

UT Marine Geology and Geophysics Field Course



Dr. Sean
Gulick,
Research
Professor
UT Austin



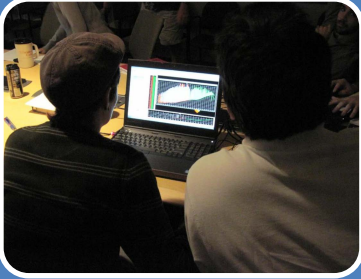
Mixed field and lab, hands-on, group based,
mixed grad-undergrad immersive learning
linked with research program

Also funded externally-

Sponsors (also invited to student presentation day)

- Austin Pixel Press
- Chevron Corporation
- ConocoPhillips Company
- ExxonMobil Corporation
- Marathon Oil Corporation
- Arthur E. Maxwell Graduate Fellowship in Geophysics
- The Scott Petty Foundation
- SEG Foundation
- Statoil
- Total S.A.
- Quarles van Ufford UTIG Field Endowment

MG&G Field Course Structure



Phase 1

- Classroom lectures on the theoretical basis for research methodologies
- Labs on methods for seismic and geological data collection and seismic software processing packages



Phase 2

- One full week of field work in the Gulf of Mexico and continental shelf
- Use a large hired research vessel and smaller UT-owned coastal vessel.
- Each day one team remains in the shore lab to process data



Phase 3

- Team-based data analysis and interpretation
- Additional lectures on data analysis, interpretation, and visualization take place
- Capstone Group Presentations



Phase 1 Examples

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100
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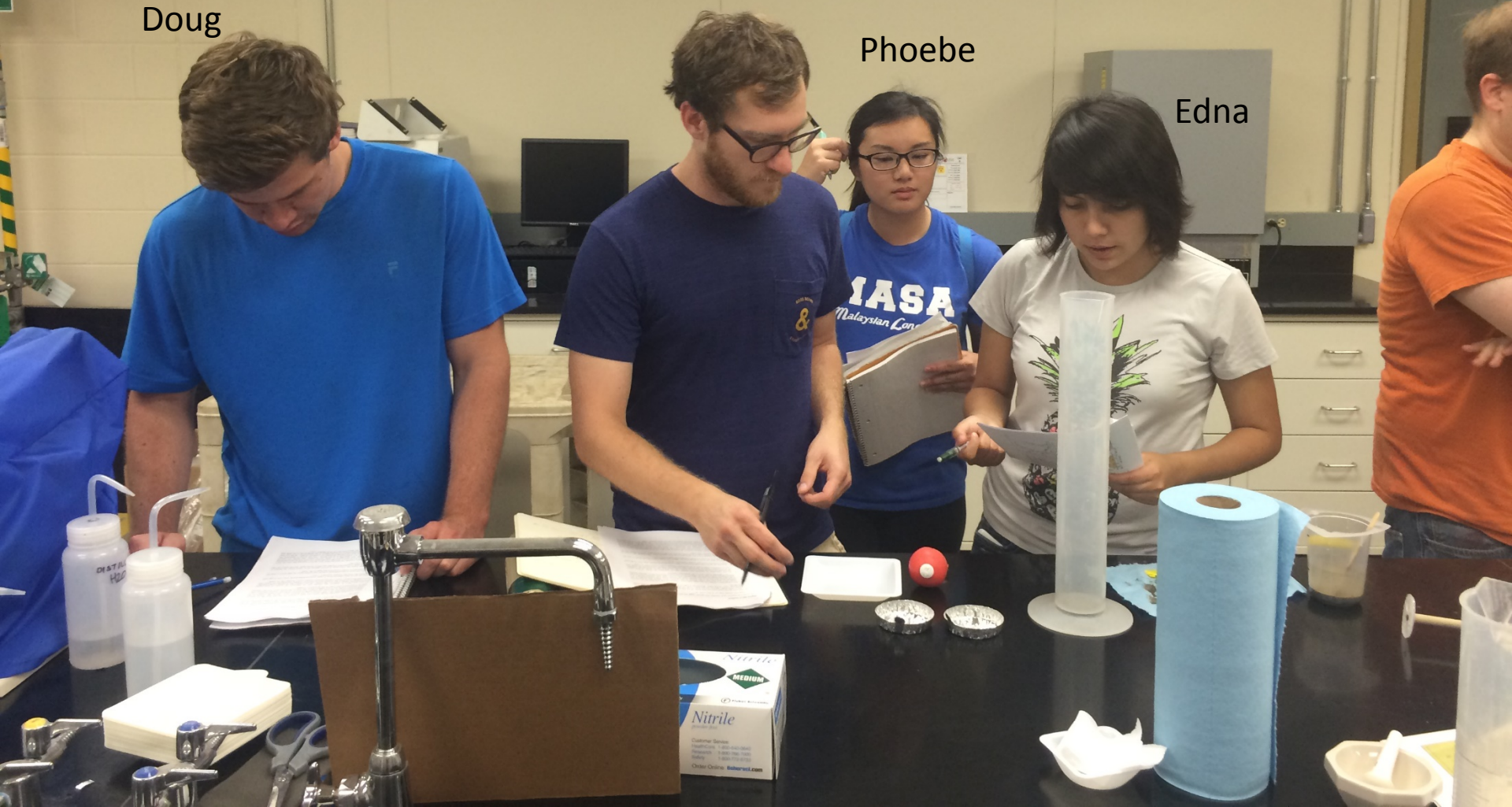
Team 2

Doug

Kris

Phoebe

Edna







Phase 2: Field













R/V Scott Petty

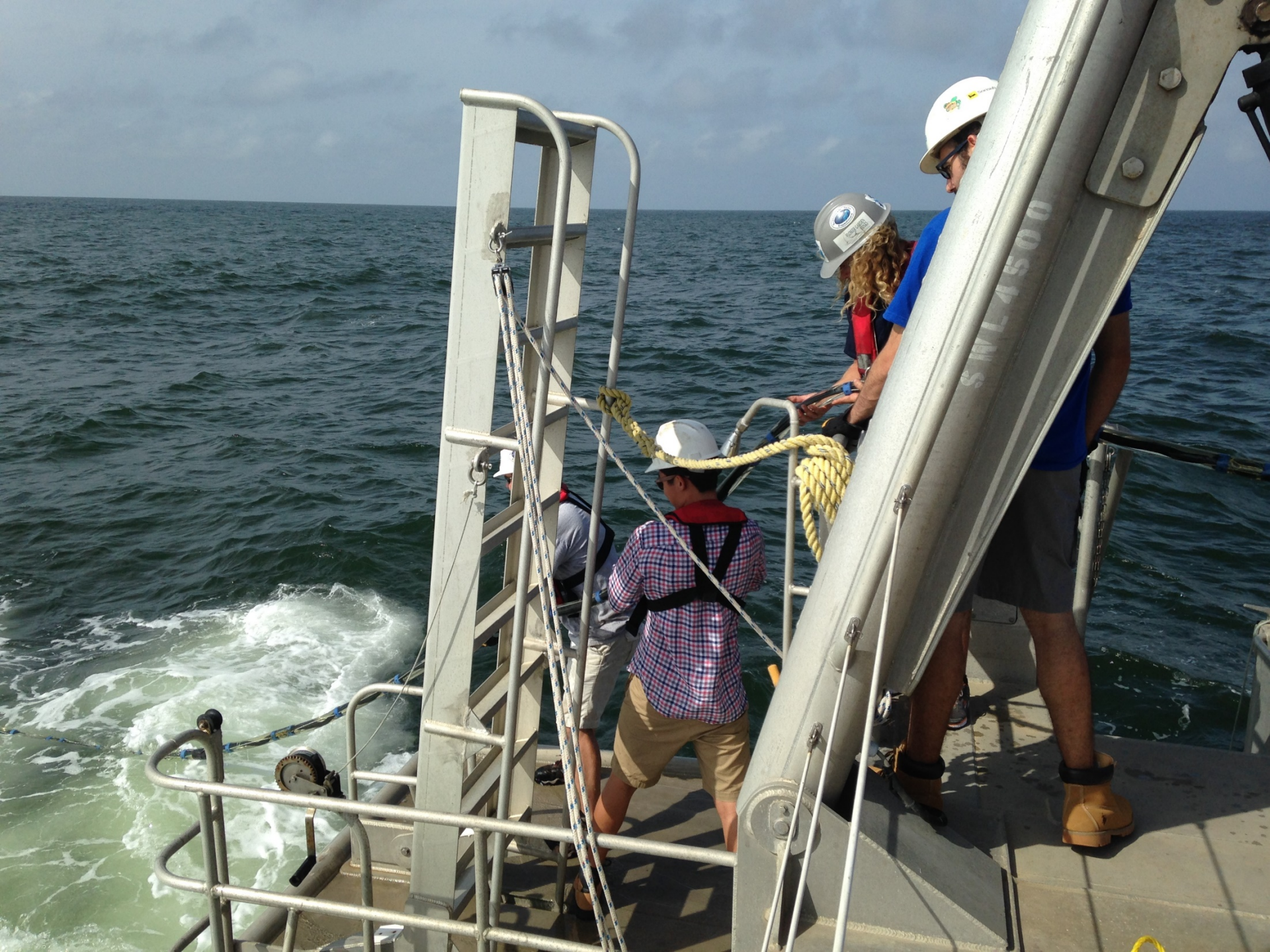


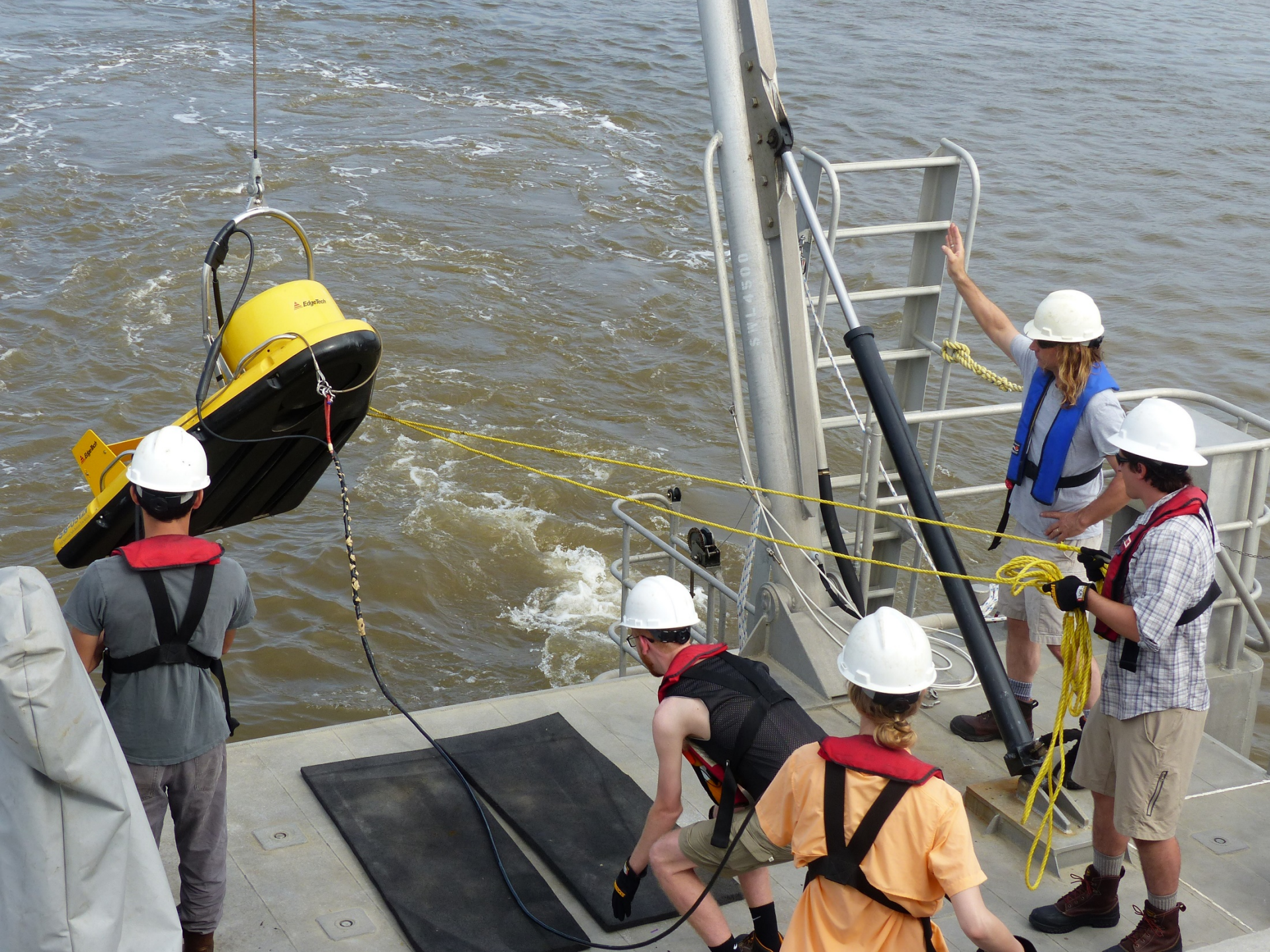


Manta







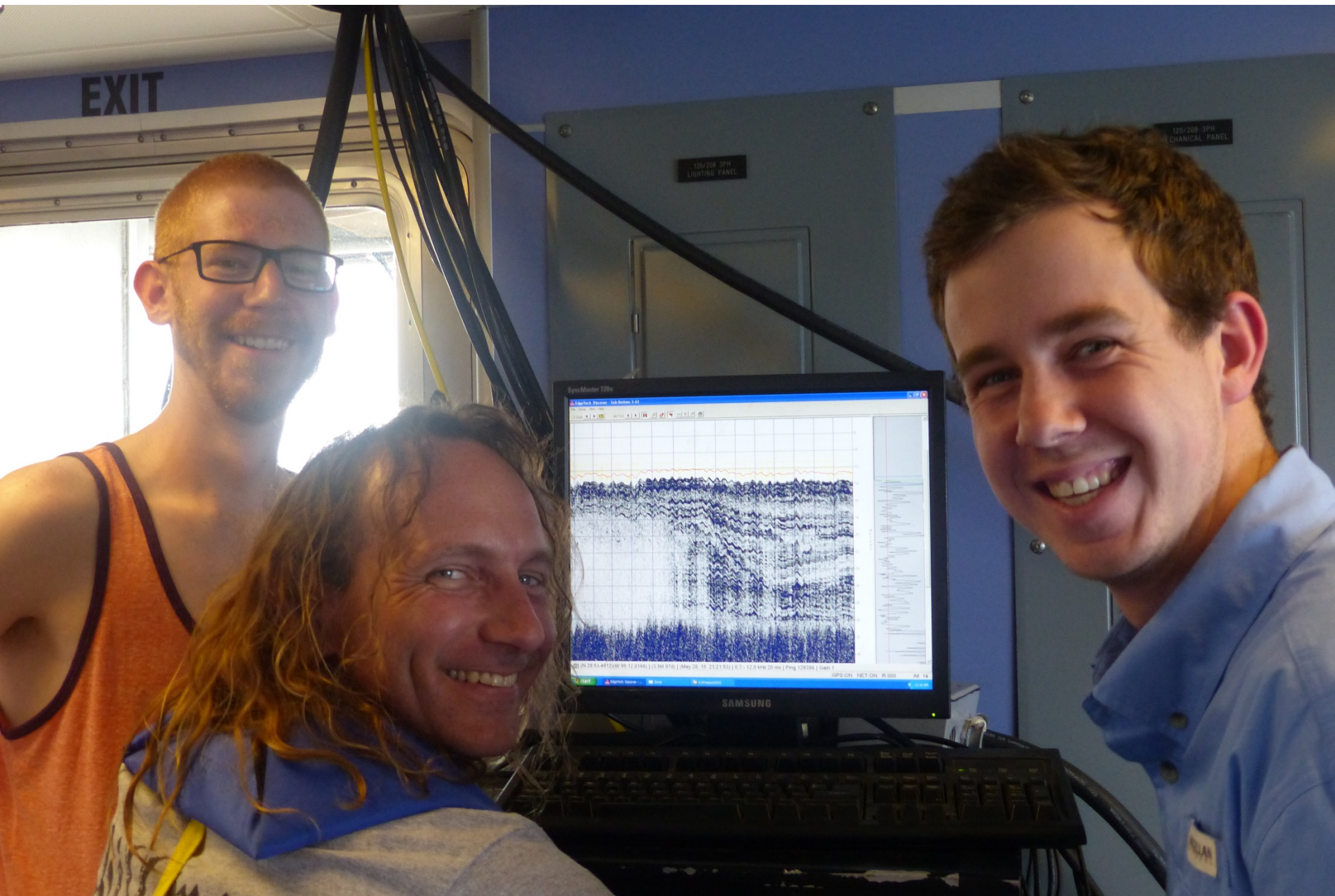






The pride and winning tradition of the
state of Texas will not be entrusted to the weak
or the timid."
-Darell K. Royal

RED RIVER RIVALRY
October 11th, 2014





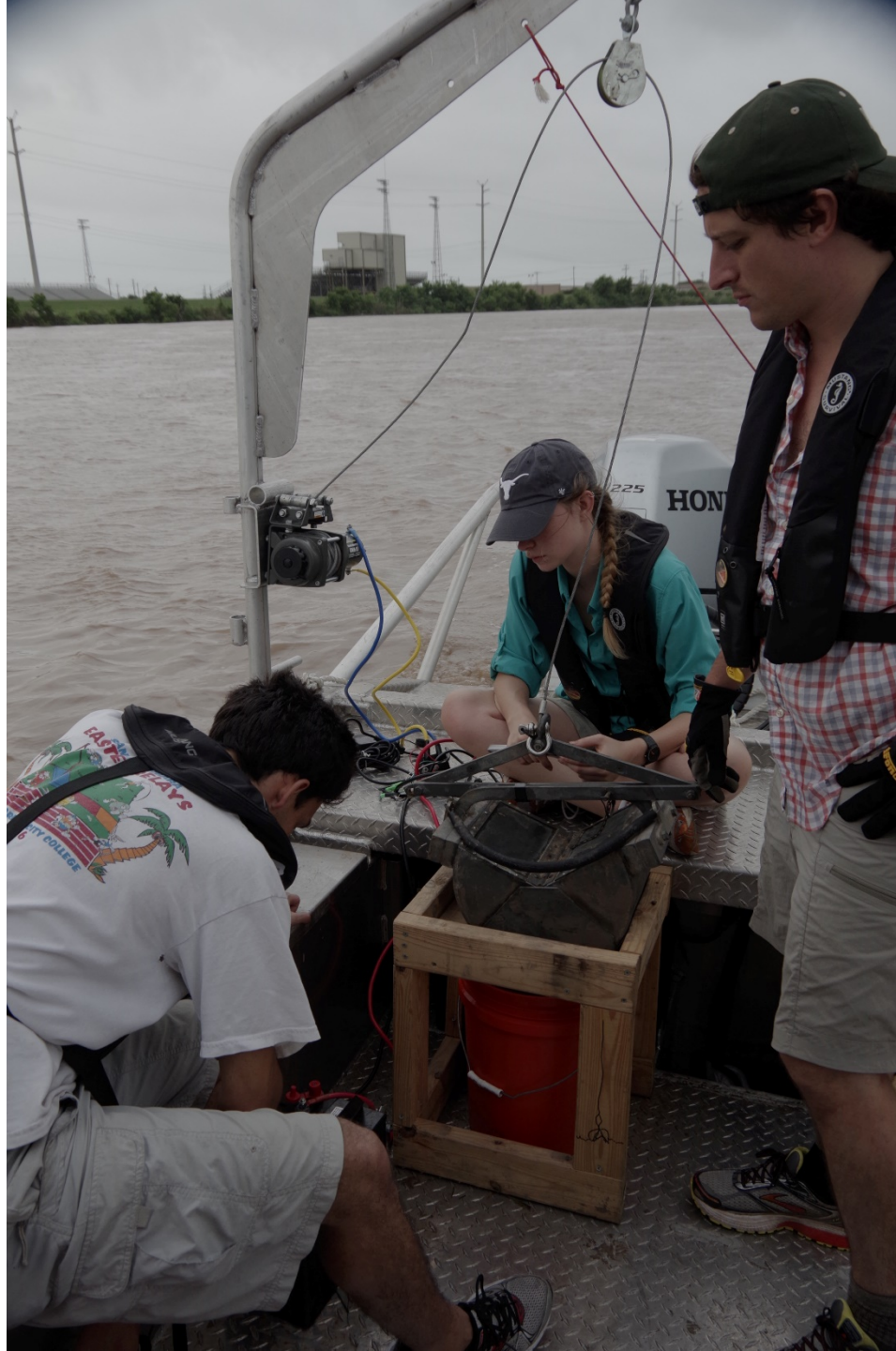
Petty















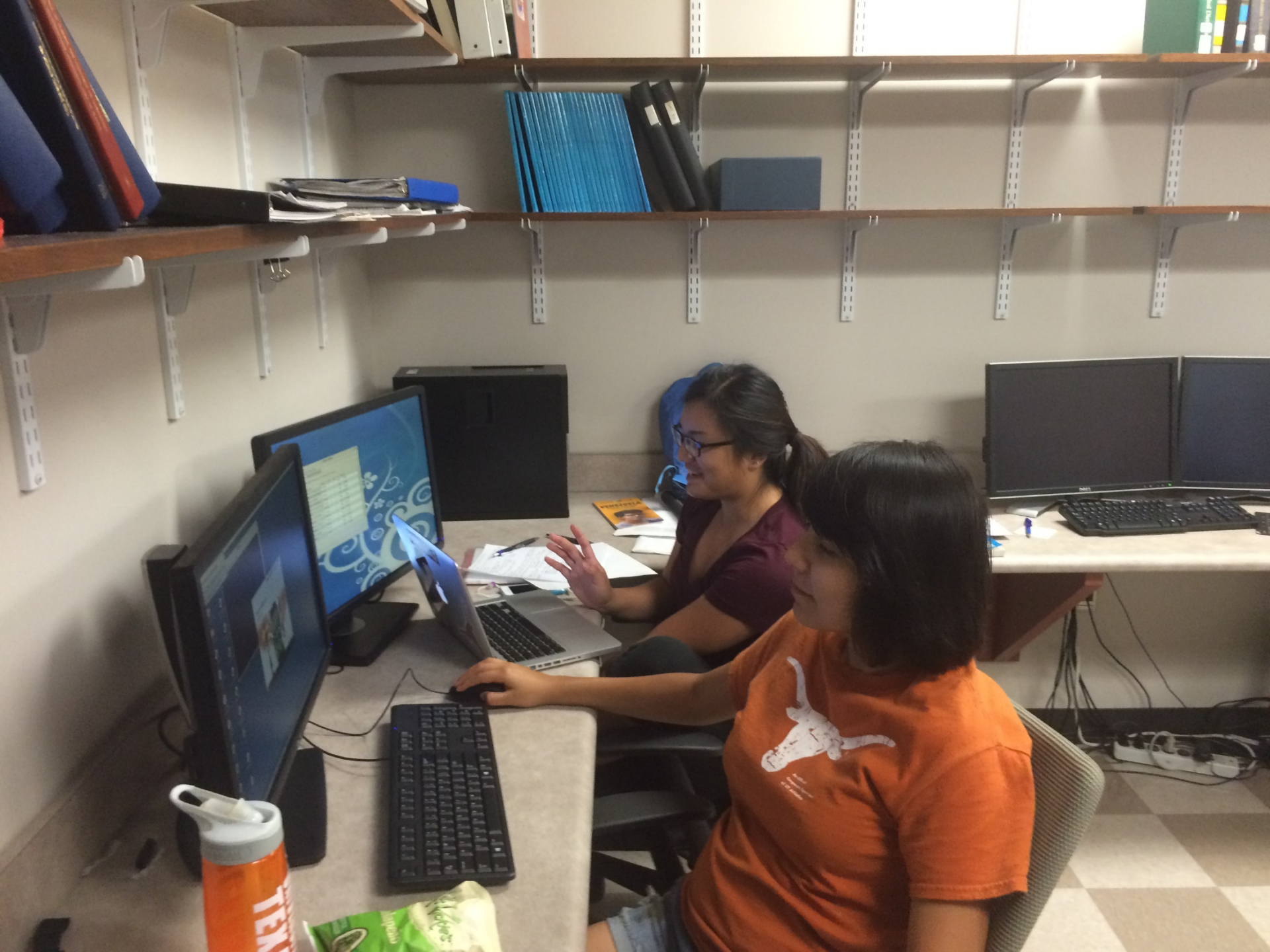




Phase 3: Interpretation Week

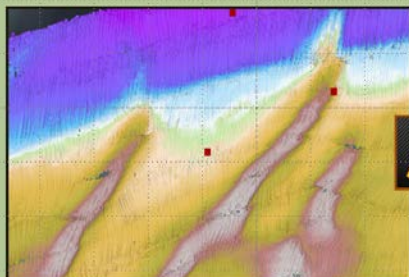








Tidal Influence on a Wave Dominated Inlet
Geomorphological Development of Bolivar Roads Inlet, Texas



A-Team
Geo 361
May, 2008



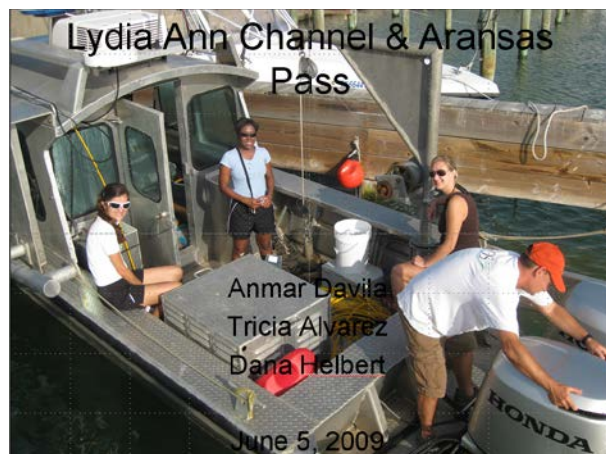
Kelley
Brunley
Eric Anderson
Ryan Elmore

Flood and Ebb Tide Deltas
Galveston, TX

Kylara Martin, Oliver Pfof, Hilary Strong
Institute for Geophysics
The University of Texas at Austin
Austin, TX 78758

Trinity River and Heald Bank:
Sea Level Controls on
Margin Development

Team HC
June 4, 2008
Marine Geophysics Field Course

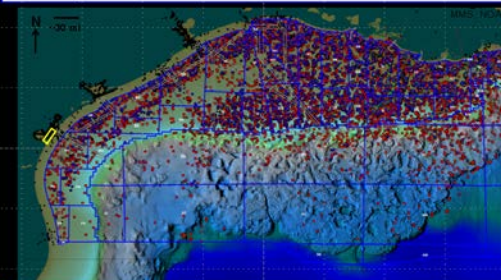


Lydia Ann Channel & Aransas
Pass

Anmar Davila
Tricia Alvarez
Dana Helbert

June 5, 2009

Geophysical survey and analysis of the Nueces offshore
system and the Aransas Pass ebb tide delta



Dan'l Lewis and Jennifer Glidewell (+ Paco Lobo)
Team 4 GEO 348K/391
Spring 2009



Testimonials

“The Marine Geology and Geophysics field course was by far the greatest learning experience in all my years at the Jackson School!...”

"As a course, I believe that the Marine Field course is an invaluable component in the curriculum of a marine geologist. The professors and research scientists from UTIG are all very knowledgeable, yet personable, allowing for a learning experience not like anything found in all classroom environments.”

“There is no other course that offers students hands-on experiences in all aspects of conducting a marine geophysics survey...”

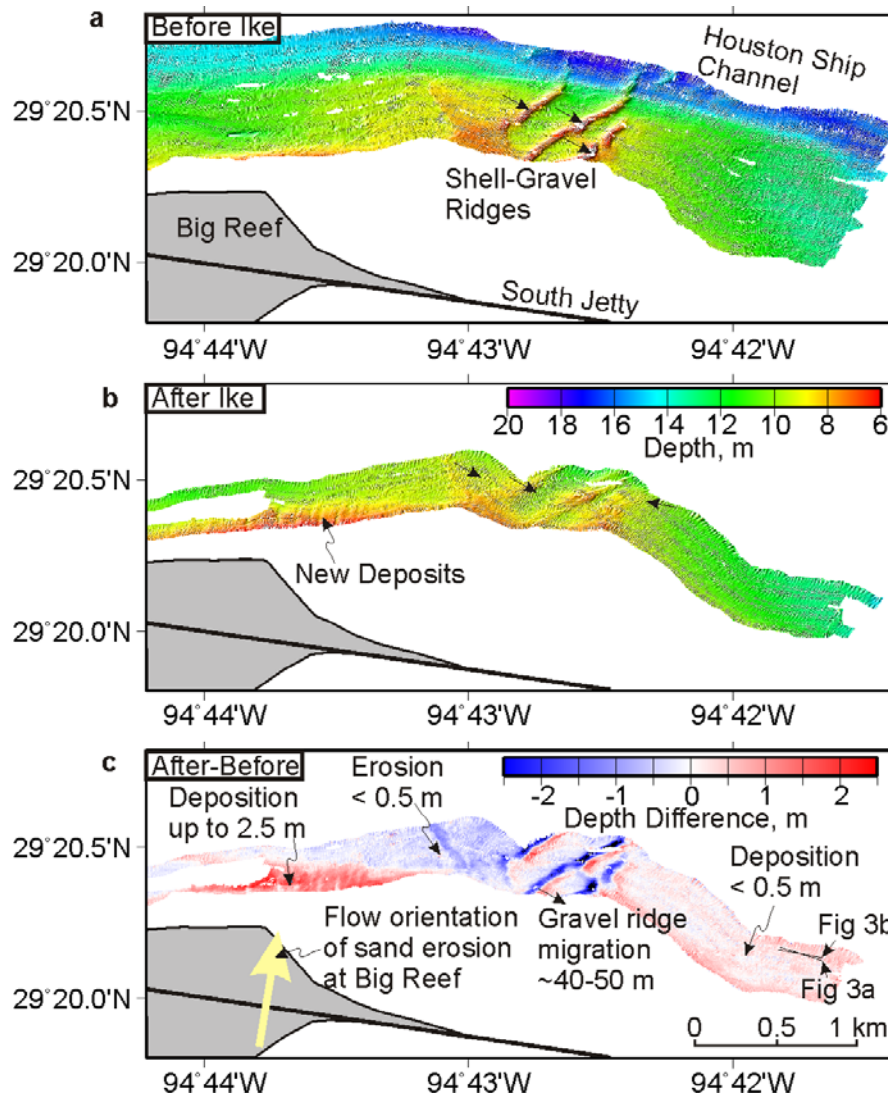
“More science classes should be taught this way! I learned more on those two weeks than I would have in two years of classroom learning. It not only teaches you geophysical skills, but teaches you about life at sea, which is equally as invaluable. This course will definitely determine whether this is a path a student wants to pursue.”

“The MG&G field course is easily the most valuable and unique educational experience I have ever had...”

<http://www-udc.ig.utexas.edu/external/MGGFieldCourse/>

Value Added: Gulf Coast Research

RESULTS:



Goff et al., Geology, 2010

EarthSky
A Clear Voice for Science • The World's Top Scientists Heard 15 Million Times a Day

REVIEWS BLOGS

WATER ENERGY HEALTH AGRICULTURE BIODIVERSITY EARTH SPACE HUMAN WORLD

Earthsky Interviews

John Goff describes how Hurricane Ike eroded Gulf Coast islands

90 SECOND INTERVIEW

00:00

DOWNLOAD EMBED

Photo Credit: Tzaya Jessier

EMAIL PRINT

09-14-2009 - WATER

Geophysicist John Goff has studied some of the slim barrier islands running parallel to the Texas coast – including Galveston Island. He said those islands were badly damaged in September of 2008 by Hurricane Ike, which made landfall near the city of Galveston.

John Goff: There was a tremendous loss of sand, and sand is the critical component to maintaining the health of the system.

Goff mapped the seafloor between barrier islands, before and after Hurricane Ike. He said the most erosion occurred when the hurricane subsided, as water rushed out of an overflowing Galveston Bay, back into the Gulf of Mexico.

John Goff: The back surge is very important. That, we found, was a very, very strong force. It moved a lot of sediment and eroded a lot of the sand. Those sands are critical to maintaining the beach barrier system. And without it, once you reduce it, it's very hard to get it back.

That's why, Goff said, his research could be helpful for cities like Galveston – places where hurricanes are likely. Galveston sits on a barrier island. Hurricane Ike sent a storm surge over the city that reached 20 feet – over six meters – in some places, before rushing back into the Gulf of Mexico. Goff said it's possible to replenish Galveston Island's lost sand. But, he said, it's expensive.

To date, the city still has not fully recovered, and part of its human population has not returned.



Elements that make it successful but are also challenges relative to “normal” academic calendars and teaching traditions

- **Immersive 3 week course (professors and students do nothing else)**
- **Teams of graduates and undergraduates crossing disciplines**
- **High teacher student ratio with technicians as TAs**
- **Expensive but can be supported externally**
- **Research link- creates baseline and repeat measurements and feeds student undergrad theses**

Questions? Thoughts?