Memo to: The UCAR Membership Committee

From: Len Pietrafesa
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Subject: Naval Postgraduate School Re-Up for Membership to UCAR

The Naval Postgraduate School (NPS) has been a member of the University Corporation for Atmospheric Research (UCAR) since 1983. The NPS membership has been shared jointly by the Departments of Meteorology and Oceanography and has a long and rich history of educating military officers in the environmental sciences, in general, and in the atmospheric and oceanic sciences, specifically. This membership has greatly assisted the Meteorology and Oceanography Departments at the NPS to develop and maintain world-class instruction and research in the environmental sciences.

The Naval Postgraduate School (NPS) is a graduate degree granting institution serving the United States (U.S.) Military Services. The U.S. Navy sends the largest number of students, although all branches of the military send students to various programs on campus. There is a relatively large population of international students (about 15%) and a small number of civilian students who work for the U.S. government. Degree programs range from business programs to political science but the main emphasis is in science and engineering programs relevant to U.S. Navy military operations. The Departments of Meteorology and Oceanography have been core programs at NPS for many years (since 1926 for Meteorology) and are highly regarded in the broader scientific community.

The NPS Meteorology Department was one of the first academic departments at NPS and is the Nation’s leader in atmospheric research that supports U.S. Navy operations. The department focuses on research on Tropical Cyclones, Climate dynamics, boundary layer effects on electro-magnetic/electro-optic wave propagation, coastal meteorology, and applications of satellite remote-sensing. The NPS Oceanography Department has been a leader in Arctic region modeling and observing, underwater acoustics, coastal ocean modeling, near-shore, surf zone dynamics, and ocean surface wave prediction. All of these areas are of great significance to U.S. Navy operations and provide an excellent basis for educating U.S. Navy officers.

The two NPS departments have participated in many research and educational UCAR activities in the past, ranging from use of NCAR’s computational facilities to working with COMET to develop a major set of mesoscale training modules. The NPS membership in UCAR purportedly has provided many opportunities for NPS faculty and students that could not have occurred without the collaboration with UCAR. NPS has expressed its commitment to maintaining strong programs of study and research in the atmospheric and oceanographic sciences, advancing these sciences through publications and active participation in national and international research efforts, and participating fully in UCAR activities to help extend both NPS and UCAR capabilities. The atmospheric and oceanographic sciences are core programs at NPS and their continued excellence greatly benefits the Navy and the broader scientific community. The NPS administration, faculty and students desire to continue to work closely with UCAR/NCAR personnel with common scientific interests, extend our capabilities by utilizing UCAR facilities that are not available at NPS, and maintain a robust, active
participation in UCAR governance and programs. Details of relevant NPS degree programs are at: http://nps.edu/Academics/Departments.

The Department of Meteorology instruction and research staff consist of 4 faculty who are tenured, one in the tenure-track, 2 research track faculty and 5 research associates. In addition, there is 5 staff that supports research and laboratory instruction. The Department of Oceanography consists of 6 tenured faculty, one of who is the Dean of Research, 8 research track faculty and 2 research associates, 1 senior lecturer and 5 staff that support research and laboratory instruction. The two departments also share 1 military instructor. Both departments are actively recruiting new tenure-track and research faculty to support the instructional and research programs.

The NPS is primarily focused on M.S. degrees. The U.S. Navy and U.S. Air Force send only a small number of students to the Ph. D. program each year. The two departments have graduated a total of 132 students in the past 5 years; including 16 Ph.D.’s in Meteorology, 8 Ph.D.’s in Oceanography, 76 M.S.’s in Meteorology and Physical Oceanography, 23 M.S.’s in Meteorology, 7 M.S. in Operational Oceanography and 3 B.S.’s in Meteorology. The B.S. students represent a small U.S. Air Force - Basic Meteorology Program (BMP) to educate junior officers without a degree in meteorology, in meteorological science, in order to become part of the Air Force Weather corps.

Funding for NPS atmospheric and oceanic sciences research exceeds $15M/year between the two departments (about $4M/year for Meteorology and $11M for Oceanography). The U.S. Office of Naval Research provides the largest single share of research funding followed closely by the National Science Foundation, along with the National Oceanic & Atmospheric Administration, the U.S. Air Force, the National Aeronautics & Space Administration and the U.S Army Corps of Engineers. Over the period 2010-2014 the results of this funded research have included more than 260 refereed journal articles, a textbook, and hundreds of conference presentations, between the two departments.

The NPS has routinely sent representatives to the UCAR members meetings, had faculty serve on the OFAP and participate in Unidata workshops, had frequent collaboration with NCAR scientists including fieldwork and also including the transfer of software developed at NPS to EOL for aircraft flight planning. Currently, field work on Tropical Cyclone Intensification (TCI) is planned for this summer/fall (2015). The Arctic modeling group in oceanography interacts with NCAR scientists in developing and improving regional coupled arctic modeling capabilities. The large-scale ocean modeling group uses NCAR's supercomputer to create large ensembles of CESM to understand model uncertainty. In addition, the Meteorology Department uses the WRF model, NCAR graphics, and UNIDATA for many research efforts.

We strongly support the re-upping of the NPS to the UCAR constellation.