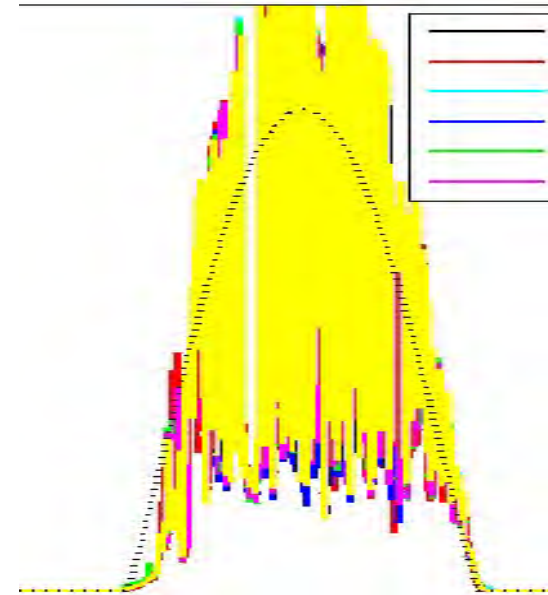
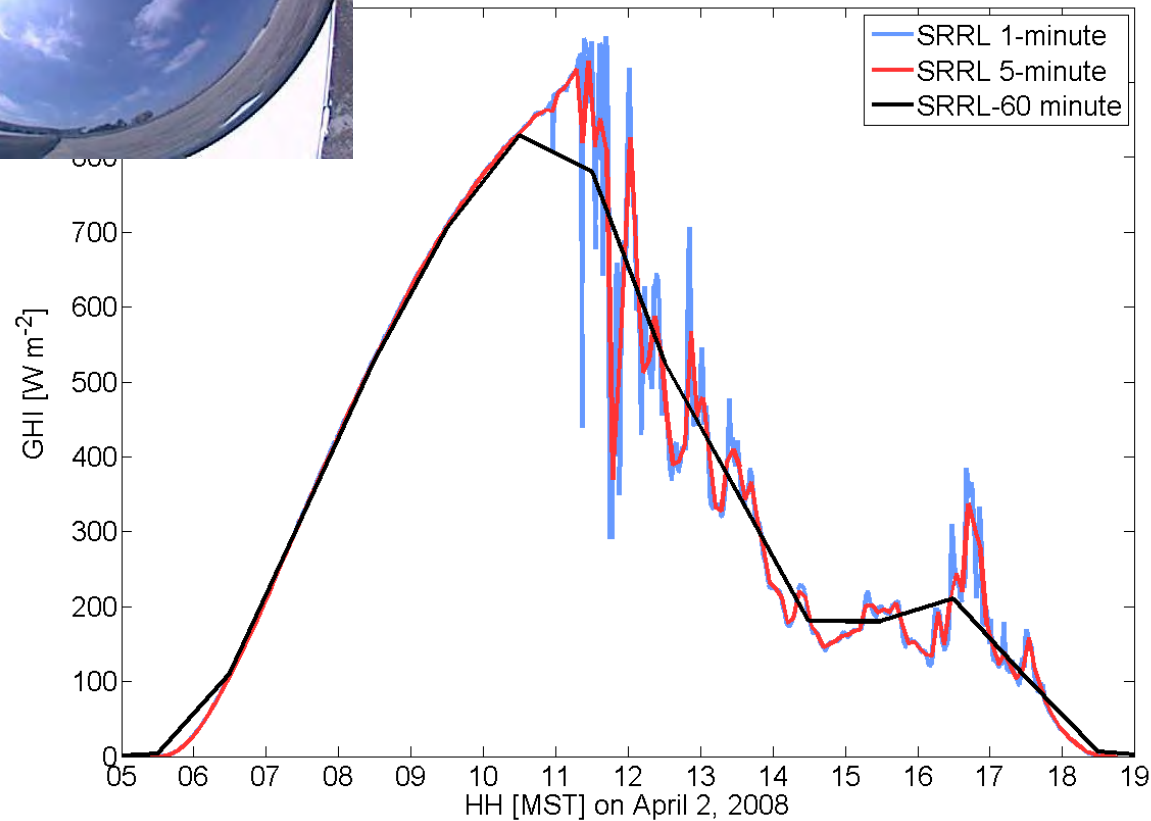
“Data Aggregation for Cloud Prediction”

<http://solar.ucsd.edu>

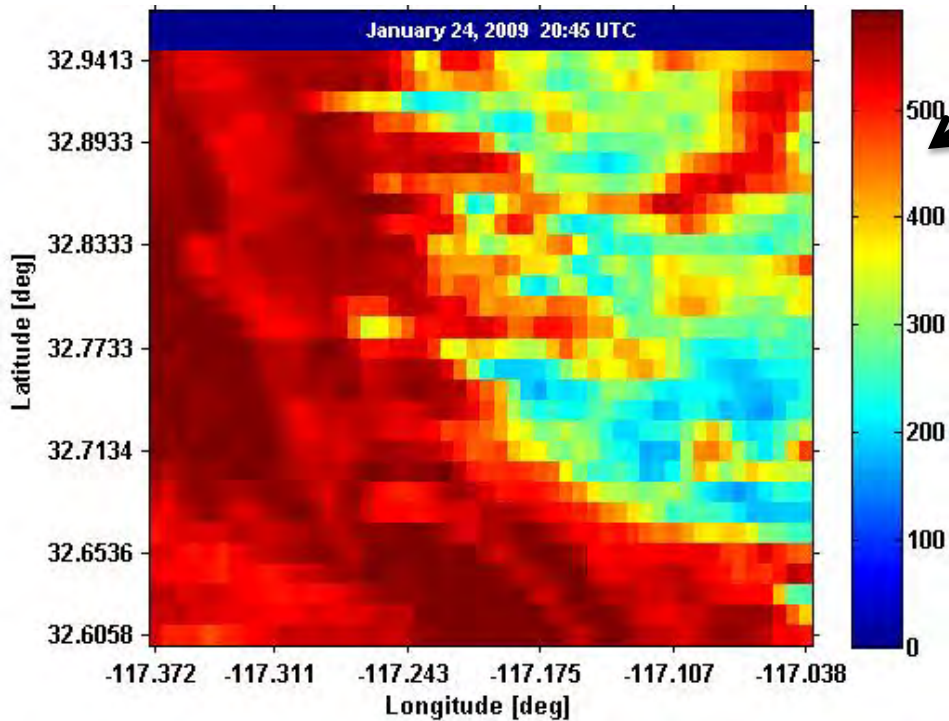
Thesis

- Solar forecasting critical for integration of renewables
- Wind forecasting well established
- Solar forecasting:
 - different techniques required
 - shortage of solar ground measurements
- Solution: aggregate existing metered PV data

The Problem

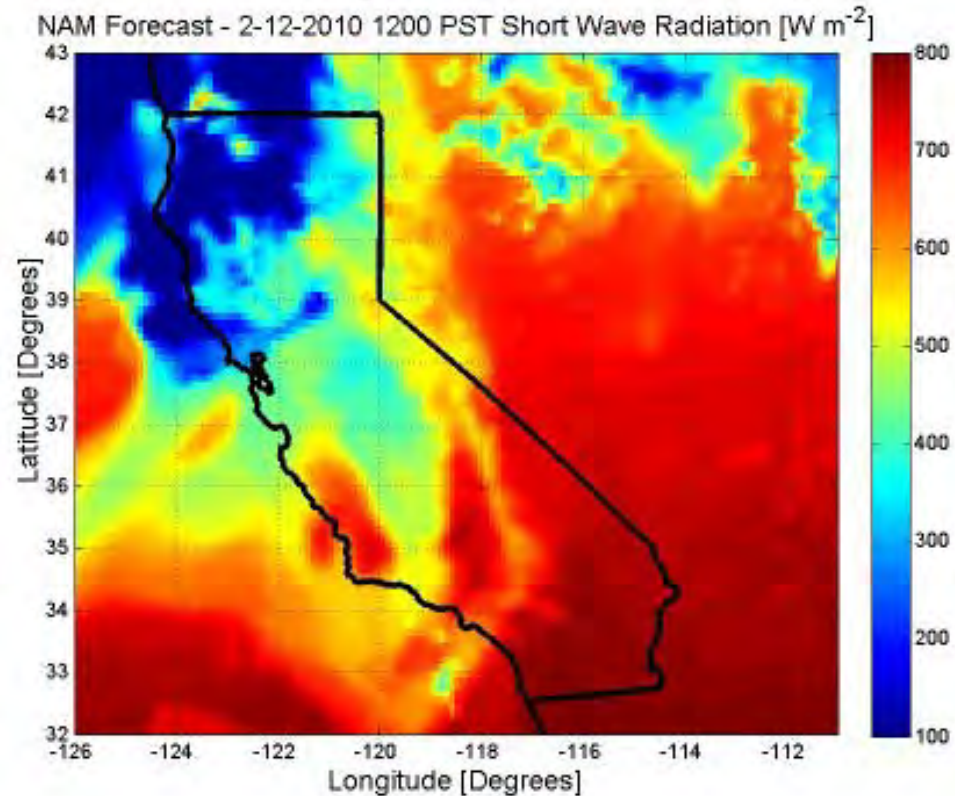


Existing Forecast Products



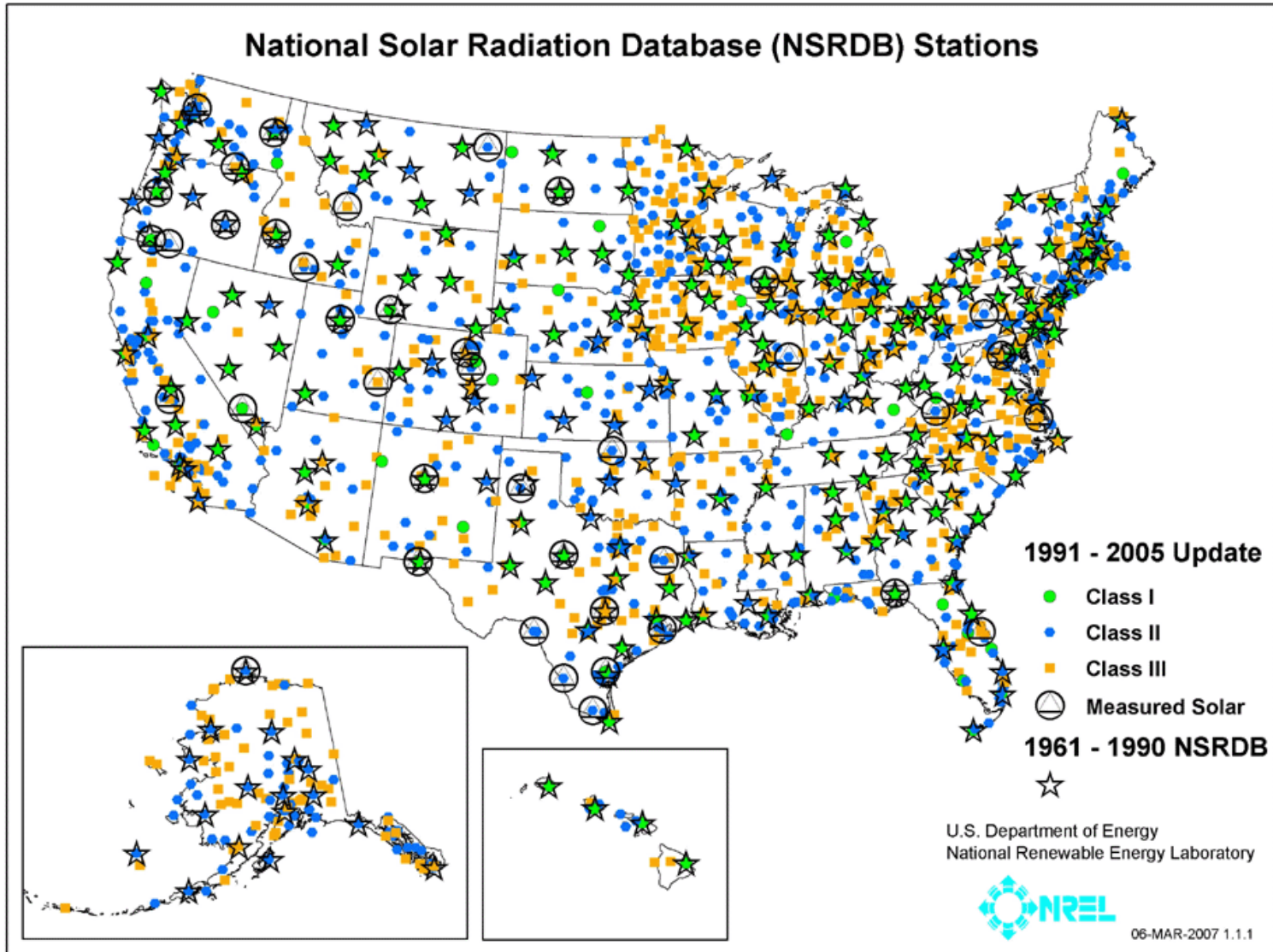
Satellite cloud maps

Numerical weather forecast



Typical errors (RMSE) for
hourly GHI forecasts:
20-40%

The plight of Solar Data

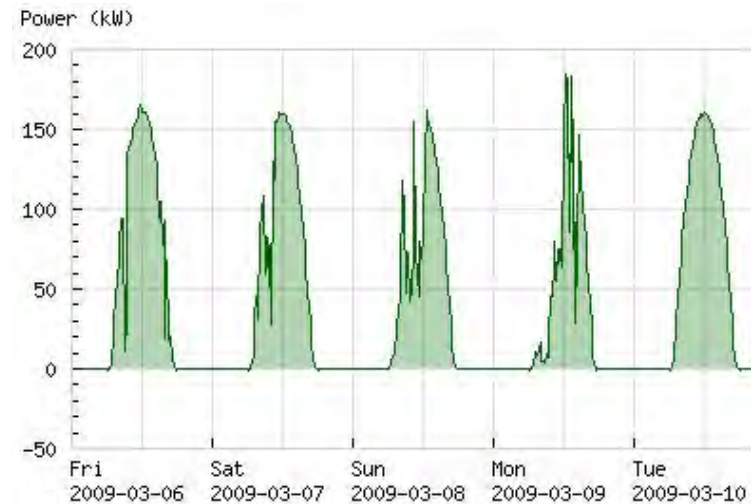


lar

PV Systems in San Diego County



Map courtesy of CCSE



azimuth, tilt, rated efficiency,
shading, location

DJI

azimuth
tilt
PV temperature
clearness index
GHI, DNI

Solar Forecasting

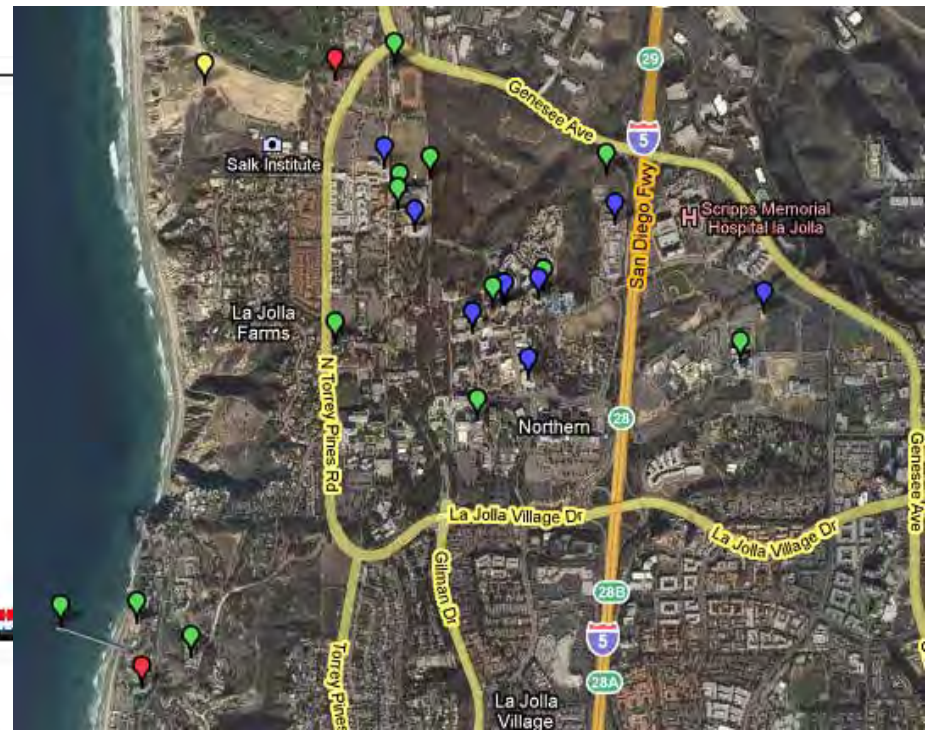
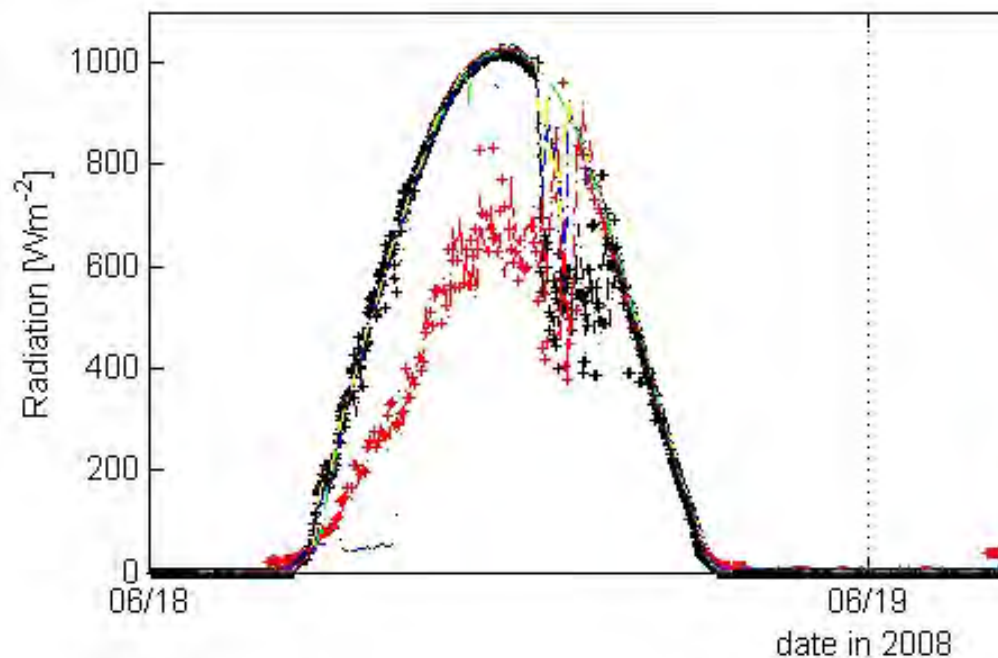
- Meteorological models > 5 hrs
- Satellite cloud maps 30 min – 5 hrs
- Sky Imagers 30 sec – 1 hr
- Network of point sensors up to 5 hrs



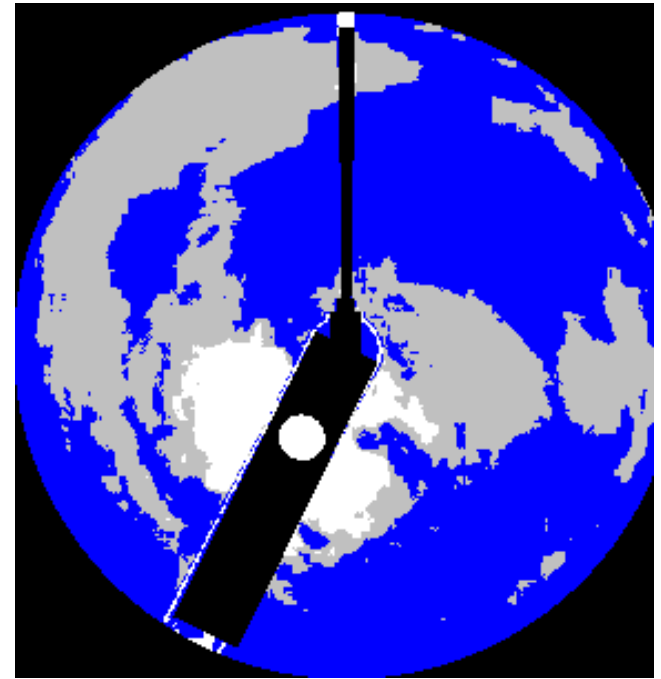
Enable data aggregation to validate
forecast models

UC San Diego Testbed

- Network of ground sensors
- Use PV output as solar sensor
- Detect pattern, calibrate satellite & sky imager

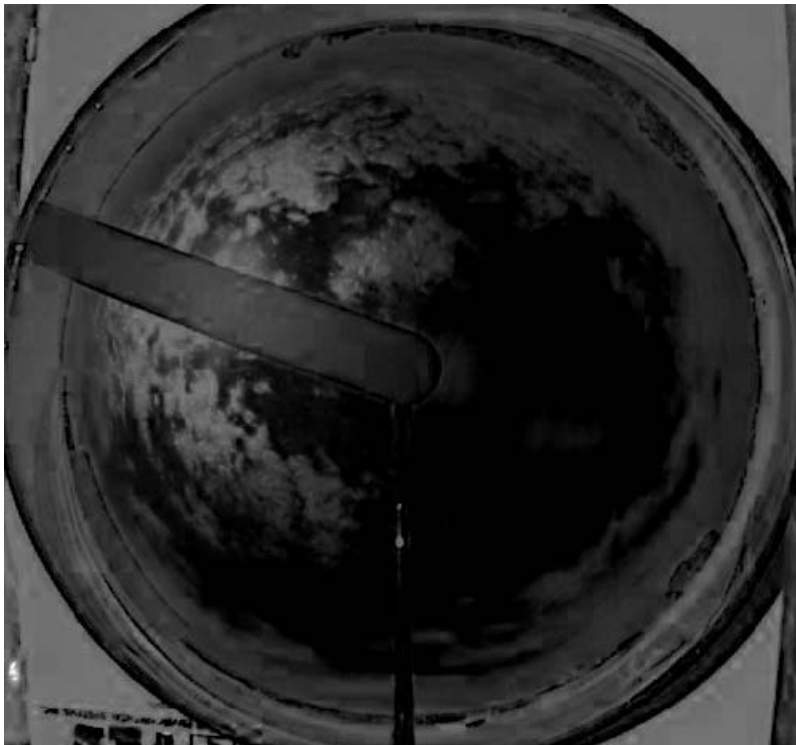


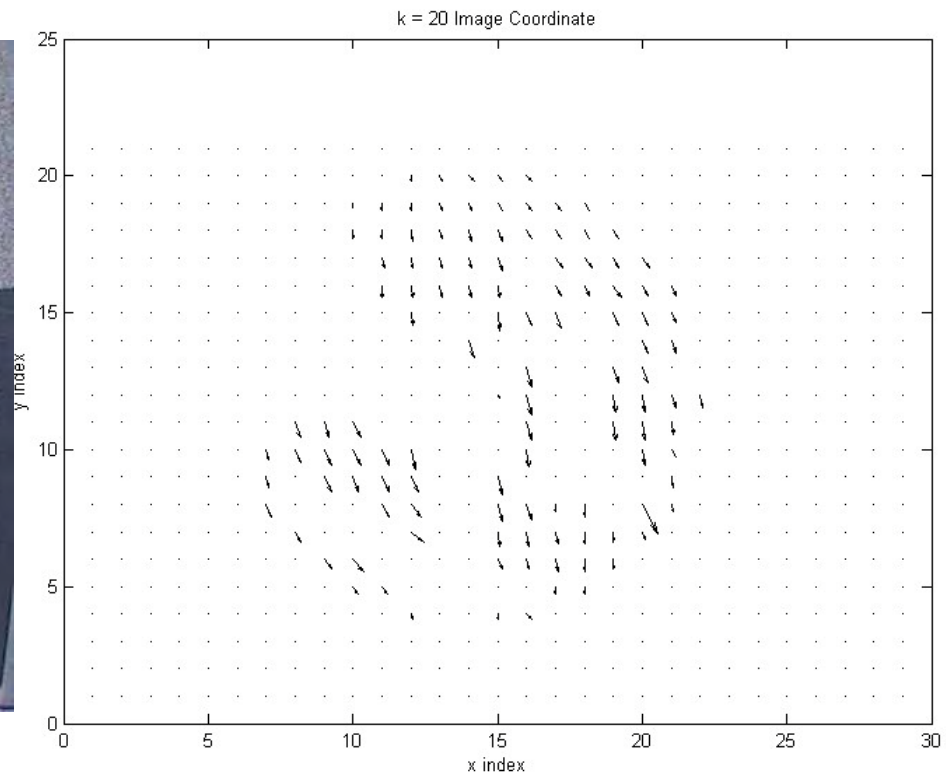
Total Sky Imager: Cloud Detection

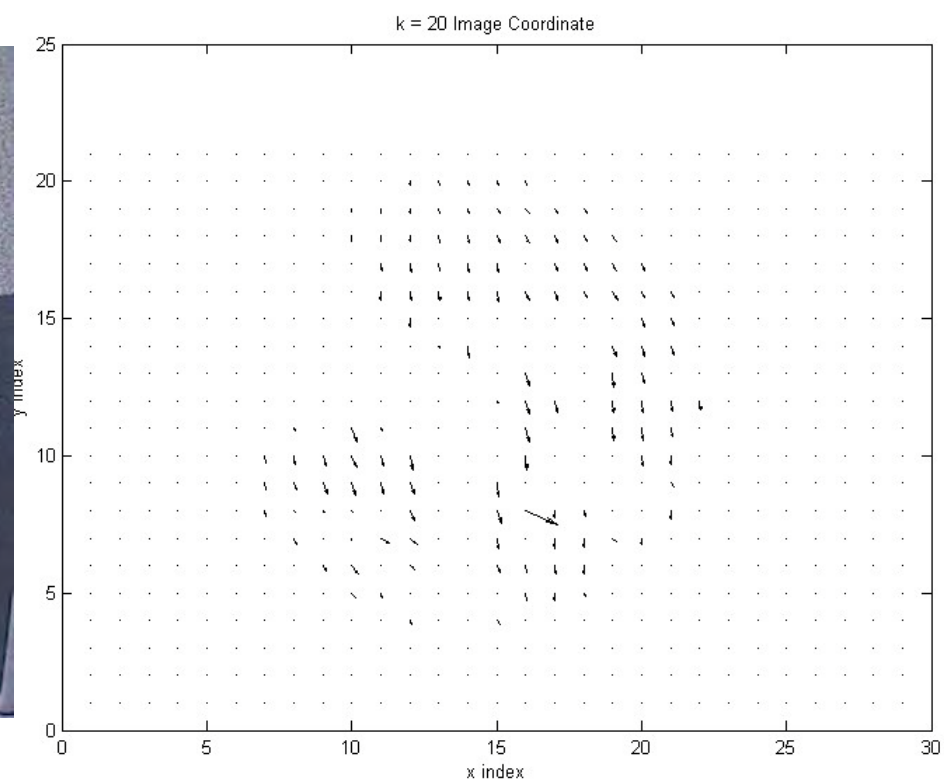


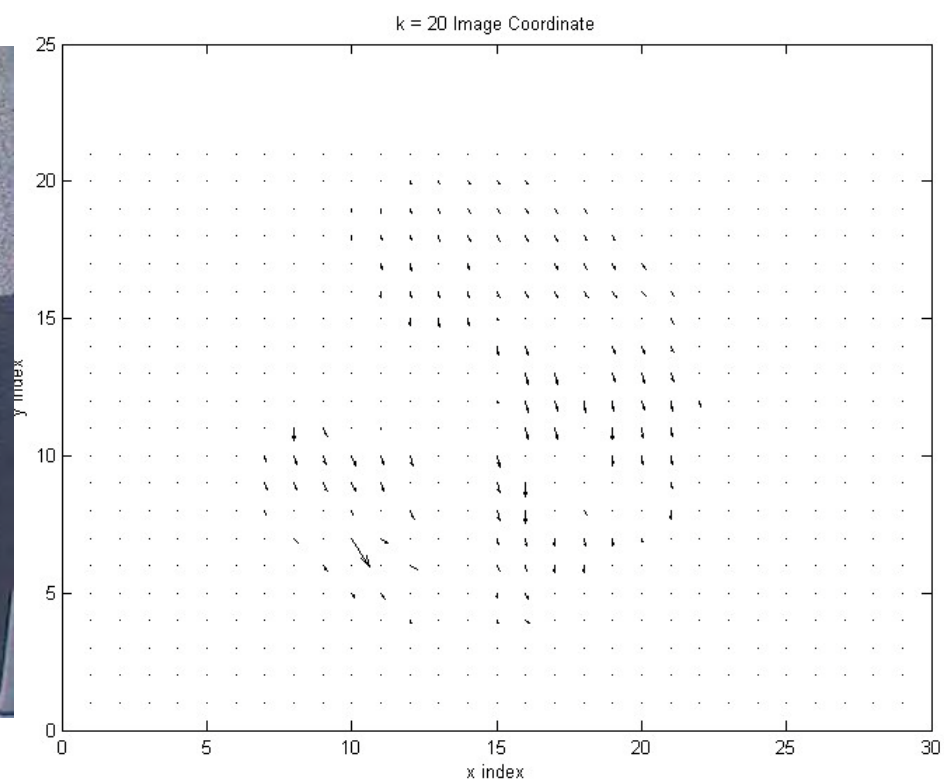
Cloud Identification

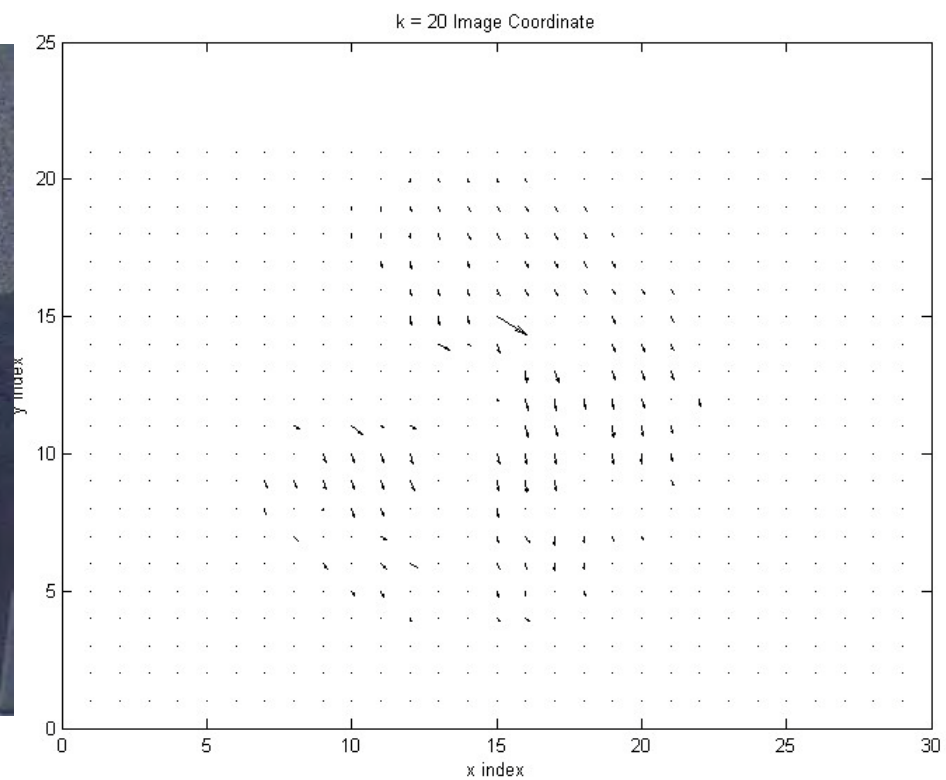
- Use red / blue ratio to identify cloud
- Compute cloud velocity and direction

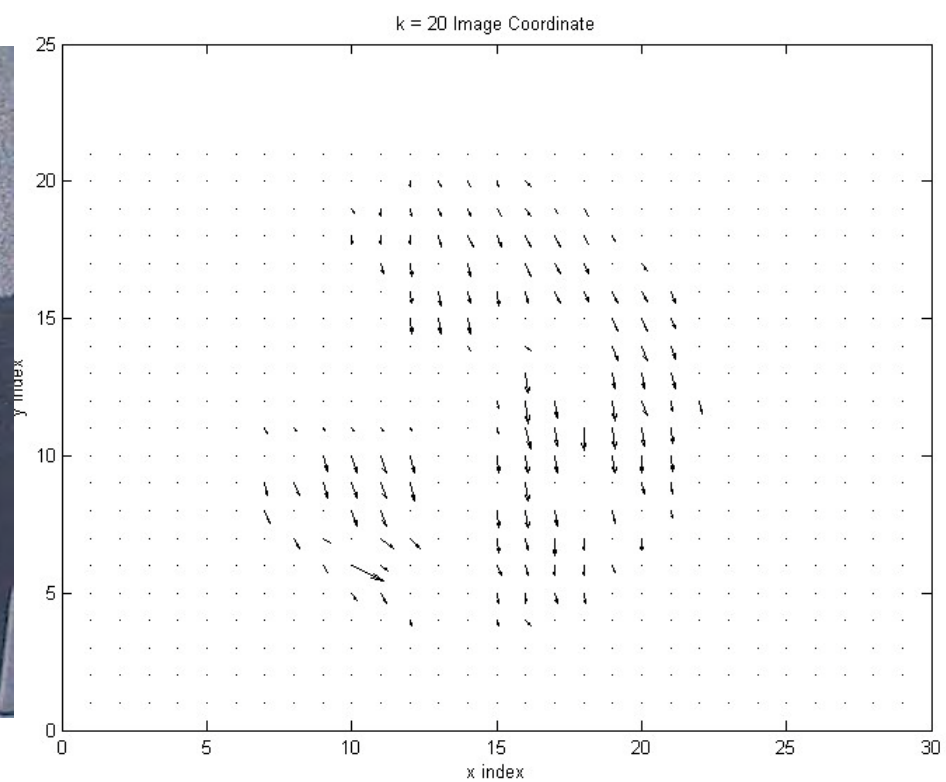








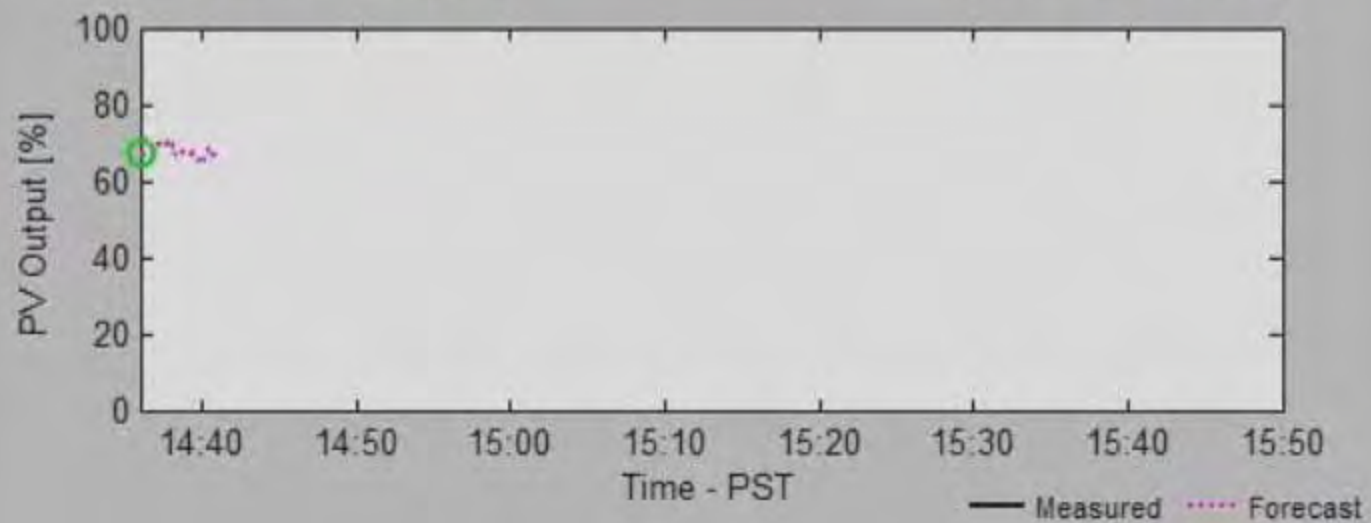






Total Sky Imager, UCSD

2009-09-16 14:36:00 PST



Conclusions

- New tools required for solar forecasting
- Aggregate sky imagery, satellite, with ground measurements of PV output
- Demonstrate in testbeds
- Enable / require data sharing (e.g. CSI PDP)

Acknowledgements

- PhD Students: Chi Wai Chow, Anders Nottrott, Matthew Lave, Patrick Mathiesen (all UCSD)
- Funding from DOE High Solar PV Penetration, CEC, CSI
- Byron Washom

CAP Business



Anne O'Donnell
Director,
Corporate Affiliates Program (CAP)

2010 results:

- 'Outstanding Poster' highlights Jacobs Solar Energy research
- Keynote speaker on Energy and America from the National Academy of Engineering
- 4 CAP sponsors



- You can sponsor the 2011 event

(celebrating UC San Diego's 50th year and Research Expo's 30th)



Embedded Systems Lab



Officially Open!
Inaugural event was May 25th, 2010

- **Embedded computer systems and sensor networks at the forefront of wireless computing:**
 - Hardware synthesis, Theory, Algorithms
 - Energy efficiency
 - Location awareness
 - Sensor networks and actuation
 - High level synthesis for System-on-chip (SoC) design
 - Non-volatile memories systems



Team Internship Program (TIP) Training



 **School of Engineering**
Team Internship Program



- **TIP team members meet for the first time and receive an overview of program requirements.**
- **Team dynamics**
 - Understand and appreciate different learning and communication styles
 - Build high performing teams for the summer
- **Business etiquette and success on the job**
"How to be a Star on the Job"
- **Q&A with TIP alumni panel**

Gordon Engineering Leadership Center Update



SPAWAR Chief Engineer, Rear Admiral Jerry Burroughs, presented keynote at Gordon Leadership Center Forum, April 7th

Accepting Professional Scholar Applications for Fall'10

gordoncenter.ucsd.edu

- 8+10* Undergraduate Student Scholars
- 12+10* Graduate Student Scholars
- 1 Professional Scholars



*Applicants currently under review

Jacobs School Culture: Graduation Ceremonies



**Graduation Ring Ceremony
June 12, 2010 – 8:00pm**

Guest Speaker:

Greg Papadopoulos UCSD '79

**New Enterprise Associates, Inc. and
Former CTO Sun Microsystems**



Jacobs Graduate Student Council

Evening at Jacobs *Green Engineering Focus*

July 21st, 2010, 5:30-7pm

Jacobs Hall (EBUI) - Qualcomm Conference Center



Agenda:

- Graduate Research Presentations
- Table discussions
- Council report

CAP Business



Dates to Remember in 2010:

- June 12 Ring Ceremony, RIMAC Arena, 8PM
- July 21 Jacobs Graduate Student Council Evening with Jacobs
Green Engineering
- September - June 2011: **UC San Diego 50th Anniversary Celebration**
- September 22 *Spirit of Solar* Cruise on San Diego Bay
- Oct 7 CAP Executive Board Meeting

Thank you CAP 2009 - 2010 Leadership



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Danny Brown, Ph.D.
VP Technology Development,
Cymer**



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Co-founder & VP Technology
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