**Topic Description**

- Understanding the ocean environment is imperative and directly coupled to the successful performance of undersea sensors and subsequent employment of undersea warfare weapon systems.

- In order to optimize the performance of undersea sensors and weapons systems, it is crucial to gain an understanding of the acoustic propagation in the ocean.

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**Difference in Acoustical Characteristics Identified from the Three Datasets in the Navy's Hot Spots**

- Climatology → Navy’s Generalized Digital Environmental Model (GDEM)
- Synoptic Monthly Gridded (T, S) fields for the world oceans from January 1960 to December 2015 → Synoptic GDEM (developed at NPS).
- Navy’s Coastal Ocean Model (NCOM) and Hybrid Coordinate Ocean Model (HYCOM)

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**Potential Research Focus/Questions**

- How can inter- and intra-annual variability in the ocean be leveraged by the submarine Force?
- Is GDEM or synoptic GDEM good enough to represent SVP for ASW especially in the bottom limited area?
- What is value-added of HYCOM/NCOM modeled (T, S) profiles to represent SVP for ASW?
- How can ocean models (e.g., NCOM or HYCOM) be used for submarine operations?

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**Students Involvement and Collaboration**

- NPS USN student officers will be recruited to work on this proposed research topic for their thesis studies.
- This project will be conducted in collaboration closely among NPS (Dr. Peter C. Chu), NAVO (Mr. Ronald Betsch, ASW/MIW program manager, Mr. Mel Wagstaff, ASW Technical Leader), and NRL (Dr. Charles Barron)