OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013

Expedition Report
Week 1 – Module 1:1

Route so far:

Narrative summary of week prior:

The James Robert Hanssen has launched! After some minor delays and thorough preparations, the time had finally come for the JRH and crew to embark on the historic row.

OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013

During the first few days of the row, much attention was given to boat systems and to getting used to life on the ocean. Here is a note from the boat about maintaining one of the water dependent systems on the boat:

Markus and Pat found that the stainless steel filter for the system was clogged with a jellyfish. A few hours later we found the filter clogged again with slimy kelp. We will keep checking the filter regularly. We hope that this is the only problem and the readings start to be transmitted.

In addition to the boat systems, the crew's personal systems needed some time to adjust. A bit of seasickness plagued the crew to start. This is to be expected and now the crew has earned their "sea legs".

What questions do you have for the crew about the boat? About living in such a small space for so long? About the exciting scientific instrumentation on the JRH and what we can learn from the data being collected? Send your questions to education@oarnorthwest.com or on the website at www.oarnorthwest.com/education.

Here are some questions posed from the JRH crew:
A great question would be to ask students to calculate power abilities and prioritize what should get power on a small vessel like this.

Post boat clock on website so people can calculate their absolute boat time using latitude. Have students do this exercise. (We calculate boat time to maintain schedule accuracy for our sleep study. We want

to wake up and go to sleep at roughly the same time each day with regards to sunlight/moonlight.)

Introduction of Lesson going live:

The module that begins this week is titled The Boat. In this module we will explore the *James Robert Hanssen* and the basics of boats. The first lesson is titled: *What makes a boat a boat?* In this lab activity we will investigate what the defining features of a boat are and do an experiment in which the students will create a hypothesis about boat design then build their own boat in order to test their hypothesis and discover what features work in their boat. This lesson will also briefly explore the concepts of density, mass and volume.

Look for the daily updates starting on Tuesday for more information and facts about boats and rowing.

OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013

Images from week prior:

Image below from 1.26.13, off the boat.

OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013

Summary of data collected week prior:
This list is from Fritz Stahr, and includes the equipment (and location) that is on the expedition.

Scientific instruments installed on OAR Northwest rowboat *James Robert Hannsen*
Last updated: 20 November 2012 by F. Stahr, Chief Scientist OAR Northwest

In hull (pumped at ~30mL/s with strained seawater):
- Sea Bird Electronics (SBE) Micro-Thermosalinigraph (model 45)
- Turner Cyclops-7 Chlorophyll Fluorometer (in-line)
- SBE Optical Dissolved Oxygen Sensor model 43F (in-line)
  (thanks to Dr. Eriksen, UW-Oceanography, for loan of instrument)
- AirMar DST-800 (through hull – depth, speed, tempers)
- Satlantic SeaFET pH sensor
- Pro-Oceanus Mini-ProCO_2 sensor

On deck/rail:
- AirMar model PB200 ultrasonic weather station
- AirMar and Furuno GPS units (models GP330 and 33)
- YSI Cast-Away CTD (T, S, position) - max depth 100m

On oarsman:
- Fatigue Science Readiband actigraphs for continuous monitoring of sleep/rest cycles

Data collection and transmission:
- Beagle-Board xM micro-computer with Fedora-17 OS & logging/transmission programs
- Iridium 9523 modem (NAL A3LA-RS) with Seaglider™ antenna (loan from UW-SFC)
- Coastal Environmental ZENO 3200 Data Logger for collecting SBE & Turner sensor data

Environmental properties measured
(and approximate temporal and spatial resolution assuming ~2.5 knot boat speed)

Regular data, all recorded with date, time, lat & lon every ~10 sec (~12 m along track):
- surface water temp., salinity, dissolved oxygen, chl-a fluorescence, pH, pCO_2 (~10 cm deep)
- air temp, barometric pressure, wind speed, wind direction (true and relative)
- ship heading, speed through water, course and speed over ground, pitch, roll

Occasional data (date/time/location stamped):
- profiles of water temp. & salinity to ~60 meters every ~12 hour (30 nm), vert. res. ~15 cm
- oarsman log entries of wave, cloud, and wind conditions, ~ twice daily
- video and/or still images of marine fauna, especially sea birds and marine mammals
- sleep/fatigue state of oarsmen

Other computer & transmission systems:
- Panasonic Toughbooks (2) & Panasonic tablets
- Inmarsat Fleet Broadband Sailor model 250 satellite communications system – capable of live video ship-to-shore, as well as voice & data comms, especially still & video image files
- AIS – Furuno model 50(?)
- VHF radio
- Iridium hand-held phone – model 9505 – rented with prepaid airtime, text-message capable
- YellowBrick tracking transmitter – positions 2x daily, text message capable

As of 1.27.13: No chemistry sample yet

OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013

Navigation Forecast:

Navigation and weather forecast imagery can be found at David Burch's site http://www.starpath.com/oarnw/ anytime. Some highlights from the last week are included below.

David Burch (Expedition Scientist) writes on his blog:
These trough winds brings with them larger waves, which slows down progress.

My guess of the waves from the ww3 model is about 3.5 m from just west of north, which means they might be rowing with seas on the starboard bow... we have to learn later what real conditions are.

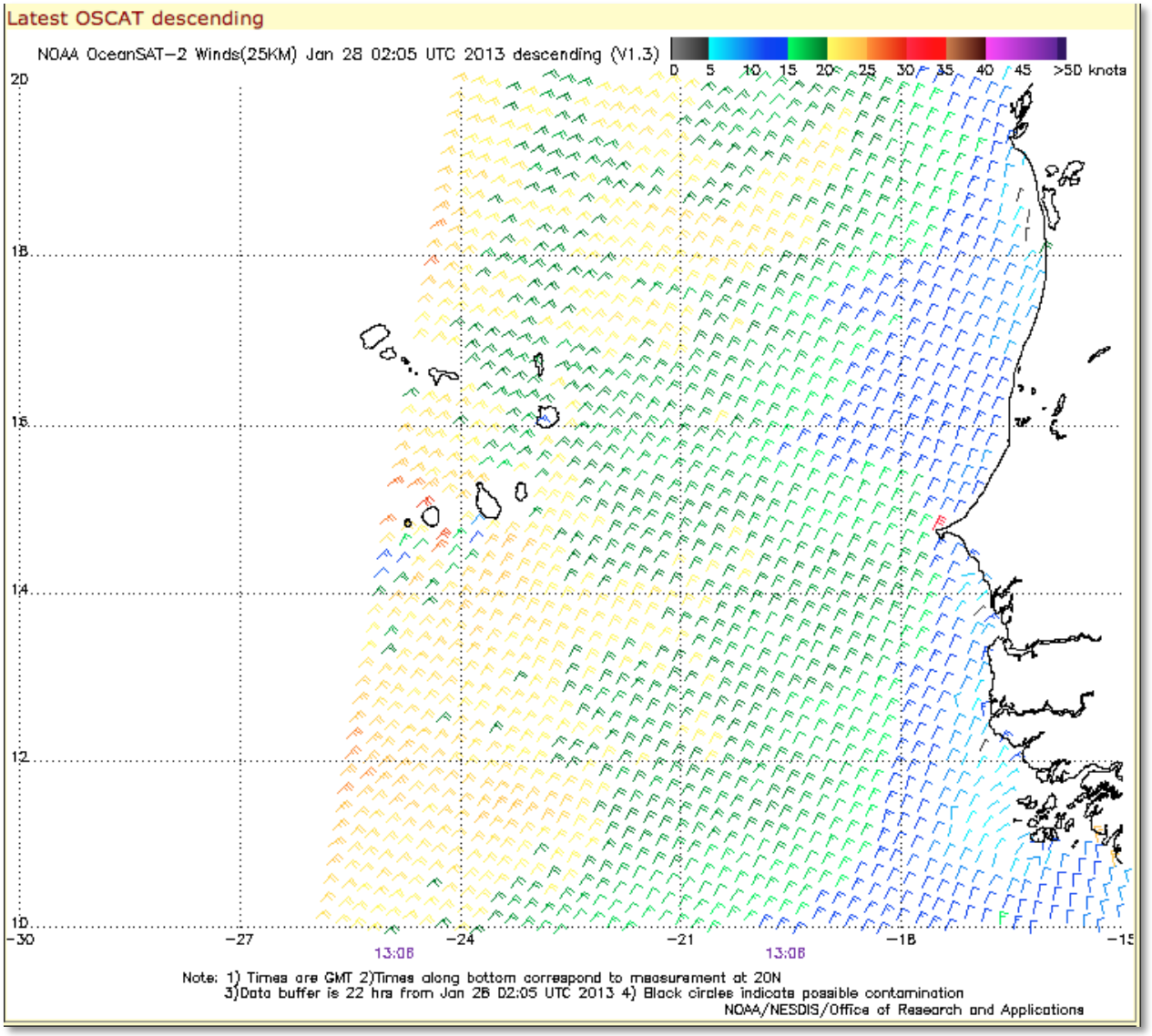
My guess is they might take a somewhat more westerly course when the wind and seas allow them.

Currents do not become an issue (http://bit.ly/XG6RK8) for a couple days I would guess, but we will keep an eye on it.

For next day or two waves are still predicted at from 350 (actually slipping a bit more to the west 340), but they should diminish. Sat down to 2.2 or so (down 40%), and by Sunday start to move to the east, meaning from 010 or so. 200 miles west of you they are from almost NE.

OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013

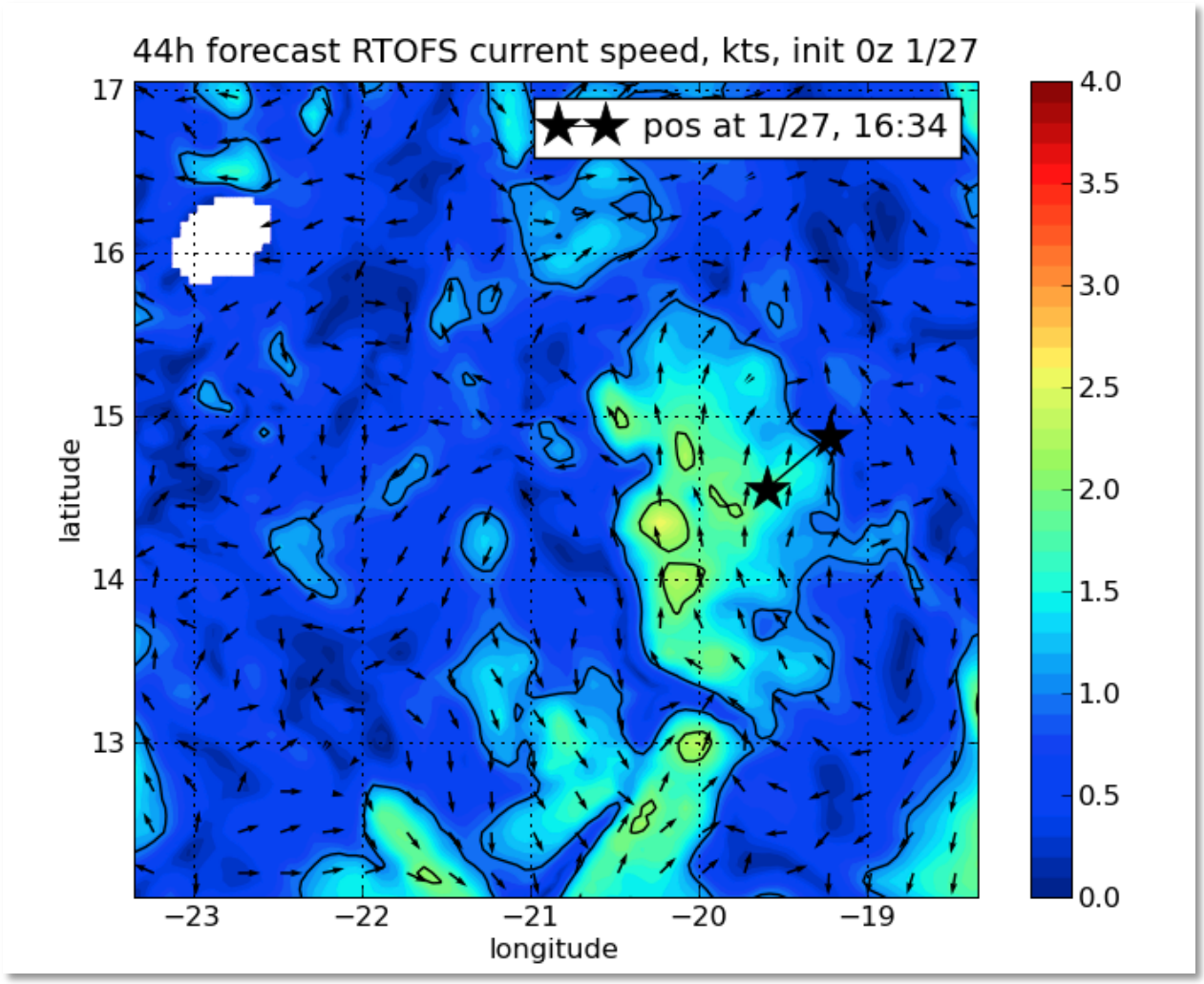


Wave data can be observed on Angie Pendergrass' (Expedition Scientist) site http://oarnw-currents.blogspot.com/

This is a 44 hour forecast, the 'warmer' the color, the higher the speed of the current in knots.

OAR NORTHWEST: EDUCATION

CWF Africa to the Americas Expedition 2013



Learn more: http://oarnorthwest.com/ Contribute: Education@oarnorthwest.com