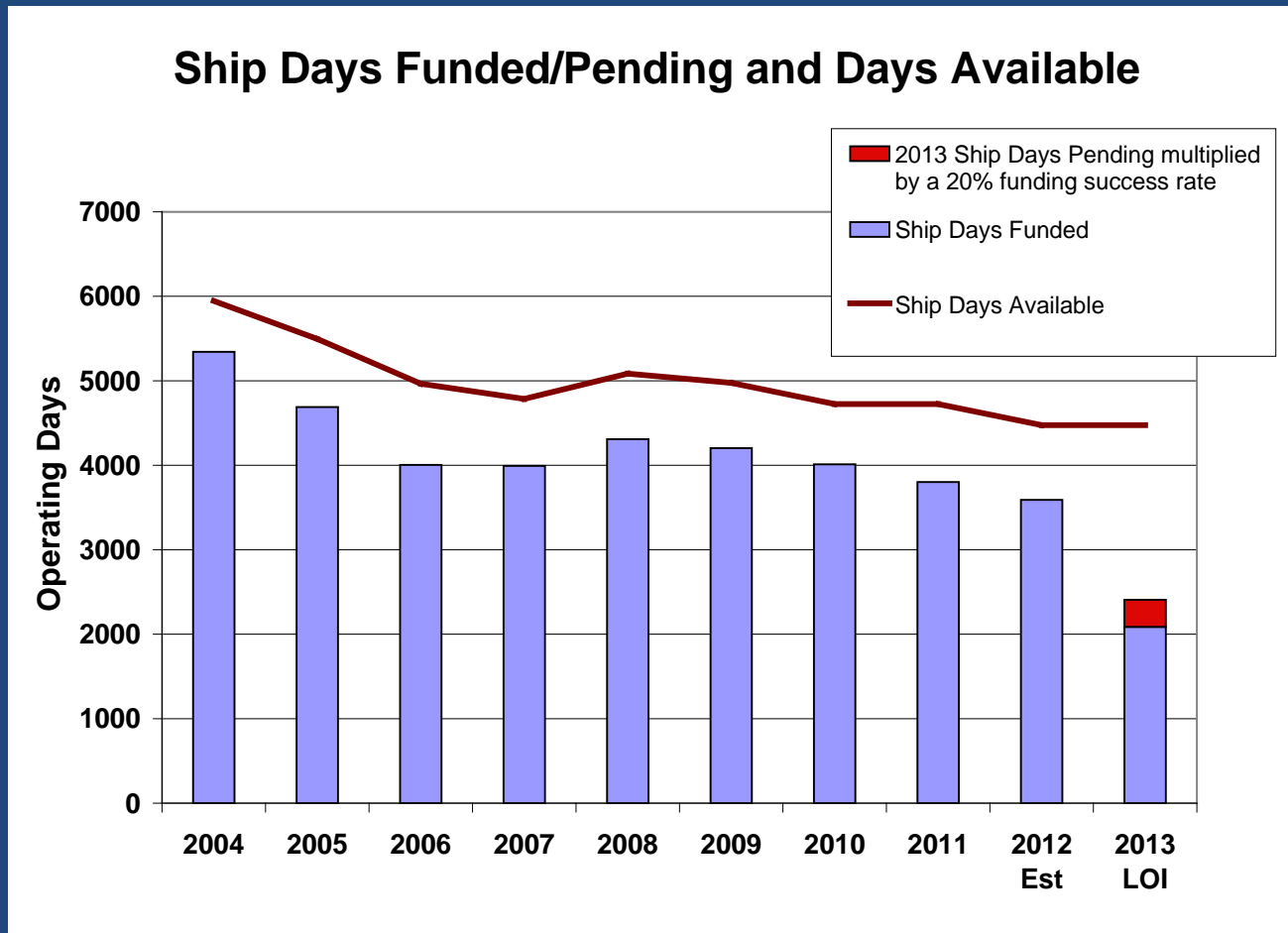


Re-Examining Fleet Capacity and FOY Definitions

Clare Reimers, FIC

October 22, 2012

June 1, 2012 Letter from NSF assessing fleet capacity



Days available based on FOY estimates

From 2009 FIP FOY by old class definitions

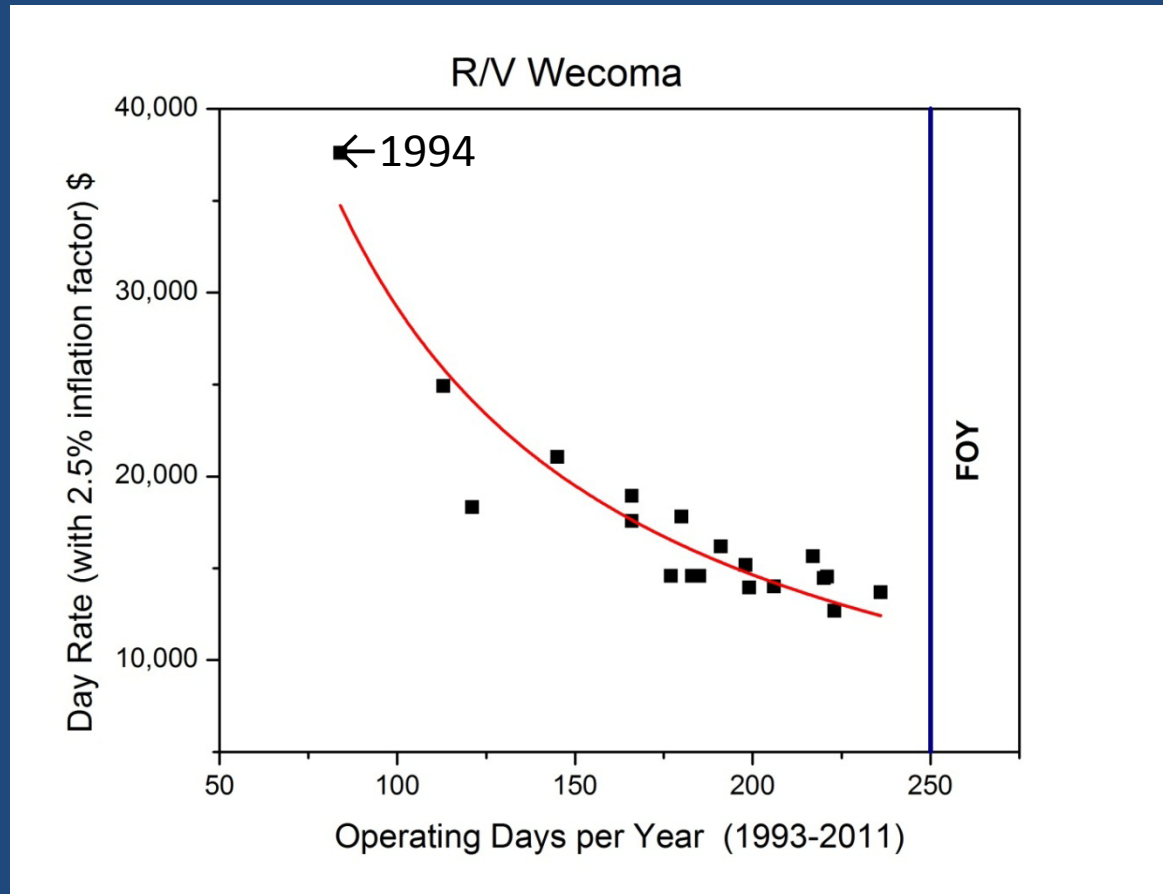
<u>Full Optimal Year Definitions:</u>	Days
Global	300
Ocean	275
Intermediate	250
Regional	200
Regional/Coastal	180
Local	110

Table 3. Full Optimal Year (FOY) Definitions

What may dictate an optimal range in number of operating days?

- Lower limit set by fixed costs (crew wages, insurance, admin etc)
More days → mostly fixed costs/bigger denominator → lower dayrate → attracts more non-NSF users → higher science \$/operations \$
- Upper limit set by maintenance needs, typical cruise profile (e.g., range, duration), fuel efficiency and relief crew availability
More days → less time for maintenance → increased risk of equipment failure and emergency out-of-service (above optimal)
More days → drives up total operating costs due to more fuel, port fees, more over time, more crew travel etc.

Example: *R/V Wecoma* 1993-2011

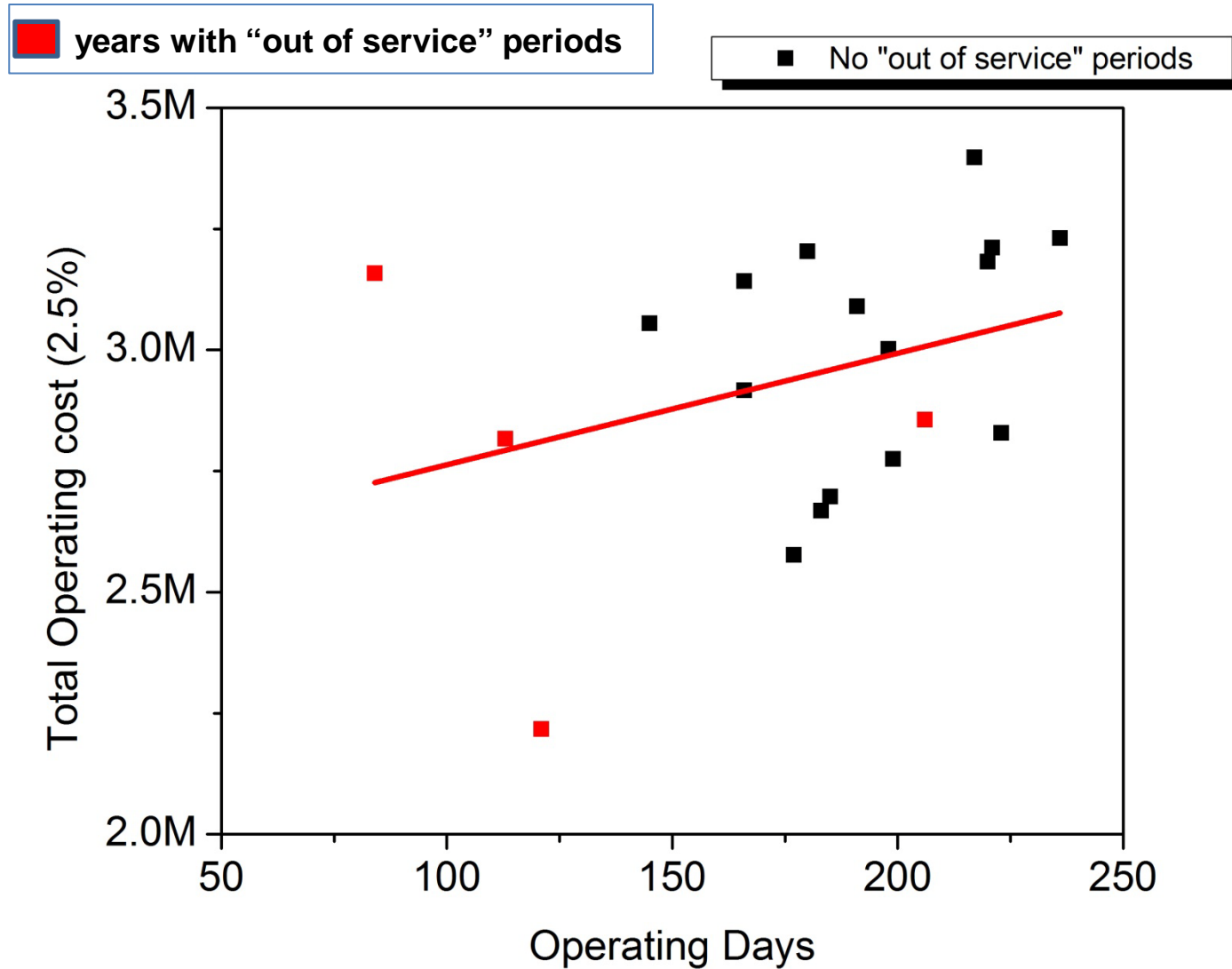


Data
provided by
Demian
Bailey OSU

At <250 op days ship has strong upkeep record. From 2004–2011, *Wecoma* lost only 12.9 days to ship or ship equipment issues, out of a total of 1,390 days (OD mean= 174), a loss time rate of only 0.9%.

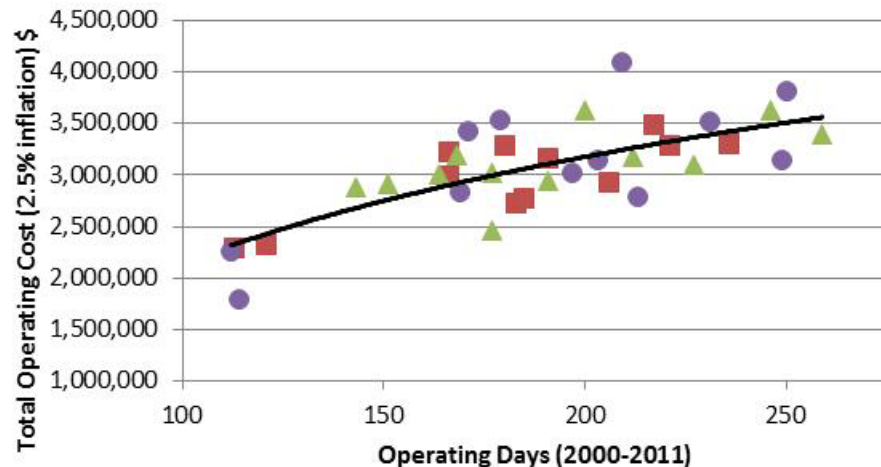
Total Cost vs. Op Days

R/V Wecoma

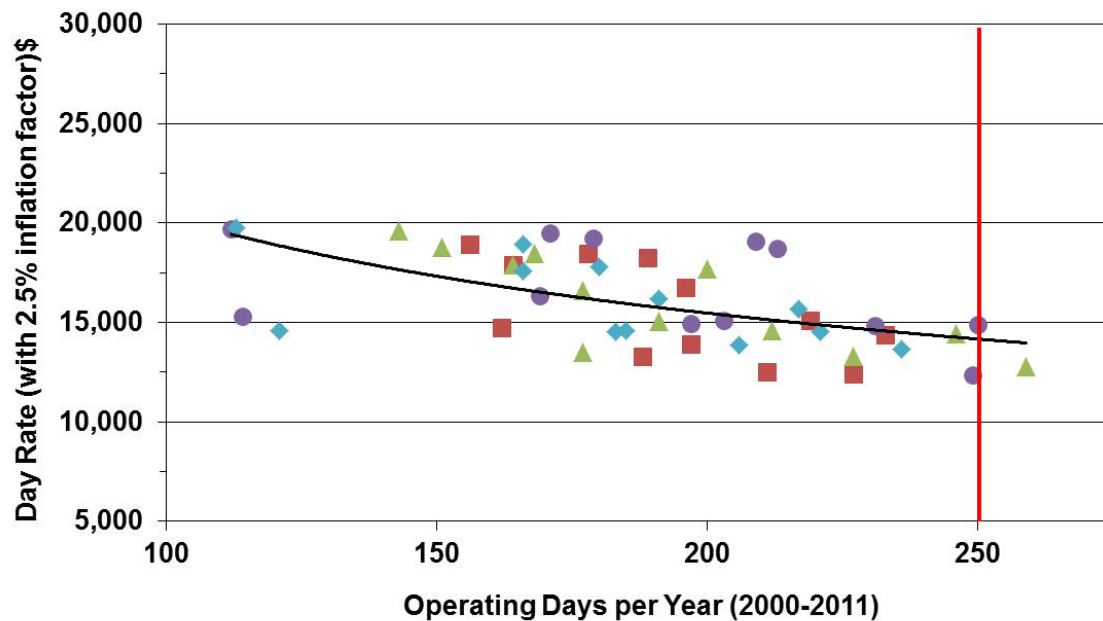


Analysis by Int. Class 2000-2011

GP Intermediates 2000-2011
Wecoma, Endeavor, Oceanus, New Horizon

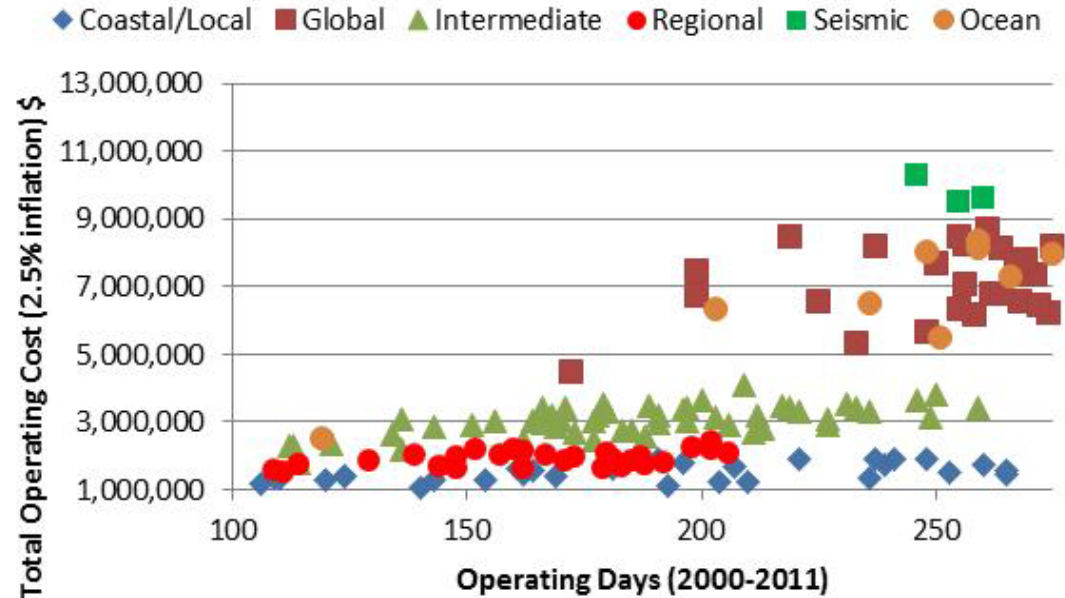


Ships with Current FOY = 250 days
(Endeavor, Oceanus, Wecoma, New Horizon)

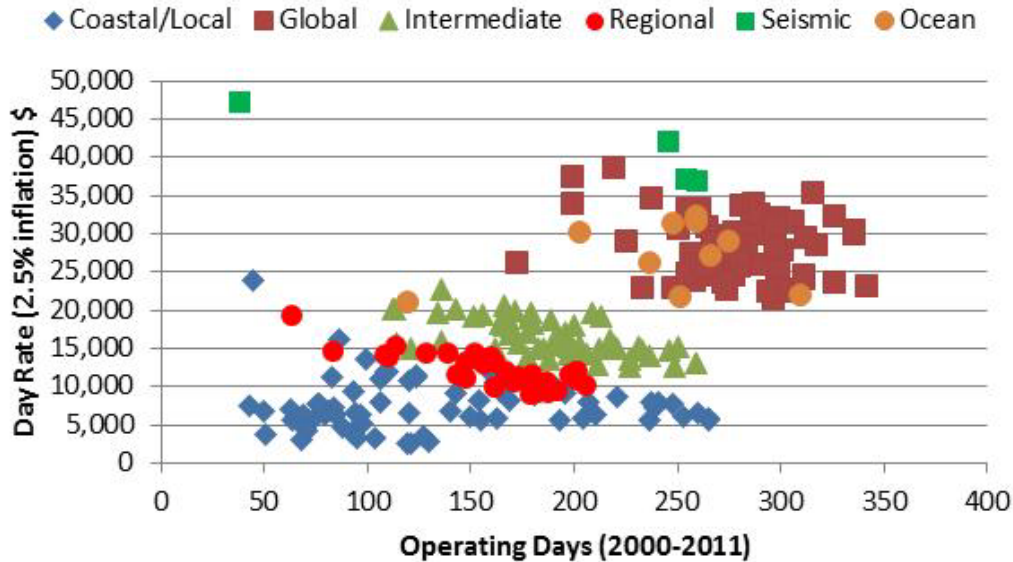


All Classes-
grouped
(new definitions-
mostly)

UNOLS Fleet



UNOLS Fleet



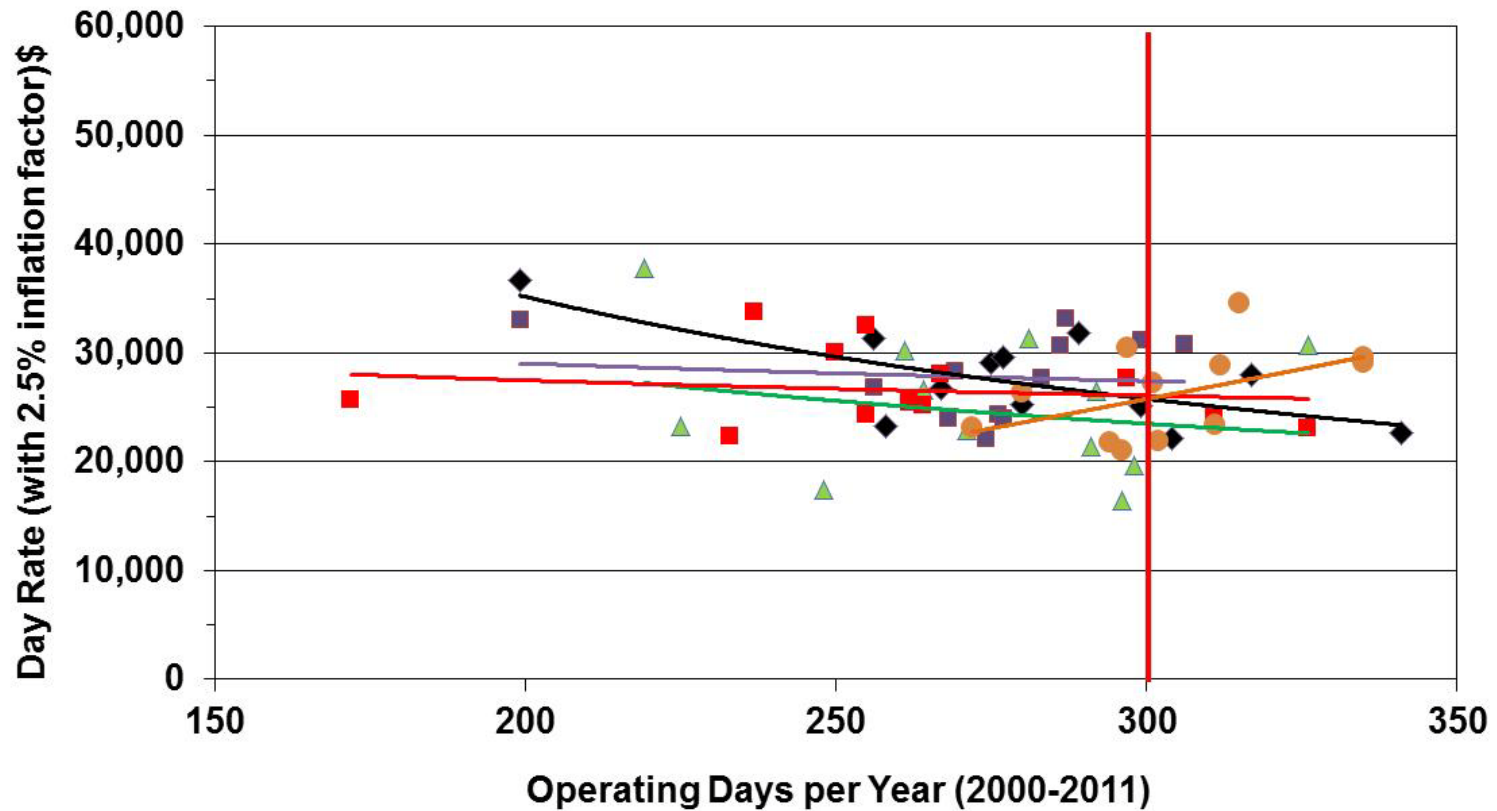
Initial Conclusions

- Schedules at FOY estimates help lower day-rates but can only lower total costs to NSF if this encourages other users and/or fewer vessels are operating
- Costs and trend differences are greatest between classes not between operators
- Schedules <FOY lead to better vessel upkeep and fewer days lost to ship problems

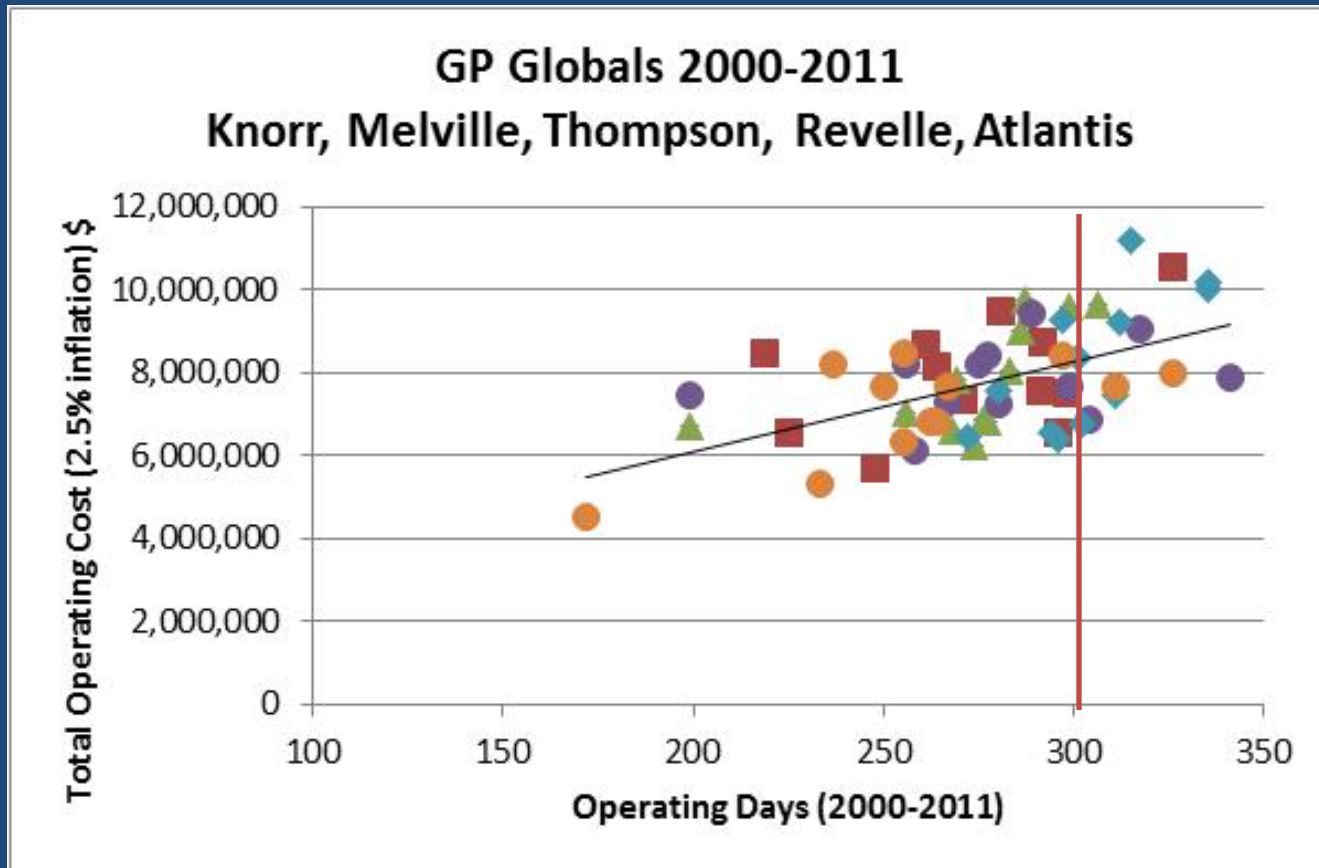
General Purpose Globals

individual trends variable
increases above FOY

GP Global Vessels: Current FOY=300
(Atlantis, Revelle, Thompson, Knorr, Melville)



Total Cost vs. Op Days



Costs escalate proportionally with operating days

Later Conclusion

- Scheduling Globals beyond their FOY limits especially escalates fleet costs.
- Combining cruises or moving work to smaller vessels to reduce Global schedules to FOY would create savings.

Superintendent Estimates vs. FOY in service vessels

- Pelican 200-240 vs. 200
- Sharp 180-220 vs. 200
- Savannah 150-160 vs. 180
- Blue Heron 65-75 vs. 110
- Walton- Smith 170 vs. 180
- Endeavor 200-220 vs. 250
- Oceanus 220 vs. 250
- Atlantis 300 vs. 300
- Knorr 300 vs. 300
- **SIO GLOBALs: 290 days**
 - OCEANs: 290 days
 - RCRVs: 290 days
 - Remaining INT/REG/LOC: 200-250 days

Email quotes-showing vessel variability

- ATLANTIS/KNORR- Al Suchy
 - We believe that a 300 operational day schedule for the Global ships is about optimal. However, I believe it is especially important to have 4 to 5 full days between voyages in a 300 day schedule. If a global has a 300 day op schedule with just 2 to 3 days in between ports it begins to be a problem with keeping up with maintenance and repair, logistical support becomes an issue, and crew fatigue becomes a problem. So, I believe a 300 day operational schedules with 4 to 5 full days between arrival and departure dates is an optimal schedule from an operational point of view.
- ENDEAVOR- Tom Glennon
 - I would say 200-220 for the Endeavor. At 37 years old we do need a fair amount of down-time for dockside pm and repairs every year. Much less than that and we may need to lay off crew to stay within budget; which we have had to do in past years.

- BLUE HERON- Doug Richetts

- By my calculations, I need 65-75 days at a minimum. This keeps most of my crew at 9 months (Captain Mike is 12 months), and limits my MOSA and training budget. Like you, salary/fringes/overtime are my primary expenses.
- Below 65-75 days I need to cut back and ask for support from the University (beyond their paying most of my salary). Above 90 days makes everyone full time and allows me to save for MOSA and do the proper training - which would be optimal.

- PELICAN- Joe Malbrough

- I consider the Pelican to have an optimal window of usage between 200-240 days although we have completed more than 265 days at sea. I have never turned down a cruise by saying we have too much work. This year will be the first year we will dip below 200 days, therefore we have been "tightening our belts" so to speak. In my operation, crew salaries are my largest expense and as our usage falls I am forced to lay-off crewmembers, usually my part-time crew members who fill-in on our vessel are the first to go and I even supplement the wheelhouse as needed. Also, during any extended down time, even if it is as little as a week, our crew operates a 40 hour work week which usually results in crew members taking time off.

- SHARP- Bill Byam

- We see our target of funded days as 180-200/year. This number is driven by the need to keep all employees on the rolls, pay our MOSA costs and keep our day rates where we consider them competitive and affordable. I will turn down work in order to give the ship and crew time for maintenance and relief. Small operations such as ours need to have relief for the crew in order to keep everyone fresh and on task. Our crew members sail between 120-140 days per year. They do not receive overtime but shore leave with pay.
- We are over our target this year at 219 days and I would not add any days to this year's schedule.
- Not sure how we can have optimal window of usage for regional ships as the operating areas are so different for each vessel. Our visits to the Gulf are out the ordinary for us and have been driven by the Navy project's needs.

- SAVANNAH- Michael Richter

- the largest single expense is crew salaries. We don't turn work away either if we can fit it into the schedule. But it does become somewhat of a balancing act if we get into the 175-200 day area. We do not have rotational or part time people so my crew has to run the entire schedule, so I do risk burning people out and deferring maintenance with that kind of a schedule. Of course in the current climate the challenge is keeping enough time on the books to remain competitive and keep your crew employed. On average, based on past experience and the current number of crew I have working I would say the sweet spot for the Savannah comes in around the 150-160 day mark. A schedule like this generally allows me to pay my people, get the required maintenance done I need during the year to keep running, and stay competitive as far as rates. Let me know if you need anything else.

SIO - Zoltan Kelety

Crucial to this full/efficient utilization is an adequate number of marine technicians. Qualified licensed mariners can be found on short notice. Techs are not similarly available, so appropriate funding support is needed to maintain enough trained technicians at operating institutions to cover the proposed number of ship days. This would be a small expense relative to gains realized from greater vessel utilization.

SIO proposes that days in home port used for mob/demob should be funded, albeit at a discounted rate reflecting fuel and related operational differences. This will allow appropriate accounting for agencies (projects require different levels of shore-side support), establish a framework for operators to recover project-specific costs related to mob/demob, and provide a transparent mechanism for charging non-federal users for port expenses. This is fairer than folding home port mobilization costs into the day rate.