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Portugal

Q1

The most important milestones in hydrography are the ones that allowed the improvement of data acquisition and processing, with better resolution and accuracy, making it available for nautical chart production and other applications. It is remarkable the evolution in hydrography with the invention of the single beam echosounder and the positioning of soundings by electronic systems. More recently, the availability of GPS and multibeam. With the development of computer systems, the processing of hydrographic data is becoming more efficient and evolve to the creation of the Electronic Nautical Charts.

All the above-mentioned improvements had impact in Portugal that has a strong tradition in nautical cartography. The establishment of the Portuguese Hydrographic Institute, in 1960, was a significant milestone. Since then, the practice of hydrography, keep evolving in pace with modern technologies, multibeam surveying and electronic nautical chart production, in the 1990's. The recognition of education and training in hydrography, IHO CAT, in 1983, was a relevant milestone, as well as the acquisition of two oceanic type hydrographic ships in the 1990's, the D. Carlos I class.

Q2

The transition to autonomous systems is a promising development. The advantages of such systems are immense. The process towards increased use of these new technologies seems unstoppable, however some hurdles still need to be overcome. Autonomous marine operations is not yet a mature technology requires improved regulation and training of specialized personnel.

Nautical cartography will evolve with less demanding for the traditional paper chart. The new Hydrographic Geospatial Standard for Marine Data and Information, known as S-100, together with its supporting geospatial information infrastructure, that is under development and implementation by the IHO will have transformative impact in maritime navigation and in the support of the marine environment and costal infrastructures with significant economic, commercial, technical, risk avoidance and environmental benefits.

With the ever-increasing and affordable capacity computing power to process and store data, the emergence of artificial intelligence in hydrography and ocean sciences is full of challenges and opportunities. This is an exciting and important developing field to follow by the hydrographic community.

Q3

The first article I remember to read at the IHR, was devoted to a new survey vessel built by the Portuguese Navy, published in 1989, LXV (I), "New survey vessels for the Portuguese Navy", by P. Fiadeiro and A. Silva Ribeiro. It was the first ship where I served as a midshipman, the same year when it was published.

Also the article published just after the creation of the Portuguese Hydrographic Institute, in 1962: Vol. XXXIX (I) "The Portuguese Hydrographic Office" and, in the same volume, I should refer the article "Prince Henry of Portugal and the Progress of Nautical Cartography" by Teixeira da Mota, because of its historical relevance.

The IHR is well known by the Portuguese hydrographic community for publishing the latest technical developments in hydrography. Among them, just to mention two articles: one published in 1976: Vol. LIII (I), "Satellite Navigation in Hydrography", by Eaton, R. M., Wells, D. E. and Stuijbergen. More recently the article published in May 2017 "Navigation Sonar: More Than Underwater Radar — Realizing the full potential of navigation and obstacle avoidance sonar" by Ian Russel and R. Glenn Wright.