

April 10, 2015

To: Margaret Leinen, SIO Director, Vice Chancellor - Marine Sciences

From: Bruce Cornuelle, Head, Oceans and Atmosphere Section

Subject: OA Section Hiring Plan

As with most of SIO, the Oceans and Atmosphere section faces difficult demographics, with 10 out of a total of 28 faculty members at least 65 years of age today. Assuming that these 10 faculty members retire within the next 5 years, OA will need to have over one-third of its faculty refreshed to maintain Scripps strengths. These 10 senior faculty span the range of research and teaching in OA, with the exception that the climate science faculty has expanded in recent years with a series of hires at both junior and senior levels. In addition, Salmon and Weiss have recently retired and Niiler passed away, all without explicit succession plans. Many senior faculty (including retirees) maintain large research programs, contribute crucial teaching to the graduate program, and would be important for the proposed OA undergraduate major.

In a bottom-up process the OA section (counting the Polar proposal) contributed 7 plans for relatively specific searches, with multiple authors in some cases, and perhaps multiple searches envisaged for at least two of the proposals: large-scale observations and ocean acoustics. The proposals are meant to be included with this summary.

Taking a cue from the GEO document, which used research themes to tie together their hiring plans, and reading the NRC Decadal Survey for Ocean Sciences, it seemed to be useful to repeat the first five themes from the NRC document:

- What are the rates, mechanisms, impacts, and geographic variability of sea level change?
- How are the coastal and estuarine ocean and their ecosystems influenced by the global hydrologic cycle, land use, and upwelling from the deep ocean?
- How have ocean biogeochemical and physical processes contributed to today's climate and its variability, and how will this system change over the next century?
- What is the role of biodiversity in the resilience of marine ecosystems and how will it be affected by natural and anthropogenic changes?
- How different will marine food webs be at mid-century? In the next 100 years?

Rather than asserting our own list of themes, COAP preferred to take the results from the NRC's careful, broad analysis in the hope that this would provide validation and support of these topics as important and fruitful research directions in the future. These topics only cover the "O" part of the section, but the first three themes are fundamentally linked to the atmosphere, the cryosphere, and the land.

The first 3 themes drive much of the research in the OA section, but there is relevance to themes 4 and 5 as well. Ocean Acoustics has relevance to some of these through acoustical oceanography and bioacoustics, as well as national security applications. Modeling and

assimilation (including atmosphere, ice, and land) large-scale observations, and observing technology are relevant to all of them. Cryosphere has particular relevance to short- and long-term sea-level rise, large-scale observations (biogeochem, physics, and climate). AGAGE and GHG attribution have special relevance to the first three. There are no search proposals in the three-year horizon linked directly to coastal and estuarine processes, reflecting the most recent hires, but this is a priority in the longer term. Likewise, air-sea interaction and theory are also priorities, but were seen to be possible to defer beyond the 3-year horizon, and so were not voted on. They are included here to flesh out the plan to 5 years.

OA section members were asked to rank the proposals, with each person giving their top pick 4 points, 3 to the second place, 2 for third, 1 for fourth, and 0 for the others. The proposals, in random order, with ranking from 16 votes (I abstained) are:

1.8125 Modeling and Data Assimilation  
1.6250 Cryosphere  
1.7500 Observing Technology  
0.9375 Ocean Acoustics  
0.7500 Greenhouse Gas Modeling  
0.8750 Greenhouse Gas-AGAGE Succession  
2.1875 Large-scale Observationalist

The significant figures are unjustified, especially for such a low turnout, which probably reflected the weakness of this approach. Some members of the section rightly pointed out that self-interest and SIO-interest may diverge, and provided two sets of votes, but I used the self-interested votes for the ranking, assuming that most people voted that way. The dynamic range between smallest and largest is not enormous, even though large-scale observationalists are top.

It would be ideal if the joint-VC hire searches can adopt some of these targets. Several proposals overlap with topics listed for the Joint-VC general topic: “Climate change impacts and adaptation”, especially the sub-topic “Measurements, sensors and platforms”. Potential overlaps are: observing technology, the two modeling proposals, large-scale observing, and perhaps even the AGAGE hire. Another factor that can greatly affect this hiring plan is what departures can be considered for succession. Both Salmon and Weiss retired in order to help SIO and should not be penalized for it.

In addition, there is overlap between proposals. For example, both modeling proposals include inverse modeling and state estimation in the atmosphere, with one focusing on inverse modeling for quantifying greenhouse gas (GHG) emissions, while the other promoting modeling and state estimation/inverse modeling in general. The more general modeling proposal considers coupled earth system models, which can include ocean and ice shelves, linking to the Polar proposal. In the majority of Section discussions, it was suggested that searches be relatively specific, as opposed to searching for “the best physical oceanographer”, given the constraints of space and programmatic needs.

Flawed though it may be, the prioritization process seemed to reflect the general consensus of the section. The following hiring plan is generally based on these priorities, with the understanding that searches can continue into the next year if the pool of applicants is not considered strong enough. In addition, succession hires were seen as requiring significantly less startup, assuming the existing labs and equipment could provide a base for the next act, but this will depend on the final negotiations. This is the justification for opening several hires in the first year, but salary considerations may preclude making hires in all the search areas. In addition, what can be considered succession needs to be clarified. The plan also does not count on any joint hires, which could add to the resources available. The strawman plan is:

2015: 3 searches, 2 succession and 1 new, The topics are:

succession: Large-scale Observationalist

succession: Observing Technology

new: Modeling and Data Assimilation, including GHG modeling and cryosphere coupled models.

2016:

succession: Ocean Acoustics

succession: Greenhouse Gas-AGAGE Succession

new: Cryosphere

2017:

new: Greenhouse Gas Modeling

succession: Large-scale Observationalist

2018:

succession: Theory

succession: Acoustics

2018:

succession: Air-sea interaction observations